FCC SAR Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2075-3
FCC ID	:	IHDT56ZC3
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

The product was received on May 11, 2020 and testing was started from May 12, 2020 and completed on May 28, 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.

Rose Wang

Reviewed by: Rose Wang / Supervisor

Kat Yin

Approved by: Kat Yin / Manager

ACCREDITED Cert #5145.02

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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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA051103	Rev. 01	Initial issue of report	Jun. 08, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2075-3,** 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	0.29	1.16	1.16	1.52
		GSM1900	<0.10	1.13	1.07	
	CDMA	CDMA2000 BC0	0.30	1.10	1.14	
		CDMA2000 BC1	<0.10	1.02	1.00	
	WCDMA	Band II	0.13	1.17	1.04	
		Band IV	0.18	1.13	1.00	
		Band V	0.33	1.08	1.06	
	LTE	Band 2	0.15	1.12	1.08	
		Band 7	0.19	**1.19**	**1.19**	
		Band 12/Band 17	0.16	1.04	1.04	
		Band 26/Band 5	0.31	1.15	1.11	
		Band 66/Band 4	0.14	1.07	1.01	
		Band 41/Band 38	<0.10	**1.19**	**1.19**	
	5G NR	n41	0.63	0.40	0.36	
DTS	WLAN	2.4GHz WLAN	**1.04**	1.09	1.09	1.48
NII		5GHz WLAN	0.26	1.01	1.01	1.52
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	<0.10	<0.10	1.52

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	1.60	3.95
		GSM1900	3.06	
	CDMA	CDMA2000 BC1	2.71	
	WCDMA	Band II	2.99	
		Band IV	3.13	
		Band V	1.30	
	LTE	Band 2	2.78	
		Band 7	2.97	
		Band 26/Band 5	1.71	
		Band 66/Band 4	3.02	
		Band 41/Band 38	**3.20**	
	5G NR	n41	1.57	
DTS	WLAN	2.4GHz WLAN	1.05	3.95
NII		5GHz WLAN	2.14	3.74
Date of Testing:			2020/5/12~2020/5/28	

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.

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	XT2075-3
FCC ID	IHDT56ZC3
IMEI Code	IMEI 1: 353617110019118 IMEI 2: 353617110019126
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 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 n41 : 2501.01MHz ~ 2685MHz 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 HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DVT2
SW Version	QPN30.33-9
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark: 1. 802.11n-HT40 is not supported in 2.4GHz WLAN. 2. This device supports VoIP in GPRS, EGPRS, WCDMA, CDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. 3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.	

4. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
5. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
6. The 2.4GHz/5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
7. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile. The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
8. The dual SIM card mobile has 2 SIM slots and supports dual SIM dual Standby. The WWAN radio transmission will be enabled by either one SIM at a time (Single active).
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, which are provided in the operational description.
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. The 2.4GHz/5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
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 LTE and 5GNR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information on section17.
13. This device supports 5GNR FR1 bands as following table.
14. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
15. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
16. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
SA	n41	TDD	30	20, 40, 50, 60, 80, 90, 100

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>IHDT56ZC3</td></tr>
<tr><td>Equipment Name</td><td>Mobile Cellular Phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>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 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</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 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</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE Release Version</td><td>R15, Cat12</td></tr>
<tr><td>CA Support</td><td>Supported, Uplink and Downlink</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
</td></tr>
<tr><td>LTE A-MPR</td><td>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)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>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.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, head/body-worn/ hotspot/extremity will trigger reduced power for some LTE bands, the detail please referred to section 13.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>1. This device supports LTE Carrier Aggregation (CA) in the uplink for 7C/2A-7A with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.
2. This device supports maximum of 4 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.</td></tr>
</table>

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)				
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)				
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)				
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 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
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

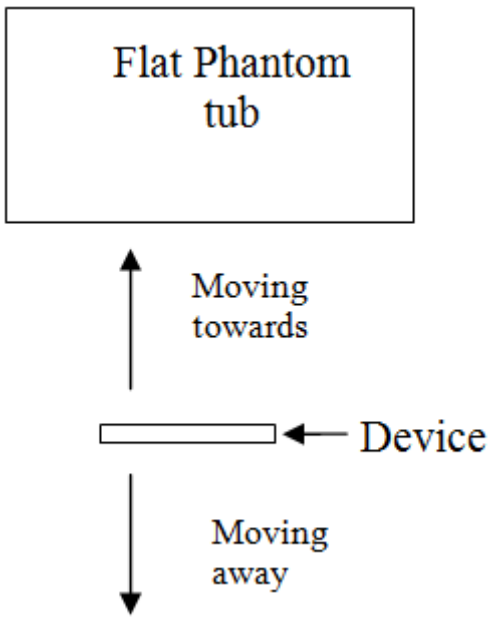
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	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

5. Proximity Sensor Triggering Test

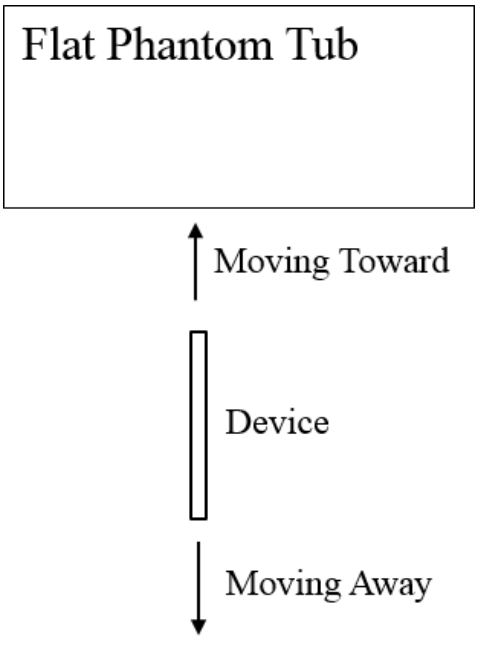
5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (5825MHz) and lowest (850MHz) frequency was used for proximity sensor triggering testing.
2. 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 or left 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.
3. When the proximity sensor is active, GSM850/1900, WCDMA band II/IV/V, CDMA BC1, LTE band 2/4/5/7/26/66/38/41, 5GNR n41 and WLAN2.4GHz / WLAN5.2GHz / 5.3GHz / 5.5GHz / 5.8GHz reduced power will be active for front/ back body worn SAR.
4. P-sensor can detect handheld state, GSM1900, WCDMA band II/IV, CDMA BC1, LTE band 2/4/7/66 for front/back/ right /bottom/top sides of product specific 10g SAR condition reduced powers will be active for handheld SAR. For LTE band 7 right side perform full power SAR testing, no need to verify reduced power.
5. 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).
6. 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: 20 mm
   Back: 24 mm
7. 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:
   Handheld-WWAN Bottom Antenna:
   Front: 5 mm (declared by manufacturer)
   Back: 7 mm (declared by manufacturer)
   Bottom side: 9 mm

   Handheld- WWAN Top Antenna:
   Front: 5 mm
   Back: 7 mm (declared by manufacturer)
   Top side: 8 mm



Sensor/handheld detection test set-up, front and back faces



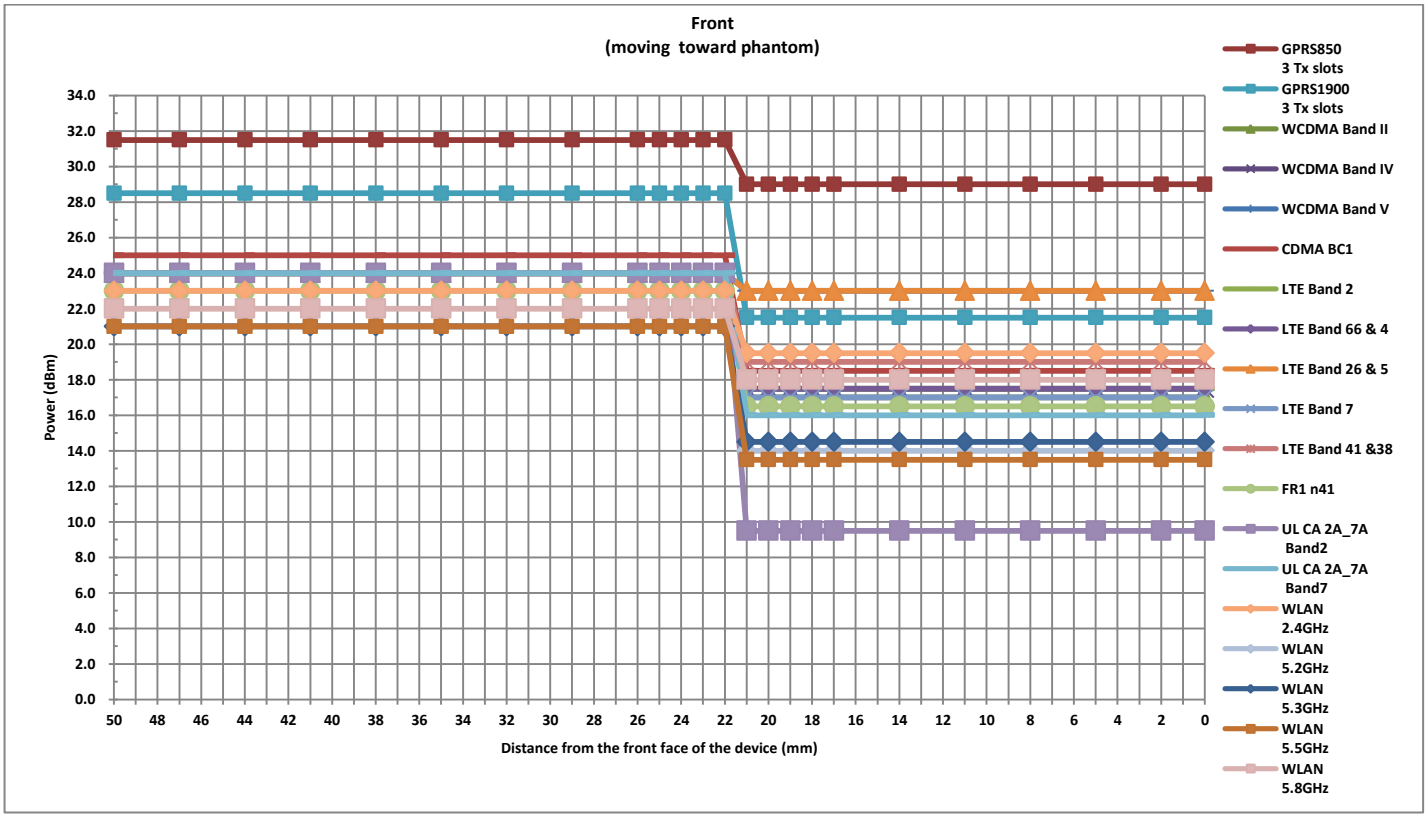
handheld detection test set-up, right side/bottom side and top side

<P-Sensor>

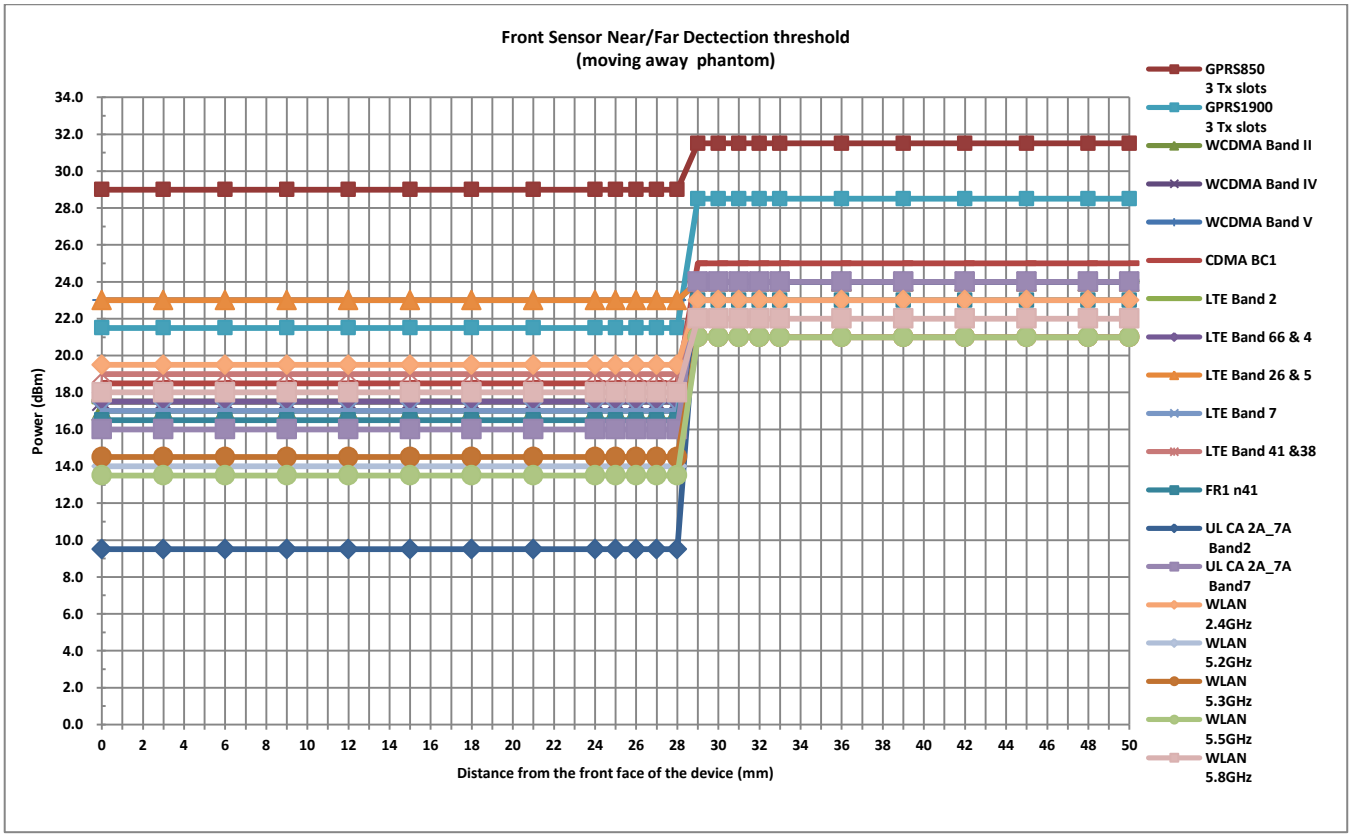
Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	21	28	25	31

TX. Band	Proximity Sensor Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
GPRS850 3 Tx slots	31.5	29.0	2.5
GPRS1900 3 Tx slots	28.5	21.5	7
WCDMA Band II	24.0	17.0	7
WCDMA Band IV	24.0	17.5	6.5
WCDMA Band V	24.0	23.0	1
CDMA BC1	25.0	18.5	6.5
LTE Band 2	24.0	17.5	6.5
LTE Band 66&4	24.0	17.5	6.5
LTE Band 26&5	24.0	23.0	1
LTE Band 7	24.0	17.0	7
LTE Band 41&38	24.0	19.0	5
FR1 n41	23.0	16.5	6.5
UL CA 2A_7A Band2	24.0	9.5	14.5
UL CA 2A_7A Band7	24.0	16	8
WLAN2.4GHz	23.0	19.5	3.5
WLAN5.2GHz	21.0	14.0	7
WLAN5.3GHz	21.0	14.5	6.5
WLAN5.5GHz	21.0	13.5	7.5
WLAN5.8GHz	22.0	18.0	4

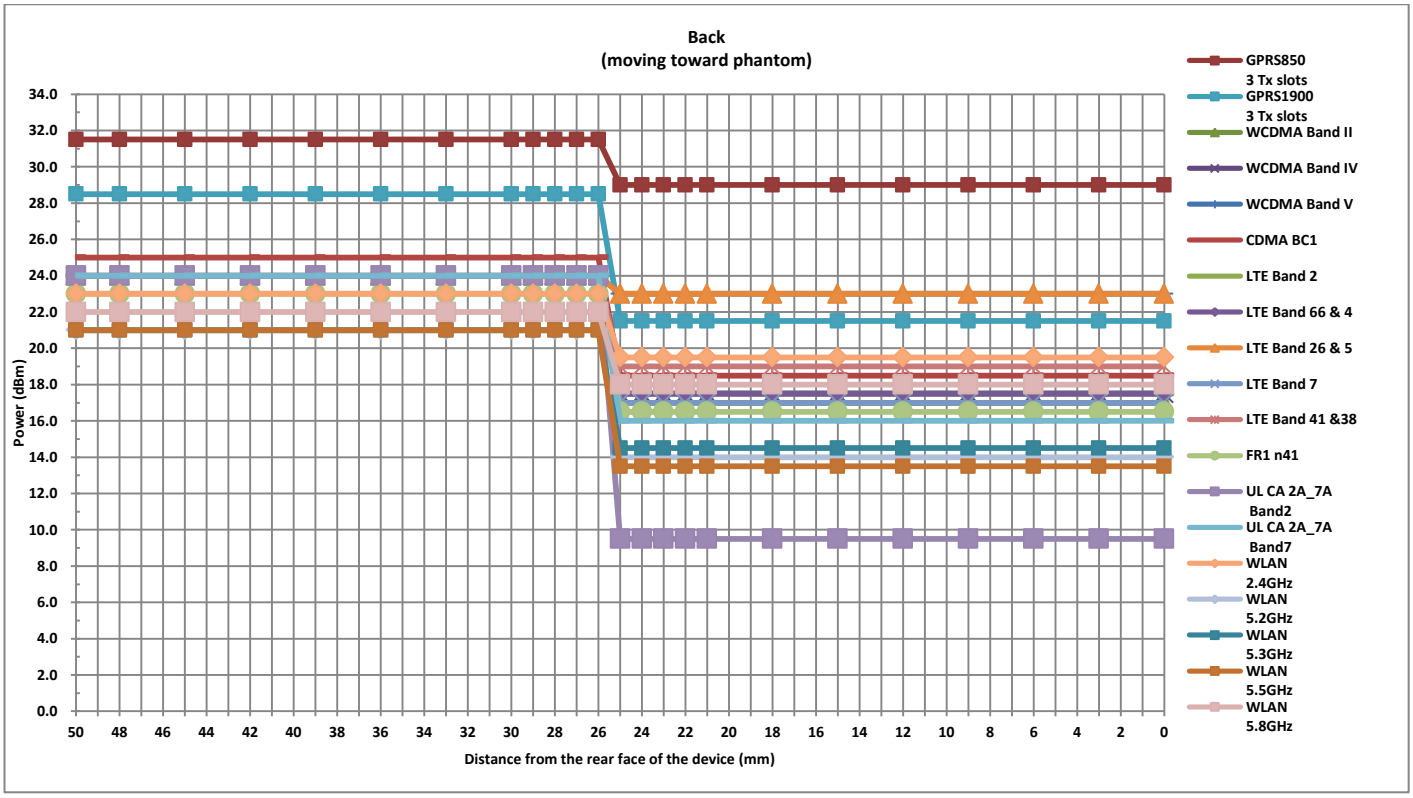
Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	47	44	41	38	35	32	29	26	25	24	23	22	21	20	19	18	17	14	11	8	5	2	0
GPRS850 3 Tx slots	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
WCDMA Band IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WCDMA Band V	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 66&4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 26&5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
LTE Band 41&38	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
FR1 n41	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	16	16	16	16	16	16	16	16	16	16	16
WLAN2.4GHz	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
WLAN5.2GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
WLAN5.3GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
WLAN5.5GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
WLAN5.8GHz	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0



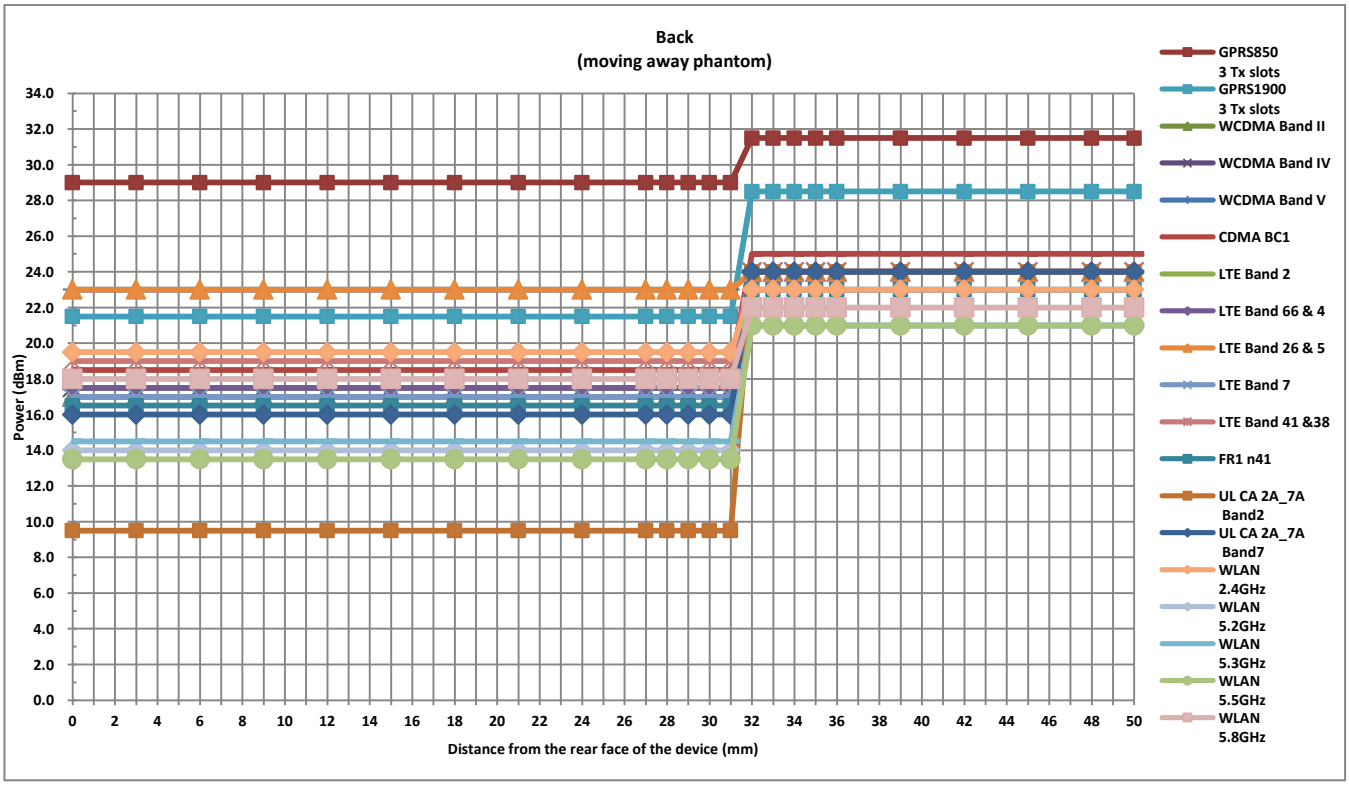
Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	48	45	42	39	36	33	32	31	30	29	28	27	26	25	24	21	18	15	12	9	6	3	0
GPRS850 3 Tx slots	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
WCDMA Band IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WCDMA Band V	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 66&4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 26&5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
LTE Band 41&38	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
FR1 n41	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	16	16	16	16	16	16	16	16	16	16	16	16	16
WLAN2.4GHz	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
WLAN5.2GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
WLAN5.3GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
WLAN5.5GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
WLAN5.8GHz	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0



Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	48	45	42	39	36	33	30	29	28	27	26	25	24	23	22	21	18	15	12	9	6	3	0
GPRS850 3 Tx slots	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
WCDMA Band IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WCDMA Band V	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 66&4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 26&5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
LTE Band 41&38	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
FR1 n41	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	16	16	16	16	16	16	16	16	16	16	16	16
WLAN2.4GHz	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
WLAN5.2GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
WLAN5.3GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
WLAN5.5GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
WLAN5.8GHz	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0



Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	48	45	42	39	36	35	34	33	32	31	30	29	28	27	24	21	18	15	12	9	6	3	0
GPRS850 3 Tx slots	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
WCDMA Band IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WCDMA Band V	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 66&4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 26&5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
LTE Band 41&38	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
FR1 n41	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	16	16	16	16	16	16	16	16	16	16	16	16	16	16
WLAN2.4GHz	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	23.0	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
WLAN5.2GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
WLAN5.3GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
WLAN5.5GHz	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
WLAN5.8GHz	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0

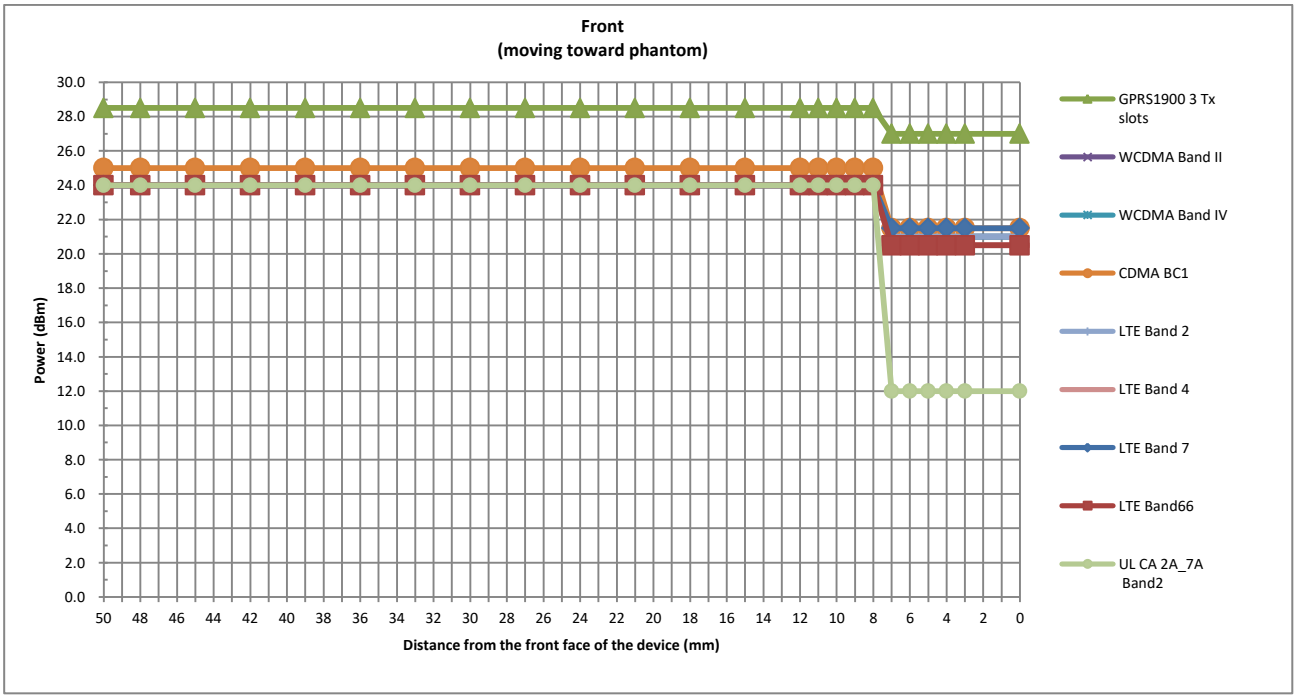


<Handheld-WWAN Bottom Antenna>

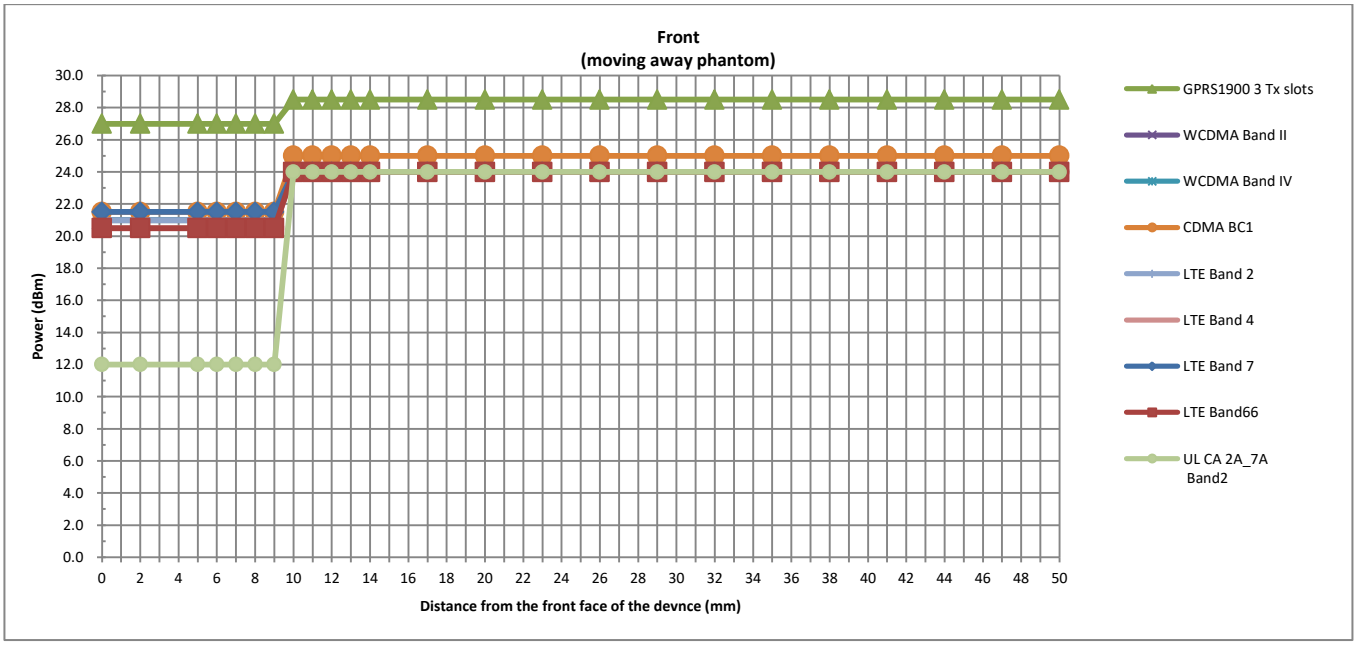
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	9	11	14	10	19

TX. Band	Handheld Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
GPRS1900 3 Tx slots	28.5	27.0	1.5
WCDMA II	24.0	21.0	3.0
WCDMA IV	24.0	21.0	3.0
CDMA BC1	25.0	21.5	3.5
LTE Band 2	24.0	21.0	3.0
LTE Band 4	24.0	20.5	3.5
LTE Band 7	24.0	21.5	2.5
LTE Band 66	24.0	20.5	3.5
UL CA 2A_7A Band2	24.0	12.0	12.0

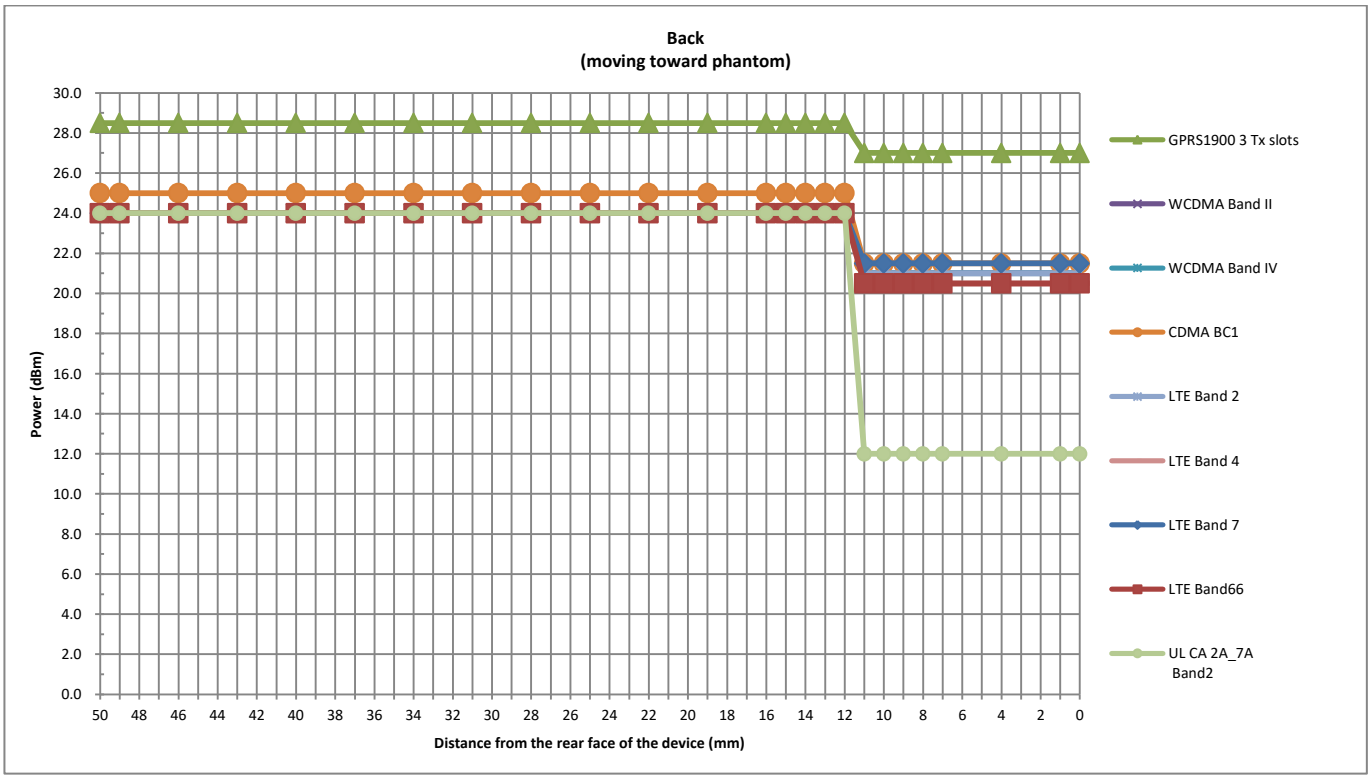
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	48	45	42	39	36	33	30	27	24	21	18	15	12	11	10	9	8	7	6	5	4	3	0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	27.0	27.0	27.0	27.0	27.0	27.0
WCDMA II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0
WCDMA IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0
LTE Band 4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 66	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	12.0	12.0	12.0	12.0	12.0	12.0



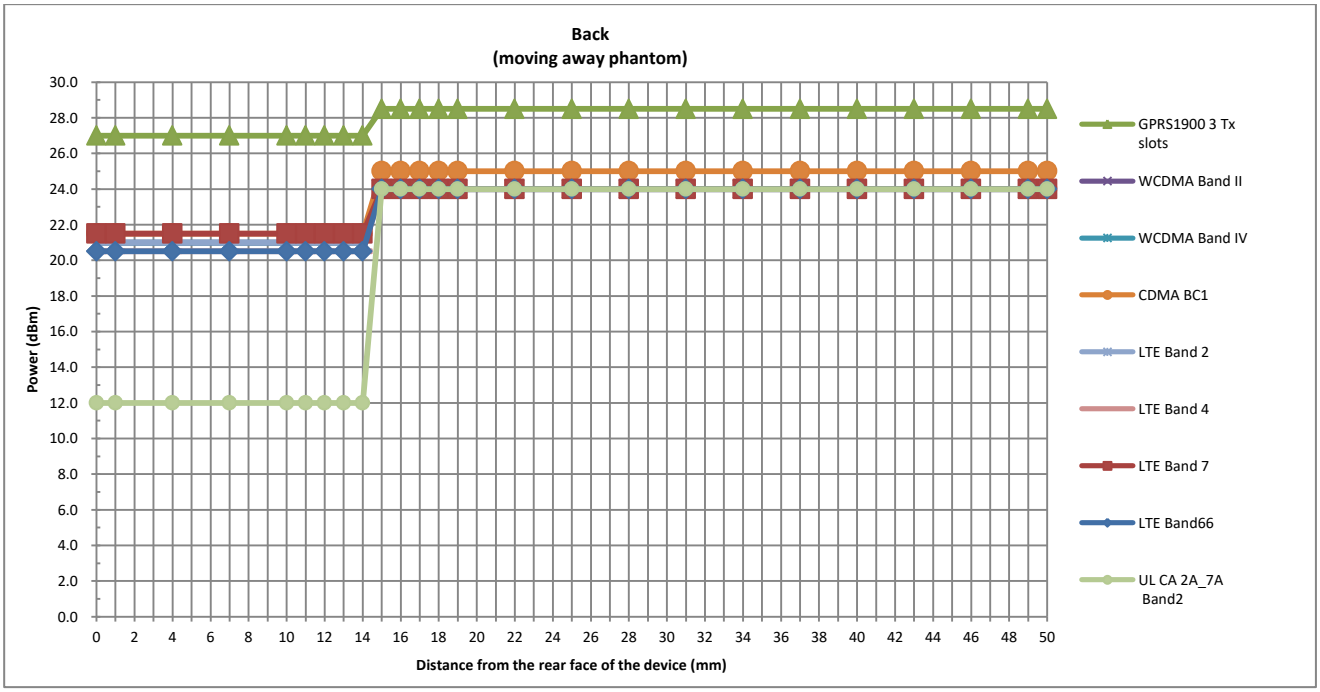
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	47	44	41	38	35	32	29	28	24	21	16	14	13	12	11	10	9	8	7	6	5	3	0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
WCDMA II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
WCDMA IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
LTE Band 4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 66	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0



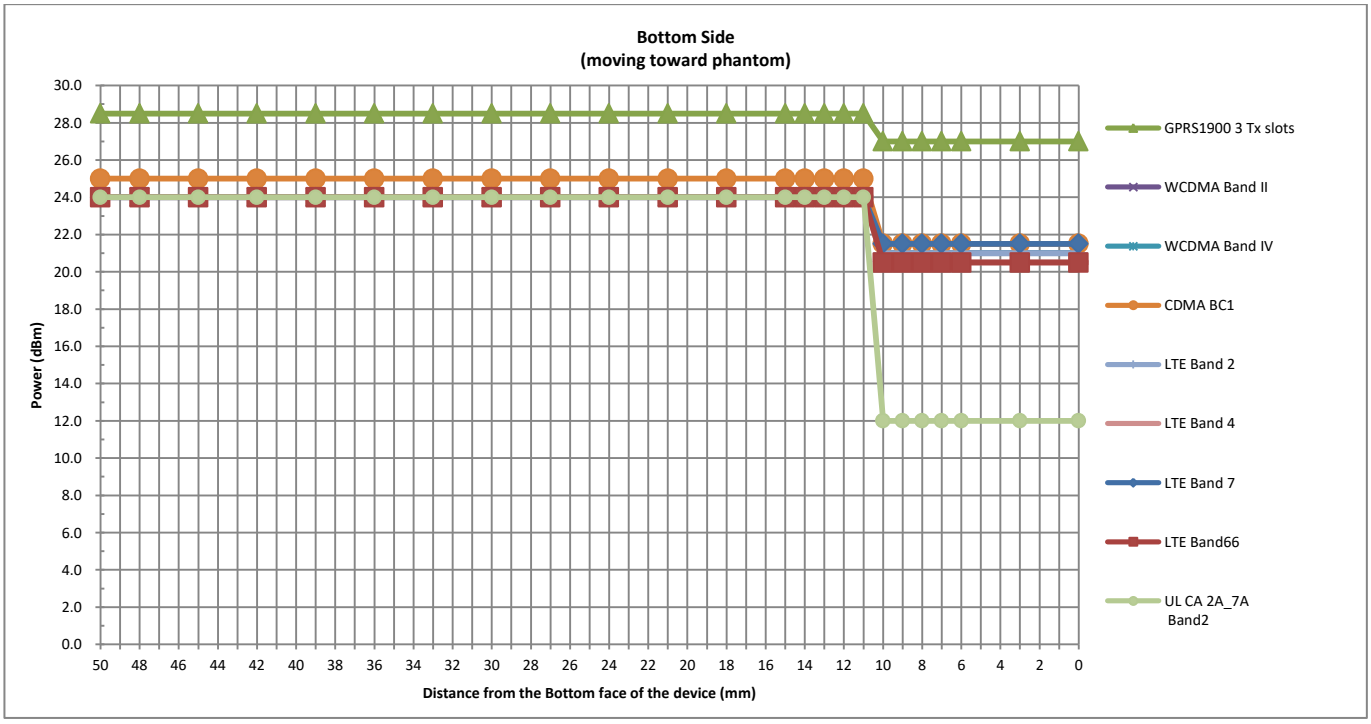
Handheld Triggering Distance (mm) and Triggering Power (dBm)																									
Back																									
Distance	50	47	44	41	38	35	32	29	26	23	20	18	16	15	14	13	12	11	10	9	8	7	5	3	0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
WCDMA II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
WCDMA IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
LTE Band 4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 66	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0



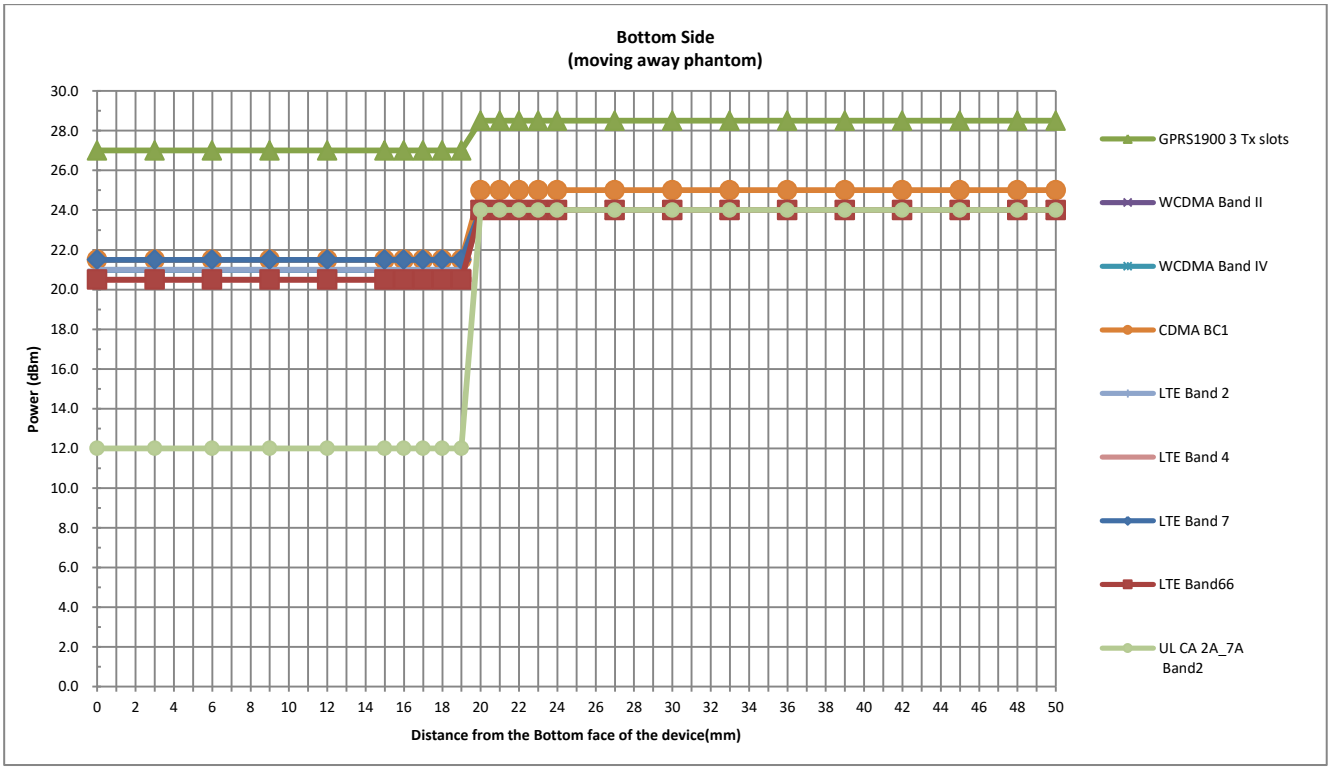
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	47	44	41	38	35	32	29	26	24	19	18	17	16	15	14	13	12	11	10	9	6	3	0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
WCDMA II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
WCDMA IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
LTE Band 4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 66	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0



Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Bottom Side																								
Distance	50	47	44	41	38	35	32	29	26	24	21	15	14	13	12	11	10	9	8	7	6	5	3	0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
WCDMA II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
WCDMA IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
LTE Band 4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 66	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0



Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Bottom Side																								
Distance	50	48	45	42	39	36	33	29	24	23	22	21	20	19	18	17	16	15	14	12	9	6	3	0
GPRS1900 3 Tx slots	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
WCDMA II	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
WCDMA IV	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
CDMA BC1	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
LTE Band 4	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 66	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
UL CA 2A_7A Band2	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0



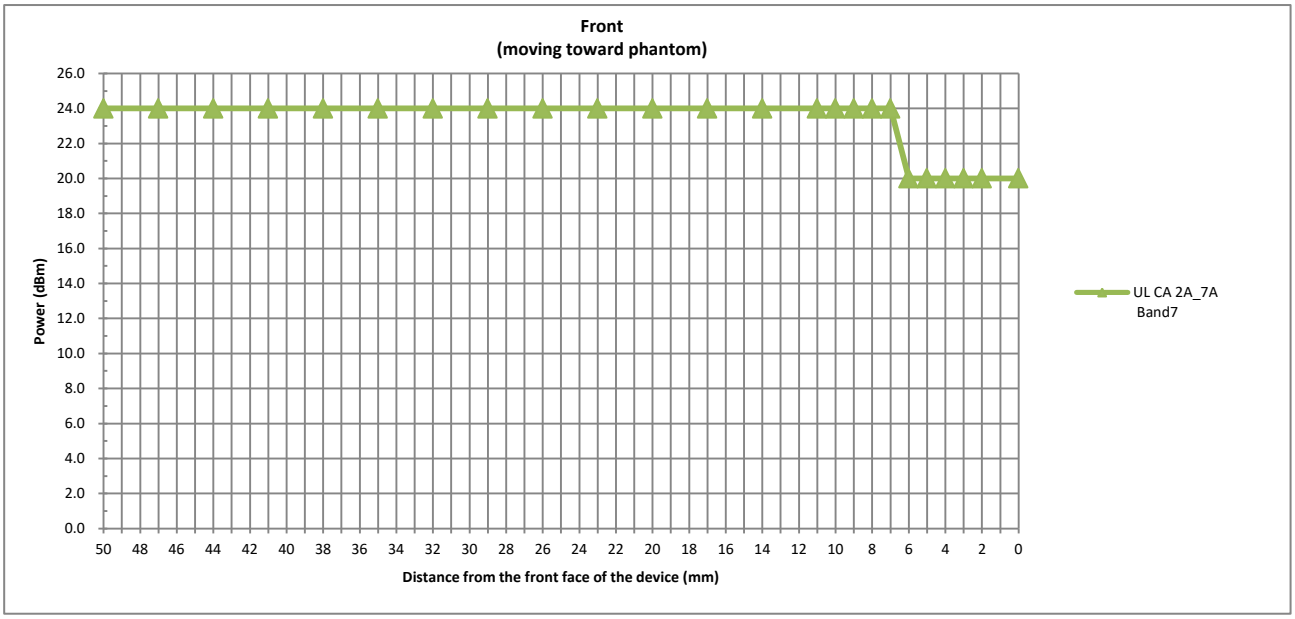
Handheld-WWAN Top Antenna

<UL CA 2A_7A Band7>

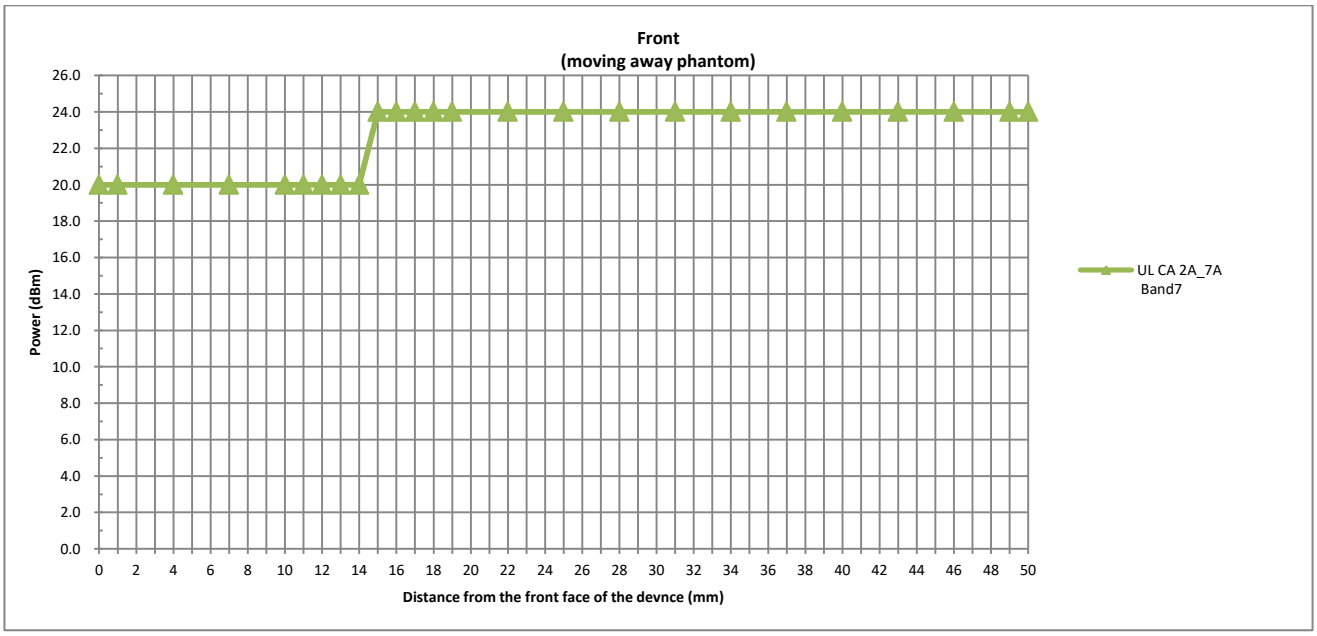
Position	Front		Back		Top Side		Right Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	14	10	13	9	14	7	12

TX. Band	Handheld Triggering Power (dBm)		
	Full	Reduced	
	max. tune up limit (dBm)	max. tune up limit(dBm)	power reduction (dB)
UL CA 2A_7A Band7	24.0	20.0	4

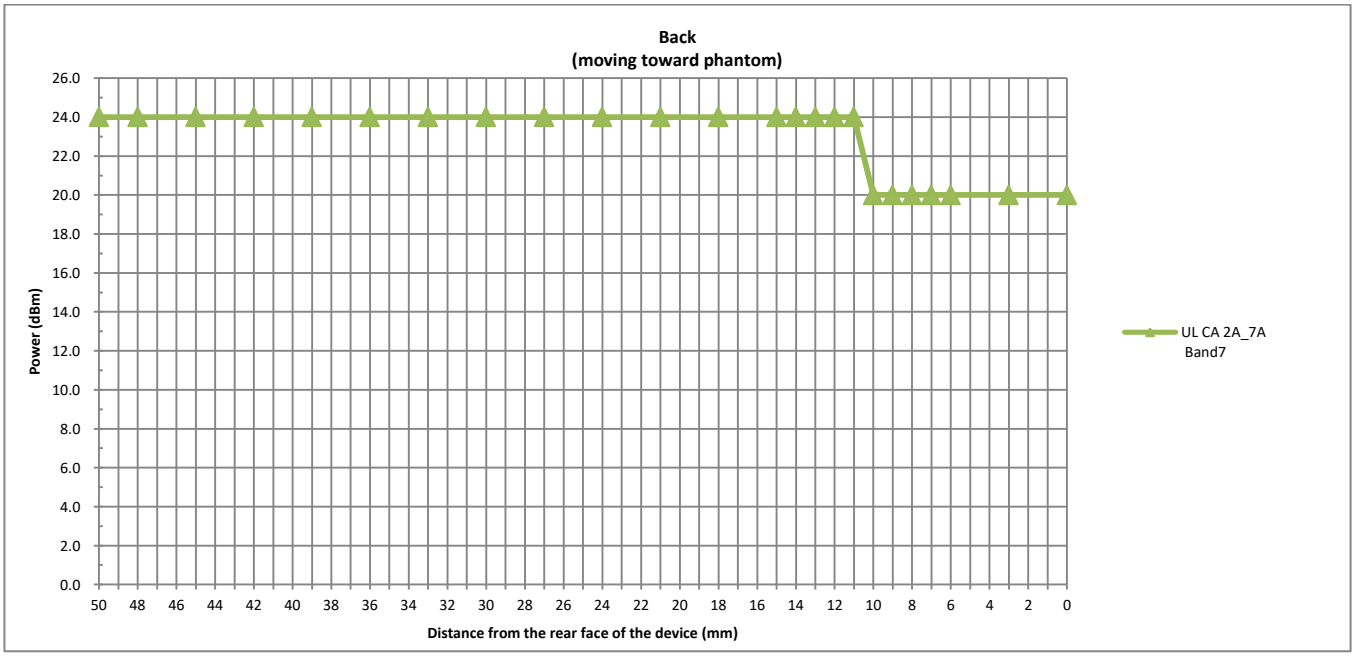
Handheld Triggering Distance (mm) and Triggering Power (dBm)																							
Front																							
Distance	50	47	44	41	38	35	32	29	26	23	20	17	14	11	10	9	8	7	6	5	4	3	2	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0



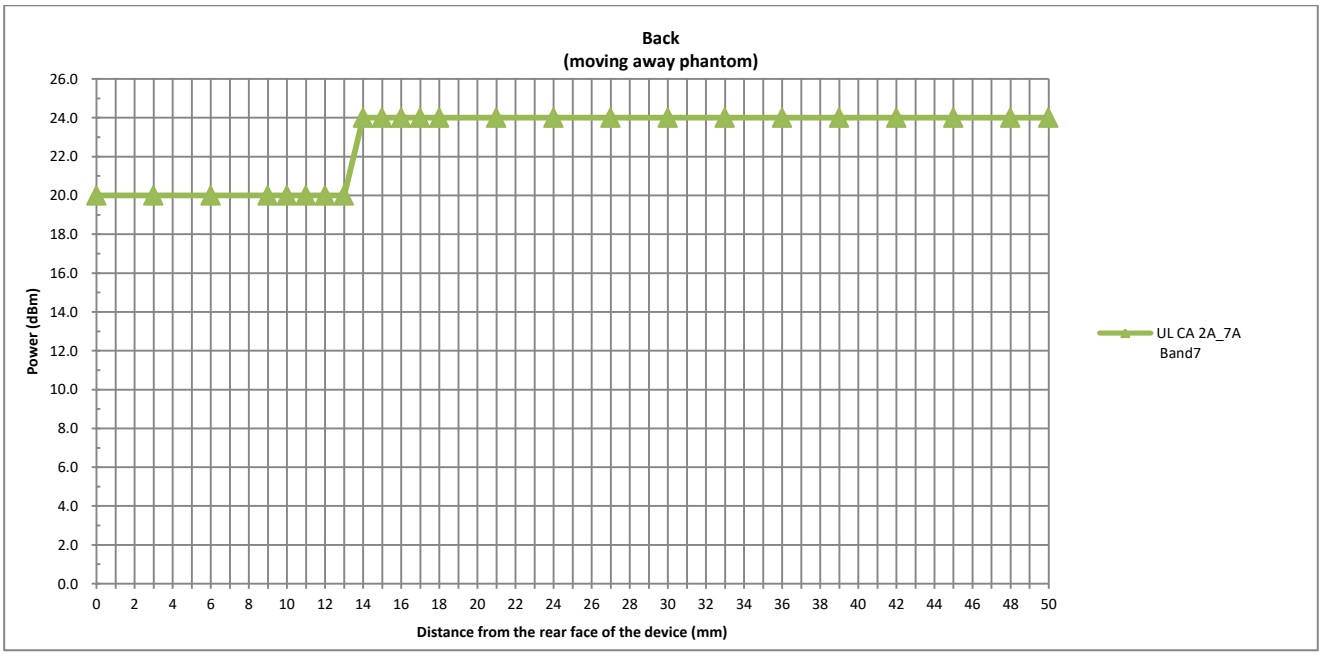
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	47	44	41	38	35	32	29	28	24	21	16	15	14	13	14	13	12	11	10	7	4	1	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0



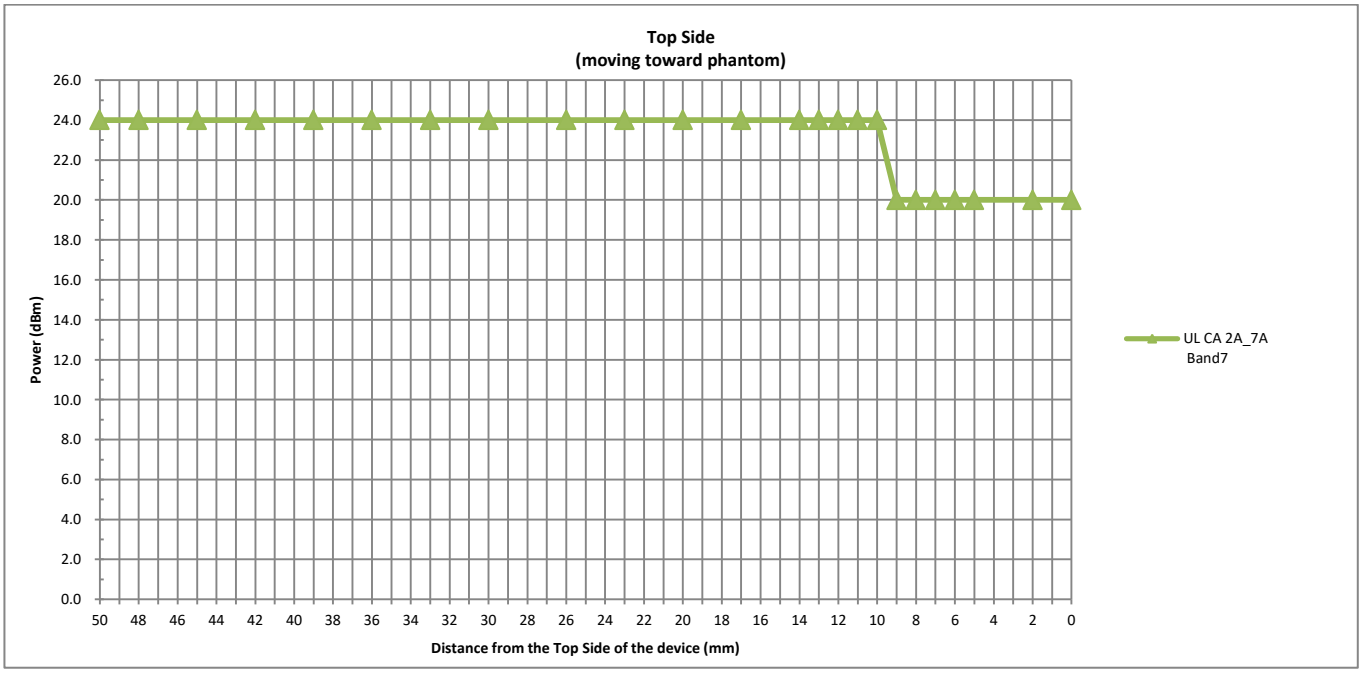
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	48	45	42	39	36	33	30	27	24	21	18	15	14	13	12	11	10	9	8	7	6	3	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0



Handheld Triggering Distance (mm) and Triggering Power (dBm)																							
Back																							
Distance	50	47	44	41	38	35	32	29	26	24	21	18	17	16	15	14	13	12	11	10	9	6	3	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

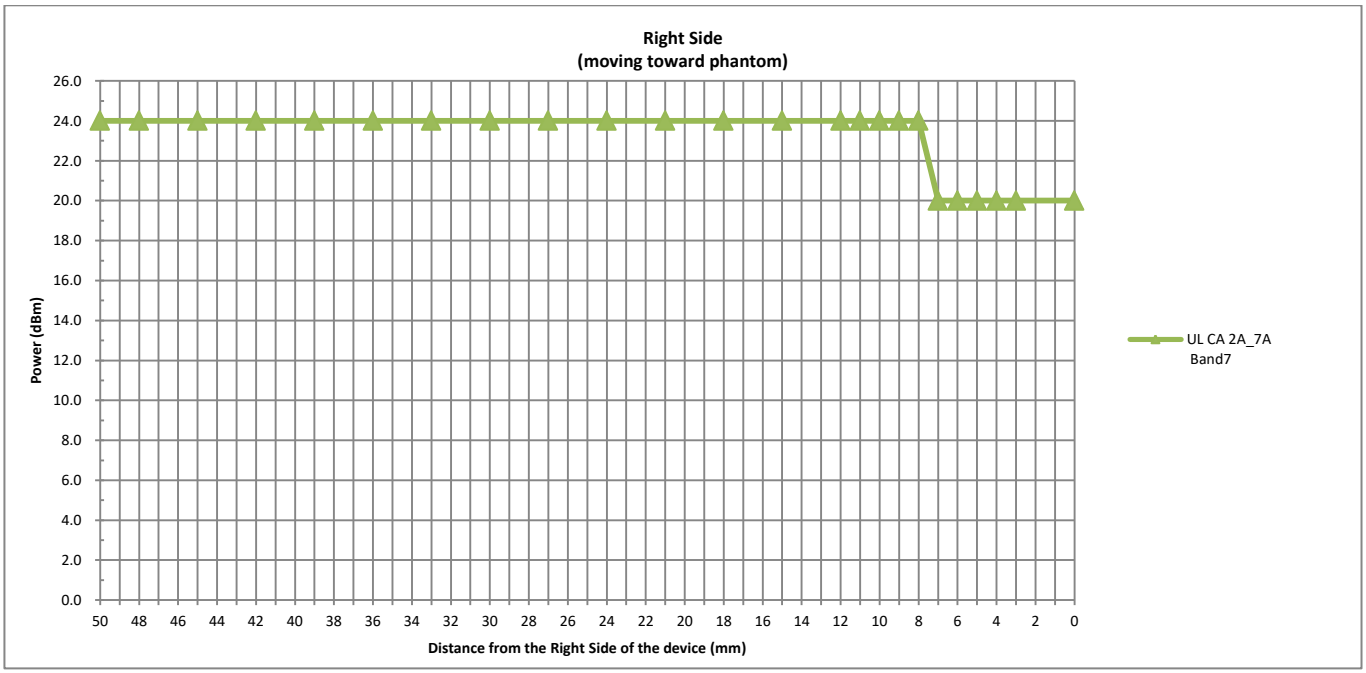


Handheld Triggering Distance (mm) and Triggering Power (dBm)																							
Top Side																							
Distance	50	48	45	42	39	36	33	30	26	23	20	17	14	13	12	11	10	9	8	7	6	5	2	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

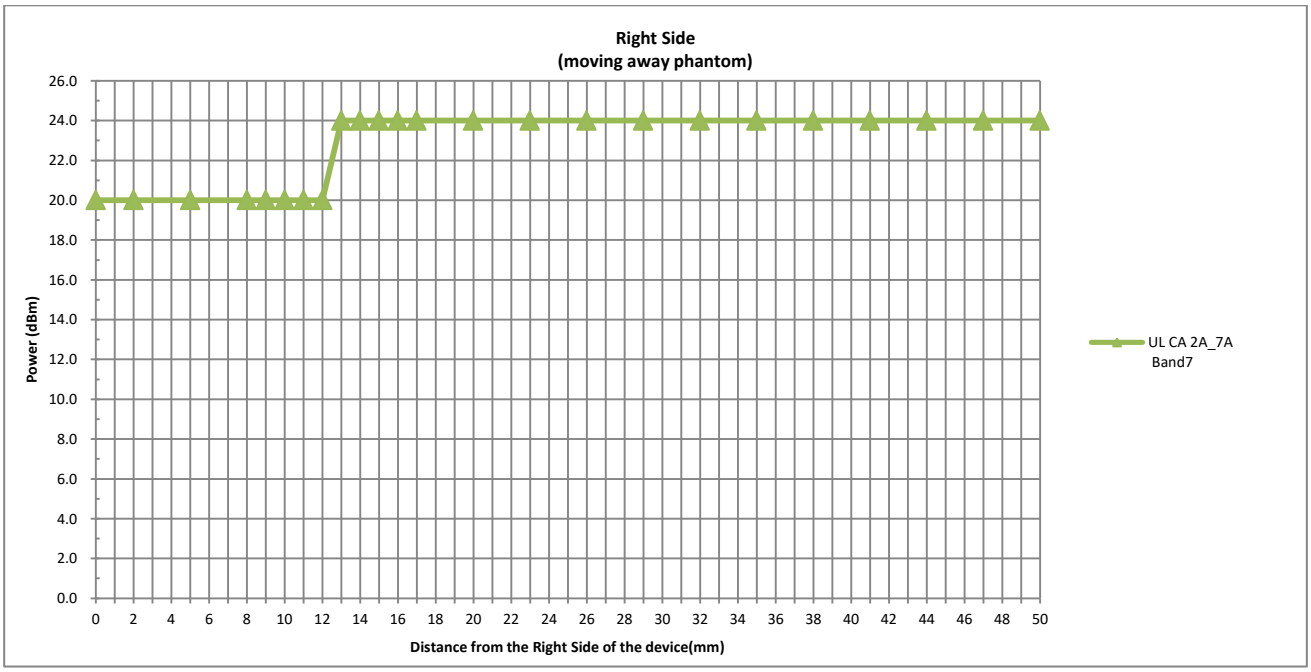


Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Top Side																								
Distance	50	49	46	43	40	37	34	31	28	25	22	19	18	17	16	15	14	13	12	11	10	7	4	1	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

Handheld Triggering Distance (mm) and Triggering Power (dBm)																							
Right Side																							
Distance	50	48	45	42	39	36	33	30	27	24	21	18	15	12	11	10	9	8	7	6	5	4	3	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0



Handheld Triggering Distance (mm) and Triggering Power (dBm)																							
Right Side																							
Distance	50	47	44	41	38	35	32	29	26	23	20	17	16	15	14	13	12	11	10	9	8	5	2	0
UL CA 2A_7A Band7	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0



6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

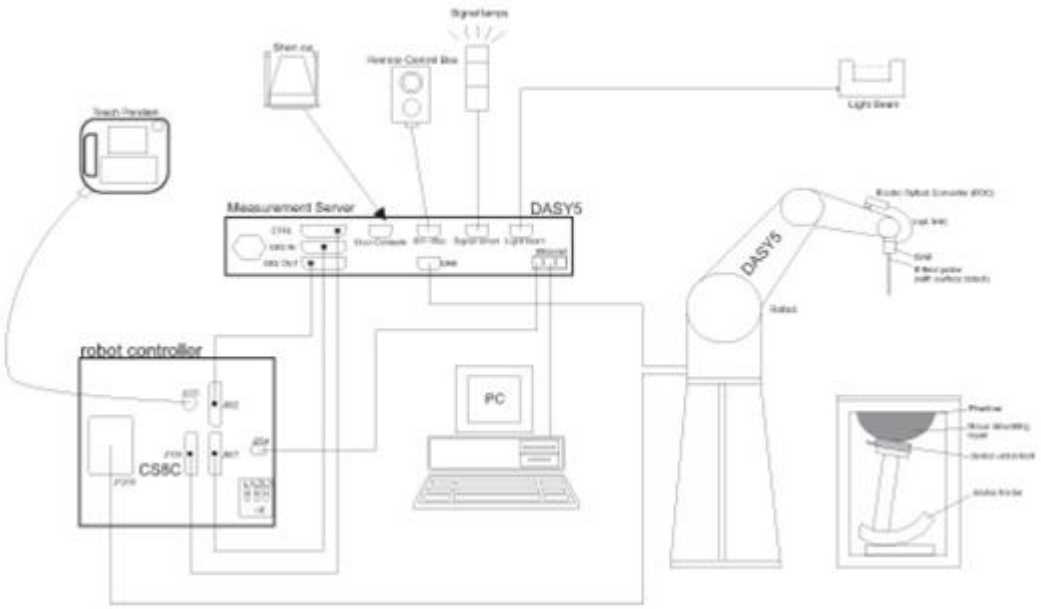
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

The 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.

8.1 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

8.2 Data Acquisition Electronics (DAE)

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

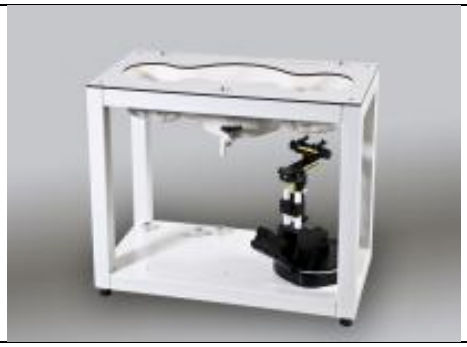
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

8.3 Phantom

<SAM Twin Phantom>

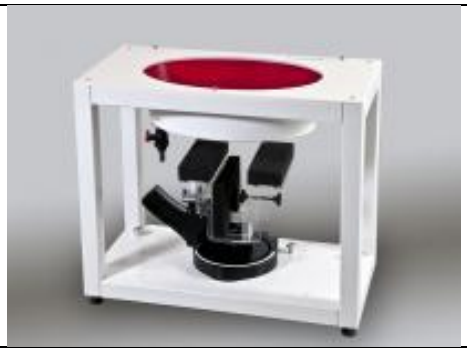
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



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

8.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4 Zoom Scan

Zoom scans are used 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 shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

9.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	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	2018/12/7	2021/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2020/9/23
SPEAG	Data Acquisition Electronics	DAE4	1338	2019/11/20	2020/11/19
SPEAG	Data Acquisition Electronics	DAE4	799	2020/2/10	2021/2/9
SPEAG	Data Acquisition Electronics	DAE4	1210	2019/7/23	2020/7/22
SPEAG	Dosimetric E-Field Probe	ES3DV3	3293	2019/11/25	2020/11/24
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2019/5/27	2020/5/26
SPEAG	Dosimetric E-Field Probe	ES3DV3	3166	2020/3/2	2021/3/1
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1697	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/16	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	2019/10/28	2020/10/27
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/8	2021/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2019/8/15	2020/8/14
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2019/8/14	2020/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2019/8/14	2020/8/13
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	2019/8/15	2020/8/14
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

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

11. System Verification

11.1 Tissue Simulating Liquids

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

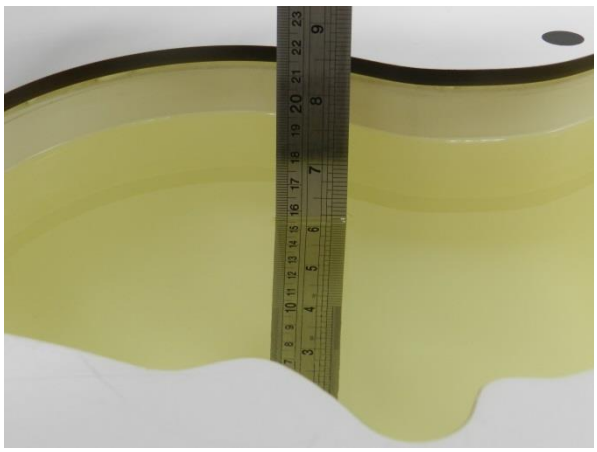


Fig 11.1 Photo of Liquid Height for Head SAR

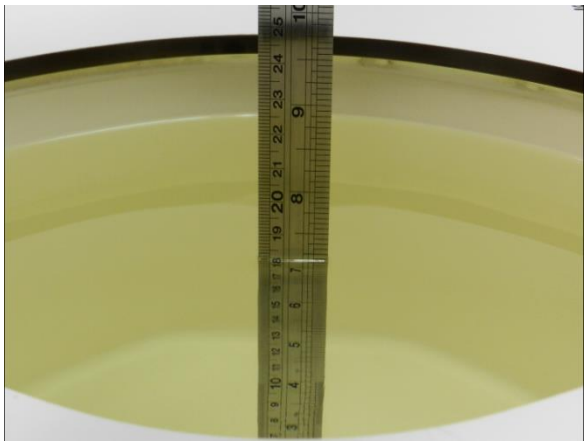


Fig 11.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
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. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.7	0.905	42.697	0.89	41.9	1.69	1.90	±5	2020/5/12
835	Head	22.6	0.92	40.553	0.9	41.5	2.22	-2.28	±5	2020/5/14
1750	Head	22.8	1.342	39.226	1.37	40.1	-2.04	-2.18	±5	2020/5/22
1900	Head	22.9	1.425	38.525	1.4	40	1.79	-3.69	±5	2020/5/15
2450	Head	22.8	1.859	38.444	1.8	39.2	3.28	-1.93	±5	2020/5/17
2600	Head	22.9	1.957	40.058	1.96	39	-0.15	2.71	±5	2020/5/21
5250	Head	22.7	4.678	36.999	4.71	35.9	-0.68	3.06	±5	2020/5/20
5600	Head	22.9	5.037	36.493	5.07	35.5	-0.65	2.80	±5	2020/5/21
5750	Head	22.6	5.2	36.307	5.22	35.4	-0.38	2.56	±5	2020/5/22
1750	Head	22.8	1.323	41.077	1.37	40.1	-3.43	2.44	±5	2020/5/24
1900	Head	22.7	1.438	40.337	1.4	40	2.71	0.84	±5	2020/5/23
2600	Head	22.6	1.956	40.403	1.96	39	-0.20	3.60	±5	2020/5/26
2600	Head	22.6	1.98	39.055	1.96	39	1.02	0.14	±5	2020/5/28

11.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2020/5/12	750	Head	250	1087	3166	1338	2.21	8.36	8.84	5.74
2020/5/14	835	Head	250	4d151	3166	1338	2.46	9.30	9.84	5.81
2020/5/22	1750	Head	250	1090	3166	1338	8.95	36.40	35.80	-1.65
2020/5/15	1900	Head	250	5d170	3166	1338	10.3	39.00	41.20	5.64
2020/5/17	2450	Head	250	908	3857	1210	13.3	52.80	53.20	0.76
2020/5/21	2600	Head	250	1061	3293	799	14.1	57.70	56.40	-2.25
2020/5/20	5250	Head	100	1113	3857	1210	7.98	80.50	79.80	-0.87
2020/5/21	5600	Head	100	1113	3857	1210	8.83	83.40	88.30	5.88
2020/5/22	5750	Head	100	1113	3857	1210	7.98	80.00	79.80	-0.25
2020/5/24	1750	Head	250	1090	3166	1338	8.97	36.40	35.88	-1.43
2020/5/23	1900	Head	250	5d170	3166	1338	10.5	39.00	42.00	7.69
2020/5/26	2600	Head	250	1061	3293	799	14.7	57.70	58.80	1.91
2020/5/28	2600	Head	250	1061	3293	799	14.9	57.70	59.60	3.29

<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 (%)
2020/5/14	835	Head	250	4d151	3166	1338	1.60	6.16	6.40	3.90
2020/5/22	1750	Head	250	1090	3166	1338	4.71	19.20	18.84	-1.88
2020/5/15	1900	Head	250	5d170	3166	1338	5.20	20.30	20.80	2.46
2020/5/17	2450	Head	250	908	3857	1210	6.38	24.20	25.52	5.45
2020/5/21	2600	Head	250	1061	3293	799	6.15	25.90	24.60	-5.02
2020/5/20	5250	Head	100	1113	3857	1210	2.32	23.10	23.20	0.43
2020/5/21	5600	Head	100	1113	3857	1210	2.58	23.80	25.80	8.40
2020/5/22	5750	Head	100	1113	3857	1210	2.32	22.80	23.20	1.75
2020/5/24	1750	Head	250	1090	3166	1338	4.80	19.20	19.20	0.00
2020/5/23	1900	Head	250	5d170	3166	1338	5.37	20.30	21.48	5.81
2020/5/26	2600	Head	250	1061	3293	799	6.33	25.90	25.32	-2.24
2020/5/28	2600	Head	250	1061	3293	799	6.96	25.90	27.84	7.49

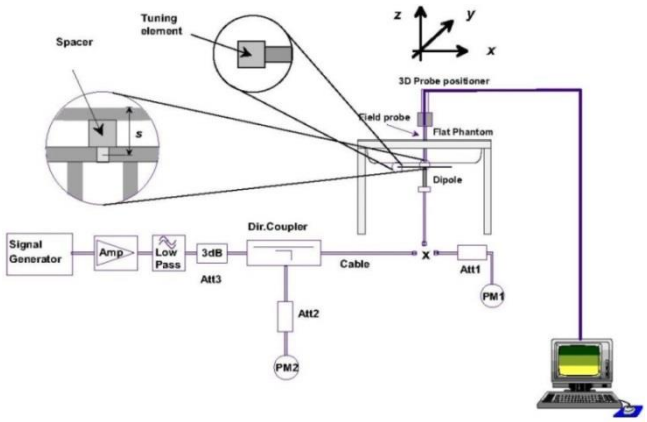


Fig 11.3.1 System Performance Check Setup

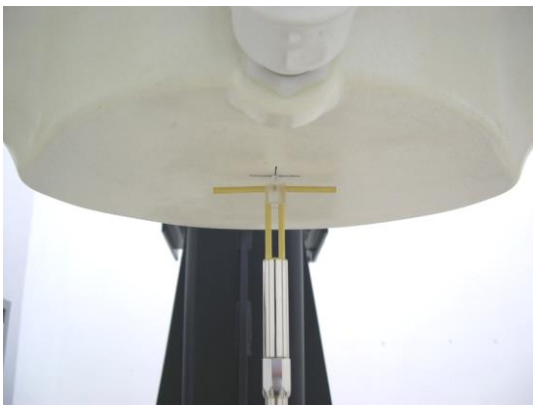


Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

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

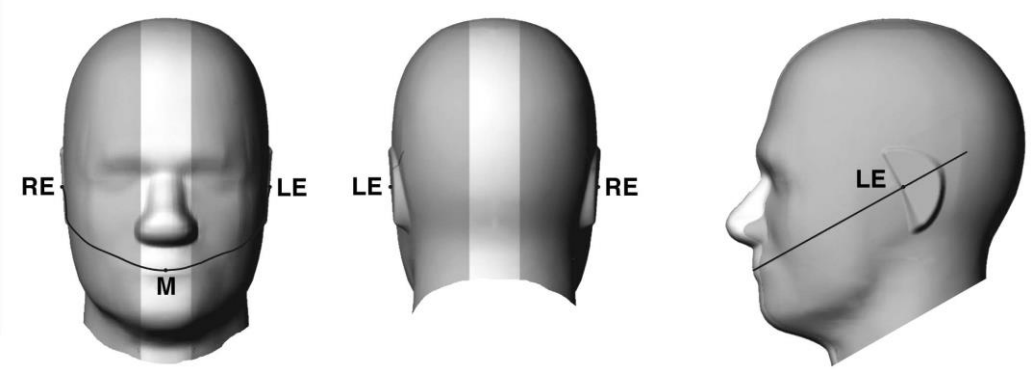


Fig 12.1.1 Front, back, and side views of SAM twin phantom

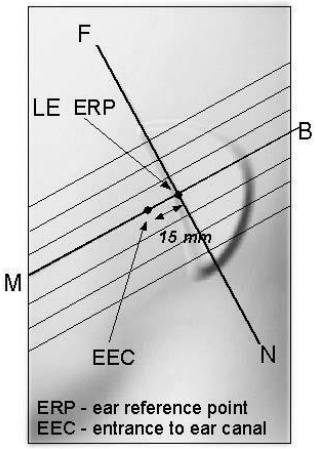


Fig 12.1.2 Close-up side view of phantom showing the ear region.

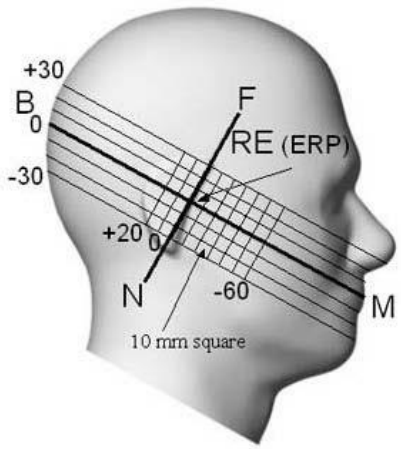


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt 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 wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

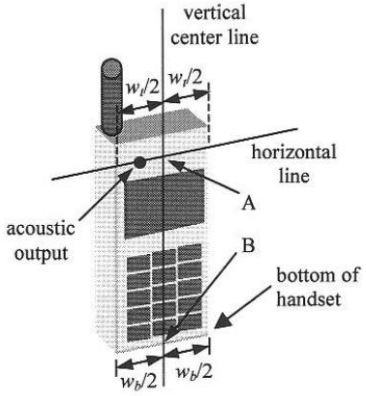


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

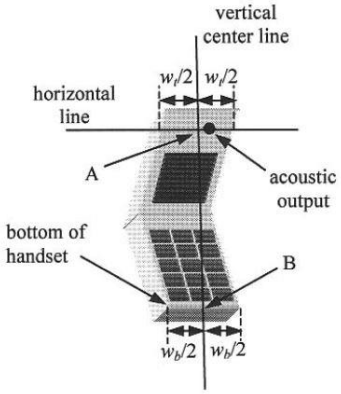


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

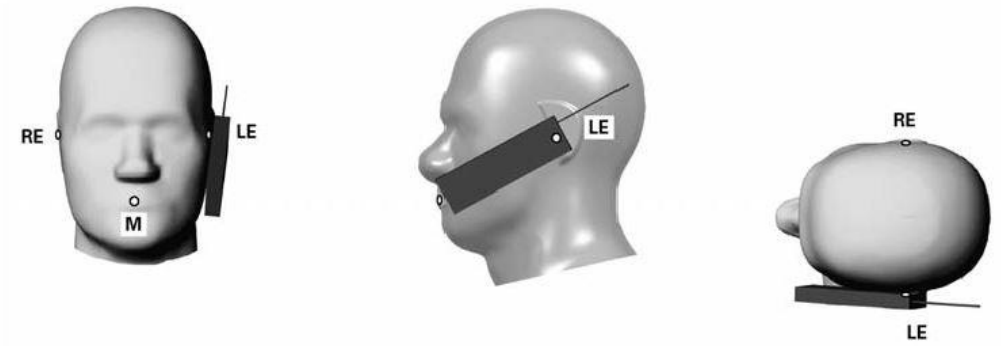


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

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

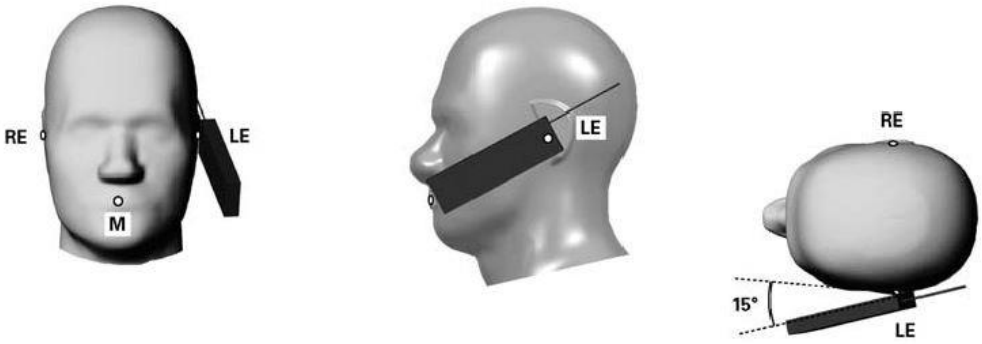


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 12.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

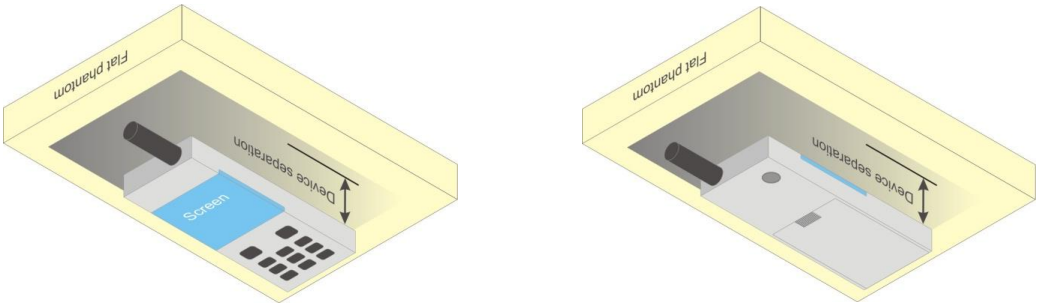


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that 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 ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

12.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 3Tx slots for GSM850/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 ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

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

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_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	Proces ses	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.		

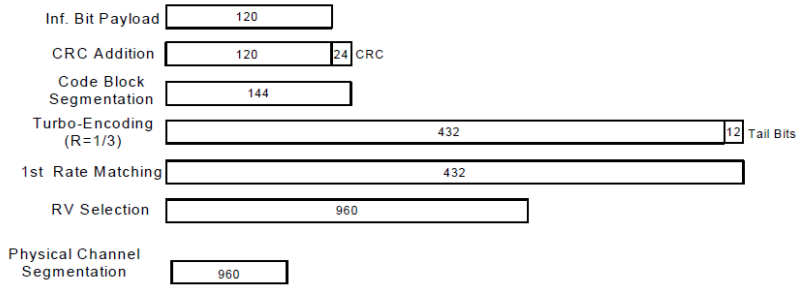


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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 ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

<CDMA2000 Conducted Power>

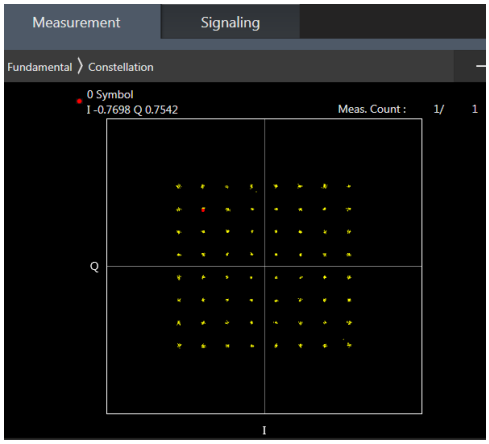
General Note:

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.

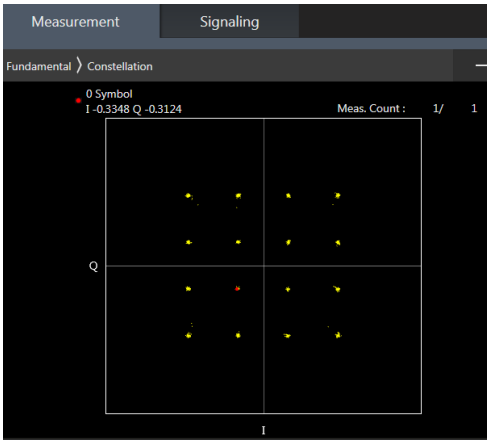
<LTE Conducted Power>

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 ≤ 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 ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not 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; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 and 5GNR n41 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 ≤ 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.

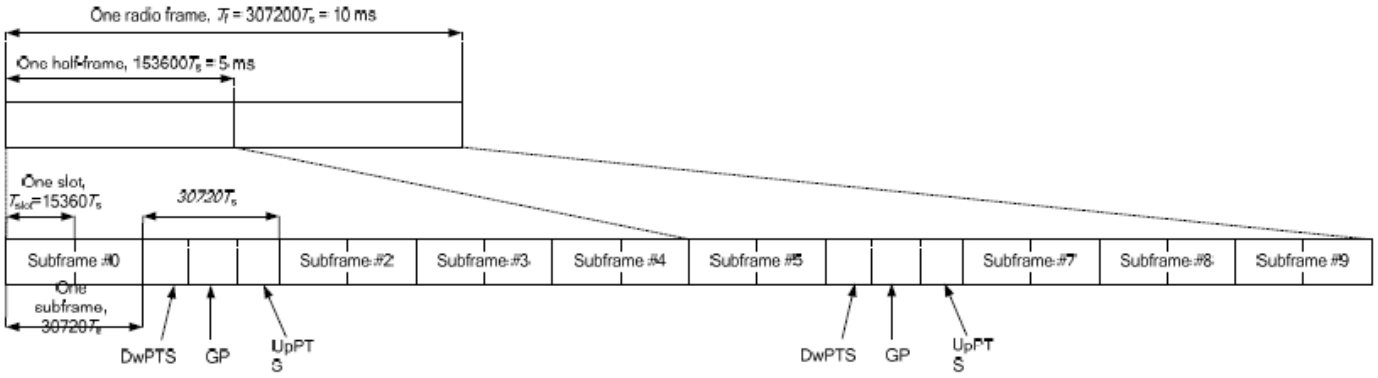


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
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_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

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

The highest duty factor is resulted from:

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

<LTE Carrier Aggregation>

General Note:

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

2CC Downlink Carrier Aggregation				3CC Downlink Carrier Aggregation			
Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset
2CC #1	CA_2A-5A			3CC #1	CA_2A-7C	CA_2A-7C4	
2CC #2	CA_2A-7A		3CC #2	3CC #2	CA_2A-7A-7A	CA_2A-7A4-7A4	
2CC #3	CA_4A-4A	CA_4A4-4A4		3CC #3	CA_4A-7C	CA_4A4-7C4	
2CC #4	CA_4A-5A	CA_4A4-5A		3CC #4	CA_5A-7C	CA_5A-7C4	
2CC #5	CA_4A-7A		3CC #3	3CC #5	CA_5A-66A-66A	CA_5A-66A4-66A4	
2CC #6	CA_4A-12A	CA_4A4-12A		3CC #6	CA_12A-66A-66A	CA_12A-66A4-66A4	
2CC #7	CA_4A-17A	CA_4A4-17A		3CC #7	CA_26A-41C		
2CC #8	CA_5A-7A		3CC #4				
2CC #9	CA_5A-38A	CA_5A-38A4					
2CC #10	CA_5A-41A	CA_5A-41A4					
2CC #11	CA_5A-66A		3CC #5				
2CC #12	CA_7B	CA_7B4					
2CC #13	CA_7C						
2CC #14	CA_7A-7A		3CC #2				
2CC #15	CA_12A-66A		3CC #6				
2CC #16	CA_26A-41A	CA_26A-41A4	3CC #7				
2CC #17	CA_38C	CA_38C4					
2CC #18	CA_41C	CA_41C4	3CC #7				
2CC #19	CA_41A-41A	CA_41A4-41A4					
2CC #20	CA_66B	CA_66B4					
2CC #21	CA_66C	CA_66C4					
2CC #22	CA66A-66A		3CC #5				

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.

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

LTE Carrier Aggregation Conducted Power (Uplink)

1. This device supports uplink carrier aggregation for LTE CA_7C with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. For the non-contiguously allocated resource blocks which the MPR level is determined by various RB separation and RB sizes requirement, and the allowed MPR levels, settings and the conducted powers are permanently implemented in this device per the 3GPP 36.36.101 section 6.2.3A.1.3 requirements.
2. According to FCC guidance, the output power with uplink CA active was measured for the high / middle / low channel configuration with the highest reported SAR for each exposure condition, the power was measured with wideband signal integration over both component carriers.
3. In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs
4. Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05. The required test channel should be associated with the UL PCC. For channels at the ends of a frequency band, the SCC and subsequent CCs are added to the side within the transmission band. Otherwise, the CCs should be added alternatively to either side of the PCC.

<Power Measurement Setup>

<Inter-band uplink carrier aggregation consideration>

2CC Uplink Carrier Aggregation	
Number	Combination
1	2A-7A

Inter Band UL CA Combination	Band	Full Power (dBm)	Head (dBm)	Body Worn (dBm)	Hotspot (dBm)	Handheld (dBm)
CA 2A_7A	LTE Band2	24.00	24.00	9.50	9.50	12.00
	LTE Band7	24.00	13.00	16.00	16.00	20.00

General Note:

1. According to October 2018 TCB workshop, uplink CA SAR test guidance as follows:
   a. Provide the single uplink SAR values you have obtained for the relevant SAR configuration and frequency bands that employ inter-band uplink carrier aggregation.
   b. If the single uplink 1g SAR values for each band are both less than 0.8W/kg and the algebraic summation of the 1g SAR values are less than 1.45W/kg no additional measurements need to be performed.
   c. If one on the single uplink 1g SAR values is greater than 0.8W/kg, instead of algebraically summing the 1g SAR values, sum up the SAR distributions, similar to the enlarged zoom scan (volume scan) procedures found in FCC KDB publication 865664 D01 SAR measurement 100MHz to 6GHz V01r04.
   d. If the algebraic sum of the 1g SAR values is > 1.45W/kg additional measurements may have to be made. Submit a KDB inquiry for additional guidance.
2. The single uplink 1g SAR values for each band are both less than 0.8W/kg and the algebraic summation of the 1g SAR value are less than 1.45W/kg, additional measurements are not required
3. The device implanted DPS (Dynamic Power Share) function to achieve higher uplink data rate keeping the total power unchanged in LTE inter band CA uplink mode, when the equipment has a dynamic power sharing capability, it adjusts the LTE two bands power so that the instantaneous total power does not exceed the specified value, Per LTE band performed separately and summed standalone SAR to do co-located analysis with WiFi and Bluetooth. Chose standalone LTE band with higher power SAR to sum inter band CA uplink SAR is more conservative.

5G NR Output Power (Unit: dBm)

General Note:

1. Following 5G NR n41 support SCS 30KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/256QAM, Bandwidth 20M/40M/50M/60M/80M/90M/100M.
2. 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 class 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
3. 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.

<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	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

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

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

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

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

<WLAN Conducted Power>

General Note:

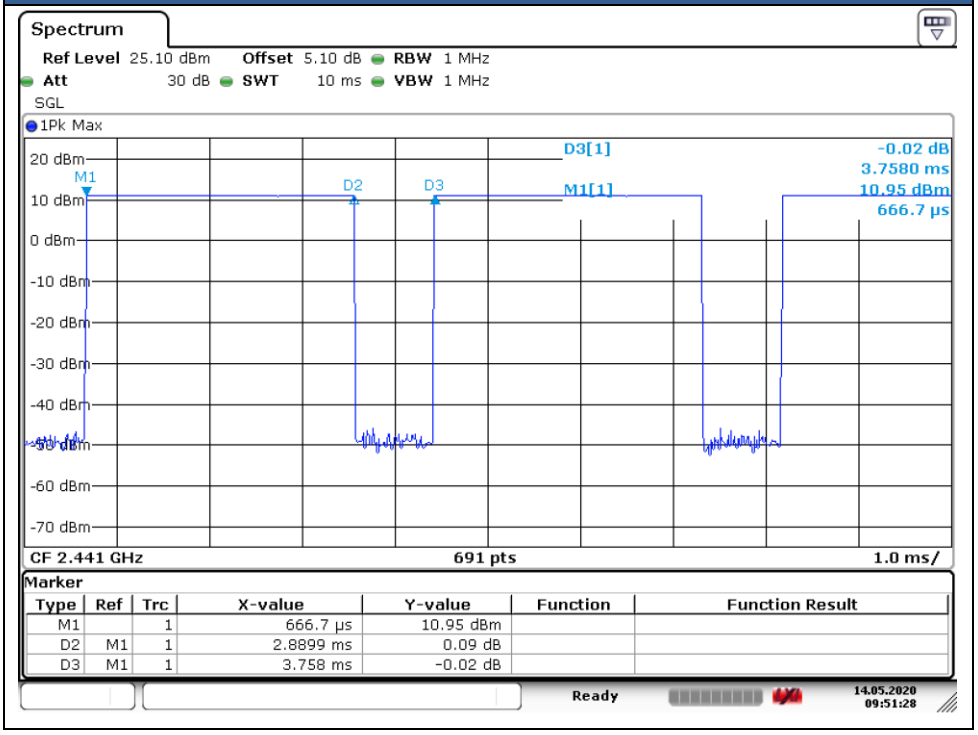
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements.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

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.9 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation

Bluetooth time-domain plot



14. Antenna Location

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/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. 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.
7. The device will invoke corresponding work scenarios power level, which are provided in the operational description.
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 1.2W/kg of GSM850/1900, CDMA2000 BC1, WCDMA Band II/IV/V, LTE Band 2/4/5/7/26/38/41/66, 5GNR n41 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.
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 body worn:
   Front: 20 mm
   Back: 24 mm
10. 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:
    Handheld-WWAN Bottom Antenna:
    Front: 5 mm (declared by manufacturer)
    Back: 7 mm (declared by manufacturer)
    Bottom side: 9 mm

Handheld- WWAN Top Antenna:
Front: 5 mm
Back: 7 mm (declared by manufacturer)
Top side: 8 mm

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 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 ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 and 5GNR n41 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B4 / B5 / B17 / B38 SAR test was covered by LTE B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

WLAN/Bluetooth Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
6. Based on WLAN2.4GHz and Bluetooth share the same antenna, so Bluetooth RF exposure evaluation chose the worst positon of WLAN 2.4GHz Ant to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.
7. WLAN 7mm distance SAR performed to do co-located with WWAN analysis.

15.1 Head SAR

<GSM SAR>

Plot No.	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	GSM850	GPRS 3 Tx slots	Right Cheek	1	Full	189	836.4	30.66	31.50	1.213	0.01	0.241	**0.292**
	GSM850	GPRS 3 Tx slots	Right Tilted	1	Full	189	836.4	30.66	31.50	1.213	0.06	0.114	0.138
	GSM850	GPRS 3 Tx slots	Left Cheek	1	Full	189	836.4	30.66	31.50	1.213	0.01	0.192	0.233
	GSM850	GPRS 3 Tx slots	Left Tilted	1	Full	189	836.4	30.66	31.50	1.213	0.08	0.123	0.149
	GSM1900	GPRS 3 Tx slots	Right Cheek	1	Full	661	1880	27.71	28.50	1.199	-0.04	0.045	0.054
	GSM1900	GPRS 3 Tx slots	Right Tilted	1	Full	661	1880	27.71	28.50	1.199	0.03	0.039	0.047
02	GSM1900	GPRS 3 Tx slots	Left Cheek	1	Full	661	1880	27.71	28.50	1.199	0.07	0.052	**0.062**
	GSM1900	GPRS 3 Tx slots	Left Tilted	1	Full	661	1880	27.71	28.50	1.199	0.01	0.044	0.053

<CDMA SAR>

Plot No.	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	CDMA BC0	RC3 S055	Right Cheek	1	Full	384	836.52	24.88	25.00	1.028	0.05	0.289	**0.297**
	CDMA BC0	RC3 S055	Right Tilted	1	Full	384	836.52	24.88	25.00	1.028	0.03	0.138	0.142
	CDMA BC0	RC3 S055	Left Cheek	1	Full	384	836.52	24.88	25.00	1.028	0.01	0.186	0.191
	CDMA BC0	RC3 S055	Left Tilted	1	Full	384	836.52	24.88	25.00	1.028	0.08	0.112	0.115
04	CDMA BC1	RC3 S055	Right Cheek	1	Full	600	1880	24.64	25.00	1.086	0.06	0.039	**0.042**
	CDMA BC1	RC3 S055	Right Tilted	1	Full	600	1880	24.64	25.00	1.086	-0.04	0.022	0.024
	CDMA BC1	RC3 S055	Left Cheek	1	Full	600	1880	24.64	25.00	1.086	0.06	0.037	0.040
	CDMA BC1	RC3 S055	Left Tilted	1	Full	600	1880	24.64	25.00	1.086	0.08	0.035	0.038

<WCDMA SAR>

Plot No.	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)
	WCDMA II	RMC 12.2Kbps	Right Cheek	1	Full	9400	1880	23.84	24.00	1.038	0.01	0.095	0.099
	WCDMA II	RMC 12.2Kbps	Right Tilted	1	Full	9400	1880	23.84	24.00	1.038	0.1	0.077	0.080
05	WCDMA II	RMC 12.2Kbps	Left Cheek	1	Full	9400	1880	23.84	24.00	1.038	0.11	0.126	**0.131**
	WCDMA II	RMC 12.2Kbps	Left Tilted	1	Full	9400	1880	23.84	24.00	1.038	0.09	0.093	0.096
06	WCDMA IV	RMC 12.2Kbps	Right Cheek	1	Full	1413	1732.6	23.40	24.00	1.148	0.03	0.153	**0.176**
	WCDMA IV	RMC 12.2Kbps	Right Tilted	1	Full	1413	1732.6	23.40	24.00	1.148	0.01	0.061	0.070
	WCDMA IV	RMC 12.2Kbps	Left Cheek	1	Full	1413	1732.6	23.40	24.00	1.148	0.09	0.102	0.117
	WCDMA IV	RMC 12.2Kbps	Left Tilted	1	Full	1413	1732.6	23.40	24.00	1.148	-0.07	0.084	0.096
07	WCDMA V	RMC 12.2Kbps	Right Cheek	1	Full	4182	836.4	23.66	24.00	1.081	0.01	0.305	**0.330**
	WCDMA V	RMC 12.2Kbps	Right Tilted	1	Full	4182	836.4	23.66	24.00	1.081	0.06	0.136	0.147
	WCDMA V	RMC 12.2Kbps	Left Cheek	1	Full	4182	836.4	23.66	24.00	1.081	-0.07	0.064	0.069
	WCDMA V	RMC 12.2Kbps	Left Tilted	1	Full	4182	836.4	23.66	24.00	1.081	0.06	0.127	0.137

<FDD LTE SAR>

Plot No.	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	LTE Band 2	20M	QPSK	1	0	Right Cheek	1	Full	18900	1880	23.38	24.00	1.153	0.01	0.128	**0.148**
	LTE Band 2	20M	QPSK	50	0	Right Cheek	1	Full	18900	1880	22.36	23.00	1.159	0.06	0.059	0.068
	LTE Band 2	20M	QPSK	1	0	Right Tilted	1	Full	18900	1880	23.38	24.00	1.153	0.02	0.081	0.093
	LTE Band 2	20M	QPSK	50	0	Right Tilted	1	Full	18900	1880	22.36	23.00	1.159	0.08	0.045	0.052
	LTE Band 2	20M	QPSK	1	0	Left Cheek	1	Full	18900	1880	23.38	24.00	1.153	-0.1	0.064	0.074
	LTE Band 2	20M	QPSK	50	0	Left Cheek	1	Full	18900	1880	22.36	23.00	1.159	0.06	0.050	0.058
	LTE Band 2	20M	QPSK	1	0	Left Tilted	1	Full	18900	1880	23.38	24.00	1.153	0.02	0.091	0.105
	LTE Band 2	20M	QPSK	50	0	Left Tilted	1	Full	18900	1880	22.36	23.00	1.159	0.09	0.047	0.054
	LTE Band 7	20M	QPSK	1	0	Right Cheek	1	Full	21100	2535	23.54	24.00	1.112	0.08	0.019	0.021
	LTE Band 7	20M	QPSK	50	0	Right Cheek	1	Full	21100	2535	22.48	23.00	1.127	0.02	0.021	0.024
	LTE Band 7	20M	QPSK	1	0	Right Tilted	1	Full	21100	2535	23.54	24.00	1.112	0.09	0.031	0.034
	LTE Band 7	20M	QPSK	50	0	Right Tilted	1	Full	21100	2535	22.48	23.00	1.127	0.03	0.019	0.021
	LTE Band 7	20M	QPSK	1	0	Left Cheek	1	Full	21100	2535	23.54	24.00	1.112	0.04	0.034	0.038
	LTE Band 7C	20M	QPSK	1	0	Left Cheek	1	Full	21100+20902	2535+2515.2	23.75	24.00	1.059	0.02	0.031	0.033
	LTE Band 7	20M	QPSK	50	0	Left Cheek	1	Full	21100	2535	22.48	23.00	1.127	-0.01	0.018	0.020
	LTE Band 7	20M	QPSK	1	0	Left Tilted	1	Full	21100	2535	23.54	24.00	1.112	0.05	0.033	0.037
	LTE Band 7	20M	QPSK	50	0	Left Tilted	1	Full	21100	2535	22.48	23.00	1.127	-0.07	0.027	0.030
	LTE Band 7 UL CA	20M	QPSK	1	0	Right Cheek	2	Reduced	21100	2535	12.21	13.00	1.199	-0.07	0.083	0.100
	LTE Band 7 UL CA	20M	QPSK	50	0	Right Cheek	2	Reduced	21100	2535	12.21	13.00	1.199	-0.08	0.094	0.113
	LTE Band 7 UL CA	20M	QPSK	1	0	Right Tilted	2	Reduced	21100	2535	12.21	13.00	1.199	0.11	0.087	0.104
	LTE Band 7 UL CA	20M	QPSK	50	0	Right Tilted	2	Reduced	21100	2535	12.21	13.00	1.199	0.16	0.099	0.119
	LTE Band 7 UL CA	20M	QPSK	1	0	Left Cheek	2	Reduced	21100	2535	12.21	13.00	1.199	-0.12	0.131	0.157
	LTE Band 7 UL CA	20M	QPSK	50	0	Left Cheek	2	Reduced	21100	2535	12.21	13.00	1.199	-0.09	0.149	0.179
	LTE Band 7 UL CA	20M	QPSK	1	0	Left Tilted	2	Reduced	21100	2535	12.21	13.00	1.199	-0.08	0.144	0.173
09	LTE Band 7 UL CA	20M	QPSK	50	0	Left Tilted	2	Reduced	21100	2535	12.21	13.00	1.199	-0.07	0.156	**0.187**
	LTE Band 12	10M	QPSK	1	0	Right Cheek	1	Full	23095	707.5	23.08	24.00	1.236	0.02	0.127	0.157
10	LTE Band 12	10M	QPSK	25	0	Right Cheek	1	Full	23095	707.5	22.12	23.00	1.225	0.01	0.130	**0.159**
	LTE Band 12	10M	QPSK	1	0	Right Tilted	1	Full	23095	707.5	23.08	24.00	1.236	0.11	0.085	0.105
	LTE Band 12	10M	QPSK	25	0	Right Tilted	1	Full	23095	707.5	22.12	23.00	1.225	0.09	0.051	0.062
	LTE Band 12	10M	QPSK	1	0	Left Cheek	1	Full	23095	707.5	23.08	24.00	1.236	0.05	0.118	0.146
	LTE Band 12	10M	QPSK	25	0	Left Cheek	1	Full	23095	707.5	22.12	23.00	1.225	0.02	0.091	0.111
	LTE Band 12	10M	QPSK	1	0	Left Tilted	1	Full	23095	707.5	23.08	24.00	1.236	-0.07	0.103	0.127
	LTE Band 12	10M	QPSK	25	0	Left Tilted	1	Full	23095	707.5	22.12	23.00	1.225	0.06	0.056	0.069
11	LTE Band 26	15M	QPSK	1	0	Right Cheek	1	Full	26865	831.5	23.37	24.00	1.156	0.06	0.268	**0.310**
	LTE Band 26	15M	QPSK	36	0	Right Cheek	1	Full	26865	831.5	22.20	23.00	1.202	-0.01	0.116	0.139
	LTE Band 26	15M	QPSK	1	0	Right Tilted	1	Full	26865	831.5	23.37	24.00	1.156	0.06	0.114	0.132
	LTE Band 26	15M	QPSK	36	0	Right Tilted	1	Full	26865	831.5	22.20	23.00	1.202	0.04	0.067	0.081
	LTE Band 26	15M	QPSK	1	0	Left Cheek	1	Full	26865	831.5	23.37	24.00	1.156	0.02	0.177	0.205
	LTE Band 26	15M	QPSK	36	0	Left Cheek	1	Full	26865	831.5	22.20	23.00	1.202	0.08	0.095	0.114
	LTE Band 26	15M	QPSK	1	0	Left Tilted	1	Full	26865	831.5	23.37	24.00	1.156	0.02	0.134	0.155
	LTE Band 26	15M	QPSK	36	0	Left Tilted	1	Full	26865	831.5	22.20	23.00	1.202	-0.13	0.074	0.089
12	LTE Band 66	20M	QPSK	1	0	Right Cheek	1	Full	132322	1745	23.27	24.00	1.183	0.15	0.115	**0.136**
	LTE Band 66	20M	QPSK	50	0	Right Cheek	1	Full	132322	1745	22.10	23.00	1.230	0.04	0.061	0.075
	LTE Band 66	20M	QPSK	1	0	Right Tilted	1	Full	132322	1745	23.27	24.00	1.183	0.01	0.060	0.071
	LTE Band 66	20M	QPSK	50	0	Right Tilted	1	Full	132322	1745	22.10	23.00	1.230	0.09	0.031	0.038
	LTE Band 66	20M	QPSK	1	0	Left Cheek	1	Full	132322	1745	23.27	24.00	1.183	0.02	0.094	0.111
	LTE Band 66	20M	QPSK	50	0	Left Cheek	1	Full	132322	1745	22.10	23.00	1.230	0.08	0.050	0.062
	LTE Band 66	20M	QPSK	1	0	Left Tilted	1	Full	132322	1745	23.27	24.00	1.183	0.01	0.101	0.119
	LTE Band 66	20M	QPSK	50	0	Left Tilted	1	Full	132322	1745	22.10	23.00	1.230	0.09	0.053	0.065

<TDD LTE SAR>

Plot No.	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)
	LTE Band 41	20M	QPSK	1	0	Right Cheek	1	Full	40620	2593	23.43	24.00	1.140	62.9	1.006	-0.04	0.037	0.043
	LTE Band 41	20M	QPSK	50	0	Right Cheek	1	Full	40620	2593	22.42	23.00	1.143	62.9	1.006	0.03	0.017	0.020
	LTE Band 41	20M	QPSK	1	0	Right Tilted	1	Full	40620	2593	23.43	24.00	1.140	62.9	1.006	0.04	0.023	0.026
	LTE Band 41	20M	QPSK	50	0	Right Tilted	1	Full	40620	2593	22.42	23.00	1.143	62.9	1.006	0.02	0.012	0.014
	LTE Band 41	20M	QPSK	1	0	Left Cheek	1	Full	40620	2593	23.43	24.00	1.140	62.9	1.006	-0.13	0.021	0.024
	LTE Band 41	20M	QPSK	50	0	Left Cheek	1	Full	40620	2593	22.42	23.00	1.143	62.9	1.006	0.08	0.012	0.013
13	LTE Band 41	20M	QPSK	1	0	Left Tilted	1	Full	40620	2593	23.43	24.00	1.140	62.9	1.006	0.01	0.061	**0.070**
	LTE Band 41	20M	QPSK	50	0	Left Tilted	1	Full	40620	2593	22.42	23.00	1.143	62.9	1.006	0.06	0.034	0.039

<5G NR SAR>

Plot No.	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)
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Right Cheek	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.06	0.316	0.374
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Right Cheek	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.04	0.324	0.384
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Right Tilted	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.04	0.340	0.402
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Right Tilted	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.07	0.347	0.411
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Left Cheek	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.02	0.442	0.523
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Left Cheek	2	Reduced	518598	2592.99	15.76	16.50	1.186	-0.01	0.484	0.574
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Left Tilted	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.05	0.530	0.627
14	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Left Tilted	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.19	0.532	**0.631**

<WLAN2.4G SAR>

Plot No.	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)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	3+6	Reduced	1	2412	19.86	20.00	1.033	100	1.000	-0.04	0.741	0.765
15	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	3+6	Reduced	11	2462	19.37	20.00	1.156	100	1.000	0.06	0.897	**1.037**
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	3+6	Reduced	6	2437	19.56	20.00	1.107	100	1.000	0.11	0.751	0.831
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	3+6	Reduced	1	2412	19.86	20.00	1.033	100	1.000	0.02	0.528	0.545
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	3+6	Reduced	1	2412	19.86	20.00	1.033	100	1.000	-0.09	0.411	0.424
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	3+6	Reduced	1	2412	19.86	20.00	1.033	100	1.000	0.1	0.429	0.443

<WLAN 5G SAR>

Plot No.	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)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	5+6	Full	60	5300	20.22	21.00	1.197	98.62	1.014	0.02	0.043	0.052
16	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	5+6	Full	60	5300	20.22	21.00	1.197	98.62	1.014	0.03	0.058	**0.070**
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	5+6	Full	60	5300	20.22	21.00	1.197	98.62	1.014	0.04	0.039	0.047
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	5+6	Full	60	5300	20.22	21.00	1.197	98.62	1.014	0.08	0.049	0.060
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	5+6	Full	132	5660	19.78	21.00	1.324	98.62	1.014	0.01	0.111	0.149
	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	5+6	Full	132	5660	19.78	21.00	1.324	98.62	1.014	0.09	0.147	0.197
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	5+6	Full	132	5660	19.78	21.00	1.324	98.62	1.014	0.09	0.115	0.154
17	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	5+6	Full	132	5660	19.78	21.00	1.324	98.62	1.014	-0.01	0.194	**0.261**
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	5+6	Full	165	5825	21.48	22.00	1.127	98.62	1.014	0.02	0.146	0.167
18	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	5+6	Full	165	5825	21.48	22.00	1.127	98.62	1.014	0.07	0.189	**0.216**
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	5+6	Full	165	5825	21.48	22.00	1.127	98.62	1.014	0.1	0.161	0.184
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	5+6	Full	165	5825	21.48	22.00	1.127	98.62	1.014	0.09	0.187	0.214

<Bluetooth SAR>

Plot No.	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)
19	Bluetooth	1Mbps	Right Cheek	6	Full	39	2441	10.87	12.00	1.297	76.9	1.083	0.06	0.018	**0.026**

15.2 Hotspot SAR

<GSM SAR>

Plot No.	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)
	GSM850	GPRS 3 Tx slots	Front	5	1	Reduced	189	836.4	28.35	29.00	1.161	-0.01	0.562	0.653
	GSM850	GPRS 3 Tx slots	Back	5	1	Reduced	189	836.4	28.35	29.00	1.161	0.03	0.873	1.014
	GSM850	GPRS 3 Tx slots	Back	5	1	Reduced	128	824.2	28.12	29.00	1.225	0.02	0.822	1.007
20	GSM850	GPRS 3 Tx slots	Back	5	1	Reduced	251	848.8	28.34	29.00	1.164	-0.02	0.995	**1.158**
	GSM850	GPRS 3 Tx slots	Left Side	5	1	Reduced	189	836.4	28.35	29.00	1.161	-0.09	0.169	0.196
	GSM850	GPRS 3 Tx slots	Right Side	5	1	Reduced	189	836.4	28.35	29.00	1.161	0.01	0.291	0.338
	GSM850	GPRS 3 Tx slots	Bottom Side	5	1	Reduced	189	836.4	28.35	29.00	1.161	0.01	0.681	0.791
	GSM1900	GPRS 3 Tx slots	Front	5	1	Reduced	661	1880	21.28	21.50	1.052	0.03	0.337	0.355
	GSM1900	GPRS 3 Tx slots	Back	5	1	Reduced	661	1880	21.28	21.50	1.052	-0.06	0.647	0.681
	GSM1900	GPRS 3 Tx slots	Back	5	1	Reduced	512	1850.2	21.22	21.50	1.067	-0.04	0.688	0.734
	GSM1900	GPRS 3 Tx slots	Back	5	1	Reduced	810	1909.8	20.30	21.50	1.318	0.08	0.813	1.072
	GSM1900	GPRS 3 Tx slots	Left Side	5	1	Reduced	661	1880	21.28	21.50	1.052	0.01	0.038	0.040
	GSM1900	GPRS 3 Tx slots	Right Side	5	1	Reduced	661	1880	21.28	21.50	1.052	0.03	0.056	0.059
	GSM1900	GPRS 3 Tx slots	Bottom Side	5	1	Reduced	661	1880	21.28	21.50	1.052	-0.01	0.808	0.850
21	GSM1900	GPRS 3 Tx slots	Bottom Side	5	1	Reduced	512	1850.2	21.22	21.50	1.067	-0.08	1.060	**1.131**
	GSM1900	GPRS 3 Tx slots	Bottom Side	5	1	Reduced	810	1909.8	20.30	21.50	1.318	-0.05	0.851	1.122

<CDMA SAR>

Plot No.	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)
	CDMA BC0	RTAP 153.6Kbps	Front	5	1	Full Power	384	836.52	24.86	25.00	1.033	0.03	0.656	0.677
	CDMA BC0	RTAP 153.6Kbps	Back	5	1	Full Power	384	836.52	24.86	25.00	1.033	-0.08	1.010	1.043
	CDMA BC0	RTAP 153.6Kbps	Back	5	1	Full Power	1013	824.7	24.85	25.00	1.035	0.08	0.964	0.998
22	CDMA BC0	RTAP 153.6Kbps	Back	5	1	Full Power	777	848.31	24.65	25.00	1.084	0.06	1.010	**1.095**
	CDMA BC0	RTAP 153.6Kbps	Left Side	5	1	Full Power	384	836.52	24.86	25.00	1.033	0.02	0.192	0.198
	CDMA BC0	RTAP 153.6Kbps	Right Side	5	1	Full Power	384	836.52	24.86	25.00	1.033	0.01	0.210	0.217
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	5	1	Full Power	384	836.52	24.86	25.00	1.033	0.02	0.999	1.032
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	5	1	Full Power	1013	824.7	24.85	25.00	1.035	0.01	0.971	1.005
	CDMA BC0	RTAP 153.6Kbps	Bottom Side	5	1	Full Power	777	848.31	24.65	25.00	1.084	0.02	0.993	1.076
	CDMA BC1	RTAP 153.6Kbps	Front	5	1	Reduced	600	1880	16.42	17.00	1.143	0.04	0.429	0.490
	CDMA BC1	RTAP 153.6Kbps	Back	5	1	Reduced	600	1880	16.42	17.00	1.143	0.01	0.687	0.785
	CDMA BC1	RTAP 153.6Kbps	Back	5	1	Reduced	25	1851.25	16.20	17.00	1.202	0.06	0.705	0.848
	CDMA BC1	RTAP 153.6Kbps	Back	5	1	Reduced	1175	1908.75	16.32	17.00	1.169	0.01	0.720	0.842
	CDMA BC1	RTAP 153.6Kbps	Left Side	5	1	Reduced	600	1880	16.42	17.00	1.143	-0.02	0.028	0.032
	CDMA BC1	RTAP 153.6Kbps	Right Side	5	1	Reduced	600	1880	16.42	17.00	1.143	0.06	0.034	0.038
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5	1	Reduced	600	1880	16.42	17.00	1.143	-0.05	0.706	0.807
23	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5	1	Reduced	25	1851.25	16.20	17.00	1.202	0.01	0.846	**1.017**
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	5	1	Reduced	1175	1908.75	16.32	17.00	1.169	0.06	0.866	1.013

<WCDMA SAR>

Plot No.	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)
	WCDMA II	RMC 12.2Kbps	Front	5	1	Reduced	9400	1880	16.71	17.00	1.069	0.01	0.394	0.421
	WCDMA II	RMC 12.2Kbps	Back	5	1	Reduced	9400	1880	16.71	17.00	1.069	-0.09	0.717	0.767
	WCDMA II	RMC 12.2Kbps	Back	5	1	Reduced	9262	1852.4	16.69	17.00	1.074	0.05	0.969	1.041
	WCDMA II	RMC 12.2Kbps	Back	5	1	Reduced	9538	1907.6	16.31	17.00	1.172	0.01	0.822	0.964
	WCDMA II	RMC 12.2Kbps	Left Side	5	1	Reduced	9400	1880	15.77	16.50	1.183	0.09	0.032	0.038
	WCDMA II	RMC 12.2Kbps	Right Side	5	1	Reduced	9400	1880	15.77	16.50	1.183	-0.01	0.031	0.036
	WCDMA II	RMC 12.2Kbps	Bottom Side	5	1	Reduced	9400	1880	15.77	16.50	1.183	0.04	0.861	1.019
	WCDMA II	RMC 12.2Kbps	Bottom Side	5	1	Reduced	9262	1852.4	15.72	16.50	1.197	0.17	0.972	1.163
24	WCDMA II	RMC 12.2Kbps	Bottom Side	5	1	Reduced	9538	1907.6	15.76	16.50	1.186	-0.02	0.987	**1.170**
	WCDMA IV	RMC 12.2Kbps	Front	5	1	Reduced	1413	1732.6	17.12	17.50	1.091	0.06	0.482	0.526
	WCDMA IV	RMC 12.2Kbps	Back	5	1	Reduced	1413	1732.6	17.12	17.50	1.091	0.03	0.913	0.996
	WCDMA IV	RMC 12.2Kbps	Back	5	1	Reduced	1312	1712.4	16.84	17.50	1.164	-0.02	0.757	0.881
	WCDMA IV	RMC 12.2Kbps	Back	5	1	Reduced	1513	1752.6	16.65	17.50	1.216	0.02	0.774	0.941
	WCDMA IV	RMC 12.2Kbps	Left Side	5	1	Reduced	1413	1732.6	15.00	16.00	1.259	0.05	0.033	0.042
	WCDMA IV	RMC 12.2Kbps	Right Side	5	1	Reduced	1413	1732.6	15.00	16.00	1.259	-0.02	0.047	0.059
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5	1	Reduced	1413	1732.6	15.00	16.00	1.259	0.17	0.759	0.956
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5	1	Reduced	1312	1712.4	14.72	16.00	1.343	0.01	0.701	0.941
25	WCDMA IV	RMC 12.2Kbps	Bottom Side	5	1	Reduced	1513	1752.6	14.81	16.00	1.315	0.02	0.855	**1.125**
	WCDMA V	RMC 12.2Kbps	Front	5	1	Reduced	4182	836.4	22.87	23.00	1.030	-0.02	0.624	0.643
	WCDMA V	RMC 12.2Kbps	Back	5	1	Reduced	4182	836.4	22.87	23.00	1.030	-0.02	0.948	0.977
	WCDMA V	RMC 12.2Kbps	Back	5	1	Reduced	4132	826.4	22.80	23.00	1.047	-0.18	0.909	0.952
	WCDMA V	RMC 12.2Kbps	Back	5	1	Reduced	4233	846.6	22.43	23.00	1.140	-0.01	0.932	1.063
	WCDMA V	RMC 12.2Kbps	Left Side	5	1	Reduced	4182	836.4	22.87	23.00	1.030	0.01	0.171	0.176
	WCDMA V	RMC 12.2Kbps	Right Side	5	1	Reduced	4182	836.4	22.87	23.00	1.030	0.02	0.288	0.297
	WCDMA V	RMC 12.2Kbps	Bottom Side	5	1	Reduced	4182	836.4	22.87	23.00	1.030	-0.01	0.949	0.978
	WCDMA V	RMC 12.2Kbps	Bottom Side	5	1	Reduced	4132	826.4	22.80	23.00	1.047	-0.03	0.920	0.963
26	WCDMA V	RMC 12.2Kbps	Bottom Side	5	1	Reduced	4233	846.6	22.43	23.00	1.140	-0.02	0.944	**1.076**

<FDD LTE SAR>

Plot No.	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)
	LTE Band 2	20M	QPSK	1	0	Front	5	1	Reduced	18900	1880	16.56	17.50	1.242	0.01	0.544	0.675
	LTE Band 2	20M	QPSK	50	0	Front	5	1	Reduced	18900	1880	16.55	17.50	1.245	0.13	0.549	0.683
	LTE Band 2	20M	QPSK	1	0	Back	5	1	Reduced	18900	1880	16.56	17.50	1.242	0.09	0.624	0.775
	LTE Band 2	20M	QPSK	1	0	Back	5	1	Reduced	18700	1860	16.55	17.50	1.245	0.04	0.869	1.081
	LTE Band 2	20M	QPSK	1	0	Back	5	1	Reduced	19100	1900	16.28	17.50	1.324	0.04	0.815	1.079
	LTE Band 2	20M	QPSK	50	0	Back	5	1	Reduced	18900	1880	16.55	17.50	1.245	-0.04	0.696	0.866
	LTE Band 2	20M	QPSK	50	0	Back	5	1	Reduced	18700	1860	16.48	17.50	1.265	-0.02	0.852	1.078
	LTE Band 2	20M	QPSK	50	0	Back	5	1	Reduced	19100	1900	16.48	17.50	1.265	0.11	0.832	1.052
	LTE Band 2	20M	QPSK	100	0	Back	5	1	Reduced	18900	1880	16.53	17.50	1.250	0.06	0.802	1.003
	LTE Band 2	20M	QPSK	1	0	Left Side	5	1	Reduced	18900	1880	15.13	16.00	1.222	0.08	0.058	0.071
	LTE Band 2	20M	QPSK	50	0	Left Side	5	1	Reduced	18900	1880	15.18	16.00	1.208	0.08	0.057	0.069
	LTE Band 2	20M	QPSK	1	0	Right Side	5	1	Reduced	18900	1880	15.13	16.00	1.222	0.08	0.061	0.074
	LTE Band 2	20M	QPSK	50	0	Right Side	5	1	Reduced	18900	1880	15.18	16.00	1.208	0.01	0.060	0.073
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5	1	Reduced	18900	1880	15.13	16.00	1.222	0.02	0.774	0.946
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5	1	Reduced	18700	1860	15.11	16.00	1.227	0.01	0.754	0.925
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5	1	Reduced	19100	1900	14.91	16.00	1.285	0.03	0.809	1.040
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	1	Reduced	18900	1880	15.18	16.00	1.208	0.02	0.794	0.959
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	1	Reduced	18700	1860	15.02	16.00	1.253	-0.05	0.803	1.006
27	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	1	Reduced	19100	1900	14.92	16.00	1.282	-0.05	0.876	**1.123**
	LTE Band 2	20M	QPSK	100	0	Bottom Side	5	1	Reduced	18900	1880	15.08	16.00	1.236	0.04	0.810	1.001
	LTE Band 2 UL CA	20M	QPSK	1	0	Front	5	1	Reduced	18900	1880	9.17	9.50	1.079	0.03	0.097	0.105
	LTE Band 2 UL CA	20M	QPSK	50	0	Front	5	1	Reduced	18900	1880	9.09	9.50	1.099	0.06	0.098	0.108
	LTE Band 2 UL CA	20M	QPSK	1	0	Back	5	1	Reduced	18900	1880	9.17	9.50	1.079	-0.03	0.182	0.196
	LTE Band 2 UL CA	20M	QPSK	50	0	Back	5	1	Reduced	18900	1880	9.09	9.50	1.099	0.01	0.150	0.165
	LTE Band 2 UL CA	20M	QPSK	1	0	Left Side	5	1	Reduced	18900	1880	9.17	9.50	1.079	0.02	0.012	0.013
	LTE Band 2 UL CA	20M	QPSK	50	0	Left Side	5	1	Reduced	18900	1880	9.09	9.50	1.099	0.06	0.012	0.013
	LTE Band 2 UL CA	20M	QPSK	1	0	Right Side	5	1	Reduced	18900	1880	9.17	9.50	1.079	0.01	0.016	0.017
	LTE Band 2 UL CA	20M	QPSK	50	0	Right Side	5	1	Reduced	18900	1880	9.09	9.50	1.099	0.04	0.016	0.017
	LTE Band 2 UL CA	20M	QPSK	1	0	Bottom Side	5	1	Reduced	18900	1880	9.17	9.50	1.079	-0.02	0.287	0.310
	LTE Band 2 UL CA	20M	QPSK	50	0	Bottom Side	5	1	Reduced	18900	1880	9.09	9.50	1.099	-0.01	0.294	0.323
	LTE Band 7	20M	QPSK	1	0	Front	5	1	Reduced	21100	2535	16.83	17.00	1.040	-0.02	0.480	0.499
	LTE Band 7	20M	QPSK	50	0	Front	5	1	Reduced	21100	2535	16.82	17.00	1.042	0.05	0.491	0.512
	LTE Band 7	20M	QPSK	1	0	Back	5	1	Reduced	21100	2535	16.83	17.00	1.040	0.02	1.030	1.071
28	LTE Band 7	20M	QPSK	1	0	Back	5	1	Reduced	20850	2510	16.61	17.00	1.094	0.16	1.090	**1.192**
	LTE Band 7C	20M	QPSK	1	0	Back	5	1	Reduced	20850+21048	2510+2529.8	16.87	17.00	1.030	0.16	1.010	1.041
	LTE Band 7	20M	QPSK	1	0	Back	5	1	Reduced	21350	2560	16.58	17.00	1.102	0.02	1.030	1.135
	LTE Band 7	20M	QPSK	50	0	Back	5	1	Reduced	21100	2535	16.82	17.00	1.042	0.04	1.010	1.053
	LTE Band 7	20M	QPSK	50	0	Back	5	1	Reduced	20850	2510	16.79	17.00	1.050	0.01	0.978	1.026
	LTE Band 7	20M	QPSK	50	0	Back	5	1	Reduced	21350	2560	16.74	17.00	1.062	0.06	1.030	1.094
	LTE Band 7	20M	QPSK	100	0	Back	5	1	Reduced	21100	2535	16.78	17.00	1.052	0.01	0.927	0.975
	LTE Band 7	20M	QPSK	1	0	Left Side	5	1	Reduced	21100	2535	13.17	14.00	1.211	0.05	0.011	0.014
	LTE Band 7	20M	QPSK	50	0	Left Side	5	1	Reduced	21100	2535	13.24	14.00	1.191	-0.02	0.014	0.017
	LTE Band 7	20M	QPSK	1	0	Right Side	5	1	Reduced	21100	2535	13.17	14.00	1.211	0.05	0.146	0.177
	LTE Band 7	20M	QPSK	50	0	Right Side	5	1	Reduced	21100	2535	13.24	14.00	1.191	0.06	0.137	0.163
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5	1	Reduced	21100	2535	13.17	14.00	1.211	0.05	0.927	1.122
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5	1	Reduced	20850	2510	13.16	14.00	1.213	0.01	0.844	1.024
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5	1	Reduced	21350	2560	13.07	14.00	1.239	0.07	0.883	1.094
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5	1	Reduced	21100	2535	13.24	14.00	1.191	-0.02	0.907	1.080
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5	1	Reduced	20850	2510	13.07	14.00	1.239	0.05	0.882	1.093
	LTE Band 7	20M	QPSK	50	0	Bottom Side	5	1	Reduced	21350	2560	13.23	14.00	1.194	0.02	0.902	1.077
	LTE Band 7	20M	QPSK	100	0	Bottom Side	5	1	Reduced	21100	2535	13.13	14.00	1.222	0.09	0.732	0.894

Plot No.	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)
	LTE Band 7 UL CA	20M	QPSK	1	0	Front	5	2	Reduced	21100	2535	15.46	16.00	1.132	0.02	0.151	0.171
	LTE Band 7 UL CA	20M	QPSK	50	0	Front	5	2	Reduced	21100	2535	15.44	16.00	1.138	0.05	0.146	0.166
	LTE Band 7 UL CA	20M	QPSK	1	0	Back	5	2	Reduced	21100	2535	15.46	16.00	1.132	0.19	0.177	0.200
	LTE Band 7 UL CA	20M	QPSK	50	0	Back	5	2	Reduced	21100	2535	15.44	16.00	1.138	0.04	0.139	0.158
	LTE Band 7 UL CA	20M	QPSK	1	0	Left Side	5	2	Reduced	21100	2535	15.46	16.00	1.132	0.02	0.006	0.007
	LTE Band 7 UL CA	20M	QPSK	50	0	Left Side	5	2	Reduced	21100	2535	15.44	16.00	1.138	0.01	0.005	0.005
	LTE Band 7 UL CA	20M	QPSK	1	0	Right Side	5	2	Reduced	21100	2535	15.46	16.00	1.132	0.01	0.004	0.005
	LTE Band 7 UL CA	20M	QPSK	50	0	Right Side	5	2	Reduced	21100	2535	15.44	16.00	1.138	0.02	0.035	0.040
	LTE Band 7 UL CA	20M	QPSK	1	0	Top Side	5	2	Reduced	21100	2535	15.46	16.00	1.132	-0.06	0.287	0.325
	LTE Band 7 UL CA	20M	QPSK	50	0	Top Side	5	2	Reduced	21100	2535	15.44	16.00	1.138	-0.05	0.299	0.340
	LTE Band 12	10M	QPSK	1	0	Front	5	1	Full Power	23095	707.5	23.08	24.00	1.236	-0.02	0.417	0.515
	LTE Band 12	10M	QPSK	25	0	Front	5	1	Full Power	23095	707.5	22.12	23.00	1.225	0.04	0.278	0.340
29	LTE Band 12	10M	QPSK	1	0	Back	5	1	Full Power	23095	707.5	23.08	24.00	1.236	0.02	0.845	**1.044**
	LTE Band 12	10M	QPSK	25	0	Back	5	1	Full Power	23095	707.5	22.12	23.00	1.225	0.04	0.511	0.626
	LTE Band 12	10M	QPSK	50	0	Back	5	1	Full Power	23095	707.5	22.07	23.00	1.239	0.02	0.506	0.627
	LTE Band 12	10M	QPSK	1	0	Left Side	5	1	Full Power	23095	707.5	23.08	24.00	1.236	0.07	0.275	0.340
	LTE Band 12	10M	QPSK	25	0	Left Side	5	1	Full Power	23095	707.5	22.12	23.00	1.225	0.09	0.219	0.268
	LTE Band 12	10M	QPSK	1	0	Right Side	5	1	Full Power	23095	707.5	23.08	24.00	1.236	0.04	0.354	0.438
	LTE Band 12	10M	QPSK	25	0	Right Side	5	1	Full Power	23095	707.5	22.12	23.00	1.225	0.01	0.281	0.344
	LTE Band 12	10M	QPSK	1	0	Bottom Side	5	1	Full Power	23095	707.5	23.08	24.00	1.236	-0.08	0.634	0.784
	LTE Band 12	10M	QPSK	25	0	Bottom Side	5	1	Full Power	23095	707.5	22.12	23.00	1.225	-0.06	0.504	0.617
	LTE Band 26	15M	QPSK	1	0	Front	5	1	Reduced	26865	831.5	22.29	23.00	1.178	0.01	0.607	0.715
	LTE Band 26	15M	QPSK	36	0	Front	5	1	Reduced	26865	831.5	21.54	23.00	1.400	0.01	0.380	0.532
	LTE Band 26	15M	QPSK	1	0	Back	5	1	Reduced	26865	831.5	22.29	23.00	1.178	0.09	0.944	1.112
	LTE Band 26	15M	QPSK	36	0	Back	5	1	Reduced	26865	831.5	21.54	23.00	1.400	0.09	0.595	0.833
	LTE Band 26	15M	QPSK	75	0	Back	5	1	Reduced	26865	831.5	21.51	23.00	1.409	-0.01	0.594	0.837
	LTE Band 26	15M	QPSK	1	0	Left Side	5	1	Reduced	26865	831.5	22.29	23.00	1.178	0.06	0.173	0.204
	LTE Band 26	15M	QPSK	36	0	Left Side	5	1	Reduced	26865	831.5	21.54	23.00	1.400	0.04	0.101	0.141
	LTE Band 26	15M	QPSK	1	0	Right Side	5	1	Reduced	26865	831.5	22.29	23.00	1.178	0.03	0.272	0.320
	LTE Band 26	15M	QPSK	36	0	Right Side	5	1	Reduced	26865	831.5	21.54	23.00	1.400	0.04	0.159	0.223
30	LTE Band 26	15M	QPSK	1	0	Bottom Side	5	1	Reduced	26865	831.5	22.29	23.00	1.178	-0.06	0.980	**1.154**
	LTE Band 26	15M	QPSK	36	0	Bottom Side	5	1	Reduced	26865	831.5	21.54	23.00	1.400	-0.01	0.587	0.822
	LTE Band 26	15M	QPSK	75	0	Bottom Side	5	1	Reduced	26865	831.5	21.51	23.00	1.409	-0.03	0.577	0.813
	LTE Band 66	20M	QPSK	1	0	Front	5	1	Reduced	132322	1745	16.85	17.50	1.161	0.06	0.478	0.555
	LTE Band 66	20M	QPSK	50	0	Front	5	1	Reduced	132322	1745	16.64	17.50	1.219	0.01	0.441	0.538
	LTE Band 66	20M	QPSK	1	0	Back	5	1	Reduced	132322	1745	16.85	17.50	1.161	-0.08	0.704	0.818
	LTE Band 66	20M	QPSK	1	0	Back	5	1	Reduced	132072	1720	16.84	17.50	1.164	0	0.679	0.790
	LTE Band 66	20M	QPSK	1	0	Back	5	1	Reduced	132572	1770	16.77	17.50	1.183	0.02	0.670	0.793
	LTE Band 66	20M	QPSK	50	0	Back	5	1	Reduced	132322	1745	16.64	17.50	1.219	-0.01	0.743	0.906
	LTE Band 66	20M	QPSK	50	0	Back	5	1	Reduced	132072	1720	16.40	17.50	1.288	0.09	0.711	0.916
	LTE Band 66	20M	QPSK	50	0	Back	5	1	Reduced	132572	1770	16.42	17.50	1.282	0.12	0.643	0.825
	LTE Band 66	20M	QPSK	100	0	Back	5	1	Reduced	132322	1745	16.72	17.50	1.197	0.18	0.846	1.012
	LTE Band 66	20M	QPSK	1	0	Left Side	5	1	Reduced	132322	1745	16.43	17.00	1.140	0.05	0.044	0.050
	LTE Band 66	20M	QPSK	50	0	Left Side	5	1	Reduced	132322	1745	16.55	17.00	1.109	0.04	0.040	0.044
	LTE Band 66	20M	QPSK	1	0	Right Side	5	1	Reduced	132322	1745	16.43	17.00	1.140	0.07	0.072	0.082
	LTE Band 66	20M	QPSK	50	0	Right Side	5	1	Reduced	132322	1745	16.55	17.00	1.109	0.03	0.080	0.089
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5	1	Reduced	132322	1745	16.43	17.00	1.140	0.05	0.689	0.786
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5	1	Reduced	132072	1720	16.35	17.00	1.161	0.05	0.759	0.882
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5	1	Reduced	132572	1770	16.21	17.00	1.199	0.03	0.842	1.010
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5	1	Reduced	132322	1745	16.55	17.00	1.109	-0.09	0.835	0.926
31	LTE Band 66	20M	QPSK	50	0	Bottom Side	5	1	Reduced	132072	1720	16.41	17.00	1.146	-0.02	0.932	**1.068**
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5	1	Reduced	132572	1770	16.37	17.00	1.156	0.05	0.819	0.947
	LTE Band 66	20M	QPSK	100	0	Bottom Side	5	1	Reduced	132322	1745	16.55	17.00	1.109	0.06	0.860	0.954

<TDD LTE SAR>

Plot No.	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)
	LTE Band 41	20M	QPSK	1	0	Front	5	1	Reduced	40620	2593	18.91	19.00	1.021	62.9	1.006	-0.02	0.342	0.351
	LTE Band 41	20M	QPSK	50	0	Front	5	1	Reduced	40620	2593	18.96	19.00	1.009	62.9	1.006	0.01	0.361	0.367
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	40620	2593	18.91	19.00	1.021	62.9	1.006	0.05	0.943	0.969
32	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	39750	2506	18.78	19.00	1.052	62.9	1.006	0.02	1.120	**1.185**
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	40185	2549.5	18.71	19.00	1.069	62.9	1.006	0.01	0.916	0.985
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	41055	2636.5	18.85	19.00	1.035	62.9	1.006	0.06	1.040	1.083
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	41490	2680	18.80	19.00	1.047	62.9	1.006	-0.05	1.110	1.169
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	40620	2593	18.96	19.00	1.009	62.9	1.006	0.01	1.030	1.046
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	39750	2506	18.66	19.00	1.081	62.9	1.006	0.06	1.000	1.088
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	40185	2549.5	18.51	19.00	1.119	62.9	1.006	0.08	1.050	1.182
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	41055	2636.5	18.76	19.00	1.057	62.9	1.006	0.02	1.100	1.169
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	41490	2680	18.85	19.00	1.035	62.9	1.006	-0.05	0.820	0.854
	LTE Band 41	20M	QPSK	100	0	Back	5	1	Reduced	40620	2593	18.88	19.00	1.028	62.9	1.006	0.01	0.952	0.985
	LTE Band 41	20M	QPSK	1	0	Left Side	5	1	Reduced	40620	2593	16.12	17.00	1.225	62.9	1.006	0.06	0.008	0.010
	LTE Band 41	20M	QPSK	50	0	Left Side	5	1	Reduced	40620	2593	16.21	17.00	1.199	62.9	1.006	-0.04	0.010	0.012
	LTE Band 41	20M	QPSK	1	0	Right Side	5	1	Reduced	40620	2593	16.12	17.00	1.225	62.9	1.006	0.09	0.081	0.099
	LTE Band 41	20M	QPSK	50	0	Right Side	5	1	Reduced	40620	2593	16.21	17.00	1.199	62.9	1.006	-0.04	0.086	0.104
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5	1	Reduced	40620	2593	16.12	17.00	1.225	62.9	1.006	0.17	0.901	1.110
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5	1	Reduced	39750	2506	15.95	17.00	1.274	62.9	1.006	-0.05	0.920	1.179
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5	1	Reduced	40185	2549.5	15.83	17.00	1.309	62.9	1.006	-0.01	0.862	1.135
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5	1	Reduced	41055	2636.5	15.85	17.00	1.303	62.9	1.006	0.09	0.865	1.134
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5	1	Reduced	41490	2680	15.90	17.00	1.288	62.9	1.006	0.12	0.910	1.179
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5	1	Reduced	40620	2593	16.21	17.00	1.199	62.9	1.006	0.09	0.808	0.975
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5	1	Reduced	39750	2506	15.97	17.00	1.268	62.9	1.006	-0.01	0.879	1.121
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5	1	Reduced	40185	2549.5	15.93	17.00	1.279	62.9	1.006	-0.03	0.785	1.010
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5	1	Reduced	41055	2636.5	16.11	17.00	1.227	62.9	1.006	0.05	0.956	1.180
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5	1	Reduced	41490	2680	16.21	17.00	1.199	62.9	1.006	0.09	0.861	1.039
	LTE Band 41	20M	QPSK	100	0	Bottom Side	5	1	Reduced	40620	2593	16.09	17.00	1.233	62.9	1.006	0.01	0.781	0.969

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Front	5	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.01	0.246	0.291
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Front	5	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.06	0.246	0.292
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Back	5	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.04	0.303	0.358
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Back	5	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.01	0.306	0.363
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Left Side	5	2	Reduced	518598	2592.99	14.11	15.00	1.227	0.03	0.005	0.007
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Left Side	5	2	Reduced	518598	2592.99	14.00	15.00	1.259	0.06	0.006	0.007
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Right Side	5	2	Reduced	518598	2592.99	14.11	15.00	1.227	0.04	0.038	0.046
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Right Side	5	2	Reduced	518598	2592.99	14.00	15.00	1.259	0.07	0.035	0.044
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Top Side	5	2	Reduced	518598	2592.99	14.11	15.00	1.227	-0.04	0.297	0.365
33	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Top Side	5	2	Reduced	518598	2592.99	14.00	15.00	1.259	-0.09	0.315	**0.397**

<WLAN2.4G SAR>

Plot No.	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.09	0.258	0.300
34	WLAN2.4GHz	802.11b 1Mbps	Back	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.01	0.934	**1.087**
	WLAN2.4GHz	802.11b 1Mbps	Back	5	3+6	Reduced	6	2437	18.11	19.50	1.377	100	1.000	0.08	0.595	0.819
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.02	0.203	0.236
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.01	0.293	0.341
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	-0.02	0.392	0.456

<WLAN5G SAR>

Plot No.	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)
	WLAN5.2GHz	802.11a 6Mbps	Front	5	5+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	0.01	0.000	0.000
35	WLAN5.2GHz	802.11a 6Mbps	Back	5	5+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	-0.04	0.894	**0.996**
	WLAN5.2GHz	802.11a 6Mbps	Back	5	5+6	Reduced	48	5240	13.56	14.00	1.107	98.62	1.014	0.02	0.783	0.879
	WLAN5.2GHz	802.11a 6Mbps	Left Side	5	5+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	0.01	0.002	0.002
	WLAN5.2GHz	802.11a 6Mbps	Right Side	5	5+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	0.01	0.110	0.123
	WLAN5.2GHz	802.11a 6Mbps	Top Side	5	5+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	0.02	0.001	0.001
	WLAN5.8GHz	802.11a 6Mbps	Front	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.01	0.021	0.027
36	WLAN5.8GHz	802.11a 6Mbps	Back	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.08	0.805	**1.014**
	WLAN5.8GHz	802.11a 6Mbps	Back	5	5+6	Reduced	149	5745	17.05	18.00	1.245	98.62	1.014	0.02	0.701	0.885
	WLAN5.8GHz	802.11a 6Mbps	Left Side	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.01	0.174	0.219
	WLAN5.8GHz	802.11a 6Mbps	Right Side	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.03	0.045	0.057
	WLAN5.8GHz	802.11a 6Mbps	Top Side	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.01	0.125	0.157

<Bluetooth SAR>

Plot No.	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)
37	Bluetooth	1Mbps	Back	5	Ant 6	Full	39	2441	10.87	12.00	1.297	76.9	1.083	0.06	0.066	**0.093**

15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	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)
	GSM850	GPRS 3 Tx slots	Front	5	1	Reduced	189	836.4	28.35	29.00	1.161	-0.01	0.562	0.653
	GSM850	GPRS 3 Tx slots	Back	5	1	Reduced	189	836.4	28.35	29.00	1.161	0.03	0.873	1.014
	GSM850	GPRS 3 Tx slots	Back	5	1	Reduced	128	824.2	28.12	29.00	1.225	0.02	0.822	1.007
38	GSM850	GPRS 3 Tx slots	Back	5	1	Reduced	251	848.8	28.34	29.00	1.164	-0.02	0.995	**1.158**
	GSM850	GPRS 3 Tx slots	Front	20	1	Full	189	836.4	30.66	31.50	1.213	0.09	0.293	0.356
	GSM850	GPRS 3 Tx slots	Back	24	1	Full	251	848.8	30.51	31.50	1.256	0.12	0.318	0.399
	GSM1900	GPRS 3 Tx slots	Front	5	1	Reduced	661	1880	21.28	21.50	1.052	0.03	0.337	0.355
	GSM1900	GPRS 3 Tx slots	Back	5	1	Reduced	661	1880	21.28	21.50	1.052	-0.06	0.647	0.681
	GSM1900	GPRS 3 Tx slots	Back	5	1	Reduced	512	1850.2	21.22	21.50	1.067	-0.04	0.688	0.734
39	GSM1900	GPRS 3 Tx slots	Back	5	1	Reduced	810	1909.8	20.30	21.50	1.318	0.08	0.813	**1.072**
	GSM1900	GPRS 3 Tx slots	Front	20	1	Full	661	1880	27.71	28.50	1.199	0.09	0.137	0.164
	GSM1900	GPRS 3 Tx slots	Back	24	1	Full	810	1909.8	26.65	28.50	1.531	0.02	0.146	0.224

<CDMA SAR>

Plot No.	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)
	CDMA BC0	RC3 SO32(F+SCH)	Front	5	1	Full	384	836.52	24.86	25.00	1.033	-0.12	0.739	0.763
	CDMA BC0	RC3 SO32(F+SCH)	Back	5	1	Full	384	836.52	24.86	25.00	1.033	0.07	1.100	1.136
	CDMA BC0	RC3 SO32(F+SCH)	Back	5	1	Full	1013	824.7	24.83	25.00	1.040	0.11	1.010	1.050
40	CDMA BC0	RC3 SO32(F+SCH)	Back	5	1	Full	777	848.31	24.67	25.00	1.079	0.08	1.060	**1.144**
	CDMA BC1	RC3 SO32(F+SCH)	Front	5	1	Reduced	600	1880	18.16	18.50	1.081	0.01	0.406	0.439
	CDMA BC1	RC3 SO32(F+SCH)	Back	5	1	Reduced	600	1880	18.16	18.50	1.081	0.09	0.823	0.890
	CDMA BC1	RC3 SO32(F+SCH)	Back	5	1	Reduced	25	1851.25	18.11	18.50	1.094	0.02	0.908	0.993
41	CDMA BC1	RC3 SO32(F+SCH)	Back	5	1	Reduced	1175	1908.75	18.13	18.50	1.089	0.04	0.914	**0.995**
	CDMA BC1	RC3 SO32(F+SCH)	Front	20	1	Full	600	1880	24.63	25.00	1.089	0.01	0.132	0.144
	CDMA BC1	RC3 SO32(F+SCH)	Back	24	1	Full	1175	1908.75	24.62	25.00	1.091	0.05	0.270	0.295

<WCDMA SAR>

Plot No.	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)
	WCDMA II	RMC 12.2Kbps	Front	5	1	Reduced	9400	1880	16.71	17.00	1.069	0.01	0.394	0.421
	WCDMA II	RMC 12.2Kbps	Back	5	1	Reduced	9400	1880	16.71	17.00	1.069	-0.09	0.717	0.767
42	WCDMA II	RMC 12.2Kbps	Back	5	1	Reduced	9262	1852.4	16.69	17.00	1.074	0.05	0.969	**1.041**
	WCDMA II	RMC 12.2Kbps	Back	5	1	Reduced	9538	1907.6	16.31	17.00	1.172	0.01	0.822	0.964
	WCDMA II	RMC 12.2Kbps	Front	20	1	Full	9400	1880	23.84	24.00	1.038	0.08	0.261	0.271
	WCDMA II	RMC 12.2Kbps	Back	24	1	Full	9262	1852.4	23.75	24.00	1.059	0.01	0.377	0.399
	WCDMA IV	RMC 12.2Kbps	Front	5	1	Reduced	1413	1732.6	17.12	17.50	1.091	0.06	0.482	0.526
43	WCDMA IV	RMC 12.2Kbps	Back	5	1	Reduced	1413	1732.6	17.12	17.50	1.091	0.03	0.913	**0.996**
	WCDMA IV	RMC 12.2Kbps	Back	5	1	Reduced	1312	1712.4	16.84	17.50	1.164	-0.02	0.757	0.881
	WCDMA IV	RMC 12.2Kbps	Back	5	1	Reduced	1513	1752.6	16.65	17.50	1.216	0.02	0.774	0.941
	WCDMA IV	RMC 12.2Kbps	Front	20	1	Full	1413	1732.6	23.40	24.00	1.148	0.09	0.302	0.347
	WCDMA IV	RMC 12.2Kbps	Back	24	1	Full	1413	1732.6	23.40	24.00	1.148	-0.02	0.383	0.440
	WCDMA V	RMC 12.2Kbps	Front	5	1	Reduced	4182	836.4	22.87	23.00	1.030	-0.02	0.624	0.643
	WCDMA V	RMC 12.2Kbps	Back	5	1	Reduced	4182	836.4	22.87	23.00	1.030	-0.02	0.948	0.977
	WCDMA V	RMC 12.2Kbps	Back	5	1	Reduced	4132	826.4	22.80	23.00	1.047	-0.18	0.909	0.952
44	WCDMA V	RMC 12.2Kbps	Back	5	1	Reduced	4233	846.6	22.43	23.00	1.140	-0.01	0.932	**1.063**
	WCDMA V	RMC 12.2Kbps	Front	20	1	Full	4182	836.4	23.66	24.00	1.081	-0.01	0.291	0.315
	WCDMA V	RMC 12.2Kbps	Back	24	1	Full	4233	846.6	23.22	24.00	1.197	0.04	0.299	0.358

<FDD LTE SAR>

Plot No.	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)
	LTE Band 2	20M	QPSK	1	0	Front	5	1	Reduced	18900	1880	16.56	17.50	1.242	0.01	0.544	0.675
	LTE Band 2	20M	QPSK	50	0	Front	5	1	Reduced	18900	1880	16.55	17.50	1.245	0.13	0.549	0.683
	LTE Band 2	20M	QPSK	1	0	Back	5	1	Reduced	18900	1880	16.56	17.50	1.242	0.09	0.624	0.775
45	LTE Band 2	20M	QPSK	1	0	Back	5	1	Reduced	18700	1860	16.55	17.50	1.245	0.04	0.869	**1.081**
	LTE Band 2	20M	QPSK	1	0	Back	5	1	Reduced	19100	1900	16.28	17.50	1.324	0.04	0.815	1.079
	LTE Band 2	20M	QPSK	50	0	Back	5	1	Reduced	18900	1880	16.55	17.50	1.245	-0.04	0.696	0.866
	LTE Band 2	20M	QPSK	50	0	Back	5	1	Reduced	18700	1860	16.48	17.50	1.265	-0.02	0.852	1.078
	LTE Band 2	20M	QPSK	50	0	Back	5	1	Reduced	19100	1900	16.48	17.50	1.265	0.11	0.832	1.052
	LTE Band 2	20M	QPSK	100	0	Back	5	1	Reduced	18900	1880	16.53	17.50	1.250	0.06	0.802	1.003
	LTE Band 2 UL CA	20M	QPSK	1	0	Front	5	1	Reduced	18900	1880	9.17	9.50	1.079	0.03	0.097	0.105
	LTE Band 2 UL CA	20M	QPSK	50	0	Front	5	1	Reduced	18900	1880	9.09	9.50	1.099	0.06	0.098	0.108
	LTE Band 2 UL CA	20M	QPSK	1	0	Back	5	1	Reduced	18900	1880	9.17	9.50	1.079	-0.03	0.182	0.196
	LTE Band 2 UL CA	20M	QPSK	50	0	Back	5	1	Reduced	18900	1880	9.09	9.50	1.099	0.01	0.150	0.165
	LTE Band 2	20M	QPSK	1	0	Front	20	1	Full	18900	1880	23.38	24.00	1.153	0.15	0.344	0.397
	LTE Band 2	20M	QPSK	1	0	Back	24	1	Full	18700	1860	23.20	24.00	1.202	0.01	0.347	0.417
	LTE Band 7	20M	QPSK	1	0	Front	5	1	Reduced	21100	2535	16.83	17.00	1.040	-0.02	0.480	0.499
	LTE Band 7	20M	QPSK	50	0	Front	5	1	Reduced	21100	2535	16.82	17.00	1.042	0.05	0.491	0.512
	LTE Band 7	20M	QPSK	1	0	Back	5	1	Reduced	21100	2535	16.83	17.00	1.040	0.02	1.030	1.071
46	LTE Band 7	20M	QPSK	1	0	Back	5	1	Reduced	20850	2510	16.61	17.00	1.094	0.16	1.090	**1.192**
	LTE Band 7C	20M	QPSK	1	0	Back	5	1	Reduced	20850+21048	2510+2529.8	16.87	17.00	1.030	0.16	1.010	1.041
	LTE Band 7	20M	QPSK	1	0	Back	5	1	Reduced	21350	2560	16.58	17.00	1.102	0.02	1.030	1.135
	LTE Band 7	20M	QPSK	50	0	Back	5	1	Reduced	21100	2535	16.82	17.00	1.042	0.04	1.010	1.053
	LTE Band 7	20M	QPSK	50	0	Back	5	1	Reduced	20850	2510	16.79	17.00	1.050	0.01	0.978	1.026
	LTE Band 7	20M	QPSK	50	0	Back	5	1	Reduced	21350	2560	16.74	17.00	1.062	0.06	1.030	1.094
	LTE Band 7	20M	QPSK	100	0	Back	5	1	Reduced	21100	2535	16.78	17.00	1.052	0.01	0.927	0.975
	LTE Band 7	20M	QPSK	1	0	Front	20	1	Full	21100	2535	23.54	24.00	1.112	0.01	0.304	0.338
	LTE Band 7	20M	QPSK	1	0	Back	24	1	Full	20850	2510	23.44	24.00	1.138	0.05	0.316	0.359
	LTE Band 7 UL CA	20M	QPSK	1	0	Front	5	2	Reduced	21100	2535	15.46	16.00	1.132	0.02	0.151	0.171
	LTE Band 7 UL CA	20M	QPSK	50	0	Front	5	2	Reduced	21100	2535	15.44	16.00	1.138	0.05	0.146	0.166
	LTE Band 7 UL CA	20M	QPSK	1	0	Back	5	2	Reduced	21100	2535	15.46	16.00	1.132	0.19	0.177	0.200
	LTE Band 7 UL CA	20M	QPSK	50	0	Back	5	2	Reduced	21100	2535	15.44	16.00	1.138	0.04	0.139	0.158
	LTE Band 7 UL CA	20M	QPSK	1	0	Front	20	2	Full	21100	2535	23.05	24.00	1.245	0.09	0.016	0.019
	LTE Band 7 UL CA	20M	QPSK	1	0	Back	24	2	Full	21100	2535	23.05	24.00	1.245	0.09	0.130	0.162
	LTE Band 12	10M	QPSK	1	0	Front	5	1	Full	23095	707.5	23.08	24.00	1.236	-0.02	0.417	0.515
	LTE Band 12	10M	QPSK	25	0	Front	5	1	Full	23095	707.5	22.12	23.00	1.225	0.04	0.278	0.340
47	LTE Band 12	10M	QPSK	1	0	Back	5	1	Full	23095	707.5	23.08	24.00	1.236	0.02	0.845	**1.044**
	LTE Band 12	10M	QPSK	25	0	Back	5	1	Full	23095	707.5	22.12	23.00	1.225	0.04	0.511	0.626
	LTE Band 12	10M	QPSK	50	0	Back	5	1	Full	23095	707.5	22.07	23.00	1.239	0.02	0.506	0.627
	LTE Band 26	15M	QPSK	1	0	Front	5	1	Reduced	26865	831.5	22.29	23.00	1.178	0.01	0.607	0.715
	LTE Band 26	15M	QPSK	36	0	Front	5	1	Reduced	26865	831.5	21.54	22.00	1.112	0.01	0.380	0.422
48	LTE Band 26	15M	QPSK	1	0	Back	5	1	Reduced	26865	831.5	22.29	23.00	1.178	0.09	0.944	**1.112**
	LTE Band 26	15M	QPSK	36	0	Back	5	1	Reduced	26865	831.5	21.54	22.00	1.112	0.09	0.595	0.661
	LTE Band 26	15M	QPSK	75	0	Back	5	1	Reduced	26865	831.5	21.51	22.00	1.119	-0.01	0.594	0.665
	LTE Band 26	15M	QPSK	1	0	Front	20	1	Full	26865	831.5	23.37	24.00	1.156	0.02	0.180	0.208
	LTE Band 26	15M	QPSK	1	0	Back	24	1	Full	26865	831.5	23.37	24.00	1.156	0.02	0.175	0.202

Plot No.	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)
	LTE Band 66	20M	QPSK	1	0	Front	5	1	Reduced	132322	1745	16.85	17.50	1.161	0.06	0.478	0.555
	LTE Band 66	20M	QPSK	50	0	Front	5	1	Reduced	132322	1745	16.64	17.50	1.219	0.01	0.441	0.538
	LTE Band 66	20M	QPSK	1	0	Back	5	1	Reduced	132322	1745	16.85	17.50	1.161	-0.08	0.704	0.818
	LTE Band 66	20M	QPSK	1	0	Back	5	1	Reduced	132072	1720	16.84	17.50	1.164	0	0.679	0.790
	LTE Band 66	20M	QPSK	1	0	Back	5	1	Reduced	132572	1770	16.77	17.50	1.183	0.02	0.670	0.793
	LTE Band 66	20M	QPSK	50	0	Back	5	1	Reduced	132322	1745	16.64	17.50	1.219	-0.01	0.743	0.906
	LTE Band 66	20M	QPSK	50	0	Back	5	1	Reduced	132072	1720	16.40	17.50	1.288	0.09	0.711	0.916
	LTE Band 66	20M	QPSK	50	0	Back	5	1	Reduced	132572	1770	16.42	17.50	1.282	0.12	0.643	0.825
49	LTE Band 66	20M	QPSK	100	0	Back	5	1	Reduced	132322	1745	16.72	17.50	1.197	0.18	0.846	**1.012**
	LTE Band 66	20M	QPSK	1	0	Front	20	1	Full	132322	1745	23.27	24.00	1.183	0.15	0.323	0.382
	LTE Band 66	20M	QPSK	1	0	Back	24	1	Full	132322	1745	23.27	24.00	1.183	0.11	0.352	0.416

<TDD LTE SAR>

Plot No.	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)
	LTE Band 41	20M	QPSK	1	0	Front	5	1	Reduced	40620	2593	18.91	19.00	1.021	62.9	1.006	-0.02	0.342	0.351
	LTE Band 41	20M	QPSK	50	0	Front	5	1	Reduced	40620	2593	18.96	19.00	1.009	62.9	1.006	0.01	0.361	0.367
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	40620	2593	18.91	19.00	1.021	62.9	1.006	0.05	0.943	0.969
50	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	39750	2506	18.78	19.00	1.052	62.9	1.006	0.02	1.120	**1.185**
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	40185	2549.5	18.71	19.00	1.069	62.9	1.006	0.01	0.916	0.985
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	41055	2636.5	18.85	19.00	1.035	62.9	1.006	0.06	1.040	1.083
	LTE Band 41	20M	QPSK	1	0	Back	5	1	Reduced	41490	2680	18.80	19.00	1.047	62.9	1.006	-0.05	1.110	1.169
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	40620	2593	18.96	19.00	1.009	62.9	1.006	0.01	1.030	1.046
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	39750	2506	18.66	19.00	1.081	62.9	1.006	0.06	1.000	1.088
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	40185	2549.5	18.51	19.00	1.119	62.9	1.006	0.08	1.050	1.182
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	41055	2636.5	18.76	19.00	1.057	62.9	1.006	0.02	1.100	1.169
	LTE Band 41	20M	QPSK	50	0	Back	5	1	Reduced	41490	2680	18.85	19.00	1.035	62.9	1.006	-0.05	0.820	0.854
	LTE Band 41	20M	QPSK	100	0	Back	5	1	Reduced	40620	2593	18.88	19.00	1.028	62.9	1.006	0.01	0.952	0.985
	LTE Band 41	20M	QPSK	1	0	Front	20	1	Full	40620	2593	23.43	24.00	1.140	62.9	1.006	0.09	0.146	0.167
	LTE Band 41	20M	QPSK	1	0	Back	24	1	Full	39750	2506	23.40	24.00	1.148	62.9	1.006	0.01	0.285	0.329

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Front	5	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.01	0.246	0.291
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Front	5	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.06	0.246	0.292
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Back	5	2	Reduced	518598	2592.99	15.77	16.50	1.183	0.04	0.303	0.358
51	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Back	5	2	Reduced	518598	2592.99	15.76	16.50	1.186	0.01	0.306	**0.363**
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Front	20	2	Full	518598	2592.99	22.92	23.00	1.019	0.07	0.159	0.162
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Back	24	2	Full	518598	2592.99	22.92	23.00	1.019	0.07	0.097	0.099

<WLAN2.4G SAR>

Plot No.	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)
	WLAN2.4GHz	802.11b 1Mbps	Front	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.09	0.258	0.300
52	WLAN2.4GHz	802.11b 1Mbps	Back	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.01	0.934	**1.087**
	WLAN2.4GHz	802.11b 1Mbps	Back	5	3+6	Reduced	6	2437	18.11	19.50	1.377	100	1.000	0.08	0.595	0.819
	WLAN2.4GHz	802.11b 1Mbps	Front	20	3+6	Full	1	2412	22.59	23.00	1.099	100	1.000	0.09	0.066	0.073
	WLAN2.4GHz	802.11b 1Mbps	Back	24	3+6	Full	1	2412	22.59	23.00	1.099	100	1.000	-0.03	0.131	0.144

<WLAN5G SAR>

Plot No.	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)
	WLAN5.3GHz	802.11a 6Mbps	Front	5	5+6	Reduced	60	5300	14.18	14.50	1.076	98.62	1.014	0	0.000	0.000
	WLAN5.3GHz	802.11a 6Mbps	Back	5	5+6	Reduced	60	5300	14.18	14.50	1.076	98.62	1.014	0.06	0.747	0.815
53	WLAN5.3GHz	802.11a 6Mbps	Back	5	5+6	Reduced	56	5280	14.17	14.50	1.079	98.62	1.014	-0.02	0.830	**0.908**
	WLAN5.3GHz	802.11a 6Mbps	Front	20	5+6	Full	60	5300	20.22	21.00	1.197	98.62	1.014	-0.02	0.000	0.000
	WLAN5.3GHz	802.11a 6Mbps	Back	24	5+6	Full	56	5280	20.20	21.00	1.202	98.62	1.014	-0.01	0.679	0.828
	WLAN5.5GHz	802.11a 6Mbps	Front	5	5+6	Reduced	132	5660	13.14	13.50	1.086	98.62	1.014	0	0.000	0.000
	WLAN5.5GHz	802.11a 6Mbps	Back	5	5+6	Reduced	132	5660	13.14	13.50	1.086	98.62	1.014	-0.03	0.660	0.727
54	WLAN5.5GHz	802.11a 6Mbps	Back	5	5+6	Reduced	116	5580	13.00	13.50	1.122	98.62	1.014	-0.03	0.796	**0.906**
	WLAN5.5GHz	802.11a 6Mbps	Front	20	5+6	Full	132	5660	19.78	21.00	1.324	98.62	1.014	-0.02	0.000	0.000
	WLAN5.5GHz	802.11a 6Mbps	Back	24	5+6	Full	116	5580	19.77	21.00	1.327	98.62	1.014	0.09	0.623	0.839
	WLAN5.8GHz	802.11a 6Mbps	Front	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.01	0.021	0.027
55	WLAN5.8GHz	802.11a 6Mbps	Back	5	5+6	Reduced	165	5825	17.06	18.00	1.242	98.62	1.014	0.08	0.805	**1.014**
	WLAN5.8GHz	802.11a 6Mbps	Back	5	5+6	Reduced	149	5745	17.05	18.00	1.245	98.62	1.014	0.02	0.701	0.885
	WLAN5.8GHz	802.11a 6Mbps	Front	20	5+6	Full	165	5825	21.48	22.00	1.127	98.62	1.014	0.01	0.021	0.024
	WLAN5.8GHz	802.11a 6Mbps	Back	24	5+6	Full	165	5825	21.48	22.00	1.127	98.62	1.014	0.07	0.741	0.847

<Bluetooth SAR>

Plot No.	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)
56	Bluetooth	1Mbps	Back	5	6	Full	39	2441	10.87	12.00	1.297	76.9	1.083	0.06	0.066	**0.093**

15.4 Product specific 10g SAR

<GSM SAR>

Plot No.	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)
57	GSM850	GPRS 3 Tx slots	Back	0	1	Full Power	189	836.4	30.66	31.50	1.213	0.18	1.320	**1.602**
	GSM850	GPRS 3 Tx slots	Bottom Side	0	1	Full Power	189	836.4	30.66	31.50	1.213	-0.08	0.919	1.115
	GSM1900	GPRS 3 Tx slots	Front	0	1	Reduced	512	1850.2	26.26	27.00	1.186	0.06	0.873	1.035
	GSM1900	GPRS 3 Tx slots	Back	0	1	Reduced	512	1850.2	26.26	27.00	1.186	-0.04	1.700	2.016
	GSM1900	GPRS 3 Tx slots	Back	0	1	Reduced	661	1880	25.92	27.00	1.282	0.09	1.780	2.283
	GSM1900	GPRS 3 Tx slots	Back	0	1	Reduced	810	1909.8	25.18	27.00	1.521	0.08	1.510	2.296
	GSM1900	GPRS 3 Tx slots	Bottom Side	0	1	Reduced	512	1850.2	26.26	27.00	1.186	-0.08	2.060	2.443
	GSM1900	GPRS 3 Tx slots	Bottom Side	0	1	Reduced	661	1880	25.92	27.00	1.282	-0.04	2.250	2.885
58	GSM1900	GPRS 3 Tx slots	Bottom Side	0	1	Reduced	810	1909.8	25.18	27.00	1.521	-0.05	2.010	**3.056**
	GSM1900	GPRS 3 Tx slots	Front	5	1	Full Power	512	1850.2	27.71	28.50	1.199	0.09	0.454	0.545
	GSM1900	GPRS 3 Tx slots	Back	7	1	Full Power	810	1909.8	26.65	28.50	1.531	0.01	0.976	1.494
	GSM1900	GPRS 3 Tx slots	Bottom Side	9	1	Full Power	810	1909.8	26.65	28.50	1.531	-0.05	0.675	1.033

<CDMA SAR>

Plot No.	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)
	CDMA BC1	RTAP 153.6Kbps	Front	0	1	Reduced	600	1880	21.30	21.50	1.047	0.09	1.040	1.089
	CDMA BC1	RTAP 153.6Kbps	Back	0	1	Reduced	600	1880	21.30	21.50	1.047	0.09	2.000	2.094
59	CDMA BC1	RTAP 153.6Kbps	Back	0	1	Reduced	1175	1908.75	21.04	21.50	1.112	0.01	2.440	**2.713**
	CDMA BC1	RTAP 153.6Kbps	Back	0	1	Reduced	25	1851.25	21.21	21.50	1.069	-0.04	2.010	2.149
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0	1	Reduced	600	1880	21.30	21.50	1.047	0.06	1.970	2.063
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0	1	Reduced	1175	1908.75	21.04	21.50	1.112	-0.03	2.140	2.379
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	0	1	Reduced	25	1851.25	21.21	21.50	1.069	-0.04	1.990	2.127
	CDMA BC1	RTAP 153.6Kbps	Front	5	1	Full Power	600	1880	24.63	25.00	1.089	0.02	0.421	0.458
	CDMA BC1	RTAP 153.6Kbps	Back	7	1	Full Power	1175	1908.75	24.61	25.00	1.094	-0.01	0.530	0.580
	CDMA BC1	RTAP 153.6Kbps	Bottom Side	9	1	Full Power	1175	1908.75	24.61	25.00	1.094	0.05	0.710	0.777

<WCDMA SAR>

Plot No.	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)
	WCDMA II	RMC 12.2Kbps	Front	0	1	Reduced	9400	1880	20.35	21.00	1.161	-0.01	1.340	1.556
	WCDMA II	RMC 12.2Kbps	Back	0	1	Reduced	9400	1880	20.35	21.00	1.161	0.08	2.130	2.474
	WCDMA II	RMC 12.2Kbps	Back	0	1	Reduced	9262	1852.4	20.33	21.00	1.167	0.1	2.240	2.614
60	WCDMA II	RMC 12.2Kbps	Back	0	1	Reduced	9538	1907.6	20.28	21.00	1.180	0.02	2.530	**2.986**
	WCDMA II	RMC 12.2Kbps	Bottom Side	0	1	Reduced	9400	1880	20.35	21.00	1.161	0.06	2.450	2.846
	WCDMA II	RMC 12.2Kbps	Bottom Side	0	1	Reduced	9262	1852.4	20.33	21.00	1.167	0.05	2.510	2.929
	WCDMA II	RMC 12.2Kbps	Bottom Side	0	1	Reduced	9538	1907.6	20.28	21.00	1.180	-0.02	2.390	2.821
	WCDMA II	RMC 12.2Kbps	Front	5	1	Full Power	9400	1880	23.84	24.00	1.038	0.01	0.866	0.898
	WCDMA II	RMC 12.2Kbps	Back	7	1	Full Power	9538	1907.6	23.35	24.00	1.161	0.09	1.500	1.742
	WCDMA II	RMC 12.2Kbps	Bottom Side	9	1	Full Power	9262	1852.4	23.75	24.00	1.059	0.01	1.480	1.568
	WCDMA IV	RMC 12.2Kbps	Front	0	1	Reduced	1413	1732.6	20.42	21.00	1.143	0.01	1.480	1.691
	WCDMA IV	RMC 12.2Kbps	Back	0	1	Reduced	1413	1732.6	20.42	21.00	1.143	0.07	2.060	2.354
	WCDMA IV	RMC 12.2Kbps	Back	0	1	Reduced	1312	1712.4	20.12	21.00	1.225	0.08	2.140	2.621
	WCDMA IV	RMC 12.2Kbps	Back	0	1	Reduced	1513	1752.6	20.25	21.00	1.189	0.08	2.430	2.888
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	1	Reduced	1413	1732.6	20.42	21.00	1.143	-0.08	2.160	2.469
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	1	Reduced	1312	1712.4	20.12	21.00	1.225	0.04	2.100	2.572
61	WCDMA IV	RMC 12.2Kbps	Bottom Side	0	1	Reduced	1513	1752.6	20.25	21.00	1.189	0.12	2.630	**3.126**
	WCDMA IV	RMC 12.2Kbps	Front	5	1	Full Power	1413	1732.6	23.40	24.00	1.148	0.02	1.080	1.240
	WCDMA IV	RMC 12.2Kbps	Back	7	1	Full Power	1513	1752.6	22.90	24.00	1.288	0.01	1.790	2.306
	WCDMA IV	RMC 12.2Kbps	Bottom Side	9	1	Full Power	1513	1752.6	22.90	24.00	1.288	0.09	1.600	2.061
62	WCDMA V	RMC 12.2Kbps	Back	0	1	Full Power	4182	836.4	23.66	24.00	1.081	0.12	1.200	**1.298**
	WCDMA V	RMC 12.2Kbps	Bottom Side	0	1	Full Power	4182	836.4	23.66	24.00	1.081	-0.03	0.804	0.869

<FDD LTE SAR>

Plot No.	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)
	LTE Band 2	20M	QPSK	1	0	Front	0	1	Reduced	18700	1860	20.45	21.00	1.135	-0.01	1.130	1.283
	LTE Band 2	20M	QPSK	50	0	Front	0	1	Reduced	18700	1860	20.43	21.00	1.140	0.02	0.930	1.060
	LTE Band 2	20M	QPSK	1	0	Back	0	1	Reduced	18700	1860	20.45	21.00	1.135	0.02	1.430	1.623
	LTE Band 2	20M	QPSK	1	0	Back	0	1	Reduced	18900	1880	20.38	21.00	1.153	0.01	1.540	1.776
	LTE Band 2	20M	QPSK	1	0	Back	0	1	Reduced	19100	1900	20.34	21.00	1.164	0.01	2.010	2.340
	LTE Band 2	20M	QPSK	50	0	Back	0	1	Reduced	18700	1860	20.43	21.00	1.140	-0.02	1.430	1.631
	LTE Band 2	20M	QPSK	50	0	Back	0	1	Reduced	18900	1880	20.36	21.00	1.159	0.02	1.540	1.785
	LTE Band 2	20M	QPSK	50	0	Back	0	1	Reduced	19100	1900	20.36	21.00	1.159	-0.01	1.980	2.294
	LTE Band 2	20M	QPSK	100	0	Back	0	1	Reduced	18900	1880	20.41	21.00	1.146	-0.06	2.010	2.302
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	1	Reduced	18700	1860	20.45	21.00	1.135	0.01	2.230	2.531
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	1	Reduced	18900	1880	20.38	21.00	1.153	0.06	2.100	2.422
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	1	Reduced	19100	1900	20.34	21.00	1.164	0.02	2.310	2.689
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	1	Reduced	18700	1860	20.43	21.00	1.140	0.08	2.140	2.440
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	1	Reduced	18900	1880	20.36	21.00	1.159	0.01	2.120	2.457
63	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	1	Reduced	19100	1900	20.36	21.00	1.159	-0.05	2.400	**2.781**
	LTE Band 2	20M	QPSK	100	0	Bottom Side	0	1	Reduced	18900	1880	20.41	21.00	1.146	0.04	2.080	2.383
	LTE Band 2 UL CA	20M	QPSK	1	0	Front	0	1	Reduced	18900	1880	10.65	12.00	1.365	-0.02	0.178	0.243
	LTE Band 2 UL CA	20M	QPSK	50	0	Front	0	1	Reduced	18900	1880	10.52	12.00	1.406	-0.03	0.179	0.252
	LTE Band 2 UL CA	20M	QPSK	1	0	Back	0	1	Reduced	18900	1880	10.65	12.00	1.365	0.11	0.231	0.315
	LTE Band 2 UL CA	20M	QPSK	50	0	Back	0	1	Reduced	18900	1880	10.52	12.00	1.406	0.1	0.231	0.325
	LTE Band 2 UL CA	20M	QPSK	1	0	Bottom Side	0	1	Reduced	18900	1880	10.65	12.00	1.365	0.06	0.360	0.491
	LTE Band 2 UL CA	20M	QPSK	50	0	Bottom Side	0	1	Reduced	18900	1880	10.52	12.00	1.406	0.09	0.364	0.512
	LTE Band 2	20M	QPSK	1	0	Front	5	1	Full Power	18700	1860	23.20	24.00	1.202	0.06	0.810	0.974
	LTE Band 2	20M	QPSK	1	0	Back	7	1	Full Power	19100	1900	23.33	24.00	1.167	-0.03	1.400	1.634
	LTE Band 2	20M	QPSK	1	0	Bottom Side	9	1	Full Power	19100	1900	23.33	24.00	1.167	-0.19	1.330	1.552
	LTE Band 7	20M	QPSK	1	0	Front	0	1	Reduced	21100	2535	21.46	21.50	1.009	-0.02	1.480	1.494
	LTE Band 7	20M	QPSK	50	0	Front	0	1	Reduced	21100	2535	21.42	21.50	1.019	0.01	1.270	1.294
	LTE Band 7	20M	QPSK	1	0	Back	0	1	Reduced	21100	2535	21.46	21.50	1.009	0.05	2.830	2.856
	LTE Band 7	20M	QPSK	1	0	Back	0	1	Reduced	20850	2510	21.38	21.50	1.028	-0.18	2.680	2.755
64	LTE Band 7	20M	QPSK	1	0	Back	0	1	Reduced	21350	2560	21.30	21.50	1.047	0.01	2.840	**2.974**
	LTE Band 7C	20M	QPSK	1	0	Back	0	1	Reduced	21350+21152	2560+2540.2	21.37	21.50	1.030	0.01	2.290	2.360
	LTE Band 7	20M	QPSK	50	0	Back	0	1	Reduced	21100	2535	21.42	21.50	1.019	0.01	2.590	2.638
	LTE Band 7	20M	QPSK	50	0	Back	0	1	Reduced	20850	2510	21.36	21.50	1.033	0.02	2.680	2.768
	LTE Band 7	20M	QPSK	50	0	Back	0	1	Reduced	21350	2560	21.35	21.50	1.035	-0.01	2.570	2.660
	LTE Band 7	20M	QPSK	100	0	Back	0	1	Reduced	21100	2535	21.30	21.50	1.047	-0.01	2.560	2.681
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0	1	Reduced	21100	2535	21.46	21.50	1.009	0.01	2.660	2.685
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0	1	Reduced	20850	2510	21.38	21.50	1.028	-0.09	2.740	2.817
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0	1	Reduced	21350	2560	21.30	21.50	1.047	0.05	2.820	2.953
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0	1	Reduced	21100	2535	21.42	21.50	1.019	0.03	2.300	2.343
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0	1	Reduced	20850	2510	21.36	21.50	1.033	0.02	2.410	2.489
	LTE Band 7	20M	QPSK	50	0	Bottom Side	0	1	Reduced	21350	2560	21.35	21.50	1.035	-0.01	2.490	2.578
	LTE Band 7	20M	QPSK	100	0	Bottom Side	0	1	Reduced	21100	2535	21.30	21.50	1.047	0.05	2.220	2.325
	LTE Band 7	20M	QPSK	1	0	Front	5	1	Full Power	21100	2535	23.54	24.00	1.112	0.09	1.120	1.245
	LTE Band 7	20M	QPSK	1	0	Back	7	1	Full Power	21350	2560	23.34	24.00	1.164	-0.02	2.380	2.771
	LTE Band 7	20M	QPSK	1	0	Bottom Side	9	1	Full Power	21350	2560	23.34	24.00	1.164	0.01	2.270	2.643
	LTE Band 7 UL CA	20M	QPSK	1	0	Back	0	2	Reduced	21100	2535	18.73	20.00	1.340	0.01	0.186	0.249
	LTE Band 7 UL CA	20M	QPSK	50	0	Back	0	2	Reduced	21100	2535	18.62	20.00	1.374	0.02	0.181	0.248
	LTE Band 7 UL CA	20M	QPSK	1	0	Top Side	0	2	Reduced	21100	2535	18.73	20.00	1.340	-0.08	0.301	0.403
	LTE Band 7 UL CA	20M	QPSK	50	0	Top Side	0	2	Reduced	21100	2535	18.62	20.00	1.374	-0.02	0.315	0.432
	LTE Band 7 UL CA	20M	QPSK	1	0	Front	5	2	Full Power	21100	2535	23.05	24.00	1.245	-0.11	0.258	0.321
	LTE Band 7 UL CA	20M	QPSK	1	0	Back	7	2	Full Power	21100	2535	23.05	24.00	1.245	-0.16	0.152	0.189
	LTE Band 7 UL CA	20M	QPSK	1	0	Top Side	8	2	Full Power	21100	2535	23.05	24.00	1.245	-0.01	0.298	0.371

Plot No.	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)
65	LTE Band 26	15M	QPSK	1	0	Back	0	1	Full Power	26865	831.5	23.37	24.00	1.156	0.06	1.480	**1.711**
	LTE Band 26	15M	QPSK	36	0	Back	0	1	Full Power	26865	831.5	22.20	23.00	1.202	0.19	0.755	0.908
	LTE Band 26	15M	QPSK	1	0	Bottom Side	0	1	Full Power	26865	831.5	23.37	24.00	1.156	-0.03	1.050	1.214
	LTE Band 26	15M	QPSK	36	0	Bottom Side	0	1	Full Power	26865	831.5	22.20	23.00	1.202	0.08	0.563	0.677
	LTE Band 66	20M	QPSK	1	0	Front	0	1	Reduced	132322	1745	20.35	20.50	1.035	0.03	1.140	1.180
	LTE Band 66	20M	QPSK	50	0	Front	0	1	Reduced	132322	1745	20.39	20.50	1.026	0.03	1.150	1.179
	LTE Band 66	20M	QPSK	1	0	Back	0	1	Reduced	132322	1745	20.35	20.50	1.035	0.03	2.010	2.081
	LTE Band 66	20M	QPSK	1	0	Back	0	1	Reduced	132072	1720	20.32	20.50	1.042	0.01	2.070	2.158
	LTE Band 66	20M	QPSK	1	0	Back	0	1	Reduced	132572	1770	20.31	20.50	1.045	0.02	2.570	2.685
	LTE Band 66	20M	QPSK	50	0	Back	0	1	Reduced	132322	1745	20.39	20.50	1.026	0.02	2.260	2.318
	LTE Band 66	20M	QPSK	50	0	Back	0	1	Reduced	132072	1720	20.31	20.50	1.045	-0.03	2.370	2.476
	LTE Band 66	20M	QPSK	50	0	Back	0	1	Reduced	132572	1770	20.35	20.50	1.035	0.02	2.800	2.898
	LTE Band 66	20M	QPSK	100	0	Back	0	1	Reduced	132322	1745	20.24	20.50	1.062	0.01	2.360	2.506
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0	1	Reduced	132322	1745	20.35	20.50	1.035	-0.04	2.240	2.319
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0	1	Reduced	132072	1720	20.32	20.50	1.042	0.02	2.220	2.314
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0	1	Reduced	132572	1770	20.31	20.50	1.045	-0.02	2.820	2.946
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0	1	Reduced	132322	1745	20.39	20.50	1.026	0.07	2.770	2.841
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0	1	Reduced	132072	1720	20.31	20.50	1.045	0.04	2.140	2.236
66	LTE Band 66	20M	QPSK	50	0	Bottom Side	0	1	Reduced	132572	1770	20.35	20.50	1.035	-0.04	2.920	**3.023**
	LTE Band 66	20M	QPSK	100	0	Bottom Side	0	1	Reduced	132322	1745	20.24	20.50	1.062	0.05	2.750	2.920
	LTE Band 66	20M	QPSK	1	0	Front	5	1	Full Power	132322	1745	23.27	24.00	1.183	-0.06	1.200	1.420
	LTE Band 66	20M	QPSK	1	0	Back	7mm	1	Full Power	132572	1770	23.02	24.00	1.253	-0.01	2.070	2.594
	LTE Band 66	20M	QPSK	1	0	Bottom Side	9mm	1	Full Power	132572	1770	23.02	24.00	1.253	-0.07	1.570	1.967

<TDD LTE SAR>

Plot No.	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)
	LTE Band 41	20M	QPSK	1	0	Front	0	1	Full Power	40620	2593	23.43	24.00	1.140	62.9	1.006	-0.01	1.540	1.767
	LTE Band 41	20M	QPSK	1	0	Front	0	1	Full Power	39750	2506	23.40	24.00	1.148	62.9	1.006	0.05	1.150	1.328
	LTE Band 41	20M	QPSK	1	0	Front	0	1	Full Power	40185	2549.5	23.33	24.00	1.167	62.9	1.006	0.08	1.670	1.960
	LTE Band 41	20M	QPSK	1	0	Front	0	1	Full Power	41055	2636.5	23.34	24.00	1.164	62.9	1.006	-0.01	1.520	1.780
	LTE Band 41	20M	QPSK	1	0	Front	0	1	Full Power	41490	2680	23.25	24.00	1.189	62.9	1.006	0.05	1.480	1.770
	LTE Band 41	20M	QPSK	50	0	Front	0	1	Full Power	40620	2593	22.42	23.00	1.143	62.9	1.006	-0.02	0.871	1.001
	LTE Band 41	20M	QPSK	100	0	Front	0	1	Full Power	40620	2593	22.29	23.00	1.178	62.9	1.006	0.06	0.631	0.748
	LTE Band 41	20M	QPSK	1	0	Back	0	1	Full Power	40620	2593	23.43	24.00	1.140	62.9	1.006	-0.04	2.070	2.374
	LTE Band 41	20M	QPSK	1	0	Back	0	1	Full Power	39750	2506	23.40	24.00	1.148	62.9	1.006	0.08	2.530	2.922
	LTE Band 41	20M	QPSK	1	0	Back	0	1	Full Power	40185	2549.5	23.33	24.00	1.167	62.9	1.006	-0.02	2.320	2.723
	LTE Band 41	20M	QPSK	1	0	Back	0	1	Full Power	41055	2636.5	23.34	24.00	1.164	62.9	1.006	0.01	2.520	2.951
	LTE Band 41	20M	QPSK	1	0	Back	0	1	Full Power	41490	2680	23.25	24.00	1.189	62.9	1.006	0.06	2.040	2.439
	LTE Band 41	20M	QPSK	50	0	Back	0	1	Full Power	40620	2593	22.42	23.00	1.143	62.9	1.006	0.08	1.350	1.552
	LTE Band 41	20M	QPSK	50	0	Back	0	1	Full Power	39750	2506	22.22	23.00	1.197	62.9	1.006	-0.02	1.480	1.782
	LTE Band 41	20M	QPSK	50	0	Back	0	1	Full Power	40185	2549.5	22.08	23.00	1.236	62.9	1.006	0.01	1.440	1.790
	LTE Band 41	20M	QPSK	50	0	Back	0	1	Full Power	41055	2636.5	22.14	23.00	1.219	62.9	1.006	0.09	1.490	1.827
	LTE Band 41	20M	QPSK	50	0	Back	0	1	Full Power	41490	2680	22.36	23.00	1.159	62.9	1.006	0.05	1.400	1.632
	LTE Band 41	20M	QPSK	100	0	Back	0	1	Full Power	40620	2593	22.29	23.00	1.178	62.9	1.006	-0.01	1.350	1.599
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0	1	Full Power	40620	2593	23.43	24.00	1.140	62.9	1.006	0.09	2.080	2.386
67	LTE Band 41	20M	QPSK	1	0	Bottom Side	0	1	Full Power	39750	2506	23.40	24.00	1.148	62.9	1.006	0.05	2.770	**3.199**
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0	1	Full Power	40185	2549.5	23.33	24.00	1.167	62.9	1.006	0.06	2.660	3.122
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0	1	Full Power	41055	2636.5	23.34	24.00	1.164	62.9	1.006	0.07	1.780	2.085
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0	1	Full Power	41490	2680	23.25	24.00	1.189	62.9	1.006	0.05	1.520	1.817
	LTE Band 41	20M	QPSK	50	0	Bottom Side	0	1	Full Power	40620	2593	22.42	23.00	1.143	62.9	1.006	0.01	1.240	1.426
	LTE Band 41	20M	QPSK	100	0	Bottom Side	0	1	Full Power	40620	2593	22.29	23.00	1.178	62.9	1.006	-0.01	1.250	1.481

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Front	0	2	Full Power	518598	2592.99	22.92	23.00	1.019	0.07	0.995	1.013
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Front	0	2	Full Power	518598	2592.99	22.85	23.00	1.035	0.04	0.854	0.884
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Back	0	2	Full Power	518598	2592.99	22.92	23.00	1.019	0.07	0.870	0.886
	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Back	0	2	Full Power	518598	2592.99	22.85	23.00	1.035	0.04	0.873	0.904
	FR1 n41	100M	QPSK	1	137	DFT-30KHz	Top Side	0	2	Full Power	518598	2592.99	22.92	23.00	1.019	-0.02	1.540	1.569
68	FR1 n41	100M	QPSK	135	69	DFT-30KHz	Top Side	0	2	Full Power	518598	2592.99	22.85	23.00	1.035	-0.02	1.520	**1.573**

<WLAN2.4G SAR>

Plot No.	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)
69	WLAN2.4GHz	802.11b 1Mbps	Back	0	3+6	Full Power	1	2412	22.59	23.00	1.099	100	1.000	0.03	0.953	**1.047**

<WLAN5G SAR>

Plot No.	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)
	WLAN5.2GHz	802.11a 6Mbps	Back	0	5+6	Full Power	44	5220	20.15	21.00	1.216	98.62	1.014	0.1	1.660	2.047
70	WLAN5.2GHz	802.11a 6Mbps	Back	0	5+6	Full Power	48	5240	20.09	21.00	1.233	98.62	1.014	0.09	1.680	**2.101**
	WLAN5.3GHz	802.11a 6Mbps	Front	0	5+6	Full Power	60	5300	20.22	21.00	1.197	98.62	1.014	0.03	0.037	0.045
71	WLAN5.3GHz	802.11a 6Mbps	Back	0	5+6	Full Power	60	5300	20.22	21.00	1.197	98.62	1.014	-0.02	1.710	**2.075**
	WLAN5.3GHz	802.11a 6Mbps	Back	0	5+6	Full Power	56	5280	20.20	21.00	1.202	98.62	1.014	0.03	1.660	2.024
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0	5+6	Full Power	60	5300	20.22	21.00	1.265	98.62	1.014	0.02	0.085	0.121
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0	5+6	Full Power	60	5300	20.22	21.00	1.197	98.62	1.014	0.01	0.227	0.275
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0	5+6	Full Power	60	5300	20.22	21.00	1.197	98.62	1.014	0.03	0.100	0.121
	WLAN5.3GHz	802.11a 6Mbps	Back	7	5+6	Full Power	60	5300	20.22	21.00	1.197	98.62	1.014	0.033	0.459	0.557
	WLAN5.5GHz	802.11a 6Mbps	Front	0	5+6	Full Power	132	5660	19.78	21.00	1.324	98.62	1.014	0.03	0.070	0.094
	WLAN5.5GHz	802.11a 6Mbps	Back	0	5+6	Full Power	132	5660	19.78	21.00	1.324	98.62	1.014	0.02	1.450	1.947
72	WLAN5.5GHz	802.11a 6Mbps	Back	0	5+6	Full Power	116	5580	19.77	21.00	1.327	98.62	1.014	0.02	1.590	**2.140**
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0	5+6	Full Power	132	5660	19.78	21.00	1.324	98.62	1.014	0.03	0.164	0.220
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0	5+6	Full Power	132	5660	19.78	21.00	1.324	98.62	1.014	0.03	0.201	0.270
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0	5+6	Full Power	132	5660	19.78	21.00	1.324	98.62	1.014	0.05	0.132	0.177
	WLAN5.8GHz	802.11a 6Mbps	Back	0	5+6	Full Power	165	5825	21.48	22.00	1.127	98.62	1.014	0.06	1.770	2.023
73	WLAN5.8GHz	802.11a 6Mbps	Back	0	5+6	Full Power	149	5745	20.89	22.00	1.291	98.62	1.014	0.01	1.590	**2.082**

15.5 Repeated SAR Measurement

<1g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Ant.	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	GSM1900	-	-	-	-	GPRS 3 Tx slots	Bottom Side	5	1	Reduced	512	1850.2	21.22	21.50	1.067	-	-	-0.08	1.060	1	1.131
2nd	GSM1900	-	-	-	-	GPRS 3 Tx slots	Bottom Side	5	1	Reduced	512	1850.2	21.22	21.50	1.067	-	-	0.06	1.010	1.050	1.077
1st	CDMA BC0 -	-	-	-	-	RC3 SO32(F+SCH)	Back	5	1	Full	384	836.52	24.86	25.00	1.033	-	-	0.07	1.100	1	1.136
2nd	CDMA BC0 -	-	-	-	-	RC3 SO32(F+SCH)	Back	5	1	Full	384	836.52	24.86	25.00	1.033	-	-	-0.04	1.080	1.019	1.115
1st	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5	1	Reduced	132072	1720	16.41	17.00	1.146	-	-	-0.02	0.932	1	1.068
2nd	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5	1	Reduced	132072	1720	16.41	17.00	1.146	-	-	-0.06	0.928	1.004	1.063
1st	LTE Band 41	20M	QPSK	1	0	-	Back	5	1	Reduced	39750	2506	18.78	19.00	1.052	62.9	1.006	0.02	1.120	1	1.185
2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5	1	Reduced	39750	2506	18.78	19.00	1.052	62.9	1.006	-0.06	1.070	1.047	1.132
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.01	0.934	1	1.087
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5	3+6	Reduced	1	2412	18.84	19.50	1.164	100	1.000	0.01	0.900	1.038	1.048
1st	WLAN5.2GHz	-	-	-	-	802.11a 6Mbps	Back	5	3+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	-0.04	0.894	1	0.996
2nd	WLAN5.2GHz	-	-	-	-	802.11a 6Mbps	Back	5	3+6	Reduced	44	5220	13.59	14.00	1.099	98.62	1.014	0.06	0.886	1.009	0.987

<10g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Ant.	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 II					RMC 12.2Kbps	Back	0	1	Reduced	9538	1907.6	20.28	21.00	1.180	-	-	0.02	2.530	1	2.986
2nd	WCDMA II					RMC 12.2Kbps	Back	0	1	Reduced	9538	1907.6	20.28	21.00	1.180	-	-	0.11	2.440	1.037	2.880
1st	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	0	1	Reduced	132572	1770	20.35	20.50	1.035	-	-	-0.04	2.920	1	3.023
2nd	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	0	1	Reduced	132572	1770	20.35	20.50	1.035	-	-	0.12	2.840	1.028	2.940

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
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. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	GSM Voice + WLAN2.4GHz MIMO	Yes	Yes		Yes
2.	GPRS/EDGE + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
3.	CDMA + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
4.	WCDMA + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
5.	LTE + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
6.	GSM Voice + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
7.	GPRS/EDGE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
8.	CDMA + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
9.	WCDMA + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
10.	LTE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
11.	GSM Voice + WLAN5.2/5.8GHz MIMO	Yes	Yes		Yes
12.	GPRS/EDGE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
13.	CDMA + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
14.	WCDMA + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
15.	LTE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
16.	GSM Voice + WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes		Yes
17.	GPRS/EDGE + WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
18.	CDMA + WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
19.	WCDMA + WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
20.	LTE + WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
21.	GSM Voice + WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes		Yes
22.	GPRS/EDGE + WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes		Yes
23.	CDMA + WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes		Yes
24.	WCDMA + WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes		Yes
25.	LTE + WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes		Yes
26.	GSM Voice + Bluetooth	Yes	Yes		Yes
27.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
28.	CDMA + Bluetooth	Yes	Yes	Yes	Yes
29.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
30.	LTE + Bluetooth	Yes	Yes	Yes	Yes
31.	5G NR + LTE+ 2.4GHz WLAN MIMO	Yes	Yes	Yes	Yes
32.	5G NR+ LTE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
33.	5G NR+ LTE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
34.	5G NR+ LTE + WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes		Yes
35.	5G NR+ LTE + WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
36.	5G NR + LTE + Bluetooth	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. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
6. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
7. According to the EUT character, WLAN 5GHz and Bluetooth can transmit simultaneously.
8. 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. 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 ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.

iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

v) The SPLSR calculated results please refer to section 16.5.

16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN MIMO 1g SAR (W/kg)	3 5GHz WLAN MIMO 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.292	1.037	0.167	0.026	1.33	0.49
		Right Tilted	0.138	0.545	0.216	0.026	0.68	0.38
		Left Cheek	0.233	0.424	0.184	0.026	0.66	0.44
		Left Tilted	0.149	0.443	0.261	0.026	0.59	0.44
	GSM1900	Right Cheek	0.054	1.037	0.167	0.026	1.09	0.25
		Right Tilted	0.047	0.545	0.216	0.026	0.59	0.29
		Left Cheek	0.062	0.424	0.184	0.026	0.49	0.27
		Left Tilted	0.053	0.443	0.261	0.026	0.50	0.34
WCDMA	WCDMA II	Right Cheek	0.099	1.037	0.167	0.026	1.14	0.29
		Right Tilted	0.080	0.545	0.216	0.026	0.63	0.32
		Left Cheek	0.131	0.424	0.184	0.026	0.56	0.34
		Left Tilted	0.096	0.443	0.261	0.026	0.54	0.38
	WCDMA IV	Right Cheek	0.176	1.037	0.167	0.026	1.21	0.37
		Right Tilted	0.070	0.545	0.216	0.026	0.62	0.31
		Left Cheek	0.117	0.424	0.184	0.026	0.54	0.33
		Left Tilted	0.096	0.443	0.261	0.026	0.54	0.38
	WCDMA V	Right Cheek	0.330	1.037	0.167	0.026	1.37	0.52
		Right Tilted	0.147	0.545	0.216	0.026	0.69	0.39
		Left Cheek	0.069	0.424	0.184	0.026	0.49	0.28
		Left Tilted	0.137	0.443	0.261	0.026	0.58	0.42
CDMA	CDMA2000 BC0	Right Cheek	0.297	1.037	0.167	0.026	1.33	0.49
		Right Tilted	0.142	0.545	0.216	0.026	0.69	0.38
		Left Cheek	0.191	0.424	0.184	0.026	0.62	0.40
		Left Tilted	0.115	0.443	0.261	0.026	0.56	0.40
	CDMA2000 BC1	Right Cheek	0.042	1.037	0.167	0.026	1.08	0.24
		Right Tilted	0.024	0.545	0.216	0.026	0.57	0.27
		Left Cheek	0.040	0.424	0.184	0.026	0.46	0.25
		Left Tilted	0.038	0.443	0.261	0.026	0.48	0.33
LTE	LTE Band 2	Right Cheek	0.148	1.037	0.167	0.026	1.19	0.34
		Right Tilted	0.093	0.545	0.216	0.026	0.64	0.34
		Left Cheek	0.074	0.424	0.184	0.026	0.50	0.28
		Left Tilted	0.105	0.443	0.261	0.026	0.55	0.39
	LTE Band 7	Right Cheek	0.024	1.037	0.167	0.026	1.06	0.22
		Right Tilted	0.034	0.545	0.216	0.026	0.58	0.28
		Left Cheek	0.038	0.424	0.184	0.026	0.46	0.25
		Left Tilted	0.037	0.443	0.261	0.026	0.48	0.32
	LTE Band 12	Right Cheek	0.159	1.037	0.167	0.026	1.20	0.35
		Right Tilted	0.105	0.545	0.216	0.026	0.65	0.35
		Left Cheek	0.146	0.424	0.184	0.026	0.57	0.36
		Left Tilted	0.127	0.443	0.261	0.026	0.57	0.41

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
LTE	LTE Band 26	Right Cheek	0.310	1.037	0.167	0.026	1.35	0.50
		Right Tilted	0.132	0.545	0.216	0.026	0.68	0.37
		Left Cheek	0.205	0.424	0.184	0.026	0.63	0.42
		Left Tilted	0.155	0.443	0.261	0.026	0.60	0.44
	LTE Band 66	Right Cheek	0.136	1.037	0.167	0.026	1.17	0.33
		Right Tilted	0.071	0.545	0.216	0.026	0.62	0.31
		Left Cheek	0.111	0.424	0.184	0.026	0.54	0.32
		Left Tilted	0.119	0.443	0.261	0.026	0.56	0.41
	LTE Band 41	Right Cheek	0.043	1.037	0.167	0.026	1.08	0.24
		Right Tilted	0.026	0.545	0.216	0.026	0.57	0.27
		Left Cheek	0.024	0.424	0.184	0.026	0.45	0.23
		Left Tilted	0.070	0.443	0.261	0.026	0.51	0.36

WWAN Band	Exposure Position	1	2	3	4	5	**1+2+3 Summed 1g SAR (W/kg)**	**1+2+4+5 Summed 1g SAR (W/kg)**
		LTE Band 2A	LTE Band 7A	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
CA_2A_7A	Right Cheek	0.148	0.113	1.037	0.167	0.026	1.30	0.45
	Right Tilted	0.093	0.119	0.545	0.216	0.026	0.76	0.45
	Left Cheek	0.074	0.179	0.424	0.184	0.026	0.68	0.46
	Left Tilted	0.105	0.187	0.443	0.261	0.026	0.74	0.58

5G NR

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
NR	N41	Right Cheek	0.384	1.037	0.167	0.026	1.42	0.58
		Right Tilted	0.411	0.545	0.216	0.026	0.96	0.65
		Left Cheek	0.574	0.424	0.184	0.026	1.00	0.78
		Left Tilted	0.631	0.443	0.261	0.026	1.07	0.92

16.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	SPLSR	Case No	1+3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth						
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Front	0.653	0.3	0.027	0.093	0.95			0.77		
		Back	1.158	1.087	1.014	0.093	**2.25**	**0.03**	**#01**	**2.27**	**0.03**	**#02**
		Left side	0.196	0.236	0.219	0.093	0.43			0.51		
		Right side	0.338	0.341	0.123	0.093	0.68			0.55		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	0.791				0.79			0.79		
	GSM1900	Front	0.355	0.3	0.027	0.093	0.66			0.48		
		Back	1.072	1.087	1.014	0.093	**2.16**	**0.03**	**#03**	**2.18**	**0.03**	**#04**
		Left side	0.04	0.236	0.219	0.093	0.28			0.35		
		Right side	0.059	0.341	0.123	0.093	0.40			0.28		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.131				1.13			1.13		
WCDMA	WCDMA II	Front	0.421	0.3	0.027	0.093	0.72			0.54		
		Back	1.041	1.087	1.014	0.093	**2.13**	**0.03**	**#05**	**2.15**	**0.03**	**#06**
		Left side	0.038	0.236	0.219	0.093	0.27			0.35		
		Right side	0.036	0.341	0.123	0.093	0.38			0.25		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.17				1.17			1.17		
	WCDMA IV	Front	0.526	0.3	0.027	0.093	0.83			0.65		
		Back	0.996	1.087	1.014	0.093	**2.08**	**0.03**	**#07**	**2.10**	**0.03**	**#08**
		Left side	0.042	0.236	0.219	0.093	0.28			0.35		
		Right side	0.059	0.341	0.123	0.093	0.40			0.28		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.125				1.13			1.13		
	WCDMA V	Front	0.643	0.3	0.027	0.093	0.94			0.76		
		Back	1.063	1.087	1.014	0.093	**2.15**	**0.03**	**#09**	**2.17**	**0.03**	**#10**
		Left side	0.176	0.236	0.219	0.093	0.41			0.49		
		Right side	0.297	0.341	0.123	0.093	0.64			0.51		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.076				1.08			1.08		
CDMA	CDMA2000 BC0	Front	0.677	0.3	0.027	0.093	0.98			0.80		
		Back	1.095	1.087	1.014	0.093	**2.18**	**0.03**	**#11**	**2.20**	**0.03**	**#12**
		Left side	0.198	0.236	0.219	0.093	0.43			0.51		
		Right side	0.217	0.341	0.123	0.093	0.56			0.43		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.076				1.08			1.08		
	CDMA2000 BC1	Front	0.49	0.3	0.027	0.093	0.79			0.61		
		Back	0.848	1.087	1.014	0.093	**1.94**	**0.02**	**#13**	**1.96**	**0.03**	**#14**
		Left side	0.032	0.236	0.219	0.093	0.27			0.34		
		Right side	0.038	0.341	0.123	0.093	0.38			0.25		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.017				1.02			1.02		
LTE	LTE Band 2	Front	0.683	0.3	0.027	0.093	0.98			0.80		
		Back	1.081	1.087	1.014	0.093	**2.17**	**0.03**	**#15**	**2.19**	**0.03**	**#16**
		Left side	0.071	0.236	0.219	0.093	0.31			0.38		
		Right side	0.074	0.341	0.123	0.093	0.42			0.29		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.123				1.12			1.12		

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN MIMO 1g SAR (W/kg)	3 5GHz WLAN MIMO 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	SPLSR	Case No	1+3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
LTE	LTE Band 7	Front	0.512	0.3	0.027	0.093	0.81			0.63		
		Back	1.192	1.087	1.014	0.093	**2.28**	**0.03**	**#17**	**2.30**	**0.03**	**#18**
		Left side	0.017	0.236	0.219	0.093	0.25			0.33		
		Right side	0.177	0.341	0.123	0.093	0.52			0.39		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.122				1.12			1.12		
	LTE Band 12	Front	0.515	0.3	0.027	0.093	0.82			0.64		
		Back	1.044	1.087	1.014	0.093	**2.13**	**0.03**	**#19**	**2.15**	**0.03**	**#20**
		Left side	0.34	0.236	0.219	0.093	0.58			0.65		
		Right side	0.438	0.341	0.123	0.093	0.78			0.65		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	0.784				0.78			0.78		
	LTE Band 26	Front	0.715	0.3	0.027	0.093	1.02			0.84		
		Back	1.112	1.087	1.014	0.093	**2.20**	**0.03**	**#21**	**2.22**	**0.03**	**#22**
		Left side	0.204	0.236	0.219	0.093	0.44			0.52		
		Right side	0.32	0.341	0.123	0.093	0.66			0.54		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.154				1.15			1.15		
	LTE Band 66	Front	0.555	0.3	0.027	0.093	0.86			0.68		
		Back	1.012	1.087	1.014	0.093	**2.10**	**0.03**	**#23**	**2.12**	**0.03**	**#24**
		Left side	0.05	0.236	0.219	0.093	0.29			0.36		
		Right side	0.089	0.341	0.123	0.093	0.43			0.31		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.068				1.07			1.07		
	LTE Band 41	Front	0.367	0.3	0.027	0.093	0.67			0.49		
		Back	1.185	1.087	1.014	0.093	**2.27**	**0.03**	**#25**	**2.29**	**0.03**	**#26**
		Left side	0.012	0.236	0.219	0.093	0.25			0.32		
		Right side	0.104	0.341	0.123	0.093	0.45			0.32		
		Top side		0.456	0.157	0.093	0.46			0.25		
		Bottom side	1.18				1.18			1.18		

WWAN Band	Exposure Position	1 LTE Band 2A 1g SAR (W/kg)	2 LTE Band 7A 1g SAR (W/kg)	3 2.4GHz WLAN MIMO 1g SAR (W/kg)	4 5GHz WLAN MIMO 1g SAR (W/kg)	5 Bluetooth 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+2+4+5 Summed 1g SAR (W/kg)
CA_2A_7A	Front	0.108	0.171	0.3	0.027	0.093	0.58	0.40
	Back	0.196	0.2	1.087	1.014	0.093	1.48	1.50
	Left side	0.013	0.007	0.236	0.219	0.093	0.26	0.33
	Right side	0.017	0.04	0.341	0.123	0.093	0.40	0.27
	Top side		0.34	0.456	0.157	0.093	0.80	0.59
	Bottom side	0.323					0.32	0.32

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WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	SPLSR	Case No	1+3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth						
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
NR	N41	Front	0.292	0.3	0.027	0.093	0.59			0.41		
		Back	0.363	1.087	1.014	0.093	1.45			1.47		
		Left side	0.007	0.236	0.219	0.093	0.24			0.32		
		Right side	0.046	0.341	0.123	0.093	0.39			0.26		
		Top side	0.397	0.456	0.157	0.093	0.85			0.65		

16.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN MIMO 1g SAR (W/kg)	3 5GHz WLAN MIMO 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	SPLSR	Case No	1+3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front at 5mm	0.653	0.3	0.027	0.093	0.95			0.77		
		Back at 5mm	1.158	1.087	1.014	0.093	**2.25**	**0.03**	**#01**	**2.27**	**0.03**	**#02**
	GSM1900	Front at 5mm	0.355	0.3	0.027	0.093	0.66			0.48		
		Back at 5mm	1.072	1.087	1.014	0.093	**2.16**	**0.03**	**#03**	**2.18**	**0.03**	**#04**
WCDMA	WCDMA II	Front at 5mm	0.421	0.3	0.027	0.093	0.72			0.54		
		Back at 5mm	1.041	1.087	1.014	0.093	**2.13**	**0.03**	**#05**	**2.15**	**0.03**	**#06**
	WCDMA IV	Front at 5mm	0.526	0.3	0.027	0.093	0.83			0.65		
		Back at 5mm	0.996	1.087	1.014	0.093	**2.08**	**0.03**	**#07**	**2.10**	**0.03**	**#08**
	WCDMA V	Front at 5mm	0.643	0.3	0.027	0.093	0.94			0.76		
		Back at 5mm	1.063	1.087	1.014	0.093	**2.15**	**0.03**	**#09**	**2.17**	**0.03**	**#10**
CDMA	CDMA2000 BC0	Front at 5mm	0.763	0.3	0.027	0.093	1.06			0.88		
		Back at 5mm	1.144	1.087	1.014	0.093	**2.23**	**0.03**	**#27**	**2.25**	**0.03**	**#28**
	CDMA2000 BC1	Front at 5mm	0.439	0.3	0.027	0.093	0.74			0.56		
		Back at 5mm	0.995	1.087	1.014	0.093	**2.08**	**0.03**	**#29**	**2.10**	**0.03**	**#30**
LTE	LTE Band 2	Front at 5mm	0.683	0.3	0.027	0.093	0.98			0.80		
		Back at 5mm	1.081	1.087	1.014	0.093	**2.17**	**0.03**	**#15**	**2.19**	**0.03**	**#16**
	LTE Band 7	Front at 5mm	0.512	0.3	0.027	0.093	0.81			0.63		
		Back at 5mm	1.192	1.087	1.014	0.093	**2.28**	**0.03**	**#17**	**2.30**	**0.03**	**#18**
	LTE Band 12	Front at 5mm	0.515	0.3	0.027	0.093	0.82			0.64		
		Back at 5mm	1.044	1.087	1.014	0.093	**2.13**	**0.03**	**#19**	**2.15**	**0.03**	**#20**
	LTE Band 26	Front at 5mm	0.715	0.3	0.027	0.093	1.02			0.84		
		Back at 5mm	1.112	1.087	1.014	0.093	**2.20**	**0.03**	**#21**	**2.22**	**0.03**	**#22**
	LTE Band 66	Front at 5mm	0.555	0.3	0.027	0.093	0.86			0.68		
		Back at 5mm	1.012	1.087	1.014	0.093	**2.10**	**0.03**	**#23**	**2.12**	**0.03**	**#24**
	LTE Band 41	Front at 5mm	0.367	0.3	0.027	0.093	0.67			0.49		
		Back at 5mm	1.185	1.087	1.014	0.093	**2.27**	**0.03**	**#25**	**2.29**	**0.03**	**#26**

WWAN Band	Exposure Position	1 LTE Band 2A 1g SAR (W/kg)	2 LTE Band 7A 1g SAR (W/kg)	3 2.4GHz WLAN MIMO 1g SAR (W/kg)	4 5GHz WLAN MIMO 1g SAR (W/kg)	5 Bluetooth 1g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+2+4+5 Summed 1g SAR (W/kg)
CA_2A_7A	Front at 5mm	0.108	0.171	0.300	0.027	0.093	0.58	0.40
	Back at 5mm	0.196	0.200	1.087	1.014	0.093	**1.48**	1.50

5GNR

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN MIMO 1g SAR (W/kg)	3 5GHz WLAN MIMO 1g SAR (W/kg)	4 Bluetooth 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	SPLSR	Case No	1+3+4 Summed 1g SAR (W/kg)	SPLSR	Case No
NR	N41	Front at 5mm	0.292	0.3	0.027	0.093	0.59			0.41		
		Back at 5mm	0.363	1.087	1.014	0.093	1.45			1.47		

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM	GSM850	Front at 20mm	0.356	0.073	0.024	0.093	0.43	0.47
		Back at 24mm	0.399	0.144	0.847	0.093	0.54	1.34
	GSM1900	Front at 20mm	0.164	0.073	0.024	0.093	0.24	0.28
		Back at 24mm	0.224	0.144	0.847	0.093	0.37	1.16
WCDMA	WCDMA II	Front at 20mm	0.271	0.073	0.024	0.093	0.34	0.39
		Back at 24mm	0.399	0.144	0.847	0.093	0.54	1.34
	WCDMA IV	Front at 20mm	0.347	0.073	0.024	0.093	0.42	0.46
		Back at 24mm	0.44	0.144	0.847	0.093	0.58	1.38
	WCDMA V	Front at 20mm	0.315	0.073	0.024	0.093	0.39	0.43
		Back at 24mm	0.358	0.144	0.847	0.093	0.50	1.30
CDMA	CDMA2000 BC1	Front at 20mm	0.144	0.073	0.024	0.093	0.22	0.26
		Back at 24mm	0.295	0.144	0.847	0.093	0.44	1.24
LTE	LTE Band 2	Front at 20mm	0.397	0.073	0.024	0.093	0.47	0.51
		Back at 24mm	0.417	0.144	0.847	0.093	0.56	1.36
	LTE Band 7	Front at 20mm	0.338	0.073	0.024	0.093	0.41	0.46
		Back at 24mm	0.359	0.144	0.847	0.093	0.50	1.30
	LTE Band 26	Front at 20mm	0.208	0.073	0.024	0.093	0.28	0.33
		Back at 24mm	0.202	0.144	0.847	0.093	0.35	1.14
	LTE Band 66	Front at 20mm	0.382	0.073	0.024	0.093	0.46	0.50
		Back at 24mm	0.416	0.144	0.847	0.093	0.56	1.36
	LTE Band 41	Front at 20mm	0.167	0.073	0.024	0.093	0.24	0.28
		Back at 24mm	0.329	0.144	0.847	0.093	0.47	1.27

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+2+4+5 Summed 1g SAR (W/kg)
		LTE Band 2A	LTE Band 7A	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
CA_2A_7A	Front at 20mm	0.397	0.019	0.073	0.024	0.093	0.49	0.53
	Back at 24mm	0.417	0.162	0.144	0.847	0.093	0.72	1.52

5GNR

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
NR	N41	Front at 20mm	0.162	0.073	0.024	0.093	0.24	0.28
		Back at 24mm	0.099	0.144	0.847	0.093	0.24	1.04

16.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 10g SAR (W/kg)	2 2.4GHz WLAN MIMO 10g SAR (W/kg)	3 5GHz WLAN MIMO 10g SAR (W/kg)	1+2 Summed 10g SAR (W/kg)	SPLSR	Case No	1+3 Summed 10g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	front at 0mm			0.094				0.09		
		Back at 0mm	1.602	1.047	2.14	2.65			**3.74**		
		Left Side at 0mm			0.22				0.22		
		Right Side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	1.115			1.12			1.12		
	GSM1900	front at 0mm	1.035		0.094	1.04			1.13		
		Back at 0mm	2.296	1.047	2.14	3.34			**4.44**	**0.09**	**#32**
		Left Side at 0mm			0.22				0.22		
		Right Side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	3.056			3.06			3.06		
WCDMA	WCDMA II	front at 0mm	1.556		0.094	1.56			1.65		
		Back at 0mm	2.986	1.047	2.14	**4.03**	**0.07**	**#33**	**5.13**	**0.10**	**#34**
		Left Side at 0mm			0.22				0.22		
		Right Side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	2.975			2.98			2.98		
	WCDMA IV	front at 0mm	1.691		0.094	1.69			1.79		
		Back at 0mm	2.888	1.047	2.14	3.94			**5.03**	**0.10**	**#35**
		Left Side at 0mm			0.22				0.22		
		Right Side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	3.126			3.13			3.13		
	WCDMA V	Front at 0mm			0.094				0.09		
		Back at 0mm	1.298	1.047	2.14	2.35			3.44		
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	0.869			0.87			0.87		
CDMA	CDMA2000 BC1	Front at 0mm	1.089		0.094	1.09			1.18		
		Back at 0mm	2.713	1.047	2.14	3.76			**4.85**	**0.09**	**#36**
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	2.379			2.38			2.38		
LTE	LTE Band 2	Front at 0mm	1.283		0.094	1.28			1.38		
		Back at 0mm	2.34	1.047	2.14	3.39			**4.48**	**0.08**	**#37**
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	2.781			2.78			2.78		
	LTE Band 7	Front at 0mm	1.494		0.094	1.49			1.59		

		Back at 0mm	2.974	1.047	2.14	**4.02**	**0.07**	**#38**	**5.11**	**0.10**	**#39**
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	2.953			2.95			2.95		
	LTE Band 26	Front at 0mm			0.094				0.09		
		Back at 0mm	1.711	1.047	2.14	2.76			3.85		
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	1.214			1.21			1.21		
	LTE Band 66	Front at 0mm	1.18		0.094	1.18			1.27		
		Back at 0mm	2.898	1.047	2.14	**3.95**			**5.04**	**0.10**	**#41**
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	3.023			3.02			3.02		
	LTE Band 41	Front at 0mm	1.96		0.094	1.96			2.05		
		Back at 0mm	2.951	1.047	2.14	**4.00**	**0.07**	**#42**	**5.09**	**0.10**	**#43**
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm			0.177				0.18		
		Bottom side at 0mm	3.199			3.20			3.20		

WWAN Band	Exposure Position	1	2	3	4	1+2+3 Summed 10g SAR (W/kg)	1+2+4 Summed 10g SAR (W/kg)
		LTE Band 2A	LTE Band 7A	2.4GHz WLAN MIMO	5GHz WLAN MIMO		
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)		
CA_2A_7A	Front at 0mm	0.252			0.094	0.25	0.35
	Back at 0mm	0.325	0.249	1.047	2.14	1.62	2.71
	Top side at 0mm		0.432		0.177	0.43	0.61
	Bottom side at 0mm	0.512				0.51	0.51

5GNR:

WWAN Band		Exposure Position	1	2	3	1+2 Summed 10g SAR (W/kg)	SPLSR	Case No	1+3 Summed 10g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO						
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)						
NR	N41	Front at 0mm	1.013		0.094	1.01			1.11		
		Back at 0mm	0.904	1.047	2.14	1.95			3.04		
		Left side at 0mm			0.22				0.22		
		Right side at 0mm			0.275				0.28		
		Top side at 0mm	1.573		0.177	1.57			1.75		

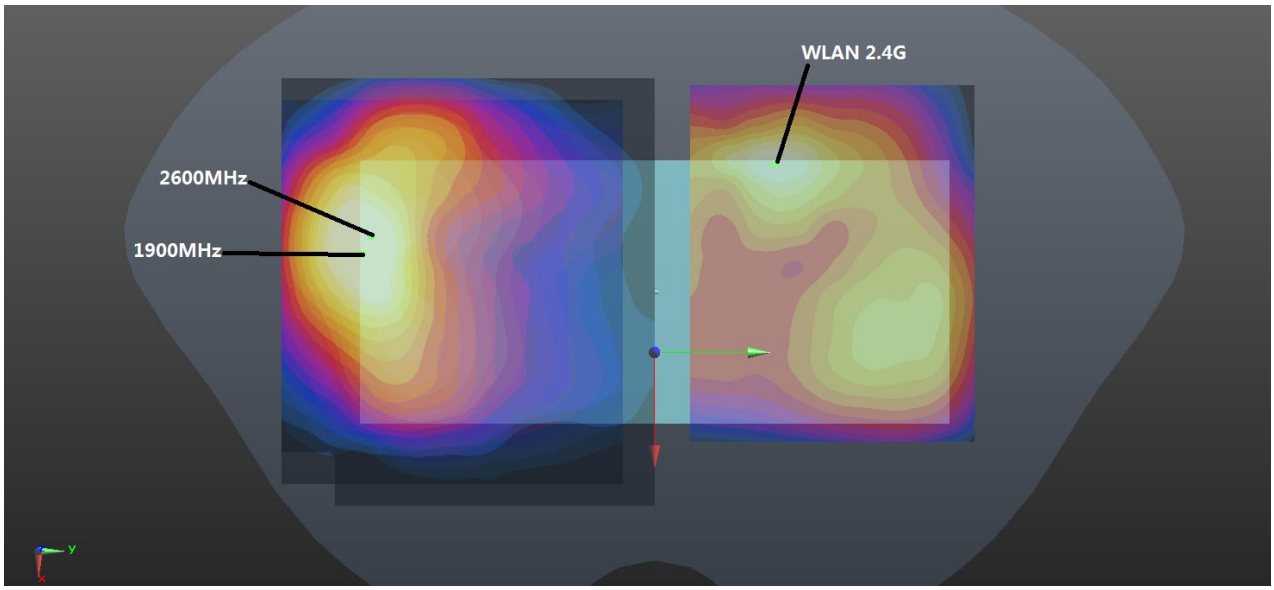
WWAN Band		Exposure Position	1	2	3	1+2 Summed 10g SAR (W/kg)	1+2+3 Summed 10g SAR (W/kg)
			WWAN	2.4GHz WLAN MIMO	5GHz WLAN MIMO		
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)		
GSM	GSM1900	Front at 5mm	0.545		0.094	0.55	0.64
		Back at 7mm	1.494	1.047	0.557	2.54	2.05
		Bottom side at 9mm	1.033			1.03	1.03
WCDMA	WCDMA II	Front at 5mm	0.898		0.094	0.90	0.99
		Back at 7mm	1.742	1.047	0.557	2.79	2.30
		Bottom side at 9mm	1.568			1.57	1.57
	WCDMA IV	Front at 5mm	1.24		0.094	1.24	1.33
		Back at 7mm	2.306	1.047	0.557	3.35	2.86
		Bottom side at 9mm	2.061			2.06	2.06
CDMA	CDMA2000 BC1	Front at 5mm	0.458		0.094	0.46	0.55
		Back at 7mm	0.58	1.047	0.557	1.63	1.14
		Bottom side at 9mm	0.777			0.78	0.78
LTE	LTE Band 2	Front at 5mm	0.974		0.094	0.97	1.07
		Back at 7mm	1.634	1.047	0.557	2.68	2.19
		Bottom side at 9mm	1.552			1.55	1.55
	LTE Band 7	Front at 5mm	1.245		0.094	1.25	1.34
		Back at 7mm	2.445	1.047	0.557	3.49	3.00
		Bottom side at 9mm	2.643			2.64	2.64
	LTE Band 66	Front at 5mm	1.42		0.094	1.42	1.51
		Back at 7mm	2.594	1.047	0.557	3.64	3.15
		Bottom side at 9mm	1.967			1.97	1.97

WWAN Band	Exposure Position	1	2	3	4	1+2+3 Summed 10g SAR (W/kg)	1+2+4 Summed 10g SAR (W/kg)
		LTE Band 2A	LTE Band 7A	2.4GHz WLAN MIMO	5GHz WLAN MIMO		
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)		
CA_2A_7A	Front at 5mm	0.934	0.321		0.094	1.26	1.35
	Back at 7mm	1.634	0.189	1.047	0.557	2.87	2.38
	Top side at 8mm		0.371			0.37	0.37
	Bottom side at 9mm	1.552				1.55	1.55

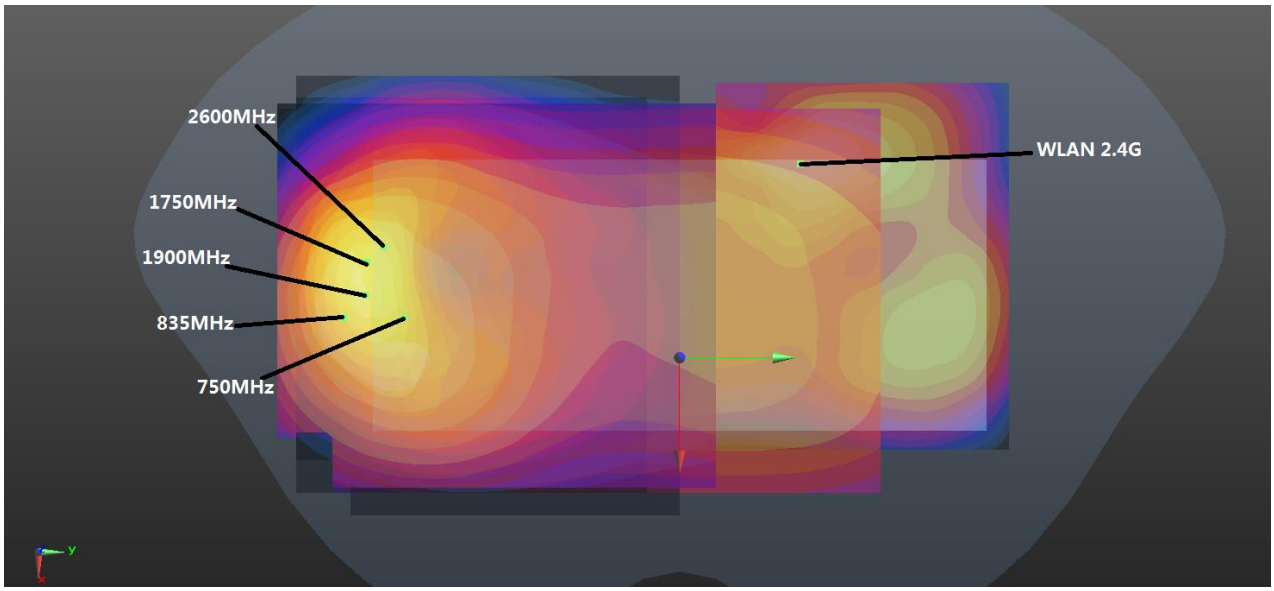
16.5 SPLSR Evaluation and Analysis

General Note:

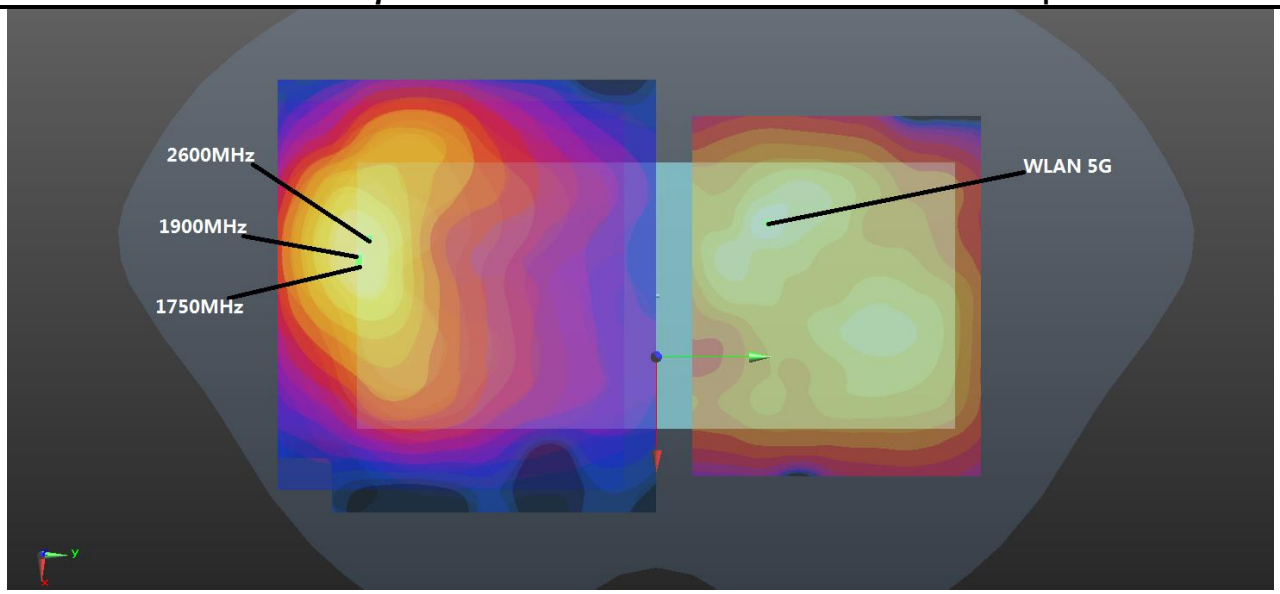
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as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



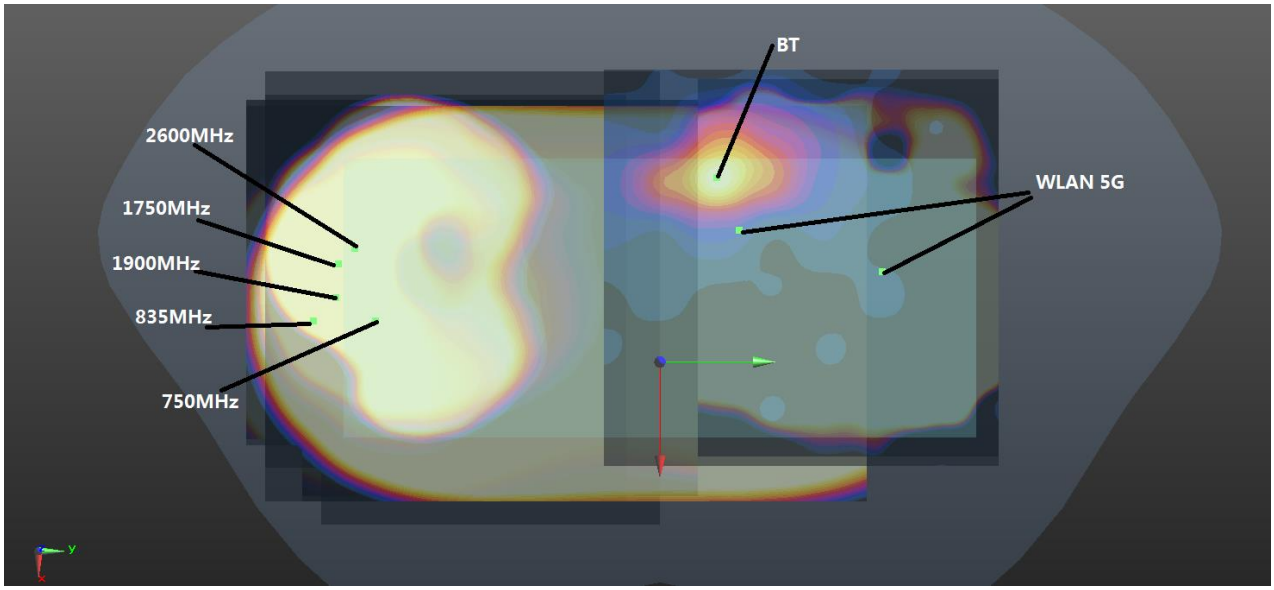
WWAN+ WLAN2.4GHz(0mm)



WWAN+ WLAN 2.4GHz(5mm)



WWAN+ WLAN 5GHz(0mm)



WWAN+ WLAN 5GHz(5mm) +BT(5mm)

Hotspot / Body Worn 5mm											
	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 1	GSM850	Back	1.158	5mm	9.2	-90.4	-1.54	129.8	2.25	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				
Case 2	GSM850	Back	1.158	5mm	9.2	-90.4	-1.54	147.2	2.17	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	GSM850	Back	1.158	5mm	9.2	-90.4	-1.54	127.9	1.25	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	GSM850	Back	1.158	5mm	9.2	-90.4	-1.54	111.0	1.70	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	GSM850	Back	1.158	5mm	9.2	-90.4	-1.54	127.9	1.25	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
Case 3	GSM1900	Back	1.072	5mm	-3.2	-86	-1.64	122.2	2.16	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				
Case 4	GSM1900	Back	1.072	5mm	-3.2	-86	-1.64	142.7	2.09	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	GSM1900	Back	1.072	5mm	-3.2	-86	-1.64	120.4	1.17	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	GSM1900	Back	1.072	5mm	-3.2	-86	-1.64	105.0	1.61	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				

	GSM1900	Back	1.072	5mm	-3.2	-86	-1.64	120.4	1.17	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 5	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA II	Back	1.041	5mm	-13.7	-83.9	0.68	118.2	2.13	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 6	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA II	Back	1.041	5mm	-13.7	-83.9	0.68	141.4	2.06	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	WCDMA II	Back	1.041	5mm	-13.7	-83.9	0.68	116.5	1.13	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WCDMA II	Back	1.041	5mm	-13.7	-83.9	0.68	102.5	1.58	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	WCDMA II	Back	1.041	5mm	-13.7	-83.9	0.68	116.5	1.13	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 7	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA IV	Back	0.996	5mm	-10.6	-83.9	0.71	118.7	2.08	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 8	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA IV	Back	0.996	5mm	-10.6	-83.9	0.71	141.0	2.01	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	WCDMA IV	Back	0.996	5mm	-10.6	-83.9	0.71	117.0	1.09	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required

	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WCDMA IV	Back	0.996	5mm	-10.6	-83.9	0.71	102.5	1.54	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	WCDMA IV	Back	0.996	5mm	-10.6	-83.9	0.71	117.0	1.09	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 9	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA V	Back	1.063	5mm	10.8	-77	-1.63	117.7	2.15	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 10	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA V	Back	1.063	5mm	10.8	-77	-1.63	133.9	2.08	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	WCDMA V	Back	1.063	5mm	10.8	-77	-1.63	115.8	1.16	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WCDMA V	Back	1.063	5mm	10.8	-77	-1.63	98.2	1.60	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	WCDMA V	Back	1.063	5mm	10.8	-77	-1.63	115.8	1.16	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 11	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC0	Back	1.095	5mm	7.6	-77	-1.6	116.6	2.18	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 12	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC0	Back	1.095	5mm	7.6	-77	-1.6	133.8	2.11	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				

	CDMA BC0	Back	1.095	5mm	7.6	-77	-1.6	114.7	1.19	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	CDMA BC0	Back	1.095	5mm	7.6	-77	-1.6	97.6	1.64	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	CDMA BC0	Back	1.095	5mm	7.6	-77	-1.6	114.7	1.19	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 13	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC1	Back	0.848	5mm	-12.2	-84	0.8	118.5	1.94	0.02	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 14	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC1	Back	0.848	5mm	-12.2	-84	0.8	141.3	1.86	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	CDMA BC1	Back	0.848	5mm	-12.2	-84	0.8	116.8	0.94	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	CDMA BC1	Back	0.848	5mm	-12.2	-84	0.8	102.6	1.39	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	CDMA BC1	Back	0.848	5mm	-12.2	-84	0.8	116.8	0.94	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 15	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 2	Back	1.081	5mm	-4.5	-83	-1.73	119.0	2.17	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 16	LTE Band 2	Back	1.081	5mm	-4.5	-83	-1.73	139.8	2.10	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	LTE Band 2	Back	1.081	5mm	-4.5	-83	-1.73	117.2	1.17	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	LTE Band 2	Back	1.081	5mm	-4.5	-83	-1.73	101.9	1.62	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	LTE Band 2	Back	1.081	5mm	-4.5	-83	-1.73	117.2	1.17	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 17	LTE Band 7	Back	1.192	5mm	-13.2	-82	0.75	116.4	2.28	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 18	LTE Band 7	Back	1.192	5mm	-13.2	-82	0.75	139.4	2.21	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	LTE Band 7	Back	1.192	5mm	-13.2	-82	0.75	114.7	1.29	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	LTE Band 7	Back	1.192	5mm	-13.2	-82	0.75	100.6	1.73	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	LTE Band 7	Back	1.192	5mm	-13.2	-82	0.75	114.7	1.29	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 19	LTE Band 12	Back	1.044	5mm	10.8	-75.5	-1.59	116.3	2.13	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 20	LTE Band 12	Back	1.044	5mm	10.8	-75.5	-1.59	132.4	2.06	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	LTE Band 12	Back	1.044	5mm	10.8	-75.5	-1.59	114.4	1.14	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	LTE Band 12	Back	1.044	5mm	10.8	-75.5	-1.59	96.8	1.58	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	LTE Band 12	Back	1.044	5mm	10.8	-75.5	-1.59	114.4	1.14	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 21	LTE Band 26	Back	1.112	5mm	6	-84	-1.51	122.7	2.20	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 22	LTE Band 26	Back	1.112	5mm	6	-84	-1.51	140.7	2.13	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	LTE Band 26	Back	1.112	5mm	6	-84	-1.51	120.9	1.21	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	LTE Band 26	Back	1.112	5mm	6	-84	-1.51	104.1	1.65	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	LTE Band 26	Back	1.112	5mm	6	-84	-1.51	120.9	1.21	0.01	Not required

	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 23	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	1.012	5mm	-4.6	-84.5	-1.69	120.5	2.10	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 24	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	1.012	5mm	-4.6	-84.5	-1.69	141.3	2.03	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	LTE Band 66	Back	1.012	5mm	-4.6	-84.5	-1.69	118.6	1.11	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	LTE Band 66	Back	1.012	5mm	-4.6	-84.5	-1.69	103.4	1.55	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	LTE Band 66	Back	1.012	5mm	-4.6	-84.5	-1.69	118.6	1.11	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 25	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 41	Back	1.185	5mm	-14.8	-84.2	0.67	118.3	2.27	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 26	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 41	Back	1.185	5mm	-14.8	-84.2	0.67	141.8	2.20	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	LTE Band 41	Back	1.185	5mm	-14.8	-84.2	0.67	116.7	1.28	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

	LTE Band 41	Back	1.185	5mm	-14.8	-84.2	0.67	102.9	1.73	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	LTE Band 41	Back	1.185	5mm	-14.8	-84.2	0.67	116.7	1.28	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 27	CDMA BC0 - Cube 0	Back	1.144	5mm	8.5	-85	-1.47	124.5	2.23	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				
	CDMA BC0 - Cube 1	Back	1.05	5mm	-0.5	-86.5	-1.5	123.4	2.14	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 28	CDMA BC0 - Cube 0	Back	1.144	5mm	8.5	-85	-1.47	141.8	2.16	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	CDMA BC0 - Cube 0	Back	1.144	5mm	8.5	-85	-1.47	122.6	1.24	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	CDMA BC0 - Cube 0	Back	1.144	5mm	8.5	-85	-1.47	105.6	1.68	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	CDMA BC0 - Cube 0	Back	1.144	5mm	8.5	-85	-1.47	122.6	1.24	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	CDMA BC0 - Cube 1	Back	1.05	5mm	-0.5	-86.5	-1.5	143.1	2.06	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	CDMA BC0 - Cube 1	Back	1.05	5mm	-0.5	-86.5	-1.5	121.5	1.14	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	CDMA BC0 - Cube 1	Back	1.05	5mm	-0.5	-86.5	-1.5	105.7	1.59	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				

	CDMA BC0 - Cube 1	Back	1.05	5mm	-0.5	-86.5	-1.5	121.5	1.14	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

Case 29	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC1 -	Back	0.995	5mm	-13.8	-81	0.61	115.3	2.08	0.03	Not required
	WLAN2.4GHz		1.087	5mm	-31	33	1.38				

Case 30	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC1 -	Back	0.995	5mm	-13.8	-81	0.61	138.5	2.01	0.02	Not required
	WLAN5GHz Cube 0		1.014	5mm	1.8	56.6	1.41				
	CDMA BC1 -	Back	0.995	5mm	-13.8	-81	0.61	113.6	1.09	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 0	Back	1.014	5mm	1.8	56.6	1.41	40.8	1.11	0.03	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	CDMA BC1 -	Back	0.995	5mm	-13.8	-81	0.61	99.6	1.54	0.02	Not required
	WLAN5GHz Cube 1		0.54	5mm	-11.6	18.6	1.31				
	CDMA BC1 -	Back	0.995	5mm	-13.8	-81	0.61	113.6	1.09	0.01	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				
	WLAN5GHz Cube 1	Back	0.54	5mm	-11.6	18.6	1.31	22.8	0.63	0.02	Not required
	Bluetooth		0.093	5mm	-29.9	31.4	-3.32				

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Case 32	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	GSM1900	Back	2.296	0mm	-9	-77.8	0.84	108.0	4.44	0.09	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 33	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA II	Back	2.986	0mm	-15.3	-82.5	0.61	117.1	4.03	0.07	Not required
	WLAN2.4GHz		1.047	0mm	-27	34	1.61				

Case 34	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				

	WCDMA II	Back	2.986	0mm	-15.3	-82.5	0.61	112.1	5.13	0.10	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 35	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	WCDMA IV	Back	2.888	0mm	-13.8	-82.5	0.82	112.2	5.03	0.10	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 36	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	CDMA BC1	Back	2.713	0mm	-13.8	-84	1.15	113.7	4.85	0.09	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 37	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 2	Back	2.34	0mm	-4.4	-81.5	-1.51	112.2	4.48	0.08	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 38	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 7	Back	2.974	0mm	-14.6	-81.8	0.68	116.5	4.02	0.07	Not required
	WLAN2.4GHz		1.047	0mm	-27	34	1.61				

Case 39	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 7	Back	2.974	0mm	-14.6	-81.8	0.68	111.4	5.11	0.10	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 41	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 66	Back	2.898	0mm	-4.5	-81.5	-1.52	112.2	5.04	0.10	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

Case 42	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 41	Back	2.951	0mm	-17	-82.6	1.27	117.0	4.00	0.07	Not required
	WLAN2.4GHz		1.047	0mm	-27	34	1.61				

Case 43	Band	Position	SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
	LTE Band 41	Back	2.951	0mm	-17	-82.6	1.27	112.1	5.09	0.10	Not required
	WLAN5GHz		2.14	0mm	-21.6	29.4	-1.8				

17. Supplemental Tuner Tests Results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 144 tuner states are divided evenly among bands (LTE B4/7/38/41/66 and 5GNR n41), 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 /B38 and B66 / B41. Since the supported frequency span for LTE B4 /B38 falls completely within the supports frequency span for LTE B66 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, chose LTE B66 / B41 for dynamic antenna analysis.
4. According to workshop 2019, if any single point SAR measurement result is > 1.2 W/kg for a band/exposure condition combination set, all supported tuner states are evaluated with single point SAR measurements for the combination.
5. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

17.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix F.

Test Engineer : Nick Hu, Yuan Zhao, Jiaxing Chang, Yuankai Kong

18. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

19. 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.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.5.12

System Check_Head_750MHz

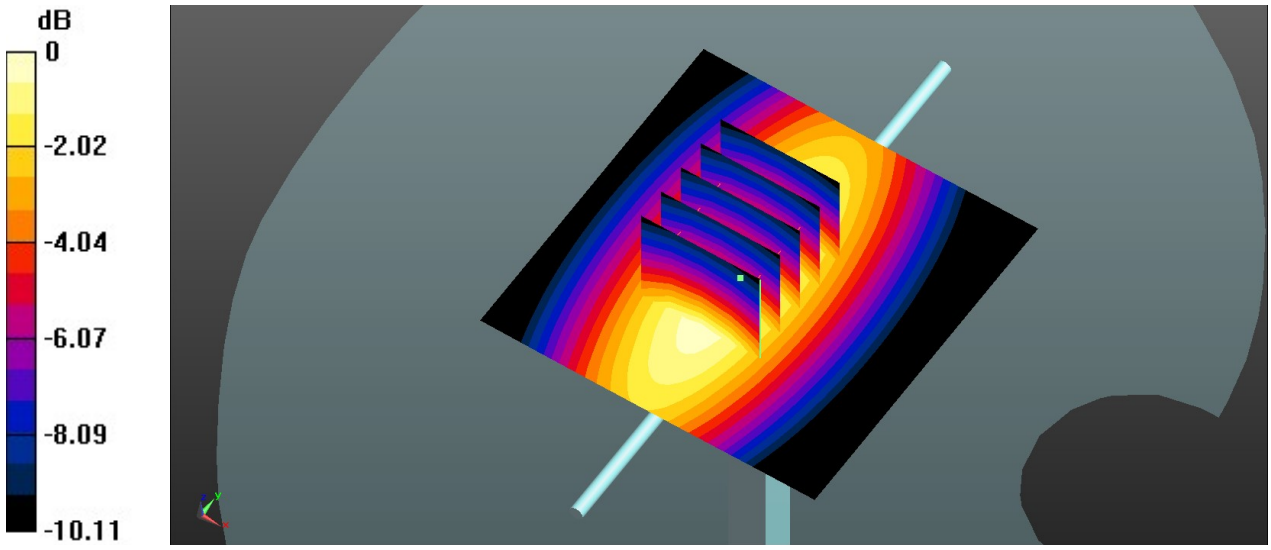
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.905 S/m; ε_r = 42.697; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3166; ConvF(6.43, 6.43, 6.43); Calibrated: 2020.3.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- 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 (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.56 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.78 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.34 W/kg
SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.46 W/kg
Maximum value of SAR (measured) = 2.59 W/kg



0 dB = 2.59 W/kg = 4.13 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.5.14

System Check_Head_835MHz

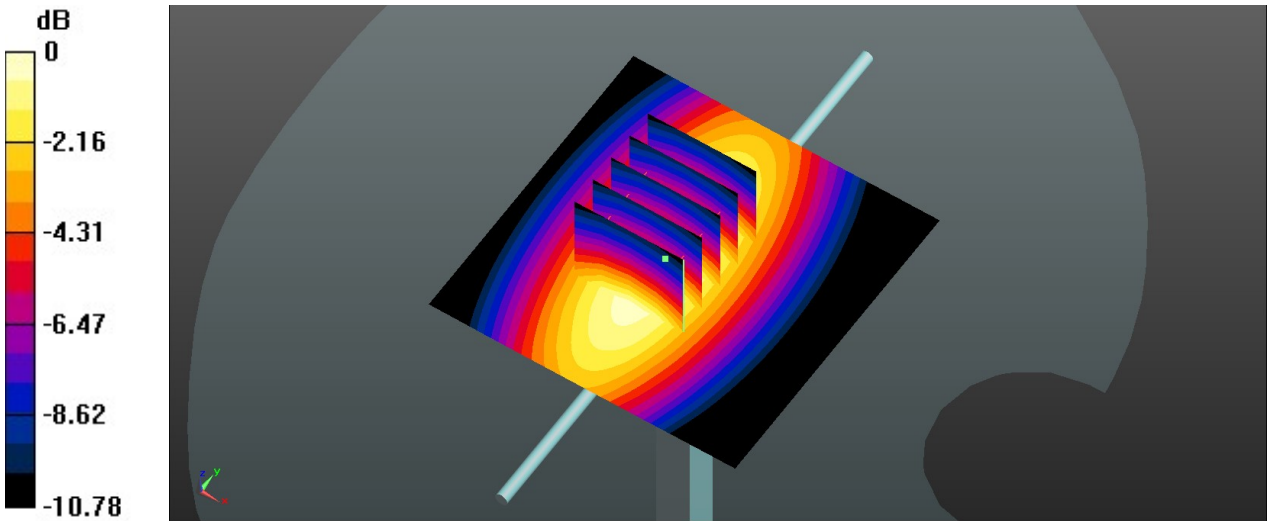
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 40.553; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3166; ConvF(6.29, 6.29, 6.29); Calibrated: 2020.3.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- 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 (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.87 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.68 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.66 W/kg
SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.6 W/kg
Maximum value of SAR (measured) = 2.89 W/kg



0 dB = 2.89 W/kg = 4.61 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.5.22

System Check_Head_1750MHz

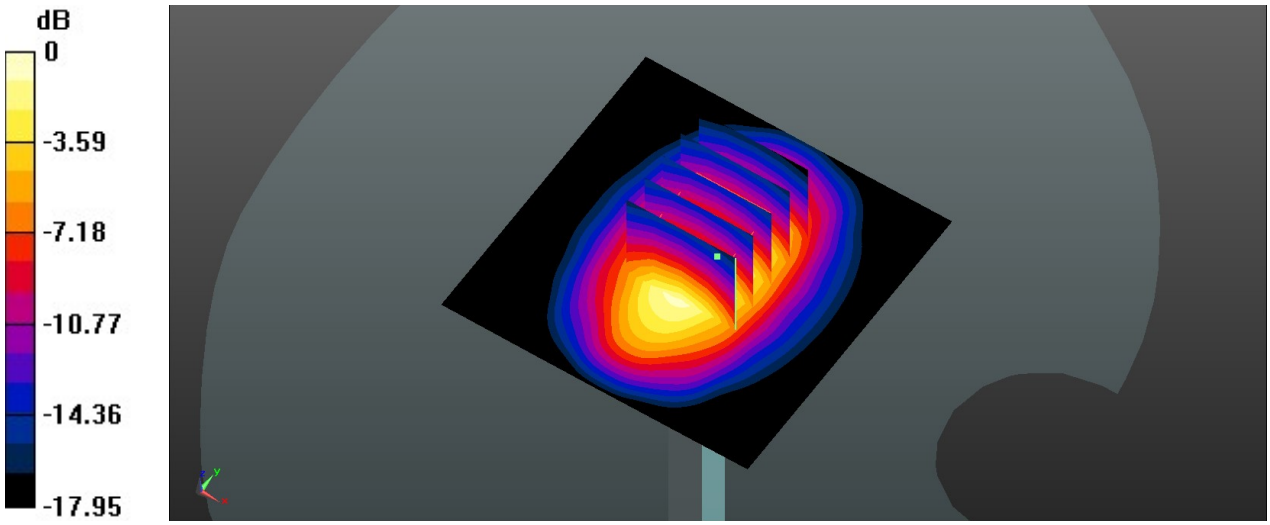
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.342 S/m; ε_r = 39.226; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3166; ConvF(5.35, 5.35, 5.35); Calibrated: 2020.3.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- 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 (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 11.3 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.06 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 8.95 W/kg; SAR(10 g) = 4.71 W/kg
Maximum value of SAR (measured) = 11.2 W/kg



0 dB = 11.2 W/kg = 10.49 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.5.15

System Check_Head_1900MHz

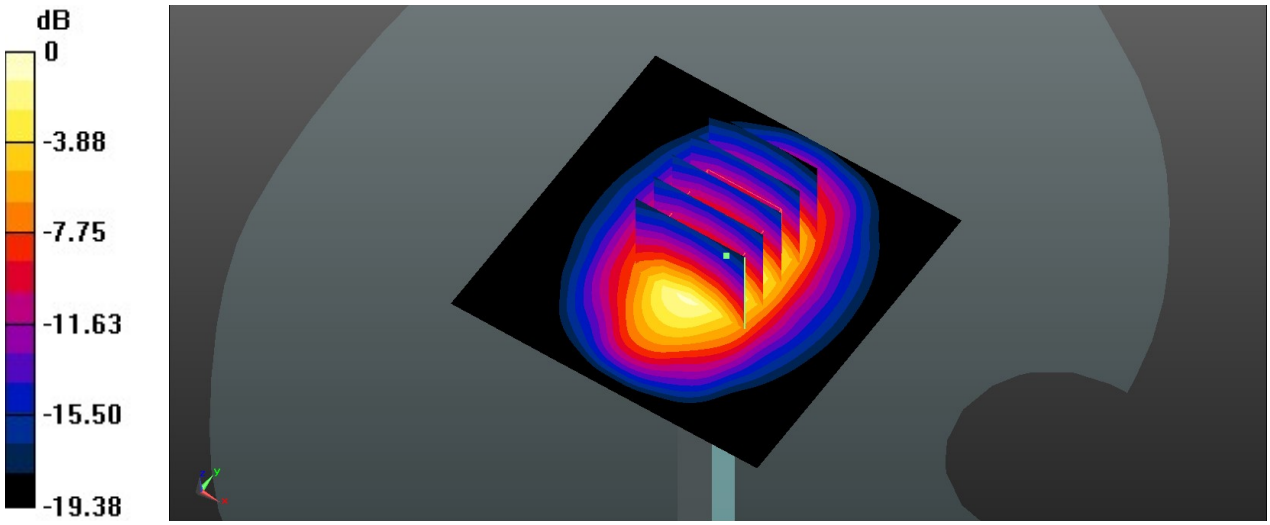
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.425 S/m; ε_r = 38.525; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3166; ConvF(5.16, 5.16, 5.16); Calibrated: 2020.3.2
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2019.11.20
- 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 (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 96.69 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 19.5 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.2 W/kg
Maximum value of SAR (measured) = 13.1 W/kg



0 dB = 13.1 W/kg = 11.17 dBW/kg