FCC SAR Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2063-3
FCC ID	:	IHDT56YU2
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

The product was received on Jan. 08, 2020 and testing was started from Feb. 15, 2020 and completed on Aug. 21, 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
FA010812-08	Rev. 01	Initial issue of report MOTO PCMCR no.: PLCM-1211/ PLCM-1237	Sep. 01, 2020

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2063-3,** 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	0.27	1.39	1.39	1.58
		GSM1900	<0.10	1.25	1.17	
	WCDMA	Band V	0.17	1.33	1.33	
		Band IV	0.12	**1.44**	1.35	
		Band II	<0.10	1.38	1.38	
	LTE	Band 12/Band 17	0.21	1.09	1.09	
		Band 26/Band 5	0.14	1.36	1.36	
		Band 66/Band 4	0.15	1.35	1.31	
		Band 2	0.12	1.40	1.40	
		Band 7	<0.10	1.22	1.22	
		Band 41/Band 38	<0.10	1.30	1.30	
	5G NR	n7	0.55	0.54	0.54	
DTS	WLAN	2.4GHz WLAN	**1.09**	0.29	1.16	1.56
NII		5GHz WLAN	1.01	0.33	**1.41**	1.58
DSS	Bluetooth	2.4GHz Bluetooth	<0.10	<0.10	<0.10	1.58

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	1.07	3.55
		GSM1900	2.84	
	WCDMA	Band V	1.68	
		Band IV	3.16	
		Band II	3.30	
	LTE	Band 26/Band 5	1.74	
		Band 66/Band 4	3.42	
		Band 2	**3.43**	
		Band 7	3.30	
		Band 41/Band 38	2.33	
	5G NR	n7	1.37	
DTS	WLAN	2.4GHz WLAN	1.30	3.55
NII		5GHz WLAN	2.92	3.55
Date of Testing:			2020/2/15~2020/8/21	

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

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	XT2063-3
FCC ID	IHDT56YU2
IMEI Code	IMEI 1: 353585110016899 IMEI 2: 353585110016907
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 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 n7: 2502.5 MHz ~ 2567.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) 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	QPD30.114-48
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. 802.11n-HT40 is not supported in 2.4GHz WLAN.
2. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
5. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.

6. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
7. When the phone is in talking mode and receiver worked, 5GNR n7 power reduction will be active.
8. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66/38/41, 5GNR n7 and WLAN2.4GHz/WLAN5.2GHz/5.3GHz/5.5GHz/5.8GHz reduced power will be active.
9. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head / hotspot / body-worn / extremity.
10. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head/hotspot / body-worn / extremity mode.
11. P-sensor can detect handheld state, GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66, 5GNR n7 for front/back/bottom sides/top sides of product specific 10g SAR condition reduced powers will be active.
12. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66/38/41, 5GNR n7 and 2.4GHz /WLAN/5.2GHz/ WLAN/5.8GHz.
13. For P-sensor reduced power level is higher than hotspot reduced power for GSM1900, WCDMA band II/IV, LTE band 2/4/7/66/38/41, so for front/back P-sensor SAR can represent conservatively for front/back hotspot SAR.
14. The 2.4GHz/5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
15. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the WCDMA and LTE modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information on section16.
16. There are two headsets, only supplier different, so only chose one headset to perform SAR testing.
17. This device supports 5GNR FR1 bands as following table.
18. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
19. 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.
20. 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
21. This is a variant report for XT2063-3, based on the similarity between two models, only the add FR1 n7(EN-DC DC_66A_n7A, DC_5A_n7A) and downlink CA components, for new added WWAN bands perform full SAR testing, and add new WLAN for transmit simultaneous measured power and SAR testing, all the other test cases were leveraged from original report which can be referred to Sporton Report Number FA010812.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n7	FDD	15	5, 10, 15, 20

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>IHDT56YU2</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
1. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, LTE band 2/4/5/7/66/38/41 reduced power will be active.
2. P-sensor can detect handheld state, LTE band 2/4/5/7/66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.
3. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE band 2/4/5/7/66/38/41.</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 LTE B7 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.
2. This device supports maximum of 2 carriers in the downlink and uplink. 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

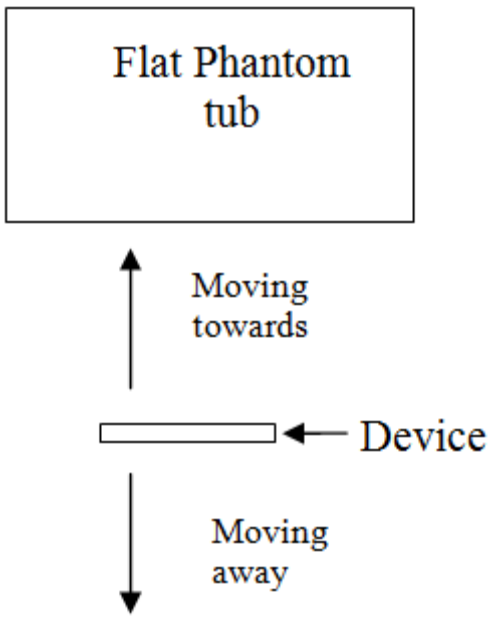
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047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

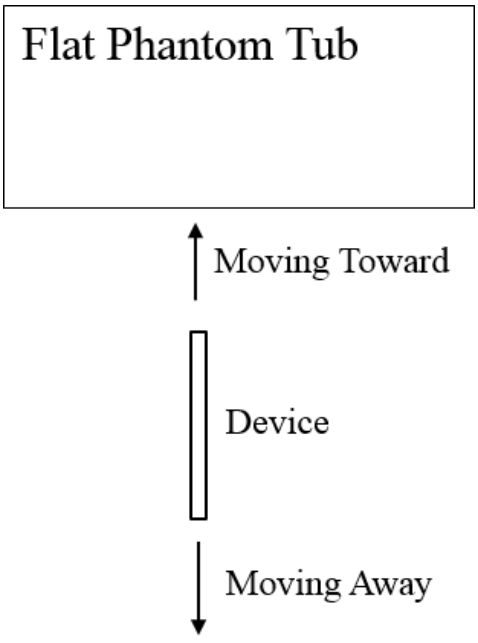
5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

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 (1750MHz) 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, GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66/38/41, 5GNR n7 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, LTE band 2/4/5/7/66, 5GNR n7 for front/back/bottom sides/top sides of product specific 10g SAR condition reduced powers will be active for handheld SAR.
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: 13 mm
   Back: 22 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:
   Bottom Ant:
   Front: 6 mm
   Back: 8 mm
   bottom side: 10 mm

   Top Ant:
   Front: 6 mm
   Back: 12 mm
   bottom side: 13 mm



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



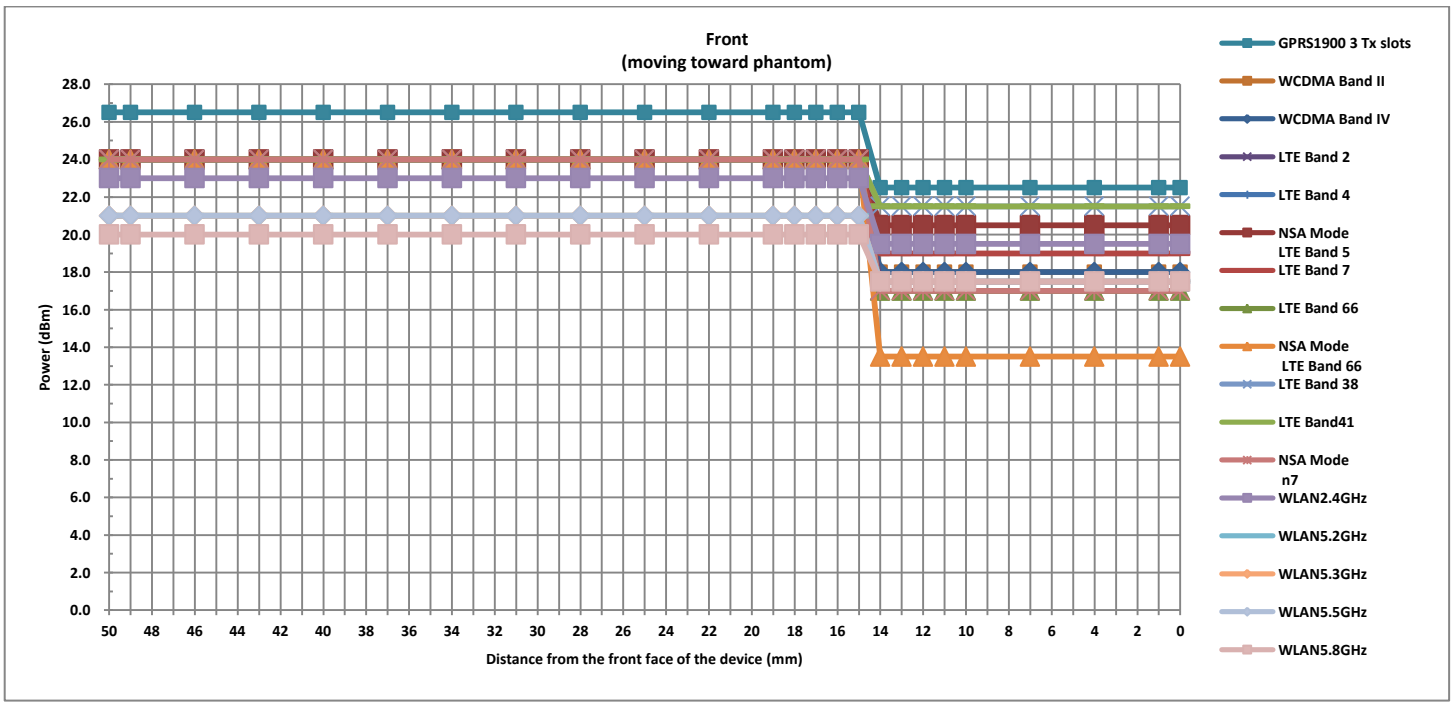
handheld detection test set-up, bottom side and top side

<P-Sensor>

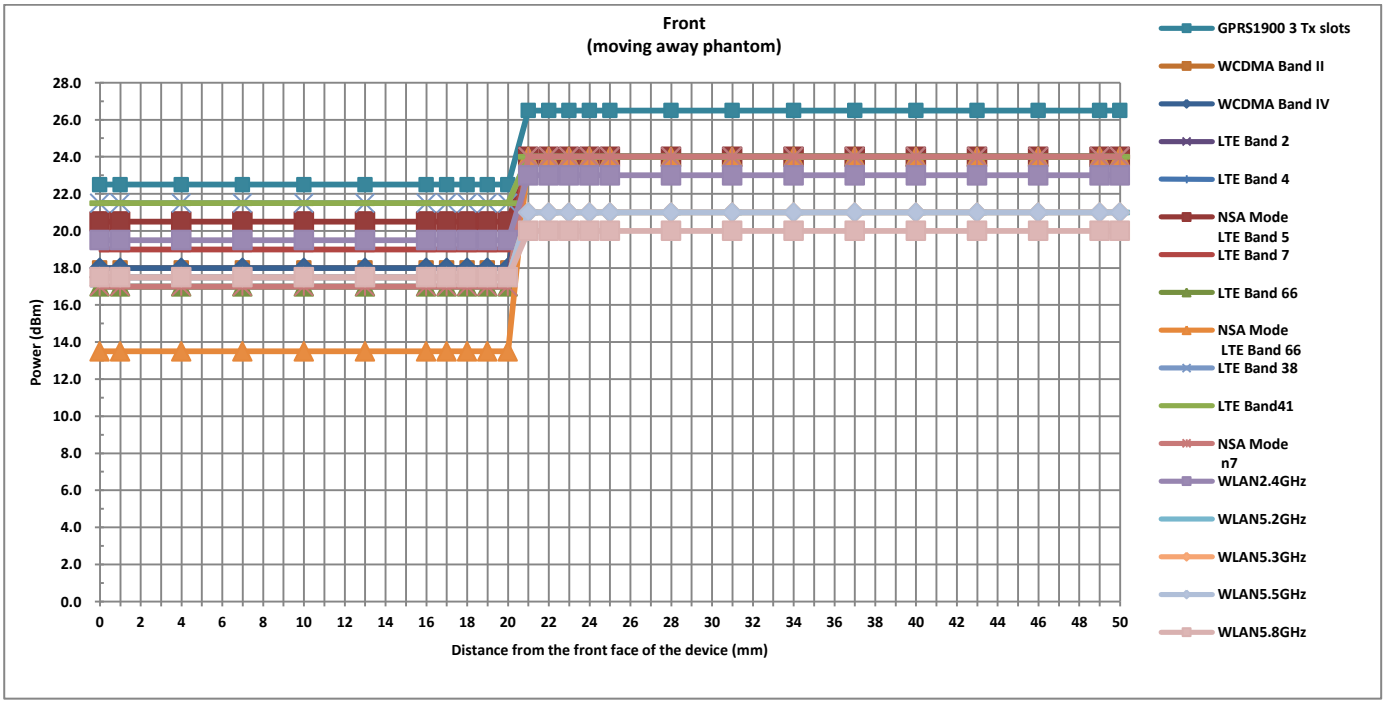
Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	14	20	23	32

TX. Band	Proximity Sensor Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
GPRS1900 3 Tx slots	26.5	22.5	4
WCDMA Band II	24	18	6
WCDMA Band IV	24	18	6
LTE Band 2	24	17.5	6.5
LTE Band 4	24	17	7
NSA Mode LTE Band 5	24	20.5	3.5
LTE Band 7	24	19	5
LTE Band 66	24	17	7
NSA Mode LTE Band 66	24	13.5	10.5
LTE Band 38	24	21.5	2.5
LTE Band 41	24	21.5	2.5
NSA Mode n7	24	17	7
WLAN2.4GHz	23	19.5	3.5
WLAN5.2GHz	21	17.5	3.5
WLAN5.3GHz	21	17.5	3.5
WLAN5.5GHz	21	17.5	3.5
WLAN5.8GHz	20	17.5	2.5

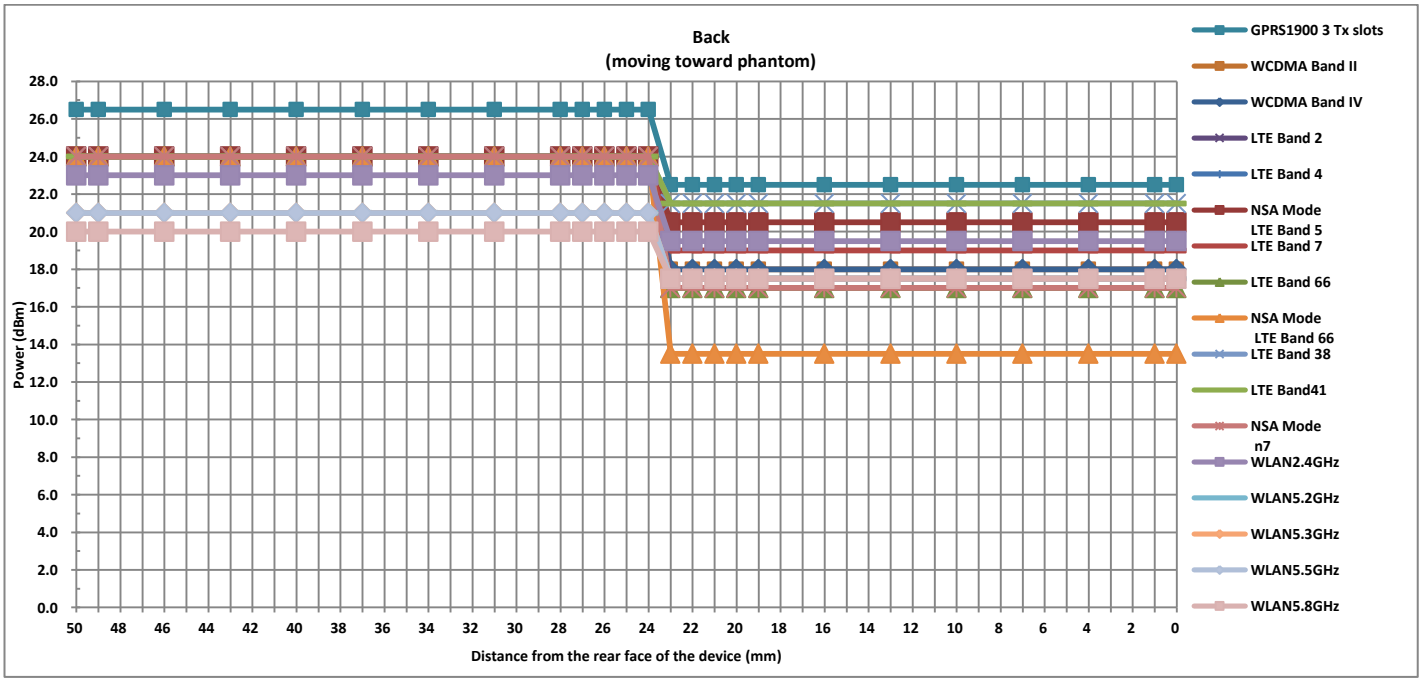
Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																									
Front																									
Distance	50	49	46	43	40	37	34	31	28	25	22	19	18	17	16	15	14	13	12	11	10	7	4	1	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18
LTE Band 2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band 7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19
LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
LTE Band 38	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 41	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17
WLAN2.4GHz	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
WLAN5.2GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.3GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.5GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.8GHz	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5



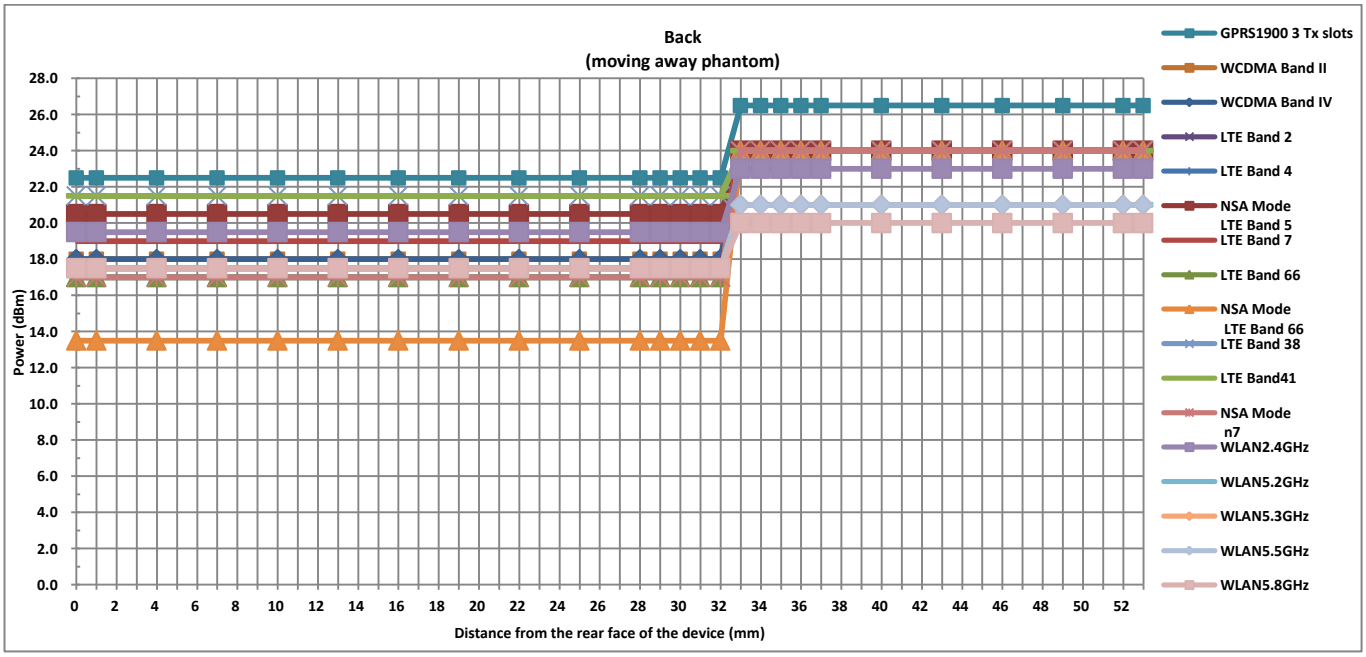
Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																									
Front																									
Distance	50	49	46	43	40	37	34	31	28	25	24	23	22	21	20	19	18	17	16	13	10	7	4	1	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18
LTE Band 2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
LTE Band 4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	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	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19	19	19
LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
LTE Band 38	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 41	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17
WLAN2.4GHz	23	23	23	23	23	23	23	23	23	23	23	23	23	23	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	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.3GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.5GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.8GHz	20	20	20	20	20	20	20	20	20	20	20	20	20	20	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5



Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	49	46	43	40	37	34	31	28	27	26	25	24	23	22	21	20	19	16	13	10	7	4	1	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band 2	24	24	24	24	24	24	24	24	24	24	24	24	24	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 4	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	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	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19	19	19	19
LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
LTE Band 38	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
LTE Band 41	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17
WLAN2.4GHz	23	23	23	23	23	23	23	23	23	23	23	23	23	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	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.3GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.5GHz	21	21	21	21	21	21	21	21	21	21	21	21	21	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
WLAN5.8GHz	20	20	20	20	20	20	20	20	20	20	20	20	20	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5



Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																										
Back																										
Distance	53	52	49	46	43	40	37	36	35	34	33	32	31	30	29	28	25	22	19	16	13	10	7	4	1	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LTE Band 2	24	24	24	24	24	24	24	24	24	24	24	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	17.5
LTE Band 4	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5	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	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	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	13.5
LTE Band 38	24	24	24	24	24	24	24	24	24	24	24	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	21.5
LTE Band 41	24	24	24	24	24	24	24	24	24	24	24	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	21.5
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
WLAN2.4GHz	23	23	23	23	23	23	23	23	23	23	23	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	19.5
WLAN5.2GHz	21	21	21	21	21	21	21	21	21	21	21	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	17.5
WLAN5.3GHz	21	21	21	21	21	21	21	21	21	21	21	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	17.5
WLAN5.5GHz	21	21	21	21	21	21	21	21	21	21	21	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	17.5
WLAN5.8GHz	20	20	20	20	20	20	20	20	20	20	20	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	17.5

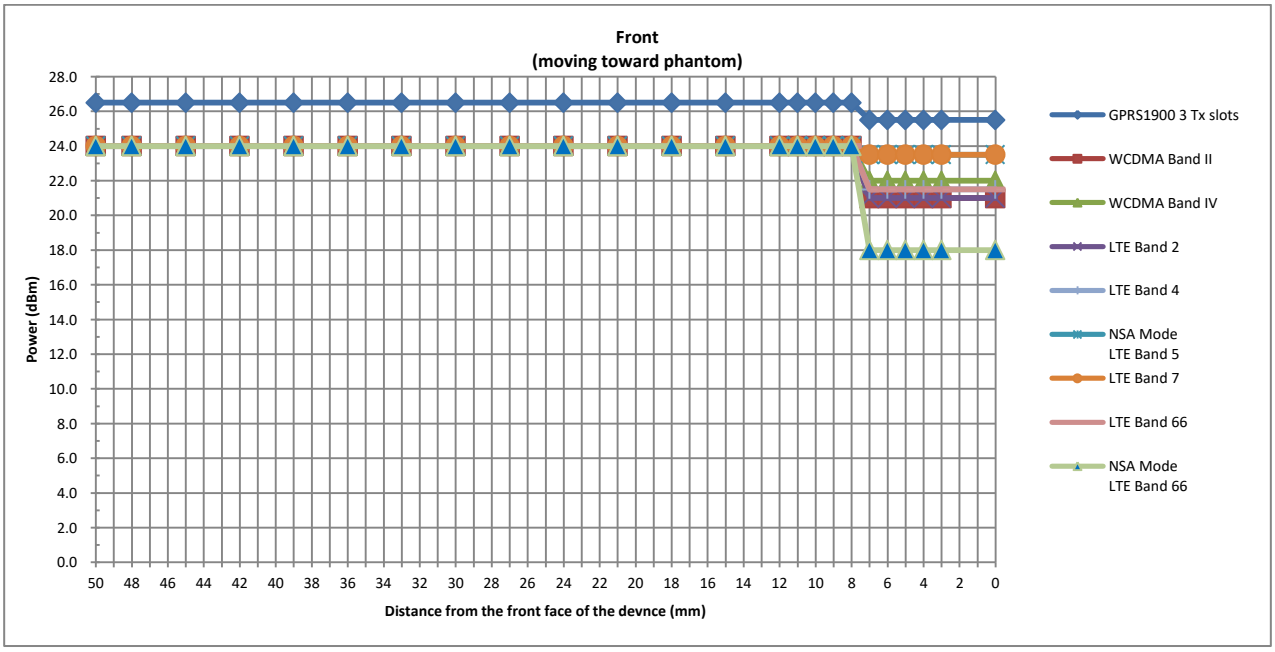


<Handheld-Bottom Ant>

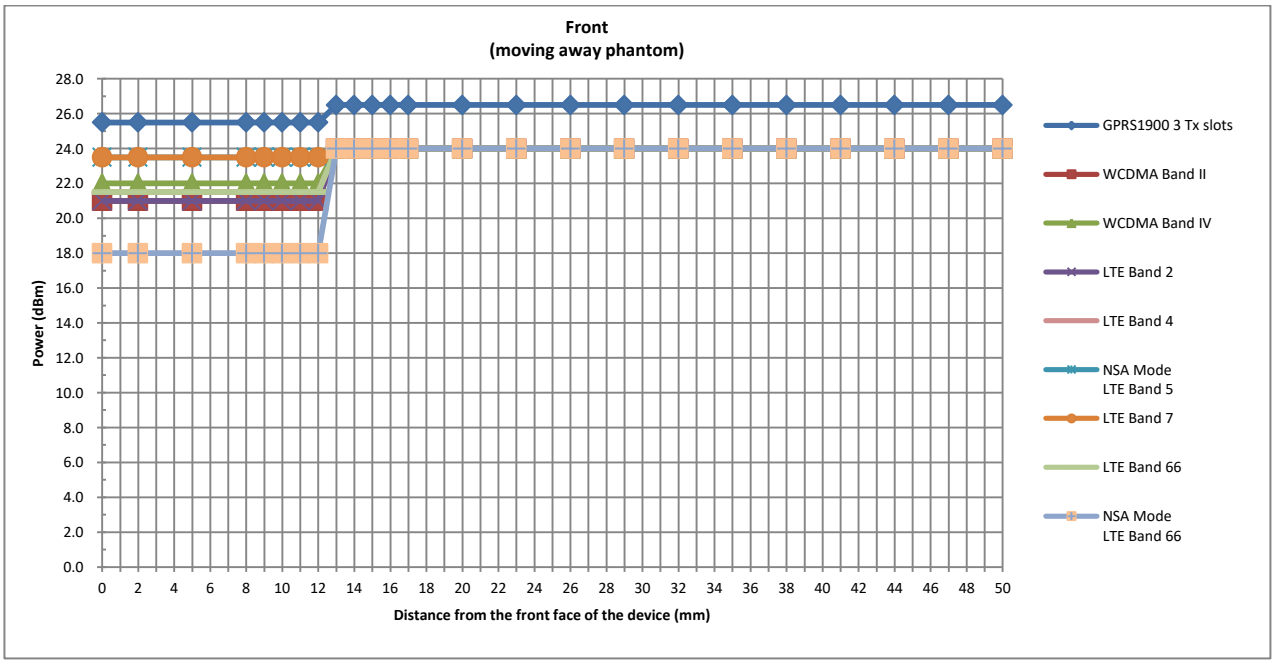
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	12	9	18	11	22

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	26.5	25.5	1
WCDMA II	24	21	3
WCDMA IV	24	22	2
LTE Band2	24	21	3
LTE Band4	24	21.5	2.5
NSA Mode LTE Band 5	24	23.5	0.5
LTE Band7	24	23.5	0.5
LTE Band66	24	21.5	2.5
NSA Mode LTE Band 66	24	18	6

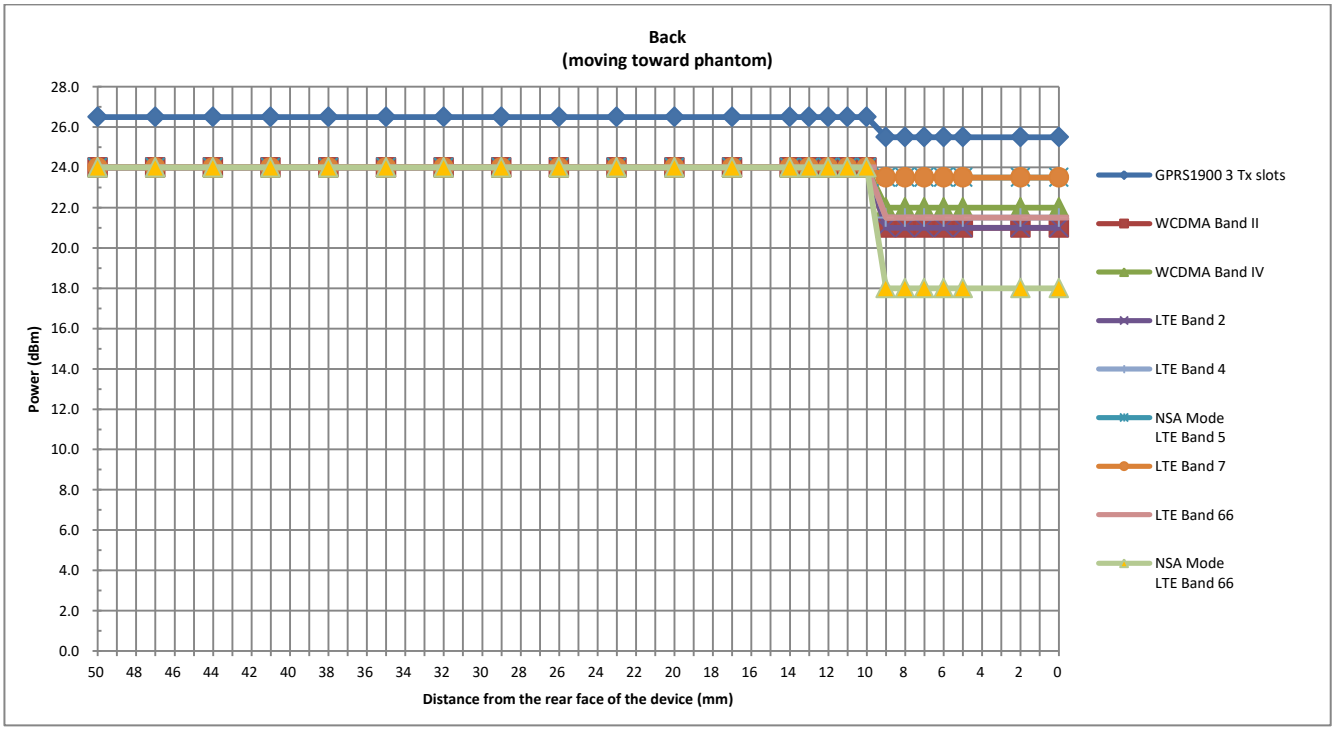
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	48	45	42	39	36	33	30	27	24	21	18	15	12	11	10	9	8	7	6	5	4	3	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21
WCDMA IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18



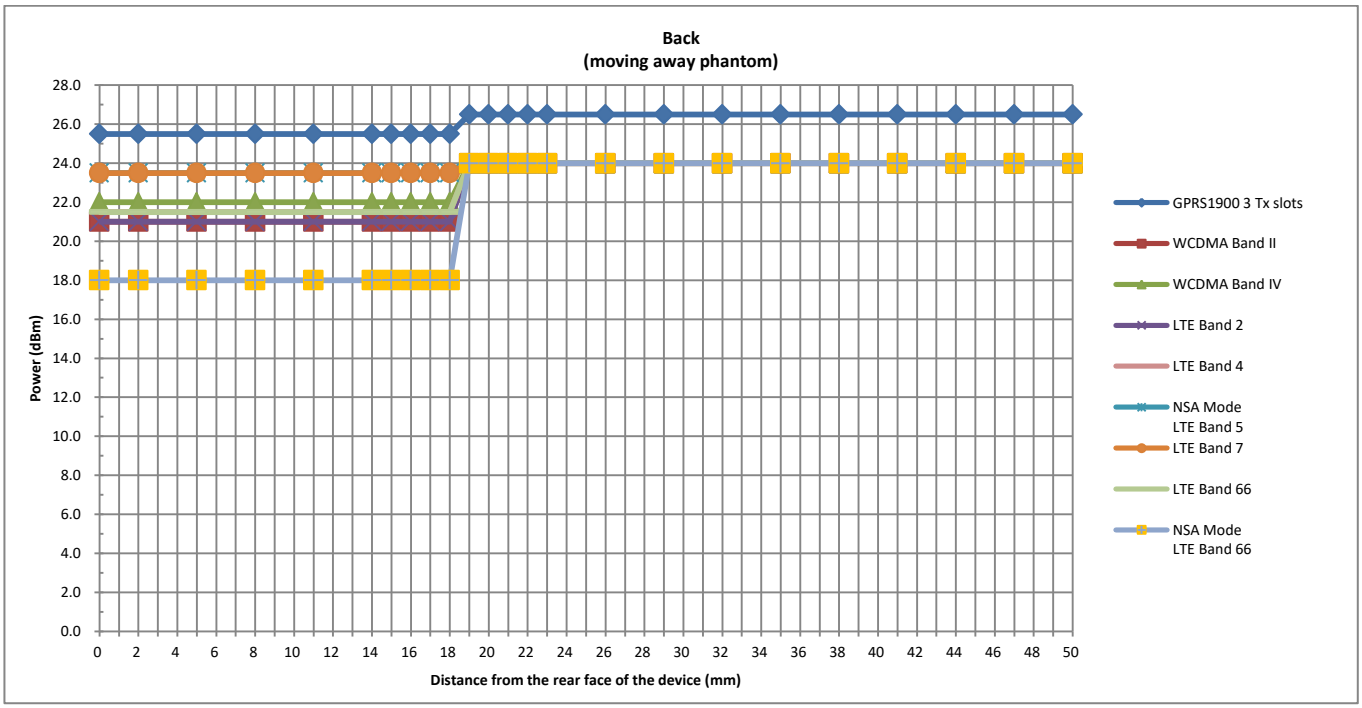
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	47	44	41	38	35	32	29	26	23	20	17	16	15	14	13	12	11	10	9	8	5	2	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21
WCDMA IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18



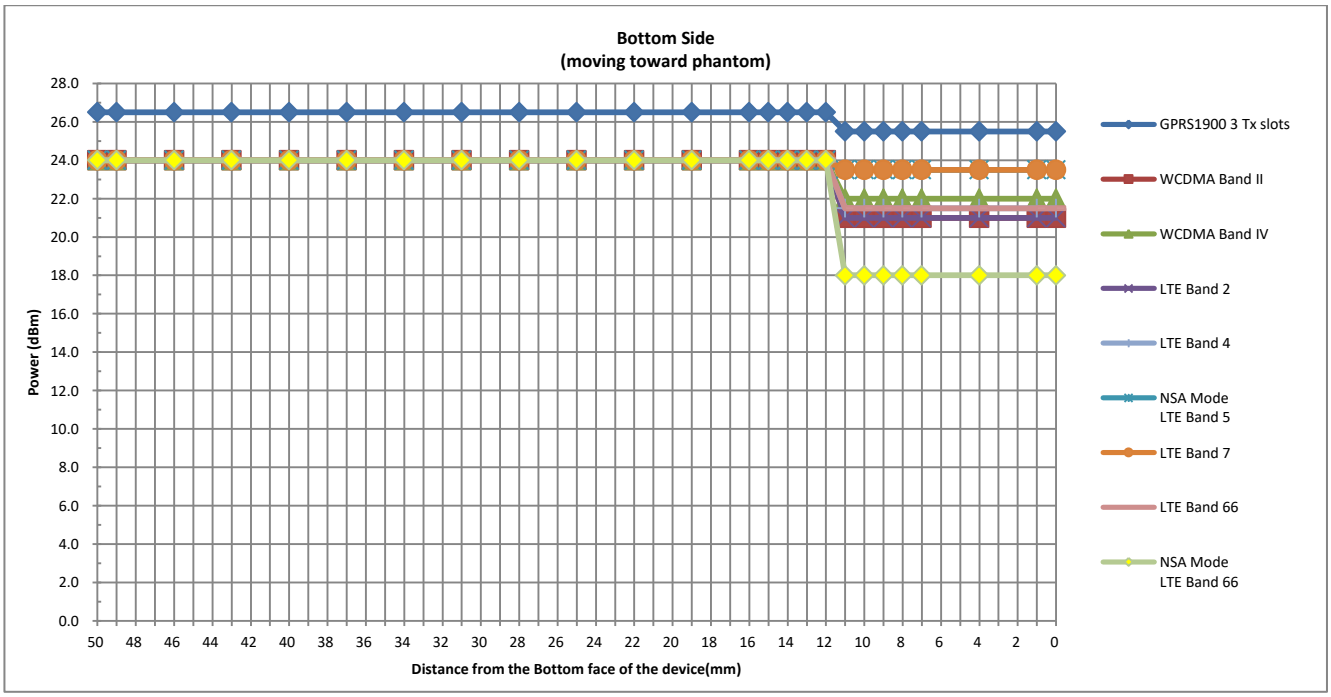
Handheld Triggering Distance (mm) and Triggering Power (dBm)																									
Back																									
Distance	50	47	44	41	38	35	32	29	26	23	20	17	14	13	12	11	10	9	8	7	6	5	4	1	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21
WCDMA IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18



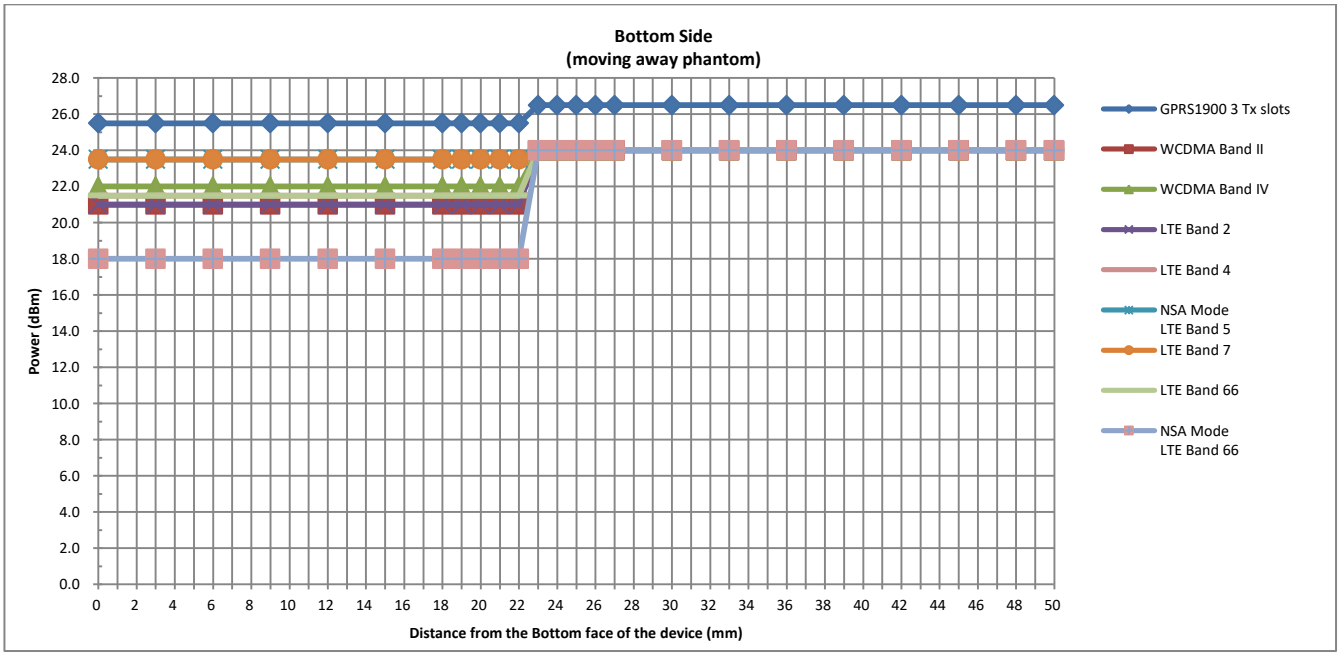
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	47	44	41	38	35	32	29	26	23	22	21	20	19	18	17	16	15	14	11	8	5	2	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21
WCDMA IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18



Handheld Triggering Distance (mm) and Triggering Power (dBm)																									
Bottom Side																									
Distance	50	49	46	43	40	37	34	31	28	25	22	19	16	15	14	13	12	11	10	9	8	7	4	1	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21
WCDMA IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18



Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Bottom Side																								
Distance	50	48	45	42	39	36	33	30	27	26	25	24	23	22	21	20	19	18	15	12	9	6	3	0
GPRS1900 3 Tx slots	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA II	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21
WCDMA IV	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	22
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 5	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
NSA Mode LTE Band 66	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18	18	18	18	18	18	18

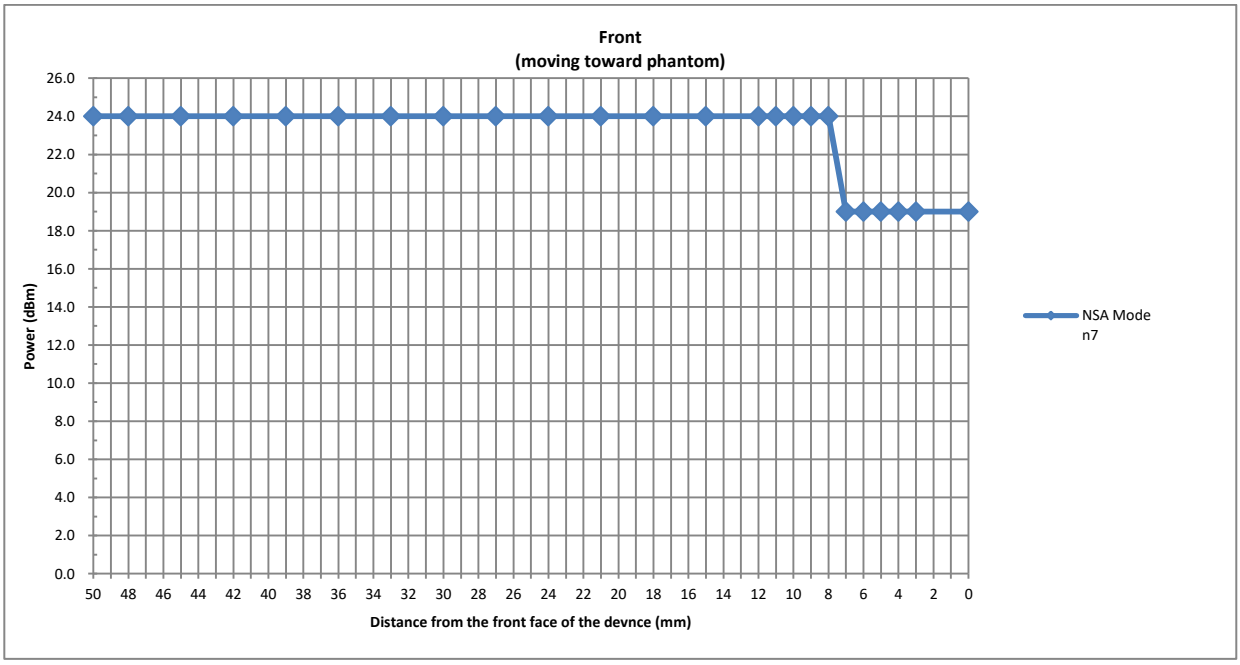


<Handheld-Top Ant>

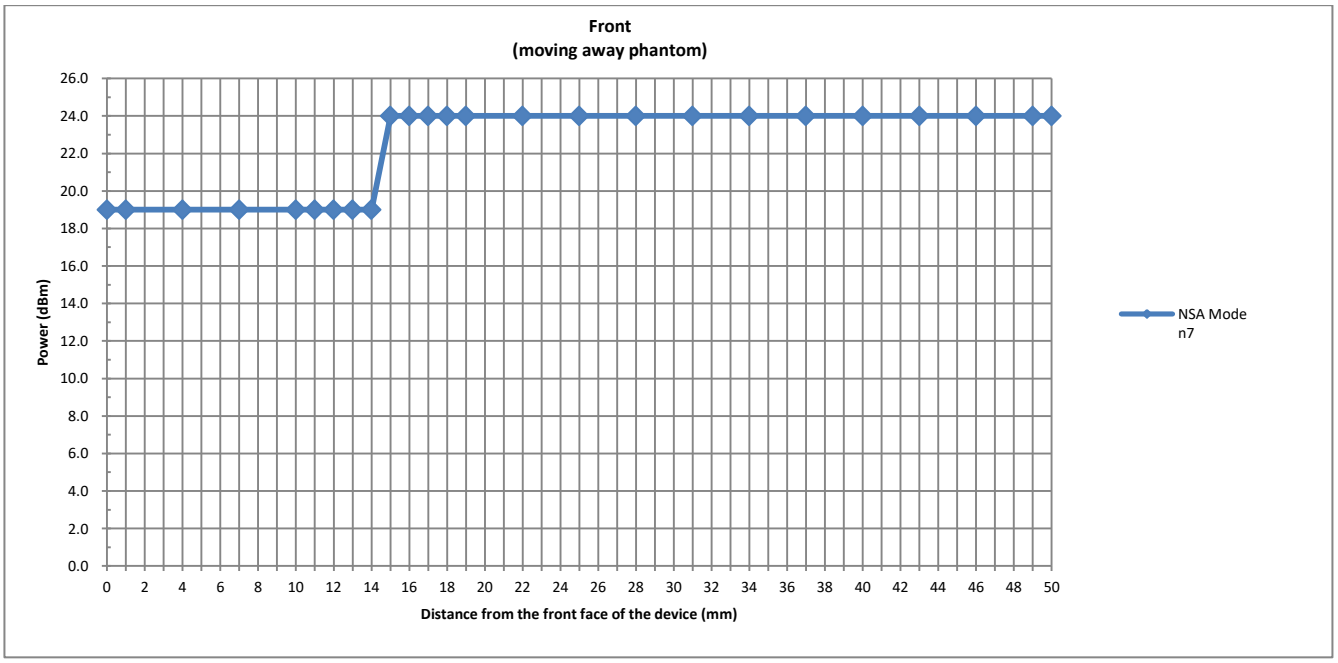
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	14	13	27	14	24

TX. Band	Handheld Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
NSA Mode n7	24	19	5

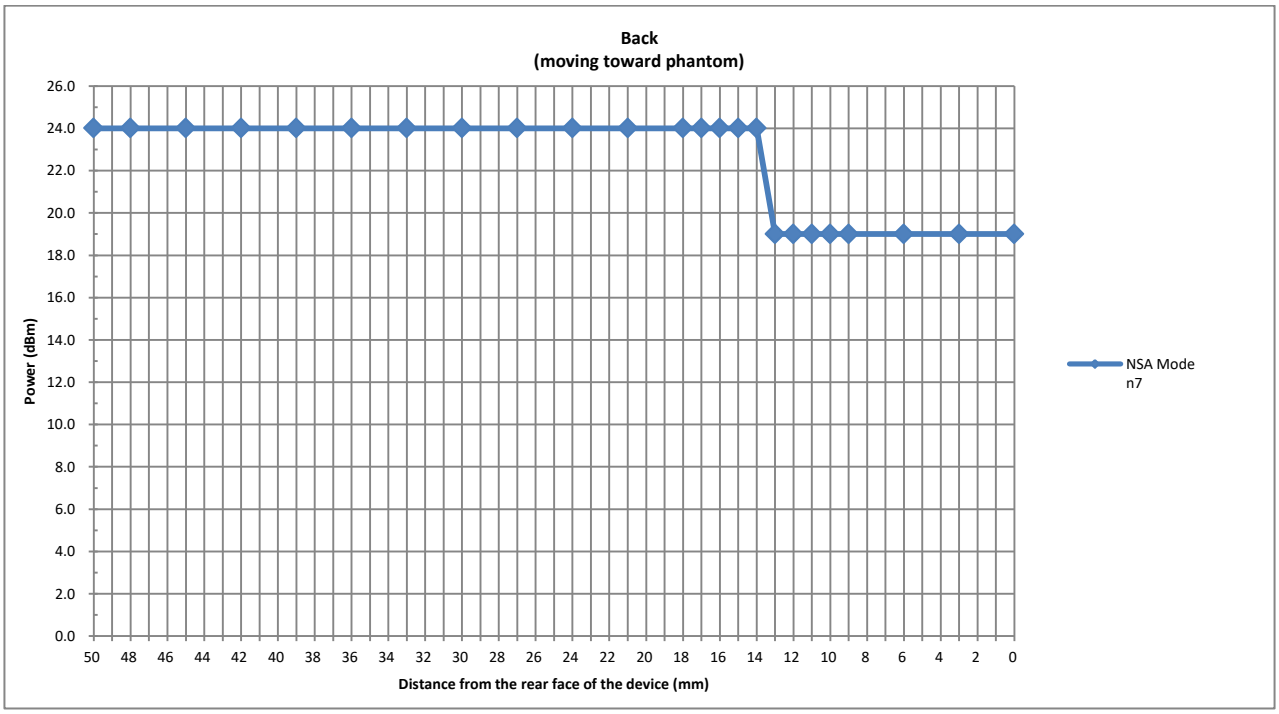
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	48	45	42	39	36	33	30	27	24	21	18	15	12	11	10	9	8	7	6	5	4	3	0
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19



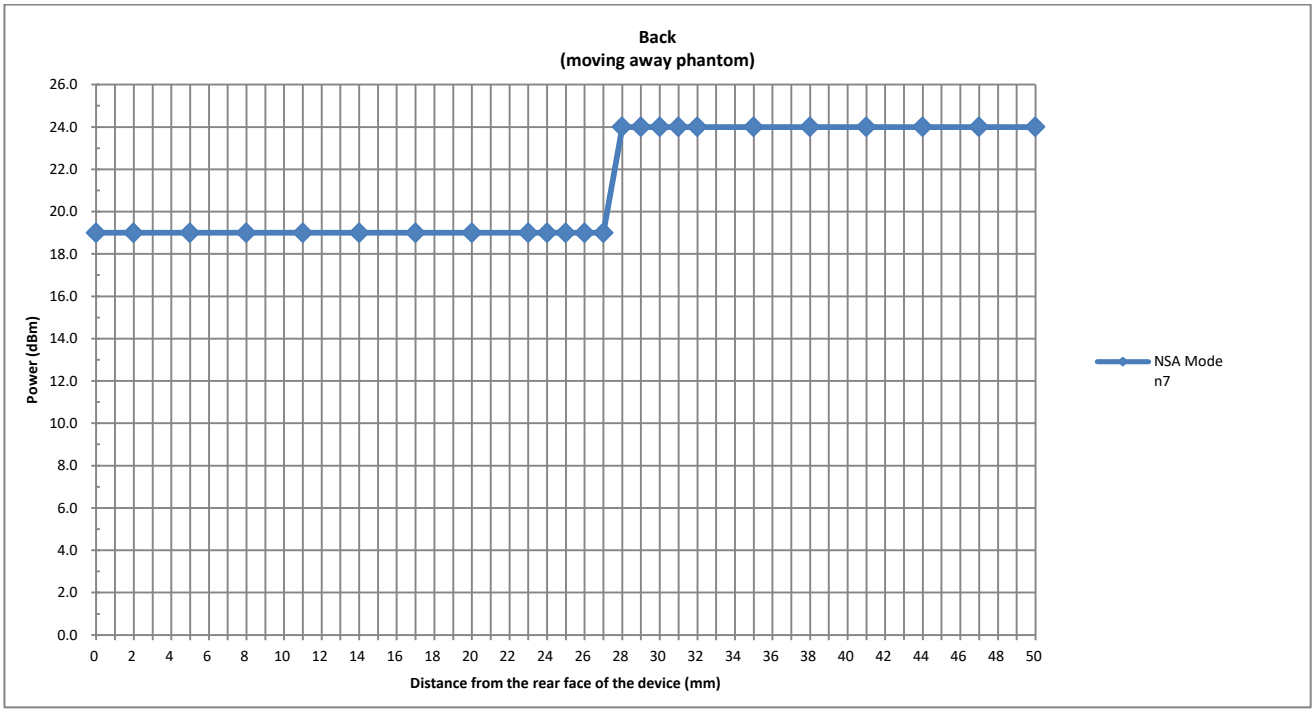
Handheld Triggering Distance (mm) and Triggering Power (dBm)																									
Front																									
Distance	50	49	46	43	40	37	34	31	28	25	22	19	18	17	16	15	14	13	12	11	10	7	4	1	0
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19



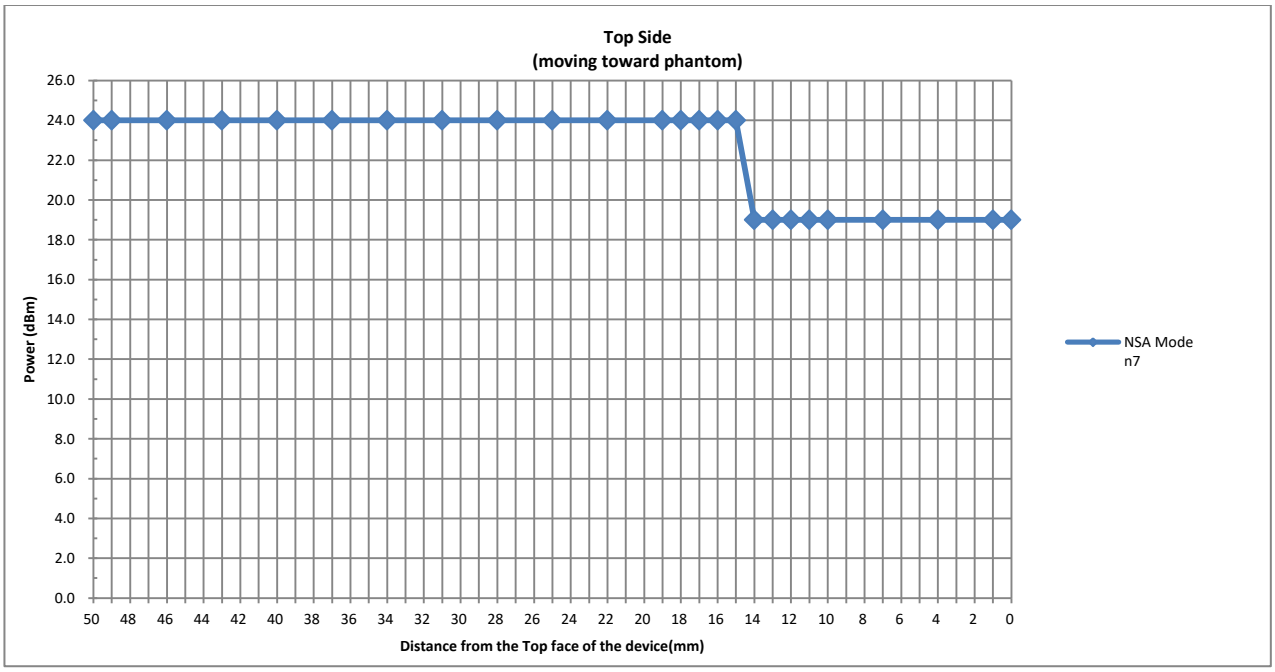
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	48	45	42	39	36	33	30	27	24	21	18	17	16	15	14	13	12	11	10	9	6	3	0
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19



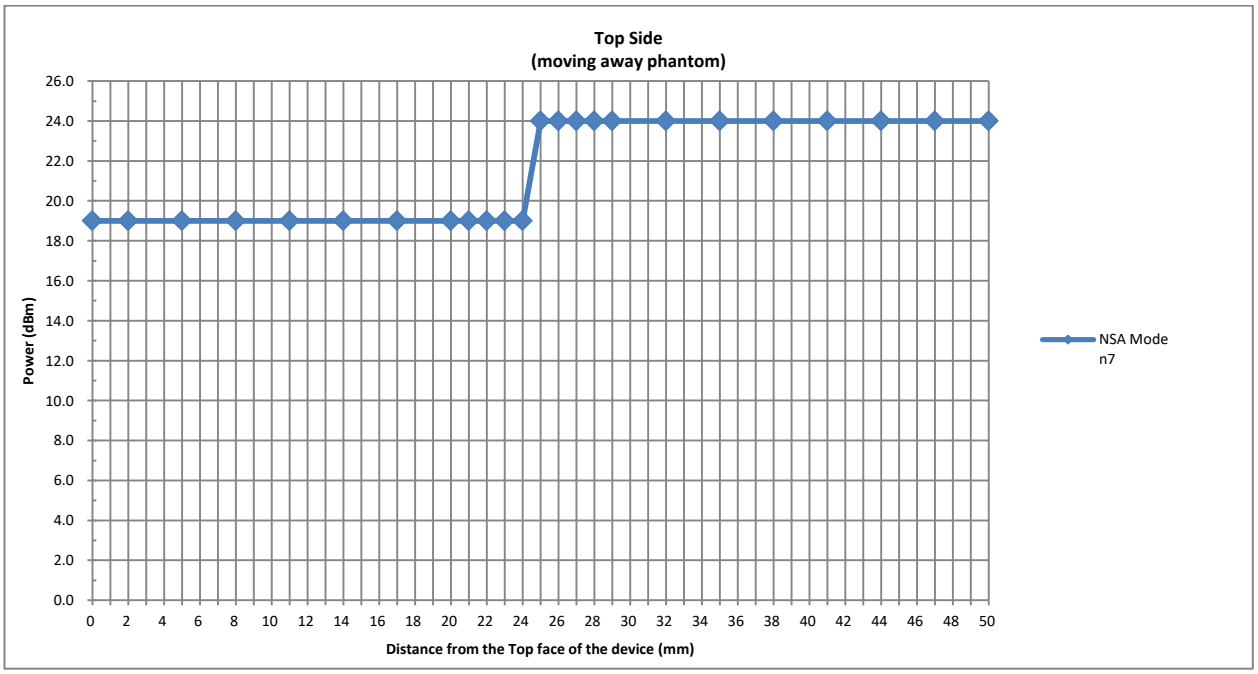
Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	47	44	41	38	35	32	31	30	29	28	27	26	25	24	23	20	17	14	11	8	5	2	0
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19	19	19	19	19



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
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19



Handheld Triggering Distance (mm) and Triggering Power (dBm)																								
Top Side																								
Distance	50	47	44	41	38	35	32	29	28	27	26	25	24	23	22	21	20	17	14	11	8	5	2	0
NSA Mode n7	24	24	24	24	24	24	24	24	24	24	24	24	19	19	19	19	19	19	19	19	19	19	19	19



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:

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

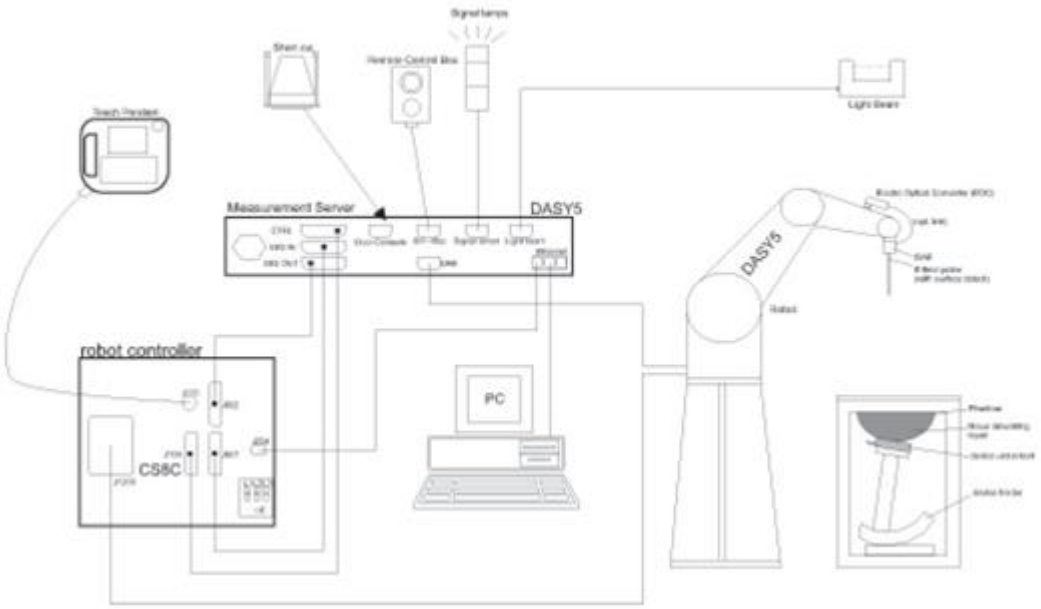
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.

<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.

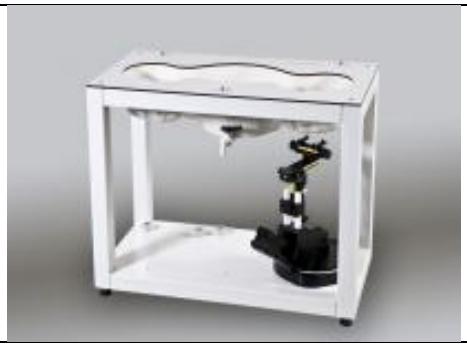
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

8.3 Phantom

<SAM Twin Phantom>

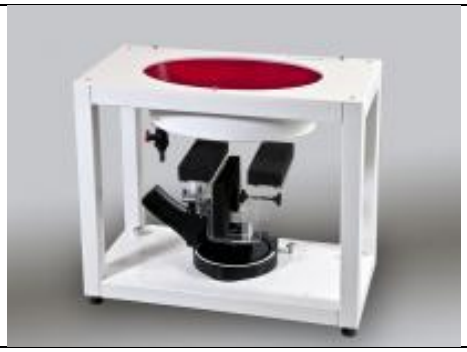
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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	$½ \cdot \delta \cdot \ln(2) \pm 0.5$ 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	2020/3/26
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	2020/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1070	2018/12/7	2021/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2020/9/23
SPEAG	Data Acquisition Electronics	DAE4	1358	2019/4/17	2020/4/16
SPEAG	Data Acquisition Electronics	DAE4	656	2019/12/17	2020/12/16
SPEAG	Dosimetric E-Field Probe	EX3DV4	3843	2019/9/26	2020/9/25
SPEAG	Dosimetric E-Field Probe	EX3DV4	7592	2020/5/22	2021/5/21
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1697	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2019/4/17	2020/4/16
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/16	2021/4/15
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2019/4/17	2020/4/16
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/4/16	2021/4/15
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2019/4/17	2020/4/16
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 Meter	NRVD	102081	2020/8/14	2021/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2019/8/14	2020/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2019/8/14	2020/8/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2020/8/13	2021/8/12
R&S	CBT BLUETOOTH TESTER	CBT	101641	2020/1/8	2021/1/7
EXA	Spectrum Analyzer	FSV7	101631	2020/1/8	2021/1/7
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2019/8/15	2020/8/14
FLUKE	DIGITAC THERMOMETER	51II	97240029	2020/8/14	2021/8/13
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note	
ARRA	Power Divider	A3200-2	N/A	Note	
MCL	Attenuation1	BW-S10W5+	N/A	Note	
MCL	Attenuation2	BW-S10W5+	N/A	Note	
MCL	Attenuation3	BW-S10W5+	N/A	Note	
Agilent	Dual Directional Coupler	778D	20500	Note	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note	

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.

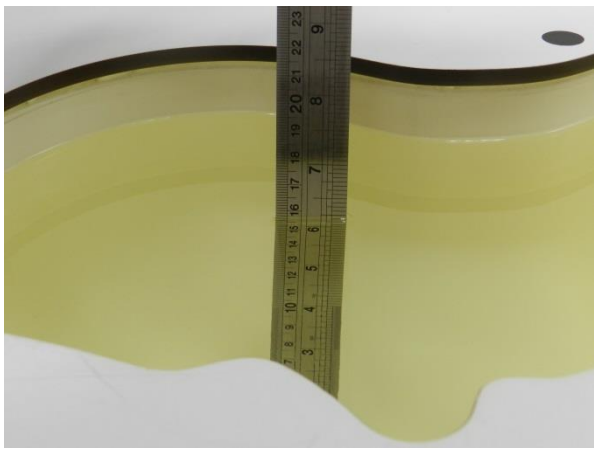


Fig 11.1 Photo of Liquid Height for Head SAR

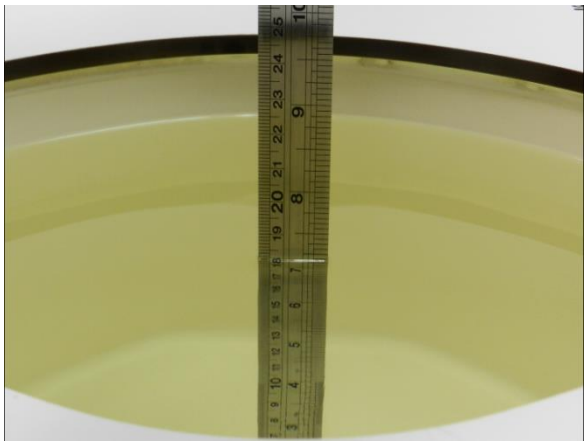


Fig 11.2 Photo of Liquid Height for Body SAR

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	0.872	41.158	0.89	41.90	-2.02	-1.77	±5	2020/2/15
835	Head	22.9	0.911	42.682	0.90	41.50	1.22	2.85	±5	2020/2/21
1750	Head	22.7	1.343	38.542	1.37	40.10	-1.97	-3.89	±5	2020/2/28
1900	Head	22.8	1.391	40.638	1.40	40.00	-0.64	1.60	±5	2020/3/3
2450	Head	22.7	1.86	38.535	1.80	39.20	3.33	-1.70	±5	2020/3/13
2600	Head	22.7	2.053	40.199	1.96	39.00	4.74	3.07	±5	2020/3/10
5250	Head	22.7	4.595	36.402	4.71	35.90	-2.44	1.40	±5	2020/3/15
5600	Head	22.8	4.985	35.825	5.07	35.50	-1.68	0.92	±5	2020/3/18
5750	Head	22.9	5.161	35.569	5.22	35.40	-1.13	0.48	±5	2020/3/19
835	Head	22.7	0.944	42.289	0.90	41.50	4.89	1.90	±5	2020/8/19
1750	Head	22.8	1.359	39.559	1.37	40.10	-0.80	-1.35	±5	2020/8/21
2450	Head	22.6	1.808	38.576	1.80	39.20	0.44	-1.59	±5	2020/8/20
2600	Head	22.9	1.927	38.270	1.96	39.00	-1.68	-1.87	±5	2020/8/21
5250	Head	22.8	4.567	35.453	4.71	35.90	-3.04	-1.25	±5	2020/8/19
5600	Head	22.7	4.950	34.844	5.07	35.50	-2.37	-1.85	±5	2020/8/20
5750	Head	22.9	5.132	34.565	5.22	35.40	-1.69	-2.36	±5	2020/8/20

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 (%)
2020/2/15	750	Head	250	1087	3843	1358	2.12	8.36	8.48	1.44
2020/2/21	835	Head	250	4d151	3843	1358	2.40	9.30	9.6	3.23
2020/2/28	1750	Head	250	1090	3843	1358	9.10	36.40	36.4	0.00
2020/3/3	1900	Head	250	5d170	3843	1358	10.10	39.00	40.4	3.59
2020/3/13	2450	Head	250	908	3843	1358	12.80	52.80	51.2	-3.03
2020/3/10	2600	Head	250	1070	3843	1358	15.40	58.10	61.6	6.02
2020/3/15	5250	Head	100	1113	3843	1358	8.02	80.50	80.2	-0.37
2020/3/18	5600	Head	100	1113	3843	1358	8.31	83.40	83.1	-0.36
2020/3/19	5750	Head	100	1113	3843	1358	7.62	80.00	76.2	-4.75
2020/8/19	835	Head	250	4d151	7592	656	2.50	9.30	10.00	7.53
2020/8/21	1750	Head	250	1090	7592	656	8.57	36.40	34.28	-5.82
2020/8/20	2450	Head	250	908	7592	656	13.00	52.80	52.00	-1.52
2020/8/21	2600	Head	250	1070	7592	656	14.80	58.10	59.20	1.89
2020/8/19	5250	Head	100	1113	7592	656	7.43	80.50	74.30	-7.70
2020/8/20	5600	Head	100	1113	7592	656	8.59	83.40	85.90	3.00
2020/8/20	5750	Head	100	1113	7592	656	7.63	80.00	76.30	-4.63

<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 (%)
2020/2/21	835	Head	250	4d151	3843	1358	1.59	6.16	6.36	3.25
2020/2/28	1750	Head	250	1090	3843	1358	4.87	19.20	19.48	1.46
2020/3/3	1900	Head	250	5d170	3843	1358	5.19	20.30	20.76	2.27
2020/3/13	2450	Head	250	908	3843	1358	6.13	24.20	24.52	1.32
2020/3/10	2600	Head	250	1070	3843	1358	6.65	26.10	26.6	1.92
2020/3/15	5250	Head	100	1113	3843	1358	2.32	23.10	23.2	0.43
2020/3/18	5600	Head	100	1113	3843	1358	2.38	23.80	23.8	0.00
2020/3/19	5750	Head	100	1113	3843	1358	2.18	22.80	21.8	-4.39
2020/8/21	1750	Head	250	1090	7592	656	4.58	19.20	18.32	-4.58
2020/8/20	2450	Head	250	908	7592	656	6.20	24.20	24.80	2.48
2020/8/21	2600	Head	250	1070	7592	656	6.90	26.10	27.60	5.75
2020/8/19	5250	Head	100	1113	7592	656	2.10	23.10	21.00	-9.09
2020/8/20	5600	Head	100	1113	7592	656	2.48	23.80	24.80	4.20
2020/8/20	5750	Head	100	1113	7592	656	2.17	22.80	21.70	-4.82

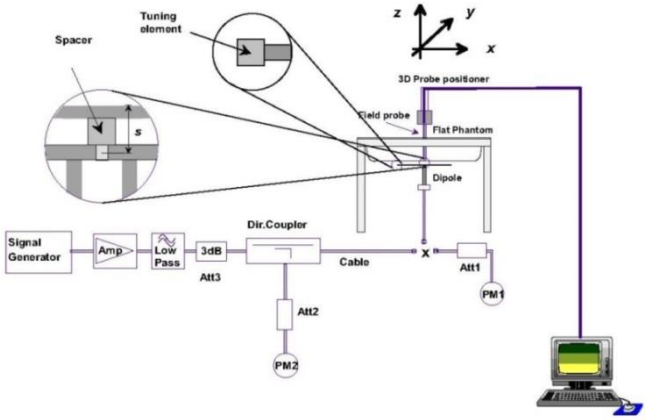


Fig 11.3.1 System Performance Check Setup

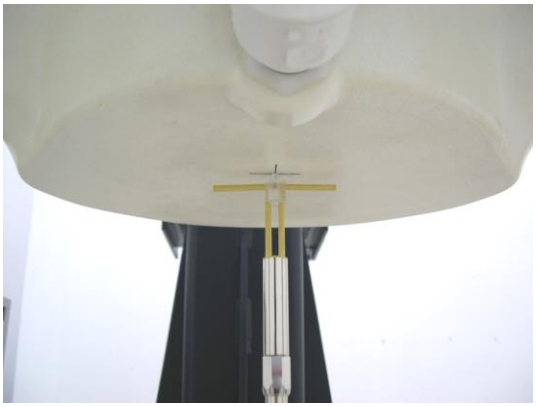


Fig 11.3.2 Setup Photo

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.

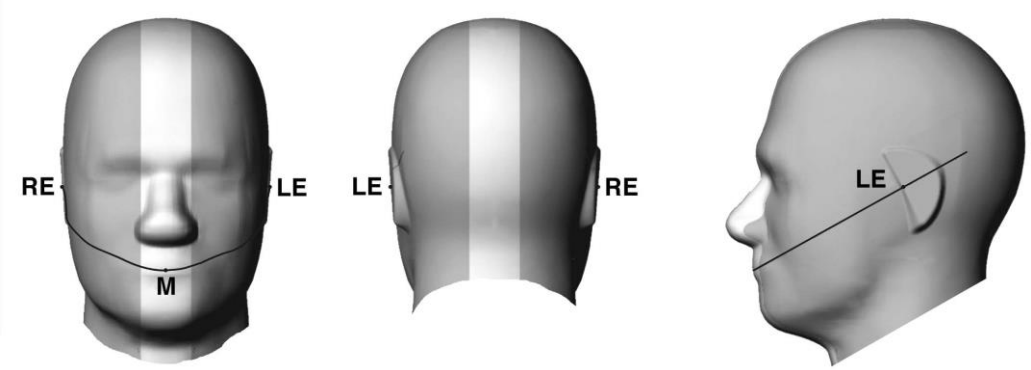


Fig 12.1.1 Front, back, and side views of SAM twin phantom

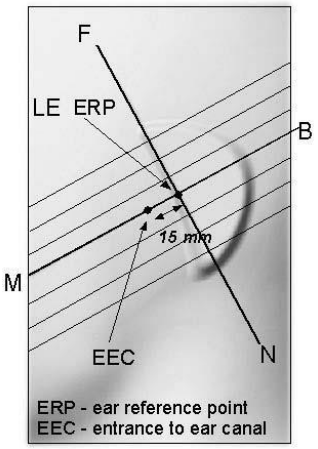


Fig 12.1.2 Close-up side view of phantom showing the ear region.

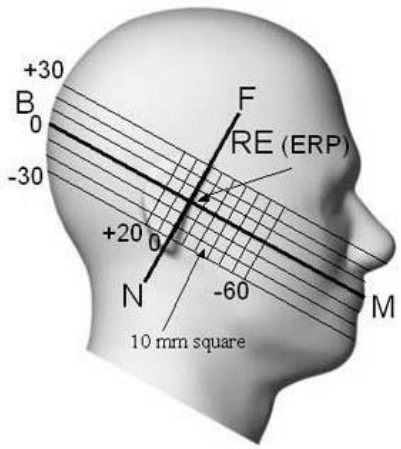


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

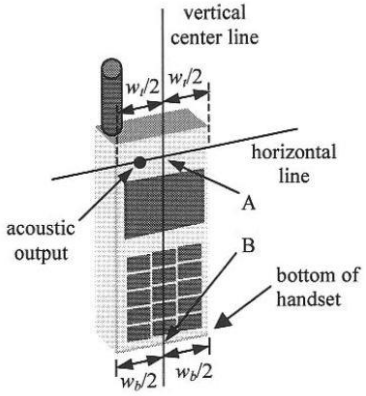


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

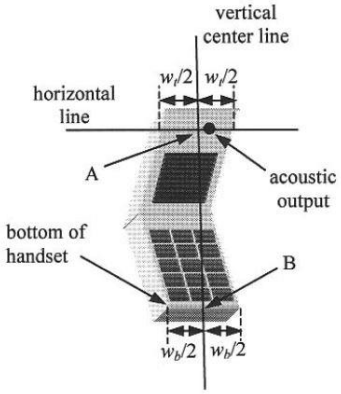


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

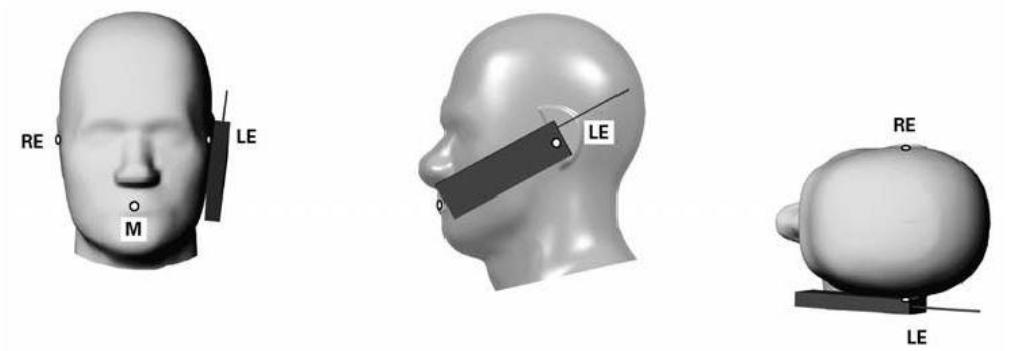


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

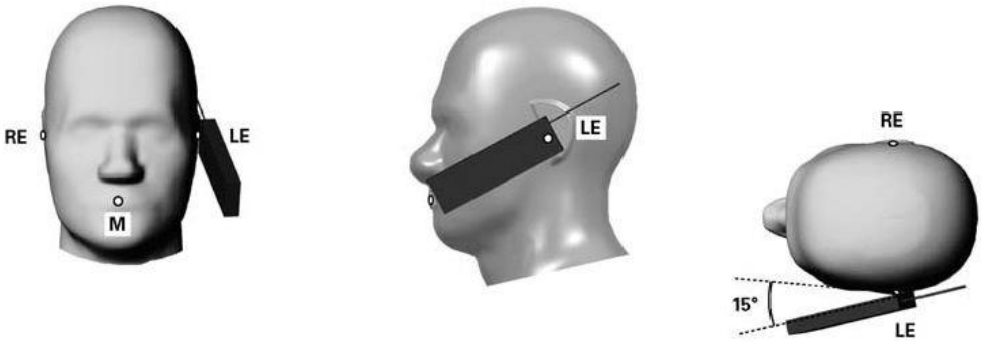


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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.

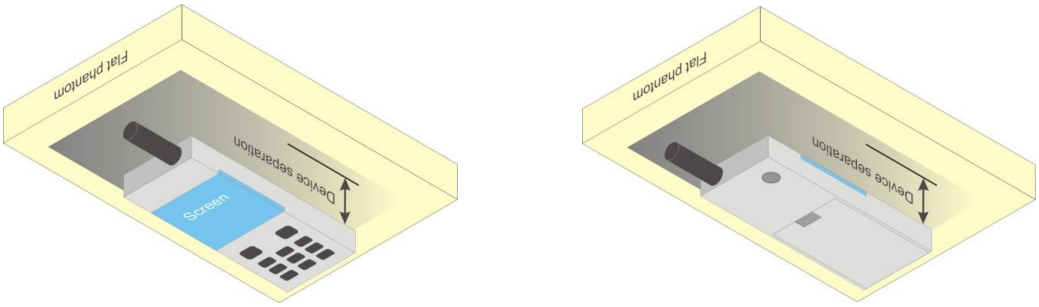


Fig 12.4 Body Worn Position

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.

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
WWAN Bottom Antenna	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
2.4GHz WLAN Antenna 1 & BT Antenna	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
5GHz WLAN Antenna 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
2.4GHz & 5GHz WLAN Antenna 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna	Yes	Yes	Yes	No	No	Yes
WWAN Bottom Antenna	Yes	Yes	No	Yes	Yes	Yes
2.4GHz WLAN Antenna 1 & BT Antenna	Yes	Yes	Yes	No	Yes	No
5GHz WLAN Antenna 1	Yes	Yes	Yes	No	Yes	No
2.4GHz & 5GHz WLAN Antenna 2	Yes	Yes	Yes	No	Yes	No

Note:

1. WWAN Top antenna is located at the left side of bottom edge of the device.
2. WWAN Bottom antenna is located at the bottom of the device.
3. 2.4GHz WLAN Antenna 1 & BT Antenna is located at the Right-top of the device
4. 5GHz WLAN Antenna 1 is located at the Right-top of the device
5. 2.4GHz & 5GHz WLAN Antenna 2 is located at the Right-top of the device

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.		

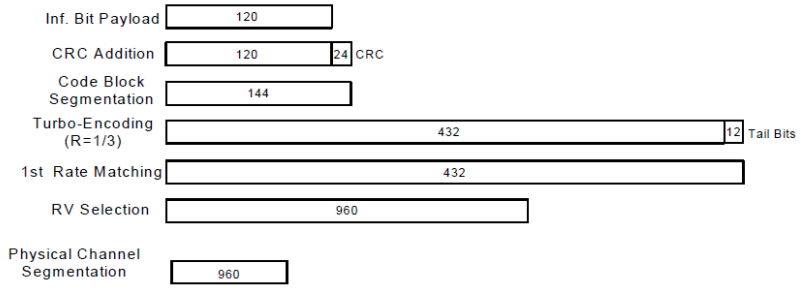


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

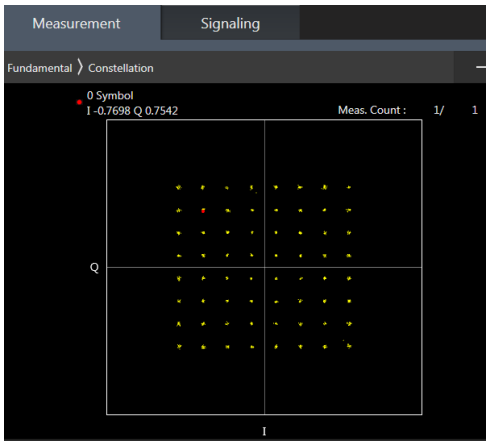
General Note:

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

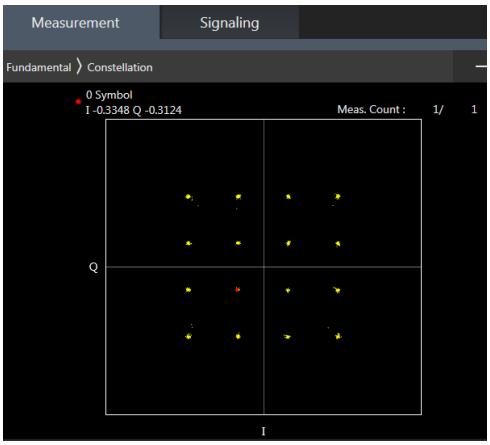
<LTE Conducted Power>

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 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.

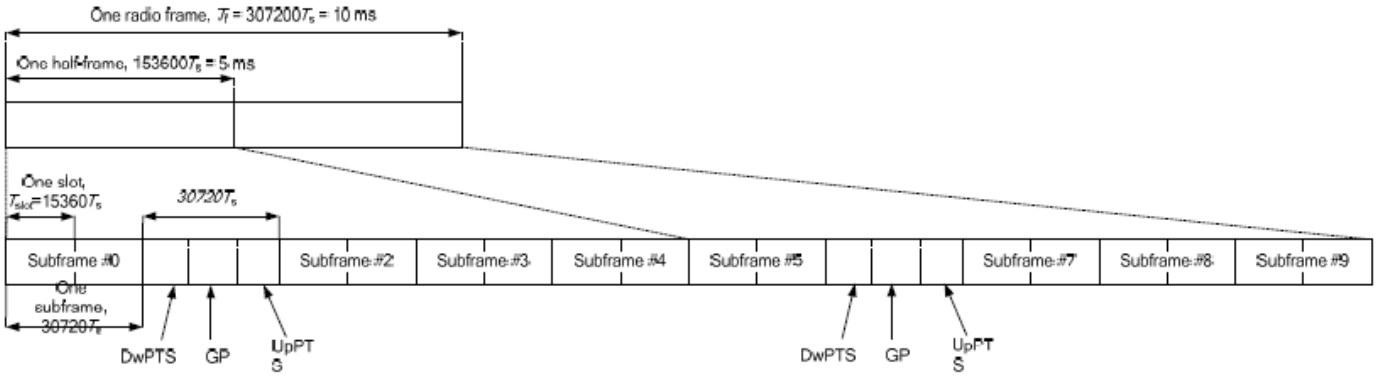


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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:

For LTE Band 41 Power class 2

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

<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.
4. The following "**"mark components mean the new added CA downlink components.

Index	2CC	Index	3CC	Index	4CC
2CC #1	CA_2A-4A	3CC #1	CA_2A-4A-5A	4CC #1**	CA_7C-66A-66A
2CC #2	CA_2A-5A	3CC #2**	CA_7A-66A-66A		
2CC #3	CA_4A-5A	3CC #3**	CA_7C-66A		
2CC #4	CA_4A-7A				
2CC #5	CA_5A-38A				
2CC #6	CA_5A-41A				
2CC #7	CA_7B				
2CC #8	CA_7C				
2CC #9	CA_38C				
2CC #10	CA_4A-4A				
2CC #11	CA_7A-7A				
2CC #12**	CA_66B				
2CC #13**	CA_66C				
2CC #14**	CA_66A-66A				
2CC #15**	CA_7A-66A				
2CC #16**	CA_5A-7A				

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>

5G NR Output Power (Unit: dBm)

General Note:

1. NR implementation of n7 is limited to EN-DC operations only (NSA), with LTE Bands 5/66 acting as anchor bands, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.
2. Following 5G NR n7 support SCS 15KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/ 256QAM, Bandwidth 5M/10M/15M/20M.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
   b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QMA/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
   c. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel
   d. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
   e. PI/2 BPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested
   f. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
4. 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		

EN-DC configuration	Uplink EN-DC configuration	E-UTRA configuration	NR configuration
DC_5A_n7A	DC_5A_n7A	5A	n7A
DC_66A_n7A	DC_66A_n7A	66A	n7A

<WLAN Conducted Power>

General Note:

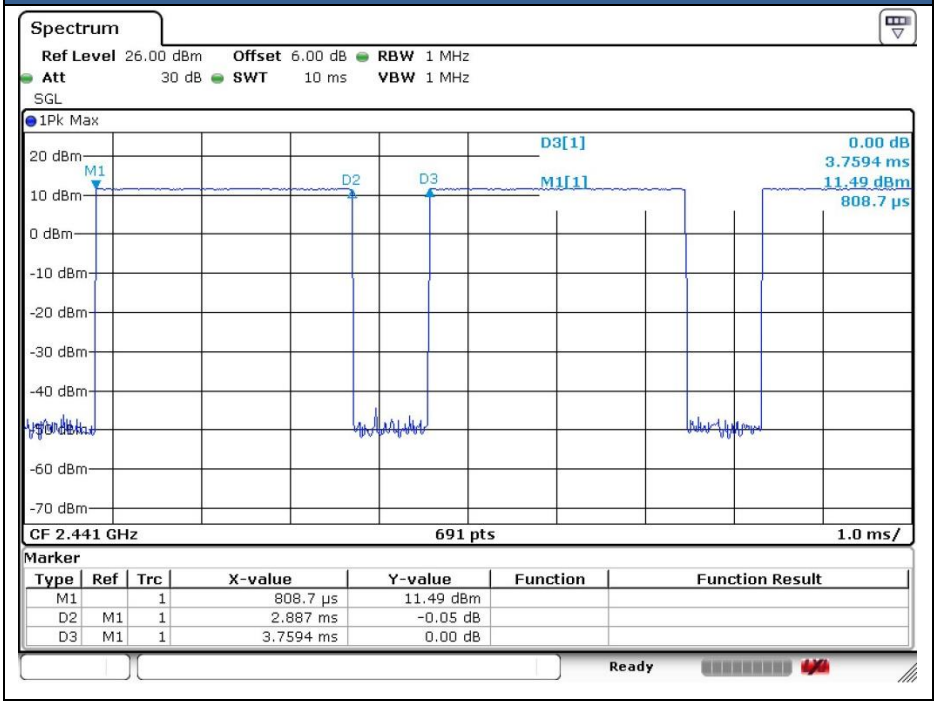
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. 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 76.79 % 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. 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. When the phone is in talking mode and receiver worked, 5GNR n7 power reduction will be active.
6. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66/38/41, 5GNR n7 and WLAN2.4GHz/WLAN5.2GHz/5.3GHz/5.5GHz/5.8GHz reduced power will be active.
7. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head / hotspot / body-worn / extremity.
8. P-sensor can detect handheld state, GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66, 5GNR n7 for front/back/bottom sides/top sides of product specific 10g SAR condition reduced powers will be active.
9. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA band II/IV, LTE band 2/4/5/7/66/38/41, 5GNR n7 and 2.4GHz /WLAN/5.2GHz/ WLAN/5.8GHz.
10. For P-sensor reduced power level is higher than hotspot reduced power for GSM1900, WCDMA band II/IV, LTE band 2/4/7/66/38/41, so for front/back P-sensor SAR can represent conservatively for front/back hotspot SAR.
11. WWAN Top antenna is located at the left side of bottom edge of the device.
12. WWAN Bottom antenna is located at the bottom of the device.
13. 2.4GHz WLAN Antenna 1 & BT Antenna is located at the Right-top of the device
14. 5GHz WLAN Antenna 1 is located at the Right-top of the device
15. 2.4GHz & 5GHz WLAN Antenna 2 is located at the Right-top of the device
16. 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/GSM1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/26/38/41/66, 5GNR n7 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.
17. 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: 13 mm
Back: 22 mm

18. 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:
Bottom Ant:
Front: 6 mm
Back: 8 mm
bottom side: 10 mm

Top Ant:
Front: 6 mm
Back: 12 mm
bottom side: 13 mm
19. LTE Band5 6mm/12mm distance SAR performed to do co-located with WLAN analysis

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. This device supports HPUE for LTE band 41 with class 2 level, so HPUE SAR has been performed.
7. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
8. LTE B4 / B5 / B17 / B38 SAR test was covered by LTE B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   c. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion

d. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 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.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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	0mm	Full	251	848.8	27.71	28.50	1.199	-0.01	0.222	**0.266**
	GSM850	GPRS 3 Tx slots	Right Tilted	0mm	Full	251	848.8	27.71	28.50	1.199	-0.06	0.079	0.095
	GSM850	GPRS 3 Tx slots	Left Cheek	0mm	Full	251	848.8	27.71	28.50	1.199	-0.09	0.131	0.157
	GSM850	GPRS 3 Tx slots	Left Tilted	0mm	Full	251	848.8	27.71	28.50	1.199	-0.19	0.072	0.087
	GSM1900	GPRS 3 Tx slots	Right Cheek	0mm	Full	661	1880	25.55	26.50	1.245	-0.05	0.053	0.066
	GSM1900	GPRS 3 Tx slots	Right Tilted	0mm	Full	661	1880	25.55	26.50	1.245	-0.06	0.036	0.045
02	GSM1900	GPRS 3 Tx slots	Left Cheek	0mm	Full	661	1880	25.55	26.50	1.245	0.01	0.065	**0.081**
	GSM1900	GPRS 3 Tx slots	Left Tilted	0mm	Full	661	1880	25.55	26.50	1.245	-0.02	0.045	0.056

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Full	4182	836.4	23.36	24.00	1.159	-0.02	0.148	**0.171**
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	Full	4182	836.4	23.36	24.00	1.159	-0.09	0.083	0.096
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Full	4182	836.4	23.36	24.00	1.159	-0.04	0.125	0.145
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	Full	4182	836.4	23.36	24.00	1.159	-0.15	0.070	0.081
04	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Full	1413	1732.6	23.92	24.00	1.019	-0.08	0.117	**0.119**
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	Full	1413	1732.6	23.92	24.00	1.019	-0.11	0.068	0.069
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Full	1413	1732.6	23.92	24.00	1.019	0.09	0.085	0.086
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	Full	1413	1732.6	23.92	24.00	1.019	-0.01	0.054	0.055
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Full	9262	1852.4	23.94	24.00	1.014	-0.04	0.076	0.077
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	Full	9262	1852.4	23.94	24.00	1.014	-0.09	0.059	0.060
05	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Full	9262	1852.4	23.94	24.00	1.014	-0.02	0.084	**0.085**
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	Full	9262	1852.4	23.94	24.00	1.014	0.11	0.071	0.072

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Full	23095	707.5	22.90	24.00	1.288	-0.08	0.162	**0.209**
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Full	23095	707.5	23.05	24.00	1.245	0.03	0.108	0.134
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Full	23095	707.5	22.90	24.00	1.288	-0.02	0.080	0.102
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Full	23095	707.5	23.05	24.00	1.245	0	0.042	0.052
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Full	23095	707.5	22.90	24.00	1.288	-0.09	0.132	0.170
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Full	23095	707.5	23.05	24.00	1.245	0.02	0.081	0.101
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Full	23095	707.5	22.90	24.00	1.288	0.01	0.082	0.105
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Full	23095	707.5	23.05	24.00	1.245	0.01	0.054	0.067
07	LTE Band 26&5	15M	QPSK	1	0	Right Cheek	0mm	Full	26865	831.5	23.03	24.00	1.250	0.18	0.114	**0.143**
	LTE Band 26&5	15M	QPSK	36	39	Right Cheek	0mm	Full	26865	831.5	23.11	24.00	1.227	-0.1	0.110	0.135
	LTE Band 26&5	15M	QPSK	1	0	Right Tilted	0mm	Full	26865	831.5	23.03	24.00	1.250	-0.04	0.069	0.086
	LTE Band 26&5	15M	QPSK	36	39	Right Tilted	0mm	Full	26865	831.5	23.11	24.00	1.227	0.03	0.049	0.060
	LTE Band 26&5	15M	QPSK	1	0	Left Cheek	0mm	Full	26865	831.5	23.03	24.00	1.250	0.09	0.108	0.135
	LTE Band 26&5	15M	QPSK	36	39	Left Cheek	0mm	Full	26865	831.5	23.11	24.00	1.227	0.08	0.084	0.103
	LTE Band 26&5	15M	QPSK	1	0	Left Tilted	0mm	Full	26865	831.5	23.03	24.00	1.250	0.09	0.062	0.077
	LTE Band 26&5	15M	QPSK	36	39	Left Tilted	0mm	Full	26865	831.5	23.11	24.00	1.227	0.03	0.048	0.058
08	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Full	132322	1745	23.60	24.00	1.096	-0.02	0.138	**0.151**
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	Full	132322	1745	23.64	24.00	1.086	0.08	0.094	0.102
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	Full	132322	1745	23.60	24.00	1.096	0.14	0.056	0.061
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Full	132322	1745	23.64	24.00	1.086	0.11	0.043	0.047
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Full	132322	1745	23.60	24.00	1.096	-0.04	0.088	0.096
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	Full	132322	1745	23.64	24.00	1.086	-0.02	0.062	0.067
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	Full	132322	1745	23.60	24.00	1.096	-0.06	0.061	0.066
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	Full	132322	1745	23.64	24.00	1.086	0.02	0.042	0.045
	LTE Band 2	20M	QPSK	1	0	Right Cheek	0mm	Full	18900	1880	23.57	24.00	1.104	-0.04	0.086	0.095
	LTE Band 2	20M	QPSK	50	50	Right Cheek	0mm	Full	18900	1880	23.67	24.00	1.079	0.11	0.081	0.087
	LTE Band 2	20M	QPSK	1	0	Right Tilted	0mm	Full	18900	1880	23.57	24.00	1.104	-0.01	0.073	0.080
	LTE Band 2	20M	QPSK	50	50	Right Tilted	0mm	Full	18900	1880	23.67	24.00	1.079	0.01	0.050	0.054
09	LTE Band 2	20M	QPSK	1	0	Left Cheek	0mm	Full	18900	1880	23.57	24.00	1.104	0.02	0.104	**0.115**
	LTE Band 2	20M	QPSK	50	50	Left Cheek	0mm	Full	18900	1880	23.67	24.00	1.079	0.15	0.091	0.098
	LTE Band 2	20M	QPSK	1	0	Left Tilted	0mm	Full	18900	1880	23.57	24.00	1.104	-0.09	0.054	0.060
	LTE Band 2	20M	QPSK	50	50	Left Tilted	0mm	Full	18900	1880	23.67	24.00	1.079	0.07	0.037	0.040
10	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Full	21350	2560	23.81	24.00	1.045	0.05	0.062	**0.064**
	LTE Band 7C	20M	QPSK	1	0	Right Cheek	0mm	Full	21350+21152	2560+2540.2	23.66	24.00	1.081	0.09	0.054	0.059
	LTE Band 7	20M	QPSK	50	50	Right Cheek	0mm	Full	21350	2560	23.64	24.00	1.086	0.04	0.028	0.030
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Full	21350	2560	23.81	24.00	1.045	-0.05	0.031	0.032
	LTE Band 7	20M	QPSK	50	50	Right Tilted	0mm	Full	21350	2560	23.64	24.00	1.086	-0.03	0.009	0.010
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Full	21350	2560	23.81	24.00	1.045	-0.02	0.041	0.042
	LTE Band 7	20M	QPSK	50	50	Left Cheek	0mm	Full	21350	2560	23.64	24.00	1.086	-0.01	0.029	0.032
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Full	21350	2560	23.81	24.00	1.045	-0.04	0.021	0.022
	LTE Band 7	20M	QPSK	50	50	Left Tilted	0mm	Full	21350	2560	23.64	24.00	1.086	-0.05	0.027	0.029

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
11	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.09	0.045	**0.050**
	LTE Band 41	20M	QPSK	50	24	Right Cheek	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	-0.09	0.033	0.035
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	-0.01	0.019	0.021
	LTE Band 41	20M	QPSK	50	24	Right Tilted	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	-0.09	0.020	0.021
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.06	0.043	0.048
	LTE Band 41	20M	QPSK	50	24	Left Cheek	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	0.09	0.040	0.043
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.04	0.025	0.028
	LTE Band 41	20M	QPSK	50	24	Left Tilted	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	0.07	0.024	0.026

<5G NR 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)
	FR1 n7	20M	QPSK	1	1	Right Cheek	Top Ant	Reduced	507000	2535	14.82	16.00	1.312	0.09	0.381	0.500
	FR1 n7	20M	QPSK	50	0	Right Cheek	Top Ant	Reduced	507000	2535	14.70	16.00	1.349	-0.11	0.373	0.503
	FR1 n7	20M	QPSK	1	1	Right Tilted	Top Ant	Reduced	507000	2535	14.82	16.00	1.312	0.11	0.410	0.538
63	FR1 n7	20M	QPSK	50	0	Right Tilted	Top Ant	Reduced	507000	2535	14.70	16.00	1.349	0.08	0.409	**0.552**
	FR1 n7	20M	QPSK	1	1	Left Cheek	Top Ant	Reduced	507000	2535	14.82	16.00	1.312	0.03	0.261	0.342
	FR1 n7	20M	QPSK	50	0	Left Cheek	Top Ant	Reduced	507000	2535	14.70	16.00	1.349	-0.02	0.269	0.363
	FR1 n7	20M	QPSK	1	1	Left Tilted	Top Ant	Reduced	507000	2535	14.82	16.00	1.312	0.07	0.309	0.405
	FR1 n7	20M	QPSK	50	0	Left Tilted	Top Ant	Reduced	507000	2535	14.70	16.00	1.349	0.04	0.324	0.437

<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)
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	-0.06	0.052	0.058
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	-0.14	0.026	0.029
12	Bluetooth	1Mbps	Left Cheek	0mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	-0.18	0.071	**0.079**
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	0.03	0.059	0.066

<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)
WWAN Off & At Head Power Table 4																
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	0.01	0.382	0.421
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	-0.08	0.408	0.449
13	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	-0.08	0.990	**1.091**
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1+2	Full	11	2462	22.07	23.00	1.239	100	1.000	-0.12	0.636	0.788
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	-0.14	0.928	1.022
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1+2	Full	11	2462	22.07	23.00	1.239	100	1.000	0.11	0.595	0.737
WWAN On & At Head Power Table 5																
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	0.02	0.020	0.020
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	-0.12	0.021	0.022
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	0.03	0.056	0.057
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	0.09	0.051	0.052

<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)
WWAN Off & At Head Power Table 4																
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.15	0.208	0.270
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	0.11	0.068	0.088
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.12	0.606	0.786
14	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.1	0.627	**0.813**
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1+2	Full	56	5280	19.70	21.00	1.349	98.28	1.018	-0.19	0.506	0.695
WWAN On & At Head Power Table 5																
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.01	0.002	0.003
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.03	0.010	0.015
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	-0.02	0.019	0.029
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.07	0.023	0.034
WWAN Off & At Head Power Table 4																
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.05	0.563	0.706
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.1	0.634	0.795
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.13	0.729	0.914
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1+2	Full	116	5580	20.42	21.00	1.143	98.28	1.018	-0.17	0.651	0.757
15	WLAN5.5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.07	0.803	**1.007**
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1+2	Full	116	5580	20.42	21.00	1.143	98.28	1.018	-0.1	0.856	0.996
WWAN On & At Head Power Table 5																
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.01	0.041	0.052
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.08	0.054	0.069
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.01	0.056	0.071
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	-0.14	0.058	0.073
WWAN Off & At Head Power Table 4																
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1+2	Full	149	5745	19.92	20.00	1.019	98.28	1.018	0.08	0.379	0.393
	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1+2	Full	149	5745	19.92	20.00	1.019	98.28	1.018	0.16	0.463	0.480
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1+2	Full	149	5745	19.92	20.00	1.019	98.28	1.018	-0.14	0.384	0.398
16	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1+2	Full	149	5745	19.92	20.00	1.019	98.28	1.018	-0.02	0.578	**0.599**
WWAN On & At Head Power Table 5																
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.05	0.080	0.098
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.01	0.092	0.113
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	-0.09	0.104	0.128
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	-0.07	0.094	0.115

14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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	5mm	Full	251	848.8	27.71	28.50	1.199	-0.07	0.623	0.747
	GSM850	GPRS 3 Tx slots	Back	5mm	Full	251	848.8	27.71	28.50	1.199	-0.1	1.010	1.211
17	GSM850	GPRS 3 Tx slots	Back	5mm	Full	128	824.2	27.35	28.50	1.303	-0.14	1.070	**1.394**
	GSM850	GPRS 3 Tx slots	Back	5mm	Full	189	836.4	27.50	28.50	1.259	-0.05	0.963	1.212
	GSM850	GPRS 3 Tx slots	Left Side	5mm	Full	251	848.8	27.71	28.50	1.199	-0.01	0.089	0.106
	GSM850	GPRS 3 Tx slots	Right Side	5mm	Full	251	848.8	27.71	28.50	1.199	-0.08	0.241	0.289
	GSM850	GPRS 3 Tx slots	Bottom Side	5mm	Full	251	848.8	27.71	28.50	1.199	0.02	0.569	0.683
	GSM1900	GPRS 3 Tx slots	Front	5mm	Reduced	661	1880	21.24	22.50	1.337	0.1	0.718	0.960
	GSM1900	GPRS 3 Tx slots	Front	5mm	Reduced	512	1850.2	21.08	22.50	1.387	0.04	0.608	0.843
	GSM1900	GPRS 3 Tx slots	Front	5mm	Reduced	810	1909.8	20.86	22.50	1.459	-0.02	0.769	1.122
	GSM1900	GPRS 3 Tx slots	Back	5mm	Reduced	661	1880	21.24	22.50	1.337	-0.02	0.836	1.117
	GSM1900	GPRS 3 Tx slots	Back	5mm	Reduced	512	1850.2	21.08	22.50	1.387	-0.05	0.676	0.937
	GSM1900	GPRS 3 Tx slots	Back	5mm	Reduced	810	1909.8	20.86	22.50	1.459	-0.05	0.800	1.167
	GSM1900	GPRS 3 Tx slots	Left Side	5mm	Reduced	661	1880	19.34	20.50	1.306	0.07	0.034	0.045
	GSM1900	GPRS 3 Tx slots	Right Side	5mm	Reduced	661	1880	19.34	20.50	1.306	0.01	0.059	0.077
	GSM1900	GPRS 3 Tx slots	Bottom Side	5mm	Reduced	661	1880	19.34	20.50	1.306	0.07	0.697	0.910
	GSM1900	GPRS 3 Tx slots	Bottom Side	5mm	Reduced	512	1850.2	19.02	20.50	1.406	0.05	0.752	1.057
18	GSM1900	GPRS 3 Tx slots	Bottom Side	5mm	Reduced	810	1909.8	19.12	20.50	1.374	0.05	0.910	**1.250**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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 V	RMC 12.2Kbps	Front	5mm	Full	4182	836.4	23.36	24.00	1.159	-0.12	0.656	0.760
19	WCDMA V	RMC 12.2Kbps	Back	5mm	Full	4182	836.4	23.36	24.00	1.159	-0.03	1.150	**1.333**
	WCDMA V	RMC 12.2Kbps	Back	5mm	Full	4132	826.4	23.33	24.00	1.167	-0.13	1.130	1.318
	WCDMA V	RMC 12.2Kbps	Back	5mm	Full	4233	846.6	23.32	24.00	1.169	-0.03	1.120	1.310
	WCDMA V	RMC 12.2Kbps	Left Side	5mm	Full	4182	836.4	23.36	24.00	1.159	0.19	0.062	0.072
	WCDMA V	RMC 12.2Kbps	Right Side	5mm	Full	4182	836.4	23.36	24.00	1.159	0.02	0.226	0.262
	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	Full	4182	836.4	23.36	24.00	1.159	0.09	0.677	0.784
	WCDMA IV	RMC 12.2Kbps	Front	5mm	Reduced	1413	1732.6	17.68	18.00	1.076	0.11	0.985	1.060
	WCDMA IV	RMC 12.2Kbps	Front	5mm	Reduced	1312	1712.4	17.56	18.00	1.107	-0.03	1.050	1.162
	WCDMA IV	RMC 12.2Kbps	Front	5mm	Reduced	1513	1752.6	17.66	18.00	1.081	0.12	1.190	1.287
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Reduced	1413	1732.6	17.68	18.00	1.076	0.08	1.140	1.227
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Reduced	1312	1712.4	17.56	18.00	1.107	-0.05	1.130	1.250
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Reduced	1513	1752.6	17.66	18.00	1.081	-0.03	1.250	1.352
	WCDMA IV	RMC 12.2Kbps	Left Side	5mm	Reduced	1413	1732.6	16.65	17.50	1.216	0.04	0.046	0.056
	WCDMA IV	RMC 12.2Kbps	Right Side	5mm	Reduced	1413	1732.6	16.65	17.50	1.216	0.09	0.104	0.126
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	Reduced	1413	1732.6	16.65	17.50	1.216	0.08	1.130	1.374
	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	Reduced	1312	1712.4	16.62	17.50	1.225	0.05	1.010	1.237
20	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	Reduced	1513	1752.6	16.57	17.50	1.239	0.09	1.160	**1.437**
	WCDMA II	RMC 12.2Kbps	Front	5mm	Reduced	9262	1852.4	16.63	18.00	1.371	0.01	0.828	1.135
	WCDMA II	RMC 12.2Kbps	Front	5mm	Reduced	9400	1880	16.52	18.00	1.406	0.01	0.888	1.249
	WCDMA II	RMC 12.2Kbps	Front	5mm	Reduced	9538	1907.6	16.53	18.00	1.403	0.06	0.963	1.351
	WCDMA II	RMC 12.2Kbps	Back	5mm	Reduced	9262	1852.4	16.63	18.00	1.371	-0.04	0.832	1.141
	WCDMA II	RMC 12.2Kbps	Back	5mm	Reduced	9400	1880	16.52	18.00	1.406	0.01	0.908	1.277
	WCDMA II	RMC 12.2Kbps	Back	5mm	Reduced	9538	1907.6	16.53	18.00	1.403	0.03	0.981	1.376
	WCDMA II	RMC 12.2Kbps	Left Side	5mm	Reduced	9262	1852.4	14.11	15.50	1.377	0.15	0.026	0.036
	WCDMA II	RMC 12.2Kbps	Right Side	5mm	Reduced	9262	1852.4	14.11	15.50	1.377	0.06	0.030	0.041
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Reduced	9262	1852.4	14.11	15.50	1.377	0.01	0.734	1.011
	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Reduced	9400	1880	14.10	15.50	1.380	0.05	0.896	1.237
21	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	Reduced	9538	1907.6	13.94	15.50	1.432	0.19	0.964	**1.381**

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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 12	10M	QPSK	1	0	Front	5mm	Full	23095	707.5	22.90	24.00	1.288	0.05	0.625	0.805
	LTE Band 12	10M	QPSK	25	0	Front	5mm	Full	23095	707.5	23.05	24.00	1.245	-0.03	0.416	0.518
	LTE Band 12	10M	QPSK	50	0	Front	5mm	Full	23095	707.5	23.03	24.00	1.250	0.04	0.460	0.575
22	LTE Band 12	10M	QPSK	1	0	Back	5mm	Full	23095	707.5	22.90	24.00	1.288	0.11	0.845	**1.089**
	LTE Band 12	10M	QPSK	25	0	Back	5mm	Full	23095	707.5	23.05	24.00	1.245	-0.04	0.598	0.744
	LTE Band 12	10M	QPSK	50	0	Back	5mm	Full	23095	707.5	23.03	24.00	1.250	-0.01	0.617	0.771
	LTE Band 12	10M	QPSK	1	0	Left Side	5mm	Full	23095	707.5	22.90	24.00	1.288	-0.02	0.114	0.147
	LTE Band 12	10M	QPSK	25	0	Left Side	5mm	Full	23095	707.5	23.05	24.00	1.245	0.12	0.087	0.108
	LTE Band 12	10M	QPSK	1	0	Right Side	5mm	Full	23095	707.5	22.90	24.00	1.288	-0.04	0.130	0.167
	LTE Band 12	10M	QPSK	25	0	Right Side	5mm	Full	23095	707.5	23.05	24.00	1.245	0.1	0.126	0.157
	LTE Band 12	10M	QPSK	1	0	Bottom Side	5mm	Full	23095	707.5	22.90	24.00	1.288	0.08	0.518	0.667
	LTE Band 12	10M	QPSK	25	0	Bottom Side	5mm	Full	23095	707.5	23.05	24.00	1.245	0.06	0.308	0.383
	LTE Band 26	15M	QPSK	1	0	Front	5mm	Full	26865	831.5	23.03	24.00	1.250	-0.04	0.833	1.041
	LTE Band 26	15M	QPSK	36	39	Front	5mm	Full	26865	831.5	23.11	24.00	1.227	0.01	0.752	0.923
	LTE Band 26	15M	QPSK	75	0	Front	5mm	Full	26865	831.5	23.21	24.00	1.199	0.08	0.651	0.781
23	LTE Band 26	15M	QPSK	1	0	Back	5mm	Full	26865	831.5	23.03	24.00	1.250	0.04	1.090	**1.363**
	LTE Band 26	15M	QPSK	36	39	Back	5mm	Full	26865	831.5	23.11	24.00	1.227	0.04	0.947	1.162
	LTE Band 26	15M	QPSK	75	0	Back	5mm	Full	26865	831.5	23.21	24.00	1.199	0.02	1.010	1.211
	LTE Band 26	15M	QPSK	1	0	Left Side	5mm	Full	26865	831.5	23.03	24.00	1.250	0.07	0.106	0.133
	LTE Band 26	15M	QPSK	36	39	Left Side	5mm	Full	26865	831.5	23.11	24.00	1.227	-0.03	0.098	0.120
	LTE Band 26	15M	QPSK	1	0	Right Side	5mm	Full	26865	831.5	23.03	24.00	1.250	-0.06	0.369	0.461
	LTE Band 26	15M	QPSK	36	39	Right Side	5mm	Full	26865	831.5	23.11	24.00	1.227	0.09	0.272	0.334
	LTE Band 26	15M	QPSK	1	0	Bottom Side	5mm	Full	26865	831.5	23.03	24.00	1.250	-0.05	0.416	0.520
	LTE Band 26	15M	QPSK	36	39	Bottom Side	5mm	Full	26865	831.5	23.11	24.00	1.227	0.04	0.418	0.513
EN-DC																
	LTE Band 5	10M	QPSK	1	0	Front	5mm	Reduced	20525	836.5	19.10	20.50	1.380	-0.08	0.106	0.146
	LTE Band 5	10M	QPSK	25	0	Front	5mm	Reduced	20525	836.5	18.82	20.50	1.472	-0.08	0.114	0.168
	LTE Band 5	10M	QPSK	1	0	Back	5mm	Reduced	20525	836.5	19.10	20.50	1.380	-0.08	0.311	0.429
	LTE Band 5	10M	QPSK	25	0	Back	5mm	Reduced	20525	836.5	18.82	20.50	1.472	0.05	0.322	0.474
	LTE Band 5	10M	QPSK	1	0	Left Side	5mm	Reduced	20525	836.5	19.10	20.50	1.380	0.03	0.039	0.054
	LTE Band 5	10M	QPSK	25	0	Left Side	5mm	Reduced	20525	836.5	18.82	20.50	1.472	0.04	0.040	0.059
	LTE Band 5	10M	QPSK	1	0	Right Side	5mm	Reduced	20525	836.5	19.10	20.50	1.380	0.05	0.118	0.163
	LTE Band 5	10M	QPSK	25	0	Right Side	5mm	Reduced	20525	836.5	18.82	20.50	1.472	0.01	0.124	0.183
	LTE Band 5	10M	QPSK	1	0	Bottom Side	5mm	Reduced	20525	836.5	19.10	20.50	1.380	0.02	0.134	0.185
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5mm	Reduced	20525	836.5	18.82	20.50	1.472	0.09	0.145	0.213
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Reduced	132072	1720	16.44	17.00	1.138	-0.04	1.010	1.149
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Reduced	132322	1745	16.34	17.00	1.164	-0.1	1.080	1.257
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Reduced	132572	1770	16.44	17.00	1.138	0.05	1.080	1.229
	LTE Band 66	20M	QPSK	50	50	Front	5mm	Reduced	132072	1720	16.61	17.00	1.094	0.08	1.000	1.094
	LTE Band 66	20M	QPSK	50	50	Front	5mm	Reduced	132322	1745	16.44	17.00	1.138	0.07	1.070	1.217
	LTE Band 66	20M	QPSK	50	50	Front	5mm	Reduced	132572	1770	16.53	17.00	1.114	0.09	1.050	1.170
	LTE Band 66	20M	QPSK	100	0	Front	5mm	Reduced	132072	1720	16.32	17.00	1.169	0.09	1.000	1.169
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Reduced	132072	1720	16.44	17.00	1.138	0.05	1.010	1.149
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Reduced	132322	1745	16.34	17.00	1.164	0.02	1.080	1.257
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Reduced	132572	1770	16.44	17.00	1.138	0.01	1.110	1.263
	LTE Band 66	20M	QPSK	50	50	Back	5mm	Reduced	132072	1720	16.61	17.00	1.094	0.05	0.950	1.039
	LTE Band 66	20M	QPSK	50	50	Back	5mm	Reduced	132322	1745	16.44	17.00	1.138	0.01	1.010	1.149
	LTE Band 66	20M	QPSK	50	50	Back	5mm	Reduced	132572	1770	16.53	17.00	1.114	0.03	1.060	1.181
	LTE Band 66	20M	QPSK	100	0	Back	5mm	Reduced	132072	1720	16.32	17.00	1.169	0.06	0.992	1.160
	LTE Band 66	20M	QPSK	1	0	Left Side	5mm	Reduced	132072	1720	15.18	16.50	1.355	0.01	0.036	0.048
	LTE Band 66	20M	QPSK	50	50	Left Side	5mm	Reduced	132072	1720	15.38	16.50	1.294	0.1	0.027	0.035
	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	Reduced	132072	1720	15.18	16.50	1.355	0.02	0.086	0.116

	LTE Band 66	20M	QPSK	50	50	Right Side	5mm	Reduced	132072	1720	15.38	16.50	1.294	0.02	0.077	0.100
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132072	1720	15.18	16.50	1.355	0.04	0.859	1.164
24	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132322	1745	15.06	16.50	1.393	0.06	0.966	**1.346**
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132572	1770	15.16	16.50	1.361	0.07	0.973	1.325
	LTE Band 66	20M	QPSK	50	50	Bottom Side	5mm	Reduced	132072	1720	15.38	16.50	1.294	0.08	0.743	0.962
	LTE Band 66	20M	QPSK	50	50	Bottom Side	5mm	Reduced	132322	1745	15.16	16.50	1.361	0.02	0.773	1.052
	LTE Band 66	20M	QPSK	50	50	Bottom Side	5mm	Reduced	132572	1770	15.25	16.50	1.334	0.09	0.760	1.013
	LTE Band 66	20M	QPSK	100	0	Bottom Side	5mm	Reduced	132072	1720	15.14	16.50	1.368	0.05	0.754	1.031
EN-DC																
	LTE Band 66	20M	QPSK	1	0	Front	5mm	Reduced	132322	1745	12.24	13.50	1.337	0.04	0.308	0.412
	LTE Band 66	20M	QPSK	50	0	Front	5mm	Reduced	132322	1745	12.02	13.50	1.406	0.02	0.307	0.432
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Reduced	132322	1745	12.24	13.50	1.337	0.04	0.359	0.480
	LTE Band 66	20M	QPSK	50	0	Back	5mm	Reduced	132322	1745	12.02	13.50	1.406	0.05	0.305	0.429
	LTE Band 66	20M	QPSK	1	0	Left Side	5mm	Reduced	132322	1745	11.88	12.00	1.028	0.02	0.020	0.020
	LTE Band 66	20M	QPSK	50	0	Left Side	5mm	Reduced	132322	1745	11.73	12.00	1.064	0.03	0.019	0.021
	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	Reduced	132322	1745	11.88	12.00	1.028	0.05	0.051	0.052
	LTE Band 66	20M	QPSK	50	0	Right Side	5mm	Reduced	132322	1745	11.73	12.00	1.064	0.08	0.051	0.055
	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	Reduced	132322	1745	11.88	12.00	1.028	-0.14	0.569	0.585
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	Reduced	132322	1745	11.73	12.00	1.064	-0.11	0.505	0.537

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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	5mm	Reduced	18900	1880	16.42	17.50	1.282	0.12	1.010	1.295
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Reduced	18700	1860	16.29	17.50	1.321	0.05	0.879	1.161
	LTE Band 2	20M	QPSK	1	0	Front	5mm	Reduced	19100	1900	16.54	17.50	1.247	0.13	1.080	1.347
25	LTE Band 2	20M	QPSK	50	50	Front	5mm	Reduced	18900	1880	16.38	17.50	1.294	0.07	1.080	**1.398**
	LTE Band 2	20M	QPSK	50	50	Front	5mm	Reduced	18700	1860	16.33	17.50	1.309	0.09	0.898	1.176
	LTE Band 2	20M	QPSK	50	50	Front	5mm	Reduced	19100	1900	16.55	17.50	1.245	0.13	1.110	1.381
	LTE Band 2	20M	QPSK	100	0	Front	5mm	Reduced	18900	1880	16.62	17.50	1.225	0.02	1.050	1.286
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Reduced	18900	1880	16.42	17.50	1.282	0.02	1.020	1.308
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Reduced	18700	1860	16.29	17.50	1.321	0.1	0.933	1.233
	LTE Band 2	20M	QPSK	1	0	Back	5mm	Reduced	19100	1900	16.54	17.50	1.247	0.03	0.896	1.118
	LTE Band 2	20M	QPSK	50	50	Back	5mm	Reduced	18900	1880	16.38	17.50	1.294	0.11	0.896	1.160
	LTE Band 2	20M	QPSK	50	50	Back	5mm	Reduced	18700	1860	16.33	17.50	1.309	-0.04	0.831	1.088
	LTE Band 2	20M	QPSK	50	50	Back	5mm	Reduced	19100	1900	16.55	17.50	1.245	-0.01	0.952	1.185
	LTE Band 2	20M	QPSK	100	0	Back	5mm	Reduced	18900	1880	16.62	17.50	1.225	0.14	0.874	1.070
	LTE Band 2	20M	QPSK	1	0	Left Side	5mm	Reduced	18900	1880	14.14	15.00	1.219	0.02	0.030	0.036
	LTE Band 2	20M	QPSK	50	50	Left Side	5mm	Reduced	18900	1880	14.23	15.00	1.194	0.09	0.026	0.031
	LTE Band 2	20M	QPSK	1	0	Right Side	5mm	Reduced	18900	1880	14.14	15.00	1.219	0.09	0.055	0.068
	LTE Band 2	20M	QPSK	50	50	Right Side	5mm	Reduced	18900	1880	14.23	15.00	1.194	0.01	0.049	0.059
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	Reduced	18900	1880	14.14	15.00	1.219	0.01	0.842	1.026
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	Reduced	18700	1860	14.14	15.00	1.219	0.09	0.943	1.150
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	Reduced	19100	1900	13.88	15.00	1.294	0.01	1.030	1.333
	LTE Band 2	20M	QPSK	50	50	Bottom Side	5mm	Reduced	18900	1880	14.23	15.00	1.194	0.08	0.975	1.164
	LTE Band 2	20M	QPSK	50	50	Bottom Side	5mm	Reduced	18700	1860	14.14	15.00	1.219	0.04	0.952	1.160
	LTE Band 2	20M	QPSK	50	50	Bottom Side	5mm	Reduced	19100	1900	13.95	15.00	1.274	0.01	0.977	1.244
	LTE Band 2	20M	QPSK	100	0	Bottom Side	5mm	Reduced	18900	1880	14.25	15.00	1.189	0.03	0.971	1.154
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Reduced	21350	2560	17.52	19.00	1.406	0.04	0.847	1.191
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Reduced	20850	2510	17.52	19.00	1.406	0.02	0.812	1.142
26	LTE Band 7	20M	QPSK	1	0	Front	5mm	Reduced	21100	2535	17.26	19.00	1.493	0.09	0.816	**1.218**
	LTE Band 7C	20M	QPSK	1	0	Front	5mm	Reduced	21100+20902	2535+2515.2	17.41	19.00	1.442	-0.02	0.779	1.123
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Reduced	21350	2560	17.66	19.00	1.361	-0.06	0.801	1.091
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Reduced	20850	2510	17.62	19.00	1.374	0.07	0.782	1.075
	LTE Band 7	20M	QPSK	50	0	Front	5mm	Reduced	21100	2535	17.46	19.00	1.426	0.06	0.779	1.111
	LTE Band 7	20M	QPSK	100	0	Front	5mm	Reduced	21350	2560	17.66	19.00	1.361	0.09	0.793	1.080
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Reduced	21350	2560	17.52	19.00	1.406	0.06	0.811	1.140
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Reduced	20850	2510	17.52	19.00	1.406	0.07	0.805	1.132
	LTE Band 7	20M	QPSK	1	0	Back	5mm	Reduced	21100	2535	17.26	19.00	1.493	0.01	0.809	1.208
	LTE Band 7	20M	QPSK	50	0	Back	5mm	Reduced	21350	2560	17.66	19.00	1.361	0.09	0.778	1.059
	LTE Band 7	20M	QPSK	50	0	Back	5mm	Reduced	20850	2510	17.62	19.00	1.374	-0.08	0.764	1.050
	LTE Band 7	20M	QPSK	50	0	Back	5mm	Reduced	21100	2535	17.46	19.00	1.426	0.06	0.757	1.079
	LTE Band 7	20M	QPSK	100	0	Back	5mm	Reduced	21350	2560	17.66	19.00	1.361	0.09	0.768	1.046
	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	Reduced	21350	2560	14.41	16.00	1.442	0.08	0.013	0.019
	LTE Band 7	20M	QPSK	50	50	Left Side	5mm	Reduced	21350	2560	14.57	16.00	1.390	0.03	0.009	0.012
	LTE Band 7	20M	QPSK	1	0	Right Side	5mm	Reduced	21350	2560	14.41	16.00	1.442	0.04	0.032	0.047
	LTE Band 7	20M	QPSK	50	50	Right Side	5mm	Reduced	21350	2560	14.57	16.00	1.390	0.01	0.032	0.045
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	Reduced	21350	2560	14.41	16.00	1.442	0.02	0.780	1.125
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	Reduced	20850	2510	14.31	16.00	1.476	0.09	0.808	1.192
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	Reduced	21100	2535	14.15	16.00	1.531	0.04	0.790	1.210
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5mm	Reduced	21350	2560	14.57	16.00	1.390	0.09	0.667	0.927
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5mm	Reduced	20850	2510	14.55	16.00	1.396	0.03	0.719	1.004
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5mm	Reduced	21100	2535	14.55	16.00	1.396	0.08	0.689	0.962
	LTE Band 7	20M	QPSK	100	0	Bottom Side	5mm	Reduced	21350	2560	14.45	16.00	1.429	0.08	0.666	0.952

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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	5mm	Reduced	40620	2593	20.04	21.50	1.400	62.9	1.006	-0.13	0.889	1.252
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Reduced	39750	2506	20.19	21.50	1.352	62.9	1.006	-0.02	0.886	1.205
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Reduced	40185	2549.5	19.99	21.50	1.416	62.9	1.006	-0.01	0.906	1.290
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Reduced	41055	2636.5	19.74	21.50	1.500	62.9	1.006	-0.08	0.720	1.086
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Reduced	41490	2680	19.96	21.50	1.426	62.9	1.006	-0.07	0.735	1.054
27	LTE Band 41	20M	QPSK	50	24	Front	5mm	Reduced	40620	2593	20.15	21.50	1.365	62.9	1.006	-0.03	0.950	**1.304**
	LTE Band 41	20M	QPSK	50	24	Front	5mm	Reduced	39750	2506	20.31	21.50	1.315	62.9	1.006	0.02	0.906	1.199
	LTE Band 41	20M	QPSK	50	24	Front	5mm	Reduced	40185	2549.5	20.10	21.50	1.380	62.9	1.006	0.09	0.933	1.296
	LTE Band 41	20M	QPSK	50	24	Front	5mm	Reduced	41055	2636.5	19.87	21.50	1.455	62.9	1.006	-0.04	0.787	1.152
	LTE Band 41	20M	QPSK	50	24	Front	5mm	Reduced	41490	2680	19.90	21.50	1.445	62.9	1.006	0.07	0.817	1.188
	LTE Band 41	20M	QPSK	100	0	Front	5mm	Reduced	40620	2593	20.27	21.50	1.327	62.9	1.006	0.03	0.942	1.258
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Reduced	40620	2593	20.04	21.50	1.400	62.9	1.006	0.08	0.881	1.240
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Reduced	39750	2506	20.19	21.50	1.352	62.9	1.006	0.06	0.838	1.140
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Reduced	40185	2549.5	19.99	21.50	1.416	62.9	1.006	0.07	0.846	1.205
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Reduced	41055	2636.5	19.74	21.50	1.500	62.9	1.006	0.09	0.688	1.038
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Reduced	41490	2680	19.96	21.50	1.426	62.9	1.006	0.01	0.723	1.037
	LTE Band 41	20M	QPSK	50	24	Back	5mm	Reduced	40620	2593	20.15	21.50	1.365	62.9	1.006	0.01	0.880	1.208
	LTE Band 41	20M	QPSK	50	24	Back	5mm	Reduced	39750	2506	20.31	21.50	1.315	62.9	1.006	0.07	0.847	1.121
	LTE Band 41	20M	QPSK	50	24	Back	5mm	Reduced	40185	2549.5	20.10	21.50	1.380	62.9	1.006	0.03	0.850	1.180
	LTE Band 41	20M	QPSK	50	24	Back	5mm	Reduced	41055	2636.5	19.87	21.50	1.455	62.9	1.006	0.01	0.742	1.086
	LTE Band 41	20M	QPSK	50	24	Back	5mm	Reduced	41490	2680	19.90	21.50	1.445	62.9	1.006	0.05	0.805	1.171
	LTE Band 41	20M	QPSK	100	0	Back	5mm	Reduced	40620	2593	20.27	21.50	1.327	62.9	1.006	0.01	0.882	1.178
	LTE Band 41	20M	QPSK	1	0	Left Side	5mm	Reduced	39750	2506	16.08	17.50	1.387	62.9	1.006	0.06	0.009	0.012
	LTE Band 41	20M	QPSK	50	24	Left Side	5mm	Reduced	39750	2506	16.20	17.50	1.349	62.9	1.006	0.04	0.004	0.006
	LTE Band 41	20M	QPSK	1	0	Right Side	5mm	Reduced	39750	2506	16.08	17.50	1.387	62.9	1.006	0.01	0.036	0.050
	LTE Band 41	20M	QPSK	50	24	Right Side	5mm	Reduced	39750	2506	16.20	17.50	1.349	62.9	1.006	0.03	0.037	0.051
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Reduced	40620	2593	15.93	17.50	1.435	62.9	1.006	0.05	0.890	1.285
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Reduced	39750	2506	16.08	17.50	1.387	62.9	1.006	0.02	0.807	1.126
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Reduced	40185	2549.5	15.88	17.50	1.452	62.9	1.006	0.03	0.837	1.223
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Reduced	41055	2636.5	15.63	17.50	1.538	62.9	1.006	0.08	0.708	1.096
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Reduced	41490	2680	15.85	17.50	1.462	62.9	1.006	0.04	0.732	1.077
	LTE Band 41	20M	QPSK	50	24	Bottom Side	5mm	Reduced	40620	2593	16.04	17.50	1.400	62.9	1.006	0.05	0.884	1.245
	LTE Band 41	20M	QPSK	50	24	Bottom Side	5mm	Reduced	39750	2506	16.20	17.50	1.349	62.9	1.006	0.08	0.842	1.143
	LTE Band 41	20M	QPSK	50	24	Bottom Side	5mm	Reduced	40185	2549.5	15.99	17.50	1.416	62.9	1.006	0.03	0.870	1.239
	LTE Band 41	20M	QPSK	50	24	Bottom Side	5mm	Reduced	41055	2636.5	15.76	17.50	1.493	62.9	1.006	0.07	0.754	1.132
	LTE Band 41	20M	QPSK	50	24	Bottom Side	5mm	Reduced	41490	2680	15.79	17.50	1.483	62.9	1.006	0.05	0.816	1.217
	LTE Band 41	20M	QPSK	100	0	Bottom Side	5mm	Reduced	40620	2593	16.16	17.50	1.361	62.9	1.006	0.04	0.909	1.245

<5G NR 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)
	FR1 n7	20M	QPSK	1	1	Front	5mm	Top Ant	Reduced	507000	2535	16.09	17.00	1.233	0.02	0.236	0.291
	FR1 n7	20M	QPSK	50	0	Front	5mm	Top Ant	Reduced	507000	2535	16.07	17.00	1.239	0.04	0.222	0.275
64	FR1 n7	20M	QPSK	1	1	Back	5mm	Top Ant	Reduced	507000	2535	16.09	17.00	1.233	-0.01	0.438	**0.540**
	FR1 n7	20M	QPSK	50	0	Back	5mm	Top Ant	Reduced	507000	2535	16.07	17.00	1.239	0.03	0.436	0.540
	FR1 n7	20M	QPSK	1	1	Left Side	5mm	Top Ant	Reduced	507000	2535	15.83	17.00	1.309	0.04	0.040	0.053
	FR1 n7	20M	QPSK	50	0	Left Side	5mm	Top Ant	Reduced	507000	2535	15.69	17.00	1.352	0.05	0.039	0.053
	FR1 n7	20M	QPSK	1	1	Top Side	5mm	Top Ant	Reduced	507000	2535	15.83	17.00	1.309	-0.11	0.402	0.526
	FR1 n7	20M	QPSK	50	0	Top Side	5mm	Top Ant	Reduced	507000	2535	15.69	17.00	1.352	0.04	0.377	0.510

<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)
	Bluetooth	1Mbps	Front	5mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	0.08	0.001	0.001
28	Bluetooth	1Mbps	Back	5mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	-0.1	0.044	**0.049**
	Bluetooth	1Mbps	Right Side	5mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	-0.07	0.001	0.001
	Bluetooth	1Mbp	Top Side	5mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	0.01	0.040	0.045

<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)
MHS (Mobile Hotspot) & Power Table 2																
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	-0.01	0.100	0.103
29	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	-0.16	0.286	**0.293**
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	0.04	0.012	0.012
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	-0.11	0.053	0.054

<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)
MHS (Mobile Hotspot) & Power Table 2																
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	Reduced	42	5210	12.47	12.50	1.007	93.35	1.071	-0.11	0.013	0.014
30	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	Reduced	42	5210	12.47	12.50	1.007	93.35	1.071	0.08	0.303	**0.327**
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 1+2	Reduced	42	5210	12.47	12.50	1.007	93.35	1.071	-0.03	0.014	0.015
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 1+2	Reduced	42	5210	12.47	12.50	1.007	93.35	1.071	0.07	0.029	0.031
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.18	0.012	0.015
31	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.12	0.234	**0.287**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0	0.001	0.001
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	-0.07	0.033	0.040

14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	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	5mm	-	Full	251	848.8	27.71	28.50	1.199	-0.07	0.623	0.747
	GSM850	GPRS 3 Tx slots	Back	5mm	-	Full	251	848.8	27.71	28.50	1.199	-0.1	1.010	1.211
32	GSM850	GPRS 3 Tx slots	Back	5mm	-	Full	128	824.2	27.35	28.50	1.303	-0.14	1.070	**1.394**
	GSM850	GPRS 3 Tx slots	Back	5mm	-	Full	189	836.4	27.50	28.50	1.259	-0.05	0.963	1.212
	GSM850	GPRS 3 Tx slots	Back	5mm	Headset	Full	128	824.2	27.35	28.50	1.303	-0.12	0.338	0.440
	GSM1900	GPRS 3 Tx slots	Front	5mm	-	Reduced	661	1880	21.24	22.50	1.337	0.1	0.718	0.960
	GSM1900	GPRS 3 Tx slots	Front	5mm	-	Reduced	512	1850.2	21.08	22.50	1.387	0.04	0.608	0.843
	GSM1900	GPRS 3 Tx slots	Front	5mm	-	Reduced	810	1909.8	20.86	22.50	1.459	-0.02	0.769	1.122
	GSM1900	GPRS 3 Tx slots	Back	5mm	-	Reduced	661	1880	21.24	22.50	1.337	-0.02	0.836	1.117
	GSM1900	GPRS 3 Tx slots	Back	5mm	-	Reduced	512	1850.2	21.08	22.50	1.387	-0.05	0.676	0.937
33	GSM1900	GPRS 3 Tx slots	Back	5mm	-	Reduced	810	1909.8	20.86	22.50	1.459	-0.05	0.800	**1.167**
	GSM1900	GPRS 3 Tx slots	Front	13mm	-	Full	810	1909.8	25.16	26.50	1.361	0.01	0.490	0.667
	GSM1900	GPRS 3 Tx slots	Back	22mm	-	Full	810	1909.8	25.16	26.50	1.361	0.03	0.195	0.265

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	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 V	RMC 12.2Kbps	Front	5mm	-	Full	4182	836.4	23.36	24.00	1.159	-0.12	0.656	0.760
34	WCDMA V	RMC 12.2Kbps	Back	5mm	-	Full	4182	836.4	23.36	24.00	1.159	-0.03	1.150	**1.333**
	WCDMA V	RMC 12.2Kbps	Back	5mm	-	Full	4132	826.4	23.33	24.00	1.167	-0.13	1.130	1.318
	WCDMA V	RMC 12.2Kbps	Back	5mm	-	Full	4233	846.6	23.32	24.00	1.169	-0.03	1.120	1.310
	WCDMA V	RMC 12.2Kbps	Back	5mm	Headset	Full	4182	836.4	23.36	24.00	1.159	0.01	0.786	0.911
	WCDMA IV	RMC 12.2Kbps	Front	5mm	-	Reduced	1413	1732.6	17.68	18.00	1.076	0.11	0.985	1.060
	WCDMA IV	RMC 12.2Kbps	Front	5mm	-	Reduced	1312	1712.4	17.56	18.00	1.107	-0.03	1.050	1.162
	WCDMA IV	RMC 12.2Kbps	Front	5mm	-	Reduced	1513	1752.6	17.66	18.00	1.081	0.12	1.190	1.287
	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	Reduced	1413	1732.6	17.68	18.00	1.076	0.08	1.140	1.227
	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	Reduced	1312	1712.4	17.56	18.00	1.107	-0.05	1.130	1.250
35	WCDMA IV	RMC 12.2Kbps	Back	5mm	-	Reduced	1513	1752.6	17.66	18.00	1.081	-0.03	1.250	**1.352**
	WCDMA IV	RMC 12.2Kbps	Back	5mm	Headset	Reduced	1513	1752.6	17.66	18.00	1.081	0.16	0.712	0.770
	WCDMA IV	RMC 12.2Kbps	Front	13mm	-	Full	1413	1732.6	23.92	24.00	1.019	0.01	0.920	0.937
	WCDMA IV	RMC 12.2Kbps	Front	13mm	-	Full	1312	1712.4	23.91	24.00	1.021	-0.03	0.812	0.829
	WCDMA IV	RMC 12.2Kbps	Front	13mm	-	Full	1513	1752.6	23.87	24.00	1.030	-0.08	1.150	1.185
	WCDMA IV	RMC 12.2Kbps	Back	22mm	-	Full	1513	1752.6	23.87	24.00	1.030	0.01	0.309	0.318
	WCDMA II	RMC 12.2Kbps	Front	5mm	-	Reduced	9262	1852.4	16.63	18.00	1.371	0.01	0.828	1.135
	WCDMA II	RMC 12.2Kbps	Front	5mm	-	Reduced	9400	1880	16.52	18.00	1.406	0.01	0.888	1.249
	WCDMA II	RMC 12.2Kbps	Front	5mm	-	Reduced	9538	1907.6	16.53	18.00	1.403	0.06	0.963	1.351
	WCDMA II	RMC 12.2Kbps	Back	5mm	-	Reduced	9262	1852.4	16.63	18.00	1.371	-0.04	0.832	1.141
	WCDMA II	RMC 12.2Kbps	Back	5mm	-	Reduced	9400	1880	16.52	18.00	1.406	0.01	0.908	1.277
36	WCDMA II	RMC 12.2Kbps	Back	5mm	-	Reduced	9538	1907.6	16.53	18.00	1.403	0.03	0.981	**1.376**
	WCDMA II	RMC 12.2Kbps	Back	5mm	Headset	Reduced	9538	1907.6	16.53	18.00	1.403	-0.04	0.391	0.549
	WCDMA II	RMC 12.2Kbps	Front	13mm	-	Full	9262	1852.4	23.94	24.00	1.014	0.11	0.985	0.999
	WCDMA II	RMC 12.2Kbps	Front	13mm	-	Full	9400	1880	23.89	24.00	1.026	-0.09	1.170	1.200
	WCDMA II	RMC 12.2Kbps	Front	13mm	-	Full	9538	1907.6	23.90	24.00	1.023	0.03	1.270	1.300
	WCDMA II	RMC 12.2Kbps	Back	22mm	-	Full	9538	1907.6	23.90	24.00	1.023	0.12	0.481	0.492

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	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 12	10M	QPSK	1	0	Front	5mm	-	Full	23095	707.5	22.90	24.00	1.288	0.05	0.625	0.805
	LTE Band 12	10M	QPSK	25	0	Front	5mm	-	Full	23095	707.5	23.05	24.00	1.245	-0.03	0.416	0.518
	LTE Band 12	10M	QPSK	50	0	Front	5mm	-	Full	23095	707.5	23.03	24.00	1.250	0.04	0.460	0.575
37	LTE Band 12	10M	QPSK	1	0	Back	5mm	-	Full	23095	707.5	22.90	24.00	1.288	0.11	0.845	**1.089**
	LTE Band 12	10M	QPSK	25	0	Back	5mm	-	Full	23095	707.5	23.05	24.00	1.245	-0.04	0.598	0.744
	LTE Band 12	10M	QPSK	50	0	Back	5mm	-	Full	23095	707.5	23.03	24.00	1.250	-0.01	0.617	0.771
	LTE Band 26	15M	QPSK	1	0	Front	5mm	-	Full	26865	831.5	23.03	24.00	1.250	-0.04	0.833	1.041
	LTE Band 26	15M	QPSK	36	39	Front	5mm	-	Full	26865	831.5	23.11	24.00	1.227	0.01	0.752	0.923
	LTE Band 26	15M	QPSK	75	0	Front	5mm	-	Full	26865	831.5	23.21	24.00	1.199	0.08	0.651	0.781
38	LTE Band 26	15M	QPSK	1	0	Back	5mm	-	Full	26865	831.5	23.03	24.00	1.250	0.04	1.090	**1.363**
	LTE Band 26	15M	QPSK	36	39	Back	5mm	-	Full	26865	831.5	23.11	24.00	1.227	0.04	0.947	1.162
	LTE Band 26	15M	QPSK	75	0	Back	5mm	-	Full	26865	831.5	23.21	24.00	1.199	0.02	1.010	1.211
	LTE Band 26	15M	QPSK	1	0	Back	5mm	Headset	Full	26865	831.5	23.03	24.00	1.250	-0.03	0.830	1.038
EN-DC																	
	LTE Band 5	10M	QPSK	1	0	Front	5mm	-	Reduced	20525	836.5	19.10	20.50	1.380	-0.08	0.106	0.146
	LTE Band 5	10M	QPSK	25	0	Front	5mm	-	Reduced	20525	836.5	18.82	20.50	1.472	-0.08	0.114	0.168
	LTE Band 5	10M	QPSK	1	0	Back	5mm	-	Reduced	20525	836.5	19.10	20.50	1.380	-0.08	0.311	0.429
	LTE Band 5	10M	QPSK	25	0	Back	5mm	-	Reduced	20525	836.5	18.82	20.50	1.472	0.05	0.322	0.474
	LTE Band 5	10M	QPSK	1	0	Front	13mm		Full	20525	836.5	22.97	24.00	1.268	-0.02	0.248	0.314
	LTE Band 5	10M	QPSK	1	0	Back	22mm		Full	20525	836.5	22.97	24.00	1.268	0.05	0.122	0.155
	LTE Band 66	20M	QPSK	1	0	Front	5mm	-	Reduced	132072	1720	16.44	17.00	1.138	-0.04	1.010	1.149
	LTE Band 66	20M	QPSK	1	0	Front	5mm	-	Reduced	132322	1745	16.34	17.00	1.164	-0.1	1.080	1.257
	LTE Band 66	20M	QPSK	1	0	Front	5mm	-	Reduced	132572	1770	16.44	17.00	1.138	0.05	1.080	1.229
	LTE Band 66	20M	QPSK	50	50	Front	5mm	-	Reduced	132072	1720	16.61	17.00	1.094	0.08	1.000	1.094
	LTE Band 66	20M	QPSK	50	50	Front	5mm	-	Reduced	132322	1745	16.44	17.00	1.138	0.07	1.070	1.217
	LTE Band 66	20M	QPSK	50	50	Front	5mm	-	Reduced	132572	1770	16.53	17.00	1.114	0.09	1.050	1.170
	LTE Band 66	20M	QPSK	100	0	Front	5mm	-	Reduced	132072	1720	16.32	17.00	1.169	0.09	1.000	1.169
	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	Reduced	132072	1720	16.44	17.00	1.138	0.05	1.010	1.149
	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	Reduced	132322	1745	16.34	17.00	1.164	0.02	1.080	1.257
	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	Reduced	132572	1770	16.44	17.00	1.138	0.01	1.110	1.263
	LTE Band 66	20M	QPSK	50	50	Back	5mm	-	Reduced	132072	1720	16.61	17.00	1.094	0.05	0.950	1.039
	LTE Band 66	20M	QPSK	50	50	Back	5mm	-	Reduced	132322	1745	16.44	17.00	1.138	0.01	1.010	1.149
	LTE Band 66	20M	QPSK	50	50	Back	5mm	-	Reduced	132572	1770	16.53	17.00	1.114	0.03	1.060	1.181
	LTE Band 66	20M	QPSK	100	0	Back	5mm	-	Reduced	132072	1720	16.32	17.00	1.169	0.06	0.992	1.160
	LTE Band 66	20M	QPSK	1	0	Back	5mm	Headset	Reduced	132572	1770	16.44	17.00	1.138	-0.05	0.390	0.444
	LTE Band 66	20M	QPSK	1	0	Front	13mm	-	Full	132072	1720	23.59	24.00	1.099	-0.05	0.991	1.089
	LTE Band 66	20M	QPSK	1	0	Front	13mm	-	Full	132322	1745	23.60	24.00	1.096	-0.07	1.030	1.129
39	LTE Band 66	20M	QPSK	1	0	Front	13mm	-	Full	132572	1770	23.42	24.00	1.143	-0.03	1.150	**1.314**
	LTE Band 66	20M	QPSK	1	0	Back	22mm	-	Full	132572	1770	23.42	24.00	1.143	-0.16	0.382	0.437
EN-DC																	
	LTE Band 66	20M	QPSK	1	0	Front	5mm	-	Reduced	132322	1745	12.24	13.50	1.337	0.04	0.308	0.412
	LTE Band 66	20M	QPSK	50	0	Front	5mm	-	Reduced	132322	1745	12.02	13.50	1.406	0.02	0.307	0.432
	LTE Band 66	20M	QPSK	1	0	Back	5mm	-	Reduced	132322	1745	12.24	13.50	1.337	0.04	0.359	0.480
	LTE Band 66	20M	QPSK	50	0	Back	5mm	-	Reduced	132322	1745	12.02	13.50	1.406	0.05	0.305	0.429
	LTE Band 2	20M	QPSK	1	0	Front	5mm	-	Reduced	18900	1880	16.42	17.50	1.282	0.12	1.010	1.295
	LTE Band 2	20M	QPSK	1	0	Front	5mm	-	Reduced	18700	1860	16.29	17.50	1.321	0.05	0.879	1.161
	LTE Band 2	20M	QPSK	1	0	Front	5mm	-	Reduced	19100	1900	16.54	17.50	1.247	0.13	1.080	1.347
40	LTE Band 2	20M	QPSK	50	50	Front	5mm	-	Reduced	18900	1880	16.38	17.50	1.294	0.07	1.080	**1.398**
	LTE Band 2	20M	QPSK	50	50	Front	5mm	-	Reduced	18700	1860	16.33	17.50	1.309	0.09	0.898	1.176
	LTE Band 2	20M	QPSK	50	50	Front	5mm	-	Reduced	19100	1900	16.55	17.50	1.245	0.13	1.110	1.381
	LTE Band 2	20M	QPSK	100	0	Front	5mm	-	Reduced	18900	1880	16.62	17.50	1.225	0.02	1.050	1.286
	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	Reduced	18900	1880	16.42	17.50	1.282	0.02	1.020	1.308

	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	Reduced	18700	1860	16.29	17.50	1.321	0.1	0.933	1.233
	LTE Band 2	20M	QPSK	1	0	Back	5mm	-	Reduced	19100	1900	16.54	17.50	1.247	0.03	0.896	1.118
	LTE Band 2	20M	QPSK	50	50	Back	5mm	-	Reduced	18900	1880	16.38	17.50	1.294	0.11	0.896	1.160
	LTE Band 2	20M	QPSK	50	50	Back	5mm	-	Reduced	18700	1860	16.33	17.50	1.309	-0.04	0.831	1.088
	LTE Band 2	20M	QPSK	50	50	Back	5mm	-	Reduced	19100	1900	16.55	17.50	1.245	-0.01	0.952	1.185
	LTE Band 2	20M	QPSK	100	0	Back	5mm	-	Reduced	18900	1880	16.62	17.50	1.225	0.14	0.874	1.070
	LTE Band 2	20M	QPSK	50	50	Front	5mm	Headset	Reduced	18900	1880	16.38	17.50	1.294	0.19	0.670	0.867
	LTE Band 2	20M	QPSK	1	0	Front	13mm	-	Full	18900	1880	23.57	24.00	1.104	0.14	0.997	1.101
	LTE Band 2	20M	QPSK	1	0	Front	13mm	-	Full	18700	1860	23.39	24.00	1.151	0.04	0.872	1.003
	LTE Band 2	20M	QPSK	1	0	Front	13mm	-	Full	19100	1900	23.48	24.00	1.127	0.04	1.090	1.229
	LTE Band 2	20M	QPSK	1	0	Back	22mm	-	Full	18700	1860	23.39	24.00	1.151	0.1	0.364	0.419

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	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	20M	QPSK	1	0	Front	5mm	-	Reduced	21350	2560	17.52	19.00	1.406	0.04	0.847	1.191
	LTE Band 7	20M	QPSK	1	0	Front	5mm	-	Reduced	20850	2510	17.52	19.00	1.406	0.02	0.812	1.142
41	LTE Band 7	20M	QPSK	1	0	Front	5mm	-	Reduced	21100	2535	17.26	19.00	1.493	0.09	0.816	**1.218**
	LTE Band 7C	20M	QPSK	1	0	Front	5mm	-	Reduced	21100+20902	2535+2515.2	17.41	19.00	1.442	-0.02	0.779	1.123
	LTE Band 7	20M	QPSK	50	0	Front	5mm	-	Reduced	21350	2560	17.66	19.00	1.361	-0.06	0.801	1.091
	LTE Band 7	20M	QPSK	50	0	Front	5mm	-	Reduced	20850	2510	17.62	19.00	1.374	0.07	0.782	1.075
	LTE Band 7	20M	QPSK	50	0	Front	5mm	-	Reduced	21100	2535	17.46	19.00	1.426	0.06	0.779	1.111
	LTE Band 7	20M	QPSK	100	0	Front	5mm	-	Reduced	21350	2560	17.66	19.00	1.361	0.09	0.793	1.080
	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	Reduced	21350	2560	17.52	19.00	1.406	0.06	0.811	1.140
	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	Reduced	20850	2510	17.52	19.00	1.406	0.07	0.805	1.132
	LTE Band 7	20M	QPSK	1	0	Back	5mm	-	Reduced	21100	2535	17.26	19.00	1.493	0.01	0.809	1.208
	LTE Band 7	20M	QPSK	50	0	Back	5mm	-	Reduced	21350	2560	17.66	19.00	1.361	0.09	0.778	1.059
	LTE Band 7	20M	QPSK	50	0	Back	5mm	-	Reduced	20850	2510	17.62	19.00	1.374	-0.08	0.764	1.050
	LTE Band 7	20M	QPSK	50	0	Back	5mm	-	Reduced	21100	2535	17.46	19.00	1.426	0.06	0.757	1.079
	LTE Band 7	20M	QPSK	100	0	Back	5mm	-	Reduced	21350	2560	17.66	19.00	1.361	0.09	0.768	1.046
	LTE Band 7	20M	QPSK	1	0	Front	5mm	Headset	Reduced	21100	2535	17.26	19.00	1.493	0.03	0.237	0.354
	LTE Band 7	20M	QPSK	1	0	Front	13mm	-	Full	21350	2560	23.81	24.00	1.045	-0.08	0.799	0.835
	LTE Band 7	20M	QPSK	1	0	Front	13mm	-	Full	20850	2510	23.45	24.00	1.135	0.01	0.769	0.873
	LTE Band 7	20M	QPSK	1	0	Front	13mm	-	Full	21100	2535	23.80	24.00	1.047	0.06	0.759	0.795
	LTE Band 7	20M	QPSK	1	0	Back	22mm	-	Full	21100	2535	23.80	24.00	1.047	0.05	0.213	0.223

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	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	5mm	-	Reduced	40620	2593	20.04	21.50	1.400	62.9	1.006	-0.13	0.889	1.252
	LTE Band 41	20M	QPSK	1	0	Front	5mm	-	Reduced	39750	2506	20.19	21.50	1.352	62.9	1.006	-0.02	0.886	1.205
	LTE Band 41	20M	QPSK	1	0	Front	5mm	-	Reduced	40185	2549.5	19.99	21.50	1.416	62.9	1.006	-0.01	0.906	1.290
	LTE Band 41	20M	QPSK	1	0	Front	5mm	-	Reduced	41055	2636.5	19.74	21.50	1.500	62.9	1.006	-0.08	0.720	1.086
	LTE Band 41	20M	QPSK	1	0	Front	5mm	-	Reduced	41490	2680	19.96	21.50	1.426	62.9	1.006	-0.07	0.735	1.054
42	LTE Band 41	20M	QPSK	50	24	Front	5mm	-	Reduced	40620	2593	20.15	21.50	1.365	62.9	1.006	-0.03	0.950	**1.304**
	LTE Band 41	20M	QPSK	50	24	Front	5mm	-	Reduced	39750	2506	20.31	21.50	1.315	62.9	1.006	0.02	0.906	1.199
	LTE Band 41	20M	QPSK	50	24	Front	5mm	-	Reduced	40185	2549.5	20.10	21.50	1.380	62.9	1.006	0.09	0.933	1.296
	LTE Band 41	20M	QPSK	50	24	Front	5mm	-	Reduced	41055	2636.5	19.87	21.50	1.455	62.9	1.006	-0.04	0.787	1.152
	LTE Band 41	20M	QPSK	50	24	Front	5mm	-	Reduced	41490	2680	19.90	21.50	1.445	62.9	1.006	0.07	0.817	1.188
	LTE Band 41	20M	QPSK	100	0	Front	5mm	-	Reduced	40620	2593	20.27	21.50	1.327	62.9	1.006	0.03	0.942	1.258
	LTE Band 41	20M	QPSK	1	0	Back	5mm	-	Reduced	40620	2593	20.04	21.50	1.400	62.9	1.006	0.08	0.881	1.240
	LTE Band 41	20M	QPSK	1	0	Back	5mm	-	Reduced	39750	2506	20.19	21.50	1.352	62.9	1.006	0.06	0.838	1.140
	LTE Band 41	20M	QPSK	1	0	Back	5mm	-	Reduced	40185	2549.5	19.99	21.50	1.416	62.9	1.006	0.07	0.846	1.205
	LTE Band 41	20M	QPSK	1	0	Back	5mm	-	Reduced	41055	2636.5	19.74	21.50	1.500	62.9	1.006	0.09	0.688	1.038
	LTE Band 41	20M	QPSK	1	0	Back	5mm	-	Reduced	41490	2680	19.96	21.50	1.426	62.9	1.006	0.01	0.723	1.037
	LTE Band 41	20M	QPSK	50	24	Back	5mm	-	Reduced	40620	2593	20.15	21.50	1.365	62.9	1.006	0.01	0.880	1.208
	LTE Band 41	20M	QPSK	50	24	Back	5mm	-	Reduced	39750	2506	20.31	21.50	1.315	62.9	1.006	0.07	0.847	1.121
	LTE Band 41	20M	QPSK	50	24	Back	5mm	-	Reduced	40185	2549.5	20.10	21.50	1.380	62.9	1.006	0.03	0.850	1.180
	LTE Band 41	20M	QPSK	50	24	Back	5mm	-	Reduced	41055	2636.5	19.87	21.50	1.455	62.9	1.006	0.01	0.742	1.086
	LTE Band 41	20M	QPSK	50	24	Back	5mm	-	Reduced	41490	2680	19.90	21.50	1.445	62.9	1.006	0.05	0.805	1.171
	LTE Band 41	20M	QPSK	100	0	Back	5mm	-	Reduced	40620	2593	20.27	21.50	1.327	62.9	1.006	0.01	0.882	1.178
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Headset	Reduced	40185	2549.5	19.99	21.50	1.416	62.9	1.006	-0.05	0.303	0.432
	LTE Band 41	20M	QPSK	1	0	Front	13mm	-	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.03	0.322	0.359
	LTE Band 41	20M	QPSK	1	0	Back	22mm	-	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.02	0.179	0.200

<5G NR 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)
	FR1 n7	20M	QPSK	1	1	Front	5mm	Top Ant	Reduced	507000	2535	16.09	17.00	1.233	0.02	0.236	0.291
	FR1 n7	20M	QPSK	50	0	Front	5mm	Top Ant	Reduced	507000	2535	16.07	17.00	1.239	0.04	0.222	0.275
65	FR1 n7	20M	QPSK	1	1	Back	5mm	Top Ant	Reduced	507000	2535	16.09	17.00	1.233	-0.01	0.438	**0.540**
	FR1 n7	20M	QPSK	50	0	Back	5mm	Top Ant	Reduced	507000	2535	16.07	17.00	1.239	0.03	0.436	0.540
	FR1 n7	20M	QPSK	1	1	Front	13mm	Top Ant	Full	507000	2535	23.68	24.00	1.076	0.09	0.300	0.323
	FR1 n7	20M	QPSK	1	1	Back	22mm	Top Ant	Full	507000	2535	23.68	24.00	1.076	-0.02	0.201	0.216

<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)
	Bluetooth	1Mbps	Front	5mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	0.08	0.001	0.001
43	Bluetooth	1Mbps	Back	5mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	-0.1	0.044	**0.049**
	Bluetooth	1Mbps	Front	13mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	0.07	0.001	0.001
	Bluetooth	1Mbps	Back	22mm	Ant 1	Full	39	2441	11.87	12.00	1.030	76.79	1.085	0.02	0.001	0.001

<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)
WWAN Off & Body Worn Power Table 6																
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Reduced	1	2412	19.03	19.50	1.114	100	1.000	-0.11	0.148	0.165
44	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Reduced	1	2412	19.03	19.50	1.114	100	1.000	-0.08	1.040	**1.159**
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Reduced	11	2462	18.42	19.50	1.282	100	1.000	-0.14	0.529	0.678
	WLAN2.4GHz	802.11b 1Mbps	Front	13mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	-0.05	0.024	0.026
	WLAN2.4GHz	802.11b 1Mbps	Back	22mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	0.18	0.028	0.031
WWAN On & Body Worn Power Table 7																
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	-0.01	0.100	0.103
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	-0.16	0.286	0.293

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Headset	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)
WWAN Off & Body Worn Power Table 6																	
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm	Ant 1+2	-	Reduced	54	5270	17.00	17.50	1.122	96.32	1.038	-0.15	0.281	0.327
45	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	-	Reduced	54	5270	17.00	17.50	1.122	96.32	1.038	-0.02	1.210	**1.409**
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	Headset	Reduced	54	5270	17.00	17.50	1.122	96.32	1.038	0.06	1.080	1.258
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	-	Reduced	62	5310	16.63	17.00	1.089	96.32	1.038	-0.17	0.692	0.782
	WLAN5.3GHz	802.11a 6Mbps	Front	13mm	Ant 1+2	-	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.10	0.065	0.084
	WLAN5.3GHz	802.11a 6Mbps	Back	22mm	Ant 1+2	-	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.16	0.402	0.521
WWAN On & Body Worn Power Table 7																	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	-	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.11	0.035	0.053
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	-	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.03	0.184	0.278
WWAN Off & Body Worn Power Table 6																	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	-	Reduced	122	5610	16.28	17.50	1.324	93.35	1.071	0.06	0.079	0.112
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	-	Reduced	122	5610	16.28	17.50	1.324	93.35	1.071	-0.02	0.805	1.142
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	-	Reduced	102	5510	17.34	17.50	1.038	96.32	1.038	-0.02	1.180	1.271
46	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	-	Reduced	110	5550	17.14	17.50	1.086	96.32	1.038	-0.03	1.210	**1.365**
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	-	Reduced	126	5630	16.04	17.50	1.400	96.32	1.038	-0.05	0.794	1.154
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	Headset	Reduced	110	5550	17.14	17.50	1.086	96.32	1.038	-0.07	1.200	1.353
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	13mm	Ant 1+2	-	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.11	0.084	0.105
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	22mm	Ant 1+2	-	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.16	0.428	0.537
WWAN On & Body Worn Power Table 7																	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	-	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.09	0.018	0.023
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	-	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.02	0.201	0.256
WWAN Off & Body Worn Power Table 6																	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	-	Reduced	155	5775	16.94	17.50	1.138	93.35	1.071	0.04	0.058	0.071
47	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	-	Reduced	155	5775	16.94	17.50	1.138	93.35	1.071	-0.09	0.836	**1.019**
	WLAN5.8GHz	802.11n-HT40 MCS0	Back	5mm	Ant 1+2	-	Reduced	151	5755	17.05	17.50	1.109	96.32	1.038	-0.17	0.873	1.005
	WLAN5.8GHz	802.11a 6Mbps	Front	13mm	Ant 1+2	-	Full	149	5745	19.92	20.00	1.019	98.28	1.018	-0.05	0.066	0.068
	WLAN5.8GHz	802.11a 6Mbps	Back	22mm	Ant 1+2	-	Full	149	5745	19.92	20.00	1.019	98.28	1.018	-0.10	0.247	0.256
WWAN On & Body Worn Power Table 7																	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 1+2	-	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.18	0.012	0.015
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 1+2	-	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.12	0.234	0.287

14.4 Product specific 10g SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
48	GSM850	GPRS 3 Tx slots	Back	0mm	Full	251	848.8	27.71	28.50	1.199	-0.14	0.891	**1.069**
	GSM1900	GPRS 3 Tx slots	Front	0mm	Reduced	661	1880	24.73	25.50	1.194	0.06	1.930	2.304
	GSM1900	GPRS 3 Tx slots	Front	0mm	Reduced	512	1850.2	24.55	25.50	1.245	0.09	1.580	1.966
	GSM1900	GPRS 3 Tx slots	Front	0mm	Reduced	810	1909.8	24.38	25.50	1.294	-0.02	1.880	2.433
	GSM1900	GPRS 3 Tx slots	Back	0mm	Reduced	661	1880	24.73	25.50	1.194	-0.02	1.600	1.910
	GSM1900	GPRS 3 Tx slots	Back	0mm	Reduced	512	1850.2	24.55	25.50	1.245	0.03	1.290	1.605
	GSM1900	GPRS 3 Tx slots	Back	0mm	Reduced	810	1909.8	24.38	25.50	1.294	0	1.580	2.045
49	GSM1900	GPRS 3 Tx slots	Bottom Side	0mm	Reduced	661	1880	24.73	25.50	1.194	0.01	2.380	**2.842**
	GSM1900	GPRS 3 Tx slots	Bottom Side	0mm	Reduced	512	1850.2	24.55	25.50	1.245	0.06	2.230	2.775
	GSM1900	GPRS 3 Tx slots	Bottom Side	0mm	Reduced	810	1909.8	24.38	25.50	1.294	0.09	1.790	2.317
	GSM1900	GPRS 3 Tx slots	Front	6mm	Full	810	1909.8	25.16	26.50	1.361	-0.06	0.803	1.093
	GSM1900	GPRS 3 Tx slots	Back	8mm	Full	810	1909.8	25.16	26.50	1.361	0.09	0.610	0.830
	GSM1900	GPRS 3 Tx slots	Bottom Side	10mm	Full	661	1880	25.55	26.50	1.245	0.1	0.744	0.926

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
50	WCDMA V	RMC 12.2Kbps	Back	0mm	Full	4182	836.4	23.36	24.00	1.159	-0.1	1.450	**1.680**
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Reduced	1413	1732.6	21.30	22.00	1.175	0.01	2.550	2.996
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Reduced	1312	1712.4	21.25	22.00	1.189	-0.03	2.400	2.852
51	WCDMA IV	RMC 12.2Kbps	Front	0mm	Reduced	1513	1752.6	21.27	22.00	1.183	-0.01	2.670	**3.159**
	WCDMA IV	RMC 12.2Kbps	Back	0mm	Reduced	1413	1732.6	21.30	22.00	1.175	0.01	2.440	2.867
	WCDMA IV	RMC 12.2Kbps	Back	0mm	Reduced	1312	1712.4	21.25	22.00	1.189	0.02	2.350	2.793
	WCDMA IV	RMC 12.2Kbps	Back	0mm	Reduced	1513	1752.6	21.27	22.00	1.183	-0.03	2.540	3.005
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	Reduced	1413	1732.6	21.30	22.00	1.175	0.02	2.140	2.514
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	Reduced	1312	1712.4	21.25	22.00	1.189	0.03	1.650	1.961
	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	Reduced	1513	1752.6	21.27	22.00	1.183	0.09	1.880	2.224
	WCDMA IV	RMC 12.2Kbps	Front	6mm	Full	1513	1752.6	23.87	24.00	1.030	-0.17	1.330	1.370
	WCDMA IV	RMC 12.2Kbps	Back	8mm	Full	1513	1752.6	23.87	24.00	1.030	-0.12	1.140	1.175
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Full	1413	1732.6	23.92	24.00	1.019	0.07	1.090	1.110
	WCDMA II	RMC 12.2Kbps	Front	0mm	Reduced	9262	1852.4	19.65	21.00	1.365	0.01	1.550	2.115
	WCDMA II	RMC 12.2Kbps	Front	0mm	Reduced	9400	1880	19.64	21.00	1.368	0.01	2.220	3.036
	WCDMA II	RMC 12.2Kbps	Front	0mm	Reduced	9538	1907.6	19.43	21.00	1.435	0.01	2.300	3.302
	WCDMA II	RMC 12.2Kbps	Back	0mm	Reduced	9262	1852.4	19.65	21.00	1.365	-0.07	1.410	1.924
	WCDMA II	RMC 12.2Kbps	Back	0mm	Reduced	9400	1880	19.64	21.00	1.368	0.01	2.010	2.749
	WCDMA II	RMC 12.2Kbps	Back	0mm	Reduced	9538	1907.6	19.43	21.00	1.435	0.03	1.700	2.440
52	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Reduced	9262	1852.4	19.65	21.00	1.365	0.01	2.420	**3.302**
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Reduced	9400	1880	19.64	21.00	1.368	0.05	1.850	2.530
	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	Reduced	9538	1907.6	19.43	21.00	1.435	-0.03	1.730	2.483
	WCDMA II	RMC 12.2Kbps	Front	6mm	Full	9538	1907.6	23.90	24.00	1.023	-0.02	1.900	1.944
	WCDMA II	RMC 12.2Kbps	Back	8mm	Full	9400	1880	23.89	24.00	1.026	0.15	1.610	1.651
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Full	9262	1852.4	23.94	24.00	1.014	0.08	1.670	1.693

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
53	LTE Band 26	15M	QPSK	1	0	Back	0mm	Full	26865	831.5	23.03	24.00	1.250	-0.02	1.390	**1.738**
	LTE Band 26	15M	QPSK	36	39	Back	0mm	Full	26865	831.5	23.11	24.00	1.227	-0.09	0.734	0.901
	LTE Band 5	10M	QPSK	1	0	Front	6mm	Full	20525	836.5	22.97	24.00	1.268	-0.01	0.347	0.440
	LTE Band 5	10M	QPSK	1	0	Back	12mm	Full	20525	836.5	22.97	24.00	1.268	0.01	0.195	0.247
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Reduced	132072	1720	20.87	21.50	1.156	0.03	2.730	3.156
54	LTE Band 66	20M	QPSK	1	0	Front	0mm	Reduced	132322	1745	20.85	21.50	1.161	-0.06	2.940	**3.415**
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Reduced	132572	1770	20.87	21.50	1.156	0.06	2.770	3.202
	LTE Band 66	20M	QPSK	50	50	Front	0mm	Reduced	132072	1720	21.00	21.50	1.122	-0.18	2.540	2.850
	LTE Band 66	20M	QPSK	50	50	Front	0mm	Reduced	132322	1745	20.99	21.50	1.125	0.06	2.840	3.194
	LTE Band 66	20M	QPSK	50	50	Front	0mm	Reduced	132572	1770	21.00	21.50	1.122	-0.01	2.830	3.175
	LTE Band 66	20M	QPSK	100	0	Front	0mm	Reduced	132072	1720	21.00	21.50	1.122	-0.01	2.660	2.985
	LTE Band 66	20M	QPSK	1	0	Back	0mm	Reduced	132072	1720	20.87	21.50	1.156	0.08	2.470	2.856
	LTE Band 66	20M	QPSK	1	0	Back	0mm	Reduced	132322	1745	20.85	21.50	1.161	0.04	2.590	3.008
	LTE Band 66	20M	QPSK	1	0	Back	0mm	Reduced	132572	1770	20.87	21.50	1.156	0.19	2.580	2.983
	LTE Band 66	20M	QPSK	50	50	Back	0mm	Reduced	132072	1720	21.00	21.50	1.122	0.06	2.400	2.693
	LTE Band 66	20M	QPSK	50	50	Back	0mm	Reduced	132322	1745	20.99	21.50	1.125	0.18	2.530	2.845
	LTE Band 66	20M	QPSK	50	50	Back	0mm	Reduced	132572	1770	21.00	21.50	1.122	0.03	2.600	2.917
	LTE Band 66	20M	QPSK	100	0	Back	0mm	Reduced	132072	1720	21.00	21.50	1.122	0.04	2.430	2.727
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132072	1720	20.87	21.50	1.156	0.01	1.680	1.942
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132322	1745	20.85	21.50	1.161	0.05	2.740	3.182
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132572	1770	20.87	21.50	1.156	0.07	2.340	2.705
	LTE Band 66	20M	QPSK	50	50	Bottom Side	0mm	Reduced	132072	1720	21.00	21.50	1.122	0.08	1.640	1.840
	LTE Band 66	20M	QPSK	50	50	Bottom Side	0mm	Reduced	132322	1745	20.99	21.50	1.125	0.01	2.450	2.755
	LTE Band 66	20M	QPSK	50	50	Bottom Side	0mm	Reduced	132572	1770	21.00	21.50	1.122	0.02	1.940	2.177
	LTE Band 66	20M	QPSK	100	0	Bottom Side	0mm	Reduced	132072	1720	21.00	21.50	1.122	0.01	1.650	1.851
	LTE Band 66	20M	QPSK	1	0	Front	6mm	Full	132322	1745	23.60	24.00	1.096	0.08	1.480	1.623
	LTE Band 66	20M	QPSK	1	0	Back	8mm	Full	132322	1745	23.60	24.00	1.096	-0.01	1.190	1.305
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Full	132322	1745	23.60	24.00	1.096	0.04	1.100	1.206
EN-DC																
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Reduced	132322	1745	17.03	18.00	1.250	0.02	1.150	1.438
	LTE Band 66	20M	QPSK	50	0	Front	0mm	Reduced	132322	1745	16.88	18.00	1.294	0.01	1.220	1.579
	LTE Band 66	20M	QPSK	1	0	Back	0mm	Reduced	132322	1745	17.03	18.00	1.250	0.03	0.990	1.238
	LTE Band 66	20M	QPSK	50	0	Back	0mm	Reduced	132322	1745	16.88	18.00	1.294	-0.06	1.010	1.307
	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	Reduced	132322	1745	17.03	18.00	1.250	-0.03	0.585	0.731
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	Reduced	132322	1745	16.88	18.00	1.294	-0.1	0.597	0.773
	LTE Band 66	20M	QPSK	1	0	Front	6mm	Full	132322	1745	23.60	24.00	1.096	0.08	1.480	1.623
	LTE Band 66	20M	QPSK	1	0	Back	12mm	Full	132322	1745	23.60	24.00	1.096	-0.11	0.678	0.743
	LTE Band 2	20M	QPSK	1	0	Front	0mm	Reduced	18900	1880	20.10	21.00	1.230	0.05	2.680	3.297
	LTE Band 2	20M	QPSK	1	0	Front	0mm	Reduced	18700	1860	20.10	21.00	1.230	-0.06	2.370	2.916
	LTE Band 2	20M	QPSK	1	0	Front	0mm	Reduced	19100	1900	19.84	21.00	1.306	0.08	2.620	3.422
	LTE Band 2	20M	QPSK	50	50	Front	0mm	Reduced	18900	1880	20.05	21.00	1.245	-0.08	2.450	3.049
	LTE Band 2	20M	QPSK	50	50	Front	0mm	Reduced	18700	1860	19.98	21.00	1.265	-0.09	2.270	2.871
55	LTE Band 2	20M	QPSK	50	50	Front	0mm	Reduced	19100	1900	19.81	21.00	1.315	0.04	2.610	**3.433**
	LTE Band 2	20M	QPSK	100	0	Front	0mm	Reduced	18900	1880	20.10	21.00	1.230	-0.04	2.680	3.297
	LTE Band 2	20M	QPSK	1	0	Back	0mm	Reduced	18900	1880	20.10	21.00	1.230	0.1	2.270	2.793
	LTE Band 2	20M	QPSK	1	0	Back	0mm	Reduced	18700	1860	20.10	21.00	1.230	0.03	2.060	2.534
	LTE Band 2	20M	QPSK	1	0	Back	0mm	Reduced	19100	1900	19.84	21.00	1.306	0.04	2.360	3.083
	LTE Band 2	20M	QPSK	50	50	Back	0mm	Reduced	18900	1880	20.05	21.00	1.245	-0.01	2.270	2.825
	LTE Band 2	20M	QPSK	50	50	Back	0mm	Reduced	18700	1860	19.98	21.00	1.265	-0.09	2.070	2.618
	LTE Band 2	20M	QPSK	50	50	Back	0mm	Reduced	19100	1900	19.81	21.00	1.315	0.07	2.020	2.657
	LTE Band 2	20M	QPSK	100	0	Back	0mm	Reduced	18900	1880	20.10	21.00	1.230	0.15	2.370	2.916
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	Reduced	18900	1880	20.10	21.00	1.230	0.04	2.340	2.879
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	Reduced	18700	1860	20.10	21.00	1.230	0.03	2.230	2.743
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	Reduced	19100	1900	19.84	21.00	1.306	0.03	1.570	2.051
	LTE Band 2	20M	QPSK	50	50	Bottom Side	0mm	Reduced	18900	1880	20.05	21.00	1.245	0.01	2.300	2.862
	LTE Band 2	20M	QPSK	50	50	Bottom Side	0mm	Reduced	18700	1860	19.98	21.00	1.265	0.02	2.190	2.770
	LTE Band 2	20M	QPSK	50	50	Bottom Side	0mm	Reduced	19100	1900	19.81	21.00	1.315	0.07	1.430	1.881
	LTE Band 2	20M	QPSK	100	0	Bottom Side	0mm	Reduced	18900	1880	20.10	21.00	1.230	0.08	2.270	2.793

	LTE Band 2	20M	QPSK	1	0	Front	6mm	Full	19100	1900	23.48	24.00	1.127	0.16	1.490	1.680
	LTE Band 2	20M	QPSK	1	0	Back	8mm	Full	19100	1900	23.48	24.00	1.127	-0.03	1.130	1.274
	LTE Band 2	20M	QPSK	1	0	Bottom Side	10mm	Full	18900	1880	23.57	24.00	1.104	0.03	1.600	1.767

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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 7	20M	QPSK	1	0	Front	0mm	Reduced	21350	2560	21.99	23.50	1.416	0.06	2.200	3.115
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Reduced	20850	2510	21.97	23.50	1.422	0.08	2.310	3.286
56	LTE Band 7	20M	QPSK	1	0	Front	0mm	Reduced	21100	2535	21.91	23.50	1.442	0.05	2.290	**3.302**
	LTE Band 7C	20M	QPSK	1	0	Front	0mm	Reduced	21100+20902	2535+2515.2	22.01	23.50	1.409	-0.11	2.140	3.016
	LTE Band 7	20M	QPSK	50	24	Front	0mm	Reduced	21350	2560	22.14	23.50	1.368	0.03	1.750	2.394
	LTE Band 7	20M	QPSK	50	24	Front	0mm	Reduced	20850	2510	22.03	23.50	1.403	0.01	1.960	2.750
	LTE Band 7	20M	QPSK	50	24	Front	0mm	Reduced	21100	2535	22.07	23.50	1.390	0.08	1.910	2.655
	LTE Band 7	20M	QPSK	100	0	Front	0mm	Reduced	21350	2560	22.08	23.50	1.387	0.06	1.720	2.385
	LTE Band 7	20M	QPSK	1	0	Back	0mm	Reduced	21350	2560	21.99	23.50	1.416	-0.12	1.950	2.761
	LTE Band 7	20M	QPSK	1	0	Back	0mm	Reduced	20850	2510	21.97	23.50	1.422	0.1	1.930	2.745
	LTE Band 7	20M	QPSK	1	0	Back	0mm	Reduced	21100	2535	21.91	23.50	1.442	0.02	1.960	2.827
	LTE Band 7	20M	QPSK	50	24	Back	0mm	Reduced	21350	2560	22.14	23.50	1.368	-0.06	1.670	2.284
	LTE Band 7	20M	QPSK	50	24	Back	0mm	Reduced	20850	2510	22.03	23.50	1.403	0.01	1.700	2.385
	LTE Band 7	20M	QPSK	50	24	Back	0mm	Reduced	21100	2535	22.07	23.50	1.390	-0.09	1.750	2.432
	LTE Band 7	20M	QPSK	100	0	Back	0mm	Reduced	21350	2560	22.08	23.50	1.387	-0.06	1.530	2.122
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	Reduced	21350	2560	21.99	23.50	1.416	0.03	2.000	2.832
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	Reduced	20850	2510	21.97	23.50	1.422	0.01	1.970	2.802
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	Reduced	21100	2535	21.91	23.50	1.442	0.06	2.040	2.942
	LTE Band 7	20M	QPSK	50	24	Bottom Side	0mm	Reduced	21350	2560	22.14	23.50	1.368	0.05	1.660	2.270
	LTE Band 7	20M	QPSK	50	24	Bottom Side	0mm	Reduced	20850	2510	22.03	23.50	1.403	0.07	1.720	2.413
	LTE Band 7	20M	QPSK	50	24	Bottom Side	0mm	Reduced	21100	2535	22.07	23.50	1.390	0.09	1.690	2.349
	LTE Band 7	20M	QPSK	100	0	Bottom Side	0mm	Reduced	21350	2560	22.08	23.50	1.387	0.04	1.640	2.274
	LTE Band 7	20M	QPSK	1	0	Front	6mm	Full	21100	2535	23.80	24.00	1.047	-0.11	0.623	0.652
	LTE Band 7	20M	QPSK	1	0	Back	8mm	Full	21100	2535	23.80	24.00	1.047	0.09	0.552	0.578
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Full	21100	2535	23.80	24.00	1.047	0.02	1.090	1.141

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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)
57	LTE Band 41	20M	QPSK	1	0	Front	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	-0.09	2.090	**2.332**
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Full	39750	2506	23.42	24.00	1.143	62.9	1.006	-0.03	1.800	2.070
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Full	40185	2549.5	23.53	24.00	1.114	62.9	1.006	-0.02	1.740	1.951
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Full	41055	2636.5	23.15	24.00	1.216	62.9	1.006	-0.06	1.240	1.517
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Full	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.02	1.100	1.352
	LTE Band 41	20M	QPSK	50	24	Front	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	0.09	1.290	1.403
	LTE Band 41	20M	QPSK	100	0	Front	0mm	Full	40185	2549.5	23.65	24.00	1.084	62.9	1.006	0.09	1.290	1.407
	LTE Band 41	20M	QPSK	1	0	Back	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.09	1.490	1.663
	LTE Band 41	20M	QPSK	50	24	Back	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	0.08	0.895	0.974
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	Full	40620	2593	23.55	24.00	1.109	62.9	1.006	0.12	1.600	1.785
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	Full	39750	2506	23.42	24.00	1.143	62.9	1.006	0.1	1.800	2.070
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	Full	40185	2549.5	23.53	24.00	1.114	62.9	1.006	0.01	1.740	1.951
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	Full	41055	2636.5	23.15	24.00	1.216	62.9	1.006	0.17	1.900	2.325
	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	Full	41490	2680	23.13	24.00	1.222	62.9	1.006	-0.07	1.450	1.782
	LTE Band 41	20M	QPSK	50	24	Bottom Side	0mm	Full	40185	2549.5	23.66	24.00	1.081	62.9	1.006	0.02	1.090	1.186
	LTE Band 41	20M	QPSK	100	0	Bottom Side	0mm	Full	40185	2549.5	23.65	24.00	1.084	62.9	1.006	-0.07	1.450	1.581

<5G NR 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)
	FR1 n7	20M	QPSK	1	1	Front	0mm	Top Ant	Reduced	507000	2535	18.19	19.00	1.205	0.03	0.738	0.889
	FR1 n7	20M	QPSK	50	0	Front	0mm	Top Ant	Reduced	507000	2535	18.16	19.00	1.213	0.05	0.634	0.769
66	FR1 n7	20M	QPSK	1	1	Back	0mm	Top Ant	Reduced	507000	2535	18.19	19.00	1.205	-0.02	1.140	**1.374**
	FR1 n7	20M	QPSK	50	0	Back	0mm	Top Ant	Reduced	507000	2535	18.16	19.00	1.213	-0.14	0.908	1.102
	FR1 n7	20M	QPSK	1	1	Top Side	0mm	Top Ant	Reduced	507000	2535	18.19	19.00	1.205	0.04	1.060	1.277
	FR1 n7	20M	QPSK	50	0	Top Side	0mm	Top Ant	Reduced	507000	2535	18.16	19.00	1.213	0.05	0.920	1.116
	FR1 n7	20M	QPSK	1	1	Front	6mm	Top Ant	Full	507000	2535	23.68	24.00	1.076	0.02	0.309	0.333
	FR1 n7	20M	QPSK	1	1	Back	12mm	Top Ant	Full	507000	2535	23.68	24.00	1.076	0.05	0.221	0.238
	FR1 n7	20M	QPSK	1	1	Top Side	13mm	Top Ant	Full	507000	2535	23.68	24.00	1.076	-0.06	0.344	0.370

<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)
Default Power Table (Max Power)																
58	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 1+2	Full	1	2412	22.58	23.00	1.102	100	1.000	-0.05	1.180	**1.300**
WWAN On & Handheld Power Table 1																
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 1+2	Reduced	1	2412	13.89	14.00	1.026	100	1.000	0.02	0.104	0.107

<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)
Default Power Table (Max Power)																
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	48	5240	20.71	21.00	1.069	98.28	1.018	0.06	2.390	2.601
59	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	44	5220	20.13	21.00	1.222	98.28	1.018	0.05	2.350	**2.923**
WWAN On & Handheld Power Table 1																
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 1+2	Reduced	42	5210	12.47	12.50	1.007	93.35	1.071	0.01	0.383	0.413
Default Power Table (Max Power)																
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.16	0.363	0.471
60	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.1	1.990	**2.580**
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	56	5280	19.70	21.00	1.349	98.28	1.018	-0.11	1.710	2.348
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	-0.16	0.149	0.193
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 1+2	Full	52	5260	19.95	21.00	1.274	98.28	1.018	0.18	0.452	0.586
WWAN On & Handheld Power Table 1																
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.09	0.017	0.026
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.01	0.130	0.196
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	-0.01	0.013	0.020
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 1+2	Reduced	58	5290	12.01	13.50	1.409	93.35	1.071	0.09	0.024	0.036
Default Power Table (Max Power)																
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	0.13	0.348	0.436
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	-0.12	2.000	2.507
61	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	116	5580	20.42	21.00	1.143	98.28	1.018	-0.07	2.170	**2.525**
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	0.01	0.077	0.097
	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 1+2	Full	110	5550	20.18	21.00	1.208	96.32	1.038	0.16	0.526	0.659
WWAN On & Handheld Power Table 1																
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.02	0.028	0.035
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.01	0.171	0.218
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.09	0.005	0.007
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 1+2	Reduced	106	5530	12.75	13.50	1.189	93.35	1.071	0.03	0.045	0.058
Default Power Table (Max Power)																
62	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 1+2	Full	149	5745	19.92	20.00	1.019	98.28	1.018	-0.1	1.810	**1.877**
WWAN On & Handheld Power Table 1																
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 1+2	Reduced	155	5775	12.91	13.50	1.146	93.35	1.071	0.01	0.384	0.471

14.5 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	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	Full	4182	836.4	23.36	24.00	1.159	-	-	-0.03	1.150	1	1.333
2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	Full	4182	836.4	23.36	24.00	1.159	-	-	0.09	1.130	1.018	1.309
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	Reduced	1513	1752.6	17.66	18.00	1.081	-	-	-0.03	1.250	1	1.352
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	Reduced	1513	1752.6	17.66	18.00	1.081	-	-	0.09	1.190	1.050	1.287
1st	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	-	Full	23095	707.5	22.90	24.00	1.288	-	-	0.11	0.845	1	1.089
2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	-	Full	23095	707.5	22.90	24.00	1.288	-	-	0.07	0.821	1.029	1.058
1st	LTE Band 41	20M	QPSK	50	24	-	Front	5mm	-	Reduced	40620	2593	20.15	21.50	1.365	62.9	1.006	-0.03	0.950	1	1.304
2nd	LTE Band 41	20M	QPSK	50	24	-	Front	5mm	-	Reduced	40620	2593	20.15	21.50	1.365	62.9	1.006	0.11	0.931	1.020	1.278
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	13mm	-	Full	9538	1907.6	23.90	24.00	1.023	-	-	0.03	1.270	1	1.300
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	13mm	-	Full	9538	1907.6	23.90	24.00	1.023	-	-	-0.11	1.220	1.041	1.248
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5mm	1+2	Reduced	1	2412	19.03	19.50	1.114	100	1.000	-0.08	1.040	1	1.159
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5mm	1+2	Reduced	1	2412	19.03	19.50	1.114	100	1.000	-0.10	0.989	1.052	1.102
1st	WLAN5.3GHz	-	-	-	-	802.11n-HT40 MCS0	Back	5mm	1+2	Reduced	54	5270	17.00	17.50	1.122	96.32	1.038	-0.02	1.210	1	1.409
2nd	WLAN5.3GHz	-	-	-	-	802.11n-HT40 MCS0	Back	5mm	1+2	Reduced	54	5270	17.00	17.50	1.122	96.32	1.038	-0.08	1.200	1.008	1.398

<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	LTE Band 66	20M	QPSK	1	0	-	Front	0mm	-	Reduced	132322	1745	20.85	21.50	1.161	-	-	-0.06	2.940	1	3.415
2nd	LTE Band 66	20M	QPSK	1	0	-	Front	0mm	-	Reduced	132322	1745	20.85	21.50	1.161	-	-	0.14	2.830	1.039	3.287
1st	LTE Band 2	20M	QPSK	100	0	-	Front	0mm	-	Reduced	18900	1880	20.10	21.00	1.230	-	-	-0.04	2.680	1	3.297
2nd	LTE Band 2	20M	QPSK	100	0	-	Front	0mm	-	Reduced	18900	1880	20.10	21.00	1.230	-	-	0.11	2.590	1.035	3.186
1st	LTE Band 7	20M	QPSK	1	0	-	Front	0mm	-	Reduced	20850	2510	21.97	23.50	1.422	-	-	0.08	2.310	1	3.286
2nd	LTE Band 7	20M	QPSK	1	0	-	Front	0mm	-	Reduced	20850	2510	21.97	23.50	1.422	-	-	0.11	2.290	1.009	3.257
1st	WLAN5.2GHz	-	-	-	-	802.11a 6Mbps	Back	0mm	1+2	Full	48	5240	20.71	21.00	1.069	98.28	1.018	0.06	2.390	1	2.601
2nd	WLAN5.2GHz	-	-	-	-	802.11a 6Mbps	Back	0mm	1+2	Full	48	5240	20.71	21.00	1.069	98.28	1.018	-0.05	2.350	1.017	2.557

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.

15. 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.	WCDMA + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
4.	LTE + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
5.	GSM Voice + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
6.	GPRS/EDGE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
7.	WCDMA + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
8.	LTE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
9.	GSM Voice + WLAN5.2/5.8GHz MIMO	Yes	Yes		Yes
10.	GPRS/EDGE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
11.	WCDMA + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
12.	LTE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
13.	GSM Voice + WLAN5.3/5.5GHz MIMO +Bluetooth	Yes	Yes		Yes
14.	GPRS/EDGE + WLAN5.3/5.5GHz MIMO +Bluetooth	Yes	Yes		Yes
15.	WCDMA + WLAN5.3/5.5GHz MIMO +Bluetooth	Yes	Yes		Yes
16.	LTE + WLAN5.3/5.5GHz MIMO +Bluetooth	Yes	Yes		Yes
17.	GSM Voice + WLAN5.2/5.8GHz MIMO +Bluetooth	Yes	Yes		Yes
18.	GPRS/EDGE + 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.	WLAN5.2/5.8GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
22.	WLAN5.3/5.5GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
23.	GSM Voice + Bluetooth	Yes	Yes		Yes
24.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
25.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
26.	LTE + Bluetooth	Yes	Yes	Yes	Yes
27.	5G NR + LTE + WLAN2.4GHz MIMO	Yes	Yes	Yes	Yes
28.	5G NR + LTE + WLAN5.3/5.5GHz MIMO	Yes	Yes		Yes
29.	5G NR + LTE + WLAN5.2/5.8GHz MIMO	Yes	Yes	Yes	Yes
30.	5G NR + LTE + WLAN5.3/5.5GHz MIMO +Bluetooth	Yes	Yes		Yes
31.	5G NR + LTE + WLAN5.2/5.8GHz MIMO +Bluetooth	Yes	Yes	Yes	Yes
32.	5G NR + LTE + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA 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. WWAN+WLAN5GHz+Bluetooth can represent WWAN+WLAN5GHz or WWAN+ Bluetooth, So no need to do co-located analysis separately.
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 15.5.

15.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2	1+3+4
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.266	0.020	0.098	0.058	0.29	0.42
		Right Tilted	0.095	0.022	0.113	0.029	0.12	0.24
		Left Cheek	0.157	0.057	0.128	0.079	0.21	0.36
		Left Tilted	0.087	0.052	0.115	0.066	0.14	0.27
	GSM1900	Right Cheek	0.066	0.020	0.098	0.058	0.09	0.22
		Right Tilted	0.045	0.022	0.113	0.029	0.07	0.19
		Left Cheek	0.081	0.057	0.128	0.079	0.14	0.29
		Left Tilted	0.056	0.052	0.115	0.066	0.11	0.24
WCDMA	WCDMA II	Right Cheek	0.077	0.020	0.098	0.058	0.10	0.23
		Right Tilted	0.060	0.022	0.113	0.029	0.08	0.20
		Left Cheek	0.085	0.057	0.128	0.079	0.14	0.29
		Left Tilted	0.072	0.052	0.115	0.066	0.12	0.25
	WCDMA IV	Right Cheek	0.119	0.020	0.098	0.058	0.14	0.28
		Right Tilted	0.069	0.022	0.113	0.029	0.09	0.21
		Left Cheek	0.086	0.057	0.128	0.079	0.14	0.29
		Left Tilted	0.055	0.052	0.115	0.066	0.11	0.24
	WCDMA V	Right Cheek	0.171	0.020	0.098	0.058	0.19	0.33
		Right Tilted	0.096	0.022	0.113	0.029	0.12	0.24
		Left Cheek	0.145	0.057	0.128	0.079	0.20	0.35
		Left Tilted	0.081	0.052	0.115	0.066	0.13	0.26
LTE	LTE Band 2	Right Cheek	0.095	0.020	0.098	0.058	0.12	0.25
		Right Tilted	0.080	0.022	0.113	0.029	0.10	0.22
		Left Cheek	0.115	0.057	0.128	0.079	0.17	0.32
		Left Tilted	0.060	0.052	0.115	0.066	0.11	0.24
	LTE Band 7	Right Cheek	0.064	0.020	0.098	0.058	0.08	0.22
		Right Tilted	0.032	0.022	0.113	0.029	0.05	0.17
		Left Cheek	0.042	0.057	0.128	0.079	0.10	0.25
		Left Tilted	0.029	0.052	0.115	0.066	0.08	0.21
	LTE Band 12	Right Cheek	0.209	0.020	0.098	0.058	0.23	0.37
		Right Tilted	0.102	0.022	0.113	0.029	0.12	0.24
		Left Cheek	0.170	0.057	0.128	0.079	0.23	0.38
		Left Tilted	0.105	0.052	0.115	0.066	0.16	0.29
	LTE Band 26	Right Cheek	0.143	0.020	0.098	0.058	0.16	0.30
		Right Tilted	0.086	0.022	0.113	0.029	0.11	0.23
		Left Cheek	0.135	0.057	0.128	0.079	0.19	0.34
		Left Tilted	0.077	0.052	0.115	0.066	0.13	0.26
	LTE Band 66	Right Cheek	0.151	0.020	0.098	0.058	0.17	0.31
		Right Tilted	0.061	0.022	0.113	0.029	0.08	0.20
		Left Cheek	0.096	0.057	0.128	0.079	0.15	0.30
		Left Tilted	0.066	0.052	0.115	0.066	0.12	0.25
	LTE Band 41	Right Cheek	0.050	0.020	0.098	0.058	0.07	0.21
		Right Tilted	0.021	0.022	0.113	0.029	0.04	0.16
		Left Cheek	0.048	0.057	0.128	0.079	0.11	0.26
		Left Tilted	0.028	0.052	0.115	0.066	0.08	0.21

5G NR

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4+5
		WWAN	WWAN FR1 N7 _UAT	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 5	Right Cheek	0.143	0.503	0.020	0.098	0.058	0.67	0.80
	Right Tilted	0.086	0.552	0.022	0.113	0.029	0.66	0.78
	Left Cheek	0.135	0.363	0.057	0.128	0.079	0.56	0.71
	Left Tilted	0.077	0.437	0.052	0.115	0.066	0.57	0.70
LTE Band 66	Right Cheek	0.151	0.503	0.020	0.098	0.058	0.67	0.81
	Right Tilted	0.061	0.552	0.022	0.113	0.029	0.64	0.76
	Left Cheek	0.096	0.363	0.057	0.128	0.079	0.52	0.67
	Left Tilted	0.066	0.437	0.052	0.115	0.066	0.56	0.68

15.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	3 5GHz WLAN Ant 1+2 1g SAR (W/kg)	4 Bluetooth Ant 1 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	0.747	0.103	0.015	0.001	0.85			0.76		
		Back	1.394	0.293	0.327	0.049	**1.69**	**0.02**	**#01**	**1.77**	**0.02**	**#02**
		Left side	0.106				0.11			0.11		
		Right side	0.289	0.012	0.015	0.001	0.30			0.31		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	0.683				0.68			0.68		
	GSM1900	Front	1.122	0.103	0.015	0.001	1.23			1.14		
		Back	1.167	0.293	0.327	0.049	1.46			1.54		
		Left side	0.045				0.05			0.05		
		Right side	0.077	0.012	0.015	0.001	0.09			0.09		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.250				1.25			1.25		
WCDMA	WCDMA II	Front	1.351	0.103	0.015	0.001	1.45			1.37		
		Back	1.376	0.293	0.327	0.049	**1.67**	**0.02**	**#03**	**1.75**	**0.02**	**#04**
		Left side	0.036				0.04			0.04		
		Right side	0.041	0.012	0.015	0.001	0.05			0.06		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.381				1.38			1.38		
	WCDMA IV	Front	1.287	0.103	0.015	0.001	1.39			1.30		
		Back	1.352	0.293	0.327	0.049	**1.65**	**0.02**	**#05**	**1.73**	**0.01**	**#06**
		Left side	0.056				0.06			0.06		
		Right side	0.126	0.012	0.015	0.001	0.14			0.14		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.437				1.44			1.44		
	WCDMA V	Front	0.760	0.103	0.015	0.001	0.86			0.78		
		Back	1.333	0.293	0.327	0.049	**1.63**	**0.02**	**#07**	**1.71**	**0.02**	**#08**
		Left side	0.072				0.07			0.07		
		Right side	0.262	0.012	0.015	0.001	0.27			0.28		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	0.784				0.78			0.78		
LTE	LTE Band 2	Front	1.398	0.103	0.015	0.001	1.50			1.41		
		Back	1.308	0.293	0.327	0.049	**1.60**	**0.02**	**#09**	**1.68**	**0.01**	**#10**
		Left side	0.036				0.04			0.04		
		Right side	0.068	0.012	0.015	0.001	0.08			0.08		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.333				1.33			1.33		
	LTE Band 7	Front	1.218	0.103	0.015	0.001	1.32			1.23		
		Back	1.208	0.293	0.327	0.049	1.50			**1.58**		
		Left side	0.019				0.02			0.02		
		Right side	0.047	0.012	0.015	0.001	0.06			0.06		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.210				1.21			1.21		
	LTE Band 12	Front	0.805	0.103	0.015	0.001	0.91			0.82		
		Back	1.089	0.293	0.327	0.049	1.38			1.47		
		Left side	0.147				0.15			0.15		

		Right side	0.167	0.012	0.015	0.001	0.18			0.18		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	0.667				0.67			0.67		
	LTE Band 26	Front	1.041	0.103	0.015	0.001	1.14			1.06		
		Back	1.363	0.293	0.327	0.049	**1.66**	**0.02**	**#11**	**1.74**	**0.02**	**#12**
		Left side	0.133				0.13			0.13		
		Right side	0.461	0.012	0.015	0.001	0.47			0.48		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	0.520				0.52			0.52		
	LTE Band 66	Front	1.257	0.103	0.015	0.001	1.36			1.27		
		Back	1.263	0.293	0.327	0.049	**1.56**			**1.64**	**0.01**	**#13**
		Left side	0.048				0.05			0.05		
		Right side	0.116	0.012	0.015	0.001	0.13			0.13		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.346				1.35			1.35		
	LTE Band 41	Front	1.304	0.103	0.015	0.001	1.41			1.32		
		Back	1.240	0.293	0.327	0.049	1.53			**1.62**	**0.01**	**#14**
		Left side	0.012				0.01			0.01		
		Right side	0.051	0.012	0.015	0.001	0.06			0.07		
		Top side		0.054	0.031	0.045	0.05			0.08		
		Bottom side	1.285				1.29			1.29		

5G NR

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4+5
		WWAN	WWAN FR1 N7 _UAT	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 5	Front	0.168	0.291	0.103	0.015	0.001	0.56	0.48
	Back	0.474	0.540	0.293	0.327	0.049	1.31	1.39
	Left side	0.059	0.053				0.11	0.11
	Right side	0.183		0.012	0.015	0.001	0.20	0.20
	Top side		0.526	0.054	0.031	0.045	0.58	0.60
	Bottom side	0.213					0.21	0.21
LTE Band 66	Front	0.432	0.291	0.103	0.015	0.001	0.83	0.74
	Back	0.480	0.540	0.293	0.327	0.049	1.31	1.40
	Left side	0.021	0.053				0.07	0.07
	Right side	0.055		0.012	0.015	0.001	0.07	0.07
	Top side		0.526	0.054	0.031	0.045	0.58	0.60
	Bottom side	0.585					0.59	0.59

15.3 Body-Worn Accessory 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 Ant 1	5GHz WLAN Ant 1	Bluetooth Ant 1						
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Front	0.747	0.103	0.053	0.001	0.85			0.80		
		Back	1.394	0.293	0.287	0.049	**1.69**	**0.02**	**#01**	**1.73**	**0.02**	**#15**
		Front with Headset					0.00			0.00		
		Back with Headset	0.440				0.44			0.44		
	GSM1900	Front	1.122	0.103	0.053	0.001	1.23			1.18		
		Back	1.167	0.293	0.287	0.049	1.46			1.50		
		Front with Headset					0.00			0.00		
		Back with Headset					0.00			0.00		
WCDMA	WCDMA II	Front	1.351	0.103	0.053	0.001	1.45			1.41		
		Back	1.376	0.293	0.287	0.049	**1.67**	**0.02**	**#03**	**1.71**	**0.02**	**#16**
		Front with Headset					0.00			0.00		
		Back with Headset	0.549				0.55			0.55		
	WCDMA IV	Front	1.287	0.103	0.053	0.001	1.39			1.34		
		Back	1.352	0.293	0.287	0.049	**1.65**	**0.02**	**#05**	**1.69**	**0.01**	**#17**
		Front with Headset					0.00			0.00		
		Back with Headset	0.770				0.77			0.77		
	WCDMA V	Front	0.760	0.103	0.053	0.001	0.86			0.81		
		Back	1.333	0.293	0.287	0.049	**1.63**	**0.02**	**#07**	**1.67**	**0.01**	**#18**
		Front with Headset					0.00			0.00		
		Back with Headset	0.911				0.91			0.91		
LTE	LTE Band 2	Front	1.398	0.103	0.053	0.001	1.50			1.45		
		Back	1.308	0.293	0.287	0.049	**1.60**	**0.02**	**#09**	**1.64**	**0.01**	**#19**
		Front with Headset	0.867				0.87			0.87		
		Back with Headset					0.00			0.00		
	LTE Band 7	Front	1.218	0.103	0.053	0.001	1.32			1.27		
		Back	1.208	0.293	0.287	0.049	1.50			1.54		
		Front with Headset	0.354				0.35			0.35		
		Back with Headset					0.00			0.00		
	LTE Band 12	Front	0.805	0.103	0.053	0.001	0.91			0.86		
		Back	1.089	0.293	0.287	0.049	1.38			1.43		
		Front with Headset					0.00			0.00		
		Back with Headset					0.00			0.00		
	LTE Band 26	Front	1.041	0.103	0.053	0.001	1.14			1.10		
		Back	1.363	0.293	0.287	0.049	**1.66**	**0.02**	**#11**	**1.70**	**0.01**	**#20**
		Front with Headset					0.00			0.00		
		Back with Headset	1.038				1.04			1.04		
	LTE Band 66	Front	1.257	0.103	0.053	0.001	1.36			1.31		
		Back	1.263	0.293	0.287	0.049	1.56			**1.60**	**0.01**	**#21**
		Front with Headset					0.00			0.00		
		Back with Headset	0.444				0.44			0.44		
	LTE Band 41	Front	1.304	0.103	0.053	0.001	1.41			1.36		
		Back	1.240	0.293	0.287	0.049	1.53			1.58		
		Front with Headset	0.432				0.43			0.43		
		Back with Headset					0.00			0.00		

5G NR

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4+5
		WWAN	WWAN FR1 N7 _UAT	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 5	Front	0.168	0.291	0.103	0.053	0.001	0.56	0.51
	Back	0.474	0.540	0.293	0.287	0.049	1.31	1.35
LTE Band 66	Front	0.432	0.291	0.103	0.053	0.001	0.83	0.78
	Back	0.480	0.540	0.293	0.287	0.049	1.31	1.36

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed	1+3+4 Summed
			WWAN	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1+2	Bluetooth Ant 1	1g SAR (W/kg)	1g SAR (W/kg)
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM	GSM1900	Front at 13mm	0.667	0.026	0.105	0.001	0.69	0.77
		Back at 22mm	0.265	0.031	0.537	0.001	0.30	0.80
WCDMA	WCDMA II	Front at 13mm	1.300	0.026	0.105	0.001	1.33	1.41
		Back at 22mm	0.492	0.031	0.537	0.001	0.52	1.03
	WCDMA IV	Front at 13mm	1.185	0.026	0.105	0.001	1.21	1.29
		Back at 22mm	0.318	0.031	0.537	0.001	0.35	0.86
LTE	LTE Band 2	Front at 13mm	1.229	0.026	0.105	0.001	1.26	1.34
		Back at 22mm	0.419	0.031	0.537	0.001	0.45	0.96
	LTE Band 7	Front at 13mm	0.873	0.026	0.105	0.001	0.90	0.98
		Back at 22mm	0.223	0.031	0.537	0.001	0.25	0.76
	LTE Band 66	Front at 13mm	1.314	0.026	0.105	0.001	1.34	1.42
		Back at 22mm	0.437	0.031	0.537	0.001	0.47	0.98
	LTE Band 41	Front at 13mm	0.359	0.026	0.105	0.001	0.39	0.47
		Back at 22mm	0.200	0.031	0.537	0.001	0.23	0.74

5G NR

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	SPLSR	Case No	1+2+4+5 Summed 1g SAR (W/kg)	SPLSR	Case No
		WWAN	WWAN FR1 N7 Ant 2	2.4GHz WLAN MIMO	5GHz WLAN MIMO	Bluetooth Ant 1						
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
LTE Band 5 Ant 1	Front at 13mm	0.314	0.323	0.026	0.105	0.001	0.66			0.74		
	Back at 22mm	0.155	0.216	0.031	0.537	0.001	0.40			0.91		
LTE Band 66 Ant 1	Front at 13mm	1.314	0.323	0.026	0.105	0.001	**1.66**	**0.01**	**#22**	**1.74**	**0.02**	**#23**
	Back at 22mm	0.437	0.216	0.031	0.537	0.001	0.68			1.19		

15.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1 WWAN 10g SAR (W/kg)	2 2.4GHz WLAN Ant 1+2 10g SAR (W/kg)	3 5GHz WLAN Ant 1+2 10g SAR (W/kg)	1+2 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)
GSM	GSM850	Front at 0mm			0.035	0.00	0.04
		Back at 0mm	1.069	0.107	0.471	1.18	1.54
		Bottom Side at 0mm				0.00	0.00
	GSM1900	Front at 0mm	2.433		0.035	2.43	2.47
		Back at 0mm	2.045	0.107	0.471	2.15	2.52
		Bottom Side at 0mm	2.842			2.84	2.84
WCDMA	WCDMA II	Front at 0mm	3.302		0.035	3.30	3.34
		Back at 0mm	2.749	0.107	0.471	2.86	3.22
		Bottom Side at 0mm	3.302			3.30	3.30
	WCDMA IV	Front at 0mm	3.159		0.035	3.16	3.19
		Back at 0mm	3.005	0.107	0.471	3.11	3.48
		Bottom Side at 0mm	2.514			2.51	2.51
	WCDMA V	Front at 0mm			0.035	0.00	0.04
		Back at 0mm	1.680	0.107	0.471	1.79	2.15
		Bottom Side at 0mm				0.00	0.00
LTE	LTE Band 2	Front at 0mm	3.433		0.035	3.43	3.47
		Back at 0mm	3.083	0.107	0.471	3.19	3.55
		Bottom Side at 0mm	2.879			2.88	2.88
	LTE Band 7	Front at 0mm	3.302		0.035	3.30	3.34
		Back at 0mm	2.827	0.107	0.471	2.93	3.30
		Bottom Side at 0mm	2.942			2.94	2.94
	LTE Band 12	Front at 0mm			0.035	0.00	0.04
		Back at 0mm		0.107	0.471	0.11	0.47
		Bottom Side at 0mm				0.00	0.00
	LTE Band 26	Front at 0mm			0.035	0.00	0.04
		Back at 0mm	1.738	0.107	0.471	1.85	2.21
		Bottom Side at 0mm				0.00	0.00
	LTE Band 66	Front at 0mm	3.415		0.035	3.42	3.45
		Back at 0mm	3.008	0.107	0.471	3.12	3.48
		Bottom Side at 0mm	3.182			3.18	3.18
	LTE Band 41	Front at 0mm	2.332		0.035	2.33	2.37
		Back at 0mm	1.663	0.107	0.471	1.77	2.13
		Bottom Side at 0mm	2.325			2.33	2.33

<5G NR>

WWAN Band	Exposure Position	1 WWAN 10g SAR (W/kg)	2 WWAN FR1 N7 -UAT 10g SAR (W/kg)	3 2.4GHz WLAN Ant 1+2 10g SAR (W/kg)	4 5GHz WLAN Ant 1+2 10g SAR (W/kg)	1+2+3 Summed 1g SAR (W/kg)	1+2+4 Summed 1g SAR (W/kg)
LTE Band 66	Front	1.579	0.889		0.035	2.47	2.50
	Back	1.307	1.374	0.107	0.471	2.79	3.15
	Top side		1.277			1.28	1.28
	Bottom side	0.773				0.77	0.77

WWAN Band		Exposure Position	1 WWAN 10g SAR (W/kg)	2 2.4GHz WLAN Ant 1+2 10g SAR (W/kg)	3 5GHz WLAN Ant 1+2 10g SAR (W/kg)	1+2 Summed 10g SAR (W/kg)	1+3 Summed 10g SAR (W/kg)
GSM	GSM1900	Front at 6mm	1.093		0.035	1.09	1.13
		Back at 8mm	0.830	0.107	0.471	0.94	1.30
		Bottom Side at 10mm	0.926			0.93	0.93
WCDMA	WCDMA II	Front at 6mm	1.944		0.035	1.94	1.98
		Back at 8mm	1.651	0.107	0.471	1.76	2.12
		Bottom Side at 10mm	1.693			1.69	1.69
	WCDMA IV	Front at 6mm	1.370		0.035	1.37	1.41
		Back at 8mm	1.175	0.107	0.471	1.28	1.65
		Bottom Side at 10mm	1.110			1.11	1.11
LTE	LTE Band 2	Front at 6mm	1.680		0.035	1.68	1.72
		Back at 8mm	1.274	0.107	0.471	1.38	1.75
		Bottom Side at 10mm	1.767			1.77	1.77
	LTE Band 7	Front at 6mm	0.652		0.035	0.65	0.69
		Back at 8mm	0.578	0.107	0.471	0.69	1.05
		Bottom Side at 10mm	1.141			1.14	1.14
	LTE Band 66	Front at 6mm	1.623		0.035	1.62	1.66
		Back at 8mm	1.305	0.107	0.471	1.41	1.78
		Bottom Side at 10mm	1.206			1.21	1.21

<5G NR>

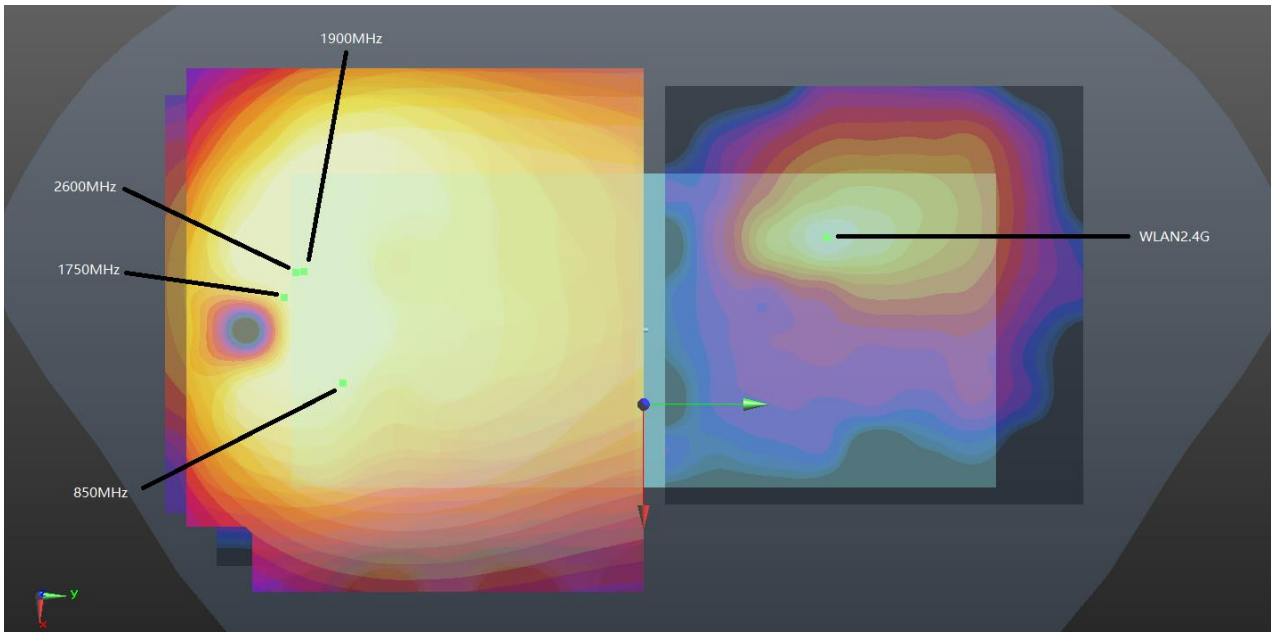
WWAN Band	Exposure Position	1 WWAN 10g SAR (W/kg)	2 WWAN FR1 N7 Ant 2 10g SAR (W/kg)	3 2.4GHz WLAN Ant 1+2 10g SAR (W/kg)	4 5GHz WLAN Ant 1+2 10g SAR (W/kg)	1+2+3 Summed 10g SAR (W/kg)	1+2+4 Summed 10g SAR (W/kg)
LTE Band 5 Ant 1	Front at 6mm	0.440	0.333		0.035	0.77	0.81
	Back at 12mm	0.247	0.238	0.107	0.471	0.59	0.96
	Top side at 13mm		0.370			0.37	0.37
LTE Band 66 Ant 1	Front at 6mm	1.623	0.333		0.035	1.96	1.99
	Back at 12mm	0.743	0.238	0.107	0.471	1.09	1.45
	Top side at 13mm		0.370			0.37	0.37

Remark:
1. For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.
2. For WLAN/Bluetooth 0mm SAR used as distance SAR for co-located with WWAN analysis is more conservatively.
3. If SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.

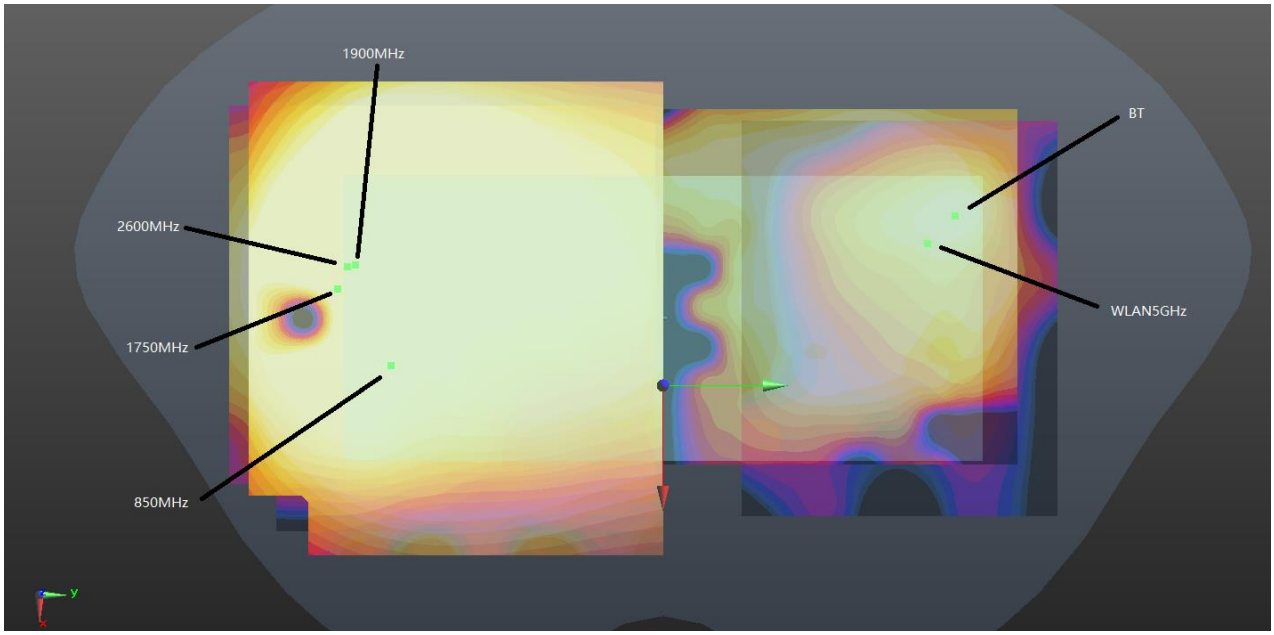
15.5 SPLSR Evaluation and Analysis

General Note:

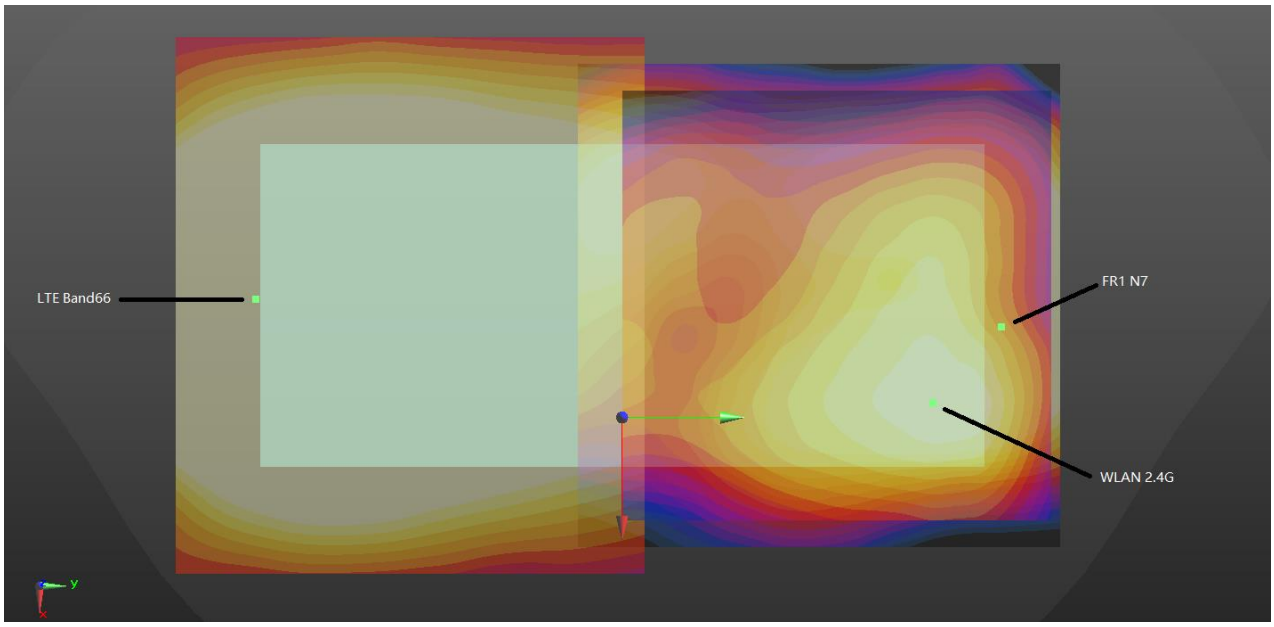
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as 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.



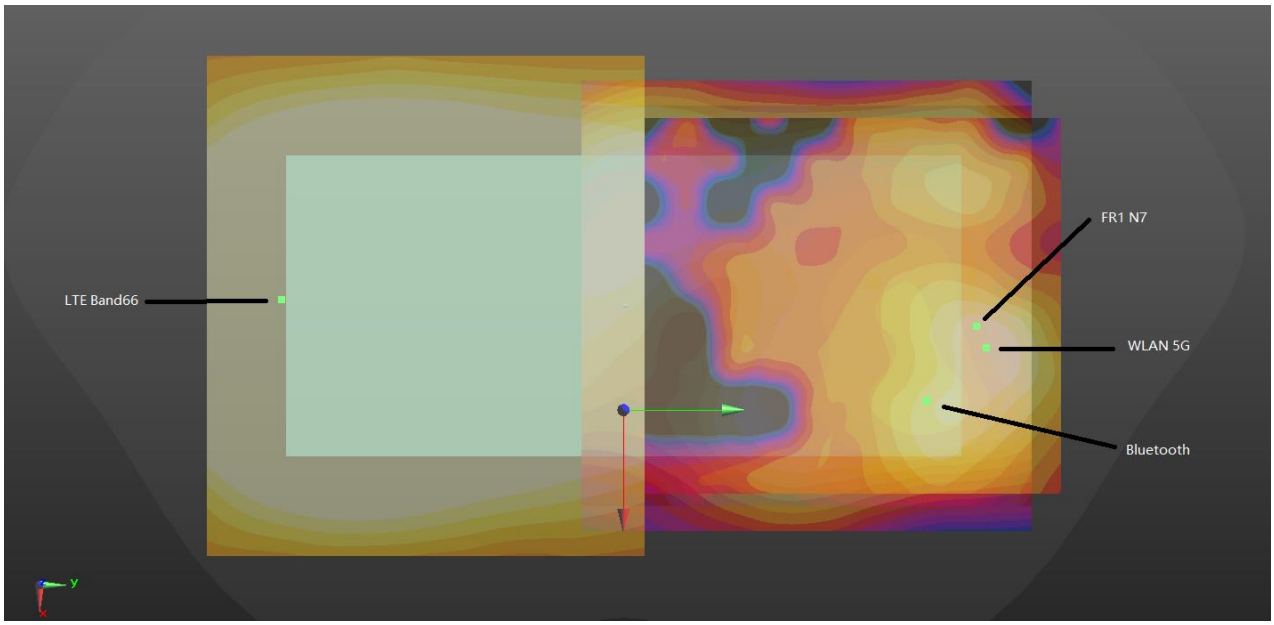
WWAN Back(5mm)+WLAN 2.4GHz(5mm)



WWAN Back(5mm)+WLAN 5GHz(5mm) + Bluetooth(5mm)



WWAN Front (13mm) + 5GNR n7 (13mm) + WLAN 2.4GHz (13mm)



WWAN Front (13mm) +5GNR n7 (13mm) + WLAN 5GHz (13mm) + Bluetooth (13mm)

	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	1.394	5mm	10.4	-73.8	-3.06	124.8	1.69	0.02	Not required
	WLAN2.4GHz		0.293	5mm	-16.6	48	-1.1				
Case 2	GSM850	Back	1.394	5mm	10.4	-73.8	-3.06	159.3	1.77	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	GSM850	Back	1.394	5mm	10.4	-73.8	-3.06	144.9	1.77	0.02	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
Case 3	WCDMA II	Back	1.376	5mm	-13.5	-78	-3.01	126.1	1.67	0.02	Not required
	WLAN2.4GHz		0.293	5mm	-16.6	48	-1.1				
Case 4	WCDMA II	Back	1.376	5mm	-13.5	-78	-3.01	156.5	1.75	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WCDMA II	Back	1.376	5mm	-13.5	-78	-3.01	147.5	1.75	0.02	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
Case 5	WCDMA IV	Back	1.352	5mm	-9.1	-82.5	-2.92	130.7	1.65	0.02	Not required
	WLAN2.4GHz		0.293	5mm	-16.6	48	-1.1				
Case 6	WCDMA IV	Back	1.352	5mm	-9.1	-82.5	-2.92	161.8	1.73	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WCDMA IV	Back	1.352	5mm	-9.1	-82.5	-2.92	152.0	1.73	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
Case 7	WCDMA V	Back	1.333	5mm	15	-75.1	1.76	127.1	1.63	0.02	Not required
	WLAN2.4GHz		0.293	5mm	-16.6	48	-1.1				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 8	WCDMA V	Back	1.333	5mm	15	-75.1	1.76	163.0	1.71	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WCDMA V	Back	1.333	5mm	15	-75.1	1.76	146.8	1.71	0.02	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 9	LTE Band 2	Back	1.308	5mm	-2.9	-82.4	1.77	131.1	1.60	0.02	Not required
	WLAN2.4GHz		0.293	5mm	-16.6	48	-1.1				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 10	LTE Band 2	Back	1.308	5mm	-2.9	-82.4	1.77	164.1	1.68	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 2	Back	1.308	5mm	-2.9	-82.4	1.77	152.0	1.68	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 11	LTE Band 26	Back	1.363	5mm	15	-78.3	1.77	130.2	1.66	0.02	Not required
	WLAN2.4GHz		0.293	5mm	-16.6	48	-1.1				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 12	LTE Band 26	Back	1.363	5mm	15	-78.3	1.77	165.9	1.74	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 26	Back	1.363	5mm	15	-78.3	1.77	150.0	1.74	0.02	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 13	LTE Band 66	Back	1.263	5mm	-10.6	-79.5	-2.97	158.6	1.64	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 66	Back	1.263	5mm	-10.6	-79.5	-2.97	149.0	1.64	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 14	LTE Band 41	Back	1.24	5mm	-15.2	-80	-5.39	157.7	1.62	0.01	Not required
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 41	Back	1.24	5mm	-15.2	-80	-5.39	149.6	1.62	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.327	5mm	-11	69.4	1.91				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 15	GSM850	Back	1.394	5mm	10.4	-73.8	-3.06	159.3	1.73	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	GSM850	Back	1.394	5mm	10.4	-73.8	-3.06	143.6	1.73	0.02	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 16	WCDMA II	Back	1.376	5mm	-13.5	-78	-3.01	156.5	1.71	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WCDMA II	Back	1.376	5mm	-13.5	-78	-3.01	146.1	1.71	0.02	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 17	WCDMA IV	Back	1.352	5mm	-9.1	-82.5	-2.92	161.8	1.69	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WCDMA IV	Back	1.352	5mm	-9.1	-82.5	-2.92	150.6	1.69	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 18	WCDMA V	Back	1.333	5mm	15	-75.1	1.76	163.0	1.67	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WCDMA V	Back	1.333	5mm	15	-75.1	1.76	145.6	1.67	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 19	LTE Band 2	Back	1.308	5mm	-2.9	-82.4	1.77	164.1	1.64	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 2	Back	1.308	5mm	-2.9	-82.4	1.77	150.7	1.64	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 20	LTE Band 26	Back	1.363	5mm	15	-78.3	1.77	165.9	1.70	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 26	Back	1.363	5mm	15	-78.3	1.77	148.7	1.70	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 21	LTE Band 66	Back	1.263	5mm	-10.6	-79.5	-2.97	158.6	1.60	0.01	Not required
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	LTE Band 66	Back	1.263	5mm	-10.6	-79.5	-2.97	147.6	1.60	0.01	Not required
	Bluetooth		0.049	5mm	-46.2	72.6	-30.13				
	WLAN5GHz		0.287	5mm	-11.8	68	2.39				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 22	LTE Band 66	Front	1.314	13mm	-1.5	-80.4	1.66	165.2	1.64	0.01	Not required
	FR1 n7		0.323	13mm	0.8	84.8	2.17				
	LTE Band 66	Front	1.314	13mm	-1.5	-80.4	1.66	155.7	1.34	0.01	Not required
	WLAN2.4GHz		0.026	13mm	21.6	73.6	2.17				
	FR1 n7	Front	0.323	13mm	0.8	84.8	2.17	23.6	0.35	0.01	Not required
	WLAN2.4GHz		0.026	13mm	21.6	73.6	2.17				

	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 23	LTE Band 66	Front	1.314	13mm	-1.5	-80.4	1.66	165.2	1.64	0.01	Not required
	FR1 n7		0.323	13mm	0.8	84.8	2.17				
	LTE Band 66	Front	1.314	13mm	-1.5	-80.4	1.66	168.1	1.42	0.01	Not required
	WLAN5GHz		0.105	13mm	14	87	2.7				
	Bluetooth		0.001	13mm	21.8	73.8	2.12				
	LTE Band 66	Front	1.314	13mm	-1.5	-80.4	1.66	156.0	1.42	0.01	Not required
	Bluetooth		0.001	13mm	21.8	73.8	2.12				
	WLAN5GHz		0.105	13mm	14	87	2.7				
	FR1 n7	Front	0.323	13mm	0.8	84.8	2.17	13.4	0.43	0.02	Not required
	WLAN5GHz		0.105	13mm	14	87	2.7				
	Bluetooth		0.001	13mm	21.8	73.8	2.12				
	FR1 n7	Front	0.323	13mm	0.8	84.8	2.17	23.7	0.43	0.01	Not required
	Bluetooth		0.001	13mm	21.8	73.8	2.12				
	WLAN5GHz		0.105	13mm	14	87	2.7				

16. Supplemental Tuner Tests Results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 144 tuner states are divided evenly among bands (except for GSM850/1900 and 5GNR n7), mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
3. This device supports LTE B4 / B5 / B17 / B38 and B66 / B26 / B12 / B41. Since the supported frequency span for LTE B4 / B5 / B17 / B38 falls completely within the 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, chose LTE B66 / B26 / B12 / 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. So we verified the single point SAR that bands with SAR value high than 1.2W/Kg.
5. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

16.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix F.

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

17. Uncertainty Assessment

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

18. References

[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: 2020.2.15

System Check_Head_750MHz

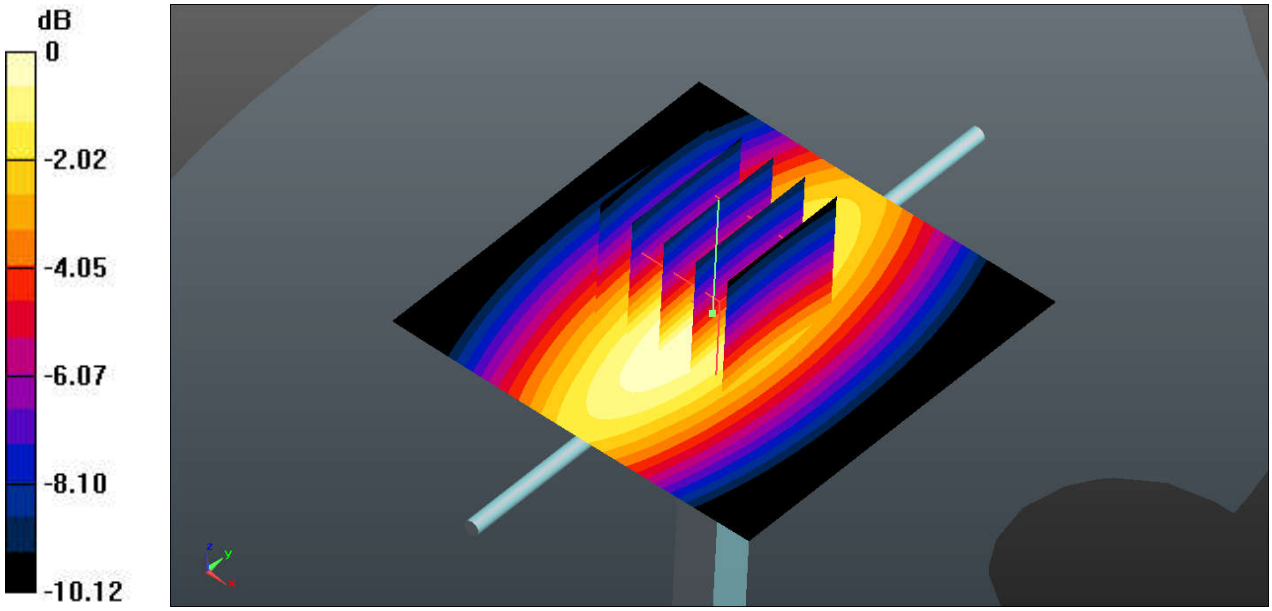
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.872 S/m; ε_r = 41.158; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.37, 9.37, 9.37); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.74 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.76 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 3.20 W/kg
SAR(1 g) = 2.12 W/kg; SAR(10 g) = 1.41 W/kg
Maximum value of SAR (measured) = 2.69 W/kg



0 dB = 2.69 W/kg = 4.30 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.2.21

System Check_Head_835MHz

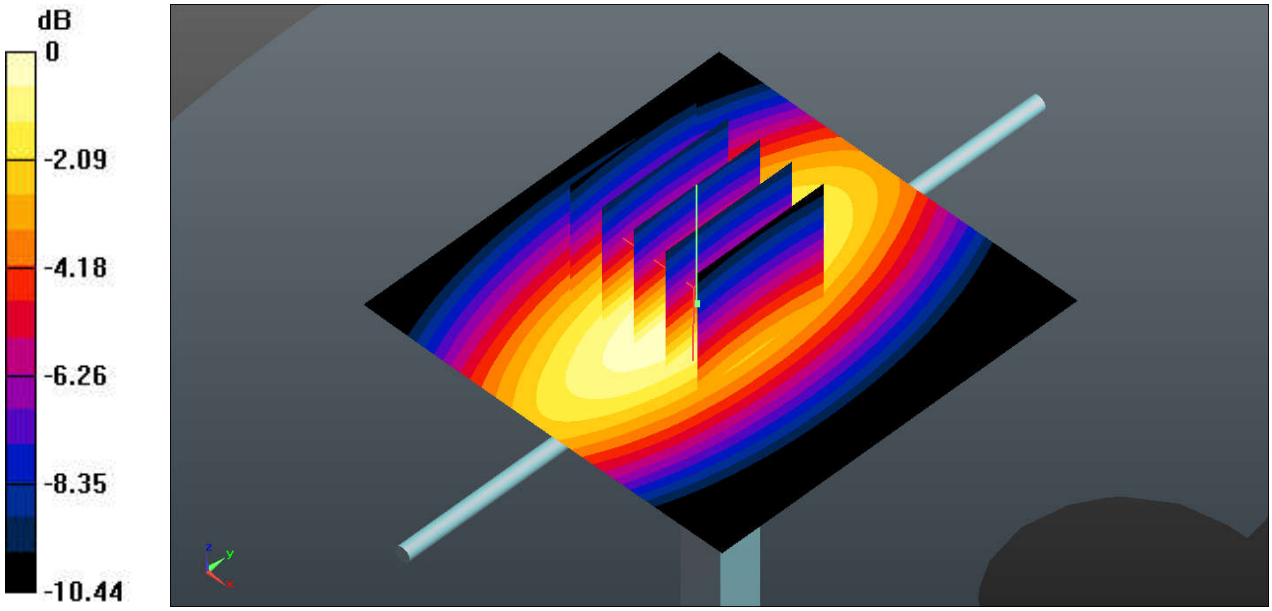
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; σ = 0.911 S/m; ε_r = 42.682; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(9.07, 9.07, 9.07); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.77 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.11 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 2.78 W/kg



0 dB = 2.78 W/kg = 4.44 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.2.28

System Check_Head_1750MHz

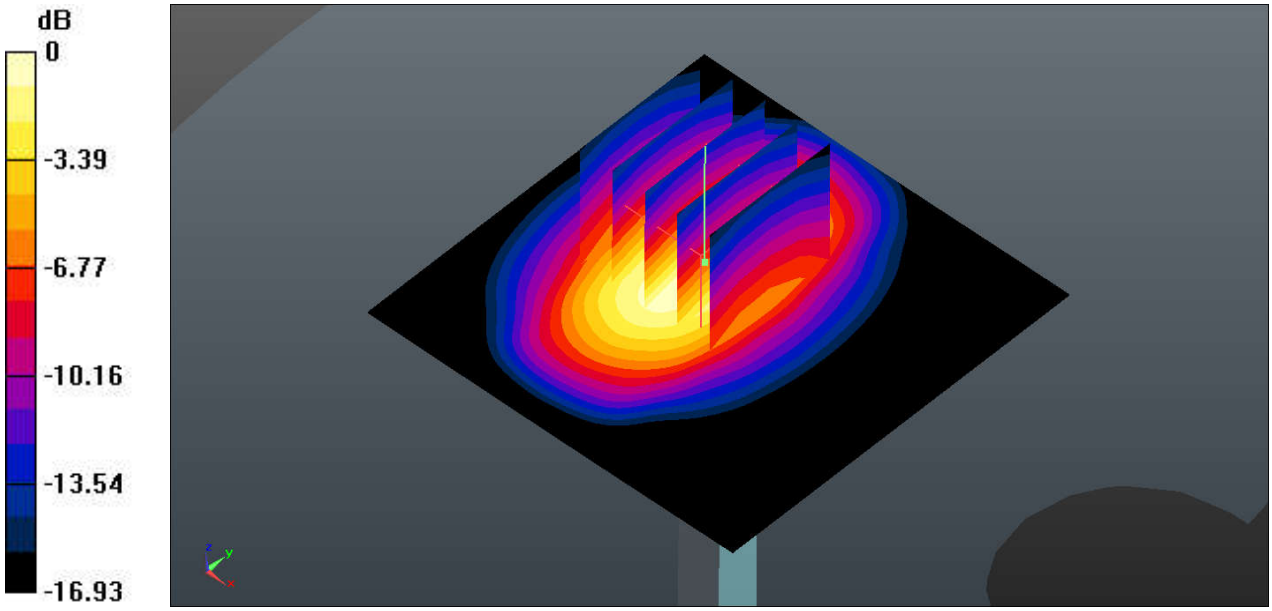
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.343 S/m; ε_r = 38.542; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.95, 7.95, 7.95); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 11.7 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 71.81 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 16.3 W/kg
SAR(1 g) = 9.1 W/kg; SAR(10 g) = 4.87 W/kg
Maximum value of SAR (measured) = 11.4 W/kg



0 dB = 11.4 W/kg = 10.57 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.3.3

System Check_Head_1900MHz

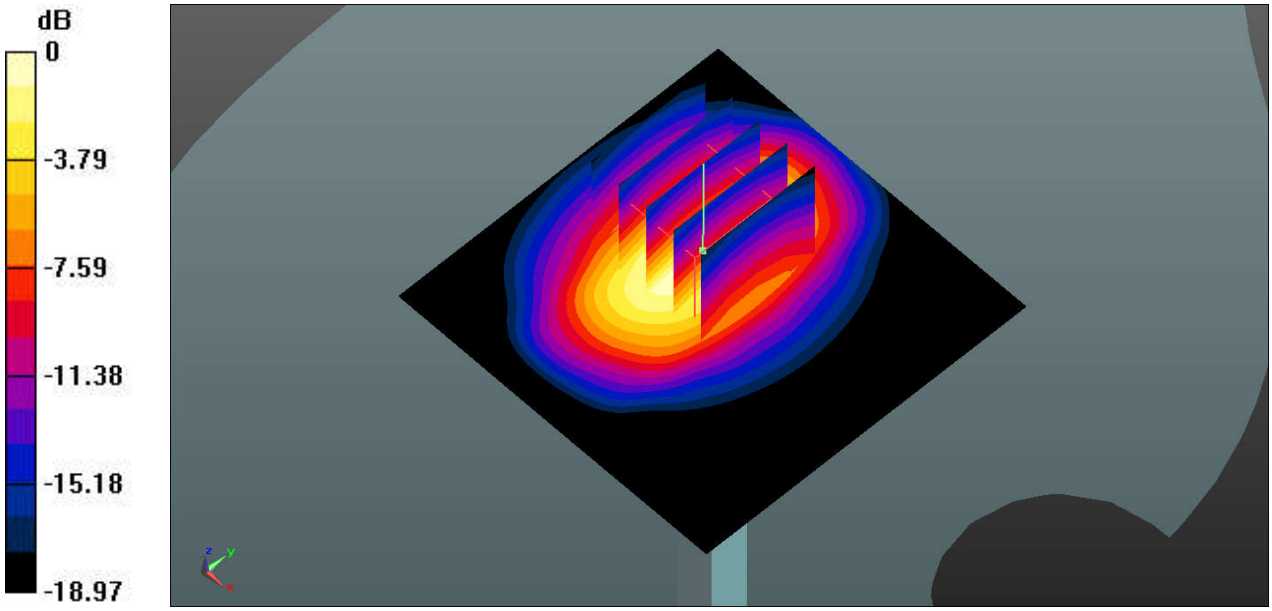
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.391 S/m; ε_r = 40.638; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.67, 7.67, 7.67); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.1 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 68.42 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 19.7 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.19 W/kg
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.10 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.3.13

System Check_Head_2450MHz

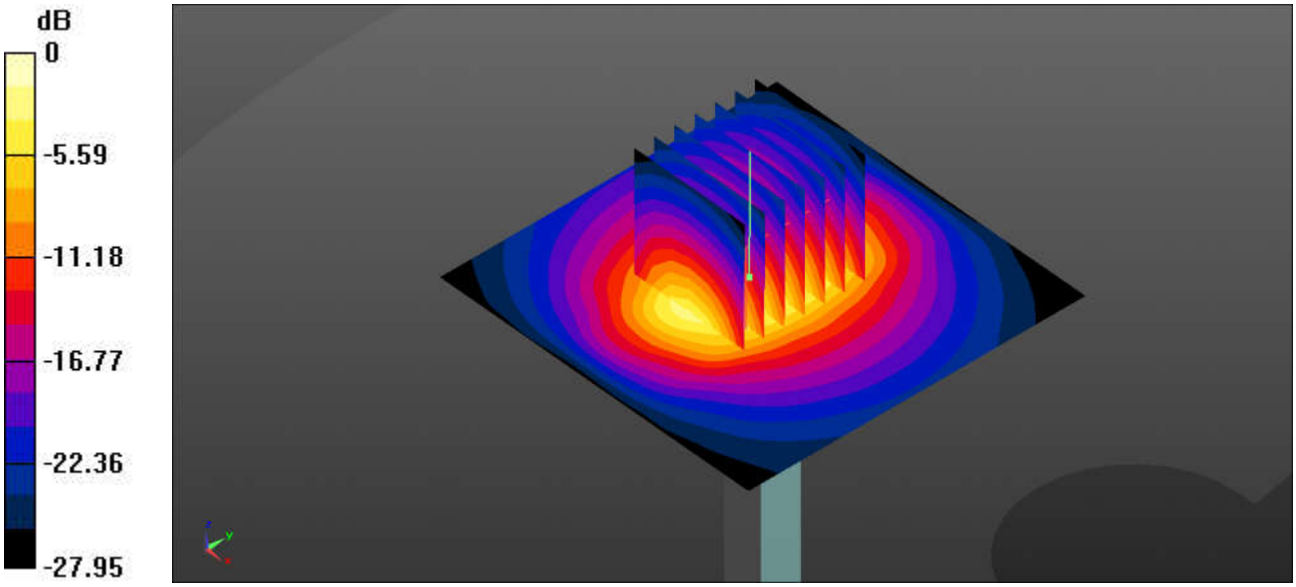
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.86 S/m; ε_r = 38.535; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(7.06, 7.06, 7.06); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.6 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.99 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 25.0 W/kg
SAR(1 g) = 12.8 W/kg; SAR(10 g) = 6.13 W/kg
Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.6 W/kg = 12.92 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.3.10

System Check_Head_2600MHz

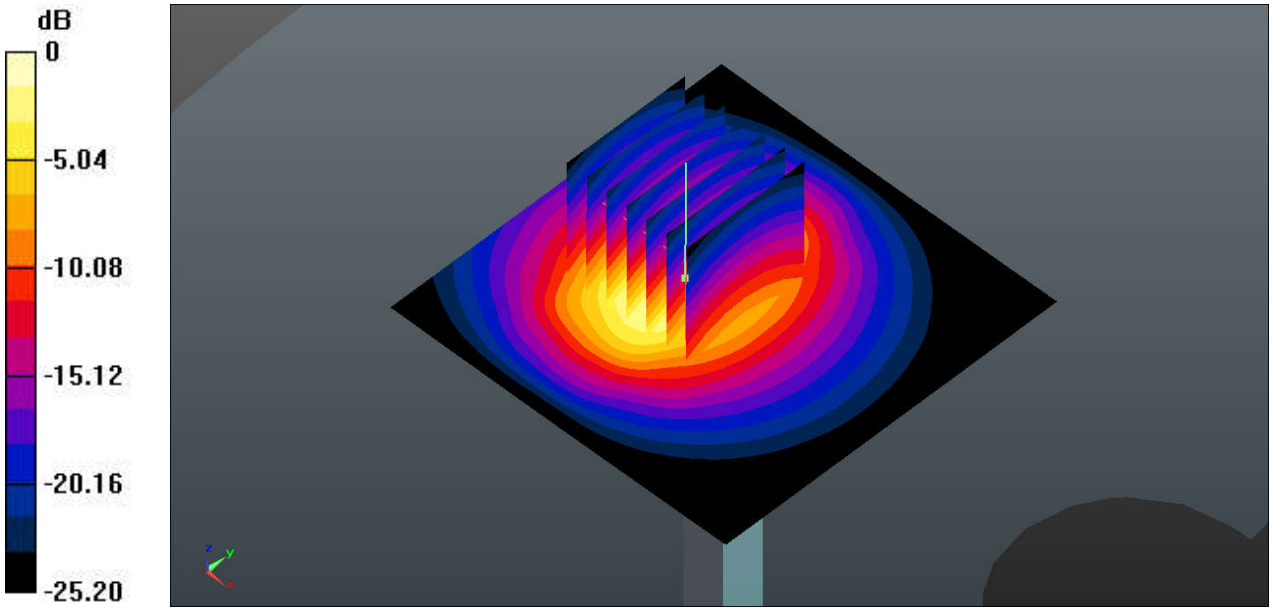
DUT: D2600V2 - SN:1070

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2600 MHz; σ = 2.053 S/m; ε_r = 40.199; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(6.9, 6.9, 6.9); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 27.8 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 78.52 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 35.3 W/kg
SAR(1 g) = 15.4 W/kg; SAR(10 g) = 6.65 W/kg
Maximum value of SAR (measured) = 27.2 W/kg



0 dB = 27.2 W/kg = 14.35 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.3.15

System Check_Head_5250MHz

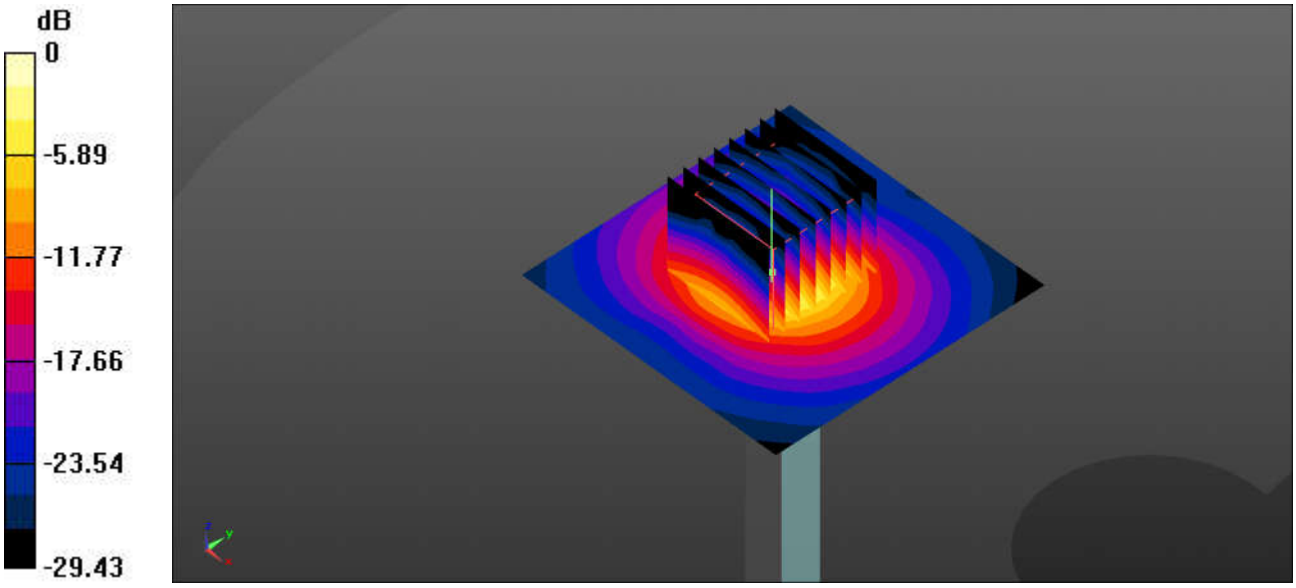
DUT: D5GHzV2-SN:1113

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.595 S/m; ε_r = 36.402; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.74, 4.74, 4.74); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.7 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 44.59 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 29.7 W/kg
SAR(1 g) = 8.02 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (measured) = 18.0 W/kg



0 dB = 18.7 W/kg = 12.72 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.3.18

System Check_Head_5600MHz

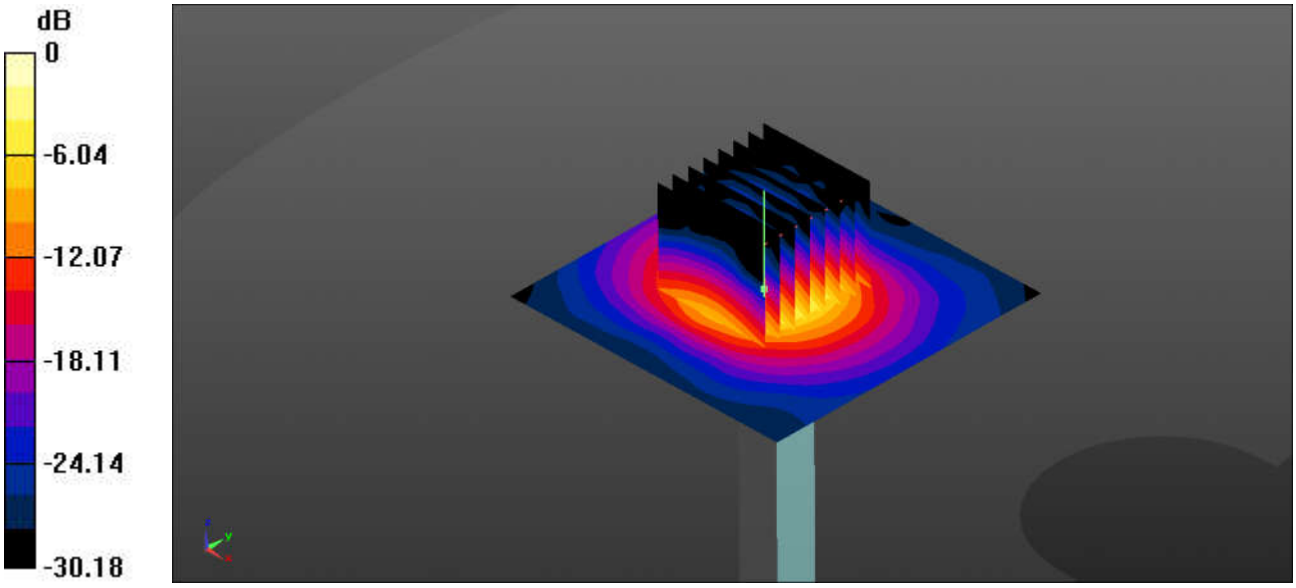
DUT: D5GHzV2-SN:1113

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; σ = 4.985 S/m; ε_r = 35.825; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.47, 4.47, 4.47); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 21.0 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 43.06 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 33.4 W/kg
SAR(1 g) = 8.31 W/kg; SAR(10 g) = 2.38 W/kg
Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 21.0 W/kg = 13.22 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.3.19

System Check_Head_5750MHz

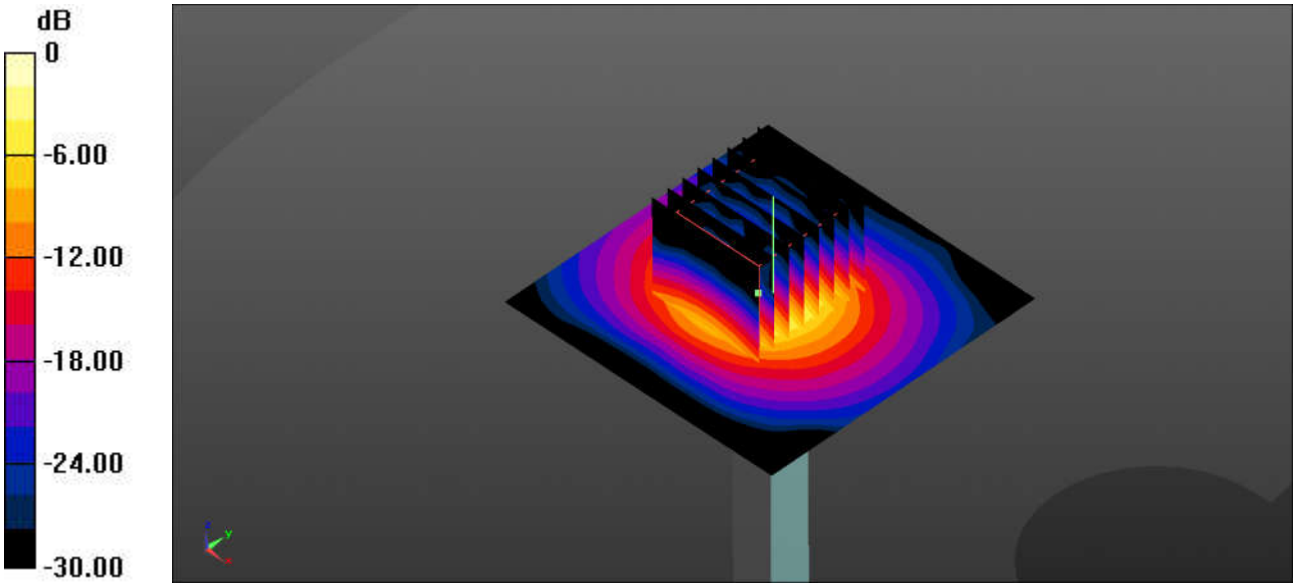
DUT: D5GHzV2-SN:1113

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; σ = 5.161 S/m; ε_r = 35.569; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3843; ConvF(4.44, 4.44, 4.44); Calibrated: 2019.9.26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2019.4.17
- Phantom: SAM1; Type: SAM; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (1); SEMCAD X Version 14.6.11 (7439)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.5 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 39.34 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 31.9 W/kg
SAR(1 g) = 7.62 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 17.7 W/kg



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

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.19

System Check_Head_835MHz

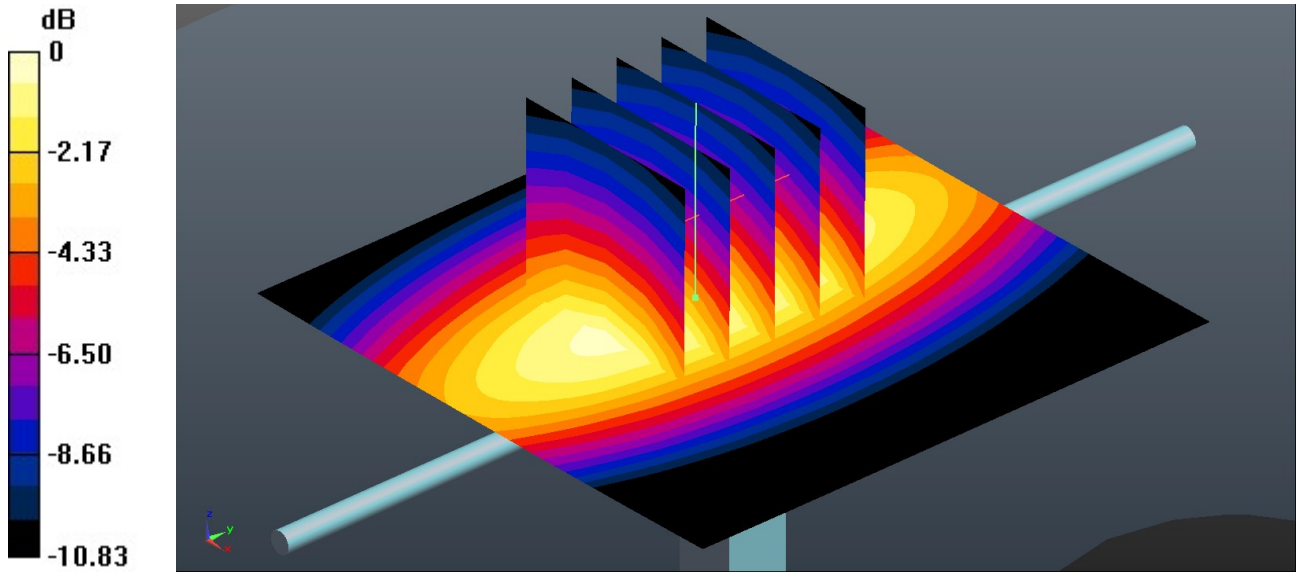
DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850 Medium parameters used: f = 835 MHz; σ = 0.944 S/m; ε_r = 42.289; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(10.05, 10.05, 10.05); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- 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) = 3.29 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.04 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.80 W/kg
SAR(1 g) = 2.5 W/kg; SAR(10 g) = 1.63 W/kg
Maximum value of SAR (measured) = 3.36 W/kg



0 dB = 3.36 W/kg = 5.26 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2020.8.21

System Check_Head_1750MHz

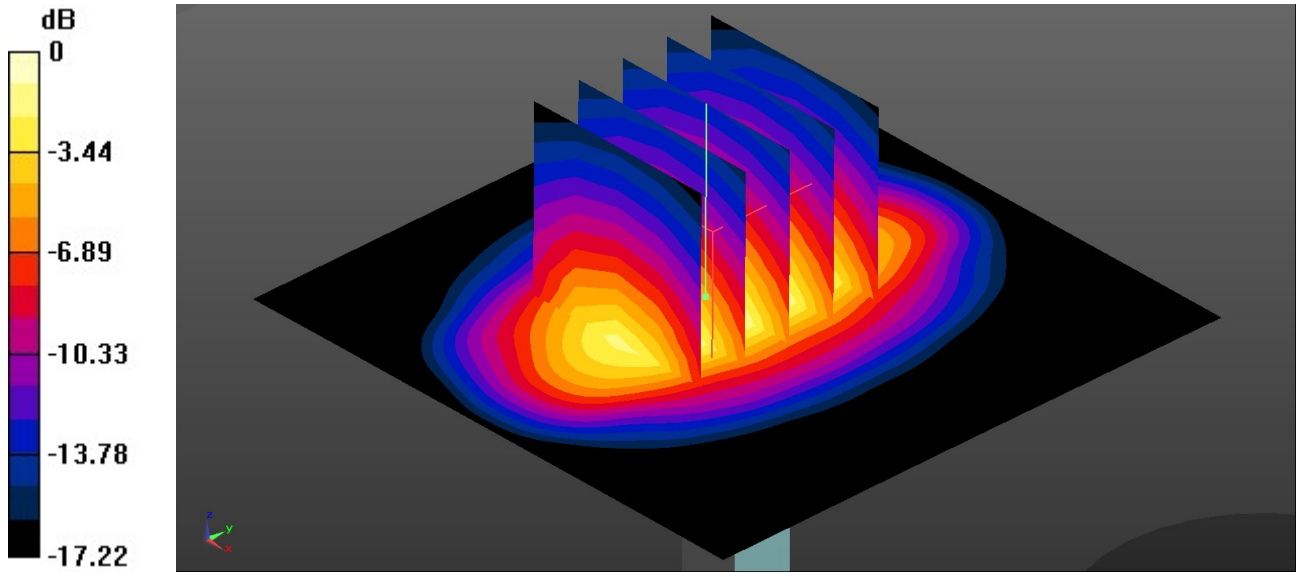
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.359 S/m; ε_r = 39.559; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7592; ConvF(8.41, 8.41, 8.41); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn656; Calibrated: 2019.12.17
- 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) = 11.7 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 79.00 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 15.1 W/kg
SAR(1 g) = 8.57 W/kg; SAR(10 g) = 4.58 W/kg
Maximum value of SAR (measured) = 11.8 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg