FCC SAR Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2169-1
FCC ID	:	IHDT56ZW3
STANDARD	:	FCC 47 CFR Part 2 (2.1093)

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

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

Nick Hu

Reviewed by: Nick Hu / 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
FA181701	Rev. 01	Initial issue of report.	Oct. 01, 2021

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2169-1,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.82	0.98	**1.27**	1.54
		GSM1900	0.15	**0.99**	1.25	
	WCDMA	Band II	0.27	0.86	1.24	
		Band IV	0.22	**0.99**	1.25	
		Band V	0.40	0.83	1.14	
	LTE	Band 2	0.25	0.98	1.24	
		Band 5(ANT2)	1.16	0.73	0.73	
		Band 7	1.24	0.96	1.25	
		Band 12/Band 17	0.72	0.52	0.52	
		Band 13	0.29	0.78	0.78	
		Band 26/5(ANT1)	0.37	0.91	0.91	
		Band 66/ Band 4	1.25	0.97	1.26	
		Band 41/ Band 38	1.25	**0.99**	1.26	
		Band 42	1.24	0.97	1.25	
	5G NR	n5	1.06	0.78	0.78	
		n7	1.23	0.93	1.25	
		n66	0.10	0.96	1.24	
		n77/n78	1.20	0.97	1.25	
DTS	WLAN	2.4GHz WLAN	**1.30**	0.35	0.98	1.36
NII		5GHz WLAN	1.19	0.39	1.18	1.54
DSS	Bluetooth	2.4GHz Bluetooth	0.17	0.13	0.13	1.54

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	2.52	3.57
		GSM1900	3.15	
	WCDMA	WCDMA II	3.09	
		WCDMA IV	3.00	
	LTE	Band 2	3.12	
		Band 7	**3.27**	
		Band 66/ Band 4	3.13	
		Band 41/ Band 38	3.04	
		Band 42	3.15	
	5G NR	n7	3.09	
		n66	3.05	
		n77/n78	3.14	
NII	WLAN	5GHz WLAN	1.83	
Date of Testing:			2021/8/24 ~ 2021/9/22	

Remark:

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

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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

2. Administration Data

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

Testing Laboratory			
Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR06-KS	CN1257	314309

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

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

3. Guidance Applied

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

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

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2169-1
FCC ID	IHDT56ZW3
IMEI Code	Sample 1 SIM1: 350662070022739 SIM2: 350662070022747 Sample 2 SIM1: 352580670005995
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 17 : 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2535 MHz ~ 2655 MHz LTE Band 42: 3450 MHz ~ 3550MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, π/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	RRUB31.Q3-46
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 2.4G 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 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 GPRS/EGPRS 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).
7. There are four samples for this project, sample 1 and sample 3 is 1st source dual/single SIM, sample 2 and sample 4 is 2nd source single/dual SIM. The detailed differences between the sample 1/2/3/4 could refer the XT2169-1_Operation Description of Product Equality Declaration exhibit submitted. According to the differences, we choose sample 1 to perform full SAR testing and sample 2 to verify the worst case of sample 1. For sample 3/4, the differences do not affect the test, so sample 3/4 are not tested.
8. There are two headsets, only supplier different, so only chose one headset to perform SAR testing.
9. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
10. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head, body-worn, hotspot, extremity.
11. For some WWAN bands, sensor on reduced power level is higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
12. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM, 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 can be referred to section 18 and appendix F.
13. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
14. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
15. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
16. This device supports 5GNR FR1 bands as following table and limited NSA mode.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40, 50
	n66	FDD	15	5, 10, 15, 20,30,40
	n77	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>IHDT56ZW3</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 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 7: 2500 MHz ~ 2570 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 13 : 777 MHz ~ 787 MHz
LTE Band 17 : 704 MHz ~ 716 MHz
LTE Band 26: 814 MHz ~ 849 MHz
LTE Band 38: 2570 MHz ~ 2620 MHz
LTE Band 41: 2535 MHz ~ 2655 MHz
LTE Band 42: 3450 MHz ~ 3550 MHz
LTE Band 66: 1710 MHz ~ 1780 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 13: 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM/ 256QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE Release Version</td><td>R15, Cat18</td></tr>
<tr><td>CA Support</td><td>Supported, Uplink and Downlink</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, head/body-worn/ hotspot/extremity will trigger reduced power for some LTE bands, the detail please referred to section 14.</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 14.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>1. This device supports LTE Carrier Aggregation (CA) in the uplink for Intra band 7C with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.
2. This device supports maximum of 3 carriers in the downlink and 2 carriers in the uplink.</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 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		
LTE Band 17				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711
LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
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	40065	2537.5	40090	2540	40115	2542.5	40140	2545
LM	40385	2569.5	40390	2570	40395	2570.5	40400	2571
HM	40705	2601.5	40690	2600	40685	2599.5	40670	2598
H	41215	2652.5	41190	2650	41165	2647.5	41140	2645

LTE Band 42								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460
M	42590	3500	42590	3500	42590	3500	42590	3500
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540

LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq.(MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

4.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz
Channel Bandwidth	5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz, 25MHz, 30MHz, 40MHz, 50MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz, 30MHz, 40MHz 5G NR n77: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz 5G NR n78: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n5	LTE B7/66
LTE Anchor Bands for n7	LTE B5/66
LTE Anchor Bands for n66	LTE B5/7/12
LTE Anchor Bands for n77	LTE B41
LTE Anchor Bands for n78	LTE B5/7/38/41/66

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

NR Band 5

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

NR Band 7

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

NR Band 66

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

NR Band 77 SCS30KHz

	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	664668	3970.02	664334	3965.01	664000	3960	663668	3955.02	663334	3950.01	663000	3945	662668	3940.02	662334	3935.01	662000	3930

NR Band 78 SCS30KHz

	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	652668	3790.02	652334	3785.01	652000	3780	651668	3775.02	651334	3770.01	651000	3765	650668	3760.02	650334	3755.01		

For 3450 MHz ~ 3550 MHz

NR Band 77 SCS30KHz																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495		
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01
H	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99		

NR Band 78 SCS30KHz																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632334	3485.01	632668	3490.02	633000	3495		
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01
H	636000	3540	635666	3534.99	635332	3529.98	635000	3525	634666	3519.99	634332	3514.98	634000	3510	633666	3504.99		

5. Smart Transmit feature for RF Exposure compliance

The RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory SAR limit to account for all device design related uncertainty.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for f < 6 GHz.

<SAR design target and uncertainty>

	Uncertainty dB (k=2)
Total uncertainty	1.5

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR\_design\_target < SAR_{regulatory\_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target, below the predefined time-averaged power limit, for each characterized technology and band.

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

Band	Antenna	Head DSI 2 Standalone	Head DSI 2 Simultaneous	Body Worn DSI 3 Standalone	Body Worn & Hotspot DSI 3 Simultaneous	Extremely DSI6 Standalone	Extremely DSI6 Simultaneous	Sensor Off DSI4	Pamx*
GSM850(2 Tx slots)	Ant 1	26.8	26.8	23.7	21.7	25.9	25.4	25.0	25.0
GSM1900(3 Tx slots)	Ant 1	32.0	32.0	19.1	17.6	20.0	19.5	21.2	21.2
WCDMA II	Ant 1	29.6	29.6	20.7	18.7	22.2	21.7	23.0	23.0
WCDMA VI	Ant 1	30.4	30.4	20.5	19.5	22.5	22.0	23.0	23.0
WCDMA V	Ant 1	27.9	27.9	23.4	22.4	23.4	23.4	23.0	23.0
LTE B2	Ant 1	30.0	30.0	20.9	19.9	22.5	22.0	23.0	23.0
LTE B5	Ant 2	23.3	22.3	25.3	25.3	23.0	23	23.0	23.0
LTE B7	Ant 1	26.8	26.8	19.5	16.5	23.0	22.3	23.0	23.0
LTE B7	Ant 2	16.8	15.8	17.4	14.9	20.2	19.7	23.0	23.0
LTE B12(17)	Ant 1	31.8	31.8	26.8	26.8	23.0	23.0	23.0	23.0
LTE B12	Ant 2	25.4	25.4	28.6	28.6	23.0	23.0	23.0	23.0
LTE B13	Ant 1	29.4	29.4	25.0	25.0	23.0	23.0	23.0	23.0
LTE B26(5)	Ant 1	28.3	28.3	23.5	23.0	24.4	24.4	23.0	23.0
LTE B66(4)	Ant 1	32.8	32.8	21.8	20.3	22.5	22	23.0	23.0
LTE B66	Ant 2	16.1	15.1	19.9	17.9	21.7	21.2	23.0	23.0
LTE B41(38)	Ant 1	27.9	27.9	20.2	17.2	23.6	23.6	21.0	21.0
LTE B41(38)	Ant 2	18.6	17.6	18.1	16.1	21.4	20.4	21.0	21.0
LTE B42	Ant 4	21.0	20.5	16.5	15.5	20.5	20.0	21.0	21.0
N5	Ant 2	23.2	22.2	25.0	25.0	23.0	23.0	23.0	23.0
N7	Ant 1	29.2	29.2	20.4	17.4	25.7	25.7	23.0	23.0
N7	Ant 2	16.4	15.4	17.8	16.8	20.8	20.3	23.0	23.0
N66	Ant 1	34.0	34.0	20.1	19.1	22.5	22.0	23.0	23.0
N77(78)	Ant 4	22.5	21.5	17.9	16.9	20.7	20.2	23.0	23.0

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to Pmax + 1.0 dB uncertainty.

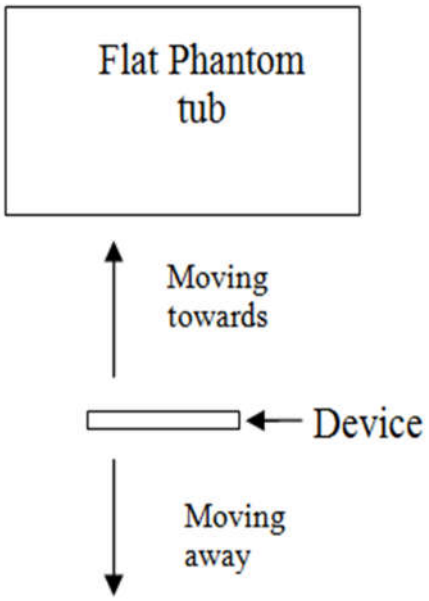
All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD).

The max allowed output power is the P_{limit} + 1.0 dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

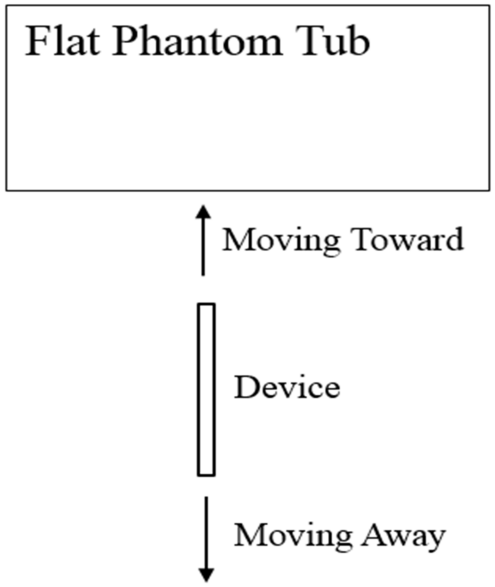
6. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (5850MHz) and lowest (850MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
3. The device employs proximity sensors that detect the presence of the user's body at the front, back faces of the device. When front or back body worn condition is detected reduced power will be active.
4. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/left /top/bottom side of the device. When front/back/left/top/bottom side of handheld condition is detected reduced power will be active.
5. The sensors can use to detect the proximity of the user's body (Body-Worn condition) at the front or back side and handheld state at front/back/left /top/bottom side of the device use a detection threshold distance. The trigger distance shown in the sections below.
6. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed for body worn and handheld.



Sensor detection test set-up, front and back sides



Sensor detection test set-up, top, bottom sides

<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	11	11	20	27

<Handheld for Antenna 1>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	11	19	19	33	19	25

<Handheld for Antenna 2>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	5	17	11	27	5	14	11	26

<Handheld for Antenna 4>

Proximity Sensor Triggering Distance (mm)				
Position	Back		Left Side	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	15	15	5	11

7. RF Exposure Limits

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

8. Specific Absorption Rate (SAR)

8.1 Introduction

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

8.2 SAR Definition

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

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

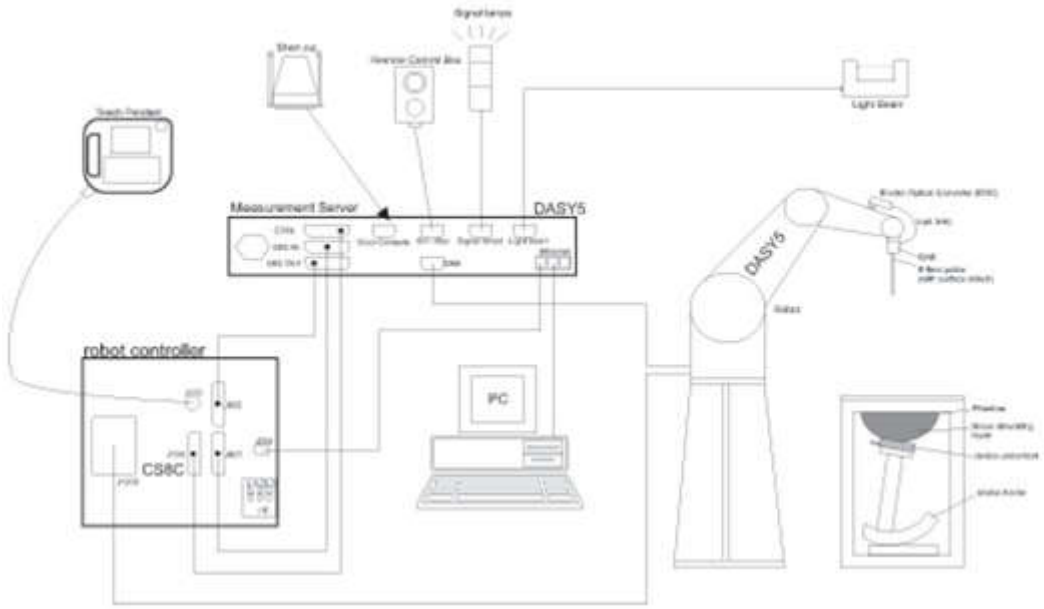
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

9. System Description and Setup

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



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

9.1 E-Field Probe

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

<EX3DV4 Probe>

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

9.2 Data Acquisition Electronics (DAE)

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

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

Photo of DAE

9.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

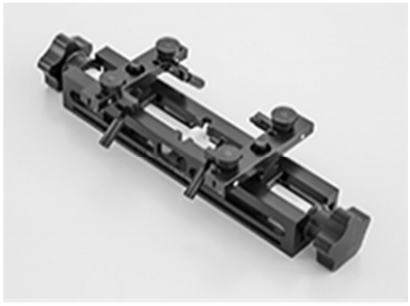
The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

9.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

10.1 Spatial Peak SAR Evaluation

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

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

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

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

10.2 Power Reference Measurement

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

10.3 Area Scan

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

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

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

10.4 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.

10.5 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.

10.6 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.

11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2022/3/24
SPEAG	835MHz System Validation Kit	D835V2	4d258	2020/5/7	2023/5/6
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2022/3/25
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2022/3/24
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/23
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2020/11/26	2023/11/25
SPEAG	3500MHz System Validation Kit	D3500V2	1037	2020/11/25	2023/11/24
SPEAG	3700MHz System Validation Kit	D3700V2	1008	2020/11/25	2023/11/24
SPEAG	3900MHz System Validation Kit	D3900V2	1048	2020/5/14	2023/5/13
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2022/9/22
SPEAG	Data Acquisition Electronics	DAE4	690	2021/3/17	2022/3/16
SPEAG	Data Acquisition Electronics	DAE4	1338	2020/11/27	2021/11/26
SPEAG	Dosimetric E-Field Probe	EX3DV4	7630	2021/2/10	2022/2/9
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2020/9/25	2021/9/24
SPEAG	SAM Twin Phantom	SAM Twin	TP-1503	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	TP-2022	NCR	NCR
Testo	Hygrometer	608-H1	1241332102	2021/1/7	2022/1/6
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2021/4/13	2022/4/12
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	2021/7/31	2022/7/30
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2020/12/2	2021/12/1
Anritsu	Vector Signal Generator	MG3710A	6201682672	2021/1/7	2022/1/6
Rohde & Schwarz	Power Meter	NRVD	102081	2021/8/12	2022/8/11
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2021/8/12	2022/8/11
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2021/8/12	2022/8/11
R&S	CBT BLUETOOTH TESTER	CBT	101246	2021/4/12	2022/4/11
EXA	Spectrum Analyzer	FSV7	101632	2021/1/7	2022/1/6
FLUKE	DIGITAC THERMOMETER	51II	97240029	2021/8/13	2022/8/12
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	

Note:

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

12. System Verification

12.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 12.1. 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. 12.2.

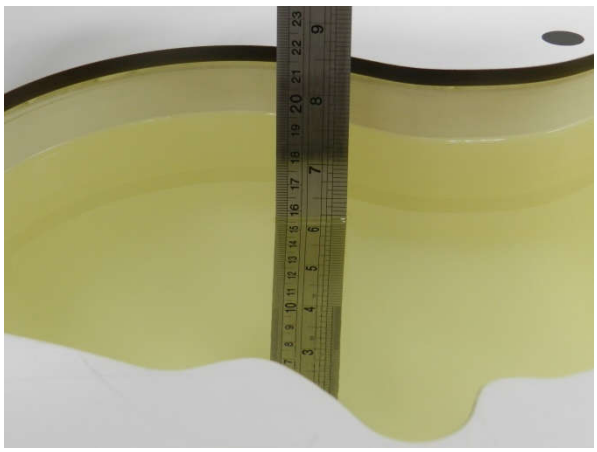


Fig 12.1 Photo of Liquid Height for Head SAR

Fig 12.2 Photo of Liquid Height for Body SAR

12.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (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	22.6	0.909	42.683	0.89	41.90	2.13	1.87	±5	2021/8/24
835	Head	22.8	0.938	42.446	0.90	41.50	4.22	2.28	±5	2021/8/25
1750	Head	22.7	1.360	40.942	1.37	40.10	-0.73	2.10	±5	2021/8/27
1900	Head	22.9	1.455	40.687	1.40	40.00	3.93	1.72	±5	2021/8/29
2450	Head	22.6	1.809	38.518	1.80	39.20	0.50	-1.74	±5	2021/8/31
2600	Head	22.6	1.926	38.225	1.96	39.00	-1.73	-1.99	±5	2021/9/1
3500	Head	22.6	2.833	39.056	2.91	37.90	-2.65	3.05	±5	2021/9/3
3700	Head	22.7	3.024	38.720	3.12	37.70	-3.08	2.71	±5	2021/9/4
3900	Head	22.9	3.227	38.419	3.32	37.50	-2.80	2.45	±5	2021/9/4
5250	Head	22.7	4.633	36.524	4.71	35.90	-1.63	1.74	±5	2021/9/5
5600	Head	22.7	4.979	35.916	5.07	35.50	-1.79	1.17	±5	2021/9/6
5750	Head	22.7	5.214	35.608	5.22	35.40	-0.11	0.59	±5	2021/9/7
750	Head	22.7	0.908	42.685	0.89	41.90	2.02	1.87	±5	2021/9/8
835	Head	22.6	0.935	42.541	0.90	41.50	3.89	2.51	±5	2021/9/9
1750	Head	22.9	1.359	40.934	1.37	40.10	-0.80	2.08	±5	2021/9/11
1900	Head	22.8	1.444	39.191	1.40	40.00	3.14	-2.02	±5	2021/9/13
2450	Head	22.9	1.810	38.628	1.80	39.20	0.56	-1.46	±5	2021/9/15
2600	Head	22.8	1.928	38.328	1.96	39.00	-1.63	-1.72	±5	2021/9/16
3500	Head	22.7	2.796	38.957	2.91	37.90	-3.92	2.79	±5	2021/9/18
3700	Head	22.8	2.993	38.672	3.12	37.70	-4.07	2.58	±5	2021/9/19
3900	Head	22.9	3.192	38.388	3.32	37.50	-3.86	2.37	±5	2021/9/19
5250	Head	22.6	4.696	36.429	4.71	35.90	-0.30	1.47	±5	2021/9/20
5600	Head	22.8	5.042	35.814	5.07	35.50	-0.55	0.88	±5	2021/9/21
5750	Head	22.9	5.279	35.501	5.22	35.40	1.13	0.29	±5	2021/9/22

12.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2021/8/24	750	Head	50	1087	7630	690	0.418	8.36	8.36	0.00
2021/8/25	835	Head	50	4d258	7630	690	0.493	9.44	9.86	4.45
2021/8/27	1750	Head	50	1090	7630	690	1.830	36.40	36.6	0.55
2021/8/29	1900	Head	50	5d170	7630	690	2.070	39.00	41.4	6.15
2021/8/31	2450	Head	50	908	7630	690	2.440	52.80	48.8	-7.58
2021/9/1	2600	Head	50	1061	7630	690	2.640	56.60	52.8	-6.71
2021/9/3	3500	Head	50	1037	7630	690	3.220	68.00	64.4	-5.29
2021/9/4	3700	Head	50	1008	7630	690	3.220	67.60	64.4	-4.73
2021/9/4	3900	Head	50	1048	3857	1338	3.380	68.90	67.6	-1.89
2021/9/5	5250	Head	50	1113	7630	690	3.910	83.40	78.2	-6.24
2021/9/6	5600	Head	50	1113	7630	690	4.100	83.40	82	-1.68
2021/9/7	5750	Head	50	1113	7630	690	4.020	83.40	80.4	-3.60
2021/9/8	750	Head	50	1087	7630	690	0.415	8.36	8.3	-0.72
2021/9/9	835	Head	50	4d258	7630	690	0.503	9.44	10.06	6.57
2021/9/11	1750	Head	50	1090	7630	690	1.830	36.40	36.6	0.55
2021/9/13	1900	Head	50	5d170	7630	690	2.040	39.00	40.8	4.62
2021/9/15	2450	Head	50	908	7630	690	2.440	52.80	48.8	-7.58
2021/9/16	2600	Head	50	1061	7630	690	2.700	56.60	54	-4.59
2021/9/18	3500	Head	50	1037	7630	690	3.280	68.00	65.6	-3.53
2021/9/19	3700	Head	50	1008	7630	690	3.110	67.60	62.2	-7.99
2021/9/19	3900	Head	50	1048	3857	1338	3.370	68.90	67.4	-2.18
2021/9/20	5250	Head	50	1113	7630	690	3.920	83.40	78.4	-6.00
2021/9/21	5600	Head	50	1113	7630	690	4.150	83.40	83	-0.48
2021/9/22	5750	Head	50	1113	7630	690	3.990	83.40	79.8	-4.32

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2021/8/24	750	Head	50	1087	7630	690	0.273	5.65	5.46	-3.36
2021/8/25	835	Head	50	4d258	7630	690	0.320	6.13	6.4	4.40
2021/8/27	1750	Head	50	1090	7630	690	0.971	19.20	19.42	1.15
2021/8/29	1900	Head	50	5d170	7630	690	1.060	20.30	21.2	4.43
2021/8/31	2450	Head	50	908	7630	690	1.140	24.20	22.8	-5.79
2021/9/1	2600	Head	50	1061	7630	690	1.170	25.10	23.4	-6.77
2021/9/3	3500	Head	50	1037	7630	690	1.200	25.40	24	-5.51
2021/9/4	3700	Head	50	1008	7630	690	1.200	24.40	24	-1.64
2021/9/4	3900	Head	50	1048	3857	1338	1.210	23.70	24.2	2.11
2021/9/5	5250	Head	50	1113	7630	690	1.100	23.80	22	-7.56
2021/9/6	5600	Head	50	1113	7630	690	1.170	23.80	23.4	-1.68
2021/9/7	5750	Head	50	1113	7630	690	1.270	23.80	25.4	6.72
2021/9/8	750	Head	50	1087	7630	690	0.272	5.65	5.44	-3.72
2021/9/9	835	Head	50	4d258	7630	690	0.326	6.13	6.52	6.36
2021/9/11	1750	Head	50	1090	7630	690	0.971	19.20	19.42	1.15
2021/9/13	1900	Head	50	5d170	7630	690	1.050	20.30	21	3.45
2021/9/15	2450	Head	50	908	7630	690	1.130	24.20	22.6	-6.61
2021/9/16	2600	Head	50	1061	7630	690	1.220	25.10	24.4	-2.79
2021/9/18	3500	Head	50	1037	7630	690	1.190	25.40	23.8	-6.30
2021/9/19	3700	Head	50	1008	7630	690	1.160	24.40	23.2	-4.92
2021/9/19	3900	Head	50	1048	3857	1338	1.210	23.70	24.2	2.11
2021/9/20	5250	Head	50	1113	7630	690	1.100	23.80	22	-7.56
2021/9/21	5600	Head	50	1113	7630	690	1.180	23.80	23.6	-0.84
2021/9/22	5750	Head	50	1113	7630	690	1.190	23.80	23.8	0.00

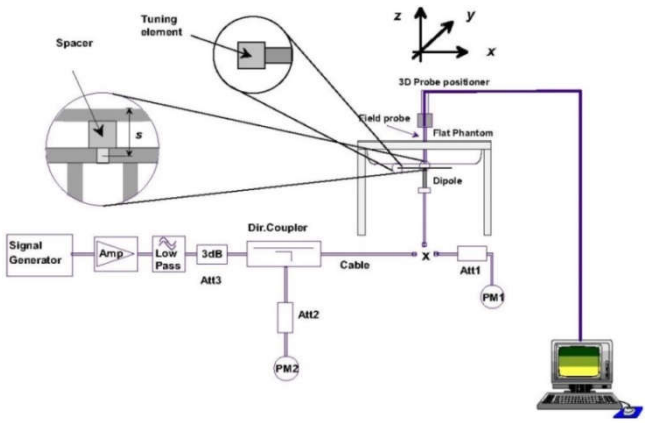


Fig 11.3.1 System Performance Check Setup

Fig 11.3.2 Setup Photo

13. RF Exposure Positions

13.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 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.

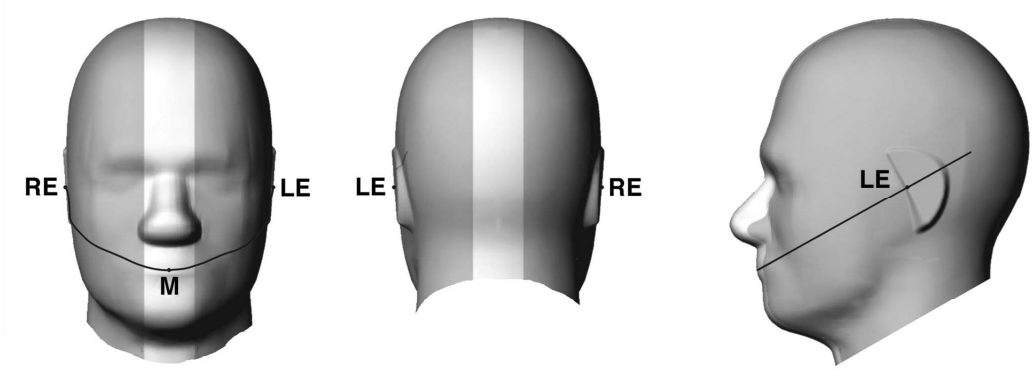


Fig 12.1.1 Front, back, and side views of SAM twin phantom

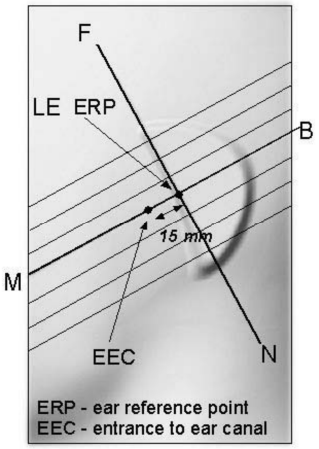


Fig 12.1.2 Close-up side view of phantom showing the ear region.

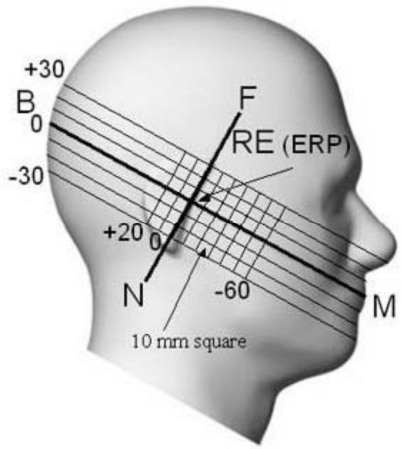


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

13.2 Definition of the cheek position

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

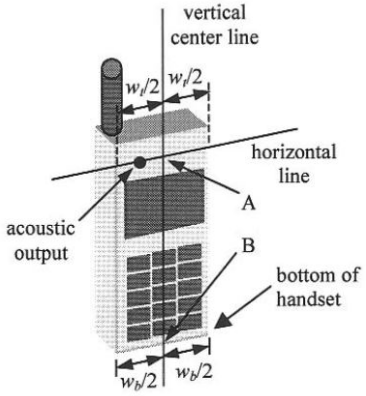


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

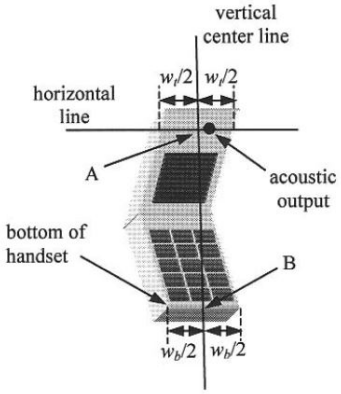


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

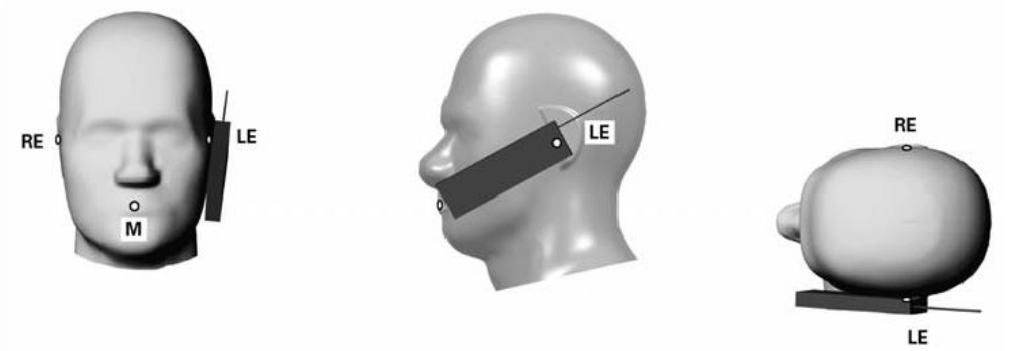


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

13.3 Definition of the tilt position

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

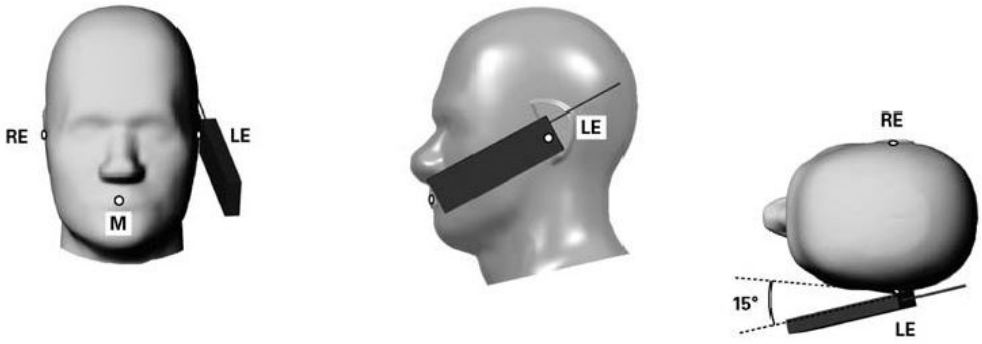


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

13.4 Body Worn Accessory

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

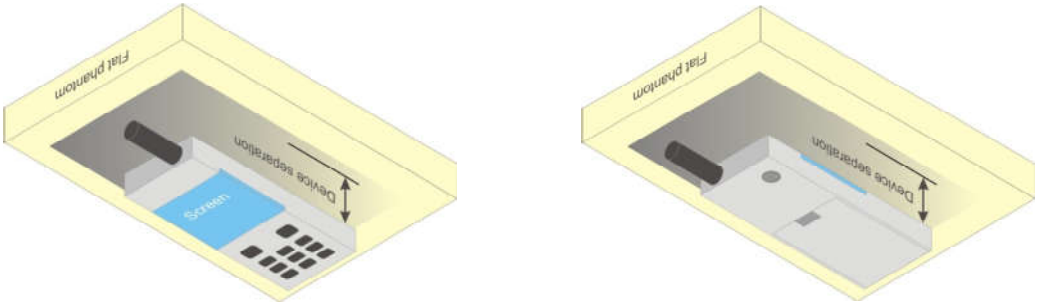


Fig 12.4 Body Worn Position

13.5 Product Specific 10g SAR Exposure

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

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 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.

13.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L 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.

14. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 2Tx slots for GSM850 and GPRS 3Tx slots for GSM1900 are considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 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.		

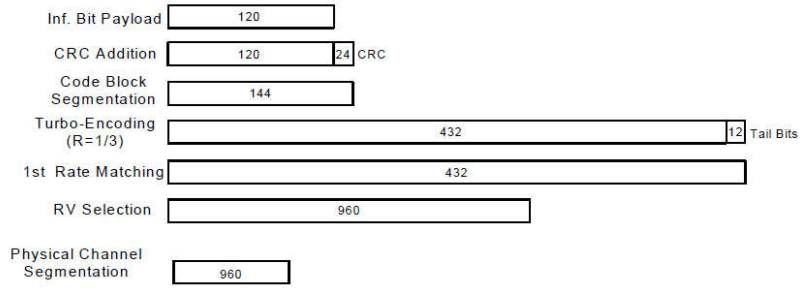


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

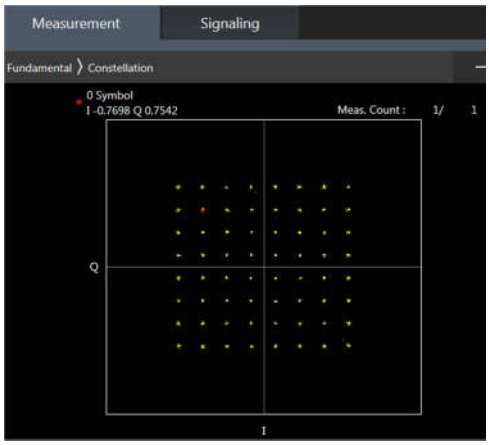
General Note:

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/256QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not 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 / B17 / B38 SAR test was covered by B66 / B12 / B41, and LTE B5 SAR test was covered by B26 at Antenna 1; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM

16QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

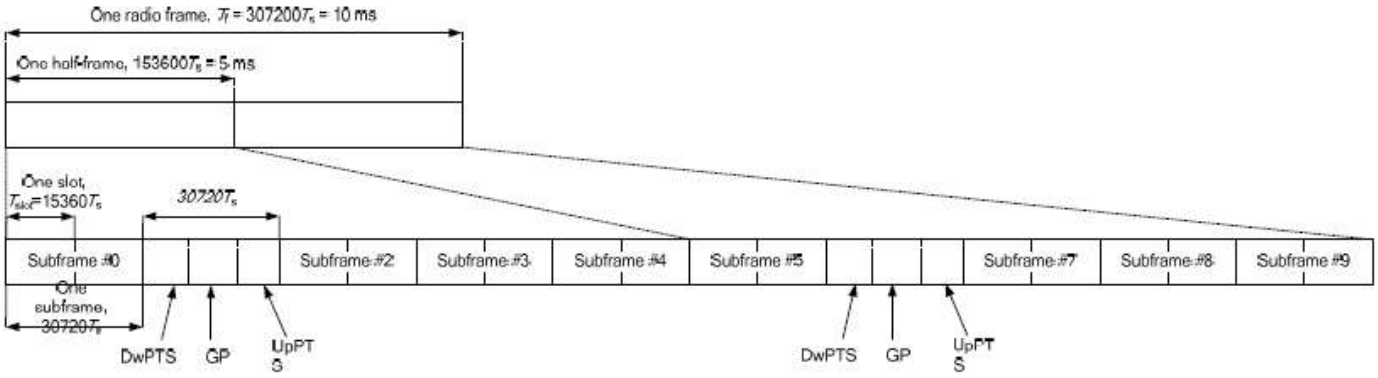


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

<LTE Carrier Aggregation>

General Note:

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.

2CC Downlink Carrier Aggregation				3CC Downlink Carrier Aggregation			
Number	Combination	4X4 MIMO	Covered by Measurement Superset	Number	Combination	4X4 MIMO	Covered by Measurement Superset
1	CA_2C			1	CA_2A-4A-5A		
2	CA_2A-4A		1-3CC	2	CA_2A-7C		
3	CA_2A-5A		1-3CC	3	CA_2A-7A-7A		
4	CA_2A-7A		3-3CC	4	CA_4A-7C		
5	CA_4A-4A	4A		5	CA_5A-7C		
6	CA_4A-5A	4A		6	CA_5A-66A-66A		
7	CA_4A-7A	4A		7	CA_7C-66A		
8	CA_4A-12A	4A		8	CA_7A-66A-66A		
9	CA_4A-17A	4A		9	CA_41D		
10	CA_5A-7A	7A		10	CA_41A-41C		
11	CA_5A-38A	38A		11	CA_41A-41A-41A		
12	CA_5A-41A	41A		12	CA_41C-42A		
13	CA_5A-66A		6-3CC	13	CA_41A-42C		
14	CA_7B			14	CA_42D		
15	CA_7C		4-3CC				
16	CA_7A-7A		3-3CC				
17	CA_7A-26A	7A					
18	CA_7A-42A	7A, 42A					
19	CA_7A-66A	7A	8-3CC				
20	CA_12A-66A						
21	CA_26A-41A	41A					
22	CA_38C	38A					
23	CA_41C	41A	10-3CC				
24	CA_41A-41A	41A	11-3CC				
25	CA_41A-42A	41A, 42A					
26	CA_42C	42A	13-3CC				
27	CA_66B						
28	CA_66C						
29	CA_66A-66A		8-3CC				

LTE Carrier Aggregation Conducted Power (Downlink)

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink three carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

LTE 4x4 MIMO (Downlink)

This device supports downlink 4x4 MIMO operations for LTE Bands 4/7/38/41/42 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

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

4X4 MIMO	WWAN Band
	LTE Band: B4/B7/B38/B41/B42

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. 5G NR n5 / n7 / n66 / n77 / n78 is NSA mode.
2. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-QPSK and the reported SAR for the DFT-QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
   b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
   c. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel
   d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
   e. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested
   f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.
   g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
3. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission.
4. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
5. 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.
6. 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.

<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		

FR 1	EN-DC	LTE UL	5G-NR UL
n5	DC_7A_n5A	Ant1	Ant2
	DC_66A_n5A	Ant1	Ant2
n7	DC_5A_n7A	Ant2	Ant1
	DC_66A_n7A	Ant1	Ant2
n66	DC_5A_n66A	Ant2	Ant1
	DC_7A_n66A	Ant2	Ant1
	DC_12A_n66A	Ant2	Ant1
n77	DC_41A_n77A	Ant2	Ant4
n78	DC_5A_n78A	Ant1	Ant4
	DC_7A_n78A	Ant2	Ant4
	DC_38A_n78A	Ant2	Ant4
	DC_41A_n78A	Ant2	Ant4
	DC_66A_n78A	Ant2	Ant4

Note: For EN-DC combination，LTE band 4/5/7/12/66/38/41 for ANT 2 is limited to EN-DC active and they will act as anchor mode. When EN-DC is not active, LTE band 4/5/7/12/66/38/41 will not transmit.

ENDC List (3*CA)
DC_7C_n5A
DC_7C_n78A
DC_41C_n77A
DC_66A-66A_n5A
DC_66A-66A_n7A

<WLAN Conducted Power>

General Note:

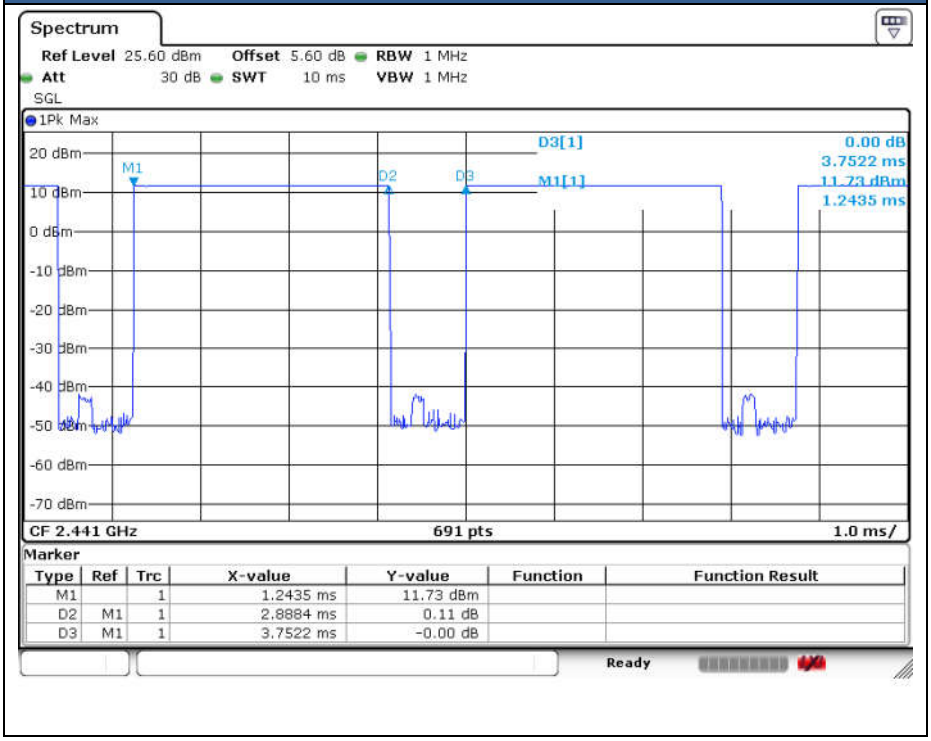
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. 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 76.98 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to100% for Bluetooth reported SAR calculation

Bluetooth time-domain plot



15. Antenna Location

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

16. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of BT/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. 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).
5. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
6. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head, body-worn, hotspot, extremity.
7. For some WWAN bands, sensor on reduced power level is higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
8. 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 GSM, 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 can be referred to section 18 and appendix F.
9. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
10. 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.
11. 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.
12. This device supports 5GNR FR1 bands limited NSA mode.
13. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
    a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of GSM850/1900, WCDMA Band II/IV, LTE Band 2/4/7/66/38/41/42, 5GNR n7/n66/n77/n78, WLAN 2.4GHz/5.2GHz/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.

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 2Tx slots for GSM850 and GPRS 3Tx slots for GSM1900 are considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE B4 / B17 / B38 SAR test was covered by LTE B66 / B12 / B41, LTE B5 SAR test was covered by LTE B26 at Antenna1; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

5G NR Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
   b. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
   c. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
   d. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK/16QAM/64QAM/256QAM SAR testing are not required.
   e. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
   f. For 5G FR1 n5/n7/n66 and n77 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN Note:

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

DSI status description：

The device has the following DSI state which used at different exposure condition.
This WWAN bands enabled with Qualcomm Smart Transmit feature which located at chapter 5. The default power is Pmax power, When Plimit power higher than Pmax power, the output power will be limited at Pmax, and so the SAR will use Pmax power to do the testing.

Exposure Condition	DSI
Head SAR-Standalone	DSI 2
Head SAR-Simultaneous	DSI 2
Body worn Mode SAR-Standalone	DSI 3
Body worn Mode SAR- Simultaneous	DSI 3
Hotspot Mode SAR	DSI 3
Extremity(Handheld) SAR-Standalone	DSI 6
Extremity(Handheld) SAR- Simultaneous	DSI 6
Sensor off SAR	DSI 4

16.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																		
	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Ant 1	1	DSI 2	23095	707.5	22.96	24.00	1.271	0.06	0.124	0.158
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Ant 1	1	DSI 2	23095	707.5	21.96	23.00	1.271	0.14	0.095	0.121
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Ant 1	1	DSI 2	23095	707.5	22.96	24.00	1.271	0.07	0.054	0.069
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Ant 1	1	DSI 2	23095	707.5	21.96	23.00	1.271	0.03	0.040	0.051
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Ant 1	1	DSI 2	23095	707.5	22.96	24.00	1.271	0.11	0.130	0.165
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Ant 1	1	DSI 2	23095	707.5	21.96	23.00	1.271	0.14	0.102	0.130
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Ant 1	1	DSI 2	23095	707.5	22.96	24.00	1.271	0.04	0.056	0.071
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Ant 1	1	DSI 2	23095	707.5	21.96	23.00	1.271	0.08	0.040	0.051
1	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Ant 2	1	DSI 2	23095	707.5	22.97	24.00	1.268	-0.09	0.570	**0.723**
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Ant 2	1	DSI 2	23095	707.5	22.81	24.00	1.315	-0.18	0.412	0.542
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Ant 2	1	DSI 2	23095	707.5	22.97	24.00	1.268	-0.08	0.405	0.513
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Ant 2	1	DSI 2	23095	707.5	22.81	24.00	1.315	0.05	0.323	0.425
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Ant 2	1	DSI 2	23095	707.5	22.97	24.00	1.268	0.07	0.331	0.420
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Ant 2	1	DSI 2	23095	707.5	22.81	24.00	1.315	-0.03	0.292	0.384
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Ant 2	1	DSI 2	23095	707.5	22.97	24.00	1.268	0.13	0.281	0.356
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Ant 2	1	DSI 2	23095	707.5	22.81	24.00	1.315	-0.15	0.225	0.296
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Ant 1	1	DSI 2	23230	782	22.77	24.00	1.327	-0.11	0.210	0.279
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Ant 1	1	DSI 2	23230	782	21.73	23.00	1.340	-0.07	0.168	0.225
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Ant 1	1	DSI 2	23230	782	22.77	24.00	1.327	-0.17	0.101	0.134
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Ant 1	1	DSI 2	23230	782	21.73	23.00	1.340	-0.03	0.081	0.109
2	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Ant 1	1	DSI 2	23230	782	22.77	24.00	1.327	-0.04	0.215	**0.285**
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Ant 1	1	DSI 2	23230	782	21.73	23.00	1.340	0.07	0.171	0.229
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Ant 1	1	DSI 2	23230	782	22.77	24.00	1.327	-0.14	0.115	0.153
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Ant 1	1	DSI 2	23230	782	21.73	23.00	1.340	0.02	0.091	0.122

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
								835MHz											
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Cheek	0mm	Ant 1	1	DSI 2	189	836.4	30.51	32.00	1.409	0.03	0.559	0.788
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant 1	1	DSI 2	189	836.4	30.51	32.00	1.409	0.02	0.275	0.388
3	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant 1	1	DSI 2	189	836.4	30.51	32.00	1.409	-0.09	0.582	**0.820**
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant 1	1	DSI 2	128	824.2	30.18	32.00	1.521	-0.09	0.482	0.733
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant 1	1	DSI 2	251	848.8	30.20	32.00	1.514	-0.09	0.511	0.773
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Tilted	0mm	Ant 1	1	DSI 2	189	836.4	30.51	32.00	1.409	0.04	0.282	0.397
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	1	DSI 2	4182	836.4	23.03	24.00	1.250	0.12	0.320	0.400
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	1	DSI 2	4182	836.4	23.03	24.00	1.250	-0.14	0.163	0.204
4	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	1	DSI 2	4182	836.4	23.03	24.00	1.250	-0.01	0.321	**0.401**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	1	DSI 2	4182	836.4	23.03	24.00	1.250	-0.12	0.174	0.218
	LTE Band 5	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	20525	836.5	23.43	24.00	1.140	0.08	0.795	0.906
	LTE Band 5	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	20525	836.5	22.46	23.00	1.132	0.03	0.633	0.717
	LTE Band 5	10M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	20525	836.5	22.33	23.00	1.167	0.08	0.630	0.735
5	LTE Band 5	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	20525	836.5	23.43	24.00	1.140	0.06	1.02	**1.163**
	LTE Band 5	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	20525	836.5	22.46	23.00	1.132	0.1	0.548	0.621
	LTE Band 5	10M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	20525	836.5	22.33	23.00	1.167	-0.16	0.540	0.630
	LTE Band 5	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	1	DSI 2	20525	836.5	23.43	24.00	1.140	-0.05	0.589	0.672
	LTE Band 5	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 2	1	DSI 2	20525	836.5	22.46	23.00	1.132	0.04	0.534	0.605
	LTE Band 5	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	20525	836.5	23.43	24.00	1.140	-0.04	0.699	0.797
	LTE Band 5	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	20525	836.5	22.46	23.00	1.132	-0.05	0.576	0.652
	LTE Band 5	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2 Simultaneous	20525	836.5	22.33	23.30	1.250	0.02	0.731	0.914
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	26865	831.5	22.86	24.00	1.300	0.02	0.279	0.363
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	26865	831.5	21.96	23.00	1.271	-0.11	0.186	0.236
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	26865	831.5	22.86	24.00	1.300	0.09	0.123	0.160
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	26865	831.5	21.96	23.00	1.271	0.07	0.080	0.102
6	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	26865	831.5	22.86	24.00	1.300	0.04	0.282	**0.367**
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	26865	831.5	21.96	23.00	1.271	0.14	0.188	0.239
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	26865	831.5	22.86	24.00	1.300	0.18	0.145	0.189
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	26865	831.5	21.96	23.00	1.271	0.13	0.095	0.121
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	167300	836.5	23.41	24.00	1.146	0.03	0.846	0.969
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	167300	836.5	23.38	24.00	1.153	0.03	0.764	0.881
	FR1 n5	20M	QPSK	100	0	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	167300	836.5	22.33	23.00	1.167	0.04	0.729	0.851
7	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	167300	836.5	23.41	24.00	1.146	0.03	0.922	**1.056**
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	167300	836.5	23.38	24.00	1.153	0.13	0.784	0.904
	FR1 n5	20M	QPSK	100	0	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	167300	836.5	22.33	23.00	1.167	0.04	0.617	0.720
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Left Cheek	0mm	Ant 2	1	DSI 2	167300	836.5	23.41	24.00	1.146	0.04	0.579	0.663
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Left Cheek	0mm	Ant 2	1	DSI 2	167300	836.5	23.38	24.00	1.153	0.09	0.553	0.638
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Left Tilted	0mm	Ant 2	1	DSI 2	167300	836.5	23.41	24.00	1.146	0.09	0.591	0.677
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Left Tilted	0mm	Ant 2	1	DSI 2	167300	836.5	23.38	24.00	1.153	0.15	0.520	0.600
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2 Simultaneous	167300	836.5	22.41	23.20	1.199	-0.01	0.770	0.924

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1750MHz																			
8	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	1	DSI 2	1413	1732.6	22.81	24.00	1.315	0.11	0.164	**0.216**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	1	DSI 2	1413	1732.6	22.81	24.00	1.315	0.17	0.108	0.142
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	1	DSI 2	1413	1732.6	22.81	24.00	1.315	-0.07	0.110	0.145
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	1	DSI 2	1413	1732.6	22.81	24.00	1.315	0.12	0.090	0.118
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	132322	1745	22.69	24.00	1.352	0.01	0.097	0.131
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	132322	1745	21.78	23.00	1.324	-0.08	0.059	0.078
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	132322	1745	22.69	24.00	1.352	-0.18	0.065	0.088
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	132322	1745	21.78	23.00	1.324	0.16	0.042	0.056
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	132322	1745	22.69	24.00	1.352	0.05	0.077	0.104
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	132322	1745	21.78	23.00	1.324	0.17	0.049	0.065
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	132322	1745	22.69	24.00	1.352	-0.09	0.061	0.082
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	132322	1745	21.78	23.00	1.324	-0.09	0.037	0.049
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132322	1745	15.77	17.10	1.358	0.07	0.777	1.055
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132072	1720	15.69	17.10	1.384	0.04	0.732	1.013
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132572	1770	15.73	17.10	1.371	-0.17	0.825	1.131
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132322	1745	15.71	17.10	1.377	-0.13	0.634	0.873
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132072	1720	15.69	17.10	1.384	-0.18	0.598	0.827
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132572	1770	15.70	17.10	1.380	0.08	0.644	0.889
	LTE Band 66	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	132322	1745	15.63	17.10	1.403	-0.17	0.626	0.878
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132322	1745	15.77	17.10	1.358	0.05	0.879	1.194
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132072	1720	15.69	17.10	1.384	0.06	0.827	1.144
9	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132572	1770	15.73	17.10	1.371	-0.07	0.915	**1.254**
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132322	1745	15.71	17.10	1.377	0.02	0.712	0.981
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132072	1720	15.69	17.10	1.384	-0.02	0.666	0.921
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132572	1770	15.70	17.10	1.380	-0.13	0.742	1.024
	LTE Band 66	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	132322	1745	15.63	17.10	1.403	0.17	0.706	0.990
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	1	DSI 2	132322	1745	15.77	17.10	1.358	-0.19	0.492	0.668
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 2	1	DSI 2	132322	1745	15.71	17.10	1.377	0.04	0.379	0.522
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	132322	1745	15.77	17.10	1.358	0.09	0.610	0.829
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	132072	1720	15.69	17.10	1.384	0.08	0.552	0.764
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	132572	1770	15.73	17.10	1.371	0.13	0.590	0.809
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	132322	1745	15.71	17.10	1.377	0.09	0.460	0.634
	LTE Band 66	20M	QPSK	100	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	132322	1745	15.63	17.10	1.403	0.05	0.476	0.668
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2 Simultaneous	132572	1770	14.73	16.10	1.371	-0.04	0.722	0.990
10	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Right Cheek	0mm	Ant 1	1	DSI 2	349000	1745	23.28	24.00	1.180	0.02	0.084	**0.099**
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Right Cheek	0mm	Ant 1	1	DSI 2	349000	1745	23.12	24.00	1.225	-0.15	0.052	0.064
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 1	1	DSI 2	349000	1745	23.28	24.00	1.180	-0.06	0.043	0.051
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Right Tilted	0mm	Ant 1	1	DSI 2	349000	1745	23.12	24.00	1.225	-0.03	0.028	0.034
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Left Cheek	0mm	Ant 1	1	DSI 2	349000	1745	23.28	24.00	1.180	-0.18	0.058	0.068
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Left Cheek	0mm	Ant 1	1	DSI 2	349000	1745	23.12	24.00	1.225	0.02	0.036	0.044
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Left Tilted	0mm	Ant 1	1	DSI 2	349000	1745	23.28	24.00	1.180	0.05	0.034	0.040
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Left Tilted	0mm	Ant 1	1	DSI 2	349000	1745	23.12	24.00	1.225	0.05	0.021	0.026
1900MHz																			
11	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 1	1	DSI 2	661	1880	25.17	26.50	1.358	0.08	0.113	**0.153**
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 1	1	DSI 2	661	1880	25.17	26.50	1.358	0.06	0.071	0.096
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Cheek	0mm	Ant 1	1	DSI 2	661	1880	25.17	26.50	1.358	0.04	0.074	0.101
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Tilted	0mm	Ant 1	1	DSI 2	661	1880	25.17	26.50	1.358	0.02	0.058	0.079
12	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	1	DSI 2	9400	1880	22.78	24.00	1.324	0.03	0.205	**0.271**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	1	DSI 2	9400	1880	22.78	24.00	1.324	-0.12	0.168	0.222
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	1	DSI 2	9400	1880	22.78	24.00	1.324	-0.12	0.171	0.226
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 1	1	DSI 2	9400	1880	22.78	24.00	1.324	0.1	0.189	0.250

13	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	18900	1880	22.88	24.00	1.294	0.12	0.190	**0.246**
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	18900	1880	21.85	23.00	1.303	-0.02	0.119	0.155
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	18900	1880	22.88	24.00	1.294	-0.13	0.143	0.185
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	18900	1880	21.85	23.00	1.303	0.04	0.096	0.125
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	18900	1880	22.88	24.00	1.294	0.18	0.169	0.219
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	18900	1880	21.85	23.00	1.303	-0.19	0.107	0.139
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	18900	1880	22.88	24.00	1.294	0.02	0.150	0.194
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	18900	1880	21.85	23.00	1.303	-0.05	0.096	0.125

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2600MHz																			
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	21100	2535	22.85	24.00	1.303	0.05	0.176	0.229
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 1	1	DSI 2	21100	2535	21.92	23.00	1.282	0.04	0.118	0.151
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	21100	2535	22.85	24.00	1.303	0.1	0.194	0.253
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	1	DSI 2	21100	2535	21.92	23.00	1.282	0.12	0.128	0.164
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	21100	2535	22.85	24.00	1.303	-0.02	0.402	0.524
	LTE Band 7C	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	21100+ 20902	2535+ 2515.2	22.76	24.00	1.330	0.07	0.357	0.475
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 1	1	DSI 2	21100	2535	21.92	23.00	1.282	0.08	0.236	0.303
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	21100	2535	22.85	24.00	1.303	-0.14	0.135	0.176
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 1	1	DSI 2	21100	2535	21.92	23.00	1.282	0.06	0.092	0.118
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	21100	2535	16.67	17.80	1.297	0.09	0.769	0.998
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	20850	2510	16.55	17.80	1.334	0.04	0.869	1.159
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	21350	2560	16.57	17.80	1.327	0.11	0.667	0.885
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	21100	2535	16.59	17.80	1.321	-0.01	0.736	0.972
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	20850	2510	16.53	17.80	1.340	0.04	0.821	1.100
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	21350	2560	16.55	17.80	1.334	0.11	0.688	0.917
	LTE Band 7	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 2	1	DSI 2	21100	2535	16.52	17.80	1.343	-0.1	0.713	0.957
14	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	21100	2535	16.67	17.80	1.297	-0.07	0.958	**1.243**
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	20850	2510	16.55	17.80	1.334	0.02	0.906	1.208
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	21350	2560	16.57	17.80	1.327	0.02	0.898	1.192
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	21100	2535	16.59	17.80	1.321	0.08	0.916	1.210
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	20850	2510	16.53	17.80	1.340	0.07	0.911	1.220
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	21350	2560	16.55	17.80	1.334	0.05	0.891	1.188
	LTE Band 7	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 2	1	DSI 2	21100	2535	16.52	17.80	1.343	-0.13	0.914	1.227
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	1	DSI 2	21100	2535	16.67	17.80	1.297	-0.15	0.338	0.438
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 2	1	DSI 2	21100	2535	16.59	17.80	1.321	-0.09	0.313	0.414
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	21100	2535	16.67	17.80	1.297	0.15	0.458	0.594
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 2	1	DSI 2	21100	2535	16.59	17.80	1.321	-0.1	0.422	0.558
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 2	1	DSI 2 Simultaneous	21100	2535	15.49	16.80	1.352	-0.08	0.725	0.980
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Cheek	0mm	Ant 1	1	DSI 2	507000	2535	22.85	24.00	1.303	0.03	0.108	0.141
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Cheek	0mm	Ant 1	1	DSI 2	507000	2535	22.58	24.00	1.387	0.06	0.085	0.118
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 1	1	DSI 2	507000	2535	22.85	24.00	1.303	-0.15	0.105	0.137
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Tilted	0mm	Ant 1	1	DSI 2	507000	2535	22.58	24.00	1.387	0.07	0.082	0.114
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Left Cheek	0mm	Ant 1	1	DSI 2	507000	2535	22.85	24.00	1.303	-0.04	0.229	0.298
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Left Cheek	0mm	Ant 1	1	DSI 2	507000	2535	22.58	24.00	1.387	0.03	0.206	0.286
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Left Tilted	0mm	Ant 1	1	DSI 2	507000	2535	22.85	24.00	1.303	-0.12	0.097	0.126
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Left Tilted	0mm	Ant 1	1	DSI 2	507000	2535	22.58	24.00	1.387	0.08	0.081	0.112
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	507000	2535	16.67	17.40	1.183	0.15	0.855	1.012
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	505000	2525	16.58	17.40	1.208	0.09	0.960	1.160
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	509000	2545	16.63	17.40	1.194	0.07	0.801	0.956
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	507000	2535	16.66	17.40	1.186	-0.19	0.811	0.962
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	505000	2525	16.64	17.40	1.191	0.01	0.921	1.097
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	509000	2545	16.62	17.40	1.197	0.04	0.759	0.908
	FR1 n7	50M	QPSK	270	0	DFT_SCS 15KHz	Right Cheek	0mm	Ant 2	1	DSI 2	507000	2535	16.63	17.40	1.194	0.06	0.765	0.913

	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	507000	2535	16.67	17.40	1.183	0.11	0.927	1.097
15	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	505000	2525	16.58	17.40	1.208	-0.05	1.02	**1.232**
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	509000	2545	16.63	17.40	1.194	-0.05	0.846	1.010
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	507000	2535	16.66	17.40	1.186	0.02	0.897	1.064
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	505000	2525	16.64	17.40	1.191	0.03	0.933	1.111
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	509000	2545	16.62	17.40	1.197	-0.05	0.821	0.983
	FR1 n7	50M	QPSK	270	0	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2	507000	2535	16.63	17.40	1.194	0.02	0.850	1.015
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Left Cheek	0mm	Ant 2	1	DSI 2	507000	2535	16.67	17.40	1.183	0.06	0.339	0.401
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Left Cheek	0mm	Ant 2	1	DSI 2	507000	2535	16.66	17.40	1.186	0.05	0.301	0.357
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Left Tilted	0mm	Ant 2	1	DSI 2	507000	2535	16.67	17.40	1.183	-0.06	0.387	0.458
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Left Tilted	0mm	Ant 2	1	DSI 2	507000	2535	16.66	17.40	1.186	-0.07	0.356	0.422
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Tilted	0mm	Ant 2	1	DSI 2 Simultaneous	505000	2525	15.53	16.40	1.222	-0.02	0.761	0.930

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2600MHz																				
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant 1	1	DSI 2	40400	2571	23.29	24.00	1.178	62.9	1.006	0.06	0.093	0.110
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant 1	1	DSI 2	40400	2571	22.37	23.00	1.156	62.9	1.006	0.03	0.060	0.070
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant 1	1	DSI 2	40400	2571	23.29	24.00	1.178	62.9	1.006	0.1	0.094	0.111
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant 1	1	DSI 2	40400	2571	22.37	23.00	1.156	62.9	1.006	-0.06	0.062	0.072
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Ant 1	1	DSI 2	40400	2571	23.29	24.00	1.178	62.9	1.006	-0.02	0.218	0.258
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant 1	1	DSI 2	40400	2571	22.37	23.00	1.156	62.9	1.006	-0.06	0.126	0.147
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Ant 1	1	DSI 2	40400	2571	23.29	24.00	1.178	62.9	1.006	0.14	0.095	0.113
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant 1	1	DSI 2	40400	2571	22.37	23.00	1.156	62.9	1.006	-0.15	0.060	0.070
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant 2	1	DSI 2	40400	2571	20.49	21.60	1.291	62.9	1.006	0.03	0.756	0.982
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant 2	1	DSI 2	40140	2545	20.41	21.60	1.315	62.9	1.006	-0.13	0.775	1.025
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant 2	1	DSI 2	40670	2598	20.35	21.60	1.334	62.9	1.006	-0.11	0.647	0.868
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant 2	1	DSI 2	41140	2645	20.44	21.60	1.306	62.9	1.006	0.05	0.585	0.769
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant 2	1	DSI 2	40400	2571	20.41	21.60	1.315	62.9	1.006	0.08	0.649	0.859
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant 2	1	DSI 2	40140	2545	20.39	21.60	1.321	62.9	1.006	0.12	0.678	0.901
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant 2	1	DSI 2	40670	2598	20.40	21.60	1.318	62.9	1.006	0.07	0.549	0.728
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant 2	1	DSI 2	41140	2645	20.39	21.60	1.321	62.9	1.006	0.09	0.499	0.663
	LTE Band 41	20M	QPSK	100	0	Right Cheek	0mm	Ant 2	1	DSI 2	40400	2571	20.45	21.60	1.303	62.9	1.006	0.01	0.663	0.869
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant 2	1	DSI 2	40400	2571	20.49	21.60	1.291	62.9	1.006	-0.16	0.805	1.046
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant 2	1	DSI 2	40140	2545	20.41	21.60	1.315	62.9	1.006	-0.18	0.898	1.188
16	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant 2	1	DSI 2	40670	2598	20.35	21.60	1.334	62.9	1.006	0.01	0.933	**1.252**
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant 2	1	DSI 2	41140	2645	20.44	21.60	1.306	62.9	1.006	-0.13	0.909	1.194
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant 2	1	DSI 2	40400	2571	20.41	21.60	1.315	62.9	1.006	-0.1	0.701	0.928
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant 2	1	DSI 2	40140	2545	20.39	21.60	1.321	62.9	1.006	0.04	0.812	1.079
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant 2	1	DSI 2	40670	2598	20.40	21.60	1.318	62.9	1.006	0.05	0.891	1.182
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant 2	1	DSI 2	41140	2645	20.39	21.60	1.321	62.9	1.006	0.01	0.859	1.142
	LTE Band 41	20M	QPSK	100	0	Right Tilted	0mm	Ant 2	1	DSI 2	40400	2571	20.45	21.60	1.303	62.9	1.006	0.05	0.788	1.033
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Ant 2	1	DSI 2	40400	2571	20.49	21.60	1.291	62.9	1.006	0.18	0.305	0.396
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant 2	1	DSI 2	40400	2571	20.41	21.60	1.315	62.9	1.006	0.19	0.270	0.357
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Ant 2	1	DSI 2	40400	2571	20.49	21.60	1.291	62.9	1.006	0.17	0.403	0.523
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant 2	1	DSI 2	40400	2571	20.41	21.60	1.315	62.9	1.006	-0.07	0.399	0.528
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant 2	1	DSI 2 Simultaneous	40670	2598	19.34	20.60	1.337	62.9	1.006	0.01	0.740	0.995
3500MHz																				
17	LTE Band 42	20M	QPSK	1	0	Right Cheek	0mm	Ant 4	1	DSI 2	42590	3500	22.39	24.00	1.449	62.9	1.006	0.01	0.850	**1.239**
	LTE Band 42	20M	QPSK	1	0	Right Cheek	0mm	Ant 4	2	DSI 2	42590	3500	22.39	24.00	1.449	62.9	1.006	0.06	0.749	1.092
	LTE Band 42	20M	QPSK	50	0	Right Cheek	0mm	Ant 4	1	DSI 2	42590	3500	21.52	23.00	1.406	62.9	1.006	-0.05	0.674	0.953
	LTE Band 42	20M	QPSK	1	0	Right Tilted	0mm	Ant 4	1	DSI 2	42590	3500	22.39	24.00	1.449	62.9	1.006	-0.03	0.511	0.745
	LTE Band 42	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	1	DSI 2	42590	3500	21.52	23.00	1.406	62.9	1.006	-0.15	0.380	0.538
	LTE Band 42	20M	QPSK	1	0	Left Cheek	0mm	Ant 4	1	DSI 2	42590	3500	22.39	24.00	1.449	62.9	1.006	0.1	0.388	0.565
	LTE Band 42	20M	QPSK	50	0	Left Cheek	0mm	Ant 4	1	DSI 2	42590	3500	21.52	23.00	1.406	62.9	1.006	0.08	0.298	0.422

	LTE Band 42	20M	QPSK	1	0	Left Tilted	0mm	Ant 4	1	DSI 2	42590	3500	22.39	24.00	1.449	62.9	1.006	0.07	0.291	0.424
	LTE Band 42	20M	QPSK	50	0	Left Tilted	0mm	Ant 4	1	DSI 2	42590	3500	21.52	23.00	1.406	62.9	1.006	0.01	0.232	0.328
	LTE Band 42	20M	QPSK	1	0	Right Cheek	0mm	Ant 4	1	DSI 2 Simultaneous	42590	3500	22.16	23.50	1.361	62.9	1.006	-0.19	0.724	0.992

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
3500MHz~3900MHz																			
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2	656000	3840	22.55	23.50	1.245	0.04	0.951	1.184
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2	656000	3840	22.21	23.50	1.346	0.04	0.851	1.145
	FR1 n77	100M	QPSK	270	0	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2	656000	3840	22.04	23.00	1.247	0.11	0.743	0.927
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Tilted	0mm	Ant 4	1	DSI 2	656000	3840	22.55	23.50	1.245	-0.18	0.442	0.550
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Right Tilted	0mm	Ant 4	1	DSI 2	656000	3840	22.21	23.50	1.346	0.13	0.272	0.366
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Left Cheek	0mm	Ant 4	1	DSI 2	656000	3840	22.55	23.50	1.245	0.04	0.318	0.396
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Left Cheek	0mm	Ant 4	1	DSI 2	656000	3840	22.21	23.50	1.346	0.13	0.238	0.320
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Left Tilted	0mm	Ant 4	1	DSI 2	656000	3840	22.55	23.50	1.245	0.19	0.159	0.198
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Left Tilted	0mm	Ant 4	1	DSI 2	656000	3840	22.21	23.50	1.346	0.1	0.106	0.143
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2 Simultaneous	656000	3840	21.93	22.50	1.140	0.06	0.784	0.894
18	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2	633334	3500.01	22.29	23.50	1.321	0.04	0.911	**1.204**
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2	633334	3500.01	22.18	23.50	1.355	0.1	0.814	1.103
	FR1 n77	100M	QPSK	270	0	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2	633334	3500.01	21.54	23.00	1.400	0.19	0.726	1.016
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Tilted	0mm	Ant 4	1	DSI 2	633334	3500.01	22.29	23.50	1.321	0.12	0.508	0.671
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Right Tilted	0mm	Ant 4	1	DSI 2	633334	3500.01	22.18	23.50	1.355	-0.11	0.501	0.679
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Left Cheek	0mm	Ant 4	1	DSI 2	633334	3500.01	22.29	23.50	1.321	-0.08	0.454	0.600
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Left Cheek	0mm	Ant 4	1	DSI 2	633334	3500.01	22.18	23.50	1.355	0.08	0.436	0.591
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Left Tilted	0mm	Ant 4	1	DSI 2	633334	3500.01	22.29	23.50	1.321	0.04	0.314	0.415
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Left Tilted	0mm	Ant 4	1	DSI 2	633334	3500.01	22.18	23.50	1.355	-0.17	0.312	0.423
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Cheek	0mm	Ant 4	1	DSI 2 Simultaneous	633334	3500.01	21.76	22.50	1.186	0.09	0.795	0.943

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN/Bluetooth																	
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	1	Full	6	2437	19.73	20.50	1.194	98.9	1.011	0.1	0.363	0.438
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 3	1	Full	6	2437	19.73	20.50	1.194	98.9	1.011	0.08	0.420	0.507
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Full	6	2437	19.73	20.50	1.194	98.9	1.011	-0.07	0.891	1.076
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Full	1	2412	19.30	20.50	1.318	98.9	1.011	0.03	0.805	1.073
19	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Full	11	2462	19.41	20.50	1.285	98.9	1.011	-0.08	0.999	**1.298**
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 3	1	Full	6	2437	19.73	20.50	1.194	98.9	1.011	0.09	0.926	1.203
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 3	1	Full	11	2462	19.41	20.50	1.285	98.9	1.011	-0.11	0.816	0.985
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 3	1	Simultaneous-Reduced	6	2437	13.66	15.00	1.361	98.9	1.011	0.04	0.835	1.085
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 3	1	Simultaneous-Reduced	6	2437	13.66	15.00	1.361	98.9	1.011	0.04	0.097	0.134
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 3	1	Simultaneous-Reduced	6	2437	13.66	15.00	1.361	98.9	1.011	0.08	0.112	0.154
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 3	1	Simultaneous-Reduced	6	2437	13.66	15.00	1.361	98.9	1.011	0.1	0.267	0.368
20	Bluetooth	1Mbps	Left Cheek	0mm	Ant 3	1	Full	39	2441	11.87	13.00	1.297	76.98	1.299	0.06	0.101	**0.170**
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	1	Reduced	58	5290	14.03	15.50	1.401	89.64	1.116	0.12	0.341	0.533
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	1	Reduced	58	5290	14.03	15.50	1.401	89.64	1.116	0.08	0.422	0.660
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Reduced	58	5290	14.03	15.50	1.401	89.64	1.116	-0.18	0.643	1.005
21	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Reduced	58	5290	14.03	15.50	1.401	89.64	1.116	-0.01	0.761	**1.190**
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	1	Simultaneous-Reduced	58	5290	8.60	10.00	1.380	89.64	1.116	0.04	0.100	0.154
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	1	Simultaneous-Reduced	58	5290	8.60	10.00	1.380	89.64	1.116	0.13	0.124	0.191
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Simultaneous-Reduced	58	5290	8.60	10.00	1.380	89.64	1.116	0.19	0.189	0.291
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Simultaneous-Reduced	58	5290	8.60	10.00	1.380	89.64	1.116	0.1	0.235	0.362
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	1	Reduced	138	5690	14.41	16.00	1.442	89.64	1.116	0.18	0.355	0.571
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	1	Reduced	138	5690	14.41	16.00	1.442	89.64	1.116	0.17	0.380	0.612
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Reduced	138	5690	14.41	16.00	1.442	89.64	1.116	-0.03	0.671	1.080
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Reduced	122	5610	14.15	16.00	1.531	89.64	1.116	0.1	0.627	1.071
22	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Reduced	138	5690	14.41	16.00	1.442	89.64	1.116	0.06	0.722	**1.162**
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Reduced	122	5610	14.15	16.00	1.531	89.64	1.116	-0.03	0.626	1.070
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	1	Simultaneous-Reduced	138	5690	10.11	11.50	1.377	89.64	1.116	0.04	0.116	0.178
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	1	Simultaneous-Reduced	138	5690	10.11	11.50	1.377	89.64	1.116	-0.07	0.124	0.191
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Simultaneous-Reduced	138	5690	10.11	11.50	1.377	89.64	1.116	0.04	0.218	0.335
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Simultaneous-Reduced	138	5690	10.11	11.50	1.377	89.64	1.116	0.02	0.245	0.377
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	1	Reduced	155	5775	15.05	16.00	1.245	89.64	1.116	0.02	0.396	0.550
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	1	Reduced	155	5775	15.05	16.00	1.245	89.64	1.116	0.06	0.456	0.633
23	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Reduced	155	5775	15.05	16.00	1.245	89.64	1.116	0.13	0.847	**1.176**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Reduced	155	5775	15.05	16.00	1.245	89.64	1.116	0.09	0.779	1.082
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 3	1	Simultaneous-Reduced	155	5775	9.93	11.50	1.435	89.64	1.116	0.02	0.097	0.155
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 3	1	Simultaneous-Reduced	155	5775	9.93	11.50	1.435	89.64	1.116	0.08	0.112	0.179
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	1	Simultaneous-Reduced	155	5775	9.93	11.50	1.435	89.64	1.116	0.06	0.218	0.349
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 3	1	Simultaneous-Reduced	155	5775	9.93	11.50	1.435	89.64	1.116	0.11	0.192	0.308

16.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																		
	LTE Band 12	10M	QPSK	1	0	Front	5mm	Ant 1	1	DSI 3	23095	707.5	22.96	24.00	1.271	0.02	0.267	0.339
	LTE Band 12	10M	QPSK	25	0	Front	5mm	Ant 1	1	DSI 3	23095	707.5	21.96	23.00	1.271	0.14	0.214	0.272
24	LTE Band 12	10M	QPSK	1	0	Back	5mm	Ant 1	1	DSI 3	23095	707.5	22.96	24.00	1.271	-0.05	0.411	**0.522**
	LTE Band 12	10M	QPSK	25	0	Back	5mm	Ant 1	1	DSI 3	23095	707.5	21.96	23.00	1.271	0.03	0.335	0.426
	LTE Band 12	10M	QPSK	1	0	Left Side	5mm	Ant 1	1	DSI 3	23095	707.5	22.96	24.00	1.271	0.18	0.214	0.272
	LTE Band 12	10M	QPSK	25	0	Left Side	5mm	Ant 1	1	DSI 3	23095	707.5	21.96	23.00	1.271	0.02	0.172	0.219
	LTE Band 12	10M	QPSK	1	0	Right Side	5mm	Ant 1	1	DSI 3	23095	707.5	22.96	24.00	1.271	0.13	0.355	0.451
	LTE Band 12	10M	QPSK	25	0	Right Side	5mm	Ant 1	1	DSI 3	23095	707.5	21.96	23.00	1.271	0.04	0.288	0.366
	LTE Band 12	10M	QPSK	1	0	Bottom Side	5mm	Ant 1	1	DSI 3	23095	707.5	22.96	24.00	1.271	0.05	0.150	0.191
	LTE Band 12	10M	QPSK	25	0	Bottom Side	5mm	Ant 1	1	DSI 3	23095	707.5	21.96	23.00	1.271	0.06	0.124	0.158
	LTE Band 12	10M	QPSK	1	0	Front	5mm	Ant 2	1	DSI 3	23095	707.5	22.97	24.00	1.268	0.13	0.147	0.186
	LTE Band 12	10M	QPSK	25	0	Front	5mm	Ant 2	1	DSI 3	23095	707.5	22.81	24.00	1.315	-0.17	0.115	0.151
	LTE Band 12	10M	QPSK	1	0	Back	5mm	Ant 2	1	DSI 3	23095	707.5	22.97	24.00	1.268	0.04	0.273	0.346
	LTE Band 12	10M	QPSK	25	0	Back	5mm	Ant 2	1	DSI 3	23095	707.5	22.81	24.00	1.315	-0.04	0.228	0.300
	LTE Band 12	10M	QPSK	1	0	Left Side	5mm	Ant 2	1	DSI 3	23095	707.5	22.97	24.00	1.268	0.03	0.244	0.309
	LTE Band 12	10M	QPSK	25	0	Left Side	5mm	Ant 2	1	DSI 3	23095	707.5	22.81	24.00	1.315	0.04	0.206	0.271
	LTE Band 12	10M	QPSK	1	0	Right Side	5mm	Ant 2	1	DSI 3	23095	707.5	22.97	24.00	1.268	-0.14	0.087	0.110
	LTE Band 12	10M	QPSK	25	0	Right Side	5mm	Ant 2	1	DSI 3	23095	707.5	22.81	24.00	1.315	-0.04	0.074	0.097
	LTE Band 12	10M	QPSK	1	0	Top Side	5mm	Ant 2	1	DSI 3	23095	707.5	22.97	24.00	1.268	0.06	0.167	0.212
	LTE Band 12	10M	QPSK	25	0	Top Side	5mm	Ant 2	1	DSI 3	23095	707.5	22.81	24.00	1.315	0.02	0.129	0.170
	LTE Band 13	10M	QPSK	1	0	Front	5mm	Ant 1	1	DSI 3	23230	782	22.77	24.00	1.327	0.01	0.396	0.526
	LTE Band 13	10M	QPSK	25	0	Front	5mm	Ant 1	1	DSI 3	23230	782	21.73	23.00	1.340	0.14	0.307	0.411
25	LTE Band 13	10M	QPSK	1	0	Back	5mm	Ant 1	1	DSI 3	23230	782	22.77	24.00	1.327	-0.01	0.588	**0.781**
	LTE Band 13	10M	QPSK	1	0	Back	5mm	Ant 1	2	DSI 3	23230	782	22.77	24.00	1.327	0.02	0.484	0.642
	LTE Band 13	10M	QPSK	25	0	Back	5mm	Ant 1	1	DSI 3	23230	782	21.73	23.00	1.340	0.03	0.367	0.492
	LTE Band 13	10M	QPSK	1	0	Left Side	5mm	Ant 1	1	DSI 3	23230	782	22.77	24.00	1.327	0.13	0.405	0.538
	LTE Band 13	10M	QPSK	25	0	Left Side	5mm	Ant 1	1	DSI 3	23230	782	21.73	23.00	1.340	0.04	0.330	0.442
	LTE Band 13	10M	QPSK	1	0	Right Side	5mm	Ant 1	1	DSI 3	23230	782	22.77	24.00	1.327	0.04	0.490	0.650
	LTE Band 13	10M	QPSK	25	0	Right Side	5mm	Ant 1	1	DSI 3	23230	782	21.73	23.00	1.340	0.1	0.488	0.654
	LTE Band 13	10M	QPSK	1	0	Bottom Side	5mm	Ant 1	1	DSI 3	23230	782	22.77	24.00	1.327	-0.03	0.351	0.466
	LTE Band 13	10M	QPSK	25	0	Bottom Side	5mm	Ant 1	1	DSI 3	23230	782	21.73	23.00	1.340	-0.03	0.286	0.383

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
								835MHz											
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Front	5mm	Ant 1	1	DSI 3	189	836.4	27.59	28.70	1.291	0.16	0.431	0.557
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 1	1	DSI 3	189	836.4	27.59	28.70	1.291	-0.18	0.655	0.846
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 1	1	DSI 3	128	824.2	27.39	28.70	1.352	0.03	0.674	0.911
26	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 1	1	DSI 3	251	848.8	27.26	28.70	1.393	-0.01	0.705	**0.982**
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Back	5mm	Ant 1	2	DSI 3	251	848.8	27.26	28.70	1.393	0.02	0.444	0.619
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Side	5mm	Ant 1	1	DSI 3	189	836.4	27.59	28.70	1.291	0.12	0.651	0.841
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Side	5mm	Ant 1	1	DSI 3	128	824.2	27.39	28.70	1.352	-0.04	0.561	0.759
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Left Side	5mm	Ant 1	1	DSI 3	251	848.8	27.26	28.70	1.393	-0.18	0.602	0.839
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Right Side	5mm	Ant 1	1	DSI 3	189	836.4	27.59	28.70	1.291	-0.06	0.420	0.542
	GSM850	-	-	-	-	GPRS (2 Tx slots)	Bottom Side	5mm	Ant 1	1	DSI 3	189	836.4	27.59	28.70	1.291	-0.04	0.513	0.662
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	1	DSI 3	4182	836.4	22.71	23.40	1.172	0.07	0.458	0.537
27	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	4182	836.4	22.71	23.40	1.172	0.14	0.711	**0.833**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	4132	826.4	22.59	23.40	1.205	-0.01	0.596	0.718
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	4233	846.6	22.49	23.40	1.233	0.05	0.633	0.781
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	1	DSI 3	4182	836.4	22.71	23.40	1.172	0.08	0.257	0.301
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 1	1	DSI 3	4182	836.4	22.71	23.40	1.172	0.01	0.436	0.511
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	1	DSI 3	4182	836.4	22.71	23.40	1.172	0.07	0.514	0.603
	LTE Band 5	10M	QPSK	1	0	-	Front	5mm	Ant 2	1	DSI 3	20525	836.5	23.43	24.00	1.140	0.05	0.398	0.454
	LTE Band 5	10M	QPSK	25	0	-	Front	5mm	Ant 2	1	DSI 3	20525	836.5	22.46	23.00	1.132	-0.11	0.257	0.291
28	LTE Band 5	10M	QPSK	1	0	-	Back	5mm	Ant 2	1	DSI 3	20525	836.5	23.43	24.00	1.140	-0.01	0.639	**0.729**
	LTE Band 5	10M	QPSK	25	0	-	Back	5mm	Ant 2	1	DSI 3	20525	836.5	22.46	23.00	1.132	0.11	0.443	0.502
	LTE Band 5	10M	QPSK	1	0	-	Left Side	5mm	Ant 2	1	DSI 3	20525	836.5	23.43	24.00	1.140	-0.12	0.209	0.238
	LTE Band 5	10M	QPSK	25	0	-	Left Side	5mm	Ant 2	1	DSI 3	20525	836.5	22.46	23.00	1.132	0.14	0.134	0.152
	LTE Band 5	10M	QPSK	1	0	-	Right Side	5mm	Ant 2	1	DSI 3	20525	836.5	23.43	24.00	1.140	0.04	0.105	0.120
	LTE Band 5	10M	QPSK	25	0	-	Right Side	5mm	Ant 2	1	DSI 3	20525	836.5	22.46	23.00	1.132	0.14	0.069	0.078
	LTE Band 5	10M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	20525	836.5	23.43	24.00	1.140	0.05	0.520	0.593
	LTE Band 5	10M	QPSK	25	0	-	Top Side	5mm	Ant 2	1	DSI 3	20525	836.5	22.46	23.00	1.132	0.18	0.314	0.356
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	1	DSI 3	26865	831.5	22.86	24.00	1.300	0.06	0.431	0.560
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 1	1	DSI 3	26865	831.5	21.96	23.00	1.271	-0.12	0.286	0.363
29	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	1	DSI 3	26865	831.5	22.86	24.00	1.300	0.1	0.699	**0.909**
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 1	1	DSI 3	26865	831.5	21.96	23.00	1.271	0.15	0.425	0.540
	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	Ant 1	1	DSI 3	26865	831.5	21.78	23.00	1.324	-0.03	0.428	0.567
	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	1	DSI 3	26865	831.5	22.86	24.00	1.300	0.09	0.188	0.244
	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 1	1	DSI 3	26865	831.5	21.96	23.00	1.271	0.07	0.123	0.156
	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	Ant 1	1	DSI 3	26865	831.5	22.86	24.00	1.300	0.04	0.355	0.462
	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	Ant 1	1	DSI 3	26865	831.5	21.96	23.00	1.271	0.15	0.241	0.306
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	26865	831.5	22.86	24.00	1.300	0.07	0.467	0.607
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	26865	831.5	21.96	23.00	1.271	-0.11	0.314	0.399
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Front	5mm	Ant 2	1	DSI 3	167300	836.5	23.41	24.00	1.146	-0.19	0.503	0.576
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Front	5mm	Ant 2	1	DSI 3	167300	836.5	23.38	24.00	1.153	0.03	0.491	0.566
30	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	167300	836.5	23.41	24.00	1.146	-0.03	0.679	**0.778**
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	167300	836.5	23.38	24.00	1.153	0.14	0.648	0.747
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Left Side	5mm	Ant 2	1	DSI 3	167300	836.5	23.41	24.00	1.146	0.04	0.279	0.320
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Left Side	5mm	Ant 2	1	DSI 3	167300	836.5	23.38	24.00	1.153	-0.02	0.229	0.264
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Right Side	5mm	Ant 2	1	DSI 3	167300	836.5	23.41	24.00	1.146	-0.06	0.147	0.168
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Right Side	5mm	Ant 2	1	DSI 3	167300	836.5	23.38	24.00	1.153	-0.03	0.105	0.121
	FR1 n5	20M	QPSK	1	1	DFT_SCS 15KHz	Top Side	5mm	Ant 2	1	DSI 3	167300	836.5	23.41	24.00	1.146	-0.04	0.668	0.765
	FR1 n5	20M	QPSK	50	28	DFT_SCS 15KHz	Top Side	5mm	Ant 2	1	DSI 3	167300	836.5	23.38	24.00	1.153	0.02	0.599	0.691

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
								1750MHz											
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	1	DSI 3	1413	1732.6	19.32	20.50	1.312	0.06	0.238	0.312
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	1413	1732.6	19.32	20.50	1.312	0.03	0.697	0.915
31	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	1312	1712.4	19.31	20.50	1.315	-0.03	0.752	**0.989**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	1513	1752.6	19.21	20.50	1.346	0.02	0.536	0.721
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	1	DSI 3	1413	1732.6	19.32	20.50	1.312	0.13	0.133	0.175
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 1	1	DSI 3	1413	1732.6	19.32	20.50	1.312	-0.05	0.084	0.110
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	1	DSI 3	1413	1732.6	19.32	20.50	1.312	0.1	0.670	0.879
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	1	DSI 3	1312	1712.4	19.31	20.50	1.315	-0.13	0.676	0.889
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	1	DSI 3	1513	1752.6	19.21	20.50	1.346	0.03	0.488	0.657
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 1	1	DSI 3	132322	1745	20.68	21.30	1.153	0.05	0.251	0.290
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 1	1	DSI 3	132322	1745	20.49	21.30	1.205	-0.1	0.202	0.243
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 1	1	DSI 3	132322	1745	20.68	21.30	1.153	0.09	0.645	0.744
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 1	1	DSI 3	132322	1745	20.49	21.30	1.205	0.07	0.582	0.701
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	1	DSI 3	132322	1745	20.68	21.30	1.153	0.09	0.134	0.155
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	1	DSI 3	132322	1745	20.49	21.30	1.205	0.06	0.121	0.146
	LTE Band 66	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	1	DSI 3	132322	1745	20.68	21.30	1.153	0.18	0.097	0.112
	LTE Band 66	20M	QPSK	50	0	-	Right Side	5mm	Ant 1	1	DSI 3	132322	1745	20.49	21.30	1.205	0.07	0.077	0.093
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	132322	1745	20.68	21.30	1.153	0.07	0.712	0.821
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	132072	1720	20.24	21.30	1.276	-0.06	0.752	0.960
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	132572	1770	20.44	21.30	1.219	-0.14	0.703	0.857
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	132322	1745	20.49	21.30	1.205	0.02	0.618	0.745
	LTE Band 66	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	132322	1745	20.64	21.30	1.164	0.13	0.634	0.738
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	1	DSI 3	132322	1745	18.12	18.90	1.197	0.08	0.680	0.814
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	1	DSI 3	132072	1720	17.98	18.90	1.236	0.07	0.608	0.751
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	1	DSI 3	132572	1770	18.01	18.90	1.227	-0.17	0.666	0.817
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	Ant 2	1	DSI 3	132322	1745	17.64	18.90	1.337	0.11	0.593	0.793
	LTE Band 66	20M	QPSK	100	0	-	Front	5mm	Ant 2	1	DSI 3	132322	1745	17.62	18.90	1.343	0.08	0.601	0.807
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	1	DSI 3	132322	1745	18.12	18.90	1.197	-0.14	0.570	0.682
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	Ant 2	1	DSI 3	132322	1745	17.64	18.90	1.337	0.02	0.560	0.748
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	1	DSI 3	132322	1745	18.12	18.90	1.197	-0.17	0.195	0.233
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	Ant 2	1	DSI 3	132322	1745	17.64	18.90	1.337	-0.11	0.159	0.213
	LTE Band 66	20M	QPSK	1	0	-	Right Side	5mm	Ant 2	1	DSI 3	132322	1745	18.12	18.90	1.197	0.05	0.160	0.191
	LTE Band 66	20M	QPSK	50	0	-	Right Side	5mm	Ant 2	1	DSI 3	132322	1745	17.64	18.90	1.337	0.09	0.148	0.198
32	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	132322	1745	18.12	18.90	1.197	0.01	0.811	**0.971**
	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	2	DSI 3	132322	1745	18.12	18.90	1.197	0.06	0.677	0.810
	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	132072	1720	17.98	18.90	1.236	0.14	0.672	0.831
	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	132572	1770	18.01	18.90	1.227	-0.09	0.679	0.833
	LTE Band 66	20M	QPSK	50	0	-	Top Side	5mm	Ant 2	1	DSI 3	132322	1745	17.64	18.90	1.337	0.08	0.605	0.809
	LTE Band 66	20M	QPSK	50	0	-	Top Side	5mm	Ant 2	1	DSI 3	132072	1720	17.52	18.90	1.374	-0.15	0.646	0.888
	LTE Band 66	20M	QPSK	50	0	-	Top Side	5mm	Ant 2	1	DSI 3	132572	1770	17.61	18.90	1.346	-0.14	0.645	0.868
	LTE Band 66	20M	QPSK	100	0	-	Top Side	5mm	Ant 2	1	DSI 3	132322	1745	17.62	18.90	1.343	0.13	0.612	0.822
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Front	5mm	Ant 1	1	DSI 3	349000	1745	18.97	20.10	1.297	0.09	0.200	0.259
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Front	5mm	Ant 1	1	DSI 3	349000	1745	18.87	20.10	1.327	-0.14	0.183	0.243
33	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	349000	1745	18.97	20.10	1.297	0.06	0.737	**0.956**
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	346000	1730	18.82	20.10	1.343	-0.06	0.657	0.882
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	352000	1760	18.75	20.10	1.365	0.16	0.656	0.895
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	349000	1745	18.87	20.10	1.327	0.08	0.677	0.899
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	346000	1730	18.84	20.10	1.337	-0.06	0.677	0.905
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	352000	1760	18.80	20.10	1.349	0.16	0.666	0.898
	FR1 n66	40M	QPSK	216	0	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	349000	1745	18.81	20.10	1.346	0.04	0.656	0.883
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Left Side	5mm	Ant 1	1	DSI 3	349000	1745	18.97	20.10	1.297	0.08	0.084	0.109
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Left Side	5mm	Ant 1	1	DSI 3	349000	1745	18.87	20.10	1.327	0.04	0.071	0.094
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Right Side	5mm	Ant 1	1	DSI 3	349000	1745	18.97	20.10	1.297	0.02	0.051	0.066

	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Right Side	5mm	Ant 1	1	DSI 3	349000	1745	18.87	20.10	1.327	0.11	0.043	0.057
	FR1 n66	40M	QPSK	1	1	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	349000	1745	18.97	20.10	1.297	-0.06	0.556	0.721
	FR1 n66	40M	QPSK	108	54	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	349000	1745	18.87	20.10	1.327	-0.03	0.532	0.706

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1900MHz																			
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	1	DSI 3	661	1880	22.35	22.90	1.135	0.07	0.214	0.243
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	1	DSI 3	661	1880	22.35	22.90	1.135	0.03	0.777	0.882
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	1	DSI 3	512	1850.2	22.21	22.90	1.172	0.11	0.630	0.738
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	1	DSI 3	810	1909.8	22.18	22.90	1.180	0.01	0.382	0.451
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	1	DSI 3	661	1880	22.35	22.90	1.135	0.07	0.127	0.144
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Side	5mm	Ant 1	1	DSI 3	661	1880	22.35	22.90	1.135	0.02	0.067	0.076
34	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 1	1	DSI 3	661	1880	22.35	22.90	1.135	0.01	0.871	**0.989**
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 1	2	DSI 3	661	1880	22.35	22.90	1.135	0.01	0.374	0.424
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 1	1	DSI 3	512	1850.2	22.21	22.90	1.172	-0.11	0.730	0.856
	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 1	1	DSI 3	810	1909.8	22.18	22.90	1.180	0.07	0.469	0.554
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	1	DSI 3	9400	1880	19.64	19.70	1.014	-0.03	0.384	0.389
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	9400	1880	19.64	19.70	1.014	0.04	0.790	0.801
35	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	9262	1852.4	19.35	19.70	1.084	-0.04	0.794	**0.861**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	1	DSI 3	9538	1907.6	19.53	19.70	1.040	-0.04	0.569	0.592
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	1	DSI 3	9400	1880	19.64	19.70	1.014	0.07	0.268	0.272
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant 1	1	DSI 3	9400	1880	19.64	19.70	1.014	-0.04	0.096	0.097
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	1	DSI 3	9400	1880	19.64	19.70	1.014	0.04	0.750	0.760
	LTE Band 2	20M	QPSK	1	0	-	Front	5mm	Ant 1	1	DSI 3	18900	1880	19.85	20.90	1.274	0.12	0.293	0.373
	LTE Band 2	20M	QPSK	50	0	-	Front	5mm	Ant 1	1	DSI 3	18900	1880	19.66	20.90	1.330	-0.05	0.225	0.299
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant 1	1	DSI 3	18900	1880	19.85	20.90	1.274	0.16	0.542	0.690
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant 1	1	DSI 3	18900	1880	19.66	20.90	1.330	0.08	0.550	0.732
	LTE Band 2	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	1	DSI 3	18900	1880	19.85	20.90	1.274	0.02	0.184	0.234
	LTE Band 2	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	1	DSI 3	18900	1880	19.66	20.90	1.330	-0.12	0.169	0.225
	LTE Band 2	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	1	DSI 3	18900	1880	19.85	20.90	1.274	-0.12	0.086	0.110
	LTE Band 2	20M	QPSK	50	0	-	Right Side	5mm	Ant 1	1	DSI 3	18900	1880	19.66	20.90	1.330	0.03	0.064	0.085
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	18900	1880	19.85	20.90	1.274	0.16	0.691	0.880
36	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	18700	1860	19.79	20.90	1.291	0.05	0.755	**0.975**
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	19100	1900	19.56	20.90	1.361	0.04	0.569	0.775
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	18900	1880	19.66	20.90	1.330	0.07	0.538	0.716
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	18900	1880	19.72	20.90	1.312	0.16	0.521	0.684
2600MHz																			
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 1	1	DSI 3	21100	2535	16.95	17.50	1.135	0.07	0.275	0.312
	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	Ant 1	1	DSI 3	21100	2535	16.87	17.50	1.156	-0.12	0.280	0.324
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	1	DSI 3	21100	2535	16.95	17.50	1.135	-0.08	0.484	0.549
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 1	1	DSI 3	21100	2535	16.87	17.50	1.156	0.02	0.410	0.474
	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	1	DSI 3	21100	2535	16.95	17.50	1.135	0.14	0.142	0.161
	LTE Band 7	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	1	DSI 3	21100	2535	16.87	17.50	1.156	0.06	0.132	0.153
	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	1	DSI 3	21100	2535	16.95	17.50	1.135	-0.05	0.023	0.026
	LTE Band 7	20M	QPSK	50	0	-	Right Side	5mm	Ant 1	1	DSI 3	21100	2535	16.87	17.50	1.156	0.05	0.019	0.022
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	21100	2535	16.95	17.50	1.135	-0.01	0.814	0.924
	LTE Band 7C	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	21100+ 20902	2535+ 2515.2	16.77	17.50	1.183	0.09	0.723	0.855
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	20850	2510	16.78	17.50	1.180	0.09	0.778	0.918
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	21350	2560	16.85	17.50	1.161	-0.06	0.795	0.923
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	21100	2535	16.87	17.50	1.156	0.1	0.755	0.873
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	20850	2510	16.80	17.50	1.175	0.01	0.766	0.900
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	21350	2560	16.82	17.50	1.169	0.05	0.781	0.913
	LTE Band 7	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 1	1	DSI 3	21100	2535	16.75	17.50	1.189	-0.12	0.751	0.893
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 2	1	DSI 3	21100	2535	14.95	15.90	1.245	0.09	0.217	0.270

	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	Ant 2	1	DSI 3	21100	2535	14.85	15.90	1.274	0.15	0.199	0.253
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	1	DSI 3	21100	2535	14.95	15.90	1.245	-0.11	0.485	0.604
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant 2	1	DSI 3	21100	2535	14.85	15.90	1.274	-0.02	0.491	0.625
	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	1	DSI 3	21100	2535	14.95	15.90	1.245	-0.15	0.183	0.228
	LTE Band 7	20M	QPSK	50	0	-	Left Side	5mm	Ant 2	1	DSI 3	21100	2535	14.85	15.90	1.274	-0.04	0.176	0.224
	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	Ant 2	1	DSI 3	21100	2535	14.95	15.90	1.245	0.07	0.003	0.004
	LTE Band 7	20M	QPSK	50	0	-	Right Side	5mm	Ant 2	1	DSI 3	21100	2535	14.85	15.90	1.274	-0.05	0.001	0.001
37	LTE Band 7	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	21100	2535	14.95	15.90	1.245	0.03	0.772	**0.961**
	LTE Band 7	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	20850	2510	14.88	15.90	1.265	0.02	0.691	0.874
	LTE Band 7	20M	QPSK	1	0	-	Top Side	5mm	Ant 2	1	DSI 3	21350	2560	14.70	15.90	1.318	0.03	0.604	0.796
	LTE Band 7	20M	QPSK	50	0	-	Top Side	5mm	Ant 2	1	DSI 3	21100	2535	14.85	15.90	1.274	0.04	0.677	0.862
	LTE Band 7	20M	QPSK	50	0	-	Top Side	5mm	Ant 2	1	DSI 3	20850	2510	14.69	15.90	1.321	0.04	0.688	0.909
	LTE Band 7	20M	QPSK	50	0	-	Top Side	5mm	Ant 2	1	DSI 3	21350	2560	14.80	15.90	1.288	0.03	0.633	0.815
	LTE Band 7	20M	QPSK	100	0	-	Top Side	5mm	Ant 2	1	DSI 3	21100	2535	14.86	15.90	1.271	0.05	0.649	0.825

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2600MHz																			
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Front	5mm	Ant 1	1	DSI 3	507000	2535	17.20	18.40	1.318	0.08	0.212	0.279
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Front	5mm	Ant 1	1	DSI 3	507000	2535	17.18	18.40	1.324	0.15	0.199	0.264
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	507000	2535	17.20	18.40	1.318	0.06	0.477	0.629
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Back	5mm	Ant 1	1	DSI 3	507000	2535	17.18	18.40	1.324	0.02	0.474	0.628
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Left Side	5mm	Ant 1	1	DSI 3	507000	2535	17.20	18.40	1.318	0.09	0.128	0.169
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Left Side	5mm	Ant 1	1	DSI 3	507000	2535	17.18	18.40	1.324	0.18	0.118	0.156
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Side	5mm	Ant 1	1	DSI 3	507000	2535	17.20	18.40	1.318	0.08	0.025	0.033
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Side	5mm	Ant 1	1	DSI 3	507000	2535	17.18	18.40	1.324	0.1	0.021	0.028
38	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	507000	2535	17.20	18.40	1.318	-0.01	0.702	**0.925**
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	505000	2525	17.18	18.40	1.324	0.07	0.571	0.756
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	509000	2545	17.04	18.40	1.368	0.07	0.576	0.788
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	507000	2535	17.18	18.40	1.324	0.08	0.628	0.832
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	505000	2525	17.15	18.40	1.334	0.05	0.566	0.755
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	509000	2545	17.10	18.40	1.349	0.07	0.659	0.889
	FR1 n7	50M	QPSK	270	0	DFT_SCS 15KHz	Bottom Side	5mm	Ant 1	1	DSI 3	507000	2535	17.18	17.40	1.052	0.06	0.605	0.636
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Front	5mm	Ant 2	1	DSI 3	507000	2535	17.73	17.80	1.016	0.06	0.237	0.241
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Front	5mm	Ant 2	1	DSI 3	507000	2535	17.65	17.80	1.035	0.19	0.239	0.247
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	507000	2535	17.73	17.80	1.016	0.09	0.712	0.724
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	505000	2525	17.65	17.80	1.035	0.08	0.592	0.613
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	509000	2545	17.70	17.80	1.023	0.02	0.744	0.761
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	507000	2535	17.65	17.80	1.035	0.04	0.457	0.473
	FR1 n7	50M	QPSK	270	0	DFT_SCS 15KHz	Back	5mm	Ant 2	1	DSI 3	507000	2535	17.64	17.80	1.038	0.1	0.699	0.725
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Left Side	5mm	Ant 2	1	DSI 3	507000	2535	17.73	17.80	1.016	0.06	0.406	0.413
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Left Side	5mm	Ant 2	1	DSI 3	507000	2535	17.65	17.80	1.035	-0.14	0.401	0.415
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Right Side	5mm	Ant 2	1	DSI 3	507000	2535	17.73	17.80	1.016	0.07	0.005	0.005
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Right Side	5mm	Ant 2	1	DSI 3	507000	2535	17.65	17.80	1.035	0.14	0.004	0.004
	FR1 n7	50M	QPSK	1	1	DFT_SCS 15KHz	Top Side	5mm	Ant 2	1	DSI 3	507000	2535	17.73	17.80	1.016	0.05	0.501	0.509
	FR1 n7	50M	QPSK	135	68	DFT_SCS 15KHz	Top Side	5mm	Ant 2	1	DSI 3	507000	2535	17.65	17.80	1.035	0.05	0.548	0.567

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2600MHz																				
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Ant 1	1	DSI 3	40400	2571	19.04	20.20	1.306	62.9	1.006	0.07	0.248	0.326
	LTE Band 41	20M	QPSK	50	0	Front	5mm	Ant 1	1	DSI 3	40400	2571	18.76	20.20	1.393	62.9	1.006	-0.17	0.192	0.269
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Ant 1	1	DSI 3	40400	2571	19.04	20.20	1.306	62.9	1.006	0.04	0.456	0.599
	LTE Band 41	20M	QPSK	50	0	Back	5mm	Ant 1	1	DSI 3	40400	2571	18.76	20.20	1.393	62.9	1.006	0.15	0.393	0.551
	LTE Band 41	20M	QPSK	1	0	Left Side	5mm	Ant 1	1	DSI 3	40400	2571	19.04	20.20	1.306	62.9	1.006	0.19	0.125	0.164
	LTE Band 41	20M	QPSK	50	0	Left Side	5mm	Ant 1	1	DSI 3	40400	2571	18.76	20.20	1.393	62.9	1.006	0.1	0.083	0.116
	LTE Band 41	20M	QPSK	1	0	Right Side	5mm	Ant 1	1	DSI 3	40400	2571	19.04	20.20	1.306	62.9	1.006	0.04	0.025	0.033
	LTE Band 41	20M	QPSK	50	0	Right Side	5mm	Ant 1	1	DSI 3	40400	2571	18.76	20.20	1.393	62.9	1.006	-0.14	0.016	0.022
39	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Ant 1	1	DSI 3	40400	2571	19.04	20.20	1.306	62.9	1.006	-0.09	0.753	**0.989**
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Ant 1	2	DSI 3	40400	2571	19.04	20.20	1.306	62.9	1.006	0.08	0.627	0.824
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Ant 1	1	DSI 3	40140	2545	18.96	20.20	1.330	62.9	1.006	0.05	0.731	0.978
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Ant 1	1	DSI 3	40670	2598	18.99	20.20	1.321	62.9	1.006	0.18	0.652	0.867
	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	Ant 1	1	DSI 3	41140	2645	18.94	20.20	1.337	62.9	1.006	0.06	0.562	0.756
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5mm	Ant 1	1	DSI 3	40400	2571	18.76	20.20	1.393	62.9	1.006	0.05	0.659	0.924
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5mm	Ant 1	1	DSI 3	40140	2545	18.49	20.20	1.483	62.9	1.006	0.01	0.647	0.965
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5mm	Ant 1	1	DSI 3	40670	2598	18.50	20.20	1.479	62.9	1.006	0.05	0.611	0.909
	LTE Band 41	20M	QPSK	50	0	Bottom Side	5mm	Ant 1	1	DSI 3	41140	2645	18.58	20.20	1.452	62.9	1.006	0.11	0.599	0.875
	LTE Band 41	20M	QPSK	100	0	Bottom Side	5mm	Ant 1	1	DSI 3	40400	2571	18.63	20.20	1.435	62.9	1.006	-0.14	0.665	0.960
	LTE Band 41	20M	QPSK	1	0	Front	5mm	Ant 2	1	DSI 3	40400	2571	18.58	19.10	1.127	62.9	1.006	0.02	0.257	0.291
	LTE Band 41	20M	QPSK	50	0	Front	5mm	Ant 2	1	DSI 3	40400	2571	18.46	19.10	1.159	62.9	1.006	0.05	0.251	0.293
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Ant 2	1	DSI 3	40400	2571	18.58	19.10	1.127	62.9	1.006	0.18	0.622	0.705
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Ant 2	1	DSI 3	40140	2545	18.48	19.10	1.153	62.9	1.006	0.01	0.570	0.661
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Ant 2	1	DSI 3	40670	2598	18.43	19.10	1.167	62.9	1.006	0.02	0.492	0.578
	LTE Band 41	20M	QPSK	1	0	Back	5mm	Ant 2	1	DSI 3	41140	2645	18.46	19.10	1.159	62.9	1.006	0.05	0.533	0.621
	LTE Band 41	20M	QPSK	50	0	Back	5mm	Ant 2	1	DSI 3	40400	2571	18.46	19.10	1.159	62.9	1.006	0.04	0.611	0.712
	LTE Band 41	20M	QPSK	50	0	Back	5mm	Ant 2	1	DSI 3	40140	2545	18.36	19.10	1.186	62.9	1.006	0.01	0.522	0.623
	LTE Band 41	20M	QPSK	50	0	Back	5mm	Ant 2	1	DSI 3	40670	2598	18.39	19.10	1.178	62.9	1.006	0.02	0.441	0.522
	LTE Band 41	20M	QPSK	50	0	Back	5mm	Ant 2	1	DSI 3	41140	2645	18.38	19.10	1.180	62.9	1.006	0.05	0.463	0.550
	LTE Band 41	20M	QPSK	100	0	Back	5mm	Ant 2	1	DSI 3	40400	2571	18.44	19.10	1.164	62.9	1.006	0.1	0.452	0.529
	LTE Band 41	20M	QPSK	1	0	Left Side	5mm	Ant 2	1	DSI 3	40400	2571	18.58	19.10	1.127	62.9	1.006	0.03	0.288	0.327
	LTE Band 41	20M	QPSK	50	0	Left Side	5mm	Ant 2	1	DSI 3	40400	2571	18.46	19.10	1.159	62.9	1.006	-0.05	0.281	0.328
	LTE Band 41	20M	QPSK	1	0	Right Side	5mm	Ant 2	1	DSI 3	40400	2571	18.58	19.10	1.127	62.9	1.006	-0.03	0.003	0.003
	LTE Band 41	20M	QPSK	50	0	Right Side	5mm	Ant 2	1	DSI 3	40400	2571	18.46	19.10	1.159	62.9	1.006	0.06	0.002	0.002
	LTE Band 41	20M	QPSK	1	0	Top Side	5mm	Ant 2	1	DSI 3	40400	2571	18.58	19.10	1.127	62.9	1.006	-0.15	0.725	0.822
	LTE Band 41	20M	QPSK	1	0	Top Side	5mm	Ant 2	1	DSI 3	40140	2545	18.48	19.10	1.153	62.9	1.006	-0.08	0.770	0.893
	LTE Band 41	20M	QPSK	1	0	Top Side	5mm	Ant 2	1	DSI 3	40670	2598	18.43	19.10	1.167	62.9	1.006	0.09	0.554	0.650
	LTE Band 41	20M	QPSK	1	0	Top Side	5mm	Ant 2	1	DSI 3	41140	2645	18.46	19.10	1.159	62.9	1.006	0.07	0.513	0.598
	LTE Band 41	20M	QPSK	50	0	Top Side	5mm	Ant 2	1	DSI 3	40400	2571	18.46	19.10	1.159	62.9	1.006	0.05	0.596	0.695
	LTE Band 41	20M	QPSK	50	0	Top Side	5mm	Ant 2	1	DSI 3	40140	2545	18.36	19.10	1.186	62.9	1.006	0.01	0.502	0.599
	LTE Band 41	20M	QPSK	50	0	Top Side	5mm	Ant 2	1	DSI 3	40670	2598	18.39	19.10	1.178	62.9	1.006	-0.02	0.468	0.554
	LTE Band 41	20M	QPSK	50	0	Top Side	5mm	Ant 2	1	DSI 3	41140	2645	18.38	19.10	1.180	62.9	1.006	0.05	0.413	0.490
	LTE Band 41	20M	QPSK	100	0	Top Side	5mm	Ant 2	1	DSI 3	40400	2571	18.44	19.10	1.164	62.9	1.006	-0.02	0.569	0.666
3500MHz~3900MHz																				
	LTE Band 42	20M	QPSK	1	0	Front	5mm	Ant 4	1	DSI 3	42590	3500	17.63	18.50	1.222	62.9	1.006	-0.07	0.117	0.144
	LTE Band 42	20M	QPSK	50	0	Front	5mm	Ant 4	1	DSI 3	42590	3500	17.38	18.50	1.294	62.9	1.006	0.11	0.091	0.118
40	LTE Band 42	20M	QPSK	1	0	Back	5mm	Ant 4	1	DSI 3	42590	3500	17.63	18.50	1.222	62.9	1.006	-0.05	0.791	**0.972**
	LTE Band 42	20M	QPSK	1	0	Back	5mm	Ant 4	1	DSI 3	42190	3460	17.50	18.50	1.259	62.9	1.006	0.02	0.748	0.947
	LTE Band 42	20M	QPSK	1	0	Back	5mm	Ant 4	1	DSI 3	42990	3540	17.48	18.50	1.265	62.9	1.006	-0.14	0.707	0.900
	LTE Band 42	20M	QPSK	50	0	Back	5mm	Ant 4	1	DSI 3	42590	3500	17.38	18.50	1.294	62.9	1.006	0.02	0.710	0.924
	LTE Band 42	20M	QPSK	50	0	Back	5mm	Ant 4	1	DSI 3	42190	3460	17.28	18.50	1.324	62.9	1.006	0.02	0.711	0.947
	LTE Band 42	20M	QPSK	50	0	Back	5mm	Ant 4	1	DSI 3	42990	3540	17.21	18.50	1.346	62.9	1.006	-0.14	0.701	0.949
	LTE Band 42	20M	QPSK	100	0	Back	5mm	Ant 4	1	DSI 3	42590	3500	17.35	18.50	1.303	62.9	1.006	0.11	0.713	0.935

	LTE Band 42	20M	QPSK	1	0	Left Side	5mm	Ant 4	1	DSI 3	42590	3500	17.63	18.50	1.222	62.9	1.006	0.04	0.412	0.506
	LTE Band 42	20M	QPSK	50	0	Left Side	5mm	Ant 4	1	DSI 3	42590	3500	17.38	18.50	1.294	62.9	1.006	0.08	0.391	0.509
	LTE Band 42	20M	QPSK	1	0	Top Side	5mm	Ant 4	1	DSI 3	42590	3500	17.63	18.50	1.222	62.9	1.006	0.01	0.113	0.139
	LTE Band 42	20M	QPSK	50	0	Top Side	5mm	Ant 4	1	DSI 3	42590	3500	17.38	18.50	1.294	62.9	1.006	0.08	0.096	0.125

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
3500MHz~3900MHz																			
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Front	5mm	Ant 4	1	DSI 3	656000	3840	16.69	17.90	1.321	0.09	0.117	0.155
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Front	5mm	Ant 4	1	DSI 3	656000	3840	16.66	17.90	1.330	0.19	0.081	0.108
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Back	5mm	Ant 4	1	DSI 3	656000	3840	16.69	17.90	1.321	0.06	0.483	0.638
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Back	5mm	Ant 4	2	DSI 3	656000	3840	16.69	17.90	1.321	0.02	0.463	0.612
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Back	5mm	Ant 4	1	DSI 3	656000	3840	16.66	17.90	1.330	0.08	0.315	0.419
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Left Side	5mm	Ant 4	1	DSI 3	656000	3840	16.69	17.90	1.321	0.05	0.407	0.538
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Left Side	5mm	Ant 4	1	DSI 3	656000	3840	16.66	17.90	1.330	0.09	0.366	0.487
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Side	5mm	Ant 4	1	DSI 3	656000	3840	16.69	17.90	1.321	0.03	0.066	0.087
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Right Side	5mm	Ant 4	1	DSI 3	656000	3840	16.66	17.90	1.330	0.04	0.051	0.068
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Top Side	5mm	Ant 4	1	DSI 3	656000	3840	16.69	17.90	1.321	0.05	0.068	0.090
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Top Side	5mm	Ant 4	1	DSI 3	656000	3840	16.66	17.90	1.330	0.01	0.060	0.080
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Front	5mm	Ant 4	1	DSI 3	633334	3500.01	17.10	17.90	1.202	0.06	0.151	0.182
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Front	5mm	Ant 4	1	DSI 3	633334	3500.01	16.88	17.90	1.265	-0.17	0.142	0.180
41	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Back	5mm	Ant 4	1	DSI 3	633334	3500.01	17.10	17.90	1.202	-0.04	0.803	**0.965**
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Back	5mm	Ant 4	2	DSI 3	633334	3500.01	17.10	17.90	1.202	0.05	0.560	0.673
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Back	5mm	Ant 4	1	DSI 3	633334	3500.01	16.88	17.90	1.265	0.16	0.757	0.957
	FR1 n77	100M	QPSK	270	0	DFT-SCS_30KHz	Back	5mm	Ant 4	1	DSI 3	633334	3500.01	16.75	17.90	1.303	-0.07	0.737	0.960
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Left Side	5mm	Ant 4	1	DSI 3	633334	3500.01	17.10	17.90	1.202	-0.17	0.524	0.630
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Left Side	5mm	Ant 4	1	DSI 3	633334	3500.01	16.88	17.90	1.265	0.15	0.507	0.641
	FR1 n77	100M	QPSK	270	0	DFT-SCS_30KHz	Left Side	5mm	Ant 4	1	DSI 3	633334	3500.01	16.75	17.90	1.303	0.18	0.504	0.657
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Right Side	5mm	Ant 4	1	DSI 3	633334	3500.01	17.10	17.90	1.202	-0.12	0.012	0.014
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Right Side	5mm	Ant 4	1	DSI 3	633334	3500.01	16.88	17.90	1.265	0.05	0.011	0.014
	FR1 n77	100M	QPSK	1	1	DFT-SCS_30KHz	Top Side	5mm	Ant 4	1	DSI 3	633334	3500.01	17.10	17.90	1.202	0.07	0.109	0.131
	FR1 n77	100M	QPSK	135	69	DFT-SCS_30KHz	Top Side	5mm	Ant 4	1	DSI 3	633334	3500.01	16.88	17.90	1.265	-0.07	0.099	0.125

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN/Bluetooth																	
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3	1	Simultaneous-Reduced	11	2462	15.26	16.50	1.330	98.9	1.011	0.03	0.213	0.287
42	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	Simultaneous-Reduced	11	2462	15.26	16.50	1.330	98.9	1.011	-0.06	0.257	**0.346**
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	2	Simultaneous-Reduced	11	2462	15.26	16.50	1.330	98.9	1.011	0.01	0.121	0.163
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	Simultaneous-Reduced	6	2437	15.09	16.50	1.384	98.9	1.011	0.01	0.245	0.343
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 3	1	Simultaneous-Reduced	11	2462	15.26	16.50	1.330	98.9	1.011	0.05	0.235	0.316
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 3	1	Simultaneous-Reduced	11	2462	15.26	16.50	1.330	98.9	1.011	0.06	0.228	0.307
43	Bluetooth	1Mbps	Back	5mm	Ant 3	1	Full	39	2441	11.87	13.00	1.297	76.98	1.299	0.06	0.078	**0.131**
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 3	1	Simultaneous-Reduced	42	5210	9.33	10.50	1.309	89.64	1.116	0.03	0.079	0.115
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 3	1	Simultaneous-Reduced	42	5210	9.33	10.50	1.309	89.64	1.116	0.02	0.204	0.298
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 3	1	Simultaneous-Reduced	42	5210	9.33	10.50	1.309	89.64	1.116	0.09	0.107	0.156
44	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 3	1	Simultaneous-Reduced	42	5210	9.33	10.50	1.309	89.64	1.116	0.05	0.249	**0.364**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 3	1	Simultaneous-Reduced	155	5775	8.37	9.50	1.297	89.64	1.116	0.1	0.123	0.178
45	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 3	1	Simultaneous-Reduced	155	5775	8.37	9.50	1.297	89.64	1.116	0.07	0.269	**0.389**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 3	1	Simultaneous-Reduced	155	5775	8.37	9.50	1.297	89.64	1.116	0.05	0.220	0.318
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 3	1	Simultaneous-Reduced	155	5775	8.37	9.50	1.297	89.64	1.116	0.05	0.112	0.162
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 3	1	Simultaneous-Reduced	155	5775	8.37	9.50	1.297	89.64	1.116	0.04	0.255	0.369