FCC SAR Test Report

APPLICANT	:	**Xiaomi Communications Co., Ltd.**
EQUIPMENT	:	**Mobile Phone**
BRAND NAME	:	**Redmi**
MODEL NAME	:	**2201117TL**
FCC ID	:	**2AFZZ117TL**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)**

We, Sporton International Inc. (Kunshan), 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 Inc. (Kunshan), the test report shall not be reproduced except in full.

Tony Zhang

Reviewed by: Tong Zhang / Supervisor

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Approved by: Kat Yin / Manager

ACCREDITED
Cert #5145.02

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Table of Contents

1. Statement of Compliance **4**
2. Administration Data **5**
3. Guidance Applied **5**
4. Equipment Under Test (EUT) Information **6**
4.1 General Information 6
4.2 General LTE SAR Test and Reporting Considerations 8
5. Proximity Sensor Triggering Test **11**
5.1 Proximity sensor triggering distances(Per KDB616217§6.2) 11
6. RF Exposure Limits **13**
6.1 Uncontrolled Environment 13
6.2 Controlled Environment 13
7. Specific Absorption Rate (SAR) **14**
7.1 Introduction 14
7.2 SAR Definition 14
8. System Description and Setup **15**
8.1 E-Field Probe 16
8.2 Data Acquisition Electronics (DAE) 16
8.3 Phantom 17
8.4 Device Holder 18
9. Measurement Procedures **19**
9.1 Spatial Peak SAR Evaluation 19
9.2 Power Reference Measurement 20
9.3 Area Scan 20
9.4 Zoom Scan 21
9.5 Volume Scan Procedures 21
9.6 Power Drift Monitoring 21
10. Test Equipment List **22**
11. System Verification **23**
11.1 Tissue Simulating Liquids 23
11.2 Tissue Verification 24
11.3 System Performance Check Results 25
12. RF Exposure Positions **27**
12.1 Ear and handset reference point 27
12.2 Definition of the cheek position 28
12.3 Definition of the tilt position 29
12.4 Body Worn Accessory 30
12.5 Product Specific 10g SAR Exposure 31
12.6 Wireless Router 31
13. Conducted RF Output Power (Unit: dBm) **32**
14. Antenna Location **45**
15. SAR Test Results **46**
15.1 Head SAR 49
15.2 Hotspot SAR 55
15.3 Body Worn Accessory SAR 61
15.4 Product Specific SAR 64
15.5 Repeated SAR Measurement 65
16. Simultaneous Transmission Analysis **66**
16.1 Head Exposure Conditions 67
16.2 Hotspot Exposure Conditions 67
16.3 Body-Worn Accessory Exposure Conditions 67
17. Uncertainty Assessment **68**
18. References **69**
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASY Calibration Certificate
Appendix D. Test Setup Photos
Appendix E. Conducted RF Output Power Table

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA1O2304-01	Rev. 01	Initial issue of report.	Jan. 17, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Xiaomi Communications Co., Ltd., Mobile Phone, 2201117TL,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 10mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.33	0.24	0.24	1.59
		GSM1900	1.03	0.47	0.35	
	WCDMA	Band II	0.96	**1.05**	0.77	
		Band IV	0.86	0.85	0.85	
		Band V	0.53	0.36	0.36	
	LTE	Band 2	0.86	0.89	0.80	
		Band 7	0.84	0.92	0.92	
		Band 12 / Band 17	0.34	0.27	0.27	
		Band 13	0.41	0.34	0.27	
		Band 26 / Band 5	0.71	0.28	0.28	
		Band 66 / Band 4	0.54	1.00	**1.00**	
		Band 41/ Band 38	**1.06**	0.62	0.46	
DTS	WLAN	2.4GHz WLAN	0.53	0.19	0.19	1.24
NII		5GHz WLAN	0.72	0.50	0.70	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.10	<0.10	<0.10	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
NII	WLAN	5GHz WLAN	**1.22**	-
Date of Testing:			2021/12/14 ~ 2021/12/20	

Remark:

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

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

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

2. Administration Data

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

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
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.
	SAR04-KS	CN1257	314309

Applicant	
Company Name	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer	
Company Name	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

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 Phone
Brand Name	Redmi
Model Name	2201117TL
FCC ID	2AFZZ117TL
IMEI Code	SIM1: 861360050015003 SIM2: 861360050015011
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: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5805 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM LTE: 256QAM(Downlink Only) 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
HW Version	P1.1
SW Version	MIUI13
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. 802.11n-HT40 is not supported in 2.4GHz WLAN.
2. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
5. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 33.
6. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will

be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.

7. There are four types of EUT, the difference are memory capacity. According to the differences, we choose sample 1 to perform full test.
8. The device has two batteries with the same battery capacity, only Manufacturer is different. We only chose one battery to perform full SAR testing.
9. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table. Full power table and reduced power table (DSI 1: receiver on reduced power for head; DSI 4: P-sensor on for hotspot; DSI 2: receiver off /P-sensor off).

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	2AFZZ117TL
Equipment Name	Mobile Phone
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz
Channel Bandwidth	LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R10, Cat13
CA Support	Supported, Uplink and Downlink
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3**

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
Power reduction applied to satisfy SAR compliance	Yes, head/body-worn/ hotspot/extremity will trigger reduced power for some LTE bands, the detail please referred to section 13.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for 7C/38C/41C with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 2 carriers in the downlink and 2 carriers in the uplink.

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
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

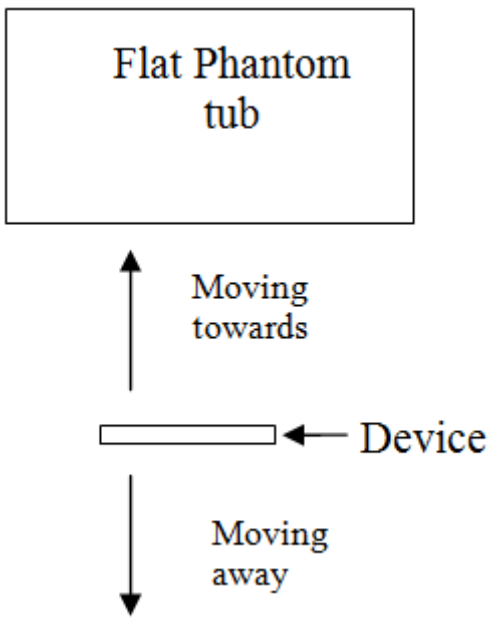
LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

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

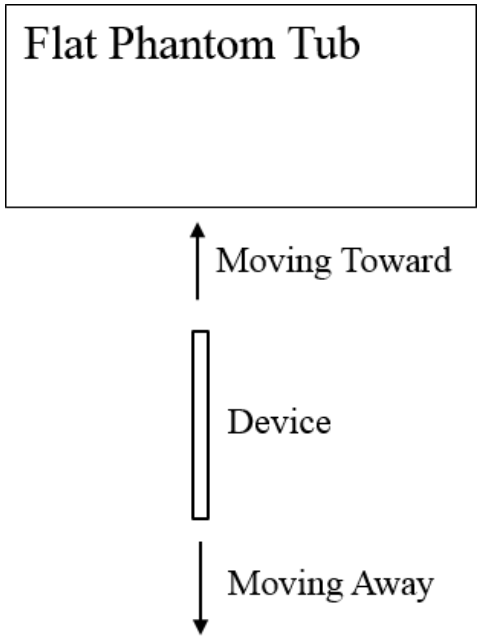
5. Proximity Sensor Triggering Test

5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed, and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensor placed coincident with antenna elements at the top/bottom end of the phone are utilized to determine when the device comes in proximity of the user's body or finger or hand at the front or back or bottom or top side surface of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
3. The proximity sensors used to detect the proximity of the user's body or handheld state at the front or back or bottom or top side of the device use a detection threshold distance. When front/back/top/bottom sides of body or handheld condition is detected reduced power will be active. The data shown in the sections below shows the distance(s).
4. 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.



Sensor detection test set-up, front and back sides



Sensor detection test set-up, top/bottom sides

<P-Sensor>

< Sensor for Ant1 >

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	11	11	16	16	20	20

< Sensor for Ant2 >

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	11	11	16	16	16	16

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

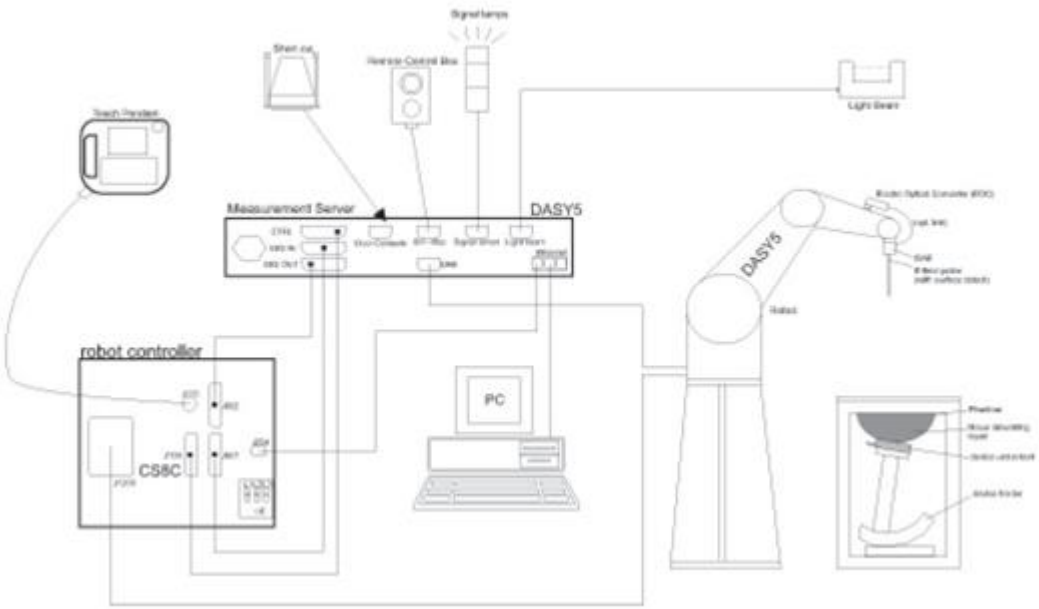
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



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

8.1 E-Field Probe

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

<EX3DV4 Probe>

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

8.2 Data Acquisition Electronics (DAE)

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

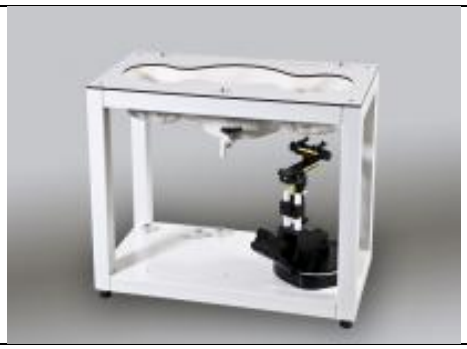
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

8.3 Phantom

<SAM Twin Phantom>

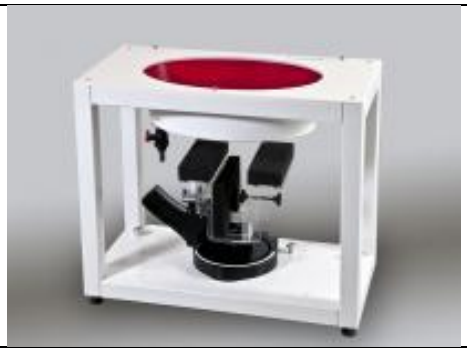
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



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

8.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

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

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

Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

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

9.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

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

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2022/3/24
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	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2022/9/22
SPEAG	Data Acquisition Electronics	DAE4	1650	2021/6/9	2022/6/8
SPEAG	Dosimetric E-Field Probe	EX3DV4	7630	2021/2/10	2022/2/9
SPEAG	SAM Twin Phantom	SAM Twin	TP-1697	NCR	NCR
Testo	Thermo-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	1138	2021/6/9	2022/6/8
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.

11. System Verification

11.1 Tissue Simulating Liquids

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

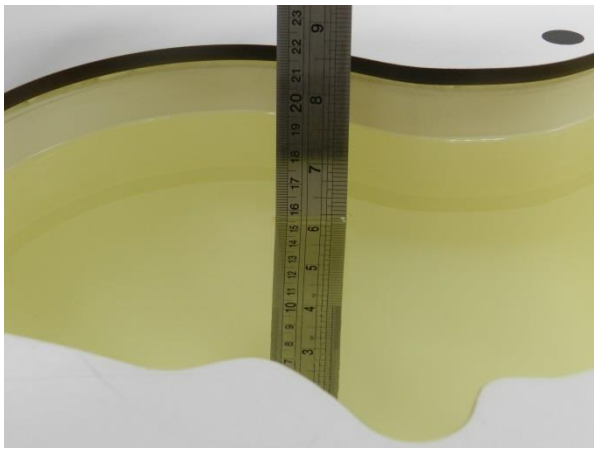


Fig 11.1 Photo of Liquid Height for Head SAR

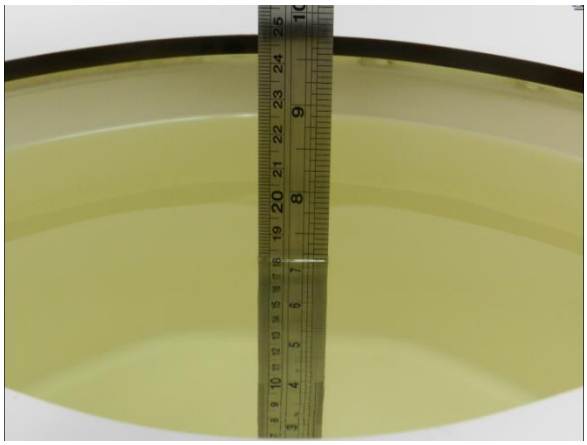


Fig 11.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
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)	Head	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	0.915	41.844	0.89	41.90	2.81	-0.13	±5	2021/12/14
835	Head	22.7	0.938	42.440	0.90	41.50	4.22	2.27	±5	2021/12/14
1750	Head	22.8	1.394	40.496	1.37	40.10	1.75	0.99	±5	2021/12/15
1900	Head	22.7	1.458	39.790	1.40	40.00	4.14	-0.53	±5	2021/12/15
2600	Head	22.8	1.975	40.602	1.96	39.00	0.77	4.11	±5	2021/12/16
750	Head	22.6	0.913	41.756	0.89	41.90	2.58	-0.34	±5	2021/12/16
835	Head	22.8	0.929	40.938	0.90	41.50	3.22	-1.35	±5	2021/12/17
1750	Head	22.7	1.410	40.677	1.37	40.10	2.92	1.44	±5	2021/12/17
1900	Head	22.6	1.453	39.680	1.40	40.00	3.79	-0.80	±5	2021/12/18
2600	Head	22.8	1.922	38.215	1.96	39.00	-1.94	-2.01	±5	2021/12/18
2450	Head	22.7	1.824	39.239	1.80	39.20	1.33	0.10	±5	2021/12/19
5250	Head	22.9	4.579	36.317	4.71	35.90	-2.78	1.16	±5	2021/12/19
5600	Head	22.7	4.946	35.757	5.07	35.50	-2.45	0.72	±5	2021/12/20
5750	Head	22.8	5.128	35.569	5.22	35.40	-1.76	0.48	±5	2021/12/20

11.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	Head	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 (%)
2021/12/14	750	Head	50	1087	7630	1650	0.429	8.36	8.58	2.63
2021/12/14	835	Head	50	4d258	7630	1650	0.508	9.44	10.16	7.63
2021/12/15	1750	Head	50	1090	7630	1650	1.900	36.40	38	4.40
2021/12/15	1900	Head	50	5d170	7630	1650	2.100	39.00	42	7.69
2021/12/16	2600	Head	50	1061	7630	1650	2.770	56.60	55.4	-2.12
2021/12/16	750	Head	50	1087	7630	1650	0.416	8.36	8.32	-0.48
2021/12/17	835	Head	50	4d258	7630	1650	0.505	9.44	10.1	6.99
2021/12/17	1750	Head	50	1090	7630	1650	1.960	36.40	39.2	7.69
2021/12/18	1900	Head	50	5d170	7630	1650	2.090	39.00	41.8	7.18
2021/12/18	2600	Head	50	1061	7630	1650	2.710	56.60	54.2	-4.24
2021/12/19	2450	Head	50	908	7630	1650	2.600	52.80	52	-1.52
2021/12/19	5250	Head	50	1113	7630	1650	3.870	80.50	77.4	-3.85
2021/12/20	5600	Head	50	1113	7630	1650	4.210	83.40	84.2	0.96
2021/12/20	5750	Head	50	1113	7630	1650	3.750	80.00	75	-6.25

<10g SAR>

Date	Frequency (MHz)	Head	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 (%)
2021/12/14	750	Head	50	1087	7630	1650	0.282	5.65	5.64	-0.18
2021/12/14	835	Head	50	4d258	7630	1650	0.331	6.13	6.62	7.99
2021/12/15	1750	Head	50	1090	7630	1650	0.999	19.20	19.98	4.06
2021/12/15	1900	Head	50	5d170	7630	1650	1.090	20.30	21.8	7.39
2021/12/16	2600	Head	50	1061	7630	1650	1.240	25.10	24.8	-1.20
2021/12/16	750	Head	50	1087	7630	1650	0.273	5.65	5.46	-3.36
2021/12/17	835	Head	50	4d258	7630	1650	0.328	6.13	6.56	7.01
2021/12/17	1750	Head	50	1090	7630	1650	1.030	19.20	20.6	7.29
2021/12/18	1900	Head	50	5d170	7630	1650	1.080	20.30	21.6	6.40
2021/12/18	2600	Head	50	1061	7630	1650	1.210	25.10	24.2	-3.59
2021/12/19	2450	Head	50	908	7630	1650	1.220	24.20	24.4	0.83
2021/12/19	5250	Head	50	1113	7630	1650	1.120	23.10	22.4	-3.03
2021/12/20	5600	Head	50	1113	7630	1650	1.190	23.80	23.8	0.00
2021/12/20	5750	Head	50	1113	7630	1650	1.070	22.80	21.4	-6.14

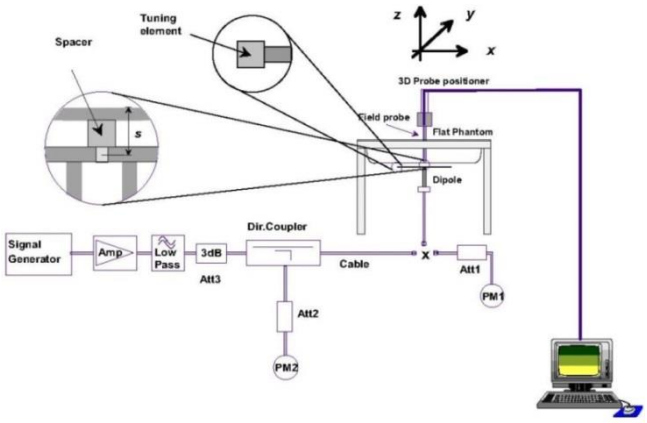


Fig 11.3.1 System Performance Check Setup

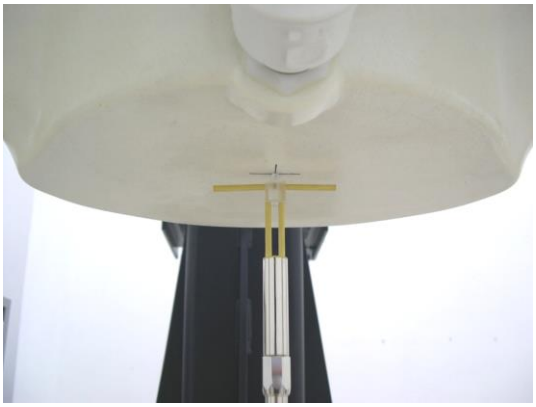


Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 Ear and handset reference point

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

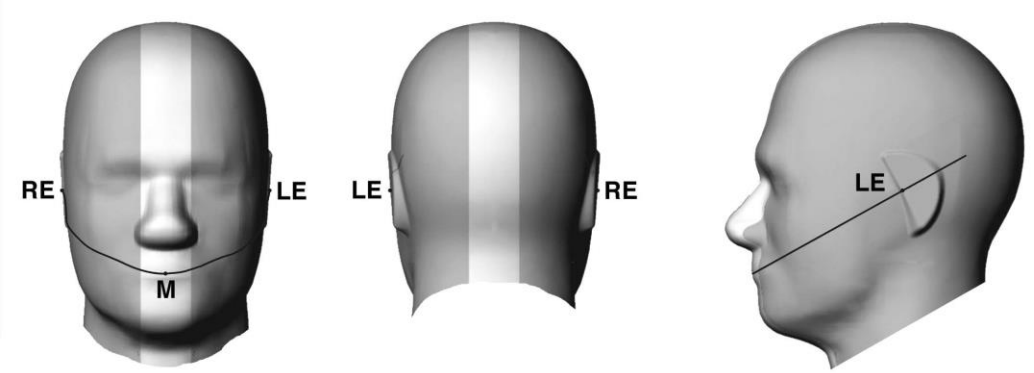


Fig 12.1.1 Front, back, and side views of SAM twin phantom

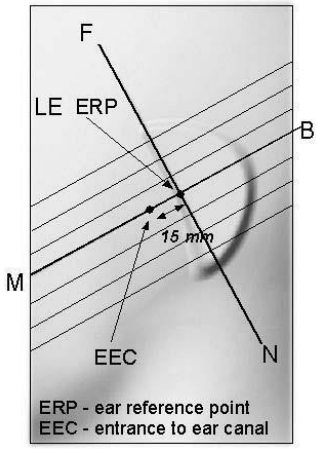


Fig 12.1.2 Close-up side view of phantom showing the ear region.

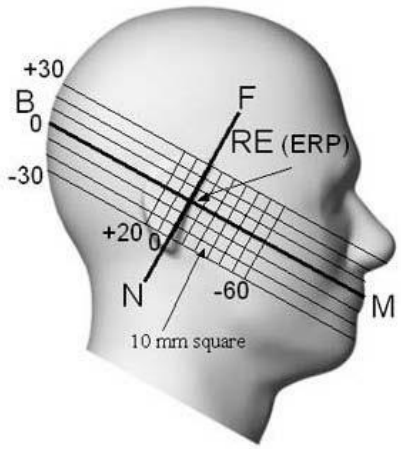


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 Definition of the cheek position

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

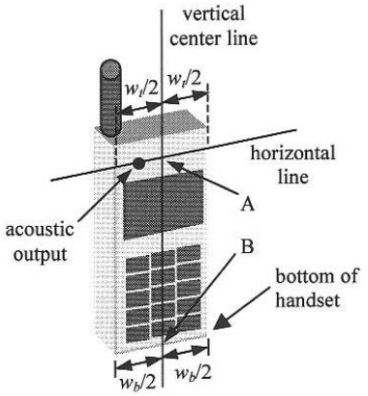


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

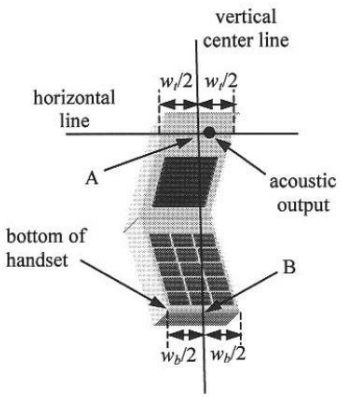


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

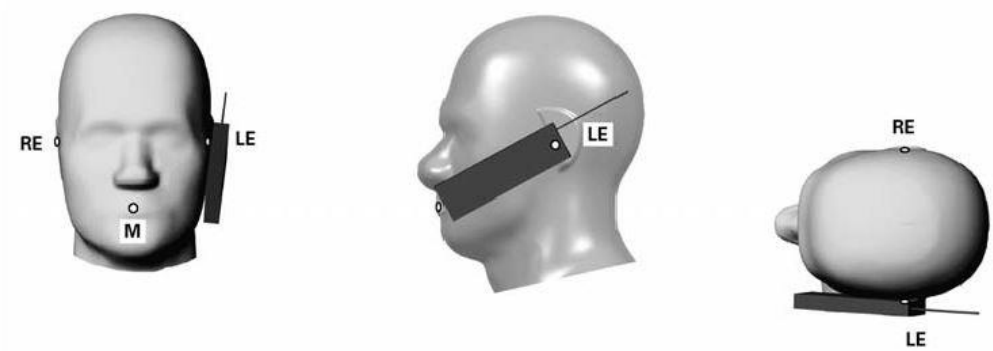


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 Definition of the tilt position

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

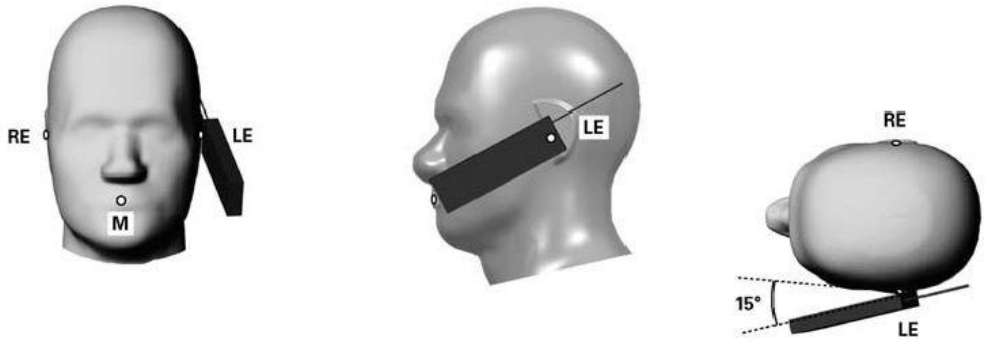


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 Body Worn Accessory

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

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

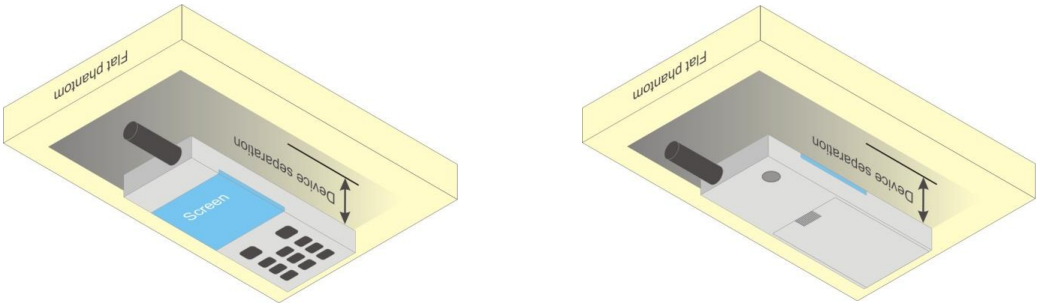


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

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

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

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

12.6 Wireless Router

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

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

13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
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	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

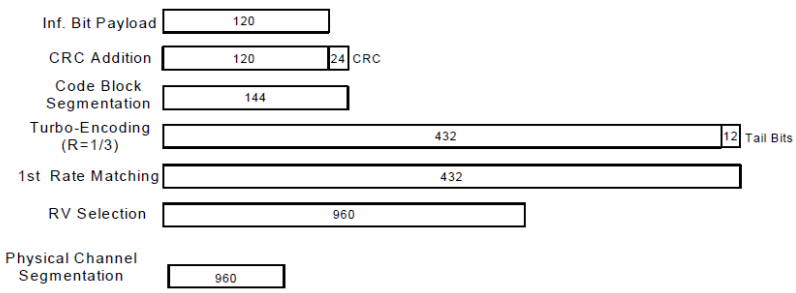


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

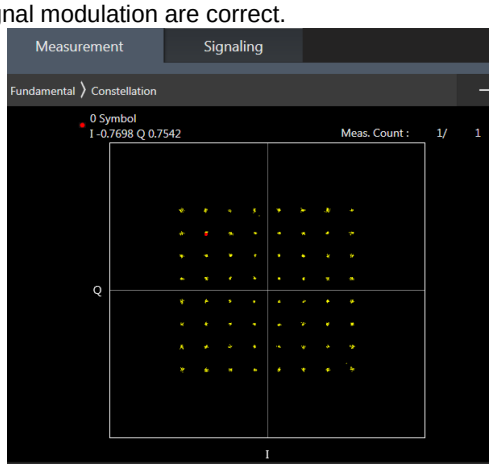
General Note:

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

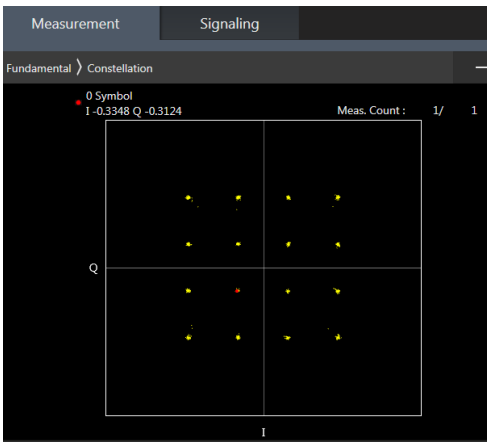
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B4 / B5 / B17 / B38 SAR test was covered by B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

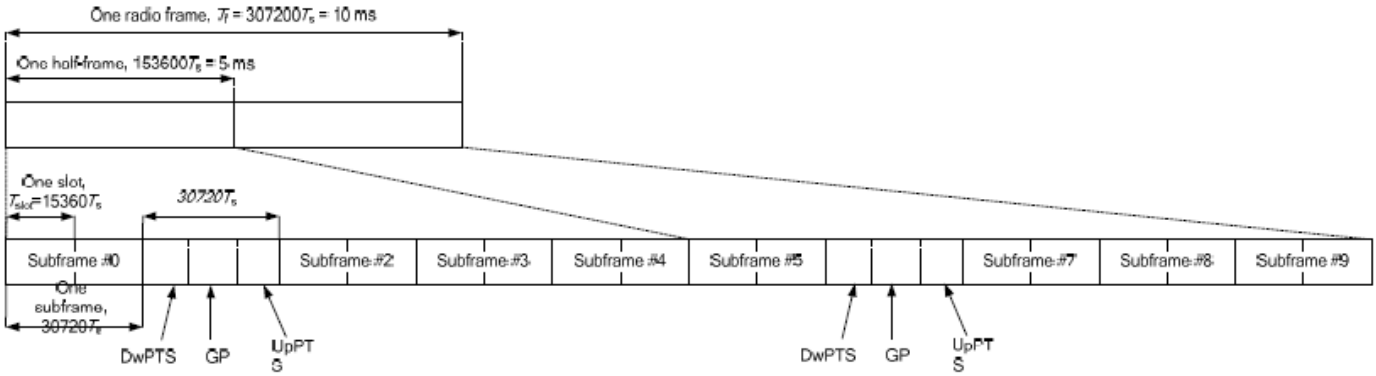


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

2CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset
1	CA_2C	
2	CA_7C	
3	CA_38C	
4	CA_41C	
5	CA_7A-7A	
6	CA_38A-38A	
7	CA_41A-41A	
8	CA_66A-66A	
9	CA_66B	
10	CA_66C	
11	CA_2A-4A	
12	CA_2A-5A	
13	CA_2A-7A	
14	CA_2A-12A	
15	CA_2A-66A	
16	CA_4A-5A	
17	CA_4A-7A	
18	CA_4A-12A	
19	CA_4A-17A	
20	CA_5A-7A	
21	CA_5A-66A	
22	CA_5A-41A	
23	CA_7A-66A	
24	CA_12A-66A	

LTE Carrier Aggregation Conducted Power (Downlink)

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

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

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

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

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

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

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

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

LTE Carrier Aggregation Conducted Power (Uplink)

<Intra-band>

2CC Uplink Carrier Aggregation	
Number	Combination
1	7C
2	38C
3	41C

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B7/B38/B41 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. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.

ii. The device supports uplink carrier aggregation 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. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.

iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

iv. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

v. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

<WLAN Conducted Power>

General Note:

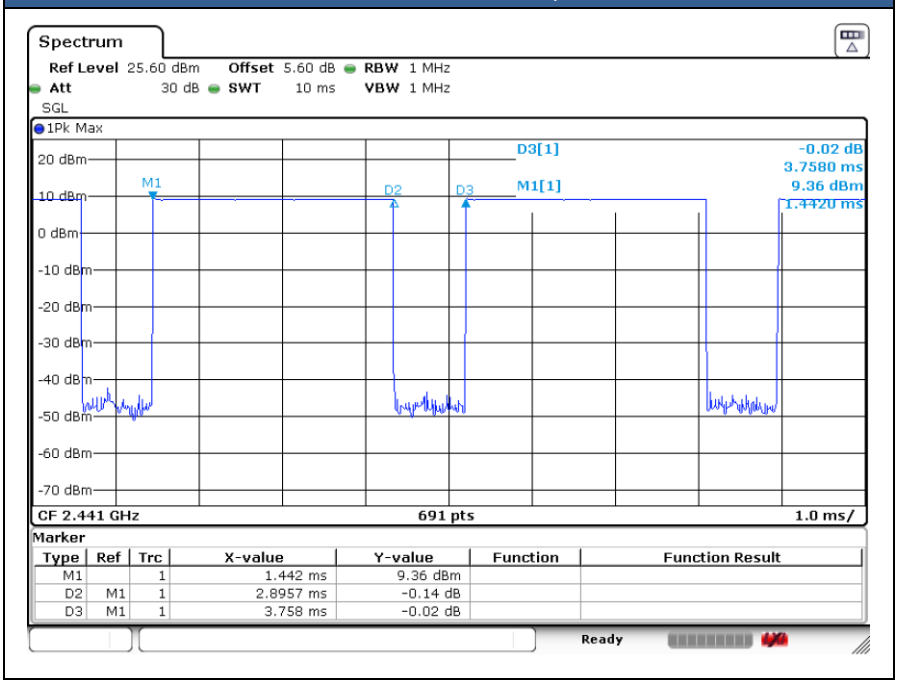
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. 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 77.05% 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



14. Antenna Location

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of 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). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
5. There are four types of EUT. The difference is that different memory capacity. According to the differences, we choose sample 1 to perform full test.
6. The device has two batteries with the same battery capacity, only Manufacturer is different. We only chose one battery to perform full SAR testing.
7. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table. Full power table and reduced power table (DSI 1: receiver on reduced power for head; DSI 4: P-sensor on for hotspot; DSI 2: receiver off /P-sensor off).
8. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
   a. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
   b. 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.
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 / B5 / B17 / B38 SAR test was covered by B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

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. Bluetooth and WLAN share the same antenna, with similar work frequency, so for Bluetooth SAR testing, we chose the worst positon of WLAN to perform, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.

15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	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	Ant1	DSI1	23095	707.5	24.10	25.50	1.380	0.02	0.091	0.126
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Ant1	DSI1	23095	707.5	23.10	24.50	1.380	0.07	0.086	0.119
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Ant1	DSI1	23095	707.5	24.10	25.50	1.380	0.1	0.060	0.083
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Ant1	DSI1	23095	707.5	23.10	24.50	1.380	0.06	0.051	0.070
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Ant1	DSI1	23095	707.5	24.10	25.50	1.380	-0.09	0.094	0.130
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Ant1	DSI1	23095	707.5	23.10	24.50	1.380	0.07	0.064	0.088
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Ant1	DSI1	23095	707.5	24.10	25.50	1.380	-0.18	0.052	0.072
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Ant1	DSI1	23095	707.5	23.10	24.50	1.380	-0.11	0.043	0.059
	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	23095	707.5	23.40	24.50	1.288	-0.19	0.246	0.317
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Ant2	DSI1	23095	707.5	23.32	24.50	1.312	0.08	0.245	0.321
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	23095	707.5	23.40	24.50	1.288	0.17	0.256	0.330
01	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Ant2	DSI1	23095	707.5	23.32	24.50	1.312	-0.06	0.261	**0.342**
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Ant2	DSI1	23095	707.5	23.40	24.50	1.288	0.03	0.210	0.271
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Ant2	DSI1	23095	707.5	23.32	24.50	1.312	0.07	0.210	0.276
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Ant2	DSI1	23095	707.5	23.40	24.50	1.288	0.06	0.251	0.323
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Ant2	DSI1	23095	707.5	23.32	24.50	1.312	0.15	0.202	0.265
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Ant1	DSI1	23230	782	24.28	25.50	1.324	-0.02	0.145	0.192
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Ant1	DSI1	23230	782	23.32	24.50	1.312	-0.12	0.124	0.163
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Ant1	DSI1	23230	782	24.28	25.50	1.324	-0.05	0.098	0.130
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Ant1	DSI1	23230	782	23.32	24.50	1.312	0.03	0.082	0.108
	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Ant1	DSI1	23230	782	24.28	25.50	1.324	0.07	0.141	0.187
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Ant1	DSI1	23230	782	23.32	24.50	1.312	0.01	0.116	0.152
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Ant1	DSI1	23230	782	24.28	25.50	1.324	0.03	0.090	0.119
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Ant1	DSI1	23230	782	23.32	24.50	1.312	0.16	0.072	0.094
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	23230	782	23.66	24.50	1.213	0.01	0.321	0.389
02	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Ant2	DSI1	23230	782	23.53	24.50	1.250	0.04	0.330	**0.413**
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	23230	782	23.66	24.50	1.213	-0.17	0.293	0.356
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Ant2	DSI1	23230	782	23.53	24.50	1.250	0.08	0.298	0.373
	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Ant2	DSI1	23230	782	23.66	24.50	1.213	-0.17	0.278	0.337
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Ant2	DSI1	23230	782	23.53	24.50	1.250	-0.07	0.293	0.366
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Ant2	DSI1	23230	782	23.66	24.50	1.213	0.16	0.322	0.391
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Ant2	DSI1	23230	782	23.53	24.50	1.250	0.03	0.258	0.323

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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 (1 Tx slot)	Right Cheek	0mm	Ant1	DSI1	189	836.4	33.37	33.50	1.030	0.09	0.184	0.190
	GSM850	-	-	-	-	GPRS (1 Tx slot)	Right Tilted	0mm	Ant1	DSI1	189	836.4	33.37	33.50	1.030	-0.12	0.096	0.099
	GSM850	-	-	-	-	GPRS (1 Tx slot)	Left Cheek	0mm	Ant1	DSI1	189	836.4	33.37	33.50	1.030	-0.14	0.162	0.167
	GSM850	-	-	-	-	GPRS (1 Tx slot)	Left Tilted	0mm	Ant1	DSI1	189	836.4	33.37	33.50	1.030	-0.15	0.087	0.090
03	GSM850	-	-	-	-	GPRS (1 Tx slot)	Right Cheek	0mm	Ant2	DSI1	189	836.4	33.30	33.50	1.047	-0.01	0.314	**0.329**
	GSM850	-	-	-	-	GPRS (1 Tx slot)	Right Tilted	0mm	Ant2	DSI1	189	836.4	33.30	33.50	1.047	0.05	0.223	0.234
	GSM850	-	-	-	-	GPRS (1 Tx slot)	Left Cheek	0mm	Ant2	DSI1	189	836.4	33.30	33.50	1.047	-0.17	0.272	0.285
	GSM850	-	-	-	-	GPRS (1 Tx slot)	Left Tilted	0mm	Ant2	DSI1	189	836.4	33.30	33.50	1.047	0.12	0.223	0.234
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant1	DSI1	4182	836.4	24.53	25.50	1.250	0.05	0.099	0.124
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant1	DSI1	4182	836.4	24.53	25.50	1.250	0.06	0.046	0.058
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant1	DSI1	4182	836.4	24.53	25.50	1.250	-0.16	0.089	0.111
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant1	DSI1	4182	836.4	24.53	25.50	1.250	0.16	0.042	0.053
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant2	DSI1	4182	836.4	23.93	24.50	1.140	-0.03	0.465	**0.530**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	4182	836.4	23.93	24.50	1.140	0.03	0.398	0.454
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant2	DSI1	4182	836.4	23.93	24.50	1.140	0.16	0.421	0.480
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant2	DSI1	4182	836.4	23.93	24.50	1.140	0.13	0.350	0.399
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant1	DSI1	26865	831.5	24.52	25.50	1.253	0.03	0.140	0.175
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant1	DSI1	26865	831.5	23.58	24.50	1.236	0.19	0.114	0.141
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant1	DSI1	26865	831.5	24.52	25.50	1.253	-0.08	0.082	0.103
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant1	DSI1	26865	831.5	23.58	24.50	1.236	-0.07	0.068	0.084
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant1	DSI1	26865	831.5	24.52	25.50	1.253	0.13	0.135	0.169
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant1	DSI1	26865	831.5	23.58	24.50	1.236	0.19	0.108	0.133
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant1	DSI1	26865	831.5	24.52	25.50	1.253	0.18	0.068	0.085
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant1	DSI1	26865	831.5	23.58	24.50	1.236	0.07	0.058	0.072
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant2	DSI1	26865	831.5	23.68	25.00	1.355	-0.02	0.517	0.701
05	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant2	DSI1	26865	831.5	23.18	24.50	1.355	0.03	0.522	**0.707**
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant2	DSI1	26865	831.5	23.68	25.00	1.355	0.15	0.432	0.585
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant2	DSI1	26865	831.5	23.18	24.50	1.355	0.06	0.437	0.592
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant2	DSI1	26865	831.5	23.68	25.00	1.355	-0.13	0.455	0.617
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant2	DSI1	26865	831.5	23.18	24.50	1.355	0.03	0.474	0.642
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant2	DSI1	26865	831.5	23.68	25.00	1.355	0.1	0.505	0.684
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant2	DSI1	26865	831.5	23.18	24.50	1.355	-0.14	0.411	0.557

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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	Right Cheek	0mm	Ant1	DSI1	1413	1732.6	24.16	25.50	1.361	0.05	0.180	0.245
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant1	DSI1	1413	1732.6	24.16	25.50	1.361	0.15	0.125	0.170
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant1	DSI1	1413	1732.6	24.16	25.50	1.361	-0.04	0.145	0.197
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant1	DSI1	1413	1732.6	24.16	25.50	1.361	-0.02	0.119	0.162
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant2	DSI1	1413	1732.6	15.35	16.50	1.303	0.06	0.497	0.648
06	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	1413	1732.6	15.35	16.50	1.303	0.08	0.661	**0.861**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	1312	1712.4	15.06	16.50	1.393	0.05	0.611	0.851
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	1513	1752.6	15.12	16.50	1.374	0.03	0.623	0.856
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant2	DSI1	1413	1732.6	15.35	16.50	1.303	-0.12	0.361	0.470
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant2	DSI1	1413	1732.6	15.35	16.50	1.303	-0.18	0.424	0.553
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant1	DSI1	132322	1745	24.43	25.50	1.279	0.03	0.285	0.365
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant1	DSI1	132322	1745	23.48	24.50	1.265	0.12	0.239	0.302
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant1	DSI1	132322	1745	24.43	25.50	1.279	0.16	0.194	0.248
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant1	DSI1	132322	1745	23.48	24.50	1.265	0.07	0.155	0.196
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant1	DSI1	132322	1745	24.43	25.50	1.279	0.08	0.244	0.312
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant1	DSI1	132322	1745	23.48	24.50	1.265	-0.02	0.202	0.255
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant1	DSI1	132322	1745	24.43	25.50	1.279	0.05	0.205	0.262
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant1	DSI1	132322	1745	23.48	24.50	1.265	-0.11	0.163	0.206
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant2	DSI1	132322	1745	15.86	16.50	1.159	0.08	0.328	0.380
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant2	DSI1	132322	1745	15.71	16.50	1.199	-0.18	0.318	0.381
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant2	DSI1	132322	1745	15.86	16.50	1.159	-0.05	0.401	0.465
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant2	DSI1	132322	1745	15.71	16.50	1.199	0.04	0.402	0.482
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant2	DSI1	132322	1745	15.86	16.50	1.159	0.06	0.226	0.262
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant2	DSI1	132322	1745	15.71	16.50	1.199	-0.18	0.228	0.273
07	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant2	DSI1	132322	1745	15.86	16.50	1.159	0.07	0.469	**0.543**
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant2	DSI1	132322	1745	15.71	16.50	1.199	0.08	0.450	0.540

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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 (1 Tx slot)	Right Cheek	0mm	Ant1	DSI1	661	1880	30.13	30.50	1.089	-0.12	0.076	0.083
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Right Tilted	0mm	Ant1	DSI1	661	1880	30.13	30.50	1.089	0.11	0.072	0.078
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Cheek	0mm	Ant1	DSI1	661	1880	30.13	30.50	1.089	0.03	0.096	0.105
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Tilted	0mm	Ant1	DSI1	661	1880	30.13	30.50	1.089	0.14	0.077	0.084
	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Right Cheek	0mm	Ant2	DSI1	661	1880	23.65	24.00	1.084	0.06	0.709	0.769
08	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant2	DSI1	661	1880	23.65	24.00	1.084	0.11	0.947	**1.026**
	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant2	DSI1	512	1850.2	23.29	24.00	1.178	0.13	0.724	0.853
	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant2	DSI1	810	1909.8	23.44	24.00	1.138	0.03	0.760	0.865
	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Left Cheek	0mm	Ant2	DSI1	661	1880	23.65	24.00	1.084	0.13	0.459	0.498
	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Left Tilted	0mm	Ant2	DSI1	661	1880	23.65	24.00	1.084	0.06	0.302	0.327
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant1	DSI1	9400	1880	24.11	25.50	1.377	0.16	0.248	0.342
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant1	DSI1	9400	1880	24.11	25.50	1.377	-0.16	0.248	0.342
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant1	DSI1	9400	1880	24.11	25.50	1.377	0.11	0.330	0.454
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant1	DSI1	9400	1880	24.11	25.50	1.377	-0.15	0.275	0.379
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant2	DSI1	9400	1880	15.51	16.50	1.256	0.07	0.576	0.723
09	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	9400	1880	15.51	16.50	1.256	0.17	0.760	**0.955**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	9262	1852.4	15.23	16.50	1.340	0.08	0.672	0.900
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant2	DSI1	9538	1907.6	15.34	16.50	1.306	0.17	0.606	0.792
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant2	DSI1	9400	1880	15.51	16.50	1.256	0.15	0.392	0.492
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant2	DSI1	9400	1880	15.51	16.50	1.256	0.07	0.478	0.600
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant1	DSI1	18900	1880	24.01	25.50	1.409	-0.14	0.189	0.266
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant1	DSI1	18900	1880	22.96	24.50	1.426	0.05	0.151	0.215
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant1	DSI1	18900	1880	24.01	25.50	1.409	0.14	0.181	0.255
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant1	DSI1	18900	1880	22.96	24.50	1.426	-0.04	0.152	0.217
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant1	DSI1	18900	1880	24.01	25.50	1.409	0.04	0.259	0.365
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant1	DSI1	18900	1880	22.96	24.50	1.426	0.12	0.206	0.294
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant1	DSI1	18900	1880	24.01	25.50	1.409	0.06	0.202	0.285
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant1	DSI1	18900	1880	22.96	24.50	1.426	0.04	0.166	0.237
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant2	DSI1	18900	1880	15.63	16.50	1.222	0.08	0.506	0.618
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant2	DSI1	18900	1880	15.49	16.50	1.262	-0.02	0.508	0.641
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant2	DSI1	18900	1880	15.63	16.50	1.222	0.05	0.627	0.766
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant2	DSI1	18900	1880	15.49	16.50	1.262	0.09	0.663	0.837
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant2	DSI1	18700	1860	15.39	16.50	1.291	0.11	0.635	0.820
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant2	DSI1	19100	1900	15.32	16.50	1.312	-0.03	0.608	0.798
10	LTE Band 2	20M	QPSK	100	0	-	Right Tilted	0mm	Ant2	DSI1	18900	1880	15.43	16.50	1.279	-0.01	0.670	**0.857**
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant2	DSI1	18900	1880	15.63	16.50	1.222	0.04	0.340	0.415
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant2	DSI1	18900	1880	15.49	16.50	1.262	-0.17	0.345	0.435
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant2	DSI1	18900	1880	15.63	16.50	1.222	0.02	0.410	0.501
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant2	DSI1	18900	1880	15.49	16.50	1.262	0.04	0.422	0.532
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant4	DSI1	18900	1880	23.81	25.50	1.476	0.08	0.365	0.539
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant4	DSI1	18900	1880	23.01	24.50	1.409	-0.15	0.309	0.435
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant4	DSI1	18900	1880	23.81	25.50	1.476	0.04	0.112	0.165
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant4	DSI1	18900	1880	23.01	24.50	1.409	-0.18	0.000	0.000
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant4	DSI1	18900	1880	23.81	25.50	1.476	0.16	0.182	0.269
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant4	DSI1	18900	1880	23.01	24.50	1.409	0.05	0.145	0.204
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant4	DSI1	18900	1880	23.81	25.50	1.476	-0.08	0.000	0.000
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant4	DSI1	18900	1880	23.01	24.50	1.409	0.04	0.000	0.000

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
										2600MHz									
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Ant1	DSI1	21100	2535	23.39	24.00	1.151	-	-	0.05	0.028	0.032
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Ant1	DSI1	21100	2535	22.10	23.00	1.230	-	-	0.01	0.032	0.039
	LTE Band 7C	20M	QPSK	50	0	Right Cheek	0mm	Ant1	DSI1	21100+20902	2535+2515.2	21.86	23.00	1.300	-	-	0.05	0.029	0.038
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Ant1	DSI1	21100	2535	23.39	24.00	1.151	-	-	0.07	0.017	0.020
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant1	DSI1	21100	2535	22.10	23.00	1.230	-	-	0.11	0.000	0.000
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Ant1	DSI1	21100	2535	23.39	24.00	1.151	-	-	-0.05	0.010	0.012
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Ant1	DSI1	21100	2535	22.10	23.00	1.230	-	-	-0.16	0.002	0.002
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Ant1	DSI1	21100	2535	23.39	24.00	1.151	-	-	0.08	0.000	0.000
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	Ant1	DSI1	21100	2535	22.10	23.00	1.230	-	-	-0.05	0.000	0.000
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	21100	2535	17.64	18.00	1.086	-	-	-0.13	0.644	0.700
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	20850	2510	17.61	18.00	1.094	-	-	0.02	0.613	0.671
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	21350	2560	17.60	18.00	1.096	-	-	0.07	0.600	0.658
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	21100	2535	17.47	18.00	1.130	-	-	0.01	0.651	0.735
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	20850	2510	17.44	18.00	1.138	-	-	0.06	0.622	0.708
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	21350	2560	17.44	18.00	1.138	-	-	0.01	0.611	0.695
	LTE Band 7	20M	QPSK	100	0	Right Cheek	0mm	Ant2	DSI1	21100	2535	17.38	18.00	1.153	-	-	0.05	0.620	0.715
11	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	21100	2535	17.64	18.00	1.086	-	-	-0.08	0.769	**0.835**
	LTE Band 7C	20M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	21100+20902	2535+2515.2	17.33	18.00	1.167	-	-	0.01	0.706	0.824
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	20850	2510	17.61	18.00	1.094	-	-	-0.03	0.733	0.802
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	21350	2560	17.60	18.00	1.096	-	-	0.02	0.711	0.780
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	21100	2535	17.47	18.00	1.130	-	-	-0.18	0.721	0.815
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	20850	2510	17.44	18.00	1.138	-	-	0.01	0.700	0.796
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	21350	2560	17.44	18.00	1.138	-	-	0.01	0.690	0.785
	LTE Band 7	20M	QPSK	100	0	Right Tilted	0mm	Ant2	DSI1	21100	2535	17.38	18.00	1.153	-	-	0.1	0.699	0.806
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Ant2	DSI1	21100	2535	17.64	18.00	1.086	-	-	0.07	0.540	0.587
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Ant2	DSI1	21100	2535	17.47	18.00	1.130	-	-	0.07	0.527	0.595
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Ant2	DSI1	21100	2535	17.64	18.00	1.086	-	-	-0.04	0.579	0.629
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	Ant2	DSI1	21100	2535	17.47	18.00	1.130	-	-	-0.07	0.573	0.647
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Ant4	DSI1	21100	2535	22.15	23.00	1.216	-	-	0.08	0.185	0.225
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Ant4	DSI1	21100	2535	20.81	22.00	1.315	-	-	-0.07	0.295	0.388
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Ant4	DSI1	21100	2535	22.15	23.00	1.216	-	-	-0.05	0.114	0.139
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant4	DSI1	21100	2535	20.81	22.00	1.315	-	-	0.13	0.063	0.083
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Ant4	DSI1	21100	2535	22.15	23.00	1.216	-	-	-0.15	0.153	0.186
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Ant4	DSI1	21100	2535	20.81	22.00	1.315	-	-	0.15	0.153	0.201
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Ant4	DSI1	21100	2535	22.15	23.00	1.216	-	-	-0.07	0.066	0.080
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	Ant4	DSI1	21100	2535	20.81	22.00	1.315	-	-	-0.06	0.065	0.085
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant1	DSI1	40620	2593	24.22	25.50	1.343	62.9	1.006	0.01	0.024	0.032
	LTE Band 41C	20M	QPSK	1	0	Right Cheek	0mm	Ant1	DSI1	40620+40818	2593+2612.8	24.01	25.50	1.409	62.9	1.006	0.02	0.019	0.027
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant1	DSI1	40620	2593	23.40	24.50	1.288	62.9	1.006	-0.17	0.020	0.026
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant1	DSI1	40620	2593	24.22	25.50	1.343	62.9	1.006	0.06	0.013	0.018
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant1	DSI1	40620	2593	23.40	24.50	1.288	62.9	1.006	0.15	0.000	0.000
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Ant1	DSI1	40620	2593	24.22	25.50	1.343	62.9	1.006	0.07	0.013	0.018
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant1	DSI1	40620	2593	23.40	24.50	1.288	62.9	1.006	0.14	0.008	0.010
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Ant1	DSI1	40620	2593	24.22	25.50	1.343	62.9	1.006	0.09	0.004	0.005
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant1	DSI1	40620	2593	23.40	24.50	1.288	62.9	1.006	0.17	0.001	0.001
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	40620	2593	21.27	22.00	1.183	62.9	1.006	0.05	0.695	0.827
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	39750	2506	21.12	22.00	1.225	62.9	1.006	0.06	0.676	0.833
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	40185	2549.5	21.06	22.00	1.242	62.9	1.006	-0.17	0.687	0.858
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	41055	2636.5	21.08	22.00	1.236	62.9	1.006	-0.17	0.677	0.842
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Ant2	DSI1	41490	2680	21.00	22.00	1.259	62.9	1.006	-0.16	0.686	0.869
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	40620	2593	20.97	22.00	1.268	62.9	1.006	0.1	0.686	0.875
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	39750	2506	20.91	22.00	1.285	62.9	1.006	-0.02	0.675	0.873

	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	40185	2549.5	20.87	22.00	1.297	62.9	1.006	0.06	0.687	0.897
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	41055	2636.5	20.91	22.00	1.285	62.9	1.006	0.03	0.676	0.874
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Ant2	DSI1	41490	2680	20.88	22.00	1.294	62.9	1.006	-0.04	0.668	0.870
	LTE Band 41	20M	QPSK	100	0	Right Cheek	0mm	Ant2	DSI1	40620	2593	20.88	22.00	1.294	62.9	1.006	-0.1	0.666	0.867
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Ant2	DSI1	40620	2593	21.27	22.00	1.183	62.9	1.006	-0.14	0.562	0.669
12	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	40620	2593	20.97	22.00	1.268	62.9	1.006	-0.04	0.831	**1.060**
	LTE Band 41C	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	40620+40818	2593+2612.8	20.96	22.00	1.271	62.9	1.006	-0.04	0.820	1.048
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	39750	2506	20.91	22.00	1.285	62.9	1.006	0.03	0.771	0.997
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	40185	2549.5	20.87	22.00	1.297	62.9	1.006	-0.15	0.803	1.048
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	41055	2636.5	20.91	22.00	1.285	62.9	1.006	-0.09	0.777	1.005
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Ant2	DSI1	41490	2680	20.88	22.00	1.294	62.9	1.006	0.15	0.770	1.003
	LTE Band 41	20M	QPSK	100	0	Right Tilted	0mm	Ant2	DSI1	40620	2593	20.88	22.00	1.294	62.9	1.006	0.03	0.808	1.052
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Ant2	DSI1	40620	2593	21.27	22.00	1.183	62.9	1.006	-0.16	0.501	0.596
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant2	DSI1	40620	2593	20.97	22.00	1.268	62.9	1.006	-0.11	0.487	0.621
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant2	DSI1	39750	2506	20.91	22.00	1.285	62.9	1.006	-0.11	0.482	0.623
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant2	DSI1	40185	2549.5	20.87	22.00	1.297	62.9	1.006	-0.11	0.486	0.634
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant2	DSI1	41055	2636.5	20.91	22.00	1.285	62.9	1.006	-0.11	0.485	0.627
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Ant2	DSI1	41490	2680	20.88	22.00	1.294	62.9	1.006	-0.11	0.483	0.629
	LTE Band 41	20M	QPSK	100	0	Left Cheek	0mm	Ant2	DSI1	40620	2593	20.88	22.00	1.294	62.9	1.006	-0.1	0.481	0.626
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Ant2	DSI1	40620	2593	21.27	22.00	1.183	62.9	1.006	0.06	0.503	0.599
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant2	DSI1	40620	2593	20.97	22.00	1.268	62.9	1.006	0.06	0.511	0.652
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant2	DSI1	39750	2506	20.91	22.00	1.285	62.9	1.006	-0.02	0.508	0.657
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant2	DSI1	40185	2549.5	20.87	22.00	1.297	62.9	1.006	0.06	0.507	0.662
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant2	DSI1	41055	2636.5	20.91	22.00	1.285	62.9	1.006	0.03	0.506	0.654
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Ant2	DSI1	41490	2680	20.88	22.00	1.294	62.9	1.006	-0.04	0.509	0.663
	LTE Band 41	20M	QPSK	100	0	Left Tilted	0mm	Ant2	DSI1	40620	2593	20.88	22.00	1.294	62.9	1.006	-0.1	0.505	0.657

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
							2450MHz									
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant3	Reduced	1	2412	16.61	18.50	1.545	98.31	1.017	0.12	0.129	0.203
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant3	Reduced	1	2412	16.61	18.50	1.545	98.31	1.017	0.13	0.114	0.179
13	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant3	Reduced	1	2412	16.61	18.50	1.545	98.31	1.017	0.15	0.336	**0.528**
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant3	Reduced	1	2412	16.61	18.50	1.545	98.31	1.017	0.03	0.274	0.431
14	Bluetooth	1Mbps	Left Cheek	0mm	Ant3	Reduced	78	2480	9.77	11.00	1.328	77.05	1.298	0.07	0.060	**0.103**
							5000MHz									
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant3	Reduced	58	5290	11.44	13.00	1.432	89.6	1.116	-0.04	0.243	0.388
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant3	Reduced	58	5290	11.44	13.00	1.432	89.6	1.116	-0.13	0.263	0.420
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant3	Reduced	58	5290	11.44	13.00	1.432	89.6	1.116	-0.09	0.373	0.596
15	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant3	Reduced	58	5290	11.44	13.00	1.432	89.6	1.116	0.01	0.452	**0.722**
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant3	Reduced	122	5610	10.61	12.50	1.545	89.6	1.116	0.14	0.244	0.421
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant3	Reduced	122	5610	10.61	12.50	1.545	89.6	1.116	0.05	0.249	0.429
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant3	Reduced	122	5610	10.61	12.50	1.545	89.6	1.116	0.03	0.330	0.569
16	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant3	Reduced	122	5610	10.61	12.50	1.545	89.6	1.116	0.17	0.415	**0.716**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant3	Reduced	155	5775	12.11	13.50	1.377	89.6	1.116	0.14	0.258	0.397
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant3	Reduced	155	5775	12.11	13.50	1.377	89.6	1.116	0.14	0.277	0.426
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant3	Reduced	155	5775	12.11	13.50	1.377	89.6	1.116	-0.15	0.339	0.521
17	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant3	Reduced	155	5775	12.11	13.50	1.377	89.6	1.116	-0.02	0.432	**0.664**

15.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	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	10mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.06	0.157	0.217
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Ant1	DSI2	23095	707.5	23.10	24.50	1.380	-0.15	0.111	0.153
	LTE Band 12	10M	QPSK	1	0	Back	10mm	Ant1	DSI4	23095	707.5	22.69	24.00	1.352	-0.19	0.172	0.233
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Ant1	DSI4	23095	707.5	22.55	24.00	1.396	0.03	0.156	0.218
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.08	0.135	0.186
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	Ant1	DSI2	23095	707.5	23.10	24.50	1.380	0.07	0.086	0.119
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.1	0.158	0.218
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	Ant1	DSI2	23095	707.5	23.10	24.50	1.380	-0.16	0.130	0.179
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	Ant1	DSI4	23095	707.5	22.69	24.00	1.352	0.19	0.090	0.122
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	Ant1	DSI4	23095	707.5	22.55	24.00	1.396	0.05	0.083	0.116
	LTE Band 12	10M	QPSK	1	0	Back	15mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.08	0.152	0.210
	LTE Band 12	10M	QPSK	1	0	Bottom Side	19mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.08	0.000	0.000
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Ant2	DSI2	23095	707.5	24.36	25.50	1.300	0.16	0.136	0.177
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Ant2	DSI2	23095	707.5	23.36	24.50	1.300	0.01	0.105	0.137
18	LTE Band 12	10M	QPSK	1	0	Back	10mm	Ant2	DSI4	23095	707.5	24.36	25.50	1.300	-0.08	0.206	**0.268**
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Ant2	DSI4	23095	707.5	23.36	24.50	1.300	0.06	0.170	0.221
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	Ant2	DSI2	23095	707.5	24.36	25.50	1.300	-0.03	0.185	0.241
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	Ant2	DSI2	23095	707.5	23.36	24.50	1.300	0.04	0.148	0.192
	LTE Band 12	10M	QPSK	1	0	Top Side	10mm	Ant2	DSI4	23095	707.5	24.36	25.50	1.300	0.15	0.084	0.109
	LTE Band 12	10M	QPSK	25	0	Top Side	10mm	Ant2	DSI4	23095	707.5	23.36	24.50	1.300	0.1	0.062	0.081
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Ant1	DSI2	23230	782	24.28	25.50	1.324	0.14	0.172	0.228
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Ant1	DSI2	23230	782	23.32	24.50	1.312	0.04	0.141	0.185
	LTE Band 13	10M	QPSK	1	0	Back	10mm	Ant1	DSI4	23230	782	22.93	24.00	1.279	-0.06	0.208	0.266
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Ant1	DSI4	23230	782	22.90	24.00	1.288	0.02	0.206	0.265
	LTE Band 13	10M	QPSK	1	0	Left Side	10mm	Ant1	DSI2	23230	782	24.28	25.50	1.324	0.03	0.147	0.195
	LTE Band 13	10M	QPSK	25	0	Left Side	10mm	Ant1	DSI2	23230	782	23.32	24.50	1.312	0.07	0.127	0.167
19	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Ant1	DSI2	23230	782	24.28	25.50	1.324	0.07	0.258	**0.342**
	LTE Band 13	10M	QPSK	25	0	Right Side	10mm	Ant1	DSI2	23230	782	23.32	24.50	1.312	0.01	0.206	0.270
	LTE Band 13	10M	QPSK	1	0	Bottom Side	10mm	Ant1	DSI4	23230	782	22.93	24.00	1.279	0.15	0.137	0.175
	LTE Band 13	10M	QPSK	25	0	Bottom Side	10mm	Ant1	DSI4	23230	782	22.90	24.00	1.288	0.17	0.172	0.222
	LTE Band 13	10M	QPSK	1	0	Back	15mm	Ant1	DSI2	23230	782	24.28	25.50	1.324	0.16	0.198	0.262
	LTE Band 13	10M	QPSK	25	0	Bottom Side	19mm	Ant1	DSI2	23230	782	23.32	24.50	1.312	0.04	0.000	0.000
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Ant2	DSI2	23230	782	24.55	25.50	1.245	-0.1	0.142	0.177
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Ant2	DSI2	23230	782	23.67	24.50	1.211	0.11	0.114	0.138
	LTE Band 13	10M	QPSK	1	0	Back	10mm	Ant2	DSI4	23230	782	24.55	25.50	1.245	0.01	0.191	0.238
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Ant2	DSI4	23230	782	23.67	24.50	1.211	0.14	0.150	0.182
	LTE Band 13	10M	QPSK	1	0	Left Side	10mm	Ant2	DSI2	23230	782	24.55	25.50	1.245	-0.11	0.144	0.179
	LTE Band 13	10M	QPSK	25	0	Left Side	10mm	Ant2	DSI2	23230	782	23.67	24.50	1.211	0.1	0.118	0.143
	LTE Band 13	10M	QPSK	1	0	Top Side	10mm	Ant2	DSI4	23230	782	24.55	25.50	1.245	0.07	0.104	0.129
	LTE Band 13	10M	QPSK	25	0	Top Side	10mm	Ant2	DSI4	23230	782	23.67	24.50	1.211	0.04	0.087	0.105

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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 (4 Tx slots)	Front	10mm	Ant1	DSI2	189	836.4	27.06	27.50	1.107	0.09	0.138	0.153
20	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant1	DSI4	189	836.4	27.06	27.50	1.107	-0.1	0.213	**0.236**
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant1	DSI2	189	836.4	27.06	27.50	1.107	0.06	0.089	0.098
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Side	10mm	Ant1	DSI2	189	836.4	27.06	27.50	1.107	0.1	0.125	0.138
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10mm	Ant1	DSI4	189	836.4	27.06	27.50	1.107	0.03	0.206	0.228
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant2	DSI2	189	836.4	26.39	27.50	1.291	-0.09	0.056	0.072
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant2	DSI4	189	836.4	26.39	27.50	1.291	0.01	0.082	0.106
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	10mm	Ant2	DSI2	189	836.4	26.39	27.50	1.291	0.07	0.047	0.061
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Top Side	10mm	Ant2	DSI4	189	836.4	26.39	27.50	1.291	0.07	0.056	0.072
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	4182	836.4	24.53	25.50	1.250	0.02	0.196	0.245
21	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant1	DSI4	4182	836.4	24.53	25.50	1.250	-0.04	0.291	**0.364**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant1	DSI2	4182	836.4	24.53	25.50	1.250	0.08	0.126	0.158
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant1	DSI2	4182	836.4	24.53	25.50	1.250	-0.02	0.201	0.251
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant1	DSI4	4182	836.4	24.53	25.50	1.250	-0.14	0.232	0.290
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant2	DSI2	4182	836.4	24.72	25.50	1.197	-0.15	0.150	0.180
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant2	DSI4	4182	836.4	24.72	25.50	1.197	0.01	0.199	0.238
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant2	DSI2	4182	836.4	24.72	25.50	1.197	0.11	0.116	0.139
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant2	DSI4	4182	836.4	24.72	25.50	1.197	0.07	0.150	0.180
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant1	DSI2	26865	831.5	24.52	25.50	1.253	0.08	0.146	0.183
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant1	DSI2	26865	831.5	23.58	24.50	1.236	0.12	0.121	0.150
22	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant1	DSI4	26865	831.5	24.52	25.50	1.253	0.01	0.221	**0.277**
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant1	DSI4	26865	831.5	23.58	24.50	1.236	0.02	0.179	0.221
	LTE Band 26	15M	QPSK	1	0	-	Left Side	10mm	Ant1	DSI2	26865	831.5	24.52	25.50	1.253	-0.06	0.100	0.125
	LTE Band 26	15M	QPSK	36	0	-	Left Side	10mm	Ant1	DSI2	26865	831.5	23.58	24.50	1.236	-0.03	0.081	0.100
	LTE Band 26	15M	QPSK	1	0	-	Right Side	10mm	Ant1	DSI2	26865	831.5	24.52	25.50	1.253	0.02	0.142	0.178
	LTE Band 26	15M	QPSK	36	0	-	Right Side	10mm	Ant1	DSI2	26865	831.5	23.58	24.50	1.236	-0.1	0.117	0.145
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	10mm	Ant1	DSI4	26865	831.5	24.52	25.50	1.253	0.06	0.163	0.204
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	10mm	Ant1	DSI4	26865	831.5	23.58	24.50	1.236	-0.01	0.131	0.162
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	26865	831.5	24.27	25.50	1.327	-0.08	0.096	0.127
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant2	DSI2	26865	831.5	23.37	24.50	1.297	-0.17	0.086	0.112
	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant2	DSI4	26865	831.5	24.27	25.50	1.327	0.03	0.140	0.186
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant2	DSI4	26865	831.5	23.37	24.50	1.297	-0.01	0.114	0.148
	LTE Band 26	15M	QPSK	1	0	-	Left Side	10mm	Ant2	DSI2	26865	831.5	24.27	25.50	1.327	-0.12	0.062	0.082
	LTE Band 26	15M	QPSK	36	0	-	Left Side	10mm	Ant2	DSI2	26865	831.5	23.37	24.50	1.297	-0.04	0.053	0.069
	LTE Band 26	15M	QPSK	1	0	-	Top Side	10mm	Ant2	DSI4	26865	831.5	24.27	25.50	1.327	0.03	0.100	0.133
	LTE Band 26	15M	QPSK	36	0	-	Top Side	10mm	Ant2	DSI4	26865	831.5	23.37	24.50	1.297	0.01	0.082	0.106

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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																		
23	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	0.09	0.624	**0.850**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	1312	1712.4	24.06	25.50	1.393	0.04	0.608	0.847
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	1513	1752.6	24.10	25.50	1.380	-0.05	0.612	0.845
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant1	DSI4	1413	1732.6	20.20	21.50	1.349	0.05	0.259	0.349
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	-0.1	0.119	0.162
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	0.06	0.079	0.108
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant1	DSI4	1413	1732.6	20.20	21.50	1.349	0.04	0.397	0.536
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	0.15	0.544	0.741
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	19mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	0.11	0.435	0.592
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant2	DSI2	1413	1732.6	23.11	23.50	1.094	0.07	0.652	0.713
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant2	DSI4	1413	1732.6	17.43	18.50	1.279	0.06	0.496	0.635
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant2	DSI2	1413	1732.6	23.11	23.50	1.094	0.02	0.149	0.163
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant2	DSI4	1413	1732.6	17.43	18.50	1.279	0.06	0.608	0.778
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant2	DSI2	1413	1732.6	23.11	23.50	1.094	0.11	0.648	0.709
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	1413	1732.6	23.11	23.50	1.094	0.08	0.750	0.820
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	1312	1712.4	23.08	23.50	1.102	0.12	0.614	0.676
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	1513	1752.6	23.09	23.50	1.099	-0.06	0.713	0.784
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	-0.03	0.620	0.793
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant1	DSI2	132322	1745	23.48	24.50	1.265	-0.05	0.483	0.611
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant1	DSI4	132322	1745	20.55	21.50	1.245	0.06	0.444	0.553
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant1	DSI4	132322	1745	20.46	21.50	1.271	0.05	0.446	0.567
	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	0.05	0.285	0.365
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant1	DSI2	132322	1745	23.48	24.50	1.265	-0.18	0.229	0.290
	LTE Band 66	20M	QPSK	1	0	-	Right Side	10mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	0.05	0.195	0.249
	LTE Band 66	20M	QPSK	50	0	-	Right Side	10mm	Ant1	DSI2	132322	1745	23.48	24.50	1.265	-0.19	0.154	0.195
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	10mm	Ant1	DSI4	132322	1745	20.55	21.50	1.245	0.05	0.732	0.911
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	10mm	Ant1	DSI4	132072	1720	20.25	21.50	1.334	-0.11	0.680	0.907
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	10mm	Ant1	DSI4	132572	1770	20.32	21.50	1.312	0.05	0.691	0.907
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant1	DSI4	132322	1745	20.46	21.50	1.271	-0.1	0.707	0.898
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant1	DSI4	132072	1720	20.08	21.50	1.387	0.06	0.650	0.901
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant1	DSI4	132572	1770	20.33	21.50	1.309	-0.08	0.687	0.899
	LTE Band 66	20M	QPSK	100	0	-	Bottom Side	10mm	Ant1	DSI4	132322	1745	20.34	21.50	1.306	0.08	0.690	0.901
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	0.03	0.328	0.420
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	19mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	0.09	0.506	0.647
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	132322	1745	24.89	25.50	1.151	0.16	0.722	0.831
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	132072	1720	24.62	25.50	1.225	-0.04	0.586	0.718
24	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	-0.03	0.839	**0.999**
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant2	DSI2	132322	1745	23.85	24.50	1.161	-0.17	0.590	0.685
	LTE Band 66	20M	QPSK	100	0	-	Front	10mm	Ant2	DSI2	132322	1745	23.91	24.50	1.146	0.05	0.581	0.666
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant2	DSI4	132322	1745	18.46	19.00	1.132	-0.12	0.354	0.401
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant2	DSI4	132322	1745	18.36	19.00	1.159	-0.09	0.352	0.408
	LTE Band 66	20M	QPSK	1	0	-	Left Side	10mm	Ant2	DSI2	132322	1745	24.89	25.50	1.151	-0.19	0.145	0.167
	LTE Band 66	20M	QPSK	50	0	-	Left Side	10mm	Ant2	DSI2	132322	1745	23.85	24.50	1.161	0.09	0.120	0.139
	LTE Band 66	20M	QPSK	1	0	-	Top Side	10mm	Ant2	DSI4	132322	1745	18.46	19.00	1.132	-0.12	0.408	0.462
	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant2	DSI4	132322	1745	18.36	19.00	1.159	-0.16	0.399	0.462
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	132322	1745	24.89	25.50	1.151	0.13	0.707	0.814
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	132072	1720	24.62	25.50	1.225	-0.18	0.581	0.712
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	0.06	0.780	0.929
	LTE Band 66	20M	QPSK	100	0	-	Back	15mm	Ant2	DSI2	132322	1745	23.91	24.50	1.146	0.03	0.561	0.643
	LTE Band 66	20M	QPSK	1	0	-	Top Side	15mm	Ant2	DSI2	132322	1745	24.89	25.50	1.151	-0.01	0.785	0.903
	LTE Band 66	20M	QPSK	1	0	-	Top Side	15mm	Ant2	DSI2	132072	1720	24.62	25.50	1.225	0.17	0.710	0.869
	LTE Band 66	20M	QPSK	1	0	-	Top Side	15mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	-0.04	0.790	0.941
	LTE Band 66	20M	QPSK	100	0	-	Top Side	15mm	Ant2	DSI2	132322	1745	23.91	24.50	1.146	-0.12	0.646	0.740

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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 (1 Tx slot)	Front	10mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	0.13	0.178	0.194
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant1	DSI4	661	1880	27.52	28.00	1.117	-0.03	0.129	0.144
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Side	10mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	0.02	0.118	0.129
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Right Side	10mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	0.04	0.050	0.055
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Bottom Side	10mm	Ant1	DSI4	661	1880	27.52	28.00	1.117	-0.09	0.237	0.265
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	15mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	0.1	0.095	0.104
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Bottom Side	19mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	-0.06	0.125	0.136
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	10mm	Ant2	DSI2	661	1880	30.35	30.50	1.035	0.08	0.303	0.314
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant2	DSI4	661	1880	25.89	26.00	1.026	0.05	0.338	0.347
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Side	10mm	Ant2	DSI2	661	1880	30.35	30.50	1.035	-0.19	0.082	0.085
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Top Side	10mm	Ant2	DSI4	661	1880	25.89	26.00	1.026	0.08	0.381	0.391
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	15mm	Ant2	DSI2	661	1880	30.35	30.50	1.035	0.17	0.313	0.324
25	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Top Side	15mm	Ant2	DSI2	661	1880	30.35	30.50	1.035	0.07	0.452	**0.468**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	-0.16	0.461	0.635
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant1	DSI4	9400	1880	20.12	21.50	1.374	-0.05	0.225	0.309
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	0.09	0.223	0.307
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	10mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	-0.05	0.107	0.147
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant1	DSI4	9400	1880	20.12	21.50	1.374	0.03	0.342	0.470
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	0.06	0.268	0.369
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	19mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	0.02	0.403	0.555
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	0.03	0.650	0.700
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant2	DSI4	9400	1880	17.03	18.00	1.250	0.04	0.380	0.475
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	10mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	0.08	0.201	0.216
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant2	DSI4	9400	1880	17.03	18.00	1.250	0.01	0.636	0.795
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	0.02	0.717	0.772
26	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	-0.19	0.973	**1.047**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	9262	1852.4	23.09	23.50	1.099	0.05	0.781	0.858
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	9538	1907.6	23.11	23.50	1.094	-0.18	0.784	0.858
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	-0.01	0.565	0.796
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant1	DSI2	18900	1880	22.96	24.50	1.426	0.03	0.446	0.636
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant1	DSI4	18900	1880	20.07	21.50	1.390	-0.08	0.295	0.410
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant1	DSI4	18900	1880	20.03	21.50	1.403	-0.13	0.298	0.418
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	-0.01	0.292	0.412
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant1	DSI2	18900	1880	22.96	24.50	1.426	0.02	0.243	0.346
	LTE Band 2	20M	QPSK	1	0	-	Right Side	10mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	0.07	0.139	0.196
	LTE Band 2	20M	QPSK	50	0	-	Right Side	10mm	Ant1	DSI2	18900	1880	22.96	24.50	1.426	0.08	0.111	0.158
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant1	DSI4	18900	1880	20.07	21.50	1.390	0.07	0.434	0.603
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	10mm	Ant1	DSI4	18900	1880	20.03	21.50	1.403	0.02	0.443	0.621
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	-0.16	0.282	0.397
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	19mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	0.16	0.361	0.509
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	18900	1880	23.49	23.50	1.002	0.05	0.632	0.633
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant2	DSI2	18900	1880	23.41	23.50	1.021	0.02	0.650	0.664
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant2	DSI4	18900	1880	17.16	18.00	1.213	0.03	0.326	0.396
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant2	DSI4	18900	1880	17.11	18.00	1.227	-0.06	0.298	0.366
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant2	DSI2	18900	1880	23.49	23.50	1.002	-0.13	0.148	0.148
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant2	DSI2	18900	1880	23.41	23.50	1.021	-0.15	0.155	0.158
	LTE Band 2	20M	QPSK	1	0	-	Top Side	10mm	Ant2	DSI4	18900	1880	17.16	18.00	1.213	0.05	0.400	0.485
	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant2	DSI4	18900	1880	17.11	18.00	1.227	-0.04	0.408	0.501
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	18900	1880	23.49	23.50	1.002	0.07	0.682	0.684
	LTE Band 2	20M	QPSK	1	0	-	Top Side	15mm	Ant2	DSI2	18900	1880	23.49	23.50	1.002	0.11	0.847	0.849
	LTE Band 2	20M	QPSK	1	0	-	Top Side	15mm	Ant2	DSI2	18700	1860	23.40	23.50	1.023	0.09	0.839	0.859
	LTE Band 2	20M	QPSK	1	0	-	Top Side	15mm	Ant2	DSI2	19100	1900	23.41	23.50	1.021	0.04	0.789	0.806
27	LTE Band 2	20M	QPSK	100	0	-	Top Side	15mm	Ant2	DSI2	19100	1900	23.35	23.50	1.035	0.11	0.855	**0.885**

	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant4	DSI2	18900	1880	23.81	25.50	1.476	0.07	0.063	0.093
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant4	DSI2	18900	1880	23.01	24.50	1.409	0.05	0.063	0.089
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant4	DSI2	18900	1880	23.81	25.50	1.476	0.09	0.188	0.277
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant4	DSI2	18900	1880	23.01	24.50	1.409	0.06	0.199	0.280
	LTE Band 2	20M	QPSK	1	0	-	Left Side	10mm	Ant4	DSI2	18900	1880	23.81	25.50	1.476	0.11	0.165	0.243
	LTE Band 2	20M	QPSK	50	0	-	Left Side	10mm	Ant4	DSI2	18900	1880	23.01	24.50	1.409	0.02	0.187	0.264

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
										2600MHz									
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	0.03	0.787	0.906
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	20850	2510	23.19	24.00	1.205	-	-	-0.08	0.741	0.893
28	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	21350	2560	23.38	24.00	1.153	-	-	0.09	0.796	**0.918**
	LTE Band 7C	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	21350+21152	2560+2540.2	23.06	24.00	1.242	-	-	0.02	0.708	0.879
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	21100	2535	22.10	23.00	1.230	-	-	0.11	0.635	0.781
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	20850	2510	21.92	23.00	1.282	-	-	0.03	0.591	0.758
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	21350	2560	21.96	23.00	1.271	-	-	0.02	0.590	0.750
	LTE Band 7	20M	QPSK	100	0	Front	10mm	Ant1	DSI2	21100	2535	22.09	23.00	1.233	-	-	0.03	0.670	0.826
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Ant1	DSI4	21100	2535	17.77	18.50	1.183	-	-	0.01	0.496	0.587
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Ant1	DSI4	21100	2535	17.68	18.50	1.208	-	-	0.06	0.491	0.593
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	0.08	0.061	0.070
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Ant1	DSI2	21100	2535	22.10	23.00	1.230	-	-	0.03	0.053	0.065
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	0.09	0.102	0.117
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	Ant1	DSI2	21100	2535	22.10	23.00	1.230	-	-	0.06	0.083	0.102
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Ant1	DSI4	21100	2535	17.77	18.50	1.183	-	-	-0.11	0.611	0.723
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Ant1	DSI2	20850	2510	23.19	24.00	1.205	-	-	0.05	0.587	0.707
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Ant1	DSI2	21350	2560	23.38	24.00	1.153	-	-	0.07	0.590	0.681
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	21100	2535	17.68	18.50	1.208	-	-	0.03	0.624	0.754
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI2	20850	2510	21.92	23.00	1.282	-	-	0.01	0.574	0.736
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI2	21350	2560	21.96	23.00	1.271	-	-	0.08	0.600	0.762
	LTE Band 7	20M	QPSK	100	0	Bottom Side	10mm	Ant1	DSI2	21100	2535	22.09	23.00	1.233	-	-	0.03	0.611	0.753
	LTE Band 7	20M	QPSK	1	0	Back	15mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	-0.15	0.444	0.511
	LTE Band 7	20M	QPSK	1	0	Bottom Side	19mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	0.08	0.724	0.833
	LTE Band 7	20M	QPSK	1	0	Bottom Side	19mm	Ant1	DSI2	20850	2510	23.19	24.00	1.205	-	-	-0.1	0.711	0.857
	LTE Band 7	20M	QPSK	1	0	Bottom Side	19mm	Ant1	DSI2	21350	2560	23.38	24.00	1.153	-	-	-0.1	0.700	0.807
	LTE Band 7	20M	QPSK	100	0	Bottom Side	19mm	Ant1	DSI2	21100	2535	22.09	23.00	1.233	-	-	-0.02	0.678	0.836
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant2	DSI2	21100	2535	23.16	24.00	1.213	-	-	-0.01	0.372	0.451
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant2	DSI2	21100	2535	22.02	23.00	1.253	-	-	-0.11	0.303	0.380
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Ant2	DSI4	21100	2535	17.64	18.00	1.086	-	-	0.07	0.198	0.215
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Ant2	DSI4	21100	2535	17.47	18.00	1.130	-	-	0.03	0.198	0.224
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Ant2	DSI2	21100	2535	23.16	24.00	1.213	-	-	-0.19	0.313	0.380
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Ant2	DSI2	21100	2535	22.02	23.00	1.253	-	-	0.07	0.256	0.321
	LTE Band 7	20M	QPSK	1	0	Top Side	10mm	Ant2	DSI4	21100	2535	17.64	18.00	1.086	-	-	0.15	0.218	0.237
	LTE Band 7	20M	QPSK	50	0	Top Side	10mm	Ant2	DSI4	21100	2535	17.47	18.00	1.130	-	-	-0.12	0.216	0.244
	LTE Band 7	20M	QPSK	1	0	Back	15mm	Ant2	DSI2	21100	2535	23.16	24.00	1.213	-	-	0.16	0.351	0.426
	LTE Band 7	20M	QPSK	1	0	Top Side	15mm	Ant2	DSI2	21100	2535	23.16	24.00	1.213	-	-	-0.06	0.417	0.506
	LTE Band 7C	20M	QPSK	1	0	Top Side	15mm	Ant2	DSI2	21100+20902	2535+2515.2	23.02	24.00	1.253	-	-	0.02	0.400	0.501
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant4	DSI2	21100	2535	22.15	23.00	1.216	-	-	0.03	0.068	0.083
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant4	DSI2	21100	2535	20.81	22.00	1.315	-	-	-0.09	0.066	0.087
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Ant4	DSI2	21100	2535	22.15	23.00	1.216	-	-	-0.03	0.177	0.215
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Ant4	DSI2	21100	2535	20.81	22.00	1.315	-	-	-0.11	0.178	0.234
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Ant4	DSI2	21100	2535	22.15	23.00	1.216	-	-	-0.1	0.122	0.148
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Ant4	DSI2	21100	2535	20.81	22.00	1.315	-	-	0.12	0.137	0.180
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	0.05	0.338	0.457
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	40620	2593	23.40	24.50	1.288	62.9	1.006	0.05	0.276	0.358

	LTE Band 41	20M	QPSK	1	0	Back	10mm	Ant1	DSI4	40620	2593	20.26	20.50	1.057	62.9	1.006	0.04	0.304	0.323
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Ant1	DSI4	40620	2593	20.13	20.50	1.089	62.9	1.006	-0.01	0.300	0.329
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	0.06	0.038	0.051
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	Ant1	DSI2	40620	2593	23.40	24.50	1.288	62.9	1.006	0.06	0.029	0.038
	LTE Band 41	20M	QPSK	1	0	Right Side	10mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	0.06	0.058	0.078
	LTE Band 41	20M	QPSK	50	0	Right Side	10mm	Ant1	DSI2	40620	2593	23.40	24.50	1.288	62.9	1.006	0.1	0.051	0.066
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Ant1	DSI4	40620	2593	20.26	20.50	1.057	62.9	1.006	0.03	0.520	0.553
29	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	40620	2593	20.13	20.50	1.089	62.9	1.006	0.11	0.562	**0.616**
	LTE Band 41C	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	40620+40818	2593+2612.8	19.91	20.50	1.146	62.9	1.006	0.06	0.523	0.603
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	39750	2506	19.95	20.50	1.135	62.9	1.006	0.11	0.538	0.614
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	40185	2549.5	19.88	20.50	1.153	62.9	1.006	0.11	0.521	0.605
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	41055	2636.5	20.12	20.50	1.091	62.9	1.006	0.11	0.523	0.574
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Ant1	DSI4	41490	2680	19.78	20.50	1.180	62.9	1.006	0.11	0.518	0.615
	LTE Band 41	20M	QPSK	100	0	Bottom Side	10mm	Ant1	DSI4	40620	2593	20.07	20.50	1.104	62.9	1.006	0.11	0.525	0.583
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	0.19	0.184	0.249
	LTE Band 41	20M	QPSK	1	0	Bottom Side	19mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	-0.11	0.419	0.566
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Ant2	DSI2	40620	2593	24.70	25.50	1.202	62.9	1.006	0.09	0.278	0.336
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Ant2	DSI2	40620	2593	23.89	24.50	1.151	62.9	1.006	-0.16	0.218	0.252
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Ant2	DSI4	40620	2593	20.55	21.50	1.245	62.9	1.006	0.09	0.230	0.288
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Ant2	DSI4	40620	2593	20.50	21.50	1.259	62.9	1.006	0.07	0.228	0.289
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	Ant2	DSI2	40620	2593	24.70	25.50	1.202	62.9	1.006	-0.15	0.225	0.272
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	Ant2	DSI2	40620	2593	23.89	24.50	1.151	62.9	1.006	0.06	0.183	0.212
	LTE Band 41	20M	QPSK	1	0	Top Side	10mm	Ant2	DSI4	40620	2593	20.55	21.50	1.245	62.9	1.006	0.18	0.266	0.333
	LTE Band 41	20M	QPSK	50	0	Top Side	10mm	Ant2	DSI4	40620	2593	20.50	21.50	1.259	62.9	1.006	0.08	0.264	0.334
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Ant2	DSI2	40620	2593	24.70	25.50	1.202	62.9	1.006	0.16	0.242	0.293
	LTE Band 41	20M	QPSK	1	0	Top Side	15mm	Ant2	DSI2	40620	2593	24.70	25.50	1.202	62.9	1.006	0.13	0.306	0.370
	LTE Band 41C	20M	QPSK	1	0	Top Side	15mm	Ant2	DSI2	40620+40818	2593+2612.8	24.44	25.50	1.276	62.9	1.006	0.1	0.285	0.366

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	0.02	0.085	0.126
30	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	0.17	0.126	**0.187**
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	-0.02	0.000	0.000
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	0.01	0.108	0.160
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	0.05	0.082	0.122
31	Bluetooth	1Mbps	Back	10mm	Ant3	Full	78	2480	9.77	11.00	1.328	77.05	1.298	0.07	0.010	**0.017**
5000MHz																
	WLAN5.2GHz	802.11n-HT40 MCS0	Front	10mm	Ant3	Full	38	5190	14.24	15.50	1.337	94.89	1.054	0.02	0.072	0.101
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	10mm	Ant3	Full	38	5190	14.24	15.50	1.337	94.89	1.054	0.04	0.164	0.231
	WLAN5.2GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant3	Full	38	5190	14.24	15.50	1.337	94.89	1.054	0.07	0.057	0.080
	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant3	Full	38	5190	14.24	15.50	1.337	94.89	1.054	0.03	0.093	0.131
32	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant3	Full	38	5190	14.24	15.50	1.337	94.89	1.054	0.04	0.236	**0.333**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	0.02	0.110	0.171
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	0.09	0.234	0.363
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Side	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	0.05	0.056	0.087
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	0.04	0.121	0.188
33	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	-0.03	0.324	**0.503**

15.3 Body Worn Accessory SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	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	10mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.06	0.157	0.217
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Ant1	DSI2	23095	707.5	23.10	24.50	1.380	-0.15	0.111	0.153
	LTE Band 12	10M	QPSK	1	0	Back	10mm	Ant1	DSI4	23095	707.5	22.69	24.00	1.352	-0.19	0.172	0.233
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Ant1	DSI4	23095	707.5	22.55	24.00	1.396	0.03	0.156	0.218
	LTE Band 12	10M	QPSK	1	0	Back	15mm	Ant1	DSI2	23095	707.5	24.10	25.50	1.380	0.08	0.152	0.210
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Ant2	DSI2	23095	707.5	24.36	25.50	1.300	0.16	0.136	0.177
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Ant2	DSI2	23095	707.5	23.36	24.50	1.300	0.01	0.105	0.137
34	LTE Band 12	10M	QPSK	1	0	Back	10mm	Ant2	DSI4	23095	707.5	24.36	25.50	1.300	-0.08	0.206	**0.268**
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Ant2	DSI4	23095	707.5	23.36	24.50	1.300	0.06	0.170	0.221
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Ant1	DSI2	23230	782	24.28	25.50	1.324	0.14	0.172	0.228
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Ant1	DSI2	23230	782	23.32	24.50	1.312	0.04	0.141	0.185
35	LTE Band 13	10M	QPSK	1	0	Back	10mm	Ant1	DSI4	23230	782	22.93	24.00	1.279	-0.06	0.208	**0.266**
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Ant1	DSI4	23230	782	22.90	24.00	1.288	0.02	0.206	0.265
	LTE Band 13	10M	QPSK	1	0	Back	15mm	Ant1	DSI2	23230	782	24.28	25.50	1.324	0.16	0.198	0.262
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Ant2	DSI2	23230	782	24.55	25.50	1.245	-0.1	0.142	0.177
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Ant2	DSI2	23230	782	23.67	24.50	1.211	0.11	0.114	0.138
	LTE Band 13	10M	QPSK	1	0	Back	10mm	Ant2	DSI4	23230	782	24.55	25.50	1.245	0.01	0.191	0.238
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Ant2	DSI4	23230	782	23.67	24.50	1.211	0.14	0.150	0.182

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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 (4 Tx slots)	Front	10mm	Ant1	DSI2	189	836.4	27.06	27.50	1.107	0.09	0.138	0.153
36	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant1	DSI4	189	836.4	27.06	27.50	1.107	-0.1	0.213	**0.236**
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant1	DSI2	189	836.4	27.06	27.50	1.107	0.11	0.156	0.173
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	10mm	Ant2	DSI2	189	836.4	26.39	27.50	1.291	-0.09	0.056	0.072
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant2	DSI4	189	836.4	26.39	27.50	1.291	0.01	0.082	0.106
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	4182	836.4	24.53	25.50	1.250	0.02	0.196	0.245
37	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant1	DSI4	4182	836.4	24.53	25.50	1.250	-0.04	0.291	**0.364**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant1	DSI2	4182	836.4	24.53	25.50	1.250	0.01	0.269	0.336
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant2	DSI2	4182	836.4	24.72	25.50	1.197	-0.15	0.150	0.180
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant2	DSI4	4182	836.4	24.72	25.50	1.197	0.01	0.199	0.238
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant1	DSI2	26865	831.5	24.52	25.50	1.253	0.08	0.146	0.183
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant1	DSI2	26865	831.5	23.58	24.50	1.236	0.12	0.121	0.150
38	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant1	DSI4	26865	831.5	24.52	25.50	1.253	0.01	0.221	**0.277**
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant1	DSI4	26865	831.5	23.58	24.50	1.236	0.02	0.179	0.221
	LTE Band 26	15M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	26865	831.5	24.27	25.50	1.327	-0.08	0.096	0.127
	LTE Band 26	15M	QPSK	36	0	-	Front	10mm	Ant2	DSI2	26865	831.5	23.37	24.50	1.297	-0.17	0.086	0.112
	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant2	DSI4	26865	831.5	24.27	25.50	1.327	0.03	0.140	0.186
	LTE Band 26	15M	QPSK	36	0	-	Back	10mm	Ant2	DSI4	26865	831.5	23.37	24.50	1.297	-0.01	0.114	0.148

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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																		
39	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	0.09	0.624	**0.850**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	1312	1712.4	24.06	25.50	1.393	0.04	0.608	0.847
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	1513	1752.6	24.10	25.50	1.380	-0.05	0.612	0.845
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant1	DSI4	1413	1732.6	20.20	21.50	1.349	0.05	0.259	0.349
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant1	DSI2	1413	1732.6	24.16	25.50	1.361	0.15	0.544	0.741
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant2	DSI2	1413	1732.6	23.11	23.50	1.094	0.07	0.652	0.713
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant2	DSI4	1413	1732.6	17.43	18.50	1.279	0.06	0.496	0.635
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant2	DSI2	1413	1732.6	23.11	23.50	1.094	0.11	0.648	0.709
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	-0.03	0.620	0.793
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant1	DSI2	132322	1745	23.48	24.50	1.265	-0.05	0.483	0.611
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant1	DSI4	132322	1745	20.55	21.50	1.245	0.06	0.444	0.553
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant1	DSI4	132322	1745	20.46	21.50	1.271	0.05	0.446	0.567
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant1	DSI2	132322	1745	24.43	25.50	1.279	0.03	0.328	0.420
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	132322	1745	24.89	25.50	1.151	0.16	0.722	0.831
	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	132072	1720	24.62	25.50	1.225	-0.04	0.586	0.718
40	LTE Band 66	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	-0.03	0.839	**0.999**
	LTE Band 66	20M	QPSK	50	0	-	Front	10mm	Ant2	DSI2	132322	1745	23.85	24.50	1.161	-0.17	0.590	0.685
	LTE Band 66	20M	QPSK	100	0	-	Front	10mm	Ant2	DSI2	132322	1745	23.91	24.50	1.146	0.05	0.581	0.666
	LTE Band 66	20M	QPSK	1	0	-	Back	10mm	Ant2	DSI4	132322	1745	18.46	19.00	1.132	-0.12	0.354	0.401
	LTE Band 66	20M	QPSK	50	0	-	Back	10mm	Ant2	DSI4	132322	1745	18.36	19.00	1.159	-0.09	0.352	0.408
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	132322	1745	24.89	25.50	1.151	0.13	0.707	0.814
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	132072	1720	24.62	25.50	1.225	-0.18	0.581	0.712
	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	0.06	0.710	0.846
	LTE Band 66	20M	QPSK	100	0	-	Back	15mm	Ant2	DSI2	132322	1745	23.91	24.50	1.146	0.03	0.561	0.643

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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 (1 Tx slot)	Front	10mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	0.13	0.178	0.194
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant1	DSI4	661	1880	27.52	28.00	1.117	-0.03	0.129	0.144
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	15mm	Ant1	DSI2	661	1880	30.12	30.50	1.091	0.1	0.095	0.104
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Front	10mm	Ant2	DSI2	661	1880	30.35	30.50	1.035	0.08	0.303	0.314
41	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	10mm	Ant2	DSI4	661	1880	25.89	26.00	1.026	0.05	0.338	**0.347**
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	15mm	Ant2	DSI2	661	1880	30.35	30.50	1.035	0.17	0.313	0.324
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	-0.16	0.461	0.635
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant1	DSI4	9400	1880	20.12	21.50	1.374	-0.05	0.225	0.309
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant1	DSI2	9400	1880	24.11	25.50	1.377	0.06	0.268	0.369
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	10mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	0.03	0.650	0.700
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant2	DSI4	9400	1880	17.03	18.00	1.250	0.04	0.380	0.475
42	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	-0.04	0.717	**0.772**
43	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	-0.01	0.565	**0.796**
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant1	DSI2	18900	1880	22.96	24.50	1.426	0.03	0.446	0.636
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant1	DSI4	18900	1880	20.07	21.50	1.390	-0.08	0.295	0.410
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant1	DSI4	18900	1880	20.03	21.50	1.403	-0.13	0.298	0.418
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant1	DSI2	18900	1880	24.01	25.50	1.409	-0.16	0.282	0.397
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant2	DSI2	18900	1880	23.49	23.50	1.002	0.05	0.632	0.633
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant2	DSI2	18900	1880	23.41	23.50	1.021	0.02	0.650	0.664
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant2	DSI4	18900	1880	17.16	18.00	1.213	0.03	0.326	0.396
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant2	DSI4	18900	1880	17.11	18.00	1.227	-0.06	0.298	0.366
	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant2	DSI2	18900	1880	23.49	23.50	1.002	0.06	0.682	0.684
	LTE Band 2	20M	QPSK	1	0	-	Front	10mm	Ant4	DSI2	18900	1880	23.81	25.50	1.476	0.07	0.063	0.093
	LTE Band 2	20M	QPSK	50	0	-	Front	10mm	Ant4	DSI2	18900	1880	23.01	24.50	1.409	0.05	0.063	0.089
	LTE Band 2	20M	QPSK	1	0	-	Back	10mm	Ant4	DSI2	18900	1880	23.81	25.50	1.476	0.09	0.188	0.277
	LTE Band 2	20M	QPSK	50	0	-	Back	10mm	Ant4	DSI2	18900	1880	23.01	24.50	1.409	0.06	0.199	0.280

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2600MHz																			
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	0.03	0.787	0.906
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	20850	2510	23.19	24.00	1.205	-	-	-0.08	0.741	0.893
44	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	21350	2560	23.38	24.00	1.153	-	-	0.09	0.796	**0.918**
	LTE Band 7C	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	21350+21152	2560+2540.2	23.06	24.00	1.242	-	-	0.05	0.708	0.879
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	21100	2535	22.10	23.00	1.230	-	-	0.11	0.635	0.781
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	20850	2510	21.92	23.00	1.282	-	-	0.03	0.591	0.758
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	21350	2560	21.96	23.00	1.271	-	-	0.02	0.590	0.750
	LTE Band 7	20M	QPSK	100	0	Front	10mm	Ant1	DSI2	21100	2535	22.09	23.00	1.233	-	-	0.03	0.670	0.826
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Ant1	DSI4	21100	2535	17.77	18.50	1.183	-	-	0.01	0.496	0.587
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Ant1	DSI4	21100	2535	17.68	18.50	1.208	-	-	0.06	0.491	0.593
	LTE Band 7	20M	QPSK	1	0	Back	15mm	Ant1	DSI2	21100	2535	23.39	24.00	1.151	-	-	-0.15	0.444	0.511
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant2	DSI2	21100	2535	23.16	24.00	1.213	-	-	-0.01	0.372	0.451
	LTE Band 7C	20M	QPSK	1	0	Front	10mm	Ant2	DSI2	21100+20902	2535+2515.2	23.02	24.00	1.253	-	-	-0.01	0.352	0.441
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant2	DSI2	21100	2535	22.02	23.00	1.253	-	-	-0.11	0.303	0.380
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Ant2	DSI4	21100	2535	17.64	18.00	1.086	-	-	0.07	0.198	0.215
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Ant2	DSI4	21100	2535	17.47	18.00	1.130	-	-	0.03	0.198	0.224
	LTE Band 7	20M	QPSK	1	0	Back	15mm	Ant2	DSI2	21100	2535	23.16	24.00	1.213	-	-	0.16	0.351	0.426
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Ant4	DSI2	21100	2535	22.15	23.00	1.216	-	-	0.03	0.068	0.083
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Ant4	DSI2	21100	2535	20.81	22.00	1.315	-	-	-0.09	0.066	0.087
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Ant4	DSI2	21100	2535	22.15	23.00	1.216	-	-	-0.03	0.177	0.215
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Ant4	DSI2	21100	2535	20.81	22.00	1.315	-	-	-0.11	0.178	0.234
45	LTE Band 41	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	0.05	0.338	**0.457**
	LTE Band 41C	20M	QPSK	1	0	Front	10mm	Ant1	DSI2	40620+40818	2593+2612.8	24.01	25.50	1.409	62.9	1.006	0.01	0.303	0.430
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Ant1	DSI2	40620	2593	23.40	24.50	1.288	62.9	1.006	0.05	0.276	0.358
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Ant1	DSI4	40620	2593	20.26	20.50	1.057	62.9	1.006	0.04	0.304	0.323
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Ant1	DSI4	40620	2593	20.13	20.50	1.089	62.9	1.006	-0.01	0.300	0.329
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Ant1	DSI2	40620	2593	24.22	25.50	1.343	62.9	1.006	0.19	0.184	0.249
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Ant2	DSI2	40620	2593	24.70	25.50	1.202	62.9	1.006	0.09	0.278	0.336
	LTE Band 41C	20M	QPSK	1	0	Front	10mm	Ant2	DSI2	40620+40818	2593+2612.8	24.44	25.50	1.276	62.9	1.006	0.06	0.256	0.329
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Ant2	DSI2	40620	2593	23.89	24.50	1.151	62.9	1.006	-0.16	0.218	0.252
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Ant2	DSI4	40620	2593	20.55	21.50	1.245	62.9	1.006	0.09	0.230	0.288
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Ant2	DSI4	40620	2593	20.50	21.50	1.259	62.9	1.006	0.07	0.228	0.289
	LTE Band 41	20M	QPSK	1	0	Back	15mm	Ant2	DSI2	40620	2593	24.70	25.50	1.202	62.9	1.006	0.16	0.242	0.293

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	0.02	0.085	0.126
46	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant3	Full	1	2412	17.85	19.50	1.461	98.31	1.017	0.17	0.126	**0.187**
47	Bluetooth	1Mbps	Back	10mm	Ant3	Full	78	2480	9.77	11.00	1.328	77.05	1.298	0.07	0.010	**0.017**
5000MHz																
	WLAN 5.3GHz	802.11n-HT40 MCS0	Front	10mm	Ant3	Full	62	5310	13.71	15.50	1.511	94.89	1.054	0.01	0.127	0.202
48	WLAN 5.3GHz	802.11n-HT40 MCS0	Back	10mm	Ant3	Full	62	5310	13.71	15.50	1.511	94.89	1.054	0.02	0.302	**0.481**
	WLAN 5.5GHz	802.11n-HT40 MCS0	Front	10mm	Ant3	Full	134	5670	14.38	16.00	1.453	94.89	1.054	0.06	0.195	0.299
49	WLAN 5.5GHz	802.11n-HT40 MCS0	Back	10mm	Ant3	Full	134	5670	14.38	16.00	1.453	94.89	1.054	0.01	0.455	**0.697**
	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Front	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	0.02	0.195	0.303
50	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant3	Full	155	5775	14.07	15.50	1.391	89.6	1.116	0.09	0.414	**0.643**

15.4 Product Specific SAR

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
5000MHz																
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	0mm	Ant3	Full Power	62	5310	13.71	15.50	1.511	94.89	1.054	0.07	0.408	0.650
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant3	Full Power	62	5310	13.71	15.50	1.511	94.89	1.054	0.03	0.501	0.798
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant3	Full Power	62	5310	13.71	15.50	1.511	94.89	1.054	-0.05	0.064	0.102
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant3	Full Power	62	5310	13.71	15.50	1.511	94.89	1.054	-0.01	0.188	0.299
51	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant3	Full Power	62	5310	13.71	15.50	1.511	94.89	1.054	0.07	0.545	**0.868**
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	0mm	Ant3	Full Power	134	5670	14.38	16.00	1.453	94.89	1.054	0.06	0.421	0.645
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant3	Full Power	134	5670	14.38	16.00	1.453	94.89	1.054	0.05	0.701	1.073
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant3	Full Power	134	5670	14.38	16.00	1.453	94.89	1.054	0.01	0.076	0.116
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant3	Full Power	134	5670	14.38	16.00	1.453	94.89	1.054	0.06	0.180	0.276
52	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant3	Full Power	134	5670	14.38	16.00	1.453	94.89	1.054	0.08	0.798	**1.222**

15.5 Repeated SAR Measurement

<1g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant2	DSI1	40620	2593	20.97	22.00	1.268	62.9	1.006	-0.04	0.831	1	1.060
2nd	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant2	DSI1	40620	2593	20.97	22.00	1.268	62.9	1.006	0.01	0.822	1.011	1.048
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	-	-	-0.19	0.973	1	1.047
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	15mm	Ant2	DSI2	9400	1880	23.18	23.50	1.076	-	-	0.01	0.962	1.011	1.036
1st	LTE Band 66	20M	QPSK	1	0		Front	10mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	-	-	-0.03	0.839	1	0.999
2nd	LTE Band 66	20M	QPSK	1	0		Front	10mm	Ant2	DSI2	132572	1770	24.74	25.50	1.191	-	-	0.03	0.833	1.007	0.992

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product Specific
1.	WWAN + 2.4GHz WLAN	Yes	Yes	Yes	Yes
2.	WWAN + 5GHz WLAN	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
4.	5GHz WLAN + Bluetooth	Yes	Yes	Yes	Yes
5.	WWAN + 5GHz WLAN + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP) and LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA, and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
4. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
5. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
6. WLAN2.4GHz and Bluetooth share the same antenna, so can't transmit simultaneously.
7. According to the characteristic of EUT, WLAN5GHz and Bluetooth can transmit simultaneously.
8. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
9. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
10. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
11. The reported SAR summation is calculated based on the same configuration and test position.
12. WWAN antenna always chose the worst position SAR among all WWAN bands base on head and body to do co-located with WLAN/Bluetooth. It is the most conservatively evaluation.
13. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
    iii) If SPLSR ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

16.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 10g SAR (W/kg)	1+3+4 Summed 10g SAR (W/kg)
		WWAN	WLAN2.4GHz Ant3	WLAN5GHz Ant3	Bluetooth Ant3		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
WWAN All Bands	Right Cheek	0.897	0.203	0.421	0.103	1.10	1.42
	Right Tilted	1.060	0.179	0.429	0.103	**1.24**	**1.59**
	Left Cheek	0.642	0.528	0.596	0.103	1.17	1.34
	Left Tilted	0.684	0.431	0.722	0.103	1.12	1.51

16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
		WWAN	WLAN2.4GHz Ant 3	WLAN5GHz Ant 3	Bluetooth Ant 3		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
WWAN All Bands	Front	0.999	0.126	0.171	0.017	1.13	1.19
	Back	0.929	0.187	0.363	0.017	1.12	1.31
	Left side	0.412		0.087	0.017	0.41	0.52
	Right side	0.342	0.160	0.188	0.017	0.50	0.55
	Top side	1.047	0.122	0.503	0.017	1.17	1.57
	Bottom side	0.911			0.017	0.91	0.93

16.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 10g SAR (W/kg)	1+3+4 Summed 10g SAR (W/kg)
		WWAN	WLAN2.4GHz Ant3	WLAN5GHz Ant3	Bluetooth Ant3		
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
WWAN All Bands	Front	0.999	0.126	0.303	0.017	1.13	1.32
	Back	0.846	0.187	0.697	0.017	1.03	1.56

Test Engineer : Bruce Li, Martin Li, Ricky Gu

17. Uncertainty Assessment

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

18. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

[7] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[8] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[9] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[10] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[11] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[12] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[13] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[14] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

System Check_Head_750MHz

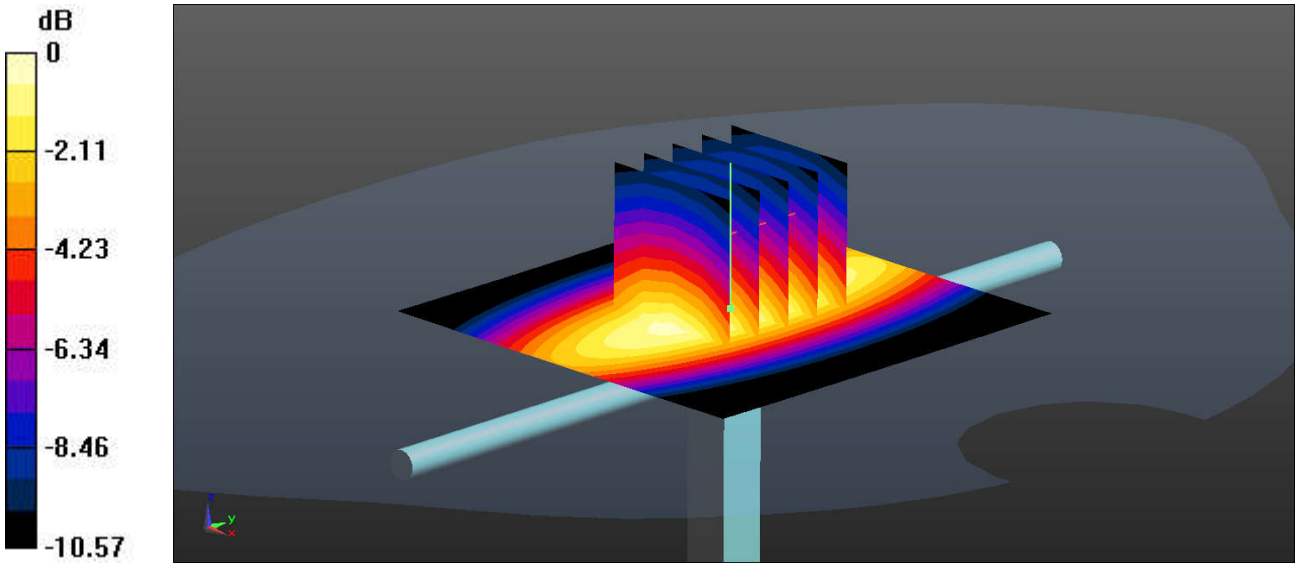
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.915 S/m; ε_r = 41.844; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.38, 10.38, 10.38); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.572 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.90 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.649 W/kg
SAR(1 g) = 0.429 W/kg; SAR(10 g) = 0.282 W/kg
Maximum value of SAR (measured) = 0.576 W/kg



0 dB = 0.576 W/kg = -2.40 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

System Check_Head_835MHz

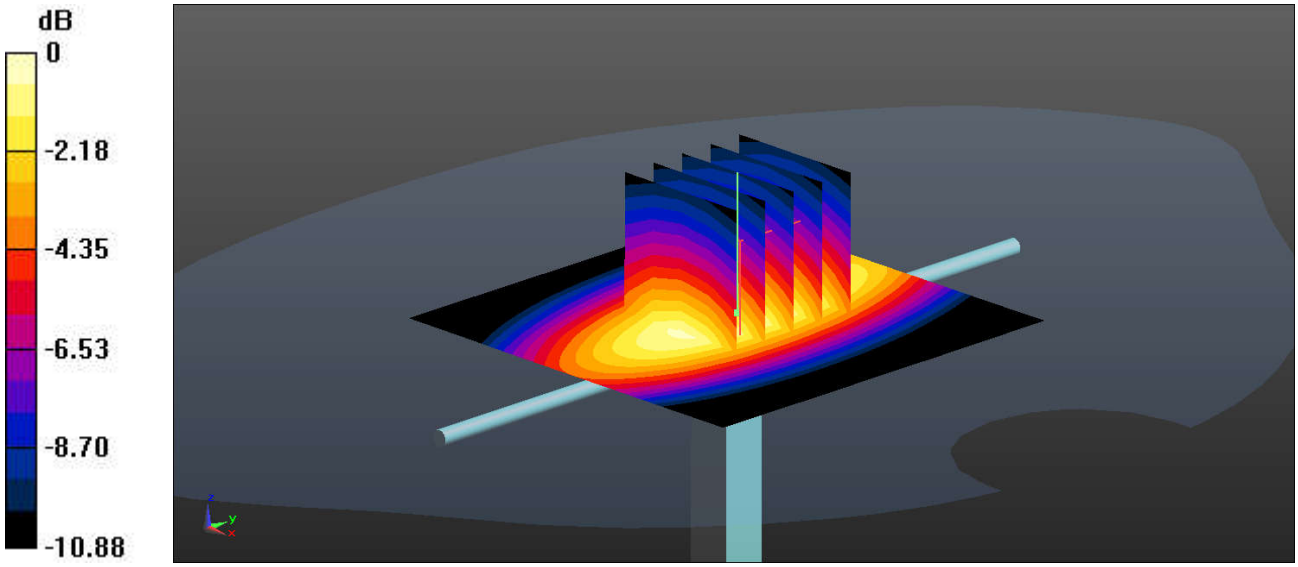
DUT: D835V2 - SN:4d258

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 835 MHz; σ = 0.938 S/m; ε_r = 42.44; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.24, 10.24, 10.24); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.689 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.08 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.780 W/kg
SAR(1 g) = 0.508 W/kg; SAR(10 g) = 0.331 W/kg
Maximum value of SAR (measured) = 0.688 W/kg



0 dB = 0.688 W/kg = -1.62 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.15

System Check_Head_1750MHz

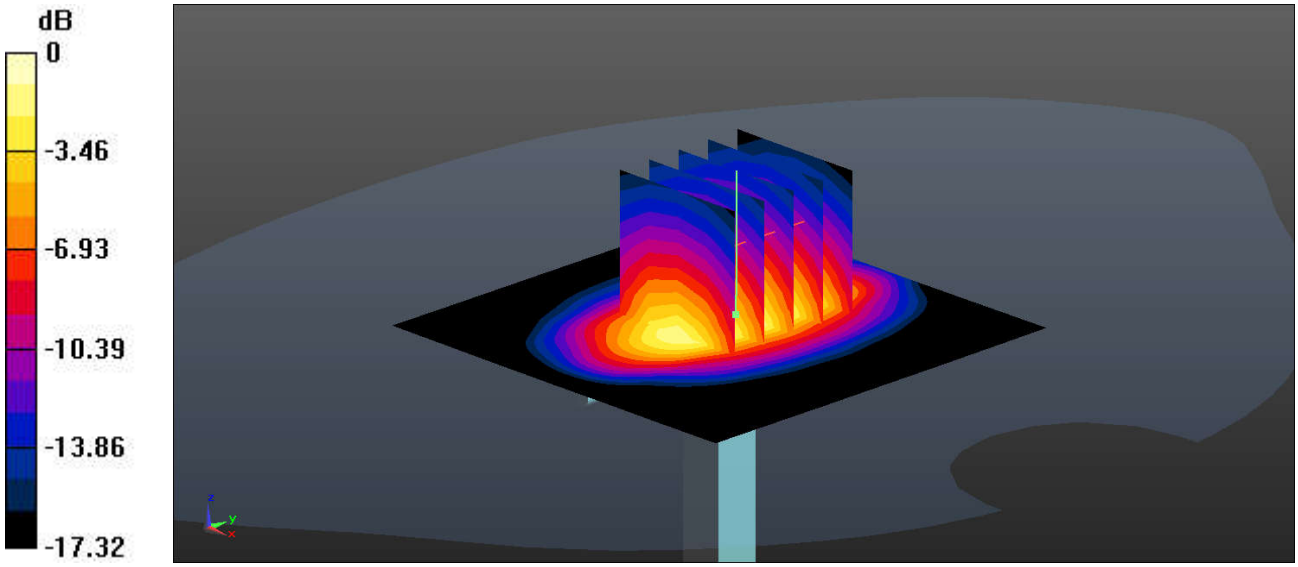
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.394 S/m; ε_r = 40.496; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.86, 8.86, 8.86); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.00 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 44.46 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 3.54 W/kg
SAR(1 g) = 1.9 W/kg; SAR(10 g) = 0.999 W/kg
Maximum value of SAR (measured) = 2.96 W/kg



0 dB = 2.96 W/kg = 4.71 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.15

System Check_Head_1900MHz

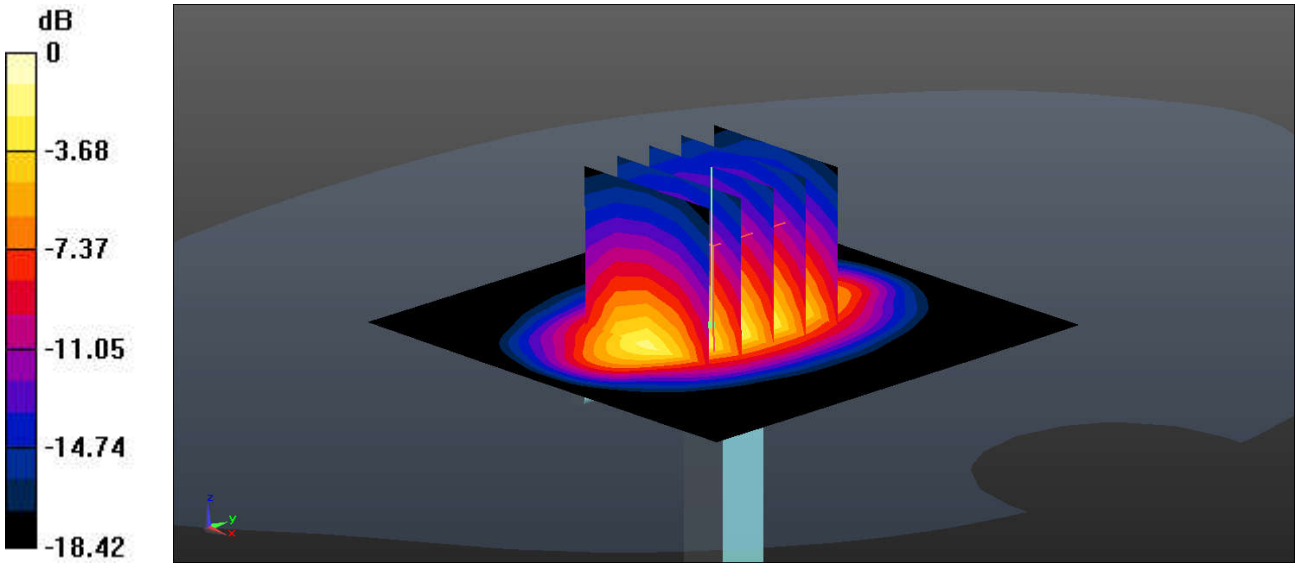
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.458 S/m; ε_r = 39.79; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.56, 8.56, 8.56); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.38 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 48.38 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 4.08 W/kg
SAR(1 g) = 2.10 W/kg; SAR(10 g) = 1.09 W/kg
Maximum value of SAR (measured) = 3.41 W/kg



0 dB = 3.41 W/kg = 5.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.16

System Check_Head_2600MHz

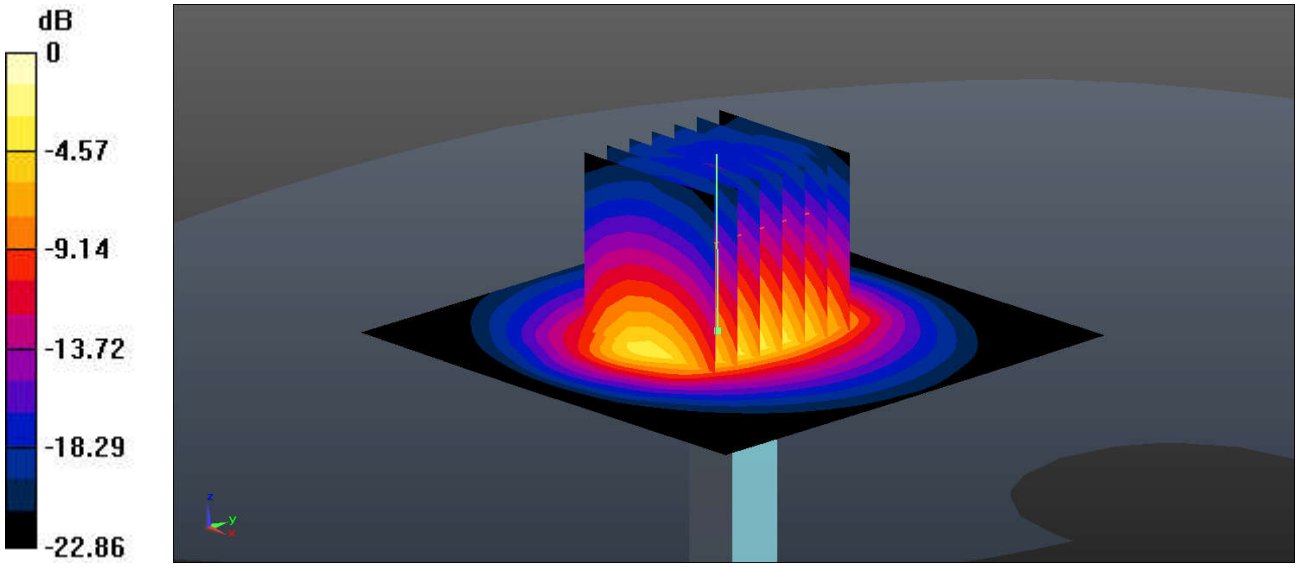
DUT: D2600V2 - SN:1061

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2600 MHz; σ = 1.975 S/m; ε_r = 40.602; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.85, 7.85, 7.85); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.82 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 48.88 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 5.94 W/kg
SAR(1 g) = 2.77 W/kg; SAR(10 g) = 1.24 W/kg
Maximum value of SAR (measured) = 4.78 W/kg



0 dB = 4.78 W/kg = 6.79 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.16

System Check_Head_750MHz

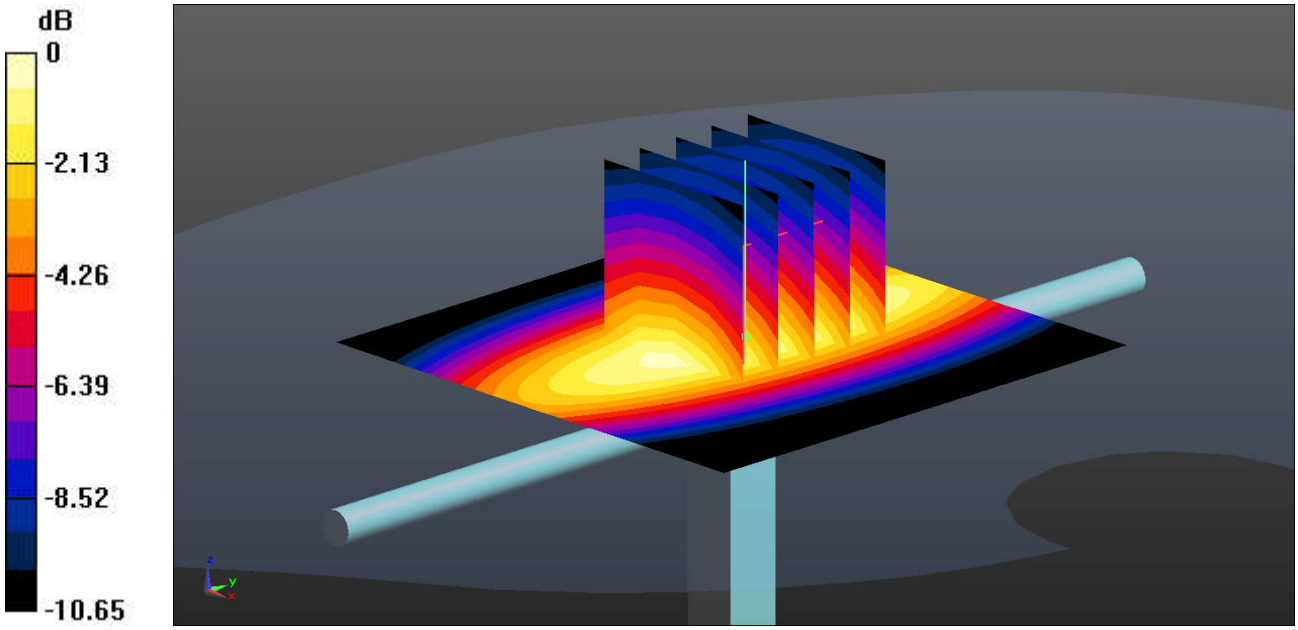
DUT: D750V3 - SN:1087

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.913 S/m; ε_r = 41.756; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.38, 10.38, 10.38); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.551 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.48 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.628 W/kg
SAR(1 g) = 0.416 W/kg; SAR(10 g) = 0.273 W/kg
Maximum value of SAR (measured) = 0.557 W/kg



0 dB = 0.557 W/kg = -2.54 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.17

System Check_Head_835MHz

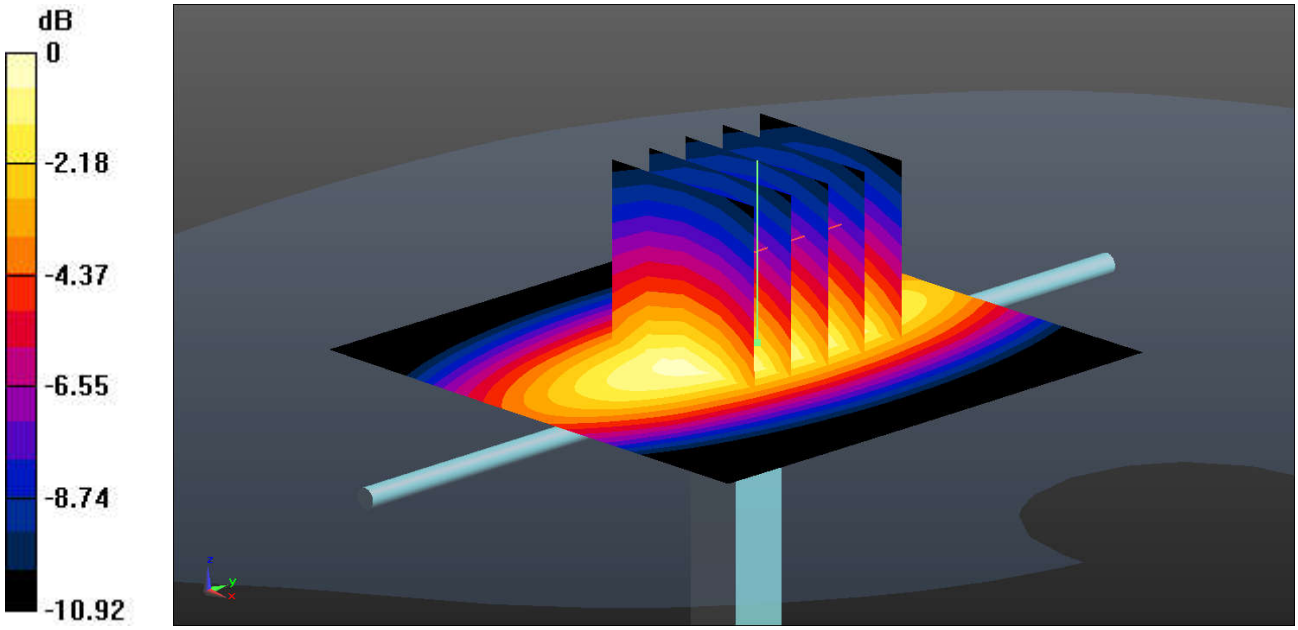
DUT: D835V2 - SN:4d258

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 835 MHz; σ = 0.929 S/m; ε_r = 40.938; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.24, 10.24, 10.24); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.706 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.96 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.801 W/kg
SAR(1 g) = 0.505 W/kg; SAR(10 g) = 0.328 W/kg
Maximum value of SAR (measured) = 0.709 W/kg



0 dB = 0.709 W/kg = -1.49 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.17

System Check_Head_1750MHz

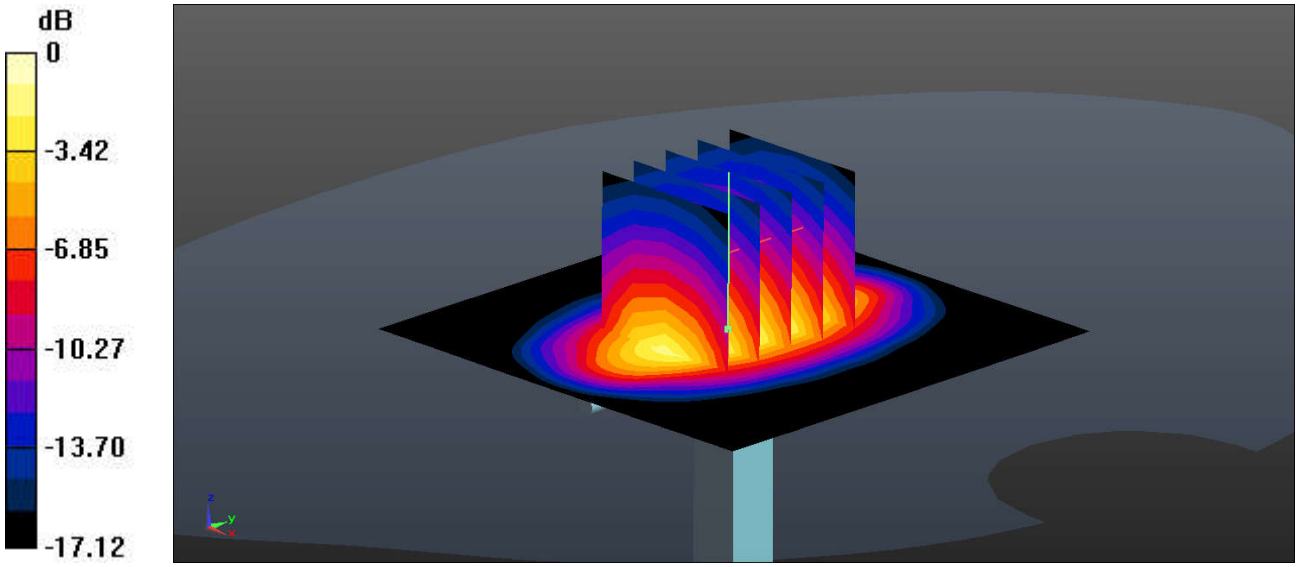
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.41 S/m; ε_r = 40.677; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.86, 8.86, 8.86); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.08 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.83 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.71 W/kg
SAR(1 g) = 1.96 W/kg; SAR(10 g) = 1.03 W/kg
Maximum value of SAR (measured) = 3.11 W/kg



0 dB = 3.11 W/kg = 4.93 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.18

System Check_Head_1900MHz

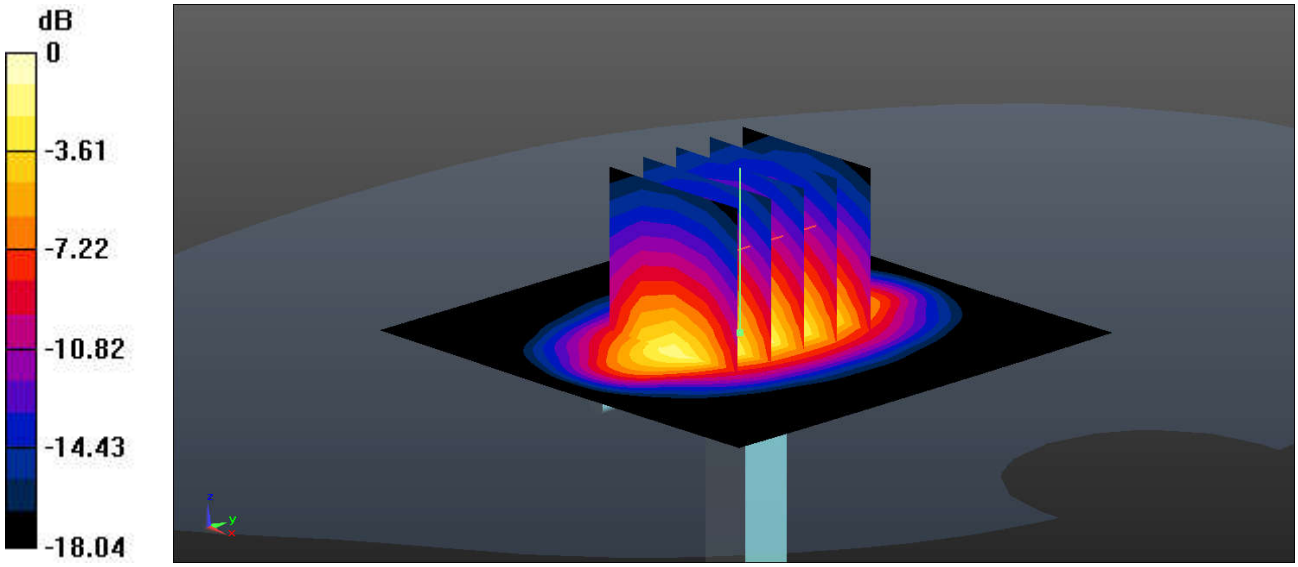
DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.453 S/m; ε_r = 39.68; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.56, 8.56, 8.56); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.32 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 49.16 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 4.04 W/kg
SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.08 W/kg
Maximum value of SAR (measured) = 3.36 W/kg



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

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.18

System Check_Head_2600MHz

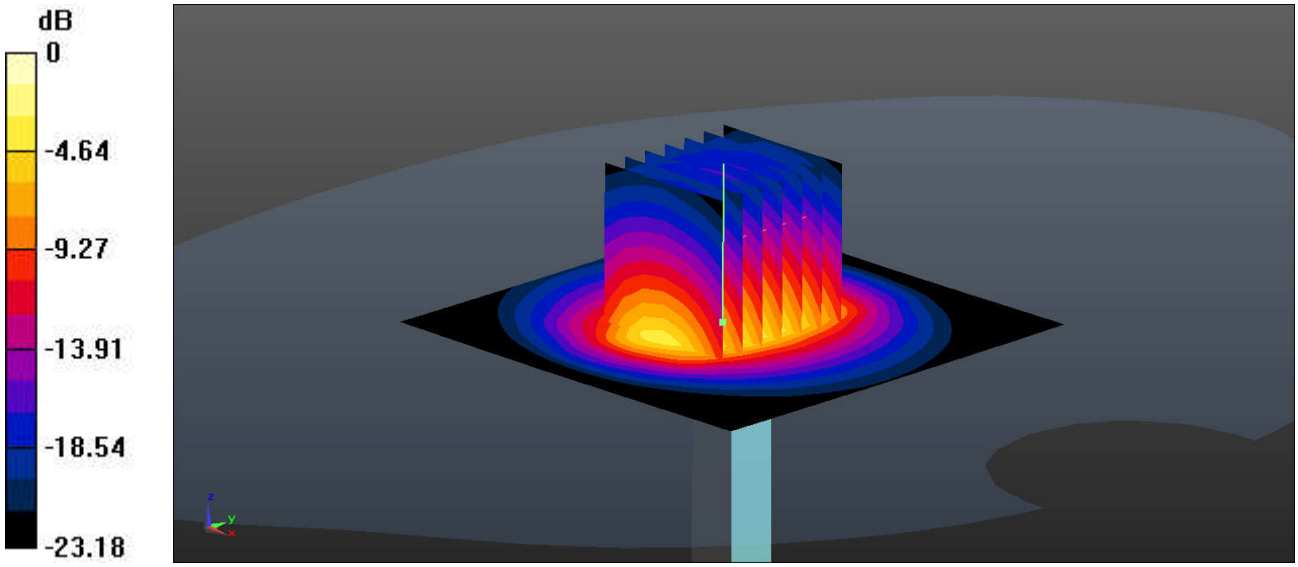
DUT: D2600V2 - SN:1061

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2600 MHz; σ = 1.922 S/m; ε_r = 38.215; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.85, 7.85, 7.85); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.69 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 49.56 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 5.81 W/kg
SAR(1 g) = 2.71 W/kg; SAR(10 g) = 1.21 W/kg
Maximum value of SAR (measured) = 4.66 W/kg



0 dB = 4.66 W/kg = 6.68 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.19

System Check_Head_2450MHz

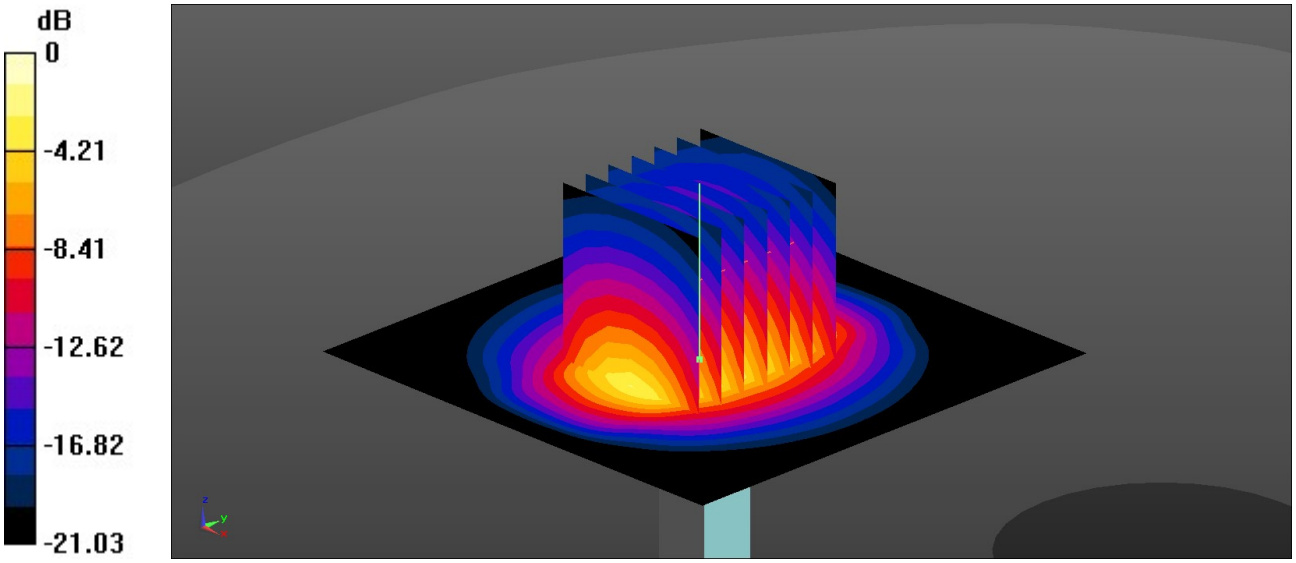
DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.824 S/m; ε_r = 39.239; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.14, 8.14, 8.14); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.38 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.15 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 5.31 W/kg
SAR(1 g) = 2.6 W/kg; SAR(10 g) = 1.22 W/kg
Maximum value of SAR (measured) = 4.32 W/kg



0 dB = 4.32 W/kg = 6.35 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.19

System Check_Head_5250MHz

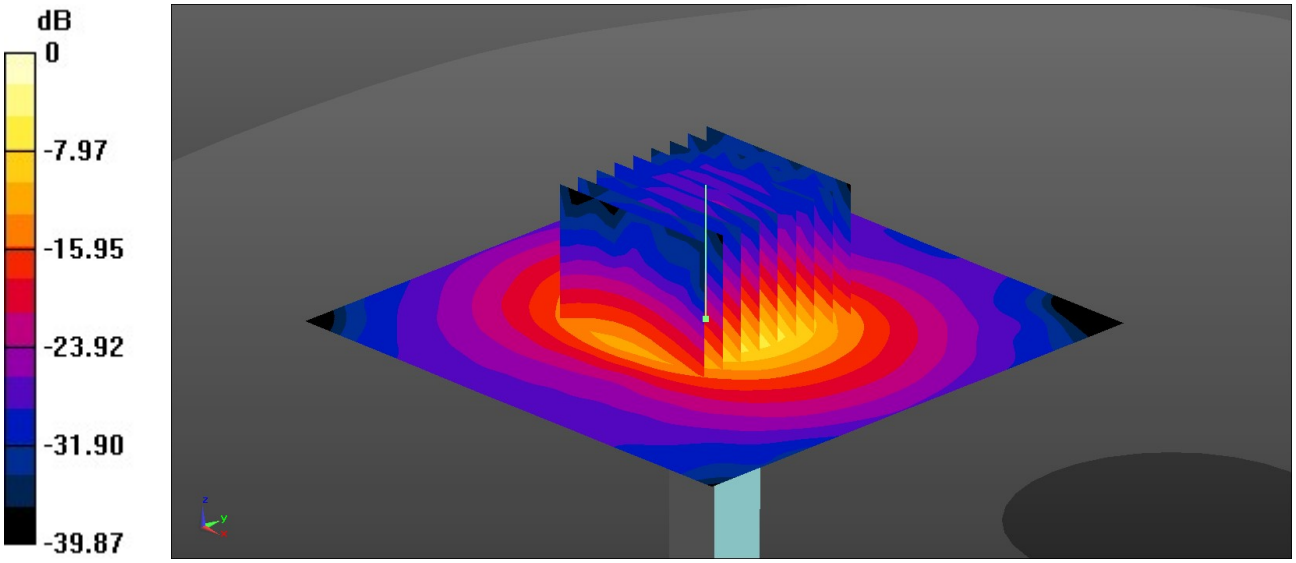
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.579 S/m; ε_r = 36.317; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(5.55, 5.55, 5.55); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.35 W/kg

Pin=50mW/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 52.46 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 14.9 W/kg
SAR(1 g) = 3.87 W/kg; SAR(10 g) = 1.12 W/kg
Maximum value of SAR (measured) = 9.58 W/kg



0 dB = 9.58 W/kg = 9.81 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.20

System Check_Head_5600MHz

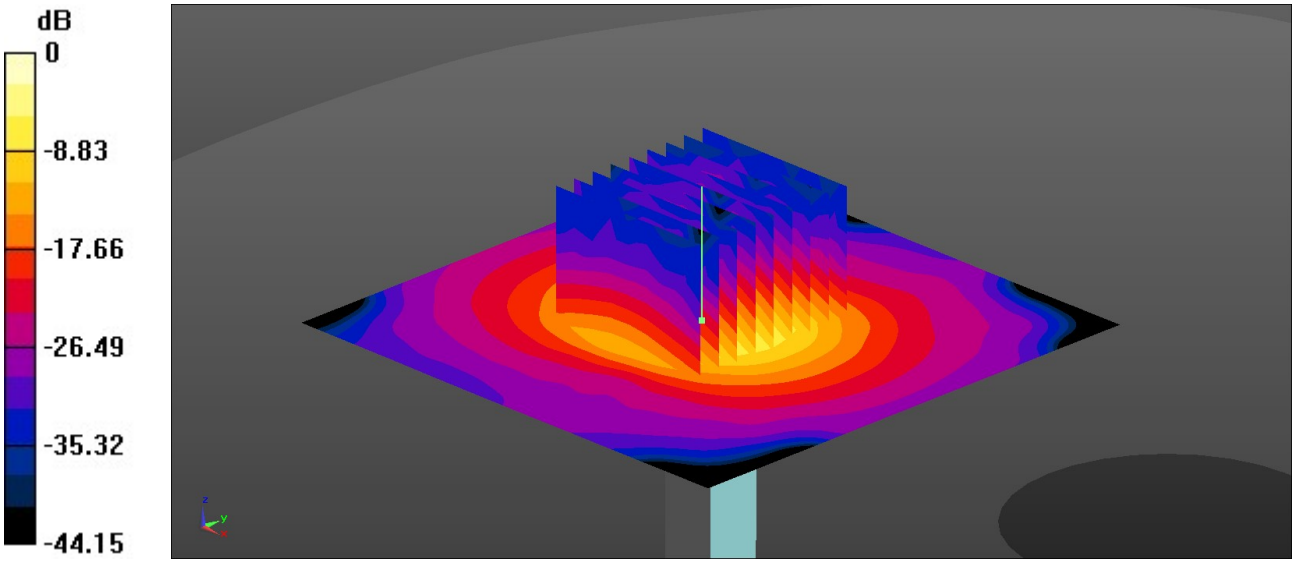
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; σ = 4.946 S/m; ε_r = 35.757; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(4.85, 4.85, 4.85); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.1 W/kg

Pin=50mW/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 51.08 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 4.21 W/kg; SAR(10 g) = 1.19 W/kg
Maximum value of SAR (measured) = 10.8 W/kg



0 dB = 10.8 W/kg = 10.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.20

System Check_Head_5750MHz

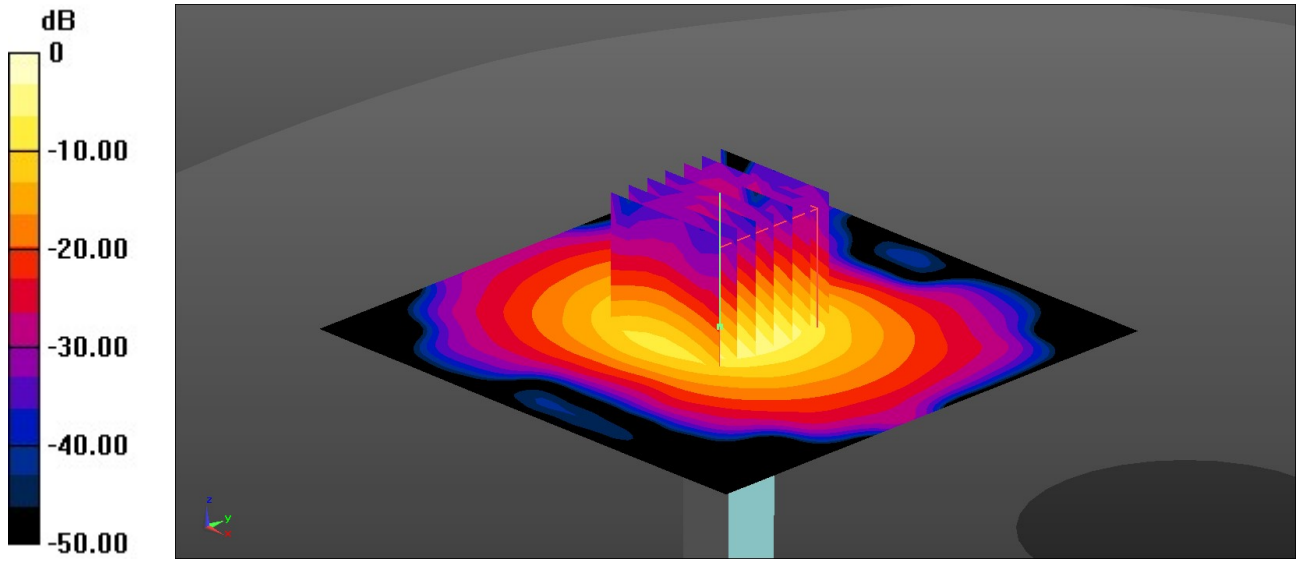
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; σ = 5.128 S/m; ε_r = 35.569; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(5.07, 5.07, 5.07); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.02 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 47.35 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 17.0 W/kg
SAR(1 g) = 3.75 W/kg; SAR(10 g) = 1.07 W/kg
Maximum value of SAR (measured) = 9.90 W/kg



0 dB = 9.90 W/kg = 9.96 dBW/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

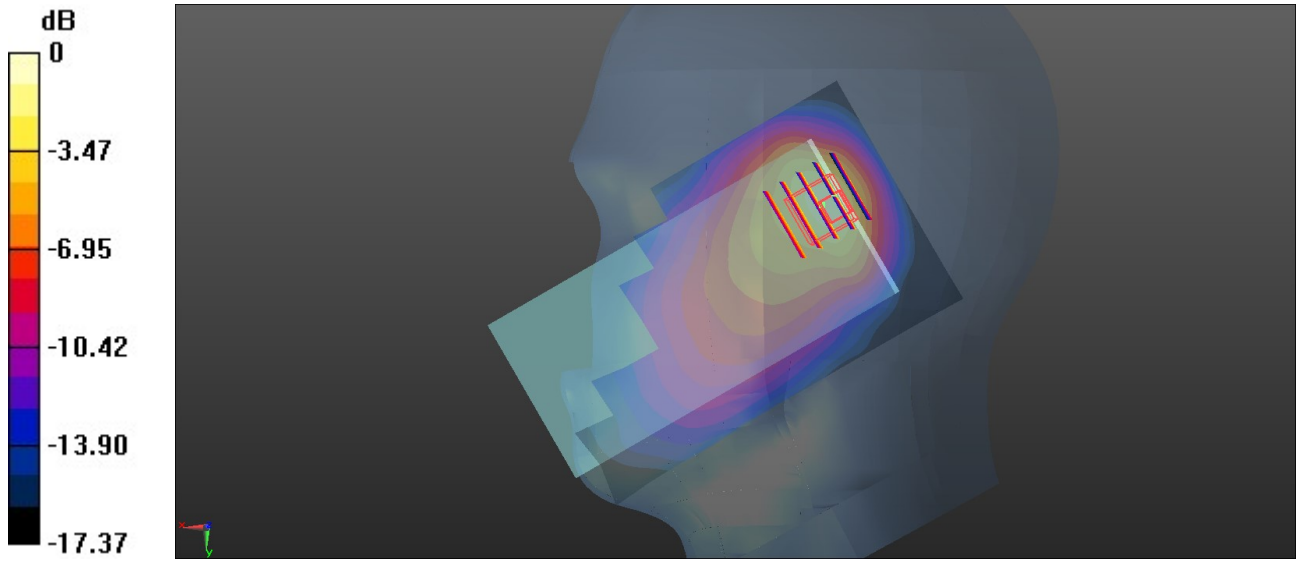
01_LTE Band 12_10M_QPSK_25RB_0Offset_Right Tilted_0mm_Ch23095

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 707.5 MHz; σ = 0.901 S/m; ε_r = 41.931; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.38, 10.38, 10.38); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.356 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.36 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.747 W/kg
SAR(1 g) = 0.261 W/kg; SAR(10 g) = 0.144 W/kg
Maximum value of SAR (measured) = 0.509 W/kg



0 dB = 0.509 W/kg = -2.93 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

02_LTE Band 13_10M_QPSK_25RB_0Offset_Right Cheek_0mm_Ch23230

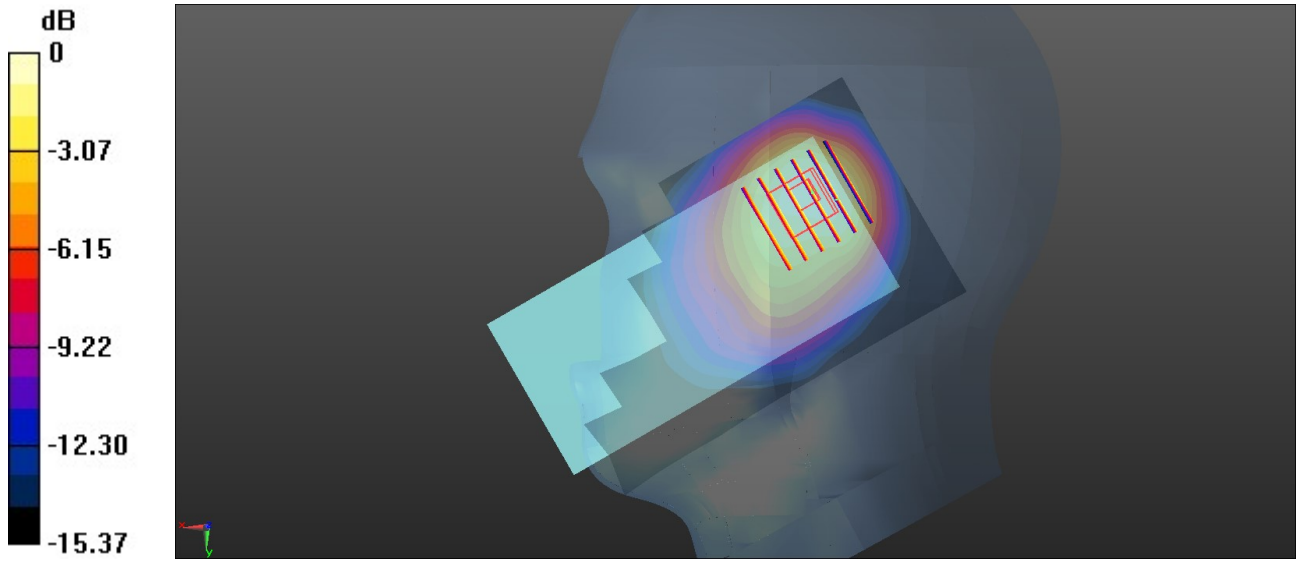
Communication System: UID 0, LTE-FDD (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 782 MHz; σ = 0.926 S/m; ε_r = 41.753; ρ = 1000 kg/m^3

Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.38, 10.38, 10.38); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.471 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.17 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.594 W/kg
SAR(1 g) = 0.330 W/kg; SAR(10 g) = 0.223 W/kg
Maximum value of SAR (measured) = 0.476 W/kg



0 dB = 0.476 W/kg = -3.22 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

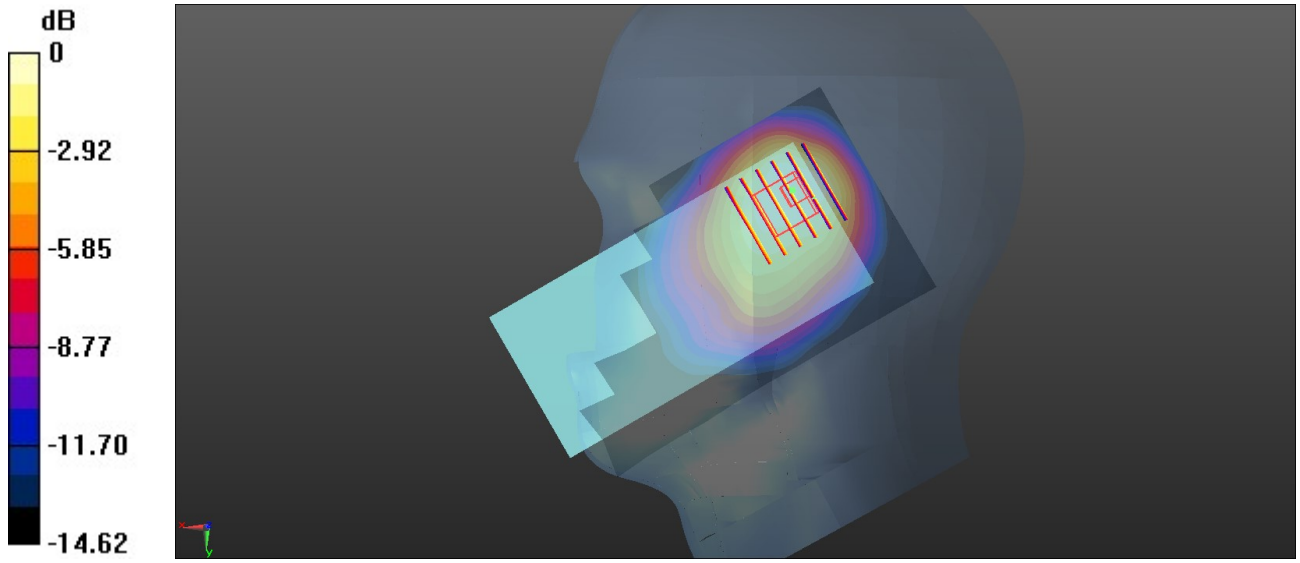
03_GSM850_GPRS (1 Tx slots)_Right Cheek_0mm_Ch189

Communication System: UID 0, GSM850 (0); Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: HSL_835 Medium parameters used: f = 836.4 MHz; σ = 0.939 S/m; ε_r = 42.449; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.24, 10.24, 10.24); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.431 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.23 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.498 W/kg
SAR(1 g) = 0.314 W/kg; SAR(10 g) = 0.216 W/kg
Maximum value of SAR (measured) = 0.404 W/kg



0 dB = 0.404 W/kg = -3.94 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

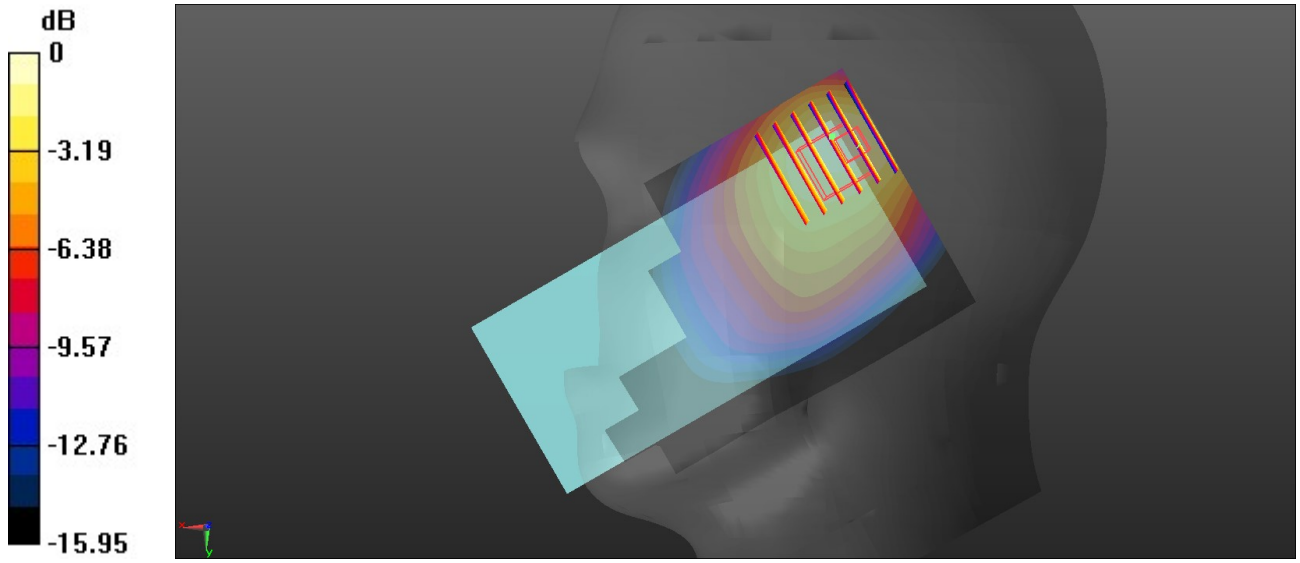
04_WCDMA V_RMC 12.2Kbps_Right Cheek_0mm_Ch4182

Communication System: UID 0, WCDMA (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 836.4 MHz; σ = 0.93 S/m; ε_r = 40.921; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.24, 10.24, 10.24); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.605 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.18 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.813 W/kg
SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.312 W/kg
Maximum value of SAR (measured) = 0.666 W/kg



0 dB = 0.666 W/kg = -1.77 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2021.12.14

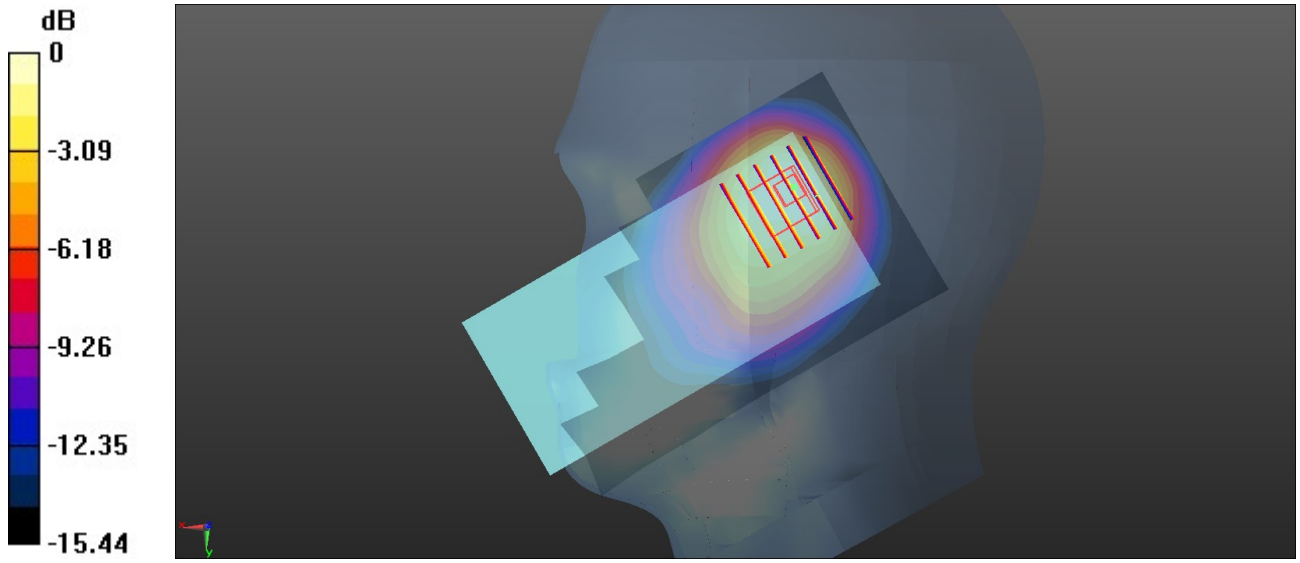
05_LTE Band 26_15M_QPSK_36RB_0Offset_Right Cheek_0mm_Ch26865

Communication System: UID 0, LTE-FDD (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 831.5 MHz; σ = 0.937 S/m; ε_r = 42.458; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.24, 10.24, 10.24); Calibrated: 2021.2.10
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1650; Calibrated: 2021.6.9
- Phantom: SAM Twin Phantom; Type: SAM Twin; Serial: TP-1697
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.785 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.42 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.522 W/kg; SAR(10 g) = 0.355 W/kg
Maximum value of SAR (measured) = 0.714 W/kg



0 dB = 0.714 W/kg = -1.46 dBW/kg