Variant FCC SAR Test Report

APPLICANT	: ZTE CORPORATION
EQUIPMENT	: WCDMA / CDMA / LTE Multi-Mode Digital Mobile Phone
BRAND NAME	: ZTE
MODEL NAME	: ZTE A2017U
FCC ID	: SRQ-ZTEA2017U
STANDARD	: FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

This is a variant report which is only valid together with the original test report. We, SPORTON INTERNATIONAL (XI'AN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (XI'AN) INC., the test report shall not be reproduced except in full.

Prepared by: Mark Qu / Manager

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (XI'AN) INC.
1F, Building A3, No. 39 Chuangye Rd., Xi'an Hi-tech Zone, Shanxi Province, P. R. China

Table of Contents

1. Statement of Compliance 4
2. Administration Data 5
3. Guidance Standard 5
4. Equipment Under Test (EUT) Information 6
4.1 General Information 6
4.2 General LTE SAR Test and Reporting Considerations 8
5. RF Exposure Limits 13
5.1 Uncontrolled Environment 13
5.2 Controlled Environment 13
6. Specific Absorption Rate (SAR) 14
6.1 Introduction 14
6.2 SAR Definition 14
7. System Description and Setup 15
7.1 E-Field Probe 16
7.2 Data Acquisition Electronics (DAE) 16
7.3 Phantom 17
7.4 Device Holder 18
8. Measurement Procedures 19
8.1 Spatial Peak SAR Evaluation 19
8.2 Power Reference Measurement 20
8.3 Area Scan 20
8.4 Zoom Scan 21
8.5 Volume Scan Procedures 21
8.6 Power Drift Monitoring 21
9. Test Equipment List 22
10. System Verification 23
10.1 Tissue Verification 23
10.2 System Performance Check Results 25
11. RF Exposure Positions 27
11.1 Ear and handset reference point 27
11.2 Definition of the cheek position 28
11.3 Definition of the tilt position 29
11.4 Body Worn Accessory 30
11.5 Product Specific 10g SAR Exposure 30
11.6 Wireless Router 31
12. Conducted RF Output Power (Unit: dBm) 32
13. Bluetooth Exclusions Applied 91
14. Antenna Location 92
15. SAR Test Results 93
15.1 Head SAR 95
15.2 Hotspot SAR 99
15.3 Body Worn Accessory SAR 102
15.4 Product specific 10g SAR 105
15.5 Repeated SAR Measurement 106
16. Simultaneous Transmission Analysis 107
16.1 Head Exposure Conditions 108
16.2 Hotspot Exposure Conditions 112
16.3 Body-Worn Accessory Exposure Conditions 118
16.4 SPLSR Evaluation and Analysis 120
17. Uncertainty Assessment 122
18. References 125
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. Product Equality Declaration

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA631604-01	Rev. 01	This is a variant report for ZTE A2017U. The product equality declaration could be referred to Appendix E. Based on the similarity between two models, for WWAN only the worse cases from original test report (Sporton Report Number FA631604) were verified for the differences and WLAN performed full testing.	Sep. 01, 2016

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, WCDMA / CDMA / LTE Multi-Mode Digital Mobile Phone, ZTE A2017U** are as follows.

Equipment Class	Frequency Band		Highest 1g SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
			Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 10mm)	
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.91	0.38	0.38	1.59
		GSM1900	1.05	0.94	0.94	
	WCDMA	Band V	0.93	0.40	0.40	
		Band IV	1.12	0.80	0.69	
		Band II	1.17	0.85	0.85	
	CDMA	CDMA2000 BC10	0.75	0.52	0.37	
		CDMA2000 BC0	0.63	0.40	0.31	
		CDMA2000 BC1	1.14	**1.01**	**1.01**	
	LTE	Band 12	0.58	0.23	0.23	
		Band 13	0.64	0.52	0.48	
		Band 26	0.85	0.33	0.33	
		Band 4	1.10	0.70	0.60	
		Band 25	1.09	0.74	0.74	
		Band 30	**1.18**	0.41	0.41	
		Band 7	0.27	0.32	0.32	
		Band 41	0.11	0.11	0.11	
DTS	WLAN	2.4GHz WLAN	1.01	<0.10	<0.10	1.59
NII		5GHz WLAN	0.51		<0.10	1.36
Date of Testing:			2016/07/02 ~ 2016/08/02			

Frequency Band	Highest SAR Summary
	Product Specific 10g SAR (W/kg) (Gap 0mm)
5GHz WLAN	0.25

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 10-gram SAR for Product Specific 10g SAR, limit: 4.0W/kg) 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

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (XI'AN) INC.
Test Site Location	1F, Building A3, No. 39 Chuangye Rd., Xi'an Hi-tech Zone, Shanxi Province, P. R. China TEL: +86-029-8860-8767 FAX: +86-029-8860-8791

Applicant	
Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

Manufacturer	
Company Name	ZTE CORPORATION
Address	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

3. Guidance Standard

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 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	WCDMA / CDMA / LTE Multi-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE A2017U
FCC ID	SRQ-ZTEA2017U
IMEI Code	990006780015052
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz CDMA 2000 BC10: 817.9 MHz ~ 823.1 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 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 41: 2496 MHz ~ 2690 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	•GSM/GPRS/EGPRS •AMR / RMC 12.2Kbps •HSDPA •HSUPA •DC-HSDPA •HSPA+ (16QAM uplink is not supported) •CDMA2000 : 1xRTT/1xEv-Do(Rel.0)/1xEv-Do(Rev.A) •LTE: QPSK, 16QAM •802.11b/g/n HT20/HT40 •802.11a/n HT20/HT40 •802.11ac VHT20/VHT40/VHT80 •Bluetooth v3.0+EDR, Bluetooth 4.0 LE, Bluetooth 4.2 LE •NFC:ASK
HW Version	wwdB
SW Version	A2017UV1.0.0B07
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	Production Unit

Remark:

1. This device supports VoIP in GPRS, EGPRS, CDMA, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device supports GPRS/EGPRS mode up to multi-slot class 12.
3. This device WWAN and 2.4GHz WLAN supports Hotspot operation.
4. This device 5.2GHz/5.8GHz WLAN has no Hotspot function.
5. This device has two antennas. The Primary Cellular Antenna is located on the bottom edge of the device and the Secondary Cellular Antenna is located on the top edge of the device.

6. The device is capable of switching between the Top antenna and Bottom antenna based on signal strength. The antenna switching is implemented with a physical, “break-before-make” switch such that only one antenna can be used for cellular transmission at a time.
7. LTE Band 7 and Band 41 are not active at WWAN Top antenna.
8. 5GHz WLAN can only worked at antenna 1.

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	SRQ-ZTEA2017U
Equipment Name	WCDMA / CDMA / LTE Multi-Mode Digital 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 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 41: 2496 MHz ~ 2690 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 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK, and 16QAM
LTE Voice / Data requirements	Voice and Data
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (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

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	No
LTE Release Version	R11, Cat 4
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations as below page and the detail power verification please referred to page85-86.
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 11. It supports a maximum of 2 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

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 25

	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	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

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 30				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	27685	2307.5	27710	2310
M	27710	2310		
H	27735	2312.5		

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 Carrier Aggregation Combinations																			
Inter-Band Combinations																			
(PCC) B2	(SCC) B4	(PCC) B4	(SCC) B2	(PCC) B2	(SCC) B5	(PCC) B5	(SCC) B2	(PCC) B2	(SCC) B12	(PCC) B12	(SCC) B2	(PCC) B2	(SCC) B13	(PCC) B2	(SCC) B29	(PCC) B4	(SCC) B5	(PCC) B5	(SCC) B4
20M+20M		20M+20M		20M+10M		10M+20M		20M+10M		10M+20M		20M+10M		20M+10M		20M+10M		10M+20M	
20M+15M		20M+15M		20M+5M		10M+15M		20M+5M		10M+15M		20M+5M		20M+5M		20M+5M		10M+15M	
20M+10M		20M+10M		15M+10M		10M+10M		20M+3M		10M+10M		15M+10M		20M+3M		15M+10M		10M+10M	
20M+5M		20M+5M		15M+5M		10M+5M		15M+10M		10M+5M		15M+5M		15M+10M		15M+5M		10M+5M	
15M+20M		20M+3M		10M+10M		5M+20M		15M+5M		5M+20M		10M+10M		15M+5M		10M+10M		5M+20M	
15M+15M		20M+1.4M		10M+5M		5M+15M		15M+3M		5M+15M		10M+5M		15M+3M		10M+5M		5M+15M	
15M+10M		15M+20M		5M+10M		5M+10M		10M+10M		5M+10M		5M+10M		10M+10M		5M+10M		5M+10M	
15M+5M		15M+15M		5M+5M		5M+5M		10M+5M		5M+5M		5M+5M		10M+5M		5M+5M		5M+5M	
10M+20M		15M+10M						10M+3M		3M+20M				10M+3M					
10M+15M		15M+5M						5M+10M		3M+15M				5M+10M					
10M+10M		15M+3M						5M+5M		3M+10M				5M+5M					
10M+5M		15M+1.4M						5M+3M		3M+5M				5M+3M					
5M+20M		10M+20M																	
5M+15M		10M+15M																	
5M+10M		10M+10M																	
5M+5M		10M+5M																	
3M+20M		10M+3M																	
3M+15M		10M+1.4M																	
3M+10M		5M+20M																	
3M+5M		5M+15M																	
1.4M+20M		5M+10M																	
1.4M+15M		5M+5M																	
1.4M+10M		5M+3M																	
1.4M+5M		5M+1.4M																	

LTE Carrier Aggregation Combinations											
Inter-Band Combinations						Intra-Band Combinations					
Non-Contiguous						Contiguous		Non-Contiguous			
(PCC) B4	(SCC) B12	(PCC) B12	(SCC) B4	(PCC) B4	(SCC) B29	(PCC) B41	(SCC) B41	(PCC) B25	(SCC) B25	(PCC) B41	(SCC) B41
20M+10M		10M+20M		20M+10M		20M+20M		20M+20M		20M+20M	
20M+5M		10M+15M		20M+5M		20M+15M		20M+15M		20M+15M	
20M+3M		10M+10M		20M+3M		20M+10M		20M+10M		20M+10M	
15M+10M		10M+5M		15M+10M		20M+5M		20M+5M		20M+5M	
15M+5M		10M+3M		15M+5M		15M+20M		15M+20M		15M+20M	
15M+3M		10M+1.4M		15M+3M		15M+15M		15M+15M		15M+15M	
10M+10M		5M+20M		10M+10M		10M+20M		15M+10M		15M+10M	
10M+5M		5M+15M		10M+5M		5M+20M		15M+5M		15M+5M	
10M+3M		5M+10M		10M+3M				10M+20M		10M+20M	
5M+10M		5M+5M		5M+10M				10M+15M		10M+15M	
5M+5M		5M+3M		5M+5M				10M+10M		10M+10M	
5M+3M		5M+1.4M		5M+3M				10M+5M		10M+5M	
3M+10M		3M+20M						5M+20M		5M+20M	
3M+5M		3M+15M						5M+15M		5M+15M	
3M+3M		3M+10M						5M+10M		5M+10M	
1.4M+10M		3M+5M						5M+5M		5M+5M	
1.4M+5M		3M+3M									
1.4M+3M		3M+1.4M									

5. RF Exposure Limits

5.1 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.

5.2 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

1. 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.

6. Specific Absorption Rate (SAR)

6.1 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.

6.2 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:

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

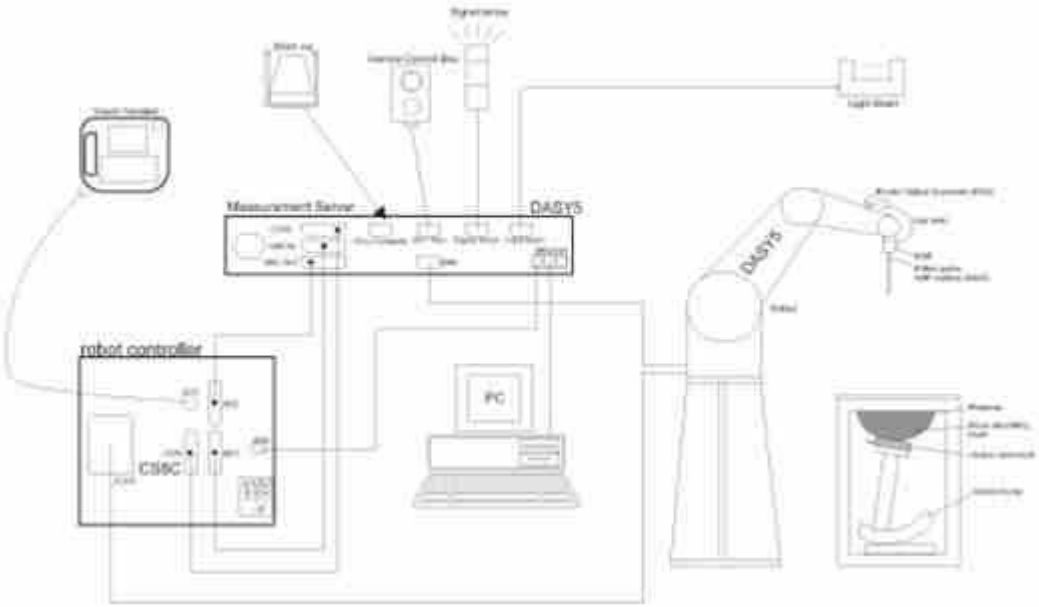
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. 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.

7.1 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	

7.2 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.

Fig 5.1 Photo of DAE

7.3 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.

7.4 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

8. 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

8.1 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

8.2 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.

8.3 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.	

8.4 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.

8.5 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.

8.6 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.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	Mar. 16, 2016	Mar. 15, 2017
SPEAG	835MHz System Validation Kit	D835V2	4d151	Mar. 16, 2016	Mar. 15, 2017
SPEAG	1750MHz System Validation Kit	D1750V2	1090	Mar. 22, 2016	Mar. 21, 2017
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	Mar. 21, 2016	Mar. 20, 2017
SPEAG	2300MHz System Validation Kit	D2300V2	1006	Jan. 21, 2016	Jan. 20, 2017
SPEAG	2600MHz System Validation Kit	D2600V2	1112	Aug. 27, 2015	Aug. 26, 2016
SPEAG	2450MHz System Validation Kit	D2450V2	908	Mar. 18, 2016	Mar. 17, 2017
SPEAG	5GHz System Validation Kit	D5GHzV2	1167	Jul. 27, 2015	Jul. 26, 2016
SPEAG	Data Acquisition Electronics	DAE4	1358	Aug. 27, 2015	Aug. 26, 2016
SPEAG	Data Acquisition Electronics	DAE4	1210	May 18, 2016	May 17, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	Nov. 27, 2015	Nov. 26, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	May 25, 2016	May 24, 2017
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Wireless Communication Test Set	E5515C	MY52102600	Dec. 08, 2015	Dec. 07, 2016
Anritus	Radio communication analyzer	MT8820C	6201074235	Oct. 15, 2015	Oct. 14, 2016
Agilent	ENA Series Network Analyzer	E5071C	MY46317418	Dec. 08, 2015	Dec. 07, 2016
Agilent	Dielectric Probe Kit	85070E	MY44300751	NCR	NCR
Anritsu	Power Senor	MA2411B	0917070	Jan. 20, 2016	Jan. 19, 2017
Anritsu	Power Meter	ML2495A	1005002	Jan. 20, 2016	Jan. 19, 2017
Anritsu	Power Sensor	MA2411B	1339206	Jan. 20, 2016	Jan. 19, 2017
Anritsu	Power Meter	ML2495A	1438004	Jan. 20, 2016	Jan. 19, 2017
Agilent	Signal Generator	N5181A	MY50145381	Jan. 12, 2016	Jan. 11, 2017
R&S	Spectrum Analyzer	FSV 7	101632	Dec. 08, 2015	Dec. 07, 2016
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1753	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1754	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1477	NCR	NCR
ARRA	Power Divider	A3200-2	NA	Note1	
Agilent	Dual Directional Coupler	778D	50422	Note1	
mini-circuits	Amplifier	ZVE-3W-83+	162601250	Note1	
AR	Amplifier	5S1G4	342137	Note1	
Woken	Attenuation1	WK0602-XX	N/A	Note1	
PE	Attenuation2	PE7005-10	N/A	Note1	
PE	Attenuation3	PE7005-3	N/A	Note1	

General 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 source.

10. System Verification

10.1 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.5	0.893	41.978	0.89	41.90	0.34	0.19	±5	2016/7/14
835	Head	22.5	0.899	41.750	0.90	41.50	-0.11	0.60	±5	2016/7/19
1750	Head	22.4	1.367	40.742	1.37	40.10	-0.22	1.60	±5	2016/7/20
1900	Head	22.5	1.421	41.283	1.40	40.00	1.50	3.21	±5	2016/7/20
2300	Head	22.6	1.687	38.801	1.67	39.50	1.02	-1.77	±5	2016/8/2
750	Body	22.5	0.965	55.045	0.96	55.50	0.52	-0.82	±5	2016/7/19
835	Body	22.5	0.977	54.466	0.97	55.20	0.72	-1.33	±5	2016/7/19
1750	Body	22.3	1.499	54.267	1.49	53.40	0.60	1.62	±5	2016/7/20
1900	Body	22.4	1.527	55.253	1.52	53.30	0.46	3.66	±5	2016/7/20
2300	Body	22.6	1.769	52.629	1.81	52.90	-2.27	-0.51	±5	2016/8/2
750	Head	22.5	0.891	42.417	0.89	41.90	0.11	1.23	±5	2016/7/8
835	Head	22.4	0.900	42.153	0.90	41.50	0.00	1.57	±5	2016/7/8
835	Head	22.6	0.918	42.173	0.90	41.50	2.00	1.62	±5	2016/7/30
1750	Head	22.6	1.394	40.284	1.37	40.10	1.75	0.46	±5	2016/7/8
1900	Head	22.5	1.455	40.846	1.40	40.00	3.93	2.11	±5	2016/7/7
2300	Head	22.5	1.693	38.361	1.67	39.50	1.38	-2.88	±5	2016/7/2
2600	Head	22.5	2.055	38.321	1.96	39.00	4.85	-1.74	±5	2016/7/2
835	Body	22.6	0.995	56.342	0.97	55.20	2.58	2.07	±5	2016/7/30
1750	Body	22.7	1.517	53.127	1.49	53.40	1.81	-0.51	±5	2016/7/5
1750	Body	22.6	1.498	53.463	1.49	53.40	0.54	0.12	±5	2016/8/2
2300	Body	22.3	1.768	53.269	1.81	52.90	-2.32	0.70	±5	2016/7/2
2600	Body	22.3	2.178	52.247	2.16	52.50	0.83	-0.48	±5	2016/7/2
2450	Head	22.5	1.845	37.668	1.80	39.20	2.50	-3.91	±5	2016/7/21
5250	Head	22.3	4.588	36.661	4.71	35.90	-2.59	2.12	±5	2016/7/22
5750	Head	22.3	5.164	35.867	5.22	35.4	-1.07	1.46	±5	2016/7/22
2450	Body	22.5	1.972	51.844	1.95	52.70	1.13	-1.62	±5	2016/7/22
5250	Body	22.4	5.437	48.733	5.36	48.90	1.44	-0.34	±5	2016/7/22
5750	Body	22.4	6.112	47.895	5.94	48.3	2.90	-0.80	±5	2016/7/22

10.2 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.

<For 1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2016/7/14	750	Head	250	1087	3935	1358	2.23	8.30	8.92	7.47
2016/7/19	835	Head	250	4d151	3935	1358	2.37	9.26	9.48	2.38
2016/7/20	1750	Head	250	1090	3935	1358	8.55	35.10	34.2	-2.56
2016/7/20	1900	Head	250	5d170	3935	1358	9.43	38.10	37.72	-1.00
2016/8/2	2300	Head	250	1006	3857	1210	12.6	48.70	50.4	3.49
2016/7/19	750	Body	250	1087	3935	1358	2.33	8.64	9.32	7.87
2016/7/19	835	Body	250	4d151	3935	1358	2.40	9.52	9.6	0.84
2016/7/20	1750	Body	250	1090	3935	1358	8.96	35.90	35.84	-0.17
2016/7/20	1900	Body	250	5d170	3935	1358	9.92	38.90	39.68	2.01
2016/8/2	2300	Body	250	1006	3857	1210	11.80	47.70	47.2	-1.05
2016/7/8	750	Head	250	1087	3935	1358	2.24	8.30	8.96	7.95
2016/7/8	835	Head	250	4d151	3935	1358	2.49	9.26	9.96	7.56
2016/7/30	835	Head	250	4d151	3857	1210	2.42	9.26	9.68	4.54
2016/7/8	1750	Head	250	1090	3935	1358	8.72	35.10	34.88	-0.63
2016/7/7	1900	Head	250	5d170	3935	1358	9.65	38.10	38.6	1.31
2016/7/2	2300	Head	250	1006	3935	1358	12.00	48.70	48	-1.44
2016/7/2	2600	Head	250	1112	3935	1358	15.4	57.30	61.6	7.50
2016/7/30	835	Body	250	4d151	3857	1210	2.54	9.52	10.16	6.72
2016/7/5	1750	Body	250	1090	3935	1358	9.07	35.90	36.28	1.06
2016/8/2	1750	Body	250	1090	3857	1210	9.19	35.90	36.76	2.40
2016/7/2	2300	Body	250	1006	3935	1358	12.50	47.70	50	4.82
2016/7/2	2600	Body	250	1112	3935	1358	14.40	57.20	57.6	0.70
2016/7/21	2450	Head	250	908	3935	1358	13.70	51.10	54.8	7.24
2016/7/22	5250	Head	100	1167	3935	1358	7.60	80.50	76	-5.59
2016/7/22	5750	Head	100	1167	3935	1358	8.06	78.70	80.6	2.41
2016/7/22	2450	Body	250	908	3935	1358	12.40	50.40	49.6	-1.59
2016/7/22	5250	Body	100	1167	3935	1358	7.70	76.00	77	1.32
2016/7/22	5750	Body	100	1167	3935	1358	7.70	75.60	77	1.85

<For 10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2016/7/22	5250	Body	100	1167	3935	1358	2.08	21.30	20.8	-2.35
2016/7/22	5750	Body	100	1167	3935	1358	2.11	20.90	21.1	0.96

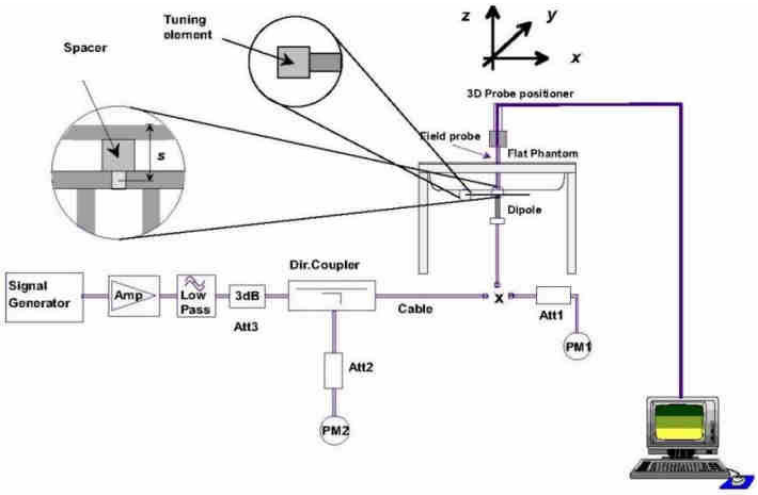


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 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 9.1.2 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 9.1.3). 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 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

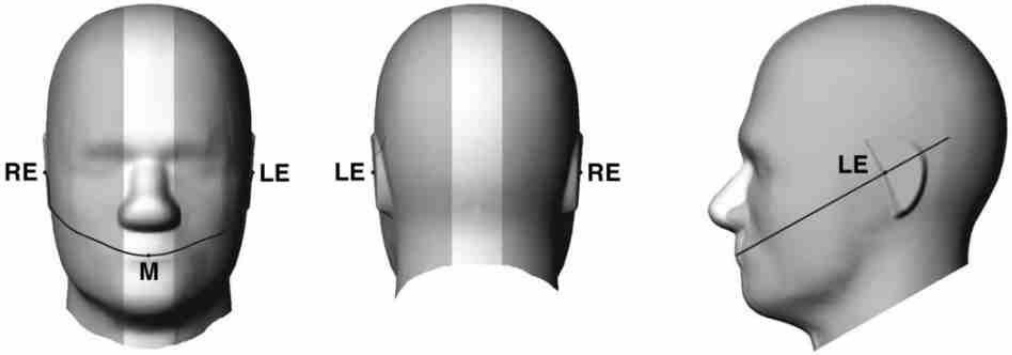


Fig 9.1.1 Front, back, and side views of SAM twin phantom

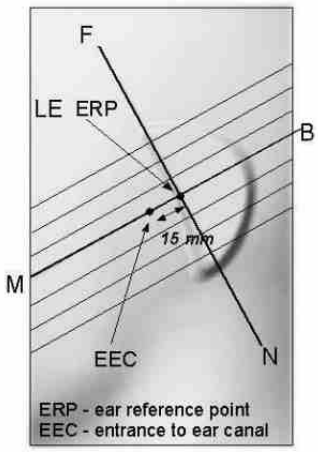


Fig 9.1.2 Close-up side view of phantom showing the ear region.

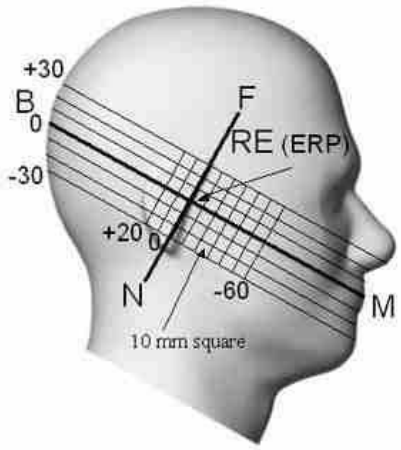


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 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 9.2.1 and Figure 9.2.2), 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 9.2.1). 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 9.2.2), 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 9.2.3), 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 9.2.3. The actual rotation angles should be documented in the test report.

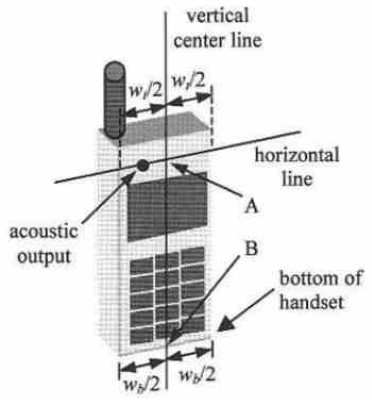


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

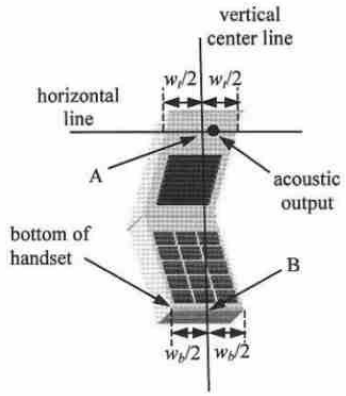


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

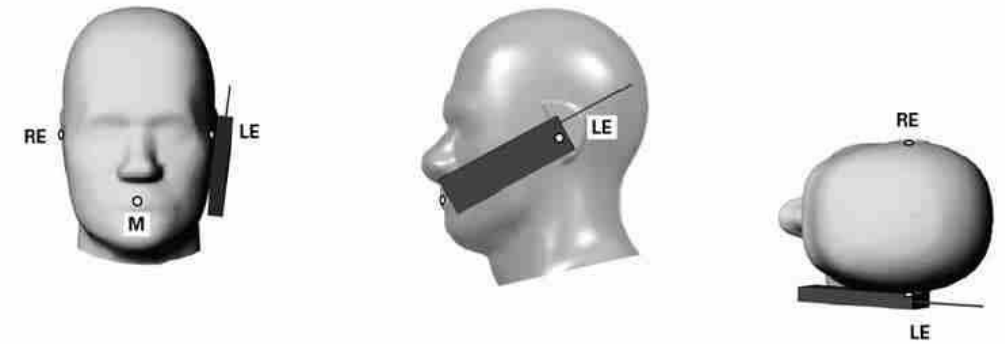


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 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 9.3.1. 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

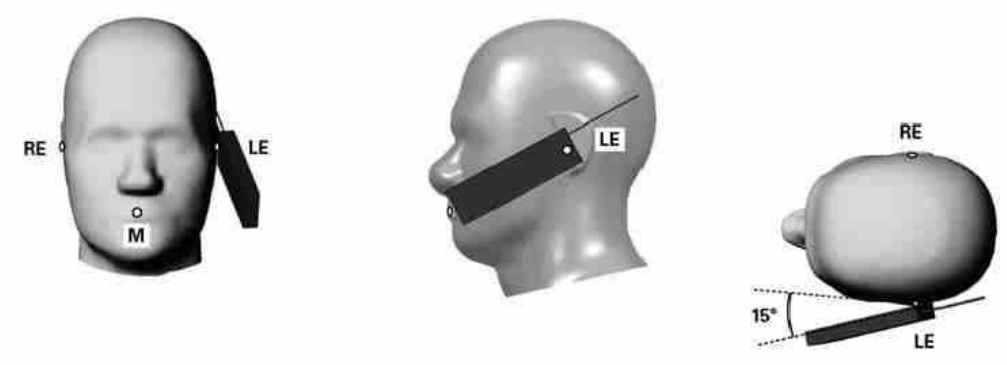


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 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 9.4). 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.

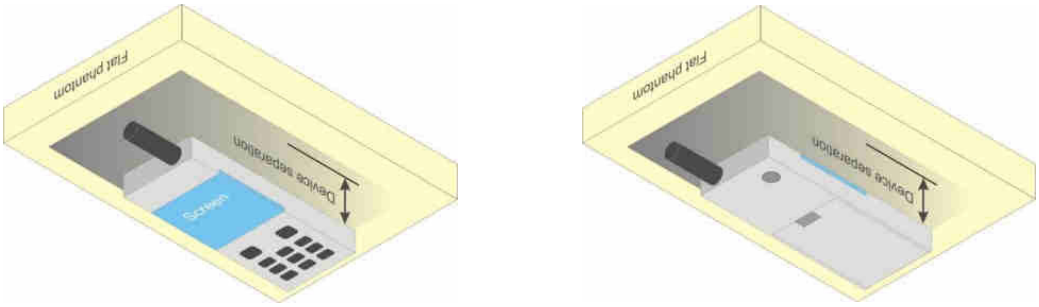


Fig 9.4 Body Worn Position

11.5 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 Product specific 10g 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 Product specific 10g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

11.6 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.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (2Tx slots) for GSM850 and GPRS (4Tx slots) for GSM1900 are considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode

Top Antenna:

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.82	31.82	31.89	33.00	22.82	22.82	22.89	24.00
GPRS 1 Tx slot	31.80	31.85	31.87	33.00	22.80	22.85	22.87	24.00
GPRS 2 Tx slots	29.76	29.84	29.83	31.00	23.76	23.84	23.83	25.00
GPRS 3 Tx slots	27.33	27.35	27.34	29.00	23.07	23.09	23.08	24.74
GPRS 4 Tx slots	26.22	26.15	26.17	27.50	23.22	23.15	23.17	24.50
EDGE 1 Tx slot	25.31	25.39	25.37	27.00	16.31	16.39	16.37	18.00
EDGE 2 Tx slots	24.26	24.23	24.24	26.00	18.26	18.23	18.24	20.00
EDGE 3 Tx slots	23.52	23.60	23.61	25.00	19.26	19.34	19.35	20.74
EDGE 4 Tx slots	23.40	23.42	23.48	25.00	20.40	20.42	20.48	22.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.10	29.18	29.33	29.50	20.10	20.18	20.33	20.50
GPRS 1 Tx slot	29.10	29.18	29.33	29.50	20.10	20.18	20.33	20.50
GPRS 2 Tx slots	26.67	26.55	26.72	27.00	20.67	20.55	20.72	21.00
GPRS 3 Tx slots	24.35	24.61	24.94	25.00	20.09	20.35	20.68	20.74
GPRS 4 Tx slots	22.84	22.83	22.79	24.00	19.84	19.83	19.79	21.00
EDGE 1 Tx slot	25.12	25.09	25.15	27.00	16.12	16.09	16.15	18.00
EDGE 2 Tx slots	25.03	25.01	25.04	26.50	19.03	19.01	19.04	20.50
EDGE 3 Tx slots	24.04	23.84	24.01	24.50	19.78	19.58	19.75	20.24
EDGE 4 Tx slots	23.00	22.63	22.72	23.50	20.00	19.63	19.72	20.50

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

Bottom Antenna:

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.82	31.82	31.89	33.00	22.82	22.82	22.89	24.00
GPRS 1 Tx slot	31.8	31.85	31.87	33.00	22.80	22.85	22.87	24.00
GPRS 2 Tx slots	29.76	29.84	29.83	31.00	23.76	23.84	23.83	25.00
GPRS 3 Tx slots	27.33	27.35	27.34	29.00	23.07	23.09	23.08	24.74
GPRS 4 Tx slots	26.22	26.15	26.17	27.50	23.22	23.15	23.17	24.50
EDGE 1 Tx slot	25.31	25.39	25.37	27.00	16.31	16.39	16.37	18.00
EDGE 2 Tx slots	24.26	24.23	24.24	26.00	18.26	18.23	18.24	20.00
EDGE 3 Tx slots	23.52	23.6	23.61	25.00	19.26	19.34	19.35	20.74
EDGE 4 Tx slots	23.4	23.42	23.48	25.00	20.40	20.42	20.48	22.00

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	30.21	30.70	30.72	32.00	21.21	21.70	21.72	23.00
GPRS 1 Tx slot	30.19	30.68	30.70	32.00	21.19	21.68	21.70	23.00
GPRS 2 Tx slots	28.46	28.32	28.40	30.00	22.46	22.32	22.40	24.00
GPRS 3 Tx slots	26.88	26.94	26.97	28.50	22.62	22.68	22.71	24.24
GPRS 4 Tx slots	25.92	25.54	25.58	27.50	22.92	22.54	22.58	24.50
EDGE 1 Tx slot	25.19	25.16	25.13	27.00	16.19	16.16	16.13	18.00
EDGE 2 Tx slots	25.06	25.02	25.03	26.50	19.06	19.02	19.03	20.50
EDGE 3 Tx slots	24.01	24.06	24.08	26.00	19.75	19.80	19.82	21.74
EDGE 4 Tx slots	23.91	23.83	23.94	25.50	20.91	20.83	20.94	22.50

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<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 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	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 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * 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: For subtest 5 the β_c/β_d ratio of 15/15 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 = 14/15 and β_d = 15/15.

Note 5: 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 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C 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.		

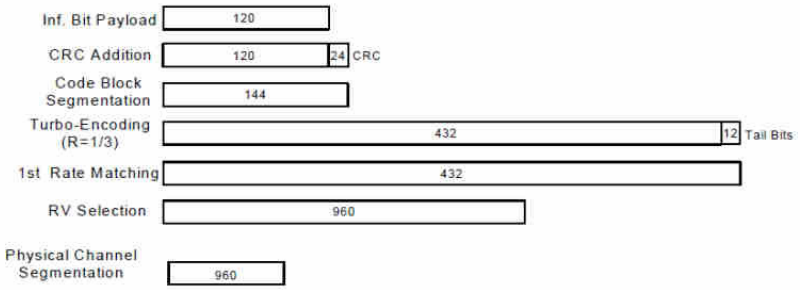


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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. If 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.

Top Antenna:

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	19.85	19.91	20.00	21.50	19.70	19.65	19.56	20.00	23.40	23.27	23.33	24.00
3GPP Rel 99	RMC 12.2Kbps	19.88	19.93	20.01	21.50	19.72	19.68	19.59	20.00	23.41	23.28	23.36	24.00
3GPP Rel 6	HSDPA Subtest-1	19.12	19.37	19.42	20.00	19.24	19.24	19.08	20.00	22.73	22.60	22.67	23.00
3GPP Rel 6	HSDPA Subtest-2	19.13	19.36	19.44	20.00	19.24	19.25	19.10	20.00	22.68	22.56	22.65	23.00
3GPP Rel 6	HSDPA Subtest-3	18.68	18.89	18.91	19.00	18.77	18.77	18.63	19.00	22.21	22.12	22.18	22.50
3GPP Rel 6	HSDPA Subtest-4	18.69	18.89	18.92	19.00	18.75	18.76	18.59	19.00	22.22	22.13	22.18	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	19.20	19.10	19.20	20.00	19.30	19.30	19.30	20.00	22.70	22.56	22.63	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	19.18	19.10	19.17	20.00	19.28	19.21	19.27	20.00	22.63	22.51	22.60	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	18.62	18.71	18.60	19.00	18.82	18.82	18.74	19.00	22.20	22.15	22.10	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	18.70	18.75	18.63	19.00	18.86	18.85	18.81	19.00	22.11	22.14	22.16	22.50
3GPP Rel 6	HSUPA Subtest-1	19.19	19.80	19.86	20.00	19.62	19.63	19.02	20.00	22.73	22.58	22.69	23.00
3GPP Rel 6	HSUPA Subtest-2	17.22	17.84	17.86	18.00	17.76	17.71	17.11	18.00	20.74	20.60	20.67	21.00
3GPP Rel 6	HSUPA Subtest-3	18.18	18.84	18.83	19.00	18.65	18.71	18.07	19.00	21.75	21.58	21.65	22.00
3GPP Rel 6	HSUPA Subtest-4	17.18	17.90	17.86	18.00	17.73	17.75	17.08	18.00	20.72	20.63	20.67	21.00
3GPP Rel 6	HSUPA Subtest-5	19.20	19.40	19.40	20.00	19.30	19.30	19.10	20.00	22.70	22.60	22.70	23.00

Bottom Antenna:

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.20	23.40	23.36	24.50	22.65	22.68	22.66	23.00	24.61	24.50	24.51	25.00
3GPP Rel 99	RMC 12.2Kbps	23.20	23.41	23.38	24.50	22.66	22.70	22.67	23.00	24.65	24.51	24.52	25.00
3GPP Rel 6	HSDPA Subtest-1	22.12	22.37	22.31	23.00	21.87	22.01	21.70	22.50	23.56	23.38	23.46	24.00
3GPP Rel 6	HSDPA Subtest-2	22.14	22.32	22.38	23.00	21.93	22.04	21.70	22.50	23.59	23.45	23.47	24.00
3GPP Rel 6	HSDPA Subtest-3	21.66	21.87	21.90	22.00	21.42	21.51	21.28	22.00	23.12	22.95	23.00	23.50
3GPP Rel 6	HSDPA Subtest-4	21.66	21.85	21.89	22.00	21.41	21.56	21.26	22.00	23.11	22.93	22.98	23.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.18	22.36	22.32	23.00	21.85	22.01	21.71	22.50	23.48	23.39	23.51	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.15	22.31	22.35	23.00	21.92	22.05	21.68	22.50	23.45	23.42	23.41	23.50
3GPP Rel 8	DC-HSDPA Subtest-3	21.68	21.80	21.89	22.00	21.41	21.53	21.28	22.00	23.10	23.92	23.01	23.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.58	21.88	21.85	22.00	21.40	21.51	21.21	22.00	23.15	23.91	23.05	24.00
3GPP Rel 6	HSUPA Subtest-1	22.17	22.81	22.83	23.00	22.39	22.47	21.68	22.50	23.57	23.45	23.45	24.00
3GPP Rel 6	HSUPA Subtest-2	20.15	20.79	20.81	21.00	20.39	20.47	19.69	21.00	21.55	21.45	21.45	22.00
3GPP Rel 6	HSUPA Subtest-3	21.10	21.79	21.81	22.00	21.37	21.43	20.71	22.00	22.59	22.40	22.40	23.00
3GPP Rel 6	HSUPA Subtest-4	20.16	20.82	20.82	21.00	20.38	20.52	19.72	21.00	21.61	21.48	21.48	22.00
3GPP Rel 6	HSUPA Subtest-5	22.20	22.40	22.40	23.00	21.90	22.00	21.70	22.50	23.60	23.50	23.50	24.00

<CDMA2000 Conducted Power>

General Note:

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

Top Antenna:

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)	CDMA2000 BC10			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175		476	580	684	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	23.15	23.01	23.22	23.50	21.23	21.32	21.42	21.50	22.85	22.80	22.83	24.00
RC3 SO55	23.26	23.11	23.40	23.50	21.24	21.34	21.34	21.50	22.90	22.93	22.95	24.00
RC3 SO32(F+SCH)	23.35	23.19	23.42	23.50	21.09	21.29	21.31	21.50	22.98	22.95	22.94	24.00
RC3 SO32(+SCH)	23.27	23.13	23.25	23.50	21.09	21.31	21.33	21.50	22.97	22.90	22.94	24.00
RTAP 153.6Kbps	23.21	23.13	23.37	23.50	21.19	21.31	21.42	21.50	22.94	22.96	22.97	24.00
RETAP 4096Bits	23.08	23.03	23.22	23.50	21.22	21.29	21.38	21.50	22.97	22.89	22.95	24.00

Bottom Antenna:

Band	CDMA2000 BC0			Tune-up Limit (dBm)	CDMA2000 BC1			Tune-up Limit (dBm)	CDMA2000 BC10			Tune-up Limit (dBm)
TX Channel	1013	384	777		25	600	1175		476	580	684	
Frequency (MHz)	824.7	836.52	848.31		1851.25	1880	1908.75		817.9	820.5	823.1	
RC1 SO55	23.15	23.01	23.22	23.50	23.90	24.35	24.09	24.50	22.85	22.80	22.83	24.00
RC3 SO55	23.26	23.11	23.40	23.50	23.77	24.28	24.06	24.50	22.90	22.93	22.95	24.00
RC3 SO32(F+SCH)	23.35	23.19	23.42	23.50	23.73	24.37	24.01	24.50	22.98	22.95	22.94	24.00
RC3 SO32(+SCH)	23.27	23.13	23.25	23.50	23.73	24.27	24.05	24.50	22.97	22.90	22.94	24.00
RTAP 153.6Kbps	23.21	23.13	23.37	23.50	23.88	24.30	24.03	24.50	22.94	22.96	22.97	24.00
RETAP 4096Bits	23.08	23.03	23.22	23.50	23.65	24.09	23.98	24.50	22.97	22.89	22.95	24.00

<LTE Conducted Power>

General Note:

Verified the worse SAR based on the original RB Offset configuration.

Top Antenna

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	21.08	21.07	21.06	21.50	0
20	QPSK	1	49	20.05	20.04	20.08		
20	QPSK	1	99	20.09	20.21	20.29		
20	QPSK	50	0	19.77	19.70	19.59	20.50	1
20	QPSK	50	24	19.19	19.23	19.28		
20	QPSK	50	50	19.14	19.16	19.28		
20	QPSK	100	0	19.63	19.38	19.43		
20	16QAM	1	0	20.30	20.25	20.21	20.50	1
20	16QAM	1	49	19.54	19.32	19.32		
20	16QAM	1	99	19.52	19.52	19.56		
20	16QAM	50	0	18.69	18.69	18.55	19.50	2
20	16QAM	50	24	18.21	18.20	18.22		
20	16QAM	50	50	18.21	18.14	18.25		
20	16QAM	100	0	18.55	18.31	18.36		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.60	20.57	20.71	21.50	0
15	QPSK	1	37	20.23	20.03	20.07		
15	QPSK	1	74	20.23	20.17	20.18		
15	QPSK	36	0	19.52	19.52	19.42	20.50	1
15	QPSK	36	20	19.25	19.21	19.17		
15	QPSK	36	39	19.18	19.10	19.20		
15	QPSK	75	0	19.37	19.27	19.25		
15	16QAM	1	0	20.00	20.01	20.02	20.50	1
15	16QAM	1	37	19.51	19.21	19.25		
15	16QAM	1	74	19.54	19.42	19.39		
15	16QAM	36	0	18.53	18.44	18.33	19.50	2
15	16QAM	36	20	18.21	18.14	18.13		
15	16QAM	36	39	18.25	18.04	18.12		
15	16QAM	75	0	18.58	18.19	18.18		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.43	20.26	20.25	21.50	0
10	QPSK	1	25	20.14	19.96	20.00		
10	QPSK	1	49	20.11	19.89	19.99		
10	QPSK	25	0	19.47	19.27	19.29	20.50	1
10	QPSK	25	12	19.30	19.12	19.16		
10	QPSK	25	25	19.20	19.02	19.10		
10	QPSK	50	0	19.32	19.14	19.18		
10	16QAM	1	0	19.91	19.55	19.52	20.50	1
10	16QAM	1	25	19.42	19.21	19.28		
10	16QAM	1	49	19.40	19.18	19.24		
10	16QAM	25	0	18.41	18.22	18.23	19.50	2
10	16QAM	25	12	18.28	18.07	18.15		
10	16QAM	25	25	18.16	17.98	18.04		
10	16QAM	50	0	18.29	18.07	18.14		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	20.19	20.14	20.12	21.50	0
5	QPSK	1	12	20.18	19.97	20.01		
5	QPSK	1	24	20.10	19.91	19.98		
5	QPSK	12	0	19.29	19.06	19.15	20.50	1
5	QPSK	12	7	19.30	19.07	19.11		
5	QPSK	12	13	19.27	19.01	19.05		
5	QPSK	25	0	19.27	19.03	19.08		
5	16QAM	1	0	19.50	19.39	19.38	20.50	1
5	16QAM	1	12	19.45	19.25	19.29		
5	16QAM	1	24	19.36	19.16	19.22		
5	16QAM	12	0	18.33	18.05	18.10	19.50	2
5	16QAM	12	7	18.31	18.07	18.08		
5	16QAM	12	13	18.31	18.01	18.01		
5	16QAM	25	0	18.32	18.04	18.06		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	20.11	19.93	19.96	21.50	0
3	QPSK	1	8	20.18	19.96	20.03		
3	QPSK	1	14	20.10	19.88	19.95		
3	QPSK	8	0	19.26	19.05	19.07	20.50	1
3	QPSK	8	4	19.29	19.09	19.09		
3	QPSK	8	7	19.24	19.02	19.06		
3	QPSK	15	0	19.26	19.05	19.08		
3	16QAM	1	0	19.40	19.27	19.21	20.50	1
3	16QAM	1	8	19.46	19.23	19.27		
3	16QAM	1	14	19.39	19.15	19.19		
3	16QAM	8	0	18.35	18.09	18.12	19.50	2
3	16QAM	8	4	18.35	18.11	18.14		
3	16QAM	8	7	18.30	18.05	18.11		
3	16QAM	15	0	18.28	18.07	18.08		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.04	19.96	19.95	21.50	0
1.4	QPSK	1	3	20.17	20.02	20.02		
1.4	QPSK	1	5	20.07	19.92	19.95		
1.4	QPSK	3	0	20.13	20.00	20.02		
1.4	QPSK	3	1	20.17	20.04	20.06		
1.4	QPSK	3	3	20.14	20.01	20.02		
1.4	QPSK	6	0	19.20	19.00	19.03	20.50	1
1.4	16QAM	1	0	19.38	19.22	19.16	20.50	1
1.4	16QAM	1	3	19.44	19.31	19.23		
1.4	16QAM	1	5	19.35	19.20	19.20		
1.4	16QAM	3	0	19.20	19.01	19.01		
1.4	16QAM	3	1	19.25	19.07	19.03		
1.4	16QAM	3	3	19.19	19.00	19.01		
1.4	16QAM	6	0	18.29	18.02	18.07	19.50	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	19.95	19.88	19.94	20.00	0
20	QPSK	1	49	19.04	18.96	18.95		
20	QPSK	1	99	19.14	19.17	19.10		
20	QPSK	50	0	18.66	18.41	18.43	19.00	1
20	QPSK	50	24	18.21	18.14	18.09		
20	QPSK	50	50	18.18	18.16	18.11		
20	QPSK	100	0	18.32	18.33	18.29		
20	16QAM	1	0	18.53	18.43	18.21	19.00	1
20	16QAM	1	49	18.30	18.25	18.21		
20	16QAM	1	99	18.44	18.46	18.33		
20	16QAM	50	0	17.61	17.38	17.40	18.00	2
20	16QAM	50	24	17.17	17.16	17.13		
20	16QAM	50	50	17.15	17.13	17.11		
20	16QAM	100	0	17.28	17.26	17.25		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.96	19.56	19.58	20.00	0
15	QPSK	1	37	19.20	19.04	18.95		
15	QPSK	1	74	19.12	19.10	19.01		
15	QPSK	36	0	18.59	18.32	18.25	19.00	1
15	QPSK	36	20	18.30	18.13	18.09		
15	QPSK	36	39	18.11	18.07	18.00		
15	QPSK	75	0	18.30	18.26	18.18		
15	16QAM	1	0	18.73	18.82	18.86	19.00	1
15	16QAM	1	37	18.34	18.17	18.21		
15	16QAM	1	74	18.43	18.33	18.26		
15	16QAM	36	0	17.52	17.27	17.29	18.00	2
15	16QAM	36	20	17.27	17.12	17.08		
15	16QAM	36	39	17.06	17.03	16.98		
15	16QAM	75	0	17.30	17.17	17.14		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.22	19.21	19.33	20.00	0
10	QPSK	1	25	18.98	18.98	19.03		
10	QPSK	1	49	18.95	18.94	18.93		
10	QPSK	25	0	18.26	18.24	18.18	19.00	1
10	QPSK	25	12	18.16	18.14	18.16		
10	QPSK	25	25	18.03	18.02	18.06		
10	QPSK	50	0	18.16	18.15	18.15		
10	16QAM	1	0	18.54	18.55	18.54	19.00	1
10	16QAM	1	25	18.31	18.26	18.30		
10	16QAM	1	49	18.28	18.20	18.14		
10	16QAM	25	0	17.23	17.22	17.21	18.00	2
10	16QAM	25	12	17.13	17.13	17.16		
10	16QAM	25	25	17.00	17.01	17.09		
10	16QAM	50	0	17.13	17.11	17.19		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.06	19.11	19.03	20.00	0
5	QPSK	1	12	18.91	18.97	19.01		
5	QPSK	1	24	18.96	18.92	18.95		
5	QPSK	12	0	18.08	18.07	18.10	19.00	1
5	QPSK	12	7	18.07	18.12	18.11		
5	QPSK	12	13	18.06	18.07	18.10		
5	QPSK	25	0	18.03	18.07	18.08		
5	16QAM	1	0	18.31	18.36	18.27	19.00	1
5	16QAM	1	12	18.20	18.30	18.31		
5	16QAM	1	24	18.23	18.16	18.24		
5	16QAM	12	0	17.09	17.09	17.14	18.00	2
5	16QAM	12	7	17.07	17.12	17.14		
5	16QAM	12	13	17.09	17.10	17.15		
5	16QAM	25	0	17.02	17.09	17.11		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.01	18.98	19.04	20.00	0
3	QPSK	1	8	19.03	19.06	19.04		
3	QPSK	1	14	18.95	18.93	18.93		
3	QPSK	8	0	18.07	18.08	18.11	19.00	1
3	QPSK	8	4	18.06	18.08	18.04		
3	QPSK	8	7	18.00	18.08	18.04		
3	QPSK	15	0	18.02	18.06	18.03		
3	16QAM	1	0	18.24	18.22	18.30	19.00	1
3	16QAM	1	8	18.29	18.34	18.32		
3	16QAM	1	14	18.26	18.20	18.19		
3	16QAM	8	0	17.13	17.14	17.21	18.00	2
3	16QAM	8	4	17.13	17.16	17.13		
3	16QAM	8	7	17.06	17.16	17.11		
3	16QAM	15	0	17.08	17.11	17.09		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	18.90	18.91	18.92	20.00	0
1.4	QPSK	1	3	18.99	19.00	18.99		
1.4	QPSK	1	5	18.86	18.90	18.92		
1.4	QPSK	3	0	18.99	19.00	19.00		
1.4	QPSK	3	1	19.02	19.03	19.04		
1.4	QPSK	3	3	19.00	19.02	19.05		
1.4	QPSK	6	0	18.03	18.05	18.02	19.00	1
1.4	16QAM	1	0	18.20	18.19	18.18	19.00	1
1.4	16QAM	1	3	18.26	18.25	18.23		
1.4	16QAM	1	5	18.12	18.18	18.23		
1.4	16QAM	3	0	18.05	18.05	18.01		
1.4	16QAM	3	1	18.07	18.10	18.09		
1.4	16QAM	3	3	18.07	18.08	18.06		
1.4	16QAM	6	0	17.12	17.11	17.09	18.00	2

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.64	23.65	23.64	24.50	0
10	QPSK	1	25	23.58	23.55	23.60		
10	QPSK	1	49	23.63	23.45	23.40		
10	QPSK	25	0	22.85	22.85	22.83	23.50	1
10	QPSK	25	12	22.77	22.72	22.78		
10	QPSK	25	25	22.76	22.71	22.74		
10	QPSK	50	0	22.73	22.87	22.73		
10	16QAM	1	0	22.65	22.69	22.58	23.50	1
10	16QAM	1	25	22.76	22.82	22.52		
10	16QAM	1	49	22.58	22.60	22.28		
10	16QAM	25	0	21.86	21.67	21.84	22.50	2
10	16QAM	25	12	21.83	21.79	21.84		
10	16QAM	25	25	21.78	21.78	21.79		
10	16QAM	50	0	21.87	21.76	21.77		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.79	23.65	23.68	24.50	0
5	QPSK	1	12	23.74	23.64	23.63		
5	QPSK	1	24	23.71	23.61	23.52		
5	QPSK	12	0	22.76	22.81	22.78	23.50	1
5	QPSK	12	7	22.88	22.81	22.74		
5	QPSK	12	13	22.89	22.81	22.82		
5	QPSK	25	0	22.86	22.73	22.65		
5	16QAM	1	0	22.73	22.61	22.61	23.50	1
5	16QAM	1	12	22.81	22.52	22.51		
5	16QAM	1	24	22.71	22.57	22.50		
5	16QAM	12	0	21.77	21.80	21.76	22.50	2
5	16QAM	12	7	21.84	21.80	21.76		
5	16QAM	12	13	21.65	21.80	21.82		
5	16QAM	25	0	21.90	21.75	21.74		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.69	23.63	23.57	24.50	0
3	QPSK	1	8	23.86	23.83	23.71		
3	QPSK	1	14	23.55	23.55	23.26		
3	QPSK	8	0	22.71	22.65	22.64	23.50	1
3	QPSK	8	4	22.86	22.70	22.76		
3	QPSK	8	7	22.92	22.66	22.64		
3	QPSK	15	0	22.80	22.75	22.70		
3	16QAM	1	0	22.77	22.59	22.53	23.50	1
3	16QAM	1	8	22.69	22.62	22.69		
3	16QAM	1	14	22.58	22.44	22.27		
3	16QAM	8	0	21.98	21.83	21.95	22.50	2
3	16QAM	8	4	21.85	21.84	21.85		
3	16QAM	8	7	21.97	21.95	21.84		
3	16QAM	15	0	21.79	21.82	21.80		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.57	23.55	23.39	24.50	0
1.4	QPSK	1	3	23.75	23.60	23.32		
1.4	QPSK	1	5	23.52	23.61	23.01		
1.4	QPSK	3	0	23.69	23.66	23.31		
1.4	QPSK	3	1	23.75	23.70	23.28		
1.4	QPSK	3	3	23.78	23.77	23.21		
1.4	QPSK	6	0	22.74	22.64	22.59	23.50	1
1.4	16QAM	1	0	22.62	22.48	22.41	23.50	1
1.4	16QAM	1	3	22.93	22.55	22.34		
1.4	16QAM	1	5	22.51	22.53	22.06		
1.4	16QAM	3	0	22.80	22.85	22.52		
1.4	16QAM	3	1	22.86	22.89	22.49		
1.4	16QAM	3	3	22.88	22.79	22.42		
1.4	16QAM	6	0	21.65	21.47	21.56	22.50	2

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	23.55	23.62	23.54	24.50	0
10	QPSK	1	25	23.74	23.79	23.77		
10	QPSK	1	49	23.64	23.68	23.67		
10	QPSK	25	0	22.86	22.79	22.78	23.50	1
10	QPSK	25	12	22.88	22.90	22.84		
10	QPSK	25	25	22.85	22.85	22.83		
10	QPSK	50	0	22.82	22.92	22.81		
10	16QAM	1	0	22.95	23.02	22.94	23.50	1
10	16QAM	1	25	23.05	23.06	23.04		
10	16QAM	1	49	22.93	22.98	22.93		
10	16QAM	25	0	21.82	21.75	21.73	22.50	2
10	16QAM	25	12	21.83	21.84	21.76		
10	16QAM	25	25	21.80	21.78	21.75		
10	16QAM	50	0	21.86	21.78	21.75		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.65	23.65	23.60	24.50	0
5	QPSK	1	12	23.79	23.76	23.61		
5	QPSK	1	24	23.74	23.81	23.63		
5	QPSK	12	0	22.84	22.80	22.71	23.50	1
5	QPSK	12	7	22.91	22.86	22.71		
5	QPSK	12	13	22.83	22.81	22.61		
5	QPSK	25	0	22.86	22.80	22.62		
5	16QAM	1	0	22.99	23.02	22.85	23.50	1
5	16QAM	1	12	23.09	23.11	22.89		
5	16QAM	1	24	23.00	23.06	22.85		
5	16QAM	12	0	21.83	21.78	21.67	22.50	2
5	16QAM	12	7	21.86	21.83	21.65		
5	16QAM	12	13	21.79	21.77	21.60		
5	16QAM	25	0	21.84	21.77	21.61		

Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.65	23.65	23.56	24.50	0
3	QPSK	1	8	23.89	23.83	23.65		
3	QPSK	1	14	23.76	23.68	23.55		
3	QPSK	8	0	22.86	22.82	22.59	23.50	1
3	QPSK	8	4	22.84	22.82	22.70		
3	QPSK	8	7	22.89	22.77	22.67		
3	QPSK	15	0	22.82	22.78	22.59		
3	16QAM	1	0	22.99	23.00	22.95	23.50	1
3	16QAM	1	8	23.14	23.16	23.04		
3	16QAM	1	14	23.00	22.94	22.92		
3	16QAM	8	0	21.88	21.85	21.74	22.50	2
3	16QAM	8	4	21.90	21.83	21.85		
3	16QAM	8	7	21.94	21.76	21.82		
3	16QAM	15	0	21.82	21.79	21.70		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	23.61	23.64	23.60	24.50	0
1.4	QPSK	1	3	23.74	23.79	23.67		
1.4	QPSK	1	5	23.74	23.69	22.81		
1.4	QPSK	3	0	23.80	23.82	23.65		
1.4	QPSK	3	1	23.81	23.87	23.76		
1.4	QPSK	3	3	23.91	23.84	23.75		
1.4	QPSK	6	0	22.76	22.29	22.68	23.50	1
1.4	16QAM	1	0	22.91	23.46	22.86	23.50	1
1.4	16QAM	1	3	23.00	22.95	22.92		
1.4	16QAM	1	5	22.98	22.88	22.79		
1.4	16QAM	3	0	22.78	22.76	22.72		
1.4	16QAM	3	1	23.45	22.81	22.78		
1.4	16QAM	3	3	22.86	22.80	22.78		
1.4	16QAM	6	0	21.72	21.77	21.00	22.50	2

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0		23.76		24.50	0
10	QPSK	1	25		23.82			
10	QPSK	1	49		23.61			
10	QPSK	25	0		22.88		23.50	1
10	QPSK	25	12		22.91			
10	QPSK	25	25		22.89			
10	QPSK	50	0		22.75			
10	16QAM	1	0		22.93		23.50	1
10	16QAM	1	25		23.07			
10	16QAM	1	49		22.90			
10	16QAM	25	0		21.83		22.50	2
10	16QAM	25	12		21.82			
10	16QAM	25	25		21.78			
10	16QAM	50	0		21.83			
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	23.61	23.62	23.70	24.50	0
5	QPSK	1	12	23.67	23.65	23.64		
5	QPSK	1	24	23.68	23.72	23.67		
5	QPSK	12	0	22.86	22.84	22.71	23.50	1
5	QPSK	12	7	22.92	22.95	22.79		
5	QPSK	12	13	22.87	22.91	22.77		
5	QPSK	25	0	22.92	22.83	22.75		
5	16QAM	1	0	22.93	22.90	22.97	23.50	1
5	16QAM	1	12	23.20	22.93	22.91		
5	16QAM	1	24	23.02	22.96	22.84		
5	16QAM	12	0	21.71	21.89	21.74	22.50	2
5	16QAM	12	7	21.88	21.83	21.77		
5	16QAM	12	13	21.74	21.96	21.73		
5	16QAM	25	0	21.97	21.92	21.81		

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.53	23.57	23.58	24.50	0
10	QPSK	1	25	23.64	23.62	23.60		
10	QPSK	1	49	23.62	23.61	23.58		
10	QPSK	25	0	22.88	22.86	22.77	23.50	1
10	QPSK	25	12	23.03	22.92	22.93		
10	QPSK	25	25	22.82	22.88	22.82		
10	QPSK	50	0	22.86	22.93	22.83		
10	16QAM	1	0	22.89	22.95	22.83	23.50	1
10	16QAM	1	25	23.03	23.07	23.00		
10	16QAM	1	49	22.89	22.85	22.79		
10	16QAM	25	0	21.85	21.83	21.79	22.50	2
10	16QAM	25	12	21.98	21.84	21.85		
10	16QAM	25	25	21.77	21.79	21.89		
10	16QAM	50	0	21.92	21.91	21.76		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.59	23.67	23.55	24.50	0
5	QPSK	1	12	23.66	23.65	23.68		
5	QPSK	1	24	23.71	23.66	23.56		
5	QPSK	12	0	22.89	22.84	22.66	23.50	1
5	QPSK	12	7	22.92	22.94	22.88		
5	QPSK	12	13	22.91	22.84	22.81		
5	QPSK	25	0	22.82	22.89	22.75		
5	16QAM	1	0	22.86	22.97	22.93	23.50	1
5	16QAM	1	12	22.93	22.99	23.04		
5	16QAM	1	24	23.03	22.93	22.84		
5	16QAM	12	0	21.93	21.71	21.77	22.50	2
5	16QAM	12	7	21.87	21.93	21.74		
5	16QAM	12	13	21.88	21.78	21.82		
5	16QAM	25	0	21.75	21.85	21.83		

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	21.12	21.01	21.18	21.50	0
20	QPSK	1	49	20.15	20.09	20.26		
20	QPSK	1	99	20.26	20.39	20.39		
20	QPSK	50	0	19.60	19.60	19.70	20.50	1
20	QPSK	50	24	19.27	19.26	19.44		
20	QPSK	50	50	19.32	19.29	19.42		
20	QPSK	100	0	19.42	19.43	19.61		
20	16QAM	1	0	20.39	20.31	20.35	20.50	1
20	16QAM	1	49	19.33	19.36	19.49		
20	16QAM	1	99	19.52	19.64	19.68		
20	16QAM	50	0	18.59	18.59	18.69	19.50	2
20	16QAM	50	24	18.26	18.27	18.42		
20	16QAM	50	50	18.28	18.28	18.33		
20	16QAM	100	0	18.36	18.37	18.55		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	20.85	20.73	20.86	21.50	0
15	QPSK	1	37	20.26	20.12	20.36		
15	QPSK	1	74	20.29	20.25	20.29		
15	QPSK	36	0	19.52	19.44	19.54	20.50	1
15	QPSK	36	20	19.27	19.23	19.37		
15	QPSK	36	39	19.23	19.18	19.28		
15	QPSK	75	0	19.33	19.33	19.53		
15	16QAM	1	0	20.11	20.03	20.14	20.50	1
15	16QAM	1	37	19.30	19.35	19.44		
15	16QAM	1	74	19.48	19.49	19.56		
15	16QAM	36	0	18.49	18.40	18.48	19.50	2
15	16QAM	36	20	18.23	18.22	18.34		
15	16QAM	36	39	18.16	18.19	18.19		
15	16QAM	75	0	18.29	18.28	18.45		

Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	20.45	20.45	20.67	21.50	0
10	QPSK	1	25	20.10	20.19	20.36		
10	QPSK	1	49	20.12	20.18	20.23		
10	QPSK	25	0	19.36	19.42	19.49	20.50	1
10	QPSK	25	12	19.24	19.28	19.48		
10	QPSK	25	25	19.20	19.24	19.33		
10	QPSK	50	0	19.24	19.33	19.50		
10	16QAM	1	0	19.73	19.72	19.93	20.50	1
10	16QAM	1	25	19.30	19.43	19.64		
10	16QAM	1	49	19.34	19.45	19.55		
10	16QAM	25	0	18.29	18.39	18.44	19.50	2
10	16QAM	25	12	18.22	18.33	18.40		
10	16QAM	25	25	18.14	18.25	18.28		
10	16QAM	50	0	18.25	18.33	18.43		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	20.30	20.28	20.34	21.50	0
5	QPSK	1	12	20.10	20.16	20.23		
5	QPSK	1	24	20.02	20.13	20.20		
5	QPSK	12	0	19.28	19.32	19.38	20.50	1
5	QPSK	12	7	19.21	19.29	19.27		
5	QPSK	12	13	19.18	19.28	19.23		
5	QPSK	25	0	19.16	19.23	19.25		
5	16QAM	1	0	19.56	19.52	19.56	20.50	1
5	16QAM	1	12	19.39	19.45	19.58		
5	16QAM	1	24	19.23	19.38	19.49		
5	16QAM	12	0	18.27	18.39	18.36	19.50	2
5	16QAM	12	7	18.23	18.34	18.24		
5	16QAM	12	13	18.20	18.32	18.22		
5	16QAM	25	0	18.17	18.27	18.24		

Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	20.18	20.21	20.25	21.50	0
3	QPSK	1	8	20.13	20.14	20.23		
3	QPSK	1	14	20.10	20.11	20.16		
3	QPSK	8	0	19.20	19.22	19.34	20.50	1
3	QPSK	8	4	19.15	19.25	19.30		
3	QPSK	8	7	19.13	19.21	19.22		
3	QPSK	15	0	19.13	19.23	19.28		
3	16QAM	1	0	19.43	19.46	19.52	20.50	1
3	16QAM	1	8	19.41	19.41	19.49		
3	16QAM	1	14	19.39	19.35	19.44		
3	16QAM	8	0	18.26	18.30	18.36	19.50	2
3	16QAM	8	4	18.17	18.35	18.32		
3	16QAM	8	7	18.14	18.29	18.23		
3	16QAM	15	0	18.14	18.28	18.30		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	20.15	20.05	20.17	21.50	0
1.4	QPSK	1	3	20.23	20.16	20.27		
1.4	QPSK	1	5	20.14	20.07	20.16		
1.4	QPSK	3	0	20.22	20.16	20.25		
1.4	QPSK	3	1	20.29	20.21	20.36		
1.4	QPSK	3	3	20.23	20.16	20.30		
1.4	QPSK	6	0	19.13	19.18	19.23	20.50	1
1.4	16QAM	1	0	19.44	19.35	19.50	20.50	1
1.4	16QAM	1	3	19.51	19.42	19.60		
1.4	16QAM	1	5	19.40	19.32	19.45		
1.4	16QAM	3	0	19.24	19.21	19.26		
1.4	16QAM	3	1	19.26	19.27	19.37		
1.4	16QAM	3	3	19.23	19.20	19.29		
1.4	16QAM	6	0	18.20	18.28	18.28	19.50	2

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.55	22.59	23.22	24.50	0
15	QPSK	1	37	23.58	23.11	23.55		
15	QPSK	1	74	22.55	22.96	23.26		
15	QPSK	36	0	22.33	21.59	22.35	23.50	1
15	QPSK	36	20	22.54	22.90	22.41		
15	QPSK	36	39	21.57	22.38	22.15		
15	QPSK	75	0	22.41	22.44	22.22		
15	16QAM	1	0	22.60	22.97	22.95	23.50	1
15	16QAM	1	37	22.95	22.55	22.49		
15	16QAM	1	74	21.78	22.45	22.26		
15	16QAM	36	0	21.54	22.06	21.31	22.50	2
15	16QAM	36	20	21.45	22.03	21.22		
15	16QAM	36	39	21.34	21.19	21.20		
15	16QAM	75	0	21.44	21.20	21.43		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.96	23.20	23.07	24.50	0
10	QPSK	1	25	23.11	23.24	22.58		
10	QPSK	1	49	22.86	23.06	23.03		
10	QPSK	25	0	22.26	22.22	22.33	23.50	1
10	QPSK	25	12	22.19	22.11	22.35		
10	QPSK	25	25	22.03	22.22	22.35		
10	QPSK	50	0	22.27	22.91	22.26		
10	16QAM	1	0	22.37	22.99	22.61	23.50	1
10	16QAM	1	25	22.62	22.64	23.08		
10	16QAM	1	49	22.48	22.27	22.59		
10	16QAM	25	0	21.18	21.91	21.31	22.50	2
10	16QAM	25	12	21.34	22.05	21.32		
10	16QAM	25	25	21.03	21.21	21.30		
10	16QAM	50	0	21.15	21.14	21.23		

Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.18	22.58	23.24	24.50	0
5	QPSK	1	12	23.24	22.54	23.21		
5	QPSK	1	24	23.24	23.34	23.24		
5	QPSK	12	0	22.24	21.59	22.42	23.50	1
5	QPSK	12	7	22.12	21.55	22.44		
5	QPSK	12	13	22.18	22.86	22.39		
5	QPSK	25	0	22.34	23.00	22.31		
5	16QAM	1	0	22.59	21.62	22.36	23.50	1
5	16QAM	1	12	22.52	22.22	22.90		
5	16QAM	1	24	22.27	22.70	22.64		
5	16QAM	12	0	21.12	20.51	21.38	22.50	2
5	16QAM	12	7	21.15	20.61	21.40		
5	16QAM	12	13	21.13	21.18	21.29		
5	16QAM	25	0	21.16	20.58	21.44		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.10	22.57	23.19	24.50	0
3	QPSK	1	8	23.18	22.51	23.26		
3	QPSK	1	14	23.08	22.58	23.21		
3	QPSK	8	0	22.16	22.14	22.24	23.50	1
3	QPSK	8	4	22.15	22.21	22.39		
3	QPSK	8	7	22.09	22.13	22.32		
3	QPSK	15	0	22.14	21.52	22.34		
3	16QAM	1	0	22.41	21.55	22.31	23.50	1
3	16QAM	1	8	22.63	22.78	22.33		
3	16QAM	1	14	22.53	22.91	22.12		
3	16QAM	8	0	21.27	21.28	21.55	22.50	2
3	16QAM	8	4	21.25	20.55	21.37		
3	16QAM	8	7	21.23	21.07	21.49		
3	16QAM	15	0	21.20	20.58	21.36		

Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.97	23.01	23.12	24.50	0
1.4	QPSK	1	3	23.10	23.10	23.21		
1.4	QPSK	1	5	23.08	22.54	23.10		
1.4	QPSK	3	0	23.08	23.15	23.31		
1.4	QPSK	3	1	23.13	23.21	23.25		
1.4	QPSK	3	3	23.06	23.26	23.22		
1.4	QPSK	6	0	22.05	22.17	22.28	23.50	1
1.4	16QAM	1	0	22.06	22.10	22.15	23.50	1
1.4	16QAM	1	3	21.95	22.10	22.27		
1.4	16QAM	1	5	22.02	22.23	22.09		
1.4	16QAM	3	0	22.12	22.28	22.44		
1.4	16QAM	3	1	22.17	22.23	22.42		
1.4	16QAM	3	3	22.19	22.27	22.43		
1.4	16QAM	6	0	20.93	21.54	21.18	22.50	2

<LTE Band 30>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				27710				
Frequency (MHz)				2310				
10	QPSK	1	0		20.37		21.00	0
10	QPSK	1	25		20.15			
10	QPSK	1	49		20.24			
10	QPSK	25	0		19.24		20.00	1
10	QPSK	25	12		19.29			
10	QPSK	25	25		19.21			
10	QPSK	50	0		19.32			
10	16QAM	1	0		19.76		20.00	1
10	16QAM	1	25		19.55			
10	16QAM	1	49		19.64			
10	16QAM	25	0		18.24		19.00	2
10	16QAM	25	12		18.36			
10	16QAM	25	25		18.23			
10	16QAM	50	0		18.38			
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	20.27	20.22	20.24	21.00	0
5	QPSK	1	12	20.13	20.06	20.10		
5	QPSK	1	24	20.09	20.04	20.15		
5	QPSK	12	0	19.07	19.13	19.18	20.00	1
5	QPSK	12	7	19.14	19.18	19.25		
5	QPSK	12	13	19.13	19.17	19.16		
5	QPSK	25	0	19.06	19.11	19.21		
5	16QAM	1	0	19.39	19.47	19.45	20.00	1
5	16QAM	1	12	19.36	19.40	19.48		
5	16QAM	1	24	19.29	19.32	19.43		
5	16QAM	12	0	18.09	18.15	18.23	19.00	2
5	16QAM	12	7	18.14	18.15	18.22		
5	16QAM	12	13	18.12	18.19	18.17		
5	16QAM	25	0	18.22	18.16	18.21		

Bottom Antenna

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.54	23.34	23.41	23.50	0
20	QPSK	1	49	22.94	23.16	22.63		
20	QPSK	1	99	23.02	23.50	23.48		
20	QPSK	50	0	21.74	22.17	22.38	22.50	1
20	QPSK	50	24	21.68	22.17	22.30		
20	QPSK	50	50	21.81	22.42	22.40		
20	QPSK	100	0	21.35	21.93	21.92		
20	16QAM	1	0	21.55	22.26	22.36	22.50	1
20	16QAM	1	49	21.91	22.17	21.63		
20	16QAM	1	99	22.32	22.43	21.96		
20	16QAM	50	0	20.93	21.37	21.48	21.50	2
20	16QAM	50	24	21.02	21.30	21.43		
20	16QAM	50	50	21.06	21.27	21.31		
20	16QAM	100	0	20.86	21.31	21.25		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.65	23.36	23.46	23.50	0
15	QPSK	1	37	22.90	23.20	23.03		
15	QPSK	1	74	23.07	23.42	23.13		
15	QPSK	36	0	21.71	22.42	22.41	22.50	1
15	QPSK	36	20	21.79	22.49	22.42		
15	QPSK	36	39	21.84	22.40	22.02		
15	QPSK	75	0	21.66	22.15	22.43		
15	16QAM	1	0	22.47	22.44	22.45	22.50	1
15	16QAM	1	37	21.92	22.14	22.20		
15	16QAM	1	74	22.21	22.42	22.28		
15	16QAM	36	0	21.38	21.50	21.40	21.50	2
15	16QAM	36	20	21.05	21.41	21.43		
15	16QAM	36	39	20.93	21.29	21.31		
15	16QAM	75	0	20.90	21.49	21.41		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.41	23.23	22.86	23.50	0
10	QPSK	1	25	22.73	23.24	23.15		
10	QPSK	1	49	22.85	23.26	22.88		
10	QPSK	25	0	21.58	22.41	22.17	22.50	1
10	QPSK	25	12	21.82	22.50	22.38		
10	QPSK	25	25	21.74	22.29	22.13		
10	QPSK	50	0	21.75	22.27	22.33		
10	16QAM	1	0	21.51	22.13	21.91	22.50	1
10	16QAM	1	25	21.64	22.25	22.36		
10	16QAM	1	49	22.21	22.33	22.02		
10	16QAM	25	0	20.83	21.50	21.46	21.50	2
10	16QAM	25	12	20.91	21.49	21.35		
10	16QAM	25	25	20.95	21.37	21.33		
10	16QAM	50	0	20.82	21.36	21.41		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.48	23.18	22.83	23.50	0
5	QPSK	1	12	22.61	23.21	22.89		
5	QPSK	1	24	22.68	23.31	22.65		
5	QPSK	12	0	21.75	22.36	22.27	22.50	1
5	QPSK	12	7	21.97	22.39	22.49		
5	QPSK	12	13	21.68	22.39	22.23		
5	QPSK	25	0	21.58	22.27	21.97		
5	16QAM	1	0	21.47	22.16	21.88	22.50	1
5	16QAM	1	12	21.64	22.31	21.96		
5	16QAM	1	24	21.56	22.25	21.78		
5	16QAM	12	0	20.91	21.44	21.44	21.50	2
5	16QAM	12	7	21.00	21.45	21.41		
5	16QAM	12	13	20.81	21.41	21.30		
5	16QAM	25	0	20.83	21.37	21.25		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.84	23.22	23.17	23.50	0
3	QPSK	1	8	22.95	23.36	23.16		
3	QPSK	1	14	22.91	23.22	22.92		
3	QPSK	8	0	21.65	22.37	22.19	22.50	1
3	QPSK	8	4	21.59	22.34	22.16		
3	QPSK	8	7	21.76	22.32	21.99		
3	QPSK	15	0	21.63	22.41	21.92		
3	16QAM	1	0	21.24	22.08	22.21	22.50	1
3	16QAM	1	8	21.41	22.31	22.23		
3	16QAM	1	14	21.44	22.29	21.99		
3	16QAM	8	0	20.99	21.26	21.48	21.50	2
3	16QAM	8	4	20.96	21.45	21.19		
3	16QAM	8	7	21.05	21.48	21.42		
3	16QAM	15	0	21.25	21.42	21.28		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.49	23.18	23.11	23.50	0
1.4	QPSK	1	3	22.56	23.30	23.13		
1.4	QPSK	1	5	22.49	23.16	23.02		
1.4	QPSK	3	0	22.45	23.19	23.13		
1.4	QPSK	3	1	22.51	23.25	23.16		
1.4	QPSK	3	3	22.52	23.36	23.13		
1.4	QPSK	6	0	21.80	22.49	22.02	22.5.0	1
1.4	16QAM	1	0	21.72	22.27	22.35	22.50	1
1.4	16QAM	1	3	21.64	22.38	22.06		
1.4	16QAM	1	5	21.78	22.24	21.91		
1.4	16QAM	3	0	21.58	22.26	21.88		
1.4	16QAM	3	1	21.63	22.21	21.91		
1.4	16QAM	3	3	21.64	22.22	21.88		
1.4	16QAM	6	0	20.83	21.34	21.28	21.50	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.69	22.34	22.38	23.00	0
20	QPSK	1	49	21.61	21.54	21.59		
20	QPSK	1	99	21.64	21.63	21.55		
20	QPSK	50	0	21.07	20.83	20.86	22.00	1
20	QPSK	50	24	20.61	20.53	20.61		
20	QPSK	50	50	20.66	20.61	20.65		
20	QPSK	100	0	20.74	20.73	20.73		
20	16QAM	1	0	21.95	21.59	21.65	22.00	1
20	16QAM	1	49	20.77	20.75	20.68		
20	16QAM	1	99	20.85	20.88	20.82		
20	16QAM	50	0	20.05	19.85	19.88	21.00	2
20	16QAM	50	24	19.61	19.59	19.58		
20	16QAM	50	50	19.56	19.50	19.53		
20	16QAM	100	0	19.68	19.66	19.74		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.40	22.01	22.05	23.00	0
15	QPSK	1	37	21.65	21.56	21.48		
15	QPSK	1	74	21.61	21.54	21.48		
15	QPSK	36	0	20.99	20.74	20.73	22.00	1
15	QPSK	36	20	20.71	20.58	20.57		
15	QPSK	36	39	20.51	20.58	20.41		
15	QPSK	75	0	20.77	20.72	20.63		
15	16QAM	1	0	21.67	21.20	21.29	22.00	1
15	16QAM	1	37	20.84	20.62	20.60		
15	16QAM	1	74	20.88	20.82	20.72		
15	16QAM	36	0	19.95	19.69	19.66	21.00	2
15	16QAM	36	20	19.69	19.52	19.51		
15	16QAM	36	39	19.52	19.44	19.43		
15	16QAM	75	0	19.70	19.55	19.56		

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.75	21.64	21.71	23.00	0
10	QPSK	1	25	21.47	21.42	21.48		
10	QPSK	1	49	21.42	21.47	21.35		
10	QPSK	25	0	20.70	20.70	20.71	22.00	1
10	QPSK	25	12	20.55	20.53	20.61		
10	QPSK	25	25	20.43	20.38	20.47		
10	QPSK	50	0	20.59	20.54	20.64		
10	16QAM	1	0	21.10	20.92	21.00	22.00	1
10	16QAM	1	25	20.72	20.66	20.72		
10	16QAM	1	49	20.69	20.67	20.64		
10	16QAM	25	0	19.68	19.64	19.61	21.00	2
10	16QAM	25	12	19.55	19.55	19.61		
10	16QAM	25	25	19.44	19.41	19.48		
10	16QAM	50	0	19.53	19.55	19.61		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.52	21.59	21.47	23.00	0
5	QPSK	1	12	21.41	21.43	21.44		
5	QPSK	1	24	21.41	21.35	21.39		
5	QPSK	12	0	20.51	20.49	20.52	22.00	1
5	QPSK	12	7	20.47	20.52	20.54		
5	QPSK	12	13	20.54	20.52	20.54		
5	QPSK	25	0	20.45	20.50	20.52		
5	16QAM	1	0	20.72	20.78	20.71	22.00	1
5	16QAM	1	12	20.67	20.70	20.73		
5	16QAM	1	24	20.67	20.59	20.62		
5	16QAM	12	0	19.53	19.54	19.54	21.00	2
5	16QAM	12	7	19.47	19.54	19.56		
5	16QAM	12	13	19.53	19.53	19.54		
5	16QAM	25	0	19.46	19.49	19.54		

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.43	21.45	21.48	23.00	0
3	QPSK	1	8	21.52	21.32	21.47		
3	QPSK	1	14	21.38	21.40	21.36		
3	QPSK	8	0	20.48	20.51	20.57	22.00	1
3	QPSK	8	4	20.47	20.54	21.12		
3	QPSK	8	7	20.41	20.50	20.45		
3	QPSK	15	0	20.44	20.49	20.45		
3	16QAM	1	0	20.74	20.05	20.69	22.00	1
3	16QAM	1	8	20.70	21.47	20.75		
3	16QAM	1	14	20.65	20.77	20.62		
3	16QAM	8	0	19.54	19.56	19.63	21.00	2
3	16QAM	8	4	19.54	19.61	19.55		
3	16QAM	8	7	19.46	19.58	19.52		
3	16QAM	15	0	19.49	19.54	19.50		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.35	21.38	21.36	23.00	0
1.4	QPSK	1	3	21.40	21.50	21.44		
1.4	QPSK	1	5	21.32	21.40	21.38		
1.4	QPSK	3	0	21.43	21.46	21.05		
1.4	QPSK	3	1	21.46	21.51	21.40		
1.4	QPSK	3	3	21.47	21.53	21.49		
1.4	QPSK	6	0	20.44	20.48	20.45	22.00	1
1.4	16QAM	1	0	20.55	20.05	20.64	22.00	1
1.4	16QAM	1	3	20.65	21.41	20.70		
1.4	16QAM	1	5	20.49	20.64	20.65		
1.4	16QAM	3	0	20.42	20.49	20.43		
1.4	16QAM	3	1	20.49	20.55	20.50		
1.4	16QAM	3	3	20.48	20.55	20.49		
1.4	16QAM	6	0	19.51	19.54	19.55	21.00	2

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.64	23.65	23.64	24.50	0
10	QPSK	1	25	23.58	23.55	23.60		
10	QPSK	1	49	23.63	23.45	23.40		
10	QPSK	25	0	22.85	22.85	22.83	23.50	1
10	QPSK	25	12	22.77	22.72	22.78		
10	QPSK	25	25	22.76	22.71	22.74		
10	QPSK	50	0	22.73	22.87	22.73		
10	16QAM	1	0	22.65	22.69	22.58	23.50	1
10	16QAM	1	25	22.76	22.82	22.52		
10	16QAM	1	49	22.58	22.60	22.28		
10	16QAM	25	0	21.86	21.67	21.84	22.50	2
10	16QAM	25	12	21.83	21.79	21.84		
10	16QAM	25	25	21.78	21.78	21.79		
10	16QAM	50	0	21.87	21.76	21.77		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.79	23.65	23.68	24.50	0
5	QPSK	1	12	23.74	23.64	23.63		
5	QPSK	1	24	23.71	23.61	23.52		
5	QPSK	12	0	22.76	22.81	22.78	23.50	1
5	QPSK	12	7	22.88	22.81	22.74		
5	QPSK	12	13	22.89	22.81	22.82		
5	QPSK	25	0	22.86	22.73	22.65		
5	16QAM	1	0	22.73	22.61	22.61	23.50	1
5	16QAM	1	12	22.81	22.52	22.51		
5	16QAM	1	24	22.71	22.57	22.50		
5	16QAM	12	0	21.77	21.80	21.76	22.50	2
5	16QAM	12	7	21.84	21.80	21.76		
5	16QAM	12	13	21.65	21.80	21.82		
5	16QAM	25	0	21.90	21.75	21.74		

Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.69	23.63	23.57	24.50	0
3	QPSK	1	8	23.86	23.83	23.71		
3	QPSK	1	14	23.55	23.55	23.26		
3	QPSK	8	0	22.71	22.65	22.64	23.50	1
3	QPSK	8	4	22.86	22.70	22.76		
3	QPSK	8	7	22.92	22.66	22.64		
3	QPSK	15	0	22.80	22.75	22.70		
3	16QAM	1	0	22.77	22.59	22.53	23.50	1
3	16QAM	1	8	22.69	22.62	22.69		
3	16QAM	1	14	22.58	22.44	22.27		
3	16QAM	8	0	21.98	21.83	21.95	22.50	2
3	16QAM	8	4	21.85	21.84	21.85		
3	16QAM	8	7	21.97	21.95	21.84		
3	16QAM	15	0	21.79	21.82	21.80		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.57	23.55	23.39	24.50	0
1.4	QPSK	1	3	23.75	23.60	23.32		
1.4	QPSK	1	5	23.52	23.61	23.01		
1.4	QPSK	3	0	23.69	23.66	23.31		
1.4	QPSK	3	1	23.75	23.70	23.28		
1.4	QPSK	3	3	23.78	23.77	23.21		
1.4	QPSK	6	0	22.74	22.64	22.59	23.50	1
1.4	16QAM	1	0	22.62	22.48	22.41	23.50	1
1.4	16QAM	1	3	22.93	22.55	22.34		
1.4	16QAM	1	5	22.51	22.53	22.06		
1.4	16QAM	3	0	22.80	22.85	22.52		
1.4	16QAM	3	1	22.86	22.89	22.49		
1.4	16QAM	3	3	22.88	22.79	22.42		
1.4	16QAM	6	0	21.65	21.47	21.56	22.50	2

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Measured Power			Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	24.02	24.27	24.22	24.50	0
20	QPSK	1	49	23.69	23.76	23.62		
20	QPSK	1	99	23.86	23.76	23.63		
20	QPSK	50	0	22.88	23.01	22.78	23.50	1
20	QPSK	50	24	22.79	22.86	22.66		
20	QPSK	50	50	22.78	22.19	22.57		
20	QPSK	100	0	22.72	22.75	22.67		
20	16QAM	1	0	23.01	22.84	22.97	23.50	1
20	16QAM	1	49	22.68	22.37	22.49		
20	16QAM	1	99	22.79	22.51	22.63		
20	16QAM	50	0	21.84	21.83	21.76	22.50	2
20	16QAM	50	24	21.39	21.31	21.69		
20	16QAM	50	50	21.73	21.31	21.53		
20	16QAM	100	0	21.12	21.17	21.59		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.77	24.05	24.01	24.50	0
15	QPSK	1	37	23.64	23.85	23.70		
15	QPSK	1	74	23.62	23.69	22.97		
15	QPSK	36	0	22.98	22.72	22.82	23.50	1
15	QPSK	36	20	22.89	22.14	22.64		
15	QPSK	36	39	22.76	22.70	22.56		
15	QPSK	75	0	22.82	22.58	22.64		
15	16QAM	1	0	22.94	23.06	23.17	23.50	1
15	16QAM	1	37	22.66	22.81	22.74		
15	16QAM	1	74	22.40	22.70	22.06		
15	16QAM	36	0	21.85	21.65	21.75	22.50	2
15	16QAM	36	20	21.83	21.31	21.66		
15	16QAM	36	39	21.29	21.85	21.53		
15	16QAM	75	0	21.81	21.17	21.61		

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.61	23.77	23.76	24.50	0
10	QPSK	1	25	23.64	23.57	23.58		
10	QPSK	1	49	23.90	23.38	23.38		
10	QPSK	25	0	22.81	22.43	22.70	23.50	1
10	QPSK	25	12	22.83	22.64	22.77		
10	QPSK	25	25	23.23	22.86	22.46		
10	QPSK	50	0	23.03	22.11	22.55		
10	16QAM	1	0	22.99	22.67	22.82	23.50	1
10	16QAM	1	25	22.91	22.59	22.70		
10	16QAM	1	49	23.36	22.50	22.54		
10	16QAM	25	0	21.58	21.07	21.56	22.50	2
10	16QAM	25	12	21.67	21.05	21.54		
10	16QAM	25	25	22.09	21.89	21.48		
10	16QAM	50	0	22.08	21.97	21.52		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.60	23.70	23.59	24.50	0
5	QPSK	1	12	23.76	23.59	23.47		
5	QPSK	1	24	23.43	23.43	23.42		
5	QPSK	12	0	22.75	22.49	22.50	23.50	1
5	QPSK	12	7	22.76	22.50	22.50		
5	QPSK	12	13	22.73	22.00	22.42		
5	QPSK	25	0	22.73	22.40	22.46		
5	16QAM	1	0	22.92	22.52	22.68	23.50	1
5	16QAM	1	12	22.85	22.71	22.68		
5	16QAM	1	24	22.79	22.43	22.56		
5	16QAM	12	0	21.91	21.41	21.58	22.50	2
5	16QAM	12	7	21.86	21.84	21.50		
5	16QAM	12	13	21.85	21.47	21.43		
5	16QAM	25	0	21.67	21.40	21.39		

<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	23.55	23.62	23.54	24.50	0
10	QPSK	1	25	23.74	23.79	23.77		
10	QPSK	1	49	23.64	23.68	23.67		
10	QPSK	25	0	22.86	22.79	22.78	23.50	1
10	QPSK	25	12	22.88	22.90	22.84		
10	QPSK	25	25	22.85	22.85	22.83		
10	QPSK	50	0	22.82	22.92	22.81		
10	16QAM	1	0	22.95	23.02	22.94	23.50	1
10	16QAM	1	25	23.05	23.06	23.04		
10	16QAM	1	49	22.93	22.98	22.93		
10	16QAM	25	0	21.82	21.75	21.73	22.50	2
10	16QAM	25	12	21.83	21.84	21.76		
10	16QAM	25	25	21.80	21.78	21.75		
10	16QAM	50	0	21.86	21.78	21.75		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.65	23.65	23.60	24.50	0
5	QPSK	1	12	23.79	23.76	23.61		
5	QPSK	1	24	23.74	23.81	23.63		
5	QPSK	12	0	22.84	22.80	22.71	23.50	1
5	QPSK	12	7	22.91	22.86	22.71		
5	QPSK	12	13	22.83	22.81	22.61		
5	QPSK	25	0	22.86	22.80	22.62		
5	16QAM	1	0	22.99	23.02	22.85	23.50	1
5	16QAM	1	12	23.09	23.11	22.89		
5	16QAM	1	24	23.00	23.06	22.85		
5	16QAM	12	0	21.83	21.78	21.67	22.50	2
5	16QAM	12	7	21.86	21.83	21.65		
5	16QAM	12	13	21.79	21.77	21.60		
5	16QAM	25	0	21.84	21.77	21.61		

Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.65	23.65	23.56	24.50	0
3	QPSK	1	8	23.89	23.83	23.65		
3	QPSK	1	14	23.76	23.68	23.55		
3	QPSK	8	0	22.86	22.82	22.59	23.50	1
3	QPSK	8	4	22.84	22.82	22.70		
3	QPSK	8	7	22.89	22.77	22.67		
3	QPSK	15	0	22.82	22.78	22.59		
3	16QAM	1	0	22.99	23.00	22.95	23.50	1
3	16QAM	1	8	23.14	23.16	23.04		
3	16QAM	1	14	23.00	22.94	22.92		
3	16QAM	8	0	21.88	21.85	21.74	22.50	2
3	16QAM	8	4	21.90	21.83	21.85		
3	16QAM	8	7	21.94	21.76	21.82		
3	16QAM	15	0	21.82	21.79	21.70		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	23.61	23.64	23.60	24.50	0
1.4	QPSK	1	3	23.74	23.79	23.67		
1.4	QPSK	1	5	23.74	23.69	22.81		
1.4	QPSK	3	0	23.80	23.82	23.65		
1.4	QPSK	3	1	23.81	23.87	23.76		
1.4	QPSK	3	3	23.91	23.84	23.75		
1.4	QPSK	6	0	22.76	22.29	22.68	23.50	1
1.4	16QAM	1	0	22.91	23.46	22.86	23.50	1
1.4	16QAM	1	3	23.00	22.95	22.92		
1.4	16QAM	1	5	22.98	22.88	22.79		
1.4	16QAM	3	0	22.78	22.76	22.72		
1.4	16QAM	3	1	23.45	22.81	22.78		
1.4	16QAM	3	3	22.86	22.80	22.78		
1.4	16QAM	6	0	21.72	21.77	21.00	22.50	2

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0		23.76		24.50	0
10	QPSK	1	25		23.82			
10	QPSK	1	49		23.61			
10	QPSK	25	0		22.88		23.50	1
10	QPSK	25	12		22.91			
10	QPSK	25	25		22.89			
10	QPSK	50	0		22.75			
10	16QAM	1	0		22.93		23.50	1
10	16QAM	1	25		23.07			
10	16QAM	1	49		22.90			
10	16QAM	25	0		21.83		22.50	2
10	16QAM	25	12		21.82			
10	16QAM	25	25		21.78			
10	16QAM	50	0		21.83			
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	23.61	23.62	23.70	24.50	0
5	QPSK	1	12	23.67	23.65	23.64		
5	QPSK	1	24	23.68	23.72	23.67		
5	QPSK	12	0	22.86	22.84	22.71	23.50	1
5	QPSK	12	7	22.92	22.95	22.79		
5	QPSK	12	13	22.87	22.91	22.77		
5	QPSK	25	0	22.92	22.83	22.75		
5	16QAM	1	0	22.93	22.90	22.97	23.50	1
5	16QAM	1	12	23.20	22.93	22.91		
5	16QAM	1	24	23.02	22.96	22.84		
5	16QAM	12	0	21.71	21.89	21.74	22.50	2
5	16QAM	12	7	21.88	21.83	21.77		
5	16QAM	12	13	21.74	21.96	21.73		
5	16QAM	25	0	21.97	21.92	21.81		

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.53	23.57	23.58	24.50	0
10	QPSK	1	25	23.64	23.62	23.60		
10	QPSK	1	49	23.62	23.61	23.58		
10	QPSK	25	0	22.88	22.86	22.77	23.50	1
10	QPSK	25	12	23.03	22.92	22.93		
10	QPSK	25	25	22.82	22.88	22.82		
10	QPSK	50	0	22.86	22.93	22.83		
10	16QAM	1	0	22.89	22.95	22.83	23.50	1
10	16QAM	1	25	23.03	23.07	23.00		
10	16QAM	1	49	22.89	22.85	22.79		
10	16QAM	25	0	21.85	21.83	21.79	22.50	2
10	16QAM	25	12	21.98	21.84	21.85		
10	16QAM	25	25	21.77	21.79	21.89		
10	16QAM	50	0	21.92	21.91	21.76		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.59	23.67	23.55	24.50	0
5	QPSK	1	12	23.66	23.65	23.68		
5	QPSK	1	24	23.71	23.66	23.56		
5	QPSK	12	0	22.89	22.84	22.66	23.50	1
5	QPSK	12	7	22.92	22.94	22.88		
5	QPSK	12	13	22.91	22.84	22.81		
5	QPSK	25	0	22.82	22.89	22.75		
5	16QAM	1	0	22.86	22.97	22.93	23.50	1
5	16QAM	1	12	22.93	22.99	23.04		
5	16QAM	1	24	23.03	22.93	22.84		
5	16QAM	12	0	21.93	21.71	21.77	22.50	2
5	16QAM	12	7	21.87	21.93	21.74		
5	16QAM	12	13	21.88	21.78	21.82		
5	16QAM	25	0	21.75	21.85	21.83		

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	23.08	23.19	23.25	23.50	0
20	QPSK	1	49	22.05	22.25	22.51		
20	QPSK	1	99	22.41	22.68	22.69		
20	QPSK	50	0	21.56	21.65	21.93	22.50	1
20	QPSK	50	24	21.39	21.49	21.75		
20	QPSK	50	50	21.45	21.63	21.74		
20	QPSK	100	0	21.58	21.74	21.89		
20	16QAM	1	0	22.47	22.45	22.46	22.50	1
20	16QAM	1	49	21.39	21.58	21.85		
20	16QAM	1	99	21.77	22.01	22.04		
20	16QAM	50	0	20.72	20.76	20.90	21.50	2
20	16QAM	50	24	20.37	20.53	20.75		
20	16QAM	50	50	20.47	20.62	20.66		
20	16QAM	100	0	20.46	20.64	20.82		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	23.11	23.39	23.45	23.50	0
15	QPSK	1	37	22.61	22.63	22.78		
15	QPSK	1	74	22.75	22.99	23.10		
15	QPSK	36	0	21.83	21.99	22.22	22.50	1
15	QPSK	36	20	21.65	21.81	21.96		
15	QPSK	36	39	21.59	21.84	21.84		
15	QPSK	75	0	21.74	21.88	22.09		
15	16QAM	1	0	22.41	22.48	22.49	22.50	1
15	16QAM	1	37	21.76	21.89	22.01		
15	16QAM	1	74	21.94	22.17	22.28		
15	16QAM	36	0	20.84	20.99	21.15	21.50	2
15	16QAM	36	20	20.64	20.79	20.95		
15	16QAM	36	39	20.59	20.81	20.97		
15	16QAM	75	0	20.70	20.84	20.98		

Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	22.58	22.73	22.78	23.50	0
10	QPSK	1	25	22.23	22.41	22.48		
10	QPSK	1	49	22.29	22.54	22.52		
10	QPSK	25	0	21.57	21.74	21.92	22.50	1
10	QPSK	25	12	21.43	21.61	21.89		
10	QPSK	25	25	21.47	21.63	21.92		
10	QPSK	50	0	21.45	21.64	22.11		
10	16QAM	1	0	21.94	22.06	22.11	22.50	1
10	16QAM	1	25	21.63	21.76	21.99		
10	16QAM	1	49	21.56	21.86	22.04		
10	16QAM	25	0	20.54	20.76	20.89	21.50	2
10	16QAM	25	12	20.43	20.61	20.88		
10	16QAM	25	25	20.46	20.67	20.85		
10	16QAM	50	0	20.45	20.68	20.90		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.35	22.52	22.70	23.50	0
5	QPSK	1	12	22.39	22.44	22.55		
5	QPSK	1	24	22.20	22.40	22.73		
5	QPSK	12	0	21.52	21.57	21.90	22.50	1
5	QPSK	12	7	21.43	21.58	21.89		
5	QPSK	12	13	21.40	21.52	21.77		
5	QPSK	25	0	21.38	21.56	21.61		
5	16QAM	1	0	21.47	21.81	22.03	22.50	1
5	16QAM	1	12	21.67	21.75	21.87		
5	16QAM	1	24	21.55	21.64	22.04		
5	16QAM	12	0	20.51	20.59	20.85	21.50	2
5	16QAM	12	7	20.43	20.57	20.91		
5	16QAM	12	13	20.42	20.54	20.76		
5	16QAM	25	0	20.41	20.56	20.77		

Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	22.26	22.50	22.58	23.50	0
3	QPSK	1	8	22.46	22.54	23.06		
3	QPSK	1	14	22.18	22.43	22.83		
3	QPSK	8	0	21.51	21.59	21.83	22.50	1
3	QPSK	8	4	21.40	21.59	21.78		
3	QPSK	8	7	21.36	21.61	21.69		
3	QPSK	15	0	21.48	21.58	21.74		
3	16QAM	1	0	21.63	21.79	21.91	22.50	1
3	16QAM	1	8	21.87	21.80	22.08		
3	16QAM	1	14	21.59	21.75	22.28		
3	16QAM	8	0	20.59	20.65	20.94	21.50	2
3	16QAM	8	4	20.52	20.66	20.92		
3	16QAM	8	7	20.49	20.54	20.82		
3	16QAM	15	0	20.47	20.59	20.80		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	22.31	22.41	22.73	23.50	0
1.4	QPSK	1	3	22.49	22.51	22.73		
1.4	QPSK	1	5	22.11	22.42	22.70		
1.4	QPSK	3	0	22.37	22.51	22.57		
1.4	QPSK	3	1	22.36	22.53	22.90		
1.4	QPSK	3	3	22.42	22.56	22.85		
1.4	QPSK	6	0	21.42	21.52	21.74	22.50	1
1.4	16QAM	1	0	21.45	21.64	21.80	22.50	1
1.4	16QAM	1	3	21.60	21.74	22.08		
1.4	16QAM	1	5	21.64	21.62	21.98		
1.4	16QAM	3	0	21.37	21.52	21.96		
1.4	16QAM	3	1	21.66	21.60	21.92		
1.4	16QAM	3	3	21.41	21.60	21.89		
1.4	16QAM	6	0	20.46	20.72	20.83	21.50	2

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.55	22.59	23.22	24.50	0
15	QPSK	1	37	23.58	23.11	23.55		
15	QPSK	1	74	22.55	22.96	23.26		
15	QPSK	36	0	22.33	21.59	22.35	23.50	1
15	QPSK	36	20	22.54	22.90	22.41		
15	QPSK	36	39	21.57	22.38	22.15		
15	QPSK	75	0	22.41	22.44	22.22		
15	16QAM	1	0	22.60	22.97	22.95	23.50	1
15	16QAM	1	37	22.95	22.55	22.49		
15	16QAM	1	74	21.78	22.45	22.26		
15	16QAM	36	0	21.54	22.06	21.31	22.50	2
15	16QAM	36	20	21.45	22.03	21.22		
15	16QAM	36	39	21.34	21.19	21.20		
15	16QAM	75	0	21.44	21.20	21.43		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.96	23.20	23.07	24.50	0
10	QPSK	1	25	23.11	23.24	22.58		
10	QPSK	1	49	22.86	23.06	23.03		
10	QPSK	25	0	22.26	22.22	22.33	23.50	1
10	QPSK	25	12	22.19	22.11	22.35		
10	QPSK	25	25	22.03	22.22	22.35		
10	QPSK	50	0	22.27	22.91	22.26		
10	16QAM	1	0	22.37	22.99	22.61	23.50	1
10	16QAM	1	25	22.62	22.64	23.08		
10	16QAM	1	49	22.48	22.27	22.59		
10	16QAM	25	0	21.18	21.91	21.31	22.50	2
10	16QAM	25	12	21.34	22.05	21.32		
10	16QAM	25	25	21.03	21.21	21.30		
10	16QAM	50	0	21.15	21.14	21.23		

Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.18	22.58	23.24	24.50	0
5	QPSK	1	12	23.24	22.54	23.21		
5	QPSK	1	24	23.24	23.34	23.24		
5	QPSK	12	0	22.24	21.59	22.42	23.50	1
5	QPSK	12	7	22.12	21.55	22.44		
5	QPSK	12	13	22.18	22.86	22.39		
5	QPSK	25	0	22.34	23.00	22.31		
5	16QAM	1	0	22.59	21.62	22.36	23.50	1
5	16QAM	1	12	22.52	22.22	22.90		
5	16QAM	1	24	22.27	22.70	22.64		
5	16QAM	12	0	21.12	20.51	21.38	22.50	2
5	16QAM	12	7	21.15	20.61	21.40		
5	16QAM	12	13	21.13	21.18	21.29		
5	16QAM	25	0	21.16	20.58	21.44		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.10	22.57	23.19	24.50	0
3	QPSK	1	8	23.18	22.51	23.26		
3	QPSK	1	14	23.08	22.58	23.21		
3	QPSK	8	0	22.16	22.14	22.24	23.50	1
3	QPSK	8	4	22.15	22.21	22.39		
3	QPSK	8	7	22.09	22.13	22.32		
3	QPSK	15	0	22.14	21.52	22.34		
3	16QAM	1	0	22.41	21.55	22.31	23.50	1
3	16QAM	1	8	22.63	22.78	22.33		
3	16QAM	1	14	22.53	22.91	22.12		
3	16QAM	8	0	21.27	21.28	21.55	22.50	2
3	16QAM	8	4	21.25	20.55	21.37		
3	16QAM	8	7	21.23	21.07	21.49		
3	16QAM	15	0	21.20	20.58	21.36		

Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.97	23.01	23.12	24.50	0
1.4	QPSK	1	3	23.10	23.10	23.21		
1.4	QPSK	1	5	23.08	22.54	23.10		
1.4	QPSK	3	0	23.08	23.15	23.31		
1.4	QPSK	3	1	23.13	23.21	23.25		
1.4	QPSK	3	3	23.06	23.26	23.22		
1.4	QPSK	6	0	22.05	22.17	22.28	23.50	1
1.4	16QAM	1	0	22.06	22.10	22.15	23.50	1
1.4	16QAM	1	3	21.95	22.10	22.27		
1.4	16QAM	1	5	22.02	22.23	22.09		
1.4	16QAM	3	0	22.12	22.28	22.44		
1.4	16QAM	3	1	22.17	22.23	22.42		
1.4	16QAM	3	3	22.19	22.27	22.43		
1.4	16QAM	6	0	20.93	21.54	21.18	22.50	2

<LTE Band 30>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel					27710			
Frequency (MHz)					2310			
10	QPSK	1	0		22.94		24.50	0
10	QPSK	1	25		23.10			
10	QPSK	1	49		22.88			
10	QPSK	25	0		22.03		23.50	1
10	QPSK	25	12		22.08			
10	QPSK	25	25		21.98			
10	QPSK	50	0		22.09			
10	16QAM	1	0		22.00		23.50	1
10	16QAM	1	25		22.02			
10	16QAM	1	49		21.81			
10	16QAM	25	0		21.42		22.50	2
10	16QAM	25	12		21.07			
10	16QAM	25	25		21.01			
10	16QAM	50	0		20.84			
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	22.81	22.86	22.81	24.50	0
5	QPSK	1	12	22.81	22.80	22.96		
5	QPSK	1	24	22.89	22.68	22.64		
5	QPSK	12	0	21.99	21.82	21.94	23.50	1
5	QPSK	12	7	22.04	22.12	22.23		
5	QPSK	12	13	22.19	21.97	21.88		
5	QPSK	25	0	21.99	21.97	21.90		
5	16QAM	1	0	21.77	21.98	22.04	23.50	1
5	16QAM	1	12	21.82	21.82	21.99		
5	16QAM	1	24	21.76	21.70	21.65		
5	16QAM	12	0	21.05	21.10	21.42	22.50	2
5	16QAM	12	7	21.12	21.20	21.42		
5	16QAM	12	13	21.10	21.26	21.07		
5	16QAM	25	0	21.44	21.11	21.03		

<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.

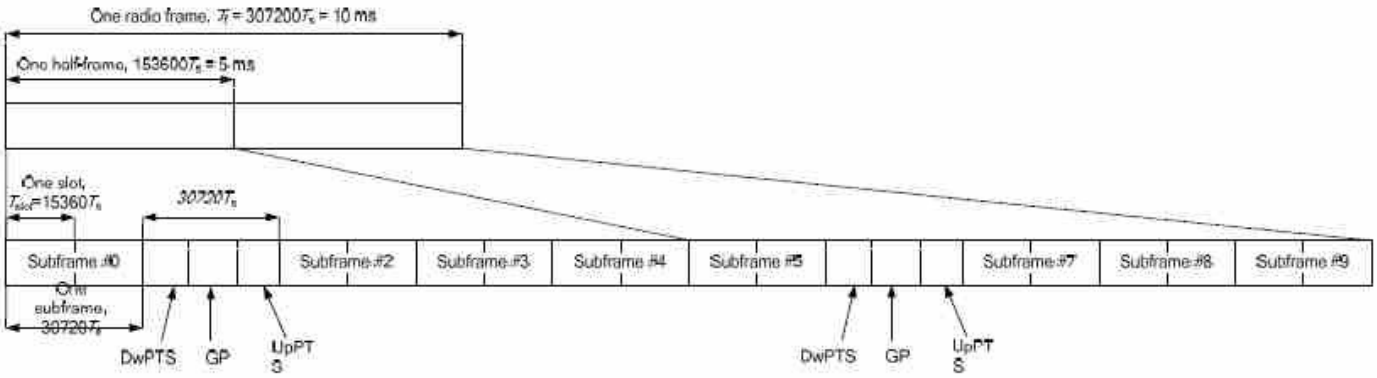


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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.

Bottom Antenna

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	22.27	22.34	22.21	22.23	22.46	23.00	0
20	QPSK	1	49	21.67	21.74	21.71	21.46	21.81		
20	QPSK	1	99	21.75	21.86	21.67	21.71	21.64		
20	QPSK	50	0	21.21	21.08	20.95	20.92	21.29	22.00	1
20	QPSK	50	24	20.95	20.90	20.85	20.77	21.25		
20	QPSK	50	50	20.74	20.91	20.81	20.76	21.08		
20	QPSK	100	0	21.05	20.94	20.84	20.82	21.27		
20	16QAM	1	0	21.54	21.49	21.39	21.27	21.60	22.00	1
20	16QAM	1	49	20.80	20.68	20.70	20.59	21.02		
20	16QAM	1	99	20.88	20.93	20.86	20.71	20.89		
20	16QAM	50	0	20.23	20.18	20.03	20.11	20.33	21.00	2
20	16QAM	50	24	20.02	19.98	19.93	19.90	20.24		
20	16QAM	50	50	19.86	19.96	19.87	19.84	20.15		
20	16QAM	100	0	20.05	20.00	19.85	19.90	20.27		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	22.11	22.15	22.08	22.09	22.38	23.00	0
15	QPSK	1	37	21.80	21.61	21.73	21.60	21.87		
15	QPSK	1	74	21.74	21.60	21.61	21.72	22.02		
15	QPSK	36	0	21.17	20.96	20.86	20.84	21.24	22.00	1
15	QPSK	36	20	20.98	20.83	20.87	20.72	21.13		
15	QPSK	36	39	20.91	20.76	20.74	20.68	21.10		
15	QPSK	75	0	20.97	20.88	20.78	20.75	21.15		
15	16QAM	1	0	21.37	21.12	21.19	21.02	21.50	22.00	1
15	16QAM	1	37	20.83	20.65	20.66	20.56	20.96		
15	16QAM	1	74	20.82	20.69	20.76	20.68	21.00		
15	16QAM	36	0	20.04	20.01	19.90	19.91	20.18	21.00	2
15	16QAM	36	20	19.94	19.87	19.84	19.79	20.18		
15	16QAM	36	39	19.90	19.84	19.75	19.72	20.15		
15	16QAM	75	0	19.89	19.91	19.83	19.81	20.18		

Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	21.80	21.88	21.75	21.81	22.12	23.00	0
10	QPSK	1	25	21.70	21.51	21.49	21.40	21.96		
10	QPSK	1	49	21.63	21.66	21.48	21.56	21.80		
10	QPSK	25	0	20.98	20.81	20.76	20.70	21.00	22.00	1
10	QPSK	25	12	20.98	20.77	20.82	20.68	21.06		
10	QPSK	25	25	20.88	20.71	20.64	20.64	21.00		
10	QPSK	50	0	20.90	20.83	20.83	20.68	21.08		
10	16QAM	1	0	21.01	20.87	20.88	20.76	21.15	22.00	1
10	16QAM	1	25	20.81	20.62	20.65	20.61	21.00		
10	16QAM	1	49	20.69	20.53	20.56	20.61	20.82		
10	16QAM	25	0	19.94	19.85	19.82	19.78	20.19	21.00	2
10	16QAM	25	12	19.96	19.84	19.78	19.78	20.15		
10	16QAM	25	25	19.83	19.77	19.69	19.71	20.06		
10	16QAM	50	0	19.87	19.85	19.85	19.79	20.10		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	21.71	21.56	21.62	21.69	22.00	23.00	0
5	QPSK	1	12	21.74	21.46	21.68	21.39	21.98		
5	QPSK	1	24	21.67	21.58	21.31	21.45	21.79		
5	QPSK	12	0	20.86	20.77	20.74	20.65	21.07	22.00	1
5	QPSK	12	7	20.95	20.79	20.79	20.72	21.14		
5	QPSK	12	13	20.81	20.73	20.66	20.65	21.00		
5	QPSK	25	0	20.82	20.73	20.75	20.62	21.01		
5	16QAM	1	0	20.85	20.66	20.75	20.58	20.98	22.00	1
5	16QAM	1	12	20.76	20.67	20.75	20.54	20.83		
5	16QAM	1	24	20.78	20.54	20.50	20.45	20.90		
5	16QAM	12	0	19.81	19.77	19.75	19.69	19.99	21.00	2
5	16QAM	12	7	19.76	19.81	19.79	19.69	20.09		
5	16QAM	12	13	19.70	19.74	19.65	19.66	19.95		
5	16QAM	25	0	19.83	19.84	19.77	19.74	20.08		

LTE Carrier Aggregation Conducted Power

General Note:

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 carrier aggregation only. Uplink carrier aggregation is not supported. 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 non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.

vi. 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.

Top Antenna

Configure	PCC						SCC				Measured Power	
	LTE Band	BW (MHz)	Freq. (MHz)	Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	Freq. (MHz)	Channel	LTE Rel 11 Tx. Power (dBm)	LTE Rel 8 Tx. Power (dBm)
Inter-Band	Band 2	20M	1860	18700	1	0	Band 4	20M	2132.5	2175	21.05	21.08
	Band 2	20M	1880	18900	1	0	Band 4	20M	2132.5	2175	21.06	21.07
	Band 2	20M	1900	19100	1	0	Band 4	20M	2132.5	2175	21.05	21.06
	Band 4	20M	1720	20050	1	0	Band 2	20M	1960	900	19.93	19.95
	Band 4	20M	1732.5	20175	1	0	Band 2	20M	1960	900	19.85	19.88
	Band 4	20M	1745	20300	1	0	Band 2	20M	1960	900	19.91	19.94
	Band 2	20M	1860	18700	1	0	Band 5	10M	881.5	2525	21.08	21.08
	Band 2	20M	1880	18900	1	0	Band 5	10M	881.5	2525	21.05	21.07
	Band 2	20M	1900	19100	1	0	Band 5	10M	881.5	2525	21.03	21.06
	Band 5	10M	829	20450	1	0	Band 2	20M	1960	900	23.61	23.64
	Band 5	10M	836.5	20525	1	0	Band 2	20M	1960	900	23.61	23.65
	Band 5	10M	844	20600	1	0	Band 2	20M	1960	900	23.62	23.64
	Band 2	20M	1860	18700	1	0	Band 12	10M	737.5	5095	21.05	21.08
	Band 2	20M	1880	18900	1	0	Band 12	10M	737.5	5095	21.04	21.07
	Band 2	20M	1900	19100	1	0	Band 12	10M	737.5	5095	21.05	21.06
	Band 12	10M	704	23060	1	25	Band 2	20M	1960	900	23.72	23.74
	Band 12	10M	707.5	23095	1	25	Band 2	20M	1960	900	23.77	23.79
	Band 12	10M	711	23130	1	25	Band 2	20M	1960	900	23.75	23.77
	Band 2	20M	1860	18700	1	0	Band 29	10M	722.5	9715	21.05	21.08
	Band 2	20M	1880	18900	1	0	Band 29	10M	722.5	9715	21.06	21.07
	Band 2	20M	1900	19100	1	0	Band 29	10M	722.5	9715	21.01	21.06
	Band 4	20M	1720	20050	1	0	Band 5	10M	881.5	2525	19.93	19.95
	Band 4	20M	1732.5	20175	1	0	Band 5	10M	881.5	2525	19.82	19.88
	Band 4	20M	1745	20300	1	0	Band 5	10M	881.5	2525	19.91	19.94
	Band 5	10M	829	20450	1	0	Band 4	20M	2132.5	2175	23.61	23.64
	Band 5	10M	836.5	20525	1	0	Band 4	20M	2132.5	2175	23.61	23.65
	Band 5	10M	844	20600	1	0	Band 4	20M	2132.5	2175	23.63	23.64
	Band 4	20M	1720	20050	1	0	Band 12	10M	737.5	5095	19.90	19.95
	Band 4	20M	1732.5	20175	1	0	Band 12	10M	737.5	5095	19.85	19.88
	Band 4	20M	1745	20300	1	0	Band 12	10M	737.5	5095	19.93	19.94
	Band 12	10M	704	23060	1	25	Band 4	20M	2132.5	2175	23.71	23.74
	Band 12	10M	707.5	23095	1	25	Band 4	20M	2132.5	2175	23.78	23.79
	Band 12	10M	711	23130	1	25	Band 4	20M	2132.5	2175	23.76	23.77
	Band 4	20M	1720	20050	1	0	Band 29	10M	722.5	9715	19.91	19.95
	Band 4	20M	1732.5	20175	1	0	Band 29	10M	722.5	9715	19.82	19.88
	Band 4	20M	1745	20300	1	0	Band 29	10M	722.5	9715	19.93	19.94
Intra-Band Contiguous	Band 25	20M	1860	26140	1	0	Band 25	20M	1960	8340	21.11	21.12
	Band 25	20M	1880	26340	1	0	Band 25	20M	1905	8590	21.03	21.01
	Band 25	20M	1905	26590	1	0	Band 25	20M	1960	8340	21.15	21.18

Bottom Antenna

Configure	PCC						SCC				Measured Power	
	LTE Band	BW (MHz)	Freq. (MHz)	Channel	UL# RB	UL RB Offset	LTE Band	BW (MHz)	Freq. (MHz)	Channel	LTE Rel 11 Tx. Power (dBm)	LTE Rel 8 Tx. Power (dBm)
Inter-Band	Band 2	20M	1860	18700	1	99	Band 4	20M	2132.5	2175	23.05	23.02
	Band 2	20M	1880	18900	1	99	Band 4	20M	2132.5	2175	23.48	23.50
	Band 2	20M	1900	19100	1	99	Band 4	20M	2132.5	2175	23.46	23.48
	Band 4	20M	1720	20050	1	0	Band 2	20M	1960	900	22.65	22.69
	Band 4	20M	1732.5	20175	1	0	Band 2	20M	1960	900	22.27	22.34
	Band 4	20M	1745	20300	1	0	Band 2	20M	1960	900	22.35	22.38
	Band 2	20M	1860	18700	1	99	Band 5	10M	881.5	2525	23.01	23.02
	Band 2	20M	1880	18900	1	99	Band 5	10M	881.5	2525	23.52	23.50
	Band 2	20M	1900	19100	1	99	Band 5	10M	881.5	2525	23.42	23.48
	Band 5	10M	829	20450	1	0	Band 2	20M	1960	900	23.61	23.64
	Band 5	10M	836.5	20525	1	0	Band 2	20M	1960	900	23.61	23.65
	Band 5	10M	844	20600	1	0	Band 2	20M	1960	900	23.62	23.64
	Band 2	20M	1860	18700	1	99	Band 12	10M	737.5	5095	23.01	23.02
	Band 2	20M	1880	18900	1	99	Band 12	10M	737.5	5095	23.48	23.50
	Band 2	20M	1900	19100	1	99	Band 12	10M	737.5	5095	23.42	23.48
	Band 12	10M	704	23060	1	25	Band 2	20M	1960	900	23.68	23.74
	Band 12	10M	707.5	23095	1	25	Band 2	20M	1960	900	23.75	23.79
	Band 12	10M	711	23130	1	25	Band 2	20M	1960	900	23.75	23.77
	Band 2	20M	1860	18700	1	0	Band 29	10M	722.5	9715	23.01	23.02
	Band 2	20M	1880	18900	1	0	Band 29	10M	722.5	9715	23.46	23.50
	Band 2	20M	1900	19100	1	0	Band 29	10M	722.5	9715	23.45	23.48
	Band 4	20M	1720	20050	1	0	Band 5	10M	881.5	2525	22.63	22.69
	Band 4	20M	1732.5	20175	1	0	Band 5	10M	881.5	2525	22.42	22.34
	Band 4	20M	1745	20300	1	0	Band 5	10M	881.5	2525	22.31	22.38
	Band 5	10M	829	20450	1	0	Band 4	20M	2132.5	2175	23.61	23.64
	Band 5	10M	836.5	20525	1	0	Band 4	20M	2132.5	2175	23.61	23.65
	Band 5	10M	844	20600	1	0	Band 4	20M	2132.5	2175	23.63	23.64
	Band 4	20M	1720	20050	1	0	Band 12	10M	737.5	5095	22.68	22.69
	Band 4	20M	1732.5	20175	1	0	Band 12	10M	737.5	5095	22.31	22.34
	Band 4	20M	1745	20300	1	0	Band 12	10M	737.5	5095	22.40	22.38
	Band 12	10M	704	23060	1	25	Band 4	20M	2132.5	2175	23.71	23.74
	Band 12	10M	707.5	23095	1	25	Band 4	20M	2132.5	2175	23.78	23.79
	Band 12	10M	711	23130	1	25	Band 4	20M	2132.5	2175	23.75	23.77
	Band 4	20M	1720	20050	1	0	Band 29	10M	722.5	9715	22.68	22.69
	Band 4	20M	1732.5	20175	1	0	Band 29	10M	722.5	9715	22.31	22.34
	Band 4	20M	1745	20300	1	0	Band 29	10M	722.5	9715	22.36	22.38
Intra-Band Contiguous	Band 25	20M	1860	26140	1	0	Band 25	20M	1960	8340	23.05	23.08
	Band 25	20M	1880	26340	1	0	Band 25	20M	1905	8590	23.17	23.19
	Band 25	20M	1905	26590	1	0	Band 25	20M	1960	8340	23.21	23.25
	Band 41	20M	2506	39750	1	0	Band 41	20M	2526	39950	22.25	22.27
	Band 41	20M	2549.5	40185	1	0	Band 41	20M	2529.5	39985	22.27	22.34
	Band 41	20M	2549.5	40185	1	0	Band 41	20M	2569.5	40385	22.31	22.34
	Band 41	20M	2593	40620	1	0	Band 41	20M	2573	40420	22.18	22.21
	Band 41	20M	2593	40620	1	0	Band 41	20M	2613	40820	22.15	22.21
	Band 41	20M	2636.5	41055	1	0	Band 41	20M	2616.5	40855	22.19	22.23
	Band 41	20M	2636.5	41055	1	0	Band 41	20M	2656.5	41255	22.16	22.23
	Band 41	20M	2680	41490	1	0	Band 41	20M	2660	41290	22.45	22.46
	Band 41	20M	2506	39750	1	0	Band 41	20M	2525.8	39948	22.32	22.27
	Band 41	20M	2593	40620	1	0	Band 41	20M	2573.2	40422	22.25	22.21
	Band 41	20M	2593	40620	1	0	Band 41	20M	2612.8	40818	22.21	22.23
	Band 41	20M	2680	41490	1	0	Band 41	20M	2660.2	41292	22.41	22.46
Intra-Band Non-Contiguous	Band 41	20M	2506	39750	1	0	Band 41	20M	2593	40620	22.26	22.27
	Band 41	20M	2593	40620	1	0	Band 41	20M	2680	41490	22.21	22.23
	Band 41	20M	2680	41490	1	0	Band 41	20M	2506	39750	22.42	22.46

<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.
5. When 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.

<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 1	802.11b	CH 1	2412	1Mbps	12.51	13.00	98.96
		CH 6	2437		14.20	15.00	
		CH 11	2462		14.46	15.00	
	802.11g	CH 1	2412	6Mbps	11.21	13.00	95.36
		CH 6	2437		12.84	13.50	
		CH 11	2462		12.92	13.50	
	802.11n-HT20	CH 1	2412	MCS0	8.11	9.00	94.12
		CH 6	2437		9.41	10.00	
		CH 11	2462		9.66	10.00	
	802.11n-HT40	CH 3	2422	MCS0	7.96	9.00	90.37
		CH 6	2437		9.04	10.00	
		CH 9	2452		9.48	10.00	

<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 2	802.11b	CH 1	2412	1Mbps	13.36	14.50	98.93
		CH 6	2437		14.08	15.00	
		CH 11	2462		14.10	15.00	
	802.11g	CH 1	2412	6Mbps	12.14	13.00	94.84
		CH 6	2437		12.58	13.00	
		CH 11	2462		12.71	13.00	
	802.11n-HT20	CH 1	2412	MCS0	8.75	10.00	94.80
		CH 6	2437		9.69	10.00	
		CH 11	2462		9.77	10.00	
	802.11n-HT40	CH 3	2422	MCS0	8.96	10.00	90.51
		CH 6	2437		8.94	10.00	
		CH 9	2452		9.61	10.00	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN ANT 1+2	802.11b	CH 1	2412	1Mbps	13.29	14.50	99.08
		CH 6	2437		14.38	15.00	
		CH 11	2462		14.55	15.00	
	802.11g	CH 1	2412	6Mbps	11.92	13.50	94.68
		CH 6	2437		12.92	13.50	
		CH 11	2462		12.96	13.50	
	802.11n-HT20	CH 1	2412	MCS0	9.26	10.50	94.37
		CH 6	2437		10.16	10.50	
		CH 11	2462		10.22	10.50	
	802.11n-HT40	CH 3	2422	MCS0	9.01	10.50	89.63
		CH 6	2437		9.31	10.50	
		CH 9	2452		9.98	10.50	

<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN ANT 1	802.11a	CH 36	5180	6Mbps	12.77	13.00	95.98
		CH 40	5200		12.14	13.00	
		CH 44	5220		12.71	13.00	
		CH 48	5240		12.23	13.00	
	802.11n-HT20	CH 36	5180	MCS0	9.71	10.00	95.07
		CH 40	5200		9.00	10.00	
		CH 44	5220		9.57	10.00	
		CH 48	5240		9.08	10.00	
	802.11n-HT40	CH 38	5190	MCS0	10.14	11.00	89.93
		CH 46	5230		10.02	11.00	
	802.11ac-VHT20	CH 36	5180	MCS0	9.65	10.00	95.43
		CH 40	5200		8.91	10.00	
		CH 44	5220		9.45	10.00	
		CH 48	5240		8.98	10.00	
	802.11ac-VHT40	CH 38	5190	MCS0	10.05	11.00	89.33
		CH 46	5230		9.80	11.00	
	802.11ac-VHT80	CH 42	5210	MCS0	9.76	11.00	82.26

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN ANT 1	802.11a	CH 149	5745	MCS0	12.28	13.50	95.98
		CH 157	5785		12.72	13.50	
		CH 165	5825		13.17	13.50	
	802.11n-HT20	CH 149	5745	MCS0	9.24	11.00	95.07
		CH 157	5785		9.54	11.00	
		CH 165	5825		10.04	11.00	
	802.11n-HT40	CH 151	5755	MCS0	8.91	10.00	89.93
		CH 159	5795		9.66	10.00	
	802.11ac-VHT20	CH 149	5745	MCS0	9.19	10.00	95.43
		CH 157	5785		9.54	10.00	
		CH 165	5825		9.85	10.00	
	802.11ac-VHT40	CH 151	5755	MCS0	8.81	10.00	89.33
		CH 159	5795		9.63	10.00	
	802.11ac-VHT80	CH 155	5775	MCS0	9.90	11.00	82.26

13. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)		
	Bluetooth v3.0+EDR	Bluetooth v4.0 LE	Bluetooth v4.2 LE
2.4GHz Bluetooth	8.0	-0.5	-0.5

Note:

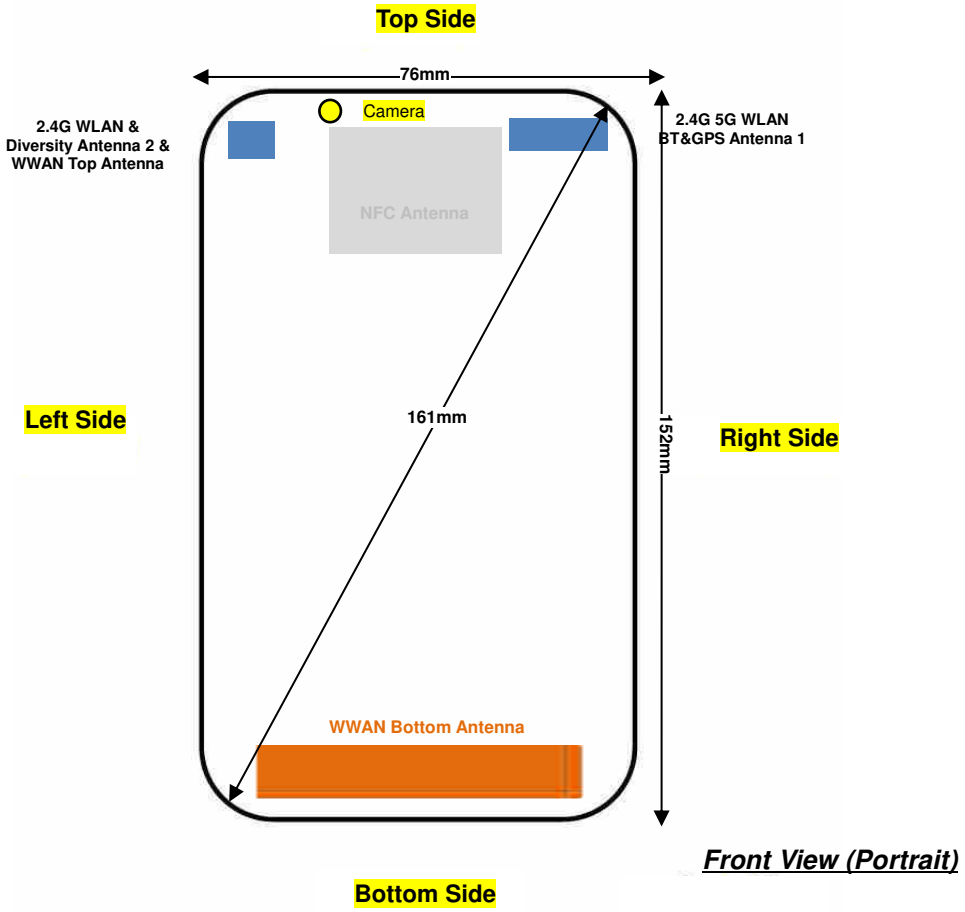
1. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
8.0	10	2.48	0.9

Note:

Per KDB 447498 D01v06, the test exclusion threshold is 0.9 which is <= 3, SAR testing is not required.

14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna	≤ 25mm	≤ 25mm	≤ 25mm	146mm	65mm	≤ 25mm
WWAN Bottom Antenna	≤ 25mm	≤ 25mm	136mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN Antenna 1	≤ 25mm	≤ 25mm	≤ 25mm	145mm	≤ 25mm	54mm
WLAN Antenna 2	≤ 25mm	≤ 25mm	≤ 25mm	146mm	65mm	≤ 25mm

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

General Note:
Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For 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 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
4. 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 Product specific 10g 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. All hotspot reported SAR are all less than 1.2W/Kg, so no need to evaluate the extremity SAR. For WLAN5GHz does not support hotspot function, so Product specific 10g SAR full test.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (2Tx slots) for GSM850 and GPRS (4Tx slots) for GSM1900 are considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

UMTS 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. If 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.

CMDA Note:

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

LTE Note:

Verified the worse SAR based on the original RB Offset configuration.

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, for U-NII-1 Head and Body-worn 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. 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.
6. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 2 Tx Slots	Right Cheek	189	836.4	29.84	31.00	1.306	0.04	Top	0.663	0.866
	GSM850	GPRS (2 Tx slots)	Right Cheek	128	824.2	29.76	31.00	1.330	0.1	Top	0.618	0.822
01	GSM850	GPRS 2 Tx Slots	Right Cheek	251	848.8	29.83	31.00	1.309	0.05	Top	0.693	**0.907**
	GSM850	GPRS(2 Tx slots)	Right Cheek	189	836.4	29.84	31.00	1.306	-0.01	Bottom	0.108	0.141
	GSM1900	GPRS 4 Tx slots	Right Cheek	512	1850.2	22.84	24.00	1.306	-0.04	Top	0.638	0.833
	GSM1900	GPRS (4 Tx slots)	Right Cheek	661	1880	22.83	24.00	1.309	0.07	Top	0.705	0.923
02	GSM1900	GPRS 4 Tx slots	Right Cheek	810	1909.8	22.79	24.00	1.321	-0.08	Top	0.792	**1.046**
	GSM1900	GPRS 4 Tx slots	Left Cheek	810	1909.8	25.58	27.50	1.556	0.05	Bottom	0.440	0.685

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4132	826.4	23.41	24.00	1.146	0.04	Top	0.728	0.834
03	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4182	836.4	23.28	24.00	1.180	0.03	Top	0.791	**0.934**
	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4233	846.6	23.36	24.00	1.159	0.02	Top	0.783	0.907
	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4132	826.4	24.65	25.00	1.084	0.05	Bottom	0.276	0.299
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1513	1752.6	19.59	20.00	1.099	-0.05	Top	1.010	1.110
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1312	1712.4	19.72	20.00	1.067	-0.11	Top	0.883	0.942
04	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1413	1732.6	19.68	20.00	1.076	-0.1	Top	1.040	**1.120**
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1513	1752.6	22.67	23.00	1.079	0.09	Bottom	0.151	0.163
05	WCDMA Band II	RMC 12.2Kbps	Right Cheek	9262	1852.4	19.88	21.50	1.452	-0.03	Top	0.807	**1.172**
	WCDMA Band II	RMC 12.2Kbps	Right Cheek	9400	1880	19.93	21.50	1.435	-0.06	Top	0.689	0.989
	WCDMA Band II	RMC 12.2Kbps	Right Cheek	9538	1907.6	20.01	21.50	1.409	-0.07	Top	0.695	0.979
	WCDMA Band II	RMC 12.2Kbps	Left Cheek	9538	1907.6	23.38	24.50	1.294	0.08	Bottom	0.511	0.661

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	CDMA2000 BC10	RC3 SO55	Right Cheek	476	817.9	22.90	24.00	1.288	0.07	Top	0.581	**0.748**
	CDMA2000 BC10	RC3 SO55	Right Cheek	476	817.9	22.90	24.00	1.288	0.08	Bottom	0.202	0.260
07	CDMA2000 BC0	RC3 SO55	Right Cheek	1013	824.7	23.26	23.50	1.057	0.07	Top	0.594	**0.628**
	CDMA2000 BC0	RC3 SO55	Right Cheek	1013	824.7	23.26	23.50	1.057	0.04	Bottom	0.188	0.199
	CDMA2000 BC1	RC3 SO55	Right Cheek	25	1851.25	21.24	21.50	1.062	-0.02	Top	0.995	1.056
	CDMA2000 BC1	RC3 SO55	Right Cheek	600	1880	21.34	21.50	1.038	-0.04	Top	1.080	1.121
08	CDMA2000 BC1	RC3 SO55	Right Cheek	1175	1908.75	21.34	21.50	1.038	-0.02	Top	1.100	**1.141**
	CDMA2000 BC1	RC3 SO55	Left Cheek	1175	1908.75	24.06	24.50	1.107	0.08	Bottom	0.637	0.705

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
09	LTE Band 12	10M	QPSK	1RB	0Offset	Right Cheek	23095	707.5	23.62	24.50	1.225	0.08	Top	0.474	**0.580**
	LTE Band 12	10M	QPSK	1RB	0Offset	Right Cheek	23095	707.5	23.62	24.50	1.225	0.09	Bottom	0.104	0.127
10	LTE Band 13	10M	QPSK	1RB	0Offset	Right Cheek	23230	782	23.76	24.50	1.186	0.01	Top	0.538	**0.638**
	LTE Band 13	10M	QPSK	1RB	0Offset	Right Cheek	23230	782	23.76	24.50	1.186	0.08	Bottom	0.251	0.298
11	LTE Band 26	15M	QPSK	1RB	0Offset	Right Cheek	26865	831.5	22.59	24.50	1.552	0.05	Top	0.549	**0.852**
	LTE Band 26	15M	QPSK	1RB	0Offset	Right Cheek	26865	831.5	22.59	24.50	1.552	0.08	Bottom	0.198	0.307
12	LTE Band 4	20M	QPSK	1RB	0Offset	Right Cheek	20175	1732.5	19.88	20.00	1.028	-0.1	Top	1.070	**1.100**
	LTE Band 4	20M	QPSK	1RB	0Offset	Right Cheek	20175	1732.5	22.34	23.00	1.164	0.07	Bottom	0.131	0.153

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 25	20M	QPSK	1RB	0Offset	Right Cheek	26140	1860	21.12	21.50	1.091	-0.04	Top	0.928	1.013
	LTE Band 25	20M	QPSK	1RB	0Offset	Right Cheek	26340	1880	21.01	21.50	1.119	-0.04	Top	0.928	1.039
13	LTE Band 25	20M	QPSK	1RB	0Offset	Right Cheek	26590	1905	21.18	21.50	1.076	-0.01	Top	1.010	**1.087**
	LTE Band 25	20M	QPSK	1RB	0Offset	Left Cheek	26340	1880	23.19	23.50	1.074	0.03	Bottom	0.469	0.504
14	LTE Band 30	10M	QPSK	1RB	25Offset	Right Cheek	27710	2310	20.15	21.00	1.216	0.03	Top	0.969	**1.178**
	LTE Band 30	10M	QPSK	1RB	25Offset	Left Cheek	27710	2310	23.10	24.50	1.380	0.02	Bottom	0.246	0.340
15	LTE Band 7	20M	QPSK	1RB	0offset	Left Cheek	21350	2560	24.22	24.50	1.067	0.03	Bottom	0.257	**0.274**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
16	LTE Band 41	20M	QPSK	1RB	0offset	Left Cheek	40185	2549.5	22.34	23.00	1.164	62.9	1.006	0.03	Bottom	0.091	**0.106**

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Peak SAR	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.386	0.03	0.241	0.276
	WLAN 2.4GHz	802.11b 1Mbps	Right Tilted	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.367	-0.03	0.298	0.341
17	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	1.49	0.07	0.883	**1.011**
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	1.47	0.13	0.780	0.893
	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1	6	2437	14.20	15.00	1.202	98.96	1.011		-0.06	0.692	0.841
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	Ant 1	6	2437	14.20	15.00	1.202	98.96	1.011		-0.01	0.636	0.773
18	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.312	-0.04	0.180	**0.224**
	WLAN 2.4GHz	802.11b 1Mbps	Right Tilted	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.189			
	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.06			
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.0627			
	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.188			
	WLAN 2.4GHz	802.11b 1Mbps	Right Tilted	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.173			
19	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.771	0.03	0.364	**0.407**
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.621	-0.06	0.321	0.359

Plot No.	Band	Mode	Test Position	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 5.2GHz	802.11a 6Mbps	Right Cheek	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	0.02	0.165	0.181
	WLAN 5.2GHz	802.11a 6Mbps	Right Tilted	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	0.08	0.153	0.168
20	WLAN 5.2GHz	802.11a 6Mbps	Left Cheek	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	0.05	0.463	**0.509**
	WLAN 5.2GHz	802.11a 6Mbps	Left Tilted	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	0.03	0.272	0.299
	WLAN 5.8GHz	802.11a 6Mbps	Right Cheek	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	0.06	0.048	0.054
	WLAN 5.8GHz	802.11a 6Mbps	Right Tilted	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	0.09	0.044	0.049
21	WLAN 5.8GHz	802.11a 6Mbps	Left Cheek	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	0.08	0.089	**0.100**
	WLAN 5.8GHz	802.11a 6Mbps	Left Tilted	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	0.07	0.082	0.092

15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
22	GSM850	GPRS(2 Tx slots)	Back	10	189	836.4	29.84	31	1.306	-0.03	Top	0.290	**0.379**
	GSM850	GPRS(2 Tx slots)	Back	10	189	836.4	29.84	31	1.306	-0.01	Bottom	0.179	0.234
	GSM850	GPRS(2 Tx slots)	Right side	10	189	836.4	29.84	31	1.306	-0.07	Bottom	0.136	0.178
	GSM1900	GPRS(4 Tx slots)	Front	10	810	1909.8	22.79	24	1.321	-0.05	Top	0.105	0.139
23	GSM1900	GPRS(4 Tx slots)	Back	10	810	1909.8	25.58	27.5	1.556	-0.15	Bottom	0.602	**0.937**
	GSM1900	GPRS(4 Tx slots)	Back	10	512	1850.2	25.92	27.5	1.439	-0.16	Bottom	0.271	0.390
	GSM1900	GPRS(4 Tx slots)	Back	10	661	1880	25.54	27.5	1.570	-0.16	Bottom	0.304	0.477

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Back	10	4233	846.6	23.36	24	1.159	-0.06	Top	0.198	0.229
24	WCDMA Band V	RMC 12.2Kbps	Back	10	4132	826.4	24.65	25	1.084	-0.08	Bottom	0.373	**0.404**
	WCDMA Band IV	RMC 12.2Kbps	Front	10	1413	1732.6	19.68	20	1.076	0.15	Top	0.161	0.173
	WCDMA Band IV	RMC 12.2Kbps	Back	10	1413	1732.5	22.7	23	1.072	0.02	Bottom	0.646	0.692
25	WCDMA Band IV	RMC 12.2Kbps	Bottom side	10	1413	1732.6	22.7	23	1.072	0.08	Bottom	0.750	**0.804**
	WCDMA Band IV	RMC 12.2Kbps	Bottom side	10	1312	1712.4	22.66	23	1.081	0.11	Bottom	0.681	0.736
	WCDMA Band IV	RMC 12.2Kbps	Bottom side	10	1513	1752.6	22.67	23	1.079	0.1	Bottom	0.579	0.625
	WCDMA Band II	RMC 12.2Kbps	Front	10	9262	1852.4	19.88	21.5	1.452	0.07	Top	0.098	0.142
26	WCDMA Band II	RMC 12.2Kbps	Back	10	9538	1907.6	23.38	24.5	1.294	-0.15	Bottom	0.659	**0.853**
	WCDMA Band II	RMC 12.2Kbps	Back	10	9262	1852.4	23.2	24.5	1.349	-0.16	Bottom	0.442	0.596
	WCDMA Band II	RMC 12.2Kbps	Back	10	9400	1880	23.41	24.5	1.285	-0.17	Bottom	0.511	0.657

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Antenna	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC10	RTAP153.6K	Back	10	476	817.9	22.94	24	1.276	-0.06	Top	0.266	0.340
27	CDMA2000 BC10	RTAP153.6K	Right side	10	476	817.9	22.94	24	1.276	-0.01	Bottom	0.410	**0.523**
	CDMA2000 BC0	RTAP153.6K	Back	10	1013	824.7	23.21	23.5	1.069	Top	-0.04	0.282	0.301
28	CDMA2000 BC0	RTAP153.6K	Right side	10	1013	824.7	23.21	23.5	1.069	Bottom	-0.01	0.374	**0.400**
	CDMA2000 BC1	RTAP153.6K	Front	10	1175	1908.75	21.42	21.5	1.019	Top	0.11	0.184	0.187
29	CDMA2000 BC1	RTAP153.6K	Back	10	1175	1908.75	24.03	24.5	1.114	Bottom	-0.07	0.902	**1.005**
	CDMA2000 BC1	RTAP153.6K	Back	10	25	1851.25	23.88	24.5	1.153	Bottom	-0.02	0.557	0.642
	CDMA2000 BC1	RTAP153.6K	Back	10	600	1908.75	24.3	24.5	1.047	Bottom	-0.01	0.766	0.802

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1RB	0Offset	Back	10	23095	707.5	23.62	24.5	1.225	0.04	Top	0.182	0.223
30	LTE Band 12	10M	QPSK	25RB	0Offset	Back	10	23095	707.5	22.79	23.5	1.178	-0.02	Bottom	0.199	**0.234**
	LTE Band 12	10M	QPSK	1RB	0Offset	Right side	10	23095	707.5	23.62	24.5	1.225	0.04	Bottom	0.172	0.211
	LTE Band 13	10M	QPSK	1RB	0Offset	Back	10	23230	782	23.76	24.5	1.186	0.09	Top	0.164	0.194
	LTE Band 13	10M	QPSK	1RB	0Offset	Back	10	23230	782	23.76	24.5	1.186	0.01	Bottom	0.402	0.477
31	LTE Band 13	10M	QPSK	1RB	0Offset	Right side	10	23230	782	23.76	24.5	1.186	0.02	Bottom	0.437	**0.518**
32	LTE Band 26	15M	QPSK	1RB	0Offset	Back	10	26865	831.5	22.59	24.5	1.552	-0.06	Top	0.214	**0.332**
	LTE Band 26	15M	QPSK	1RB	0Offset	Back	10	26865	831.5	22.59	24.5	1.552	-0.17	Bottom	0.185	0.287
	LTE Band 26	15M	QPSK	1RB	0Offset	Right side	10	26865	831.5	22.59	24.5	1.552	-0.04	Bottom	0.204	0.317
	LTE Band 4	20M	QPSK	1RB	0Offset	Front	10	20175	1732.5	19.88	20	1.028	0.07	Top	0.152	0.156
	LTE Band 4	20M	QPSK	1RB	0Offset	Back	10	20175	1732.5	22.34	23	1.164	0.13	Bottom	0.514	0.598
33	LTE Band 4	20M	QPSK	1RB	0Offset	Bottom side	10	20175	1732.5	22.34	23	1.164	0.03	Bottom	0.602	**0.701**
	LTE Band 25	20M	QPSK	1RB	0Offset	Front	10	26340	1880	21.01	21.5	1.119	0.14	Top	0.153	0.171
34	LTE Band 25	20M	QPSK	1RB	0Offset	Back	10	26340	1880	23.19	23.5	1.074	-0.12	Bottom	0.689	**0.740**
	LTE Band 30	10M	QPSK	1RB	25Offset	Back	10	27710	2310	20.15	21	1.216	0.06	Top	0.200	0.243
35	LTE Band 30	10M	QPSK	1RB	25Offset	Back	10	27710	2310	23.1	24.5	1.380	-0.15	Bottom	0.296	**0.409**
36	LTE Band 7	20M	QPSK	1RB	0offset	Back	10	21350	2560	24.22	24.5	1.067	-0.14	Bottom	0.296	**0.316**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
37	LTE Band 41	20M	QPSK	1RB	0offset	Back	10	40185	2549.5	22.34	23	1.164	62.9	1.006	-0.02	Bottom	0.097	**0.114**

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Peak SAR	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
38	WLAN 2.4GHz	802.11b 1Mbps	Front	10	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.135	0.02	0.080	**0.092**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.0957			
	WLAN 2.4GHz	802.11b 1Mbps	Right side	10	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.113			
	WLAN 2.4GHz	802.11b 1Mbps	Top side	10	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.0893			
39	WLAN 2.4GHz	802.11b 1Mbps	Front	10	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.0296	0.04	0.019	**0.024**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.0273			
	WLAN 2.4GHz	802.11b 1Mbps	Left side	10	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.0295			
	WLAN 2.4GHz	802.11b 1Mbps	Top side	10	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.02			
40	WLAN 2.4GHz	802.11b 1Mbps	Front	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0605	0.02	0.037	**0.041**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0462			
	WLAN 2.4GHz	802.11b 1Mbps	Left side	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0188			
	WLAN 2.4GHz	802.11b 1Mbps	Right side	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0512			
	WLAN 2.4GHz	802.11b 1Mbps	Top side	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0418			

15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
41	GSM850	GPRS(2 Tx slots)	Back	10	189	836.4	29.84	31	1.306	-0.03	Top	0.290	**0.379**
	GSM850	GPRS(2 Tx slots)	Back	10	189	836.4	29.84	31	1.306	-0.01	Bottom	0.179	0.234
	GSM1900	GPRS(4 Tx slots)	Front	10	810	1909.8	22.79	24	1.321	-0.05	Top	0.105	0.139
42	GSM1900	GPRS(4 Tx slots)	Back	10	810	1909.8	25.58	27.5	1.556	-0.15	Bottom	0.602	**0.937**
	GSM1900	GPRS(4 Tx slots)	Back	10	512	1850.2	25.92	27.5	1.439	-0.16	Bottom	0.271	0.390
	GSM1900	GPRS(4 Tx slots)	Back	10	661	1880	25.54	27.5	1.570	-0.16	Bottom	0.304	0.477

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Back	10	4233	846.6	23.36	24	1.159	-0.06	Top	0.198	0.229
43	WCDMA Band V	RMC 12.2Kbps	Back	10	4132	826.4	24.65	25	1.084	-0.08	Bottom	0.373	**0.404**
	WCDMA Band IV	RMC 12.2Kbps	Front	10	1413	1732.6	19.68	20	1.076	0.15	Top	0.161	0.173
44	WCDMA Band IV	RMC 12.2Kbps	Back	10	1413	1732.5	22.7	23	1.072	0.02	Bottom	0.646	**0.692**
	WCDMA Band II	RMC 12.2Kbps	Front	10	9262	1852.4	19.88	21.5	1.452	0.07	Top	0.098	0.142
45	WCDMA Band II	RMC 12.2Kbps	Back	10	9538	1907.6	23.38	24.5	1.294	-0.15	Bottom	0.659	**0.853**
	WCDMA Band II	RMC 12.2Kbps	Back	10	9262	1852.4	23.2	24.5	1.349	-0.16	Bottom	0.442	0.596
	WCDMA Band II	RMC 12.2Kbps	Back	10	9400	1880	23.41	24.5	1.285	-0.17	Bottom	0.511	0.657

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Antenna	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA2000 BC10	RC3 SO32	Back	10	476	817.9	22.98	24	1.265	-0.03	Top	0.185	0.234
46	CDMA2000 BC10	RC3 SO32	Back	10	476	817.9	22.98	24	1.265	-0.03	Bottom	0.296	**0.374**
	CDMA2000 BC0	RC3 SO32	Back	10	1013	824.7	23.35	23.5	1.035	Top	-0.06	0.190	0.197
47	CDMA2000 BC0	RC3 SO32	Back	10	1013	824.7	23.35	23.5	1.035	Bottom	-0.01	0.298	**0.308**
	CDMA2000 BC1	RC3 SO32	Front	10	1175	1908.75	21.31	21.5	1.045	Top	0.07	0.184	0.192
48	CDMA2000 BC1	RC3 SO32	Back	10	1175	1908.75	24.01	24.5	1.119	Bottom	-0.12	0.904	**1.012**
	CDMA2000 BC1	RC3 SO32	Back	10	25	1851.25	23.73	24.5	1.194	Bottom	-0.17	0.572	0.683
	CDMA2000 BC1	RC3 SO32	Back	10	600	1880	24.37	24.5	1.030	Bottom	-0.16	0.771	0.794

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1RB	0Offset	Back	10	23095	707.5	23.62	24.5	1.225	0.04	Top	0.182	0.223
49	LTE Band 12	10M	QPSK	25RB	0Offset	Back	10	23095	707.5	22.79	23.5	1.178	-0.02	Bottom	0.199	**0.234**
	LTE Band 13	10M	QPSK	1RB	0Offset	Back	10	23230	782	23.76	24.5	1.186	0.09	Top	0.164	0.194
50	LTE Band 13	10M	QPSK	1RB	0Offset	Back	10	23230	782	23.76	24.5	1.186	0.01	Bottom	0.402	**0.477**
51	LTE Band 26	15M	QPSK	1RB	0Offset	Back	10	26865	831.5	22.59	24.5	1.552	-0.06	Top	0.214	**0.332**
	LTE Band 26	15M	QPSK	1RB	0Offset	Back	10	26865	831.5	22.59	24.5	1.552	-0.17	Bottom	0.185	0.287
	LTE Band 4	20M	QPSK	1RB	0Offset	Front	10	20175	1732.5	19.88	20	1.028	0.07	Top	0.152	0.156
52	LTE Band 4	20M	QPSK	1RB	0Offset	Back	10	20175	1732.5	22.34	23	1.164	0.13	Bottom	0.514	**0.598**
	LTE Band 25	20M	QPSK	1RB	0Offset	Front	10	26340	1880	21.01	21.5	1.119	0.14	Top	0.153	0.171
53	LTE Band 25	20M	QPSK	1RB	0Offset	Back	10	26340	1880	23.19	23.5	1.074	-0.12	Bottom	0.689	**0.740**
	LTE Band 30	10M	QPSK	1RB	25Offset	Back	10	27710	2310	20.15	21	1.216	0.06	Top	0.200	0.243
54	LTE Band 30	10M	QPSK	1RB	25Offset	Back	10	27710	2310	23.1	24.5	1.380	-0.15	Bottom	0.296	**0.409**
55	LTE Band 7	20M	QPSK	1RB	0offset	Back	10	21350	2560	24.22	24.5	1.067	-0.14	Bottom	0.296	**0.316**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Antenna	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
56	LTE Band 41	20M	QPSK	1RB	0offset	Back	10	40185	2549.5	22.34	23	1.164	62.9	1.006	-0.02	Bottom	0.097	**0.114**

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Peak SAR	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
57	WLAN 2.4GHz	802.11b 1Mbps	Front	10	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.135	0.02	0.080	**0.092**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	Ant 1	11	2462	14.46	15.00	1.132	98.96	1.011	0.0957			
58	WLAN 2.4GHz	802.11b 1Mbps	Front	10	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.0296	0.04	0.019	**0.024**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	Ant 2	11	2462	14.10	15.00	1.230	98.93	1.011	0.0273			
59	WLAN 2.4GHz	802.11b 1Mbps	Front	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0605	0.02	0.037	**0.041**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	Ant 1+2	11	2462	14.55	15.00	1.109	99.08	1.009	0.0462			

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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)
60	WLAN 5.2GHz	802.11a 6Mbps	Front	10	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	-0.09	0.070	**0.077**
	WLAN 5.2GHz	802.11a 6Mbps	Back	10	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	-0.06	0.025	0.027
61	WLAN 5.8GHz	802.11a 6Mbps	Front	10	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	0.01	0.025	**0.028**
	WLAN 5.8GHz	802.11a 6Mbps	Back	10	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	0.04	0.021	0.024

15.4 Product specific 10g SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Antenna	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
62	WLAN 5.2GHz	802.11a 6Mbps	Front	0	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	Top	0.02	0.228	**0.250**
	WLAN 5.2GHz	802.11a 6Mbps	Back	0	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	Top	0.06	0.091	0.100
	WLAN 5.2GHz	802.11a 6Mbps	Right Side	0	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	Top	0.07	0.154	0.169
	WLAN 5.2GHz	802.11a 6Mbps	Top Side	0	Ant 1	36	5180	12.77	13.00	1.054	95.98	1.042	Top	0.09	0.085	0.093
	WLAN 5.8GHz	802.11a 6Mbps	Front	0	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	Top	0.08	0.130	0.146
	WLAN 5.8GHz	802.11a 6Mbps	Back	0	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	Top	0.01	0.059	0.066
63	WLAN 5.8GHz	802.11a 6Mbps	Right Side	0	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	Top	0.12	0.133	**0.150**
	WLAN 5.8GHz	802.11a 6Mbps	Top Side	0	Ant 1	165	5825	13.17	13.50	1.079	95.98	1.042	Top	0.07	0.060	0.067

15.5 Repeated SAR Measurement

No.	Band	BW (MHz)	RB Size	RB offset	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Antenna	Peak SAR	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	CDMA2000 BC1	-	-	-	RC3 SO55	Right Cheek	-	1175	1908.75	21.34	21.50	1.038	-	-	Top	-	-0.02	1.100	1	1.141
2nd	CDMA2000 BC1	-	-	-	RC3 SO55	Right Cheek	-	1175	1908.75	21.34	21.50	1.038	-	-	Top	-	-0.01	1.060	1.036	1.100
1st	LTE Band 4	20M	1RB	0Offset	QPSK	Right Cheek	-	20175	1732.5	19.88	20.00	1.028	-	-	Top	-	-0.1	1.070	1	1.100
2nd	LTE Band 4	20M	1RB	0Offset	QPSK	Right Cheek	-	20175	1732.5	19.88	20.00	1.028	-	-	Top	-	-0.13	1.060	1.009	1.090
1st	LTE Band 30	10M	1RB	25Offset	QPSK	Right Cheek	-	27710	2310	20.15	21.00	1.216	-	-	Top	-	0.03	0.969	1	1.178
2nd	LTE Band 30	10M	1RB	25Offset	QPSK	Right Cheek	-	27710	2310	20.15	21.00	1.216	-	-	Top	-	0.05	0.926	1.044	1.126
1st	WLAN 2.4GHz	-	-	-	802.11b 1Mbps	Left Cheek	-	11	2462	14.46	15.00	1.132	98.96	1.011	Top	1.49	0.07	0.883	1	1.011
2nd	WLAN 2.4GHz	-	-	-	802.11b 1Mbps	Left Cheek	-	11	2462	14.46	15.00	1.132	98.96	1.011	Top	1.49	-0.05	0.817	1.075	0.935

General Note:

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

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	GSM Voice + WLAN2.4GHz(SISO)	Yes	Yes		
2.	GPRS/EDGE + WLAN2.4GHz(SISO)	Yes	Yes	Yes	Hotspot
3.	WCDMA + WLAN2.4GHz(SISO)	Yes	Yes	Yes	Hotspot
4.	CDMA + WLAN2.4GHz(SISO)	Yes	Yes	Yes	Hotspot
5.	LTE + WLAN2.4GHz(SISO)	Yes	Yes	Yes	Hotspot
6.	GSM Voice + WLAN2.4GHz(MIMO)	Yes	Yes		
7.	GPRS/EDGE + WLAN2.4GHz(MIMO)	Yes	Yes	Yes	WWAN VoIP
8.	WCDMA + WLAN2.4GHz(MIMO)	Yes	Yes	Yes	WWAN VoIP
9.	CDMA+ WLAN2.4GHz(MIMO)	Yes	Yes	Yes	WWAN VoIP
10.	LTE + WLAN2.4GHz(MIMO)	Yes	Yes	Yes	WWAN VoIP
11.	GSM Voice + Bluetooth		Yes		
12.	GPRS/EDGE + Bluetooth		Yes		WWAN VoIP
13.	CDMA+ Bluetooth		Yes		WWAN VoIP
14.	WCDMA+ Bluetooth		Yes		WWAN VoIP
15.	LTE + Bluetooth		Yes		WWAN VoIP
16.	GSM Voice + WLAN5.2/5.8GHz(SISO)	Yes	Yes		
17.	GPRS/EDGE + WLAN5.2/5.8GHz(SISO)	Yes	Yes		WiFi Direct(GC only)
18.	WCDMA + WLAN5.2/5.8GHz(SISO)	Yes	Yes		WiFi Direct(GC only)
19.	CDMA+ WLAN5.2/5.8GHz(SISO)	Yes	Yes		WiFi Direct(GC only)
20.	LTE + WLAN5.2/5.8GHz(SISO)	Yes	Yes		WiFi Direct(GC only)

General Note:

1. This device supported VoIP in GPRS, EGPRS, CDMA, WCDMA and LTE (e.g. 3rd party VoIP) and LTE Supports VoLTE operation.
2. This device 5GHz WLAN SISO has no Hotspot operation.
3. EUT will choose each GSM, CDMA, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
4. WLAN2.4GHz and Bluetooth share the same antenna, and cannot transmit simultaneously.
5. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
6. Chose the worse zoom scan SAR of WLAN2.4GHz and WLAN 5GHz SAR for co-located with WWAN analysis.
7. For simultaneously transmission SAR analysis, SAR values only considered the worst position which we did perform SAR testing on FA631604-01, other test results were leverage from the parent model which referred to the test report number FA631604.
8. The Scaled SAR summation is calculated based on the same configuration and test position.
9. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/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, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
10. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.

Bluetooth Max Power	Exposure Position	Body worn
	Test separation	10 mm
8.0 dBm	Estimated SAR (W/kg)	0.126 W/kg

16.1 Head Exposure Conditions

Top Antenna:

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	5 5GHz WLAN Ant 1 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.907	0.276	0.224	0.407	0.181	1.18	1.13	1.31	1.09		
		Right Tilted	0.600	0.341	0.224	0.407	0.168	0.94	0.82	1.01	0.77		
		Left Cheek	0.496	1.011	0.224	0.407	0.509	1.51	0.72	0.90	1.01		
		Left Tilted	0.421	0.893	0.224	0.407	0.299	1.31	0.65	0.83	0.72		
	GSM1900	Right Cheek	1.046	0.276	0.224	0.407	0.181	1.32	1.27	1.45	1.23		
		Right Tilted	0.538	0.341	0.224	0.407	0.168	0.88	0.76	0.95	0.71		
		Left Cheek	0.337	1.011	0.224	0.407	0.509	1.35	0.56	0.74	0.85		
		Left Tilted	0.274	0.893	0.224	0.407	0.299	1.17	0.50	0.68	0.57		
WCDMA	Band V	Right Cheek	0.934	0.276	0.224	0.407	0.181	1.21	1.16	1.34	1.12		
		Right Tilted	0.614	0.341	0.224	0.407	0.168	0.96	0.84	1.02	0.78		
		Left Cheek	0.538	1.011	0.224	0.407	0.509	1.55	0.76	0.95	1.05		
		Left Tilted	0.453	0.893	0.224	0.407	0.299	1.35	0.68	0.86	0.75		
	Band IV	Right Cheek	1.120	0.276	0.224	0.407	0.181	1.40	1.34	1.53	1.30		
		Right Tilted	0.478	0.341	0.224	0.407	0.168	0.82	0.70	0.89	0.65		
		Left Cheek	0.519	1.011	0.224	0.407	0.509	1.53	0.74	0.93	1.03		
		Left Tilted	0.371	0.893	0.224	0.407	0.299	1.26	0.60	0.78	0.67		
	Band II	Right Cheek	1.172	0.276	0.224	0.407	0.181	1.45	1.40	1.58	1.35		
		Right Tilted	0.564	0.341	0.224	0.407	0.168	0.91	0.79	0.97	0.73		
		Left Cheek	0.353	1.011	0.224	0.407	0.509	1.36	0.58	0.76	0.86		
		Left Tilted	0.271	0.893	0.224	0.407	0.299	1.16	0.50	0.68	0.57		
CDMA	CDMA2000 BC10	Right Cheek	0.748	0.276	0.224	0.407	0.181	1.02	0.97	1.16	0.93		
		Right Tilted	0.517	0.341	0.224	0.407	0.168	0.86	0.74	0.92	0.69		
		Left Cheek	0.578	1.011	0.224	0.407	0.509	1.59	0.80	0.99	1.09		
		Left Tilted	0.420	0.893	0.224	0.407	0.299	1.31	0.64	0.83	0.72		
	CDMA2000 BC0	Right Cheek	0.628	0.276	0.224	0.407	0.181	0.90	0.85	1.04	0.81		
		Right Tilted	0.416	0.341	0.224	0.407	0.168	0.76	0.64	0.82	0.58		
		Left Cheek	0.482	1.011	0.224	0.407	0.509	1.49	0.71	0.89	0.99		
		Left Tilted	0.355	0.893	0.224	0.407	0.299	1.25	0.58	0.76	0.65		
	CDMA2000 BC1	Right Cheek	1.141	0.276	0.224	0.407	0.181	1.42	1.37	1.55	1.32		
		Right Tilted	0.534	0.341	0.224	0.407	0.168	0.88	0.76	0.94	0.70		
		Left Cheek	0.398	1.011	0.224	0.407	0.509	1.41	0.62	0.81	0.91		
		Left Tilted	0.262	0.893	0.224	0.407	0.299	1.16	0.49	0.67	0.56		

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	5 5GHz WLAN Ant 1 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
LTE	Band 12	Right Cheek	0.580	0.276	0.224	0.407	0.181	0.86	0.80	0.99	0.76		
		Right Tilted	0.322	0.341	0.224	0.407	0.168	0.66	0.55	0.73	0.49		
		Left Cheek	0.246	1.011	0.224	0.407	0.509	1.26	0.47	0.65	0.76		
		Left Tilted	0.207	0.893	0.224	0.407	0.299	1.10	0.43	0.61	0.51		
	Band 13	Right Cheek	0.638	0.276	0.224	0.407	0.181	0.91	0.86	1.05	0.82		
		Right Tilted	0.483	0.341	0.224	0.407	0.168	0.82	0.71	0.89	0.65		
		Left Cheek	0.390	1.011	0.224	0.407	0.509	1.40	0.61	0.80	0.90		
		Left Tilted	0.338	0.893	0.224	0.407	0.299	1.23	0.56	0.75	0.64		
	Band 26	Right Cheek	0.852	0.276	0.224	0.407	0.181	1.13	1.08	1.26	1.03		
		Right Tilted	0.612	0.341	0.224	0.407	0.168	0.95	0.84	1.02	0.78		
		Left Cheek	0.527	1.011	0.224	0.407	0.509	1.54	0.75	0.93	1.04		
		Left Tilted	0.442	0.893	0.224	0.407	0.299	1.34	0.67	0.85	0.74		
	Band 4	Right Cheek	1.100	0.276	0.224	0.407	0.181	1.38	1.32	1.51	1.28		
		Right Tilted	0.672	0.341	0.224	0.407	0.168	1.01	0.90	1.08	0.84		
		Left Cheek	0.582	1.011	0.224	0.407	0.509	1.59	0.81	0.99	1.09		
		Left Tilted	0.515	0.893	0.224	0.407	0.299	1.41	0.74	0.92	0.81		
	Band 25	Right Cheek	1.087	0.276	0.224	0.407	0.181	1.36	1.31	1.49	1.27		
		Right Tilted	0.558	0.341	0.224	0.407	0.168	0.90	0.78	0.97	0.73		
		Left Cheek	0.408	1.011	0.224	0.407	0.509	1.42	0.63	0.82	0.92		
		Left Tilted	0.303	0.893	0.224	0.407	0.299	1.20	0.53	0.71	0.60		
	Band 30	Right Cheek	1.178	0.276	0.224	0.407	0.181	1.45	1.40	1.59	**1.36**		
		Right Tilted	0.896	0.341	0.224	0.407	0.168	1.24	1.12	1.30	1.06		
		Left Cheek	0.436	1.011	0.224	0.407	0.509	1.45	0.66	0.84	0.95		
		Left Tilted	0.523	0.893	0.224	0.407	0.299	1.42	0.75	0.93	0.82		

Bottom Antenna:

WWAN Band		Exposure Position	1	2	3	4	5	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1						
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Right Cheek	0.141	0.276	0.224	0.407	0.181	0.42	0.37	0.55	0.32		
		Right Tilted	0.044	0.341	0.224	0.407	0.168	0.39	0.27	0.45	0.21		
		Left Cheek	0.079	1.011	0.224	0.407	0.509	1.09	0.30	0.49	0.59		
		Left Tilted	0.049	0.893	0.224	0.407	0.299	0.94	0.27	0.46	0.35		
	GSM1900	Right Cheek	0.177	0.276	0.224	0.407	0.181	0.45	0.40	0.58	0.36		
		Right Tilted	0.115	0.341	0.224	0.407	0.168	0.46	0.34	0.52	0.28		
		Left Cheek	0.685	1.011	0.224	0.407	0.509	**1.70**	0.91	1.09	1.19	**0.02**	**#01**
		Left Tilted	0.097	0.893	0.224	0.407	0.299	0.99	0.32	0.50	0.40		
WCDMA	Band V	Right Cheek	0.299	0.276	0.224	0.407	0.181	0.58	0.52	0.71	0.48		
		Right Tilted	0.108	0.341	0.224	0.407	0.168	0.45	0.33	0.52	0.28		
		Left Cheek	0.219	1.011	0.224	0.407	0.509	1.23	0.44	0.63	0.73		
		Left Tilted	0.128	0.893	0.224	0.407	0.299	1.02	0.35	0.54	0.43		
	Band IV	Right Cheek	0.163	0.276	0.224	0.407	0.181	0.44	0.39	0.57	0.34		
		Right Tilted	0.105	0.341	0.224	0.407	0.168	0.45	0.33	0.51	0.27		
		Left Cheek	0.090	1.011	0.224	0.407	0.509	1.10	0.31	0.50	0.60		
		Left Tilted	0.075	0.893	0.224	0.407	0.299	0.97	0.30	0.48	0.37		
	Band II	Right Cheek	0.336	0.276	0.224	0.407	0.181	0.61	0.56	0.74	0.52		
		Right Tilted	0.194	0.341	0.224	0.407	0.168	0.54	0.42	0.60	0.36		
		Left Cheek	0.661	1.011	0.224	0.407	0.509	**1.67**	0.89	1.07	1.17	**0.02**	**#02**
		Left Tilted	0.183	0.893	0.224	0.407	0.299	1.08	0.41	0.59	0.48		
CDMA	CDMA2000 BC10	Right Cheek	0.260	0.276	0.224	0.407	0.181	0.54	0.48	0.67	0.44		
		Right Tilted	0.216	0.341	0.224	0.407	0.168	0.56	0.44	0.62	0.38		
		Left Cheek	0.363	1.011	0.224	0.407	0.509	1.37	0.59	0.77	0.87		
		Left Tilted	0.250	0.893	0.224	0.407	0.299	1.14	0.47	0.66	0.55		
	CDMA2000 BC0	Right Cheek	0.199	0.276	0.224	0.407	0.181	0.48	0.42	0.61	0.38		
		Right Tilted	0.182	0.341	0.224	0.407	0.168	0.52	0.41	0.59	0.35		
		Left Cheek	0.311	1.011	0.224	0.407	0.509	1.32	0.54	0.72	0.82		
		Left Tilted	0.203	0.893	0.224	0.407	0.299	1.10	0.43	0.61	0.50		
	CDMA2000 BC1	Right Cheek	0.316	0.276	0.224	0.407	0.181	0.59	0.54	0.72	0.50		
		Right Tilted	0.237	0.341	0.224	0.407	0.168	0.58	0.46	0.64	0.41		
		Left Cheek	0.705	1.011	0.224	0.407	0.509	**1.72**	0.93	1.11	1.21	**0.03**	**#03**
		Left Tilted	0.190	0.893	0.224	0.407	0.299	1.08	0.41	0.60	0.49		

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	5 5GHz WLAN Ant 1 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
LTE	Band 12	Right Cheek	0.127	0.276	0.224	0.407	0.181	0.40	0.35	0.53	0.31		
		Right Tilted	0.039	0.341	0.224	0.407	0.168	0.38	0.26	0.45	0.21		
		Left Cheek	0.089	1.011	0.224	0.407	0.509	1.10	0.31	0.50	0.60		
		Left Tilted	0.057	0.893	0.224	0.407	0.299	0.95	0.28	0.46	0.36		
	Band 13	Right Cheek	0.298	0.276	0.224	0.407	0.181	0.57	0.52	0.71	0.48		
		Right Tilted	0.100	0.341	0.224	0.407	0.168	0.44	0.32	0.51	0.27		
		Left Cheek	0.191	1.011	0.224	0.407	0.509	1.20	0.42	0.60	0.70		
		Left Tilted	0.115	0.893	0.224	0.407	0.299	1.01	0.34	0.52	0.41		
	Band 26	Right Cheek	0.307	0.276	0.224	0.407	0.181	0.58	0.53	0.71	0.49		
		Right Tilted	0.196	0.341	0.224	0.407	0.168	0.54	0.42	0.60	0.36		
		Left Cheek	0.276	1.011	0.224	0.407	0.509	1.29	0.50	0.68	0.79		
		Left Tilted	0.223	0.893	0.224	0.407	0.299	1.12	0.45	0.63	0.52		
	Band 4	Right Cheek	0.153	0.276	0.224	0.407	0.181	0.43	0.38	0.56	0.33		
		Right Tilted	0.053	0.341	0.224	0.407	0.168	0.39	0.28	0.46	0.22		
		Left Cheek	0.074	1.011	0.224	0.407	0.509	1.09	0.30	0.48	0.58		
		Left Tilted	0.039	0.893	0.224	0.407	0.299	0.93	0.26	0.45	0.34		
	Band 25	Right Cheek	0.320	0.276	0.224	0.407	0.181	0.60	0.54	0.73	0.50		
		Right Tilted	0.155	0.341	0.224	0.407	0.168	0.50	0.38	0.56	0.32		
		Left Cheek	0.504	1.011	0.224	0.407	0.509	1.52	0.73	0.91	1.01		
		Left Tilted	0.144	0.893	0.224	0.407	0.299	1.04	0.37	0.55	0.44		
	Band 30	Right Cheek	0.173	0.276	0.224	0.407	0.181	0.45	0.40	0.58	0.35		
		Right Tilted	0.133	0.341	0.224	0.407	0.168	0.47	0.36	0.54	0.30		
		Left Cheek	0.340	1.011	0.224	0.407	0.509	1.35	0.56	0.75	0.85		
		Left Tilted	0.121	0.893	0.224	0.407	0.299	1.01	0.35	0.53	0.42		
	Band 7	Right Cheek	0.186	0.276	0.224	0.407	0.181	0.46	0.41	0.59	0.37		
		Right Tilted	0.184	0.341	0.224	0.407	0.168	0.53	0.41	0.59	0.35		
		Left Cheek	0.274	1.011	0.224	0.407	0.509	1.29	0.50	0.68	0.78		
		Left Tilted	0.131	0.893	0.224	0.407	0.299	1.02	0.36	0.54	0.43		
	Band 41	Right Cheek	0.059	0.276	0.224	0.407	0.181	0.34	0.28	0.47	0.24		
		Right Tilted	0.056	0.341	0.224	0.407	0.168	0.40	0.28	0.46	0.22		
		Left Cheek	0.106	1.011	0.224	0.407	0.509	1.12	0.33	0.51	0.62		
		Left Tilted	0.040	0.893	0.224	0.407	0.299	0.93	0.26	0.45	0.34		

16.2 Hotspot Exposure Conditions

Top Antenna:

WWAN Band		Exposure Position	1	2	3	5	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM	GSM850	Front	0.161	0.092	0.024	0.041	0.25	0.19	0.20		
		Back	0.379	0.092	0.024	0.041	0.47	0.40	0.42		
		Left side	0.194		0.024	0.041	0.19	0.22	0.24		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.143	0.092	0.024	0.041	0.24	0.17	0.18		
	GSM1900	Front	0.139	0.092	0.024	0.041	0.23	0.16	0.18		
		Back	0.084	0.092	0.024	0.041	0.18	0.11	0.13		
		Left side	0.093		0.024	0.041	0.09	0.12	0.13		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.047	0.092	0.024	0.041	0.14	0.07	0.09		
WCDMA	Band V	Front	0.206	0.092	0.024	0.041	0.30	0.23	0.25		
		Back	0.229	0.092	0.024	0.041	0.32	0.25	0.27		
		Left side	0.216		0.024	0.041	0.22	0.24	0.26		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.155	0.092	0.024	0.041	0.25	0.18	0.20		
	Band IV	Front	0.173	0.092	0.024	0.041	0.27	0.20	0.21		
		Back	0.165	0.092	0.024	0.041	0.26	0.19	0.21		
		Left side	0.128		0.024	0.041	0.13	0.15	0.17		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.132	0.092	0.024	0.041	0.22	0.16	0.17		
	Band II	Front	0.142	0.092	0.024	0.041	0.23	0.17	0.18		
		Back	0.128	0.092	0.024	0.041	0.22	0.15	0.17		
		Left side	0.141		0.024	0.041	0.14	0.17	0.18		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.091	0.092	0.024	0.041	0.18	0.12	0.13		

WWAN Band		Exposure Position	1	2	3	5	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
CDMA	CDMA2000 BC10	Front	0.158	0.092	0.024	0.041	0.25	0.18	0.20		
		Back	0.340	0.092	0.024	0.041	0.43	0.36	0.38		
		Left side	0.167		0.024	0.041	0.17	0.19	0.21		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.128	0.092	0.024	0.041	0.22	0.15	0.17		
	CDMA2000 BC0	Front	0.127	0.092	0.024	0.041	0.22	0.15	0.17		
		Back	0.301	0.092	0.024	0.041	0.39	0.33	0.34		
		Left side	0.135		0.024	0.041	0.14	0.16	0.18		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.105	0.092	0.024	0.041	0.20	0.13	0.15		
	CDMA2000 BC1	Front	0.187	0.092	0.024	0.041	0.28	0.21	0.23		
		Back	0.052	0.092	0.024	0.041	0.14	0.08	0.09		
		Left side	0.065		0.024	0.041	0.07	0.09	0.11		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.029	0.092	0.024	0.041	0.12	0.05	0.07		
LTE	Band 12	Front	0.113	0.092	0.024	0.041	0.21	0.14	0.15		
		Back	0.223	0.092	0.024	0.041	0.32	0.25	0.26		
		Left side	0.104		0.024	0.041	0.10	0.13	0.15		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.102	0.092	0.024	0.041	0.19	0.13	0.14		
	Band 13	Front	0.185	0.092	0.024	0.041	0.28	0.21	0.23		
		Back	0.194	0.092	0.024	0.041	0.29	0.22	0.24		
		Left side	0.276		0.024	0.041	0.28	0.30	0.32		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.176	0.092	0.024	0.041	0.27	0.20	0.22		

WWAN Band		Exposure Position	1	2	3	5	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
LTE	Band 26	Front	0.206	0.092	0.024	0.041	0.30	0.23	0.25		
		Back	0.332	0.092	0.024	0.041	0.42	0.36	0.37		
		Left side	0.253		0.024	0.041	0.25	0.28	0.29		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.187	0.092	0.024	0.041	0.28	0.21	0.23		
	Band 4	Front	0.156	0.092	0.024	0.041	0.25	0.18	0.20		
		Back	0.163	0.092	0.024	0.041	0.26	0.19	0.20		
		Left side	0.118		0.024	0.041	0.12	0.14	0.16		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.095	0.092	0.024	0.041	0.19	0.12	0.14		
	Band 25	Front	0.171	0.092	0.024	0.041	0.26	0.20	0.21		
		Back	0.094	0.092	0.024	0.041	0.19	0.12	0.14		
		Left side	0.088		0.024	0.041	0.09	0.11	0.13		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.044	0.092	0.024	0.041	0.14	0.07	0.09		
	Band 30	Front	0.229	0.092	0.024	0.041	0.32	0.25	0.27		
		Back	0.243	0.092	0.024	0.041	0.34	0.27	0.28		
		Left side	0.284		0.024	0.041	0.28	0.31	0.33		
		Right side		0.092		0.041	0.09		0.04		
		Top side	0.183	0.092	0.024	0.041	0.28	0.21	0.22		

Bottom Antenna:

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Front	0.124	0.092	0.024	0.041	0.22	0.15	0.17		
		Back	0.234	0.092	0.024	0.041	0.33	0.26	0.28		
		Left side	0.084		0.024	0.041	0.08	0.11	0.13		
		Right side	0.178	0.092		0.041	0.27	0.18	0.22		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.099				0.10	0.10	0.10		
	GSM1900	Front	0.256	0.092	0.024	0.041	0.35	0.28	0.30		
		Back	0.937	0.092	0.024	0.041	1.03	0.96	0.98		
		Left side	0.256		0.024	0.041	0.26	0.28	0.30		
		Right side	0.085	0.092		0.041	0.18	0.09	0.13		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.156				0.16	0.16	0.16		
WCDMA	Band V	Front	0.245	0.092	0.024	0.041	0.34	0.27	0.29		
		Back	0.404	0.092	0.024	0.041	0.50	0.43	0.45		
		Left side	0.184		0.024	0.041	0.18	0.21	0.23		
		Right side	0.395	0.092		0.041	0.49	0.40	0.44		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.190				0.19	0.19	0.19		
	Band IV	Front	0.690	0.092	0.024	0.041	0.78	0.71	0.73		
		Back	0.692	0.092	0.024	0.041	0.78	0.72	0.73		
		Left side	0.140		0.024	0.041	0.14	0.16	0.18		
		Right side	0.249	0.092		0.041	0.34	0.25	0.29		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.804				0.80	0.80	0.80		
	Band II	Front	0.555	0.092	0.024	0.041	0.65	0.58	0.60		
		Back	0.853	0.092	0.024	0.041	0.95	0.88	0.89		
		Left side	0.638		0.024	0.041	0.64	0.66	0.68		
		Right side	0.102	0.092		0.041	0.19	0.10	0.14		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.297				0.30	0.30	0.30		

WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
CDMA	CDMA2000 BC10	Front	0.501	0.092	0.024	0.041	0.59	0.53	0.54		
		Back	0.707	0.092	0.024	0.041	0.80	0.73	0.75		
		Left side	0.301		0.024	0.041	0.30	0.33	0.34		
		Right side	0.523	0.092		0.041	0.62	0.52	0.56		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.338				0.34	0.34	0.34		
	CDMA2000 BC0	Front	0.423	0.092	0.024	0.041	0.52	0.45	0.46		
		Back	0.575	0.092	0.024	0.041	0.67	0.60	0.62		
		Left side	0.259		0.024	0.041	0.26	0.28	0.30		
		Right side	0.400	0.092		0.041	0.49	0.40	0.44		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.302				0.30	0.30	0.30		
	CDMA2000 BC1	Front	0.436	0.092	0.024	0.041	0.53	0.46	0.48		
		Back	1.005	0.092	0.024	0.041	1.10	1.03	1.05		
		Left side	0.516		0.024	0.041	0.52	0.54	0.56		
		Right side	0.139	0.092		0.041	0.23	0.14	0.18		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.278				0.28	0.28	0.28		
LTE	Band 12	Front	0.152	0.092	0.024	0.041	0.24	0.18	0.19		
		Back	0.234	0.092	0.024	0.041	0.33	0.26	0.28		
		Left side	0.166		0.024	0.041	0.17	0.19	0.21		
		Right side	0.211	0.092		0.041	0.30	0.21	0.25		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.089				0.09	0.09	0.09		
	Band 13	Front	0.280	0.092	0.024	0.041	0.37	0.30	0.32		
		Back	0.477	0.092	0.024	0.041	0.57	0.50	0.52		
		Left side	0.347		0.024	0.041	0.35	0.37	0.39		
		Right side	0.518	0.092		0.041	0.61	0.52	0.56		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.158				0.16	0.16	0.16		
	Band 26	Front	0.419	0.092	0.024	0.041	0.51	0.44	0.46		
		Back	0.287	0.092	0.024	0.041	0.38	0.31	0.33		
		Left side	0.212		0.024	0.041	0.21	0.24	0.25		
		Right side	0.317	0.092		0.041	0.41	0.32	0.36		

		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.253				0.25	0.25	0.25		

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
LTE	Band 4	Front	0.728	0.092	0.024	0.041	0.82	0.75	0.77		
		Back	0.598	0.092	0.024	0.041	0.69	0.62	0.64		
		Left side	0.125		0.024	0.041	0.13	0.15	0.17		
		Right side	0.208	0.092		0.041	0.30	0.21	0.25		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.701				0.70	0.70	0.70		
	Band 25	Front	0.468	0.092	0.024	0.041	0.56	0.49	0.51		
		Back	0.740	0.092	0.024	0.041	0.83	0.76	0.78		
		Left side	0.356		0.024	0.041	0.36	0.38	0.40		
		Right side	0.198	0.092		0.041	0.29	0.20	0.24		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.414				0.41	0.41	0.41		
	Band 30	Front	0.475	0.092	0.024	0.041	0.57	0.50	0.52		
		Back	0.409	0.092	0.024	0.041	0.50	0.43	0.45		
		Left side	0.469		0.024	0.041	0.47	0.49	0.51		
		Right side	0.031	0.092	0.000	0.041	0.12	0.03	0.07		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.301				0.30	0.30	0.30		
	Band 7	Front	0.481	0.092	0.024	0.041	0.57	0.51	0.52		
		Back	0.316	0.092	0.024	0.041	0.41	0.34	0.36		
		Left side	0.490		0.024	0.041	0.49	0.51	0.53		
		Right side	0.026	0.092		0.041	0.12	0.03	0.07		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.282				0.28	0.28	0.28		
	Band 41	Front	0.161	0.092	0.024	0.041	0.25	0.19	0.20		
		Back	0.114	0.092	0.024	0.041	0.21	0.14	0.16		
		Left side	0.160		0.024	0.041	0.16	0.18	0.20		
		Right side	0.011	0.092		0.041	0.10	0.01	0.05		
		Top side		0.092	0.024	0.041	0.09	0.02	0.04		
		Bottom side	0.091				0.09	0.09	0.09		

16.3 Body-Worn Accessory Exposure Conditions

Top Antenna:

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	2.4GHz WLAN Ant 1+2	5GHz WLAN Ant 1	Bluetooth Ant 1					
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)					
GSM	GSM850	Front	0.161	0.092	0.024	0.041	0.077	0.126	0.25	0.19	0.20	0.24	0.29
		Back	0.379	0.092	0.024	0.041	0.077	0.126	0.47	0.40	0.42	0.46	0.51
	GSM1900	Front	0.139	0.092	0.024	0.041	0.077	0.126	0.23	0.16	0.18	0.22	0.27
		Back	0.084	0.092	0.024	0.041	0.077	0.126	0.18	0.11	0.13	0.16	0.21
WCDMA	Band V	Front	0.206	0.092	0.024	0.041	0.077	0.126	0.30	0.23	0.25	0.28	0.33
		Back	0.229	0.092	0.024	0.041	0.077	0.126	0.32	0.25	0.27	0.31	0.36
	Band IV	Front	0.173	0.092	0.024	0.041	0.077	0.126	0.27	0.20	0.21	0.25	0.30
		Back	0.165	0.092	0.024	0.041	0.077	0.126	0.26	0.19	0.21	0.24	0.29
	Band II	Front	0.142	0.092	0.024	0.041	0.077	0.126	0.23	0.17	0.18	0.22	0.27
		Back	0.128	0.092	0.024	0.041	0.077	0.126	0.22	0.15	0.17	0.21	0.25
CDMA	CDMA2000 BC10	Front	0.151	0.092	0.024	0.041	0.077	0.126	0.24	0.18	0.19	0.23	0.28
		Back	0.234	0.092	0.024	0.041	0.077	0.126	0.33	0.26	0.28	0.31	0.36
	CDMA2000 BC0	Front	0.123	0.092	0.024	0.041	0.077	0.126	0.22	0.15	0.16	0.20	0.25
		Back	0.197	0.092	0.024	0.041	0.077	0.126	0.29	0.22	0.24	0.27	0.32
	CDMA2000 BC1	Front	0.192	0.092	0.024	0.041	0.077	0.126	0.28	0.22	0.23	0.27	0.32
		Back	0.062	0.092	0.024	0.041	0.077	0.126	0.15	0.09	0.10	0.14	0.19
LTE	Band 12	Front	0.113	0.092	0.024	0.041	0.077	0.126	0.21	0.14	0.15	0.19	0.24
		Back	0.223	0.092	0.024	0.041	0.077	0.126	0.32	0.25	0.26	0.30	0.35
	Band 13	Front	0.185	0.092	0.024	0.041	0.077	0.126	0.28	0.21	0.23	0.26	0.31
		Back	0.194	0.092	0.024	0.041	0.077	0.126	0.29	0.22	0.24	0.27	0.32
	Band 26	Front	0.206	0.092	0.024	0.041	0.077	0.126	0.30	0.23	0.25	0.28	0.33
		Back	0.332	0.092	0.024	0.041	0.077	0.126	0.42	0.36	0.37	0.41	0.46
	Band 4	Front	0.156	0.092	0.024	0.041	0.077	0.126	0.25	0.18	0.20	0.23	0.28
		Back	0.163	0.092	0.024	0.041	0.077	0.126	0.26	0.19	0.20	0.24	0.29
	Band 25	Front	0.171	0.092	0.024	0.041	0.077	0.126	0.26	0.20	0.21	0.25	0.30
		Back	0.094	0.092	0.024	0.041	0.077	0.126	0.19	0.12	0.14	0.17	0.22
	Band 30	Front	0.229	0.092	0.024	0.041	0.077	0.126	0.32	0.25	0.27	0.31	0.36
		Back	0.243	0.092	0.024	0.041	0.077	0.126	0.34	0.27	0.28	0.32	0.37

Bottom Antenna:

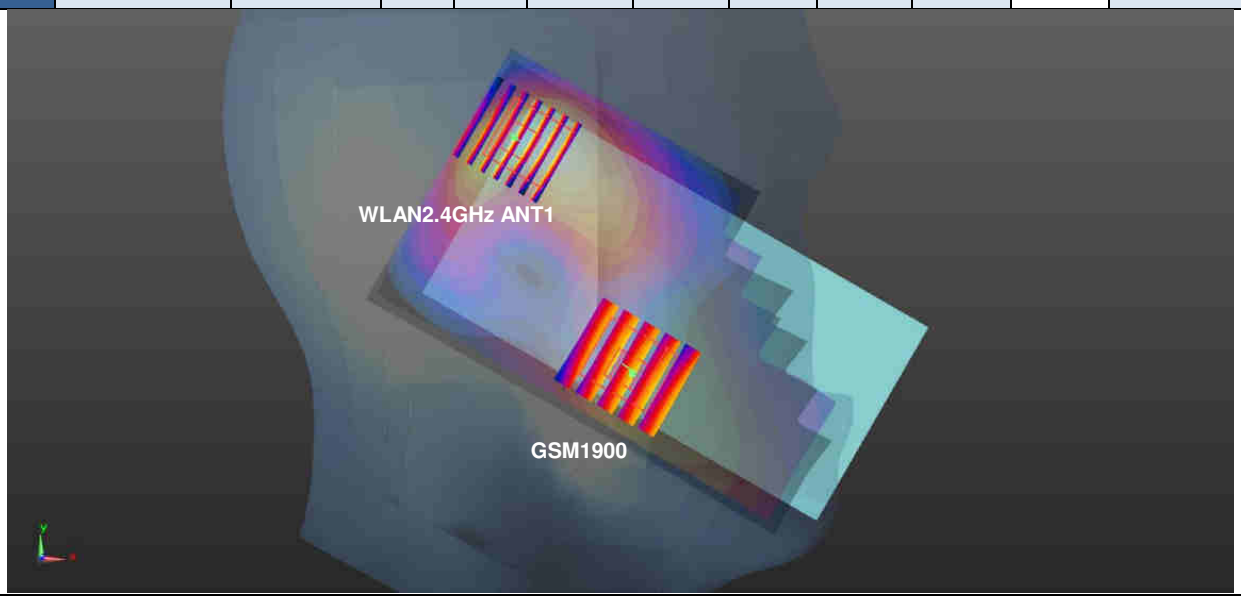
WWAN Band		Exposure Position	1 WWAN 1g SAR (W/kg)	2 2.4GHz WLAN Ant 1 1g SAR (W/kg)	3 2.4GHz WLAN Ant 2 1g SAR (W/kg)	4 2.4GHz WLAN Ant 1+2 1g SAR (W/kg)	5 WLAN 5GHz Ant 1 1g SAR (W/kg)	6 Bluetooth Ant 1 Estimated 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)	1+5 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)
GSM	GSM850	Front	0.124	0.092	0.024	0.041	0.077	0.126	0.22	0.15	0.17	0.20	0.25
		Back	0.234	0.092	0.024	0.041	0.077	0.126	0.33	0.26	0.28	0.31	0.36
	GSM1900	Front	0.256	0.092	0.024	0.041	0.077	0.126	0.35	0.28	0.30	0.33	0.38
		Back	0.937	0.092	0.024	0.041	0.077	0.126	1.03	0.96	0.98	1.01	1.06
WCDMA	Band V	Front	0.245	0.092	0.024	0.041	0.077	0.126	0.34	0.27	0.29	0.32	0.37
		Back	0.404	0.092	0.024	0.041	0.077	0.126	0.50	0.43	0.45	0.48	0.53
	Band IV	Front	0.690	0.092	0.024	0.041	0.077	0.126	0.78	0.71	0.73	0.77	0.82
		Back	0.692	0.092	0.024	0.041	0.077	0.126	0.78	0.72	0.73	0.77	0.82
	Band II	Front	0.555	0.092	0.024	0.041	0.077	0.126	0.65	0.58	0.60	0.63	0.68
		Back	0.853	0.092	0.024	0.041	0.077	0.126	0.95	0.88	0.89	0.93	0.98
CDMA	CDMA2000 BC10	Front	0.458	0.092	0.024	0.041	0.077	0.126	0.55	0.48	0.50	0.54	0.58
		Back	0.374	0.092	0.024	0.041	0.077	0.126	0.47	0.40	0.42	0.45	0.50
	CDMA2000 BC0	Front	0.345	0.092	0.024	0.041	0.077	0.126	0.44	0.37	0.39	0.42	0.47
		Back	0.308	0.092	0.024	0.041	0.077	0.126	0.40	0.33	0.35	0.39	0.43
	CDMA2000 BC1	Front	0.440	0.092	0.024	0.041	0.077	0.126	0.53	0.46	0.48	0.52	0.57
		Back	1.012	0.092	0.024	0.041	0.077	0.126	1.10	1.04	1.05	1.09	**1.14**
LTE	Band 12	Front	0.152	0.092	0.024	0.041	0.077	0.126	0.24	0.18	0.19	0.23	0.28
		Back	0.234	0.092	0.024	0.041	0.077	0.126	0.33	0.26	0.28	0.31	0.36
	Band 13	Front	0.280	0.092	0.024	0.041	0.077	0.126	0.37	0.30	0.32	0.36	0.41
		Back	0.477	0.092	0.024	0.041	0.077	0.126	0.57	0.50	0.52	0.55	0.60
	Band 26	Front	0.419	0.092	0.024	0.041	0.077	0.126	0.51	0.44	0.46	0.50	0.55
		Back	0.287	0.092	0.024	0.041	0.077	0.126	0.38	0.31	0.33	0.36	0.41
	Band 4	Front	0.728	0.092	0.024	0.041	0.077	0.126	0.82	0.75	0.77	0.81	0.85
		Back	0.598	0.092	0.024	0.041	0.077	0.126	0.69	0.62	0.64	0.68	0.72
	Band 25	Front	0.468	0.092	0.024	0.041	0.077	0.126	0.56	0.49	0.51	0.55	0.59
		Back	0.740	0.092	0.024	0.041	0.077	0.126	0.83	0.76	0.78	0.82	0.87
	Band 30	Front	0.475	0.092	0.024	0.041	0.077	0.126	0.57	0.50	0.52	0.55	0.60
		Back	0.409	0.092	0.024	0.041	0.077	0.126	0.50	0.43	0.45	0.49	0.54
	Band 7	Front	0.481	0.092	0.024	0.041	0.077	0.126	0.57	0.51	0.52	0.56	0.61
		Back	0.316	0.092	0.024	0.041	0.077	0.126	0.41	0.34	0.36	0.39	0.44
	Band 41	Front	0.161	0.092	0.024	0.041	0.077	0.126	0.25	0.19	0.20	0.24	0.29
		Back	0.114	0.092	0.024	0.041	0.077	0.126	0.21	0.14	0.16	0.19	0.24

16.4 SPLSR Evaluation and Analysis

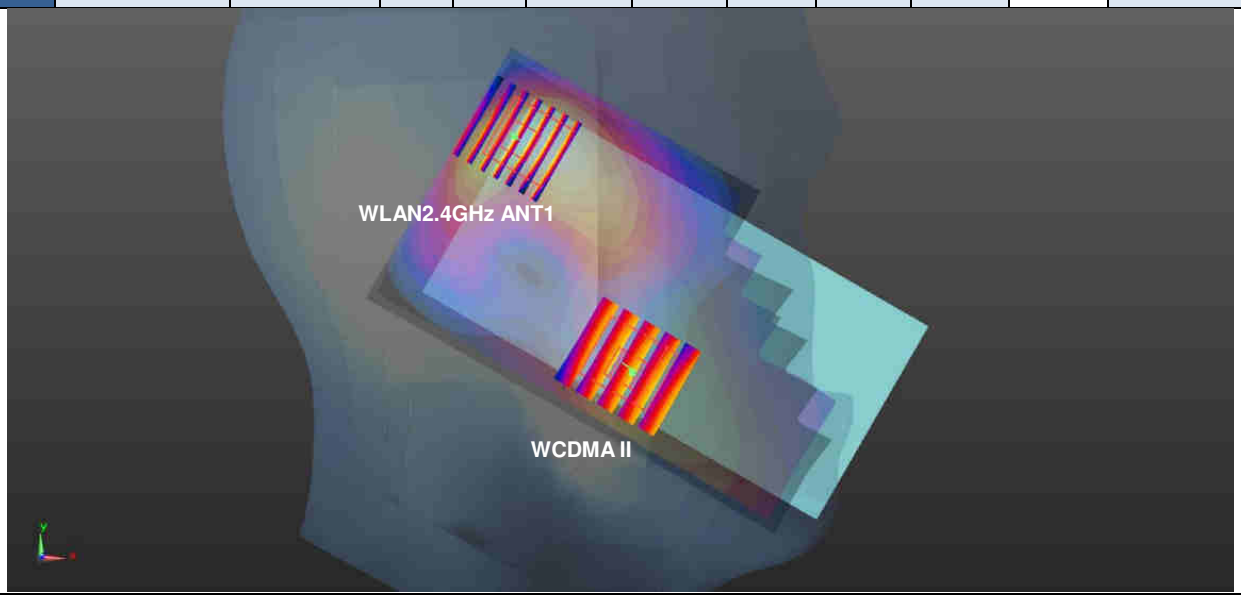
General Note:

1. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

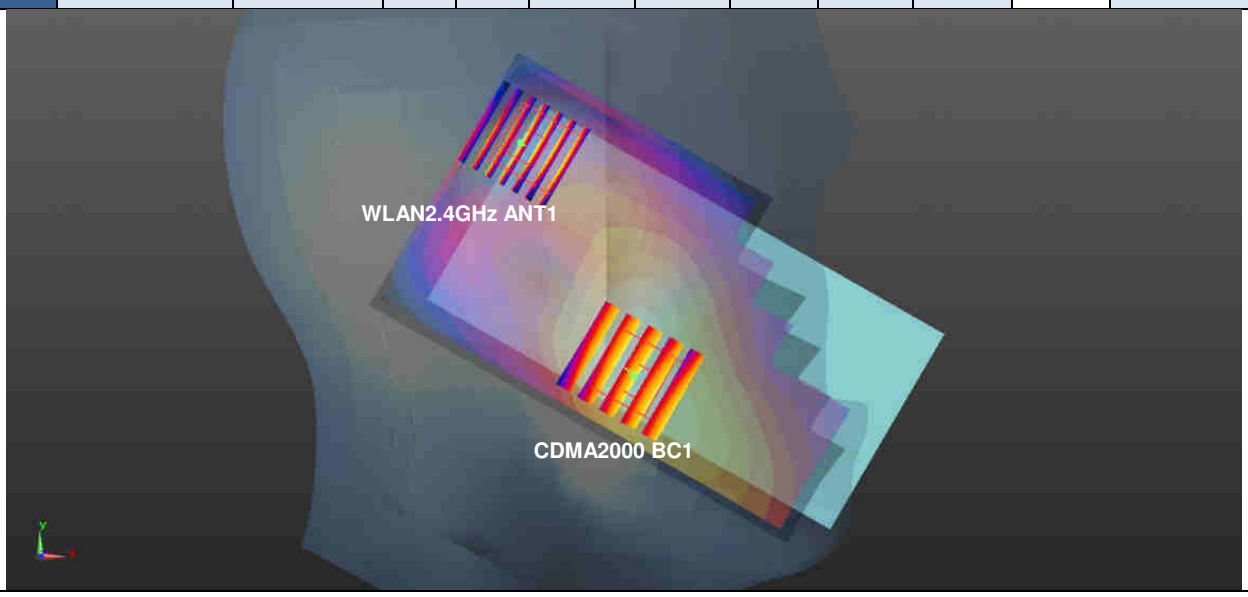
Case 1	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Left Cheek	0.685	0	4.59	-6.04	-0.1	89.5	1.70	0.02	Not required
	WLAN2.4G ANT1		1.011	0	0.79	2.06	-0.15				



Case 2	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II	Left Cheek	0.661	0	4.35	-5.91	-0.19	87.3	1.67	0.02	Not required
	WLAN2.4G ANT1		1.011	0	0.79	2.06	-0.15				



Case 3	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	CDMA2000 BC1	Left Cheek	0.705	0	4.61	-6.05	-0.08	89.6	1.72	0.03	Not required
	WLAN2.4G ANT1		1.011	0	0.79	2.06	-0.15				



Test Engineer： Frank Qiao and Kat Yin

17. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.0	N	1	1	1	6.0	6.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.0	R	1.732	1	1	0.6	0.6
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	2.9	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.0	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.1	R	1.732	1	1	3.5	3.5
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.4%	11.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						22.9%	22.7%

Table 17.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	7.0	N	1	1	1	7.0	7.0
Axial Isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	2.0	R	1.732	1	1	1.2	1.2
Linearity	4.7	R	1.732	1	1	2.7	2.7
System Detection Limits	1.0	R	1.732	1	1	0.6	0.6
Modulation Response	3.2	R	1.732	1	1	1.8	1.8
Readout Electronics	0.3	N	1	1	1	0.3	0.3
Response Time	0.0	R	1.732	1	1	0.0	0.0
Integration Time	2.6	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.0	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.0	R	1.732	1	1	1.7	1.7
Probe Positioner	0.4	R	1.732	1	1	0.2	0.2
Probe Positioning	6.7	R	1.732	1	1	3.9	3.9
Max. SAR Eval.	4.0	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Positioning	3.0	N	1	1	1	3.0	3.0
Device Holder	3.6	N	1	1	1	3.6	3.6
Power Drift	5.0	R	1.732	1	1	2.9	2.9
Power Scaling	0.0	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.6	R	1.732	1	1	3.8	3.8
SAR correction	0.0	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.2	N	1	0.78	0.71	0.1	0.1
Liquid Conductivity (target)	5.0	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.5	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.4	R	1.732	0.78	0.71	1.5	1.4
Liquid Permittivity Repeatability	0.15	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.0	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.5	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.83	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.8%	12.7%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.5%	25.4%

Table 17.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

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 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

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

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

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

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

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

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

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/14

System Check_Head_750MHz_20160714

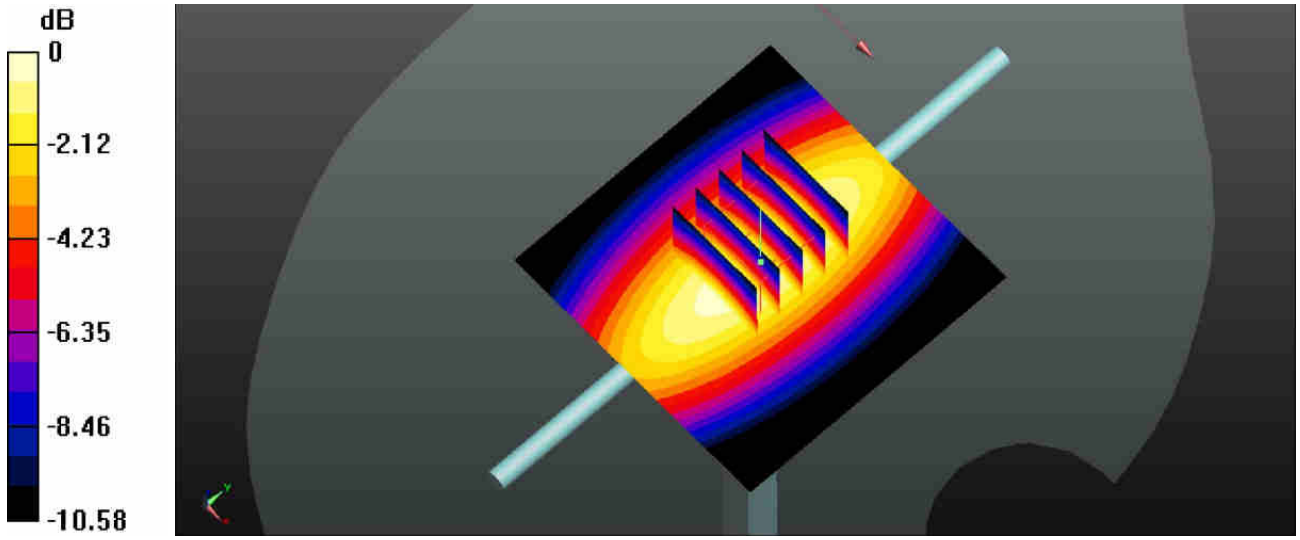
DUT: Dipole 750 MHz D750V3

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_2016/07/14 Medium parameters used: f = 750 MHz; σ = 0.893 S/m; ε_r = 41.978; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(10.72, 10.72, 10.72); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.97 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 58.96 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.48 W/kg
SAR(1 g) = 2.23 W/kg; SAR(10 g) = 1.53 W/kg
Maximum value of SAR (measured) = 2.96 W/kg



0 dB = 2.96 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/19

System Check_Head_835MHz_20160719

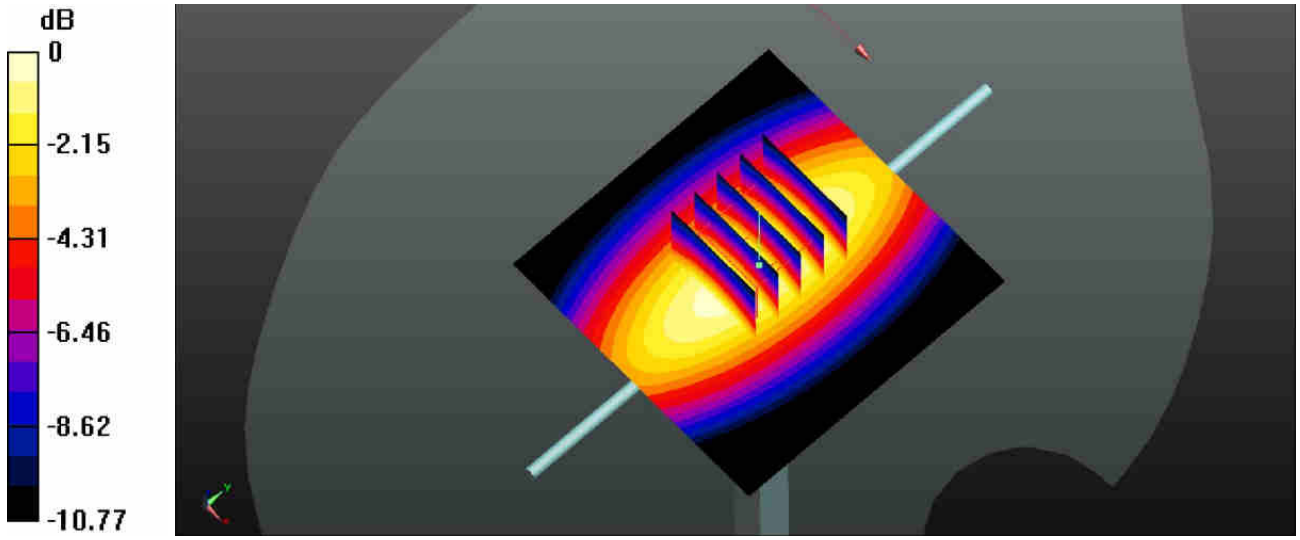
DUT: Dipole 835 MHz D835V2

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_2016/07/19 Medium parameters used: f = 835 MHz; σ = 0.899 S/m; ε_r = 41.75; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(10.15, 10.15, 10.15); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.99 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.83 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.50 W/kg
SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (measured) = 3.00 W/kg



0 dB = 3.00 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/20

System Check_Head_1750MHz_20160720

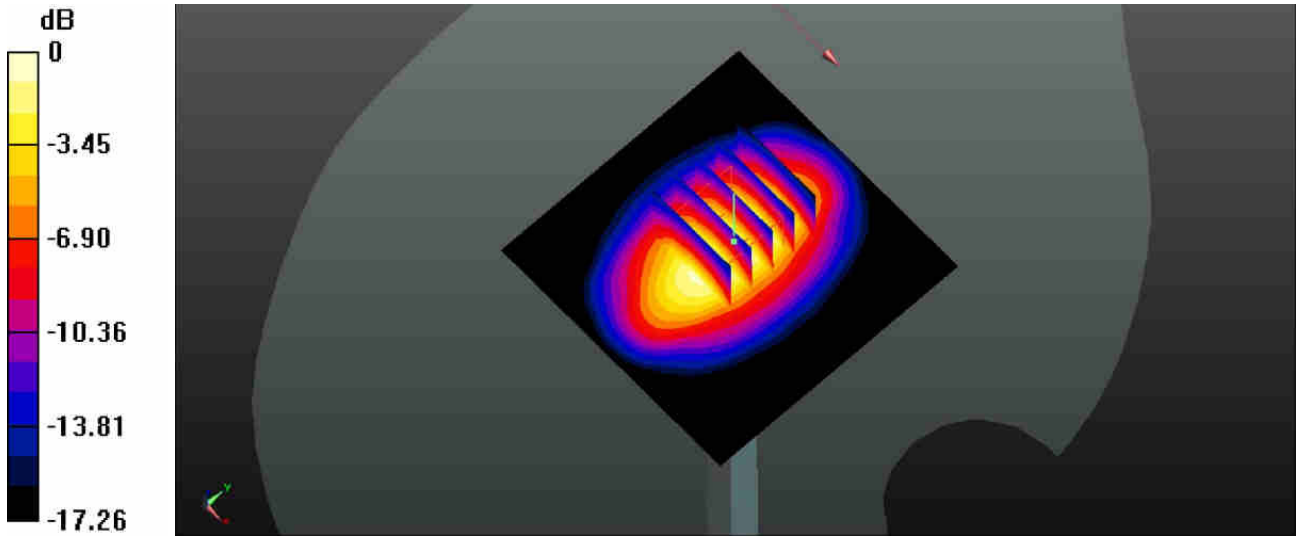
DUT: Dipole 1750 MHz D1750V2

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_2016/07/20 Medium parameters used: f = 1750 MHz; σ = 1.367 S/m; ε_r = 40.742; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(8.69, 8.69, 8.69); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.2 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 92.21 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 15.5 W/kg
SAR(1 g) = 8.55 W/kg; SAR(10 g) = 4.58 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/20

System Check_Head_1900MHz_20160720

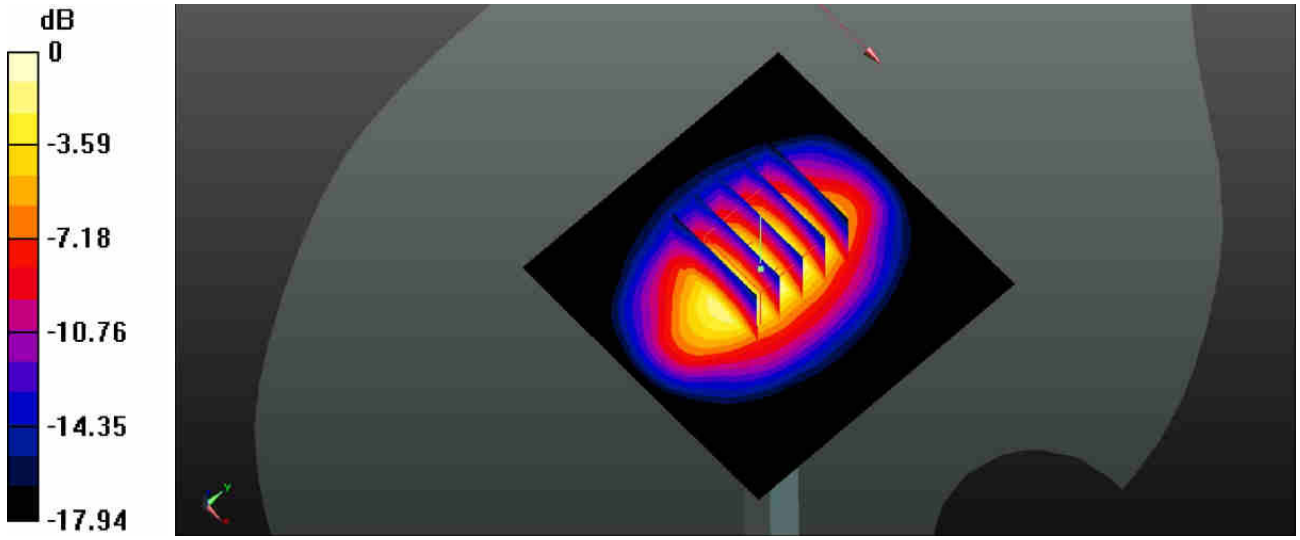
DUT: Dipole 1900 MHz D1900V2

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_2016/07/20 Medium parameters used: f = 1900 MHz; σ = 1.421 S/m; ε_r = 41.283; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(8.37, 8.37, 8.37); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 95.94 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.43 W/kg; SAR(10 g) = 4.93 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/8/2

System Check_Head_2300MHz_160802

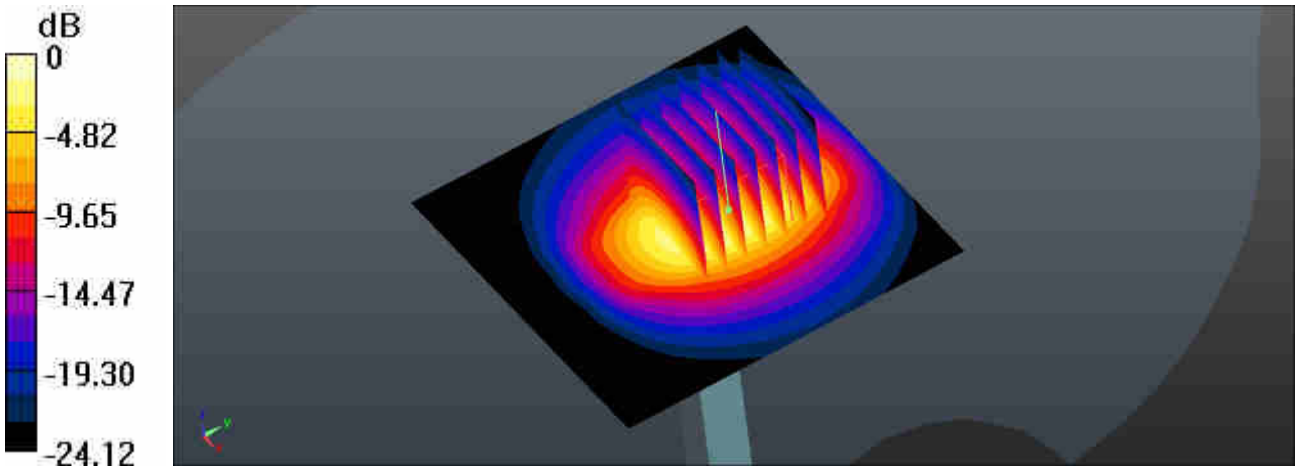
DUT: D2300V2 - SN:1055

Communication System: UID 0, CW (0); Frequency: 2300 MHz;Duty Cycle: 1:1
Medium: HSL_2300_2016/08/02 Medium parameters used: f = 2300 MHz; σ = 1.687 S/m; ε_r = 38.801; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.44, 7.44, 7.44); Calibrated: 2016.5.25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2016.5.18
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.5 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.30 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 27.7 W/kg
SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.73 W/kg
Maximum value of SAR (measured) = 19.7 W/kg



0 dB = 19.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/19

System Check_Body_750MHz_20160719

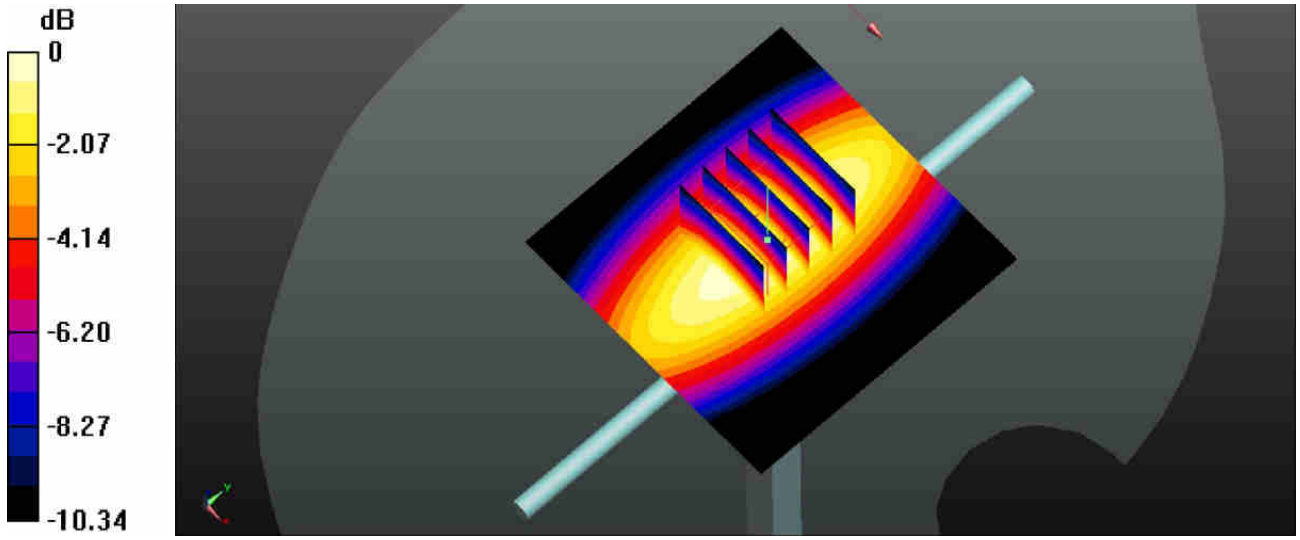
DUT: Dipole 750 MHz D750V3

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: MSL_750_2016/07/19 Medium parameters used: f = 750 MHz; σ = 0.965 S/m; ε_r = 55.045; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(10.59, 10.59, 10.59); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.96 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.69 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 2.93 W/kg



0 dB = 2.93 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/19

System Check_Body_835MHz_20160719

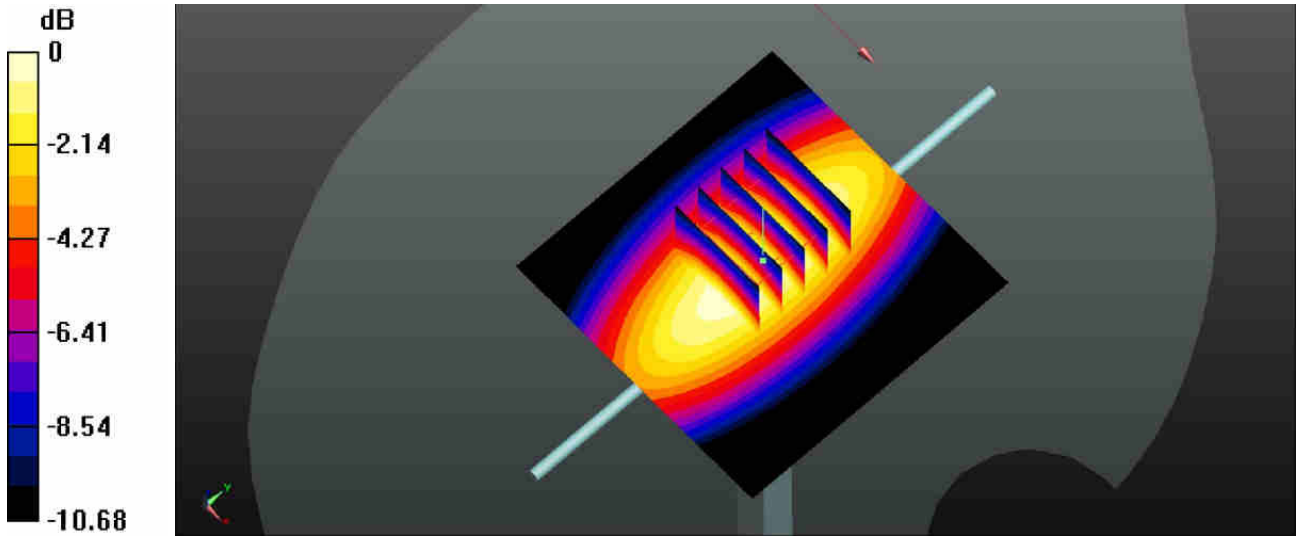
DUT: Dipole 835 MHz D835V2

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_2016/07/19 Medium parameters used: f = 835 MHz; σ = 0.977 S/m; ε_r = 54.466; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(10.3, 10.3, 10.3); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.03 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.02 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.57 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 3.03 W/kg



0 dB = 3.03 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/20

System Check_Body_1750MHz_20160720

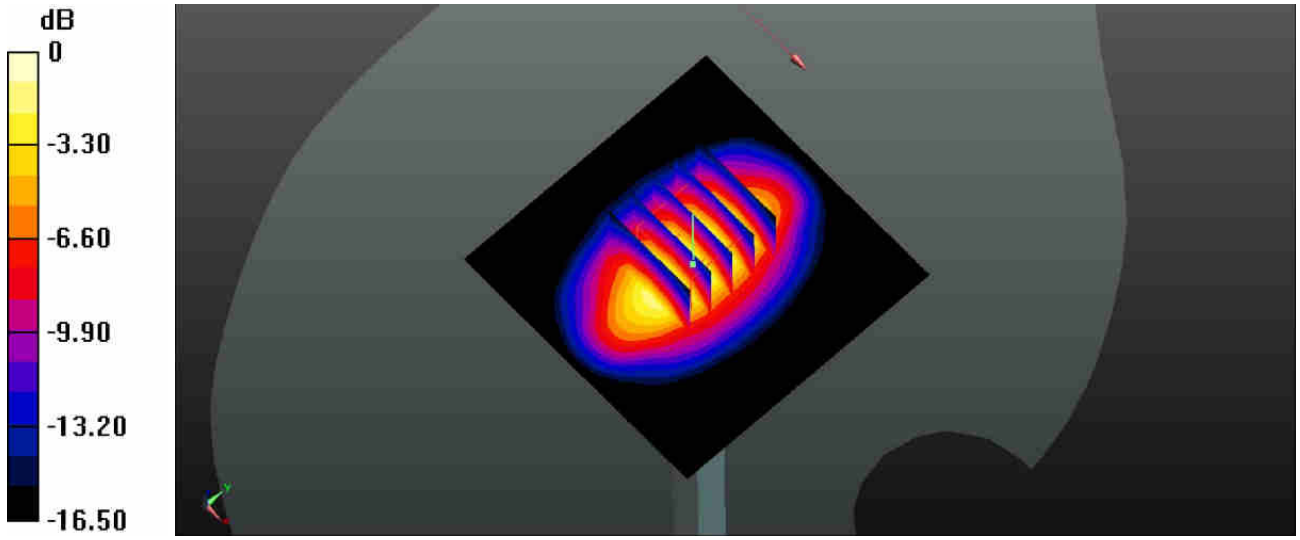
DUT: Dipole 1750 MHz D1750V2

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_2016/07/20 Medium parameters used: f = 1750 MHz; σ = 1.499 S/m; ε_r = 54.267; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature ：22.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(8.24, 8.24, 8.24); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 90.79 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 8.96 W/kg; SAR(10 g) = 4.79 W/kg
Maximum value of SAR (measured) = 13.7 W/kg



0 dB = 13.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/20

System Check_Body_1900MHz_20160720

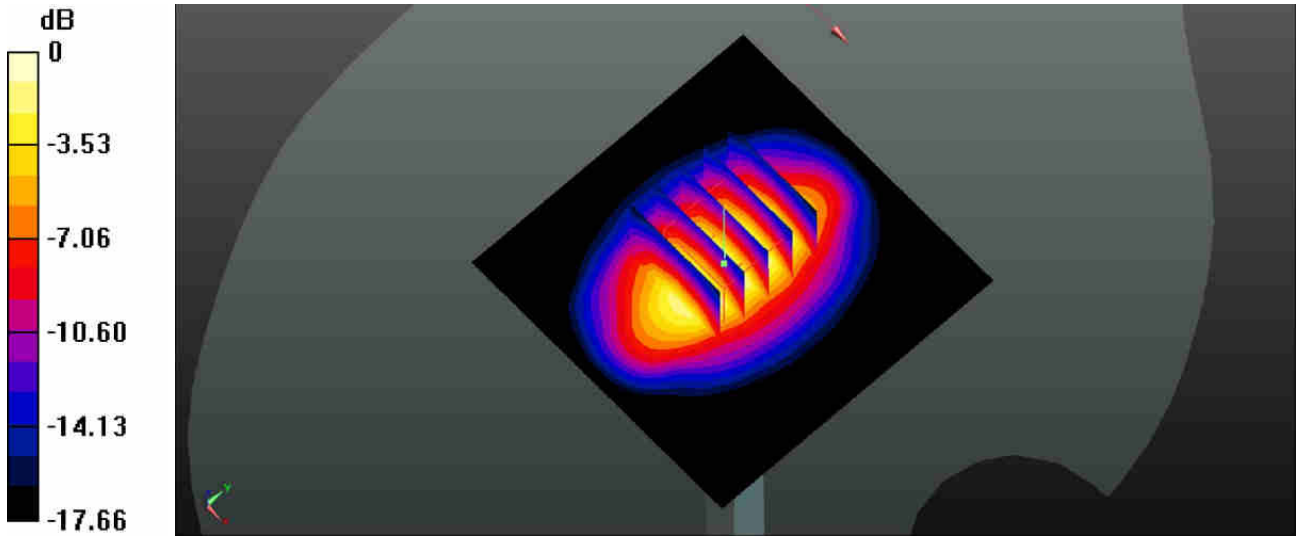
DUT: Dipole 1900 MHz D1900V2

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_2016/07/20 Medium parameters used: f = 1900 MHz; σ = 1.527 S/m; ε_r = 55.253; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature ：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(7.99, 7.99, 7.99); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.2 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 83.56 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 9.92 W/kg; SAR(10 g) = 5.18 W/kg
Maximum value of SAR (measured) = 14.9 W/kg



0 dB = 14.9 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/8/2

System Check_Body_2300MHz_160802

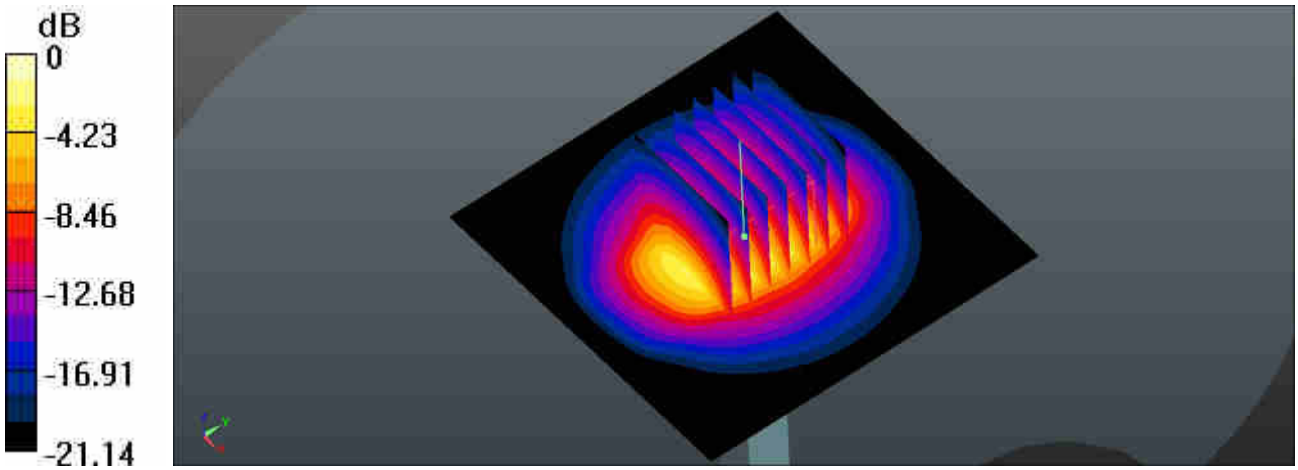
DUT: D2300V2 - SN:1055

Communication System: UID 0, CW (0); Frequency: 2300 MHz;Duty Cycle: 1:1
Medium: MSL_2300_2016/08/02 Medium parameters used: f = 2300 MHz; σ = 1.769 S/m; ε_r = 52.629; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.31, 7.31, 7.31); Calibrated: 2016.5.25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2016.5.18
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 16.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.40 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 21.4 W/kg
SAR(1 g) = 11.8 W/kg; SAR(10 g) = 5.62 W/kg
Maximum value of SAR (measured) = 16.3 W/kg



0 dB = 16.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/8

System Check_Head_750MHz_20160708

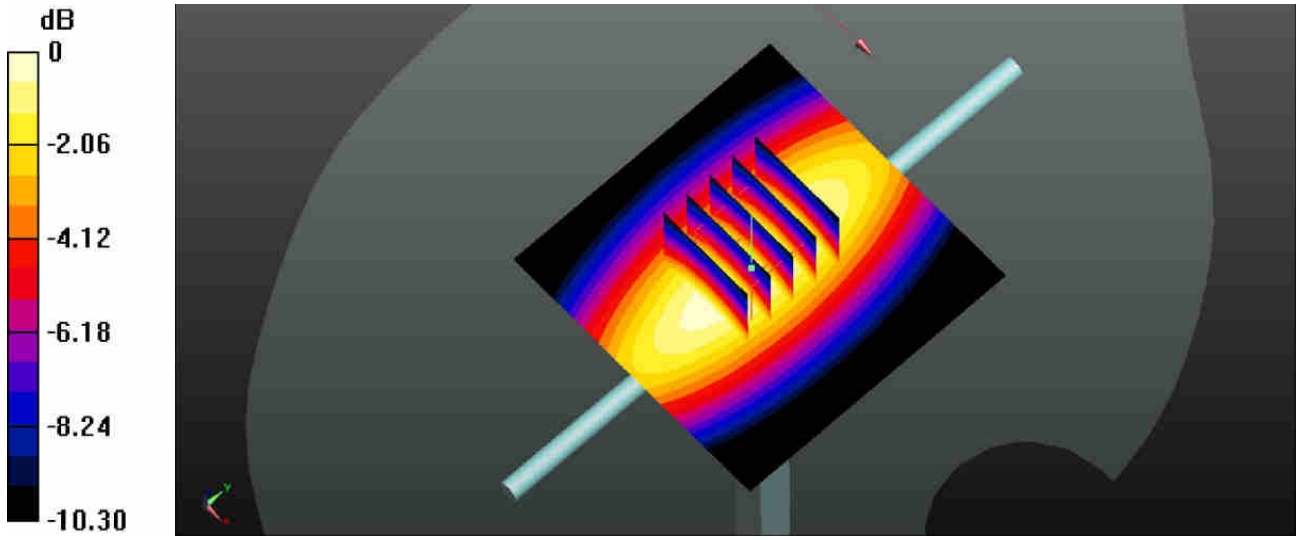
DUT: Dipole 750 MHz D750V3

Communication System: UID 0, CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_2016/07/08 Medium parameters used: f = 750 MHz; σ = 0.891 S/m; ε_r = 42.417; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(10.72, 10.72, 10.72); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.02 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.71 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.39 W/kg
SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.48 W/kg
Maximum value of SAR (measured) = 3.00 W/kg



0 dB = 3.00 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/8

System Check_Head_835MHz_2016708

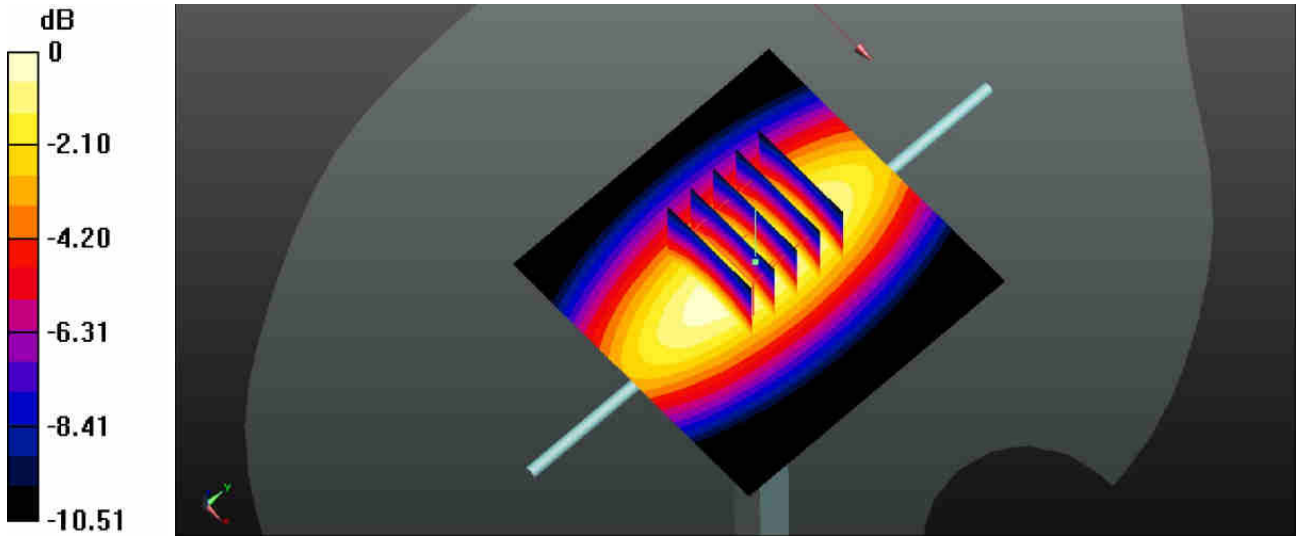
DUT: Dipole 835 MHz D835V2

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_2016/07/08 Medium parameters used: f = 835 MHz; σ = 0.9 S/m; ε_r = 42.153; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature ：22.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(10.15, 10.15, 10.15); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.35 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.13 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 2.49 W/kg; SAR(10 g) = 1.65 W/kg
Maximum value of SAR (measured) = 3.31 W/kg



0 dB = 3.31 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/30

System Check_Head_835MHz_160730

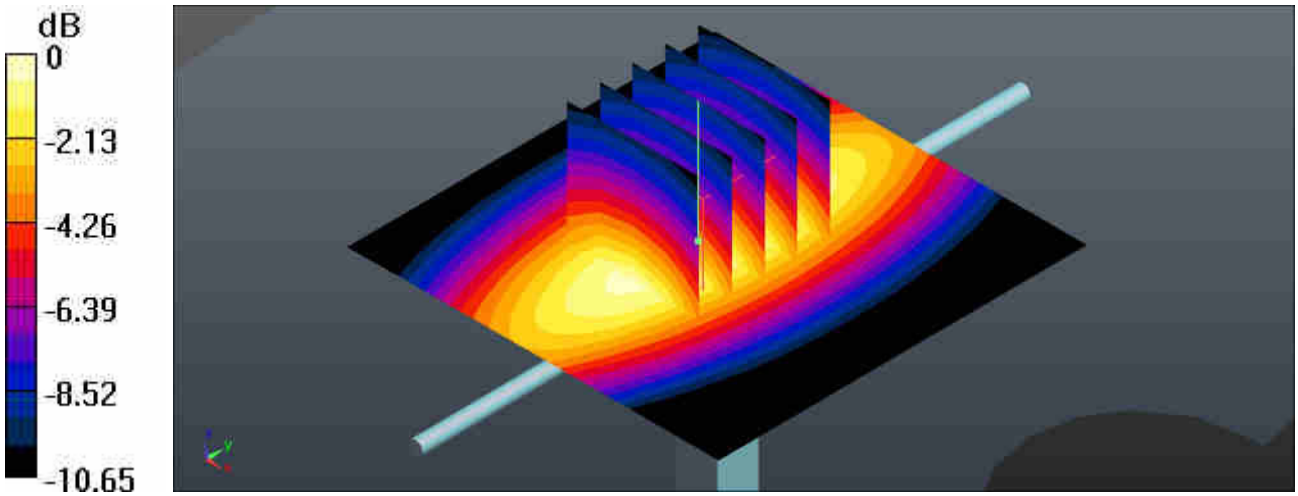
DUT: D835V2 - SN:4d091

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850_2016/07/30 Medium parameters used: f = 835 MHz; σ = 0.918 S/m; ε_r = 42.173; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.1, 10.1, 10.1); Calibrated: 2015.11.27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2016.4.4
- Phantom: SAM1; Type: SAM; Serial: TP-1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.05 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.91 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.08 W/kg



0 dB = 3.08 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/8

System Check_Head_1750MHz_20160708

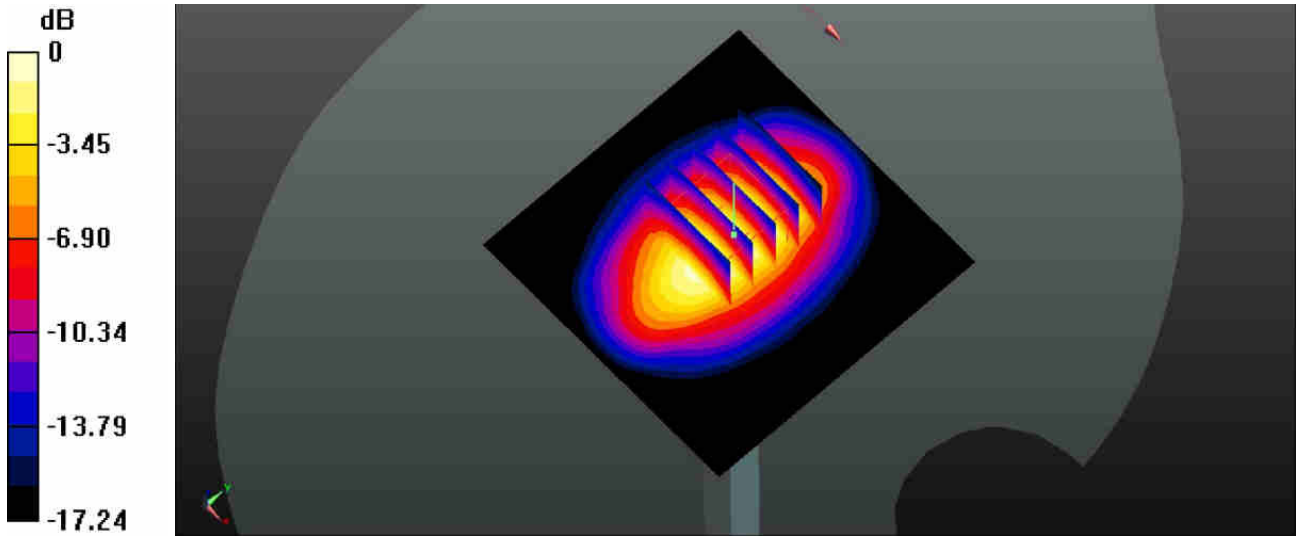
DUT: Dipole 1750 MHz D1750V2

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_2016/07/08 Medium parameters used: f = 1750 MHz; σ = 1.394 S/m; ε_r = 40.284; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature ：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(8.69, 8.69, 8.69); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 92.21 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 15.8 W/kg
SAR(1 g) = 8.72 W/kg; SAR(10 g) = 4.67 W/kg
Maximum value of SAR (measured) = 13.0 W/kg



0 dB = 13.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/7

System Check_Head_1900MHz_20160707

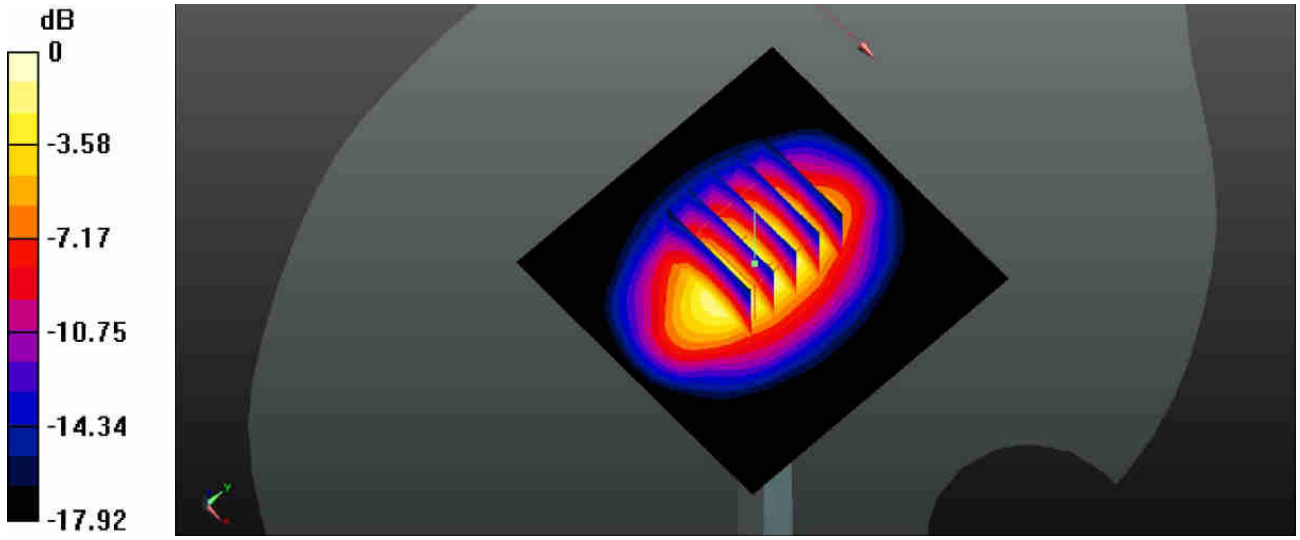
DUT: Dipole 1900 MHz D1900V2

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_2016/07/07 Medium parameters used: f = 1900 MHz; σ = 1.455 S/m; ε_r = 40.846; ρ = 1000 kg/m^3
Ambient Temperature：23.8 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(8.37, 8.37, 8.37); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.8 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 95.94 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.65 W/kg; SAR(10 g) = 5.05 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/2

System Check_Head_2300MHz_20160702

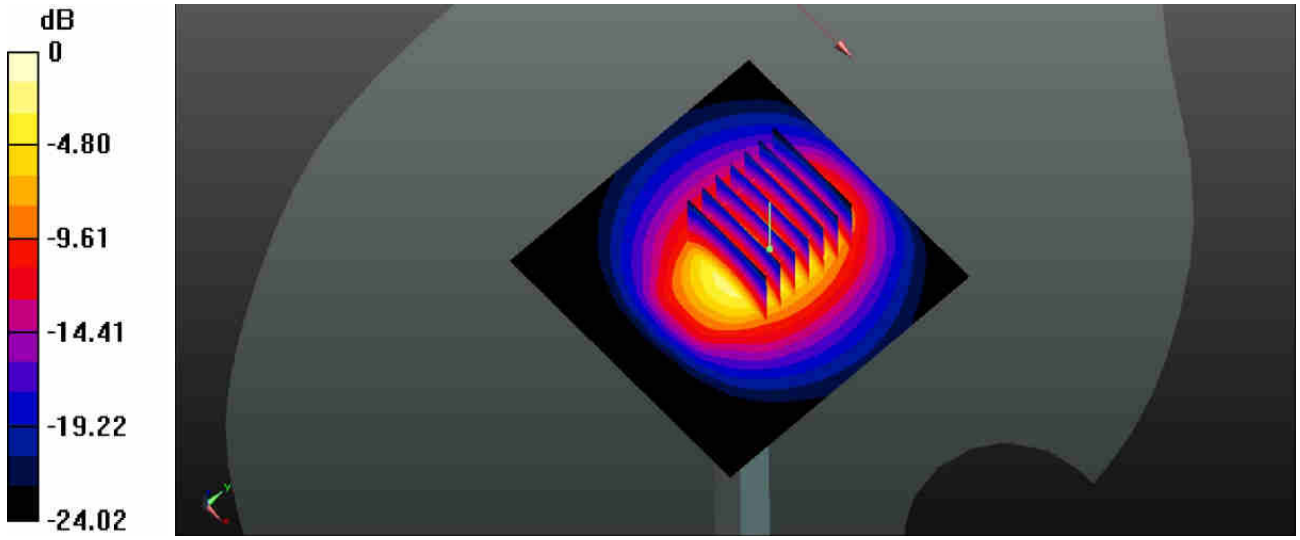
DUT: D2300V2 - SN:1055

Communication System: UID 0, CW (0); Frequency: 2300 MHz;Duty Cycle: 1:1
Medium: HSL_2300_2016/07/02 Medium parameters used: f = 2300 MHz; σ = 1.693 S/m; ε_r = 38.361; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(7.96, 7.96, 7.96); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 18.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 83.44 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 26.4 W/kg
SAR(1 g) = 12 W/kg; SAR(10 g) = 5.37 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/2

System Check_Head_2600MHz_20160702

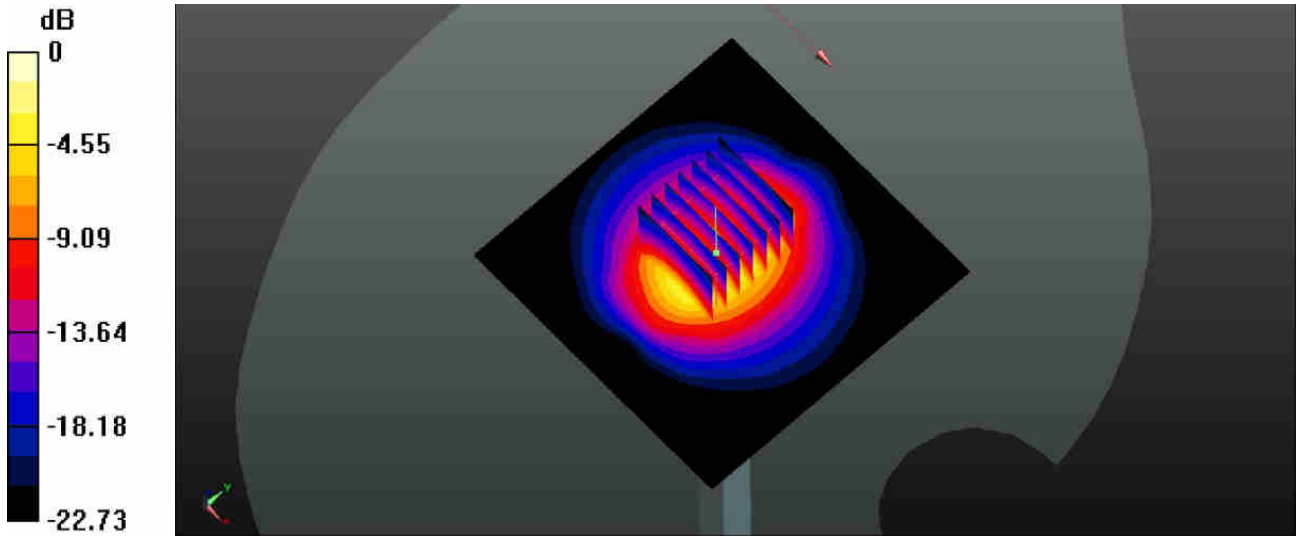
DUT: Dipole 2600 MHz D2600V2

Communication System: UID 0, CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_2016/07/02 Medium parameters used: f = 2600 MHz; σ = 2.055 S/m; ε_r = 38.321; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(7.26, 7.26, 7.26); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1754
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 25.9 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.17 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 34.1 W/kg
SAR(1 g) = 15.4 W/kg; SAR(10 g) = 6.91 W/kg
Maximum value of SAR (measured) = 26.9 W/kg



0 dB = 26.9 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016.7.30

System Check_Body_835MHz_160730

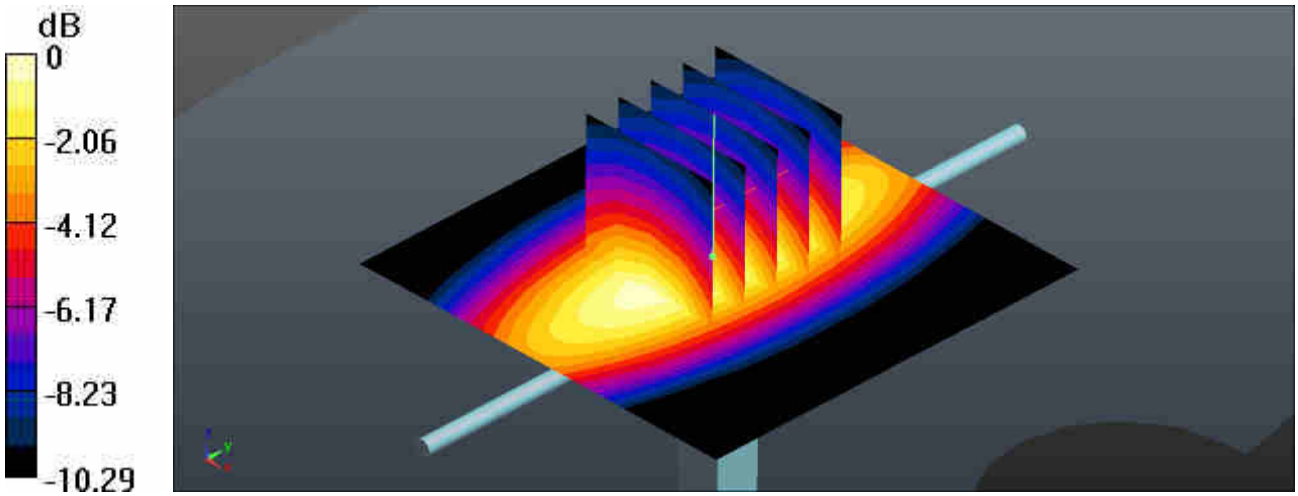
DUT: D835V2 - SN:4d091

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850_160730 Medium parameters used: f = 835 MHz; σ = 0.995 S/m; ε_r = 56.342; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.17, 10.17, 10.17); Calibrated: 2015.11.27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2016.4.4
- Phantom: SAM1; Type: SAM; Serial: TP-1644
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.17 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.90 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.66 W/kg
SAR(1 g) = 2.54 W/kg; SAR(10 g) = 1.67 W/kg
Maximum value of SAR (measured) = 3.19 W/kg



0 dB = 3.19 W/kg = 5.04 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016/7/5

System Check_Body_1750MHz_20160705

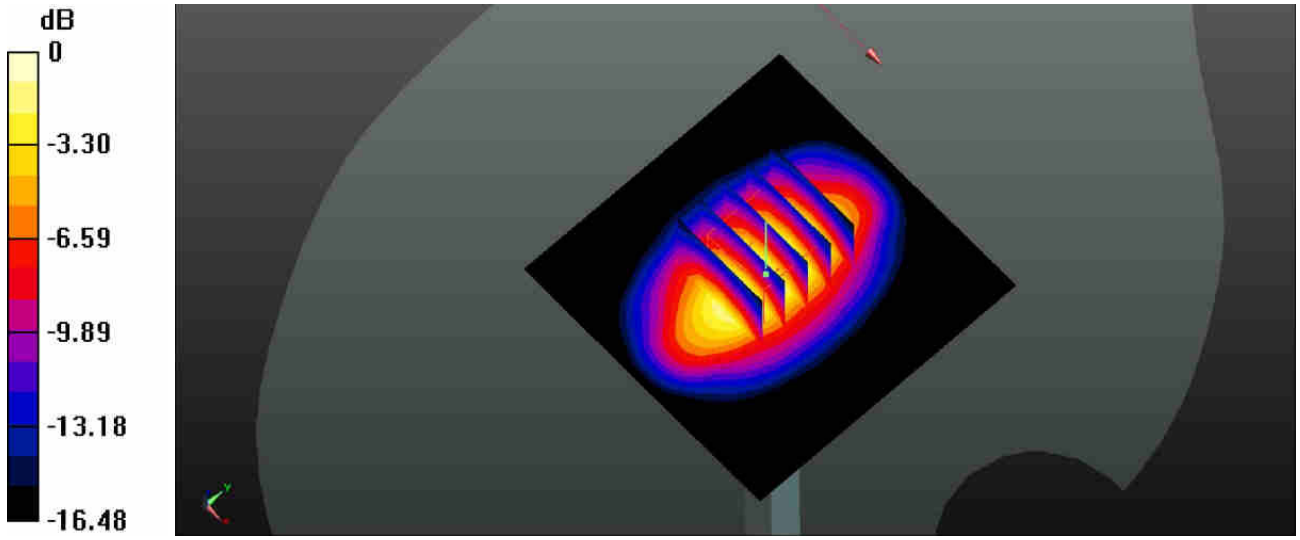
DUT: Dipole 1750 MHz D1750V2

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_2016/07/05 Medium parameters used: f = 1750 MHz; σ = 1.517 S/m; ε_r = 53.127; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature ：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3935; ConvF(8.24, 8.24, 8.24); Calibrated: 2015/11/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2015/8/27
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1753
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 90.79 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.07 W/kg; SAR(10 g) = 4.85 W/kg
Maximum value of SAR (measured) = 13.8 W/kg



0 dB = 13.8 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2016.8.2

System Check_Body_1750MHz_160802

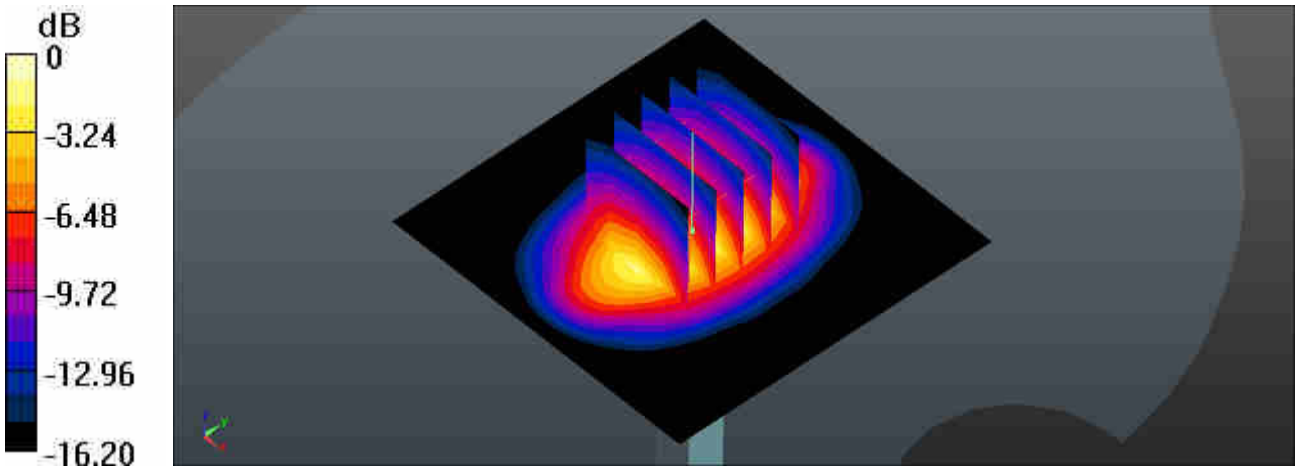
DUT: D1750V2 - SN:1069

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_160802 Medium parameters used: f = 1750 MHz; σ = 1.498 S/m; ε_r = 53.463; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.81, 7.81, 7.81); Calibrated: 2016.5.25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2016.5.18
- Phantom: SAM2; Type: SAM; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.9 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 83.14 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 16.0 W/kg
SAR(1 g) = 9.19 W/kg; SAR(10 g) = 4.92 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg