FCC SAR Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	WCDMA/LTE Multi-Mode Digital Mobile Phone
BRAND NAME	:	ZTE
MODEL NAME	:	A1R
FCC ID	:	SRQ-ZTEA1R
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

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Table of Contents

1. Statement of Compliance **4**
2. Administration Data **5**
3. Guidance Standard **5**
4. Equipment Under Test (EUT) **6**
4.1 General Information 6
4.2 Maximum Tune-up Limit 7
4.3 General LTE SAR Test and Reporting Considerations 13
5. RF Exposure Limits **16**
5.1 Uncontrolled Environment 16
5.2 Controlled Environment 16
6. Specific Absorption Rate (SAR) **17**
6.1 Introduction 17
6.2 SAR Definition 17
7. System Description and Setup **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 **26**
11.1 Ear and handset reference point 26
11.2 Definition of the cheek position 27
11.3 Definition of the tilt position 28
11.4 Body Worn Accessory 29
11.5 Wireless Router 29
12. Conducted RF Output Power (Unit: dBm) **30**
13. Antenna Location **51**
14. SAR Test Results **52**
14.1 Head SAR 54
14.2 Hotspot SAR 57
14.3 Body Worn Accessory SAR 62
14.4 Repeated SAR Measurement 65
15. Simultaneous Transmission Analysis **66**
15.1 Head Exposure Conditions 67
15.2 Hotspot Exposure Conditions 70
15.3 Body-Worn Accessory Exposure Conditions 76
16. Uncertainty Assessment **79**
17. References **82**
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASY Calibration Certificate
Appendix D. Test Setup Photos

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA591101	Rev. 01	Initial issue of report	Sep. 23, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **ZTE CORPORATION, WCDMA/LTE Multi-Mode Digital Mobile Phone, A1R,** are as follows.

Equipment Class	Frequency Band	Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Wireless Router (Separation 10mm)	Body-worn (Separation 10mm)	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
PCE	GSM850	**0.66**	1.09	0.96	1.14
	GSM1900	0.18	**1.14**	1.00	
	WCDMA Band V	0.29	0.61	0.61	
	WCDMA Band IV	0.20	0.96	0.96	
	WCDMA Band II	0.16	0.95	0.95	
	LTE Band 12	< 0.10	< 0.10	< 0.10	
	LTE Band 5	0.38	0.61	0.61	
	LTE Band 4	0.18	0.73	0.73	
	LTE Band 2	0.17	0.98	0.98	
	LTE Band 7	0.15	1.03	**1.01**	
DTS	WLAN 2.4GHz Band	0.38	0.10	0.10	1.14
NII	WLAN 5.2GHz Band	0.27	< 0.10	< 0.10	1.14
	WLAN 5.8GHz Band	0.11	< 0.10	< 0.10	
DSS	Bluetooth	< 0.10	< 0.10	< 0.10	1.14
Date of Testing:		Jul. 25, 2015 ~ Aug. 08, 2015			

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/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.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

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 v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r01
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r01
- FCC KDB 941225 D06 Hotspot Mode SAR v02

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	WCDMA/LTE Multi-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	A1R
FCC ID	SRQ-ZTEA1R
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 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 · RMC/AMR 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · HSPA+ (Downlink Only) · LTE · WLAN 2.4GHz 802.11b/g/n HT20 · WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 · Bluetooth v2.1+EDR, Bluetooth v4.0 LE · NFC
HW Version	wsjB
SW Version	A1RV1.0.0B02
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 2.4GHz WLAN supports hotspot operation and 5.2GHz / 5.8 GHz supports WiFi Direct (GO/GC).
2. This device supported VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. 3rd party VoIP).
3. This device supports GRPS/EGPRS mode up to multi-slot class 12.
4. This device does not support DTM operation.
5. The device supports VoLTE function.

4.2 Maximum Tune-up Limit

Mode	Burst Average Power (dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	33.00	30.50
GPRS (GMSK, 1 Tx slot)	33.00	30.50
GPRS (GMSK, 2 Tx slots)	33.00	30.50
GPRS (GMSK, 3 Tx slots)	31.00	30.50
GPRS (GMSK, 4 Tx slots)	31.00	30.50
EDGE (8PSK, 1 Tx slot)	27.00	27.00
EDGE (8PSK, 2 Tx slots)	27.00	27.00
EDGE (8PSK, 3 Tx slots)	27.00	27.00
EDGE (8PSK, 4 Tx slots)	27.00	27.00

Mode	Average Power (dBm)		
	WCDMA Band V	WCDMA Band II	WCDMA Band IV
AMR 12.2Kbps	24.00	24.00	24.50
RMC 12.2Kbps	24.00	24.00	24.50
HSDPA Subtest-1	24.00	24.00	24.00
HSDPA Subtest-2	24.00	24.00	24.00
HSDPA Subtest-3	23.50	23.50	23.50
HSDPA Subtest-4	23.50	23.50	23.50
DC-HSDPA Subtest-1	24.00	24.00	24.00
DC-HSDPA Subtest-2	24.00	24.00	24.00
DC-HSDPA Subtest-3	23.50	23.50	23.50
DC-HSDPA Subtest-4	23.50	23.50	23.50
HSUPA Subtest-1	24.00	24.00	24.00
HSUPA Subtest-2	22.00	22.00	22.00
HSUPA Subtest-3	23.00	23.00	23.00
HSUPA Subtest-4	22.00	22.00	22.00
HSUPA Subtest-5	24.00	24.00	24.00

LTE Band 12				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	24.00
QPSK	10	> 12	0-1	24.00
16QAM	10	≤ 12	0-1	24.00
16QAM	10	> 12	0-2	24.00
QPSK	5	≤ 8	0	24.00
QPSK	5	> 8	0-1	24.00
16QAM	5	≤ 8	0-1	24.00
16QAM	5	> 8	0-2	24.00
QPSK	3	≤ 4	0	24.00
QPSK	3	> 4	0-1	24.00
16QAM	3	≤ 4	0-1	24.00
16QAM	3	> 4	0-2	24.00
QPSK	1.4	≤ 5	0	24.00
QPSK	1.4	> 5	0-1	24.00
16QAM	1.4	≤ 5	0-1	24.00
16QAM	1.4	> 5	0-2	24.00

LTE Band 17				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	24.00
QPSK	10	> 12	0-1	24.00
16QAM	10	≤ 12	0-1	24.00
16QAM	10	> 12	0-2	24.00
QPSK	5	≤ 8	0	24.00
QPSK	5	> 8	0-1	24.00
16QAM	5	≤ 8	0-1	24.00
16QAM	5	> 8	0-2	24.00

LTE Band 5				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	10	≤ 12	0	24.00
QPSK	10	> 12	0-1	24.00
16QAM	10	≤ 12	0-1	24.00
16QAM	10	> 12	0-2	24.00
QPSK	5	≤ 8	0	24.00
QPSK	5	> 8	0-1	24.00
16QAM	5	≤ 8	0-1	24.00
16QAM	5	> 8	0-2	24.00
QPSK	3	≤ 4	0	24.00
QPSK	3	> 4	0-1	24.00
16QAM	3	≤ 4	0-1	24.00
16QAM	3	> 4	0-2	24.00
QPSK	1.4	≤ 5	0	24.00
QPSK	1.4	> 5	0-1	24.00
16QAM	1.4	≤ 5	0-1	24.00
16QAM	1.4	> 5	0-2	24.00

LTE Band 4				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	24.50
QPSK	20	> 18	0-1	23.50
16QAM	20	≤ 18	0-1	23.50
16QAM	20	> 18	0-2	22.50
QPSK	15	≤ 16	0	24.50
QPSK	15	> 16	0-1	23.50
16QAM	15	≤ 16	0-1	23.50
16QAM	15	> 16	0-2	22.50
QPSK	10	≤ 12	0	24.50
QPSK	10	> 12	0-1	23.50
16QAM	10	≤ 12	0-1	23.50
16QAM	10	> 12	0-2	22.50
QPSK	5	≤ 8	0	24.50
QPSK	5	> 8	0-1	23.50
16QAM	5	≤ 8	0-1	23.50
16QAM	5	> 8	0-2	22.50
QPSK	3	≤ 4	0	24.50
QPSK	3	> 4	0-1	23.50
16QAM	3	≤ 4	0-1	23.50
16QAM	3	> 4	0-2	22.50
QPSK	1.4	≤ 5	0	24.50
QPSK	1.4	> 5	0-1	23.50
16QAM	1.4	≤ 5	0-1	23.50
16QAM	1.4	> 5	0-2	22.50

LTE Band 2				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	24.50
QPSK	20	> 18	0-1	23.50
16QAM	20	≤ 18	0-1	23.50
16QAM	20	> 18	0-2	22.50
QPSK	15	≤ 16	0	24.50
QPSK	15	> 16	0-1	23.50
16QAM	15	≤ 16	0-1	23.50
16QAM	15	> 16	0-2	22.50
QPSK	10	≤ 12	0	24.50
QPSK	10	> 12	0-1	23.50
16QAM	10	≤ 12	0-1	23.50
16QAM	10	> 12	0-2	22.50
QPSK	5	≤ 8	0	24.50
QPSK	5	> 8	0-1	23.50
16QAM	5	≤ 8	0-1	23.50
16QAM	5	> 8	0-2	22.50
QPSK	3	≤ 4	0	24.50
QPSK	3	> 4	0-1	23.50
16QAM	3	≤ 4	0-1	23.50
16QAM	3	> 4	0-2	22.50
QPSK	1.4	≤ 5	0	24.50
QPSK	1.4	> 5	0-1	23.50
16QAM	1.4	≤ 5	0-1	23.50
16QAM	1.4	> 5	0-2	22.50

LTE Band 7				
Average Power (dBm)				
Modulation	BW (MHz)	RB size	MPR	Target Power
QPSK	20	≤ 18	0	24.50
QPSK	20	> 18	0-1	23.50
16QAM	20	≤ 18	0-1	23.50
16QAM	20	> 18	0-2	22.50
QPSK	15	≤ 16	0	24.50
QPSK	15	> 16	0-1	23.50
16QAM	15	≤ 16	0-1	23.50
16QAM	15	> 16	0-2	22.50
QPSK	10	≤ 12	0	24.50
QPSK	10	> 12	0-1	23.50
16QAM	10	≤ 12	0-1	23.50
16QAM	10	> 12	0-2	22.50
QPSK	5	≤ 8	0	24.50
QPSK	5	> 8	0-1	23.50
16QAM	5	≤ 8	0-1	23.50
16QAM	5	> 8	0-2	22.50

Mode		Average Power (dBm)
2.4GHz	802.11b	16.00
	802.11g	14.50
	802.11n-HT20	13.50
5.2GHz	802.11ac-VHT20	11.50
	802.11ac-VHT40	11.50
	802.11ac-VHT80	11.50
5.8GHz	802.11ac-VHT20	11.50
	802.11ac-VHT40	11.50
	802.11ac-VHT80	11.50
Bluetooth v2.1 + EDR		6.00
Bluetooth v4.0 LE		6.50

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	SRQ-ZTEA1R
Equipment Name	WCDMA/LTE Multi-Mode Digital Mobile Phone
Operating Frequency Range of each LTE transmission band	LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz
Channel Bandwidth	LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 7: 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.
LTE Carrier Aggregation Combinations	Inter-Band possible combinations as below page and the detail power verification please referred to page 47.
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 10. Is 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.

LTE Carrier Aggregation Combinations													
Inter-Band Combinations													
(PCC) B2	(SCC) B12	(PCC) B12	(SCC) B2	(PCC) B2	(SCC) B17	(PCC) B17	(SCC) B2	(PCC) B12	(SCC) B4	(PCC) B4	(SCC) B17	(PCC) B17	(SCC) B4
20M+10M		10M+20M		10M+10M		10M+10M		10M+20M		10M+10M		10M+10M	
20M+5M		10M+15M		10M+5M		10M+5M		10M+15M		10M+5M		10M+5M	
20M+3M		10M+10M		5M+10M		5M+10M		10M+10M		5M+10M		5M+10M	
15M+10M		10M+5M		5M+5M		5M+5M		10M+5M		5M+5M		5M+5M	
15M+5M		5M+20M						10M+3M					
15M+3M		5M+15M						10M+1.4M					
10M+10M		5M+10M						5M+20M					
10M+5M		5M+5M						5M+15M					
10M+3M		3M+20M						5M+10M					
5M+10M		3M+15M						5M+5M					
5M+5M		3M+10M						5M+3M					
5M+3M		3M+5M						5M+1.4M					
								3M+20M					
								3M+15M					
								3M+10M					
								3M+5M					
								3M+3M					
								3M+1.4M					

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

LTE Band 12

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 17

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

LTE Band 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 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 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 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

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

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:

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

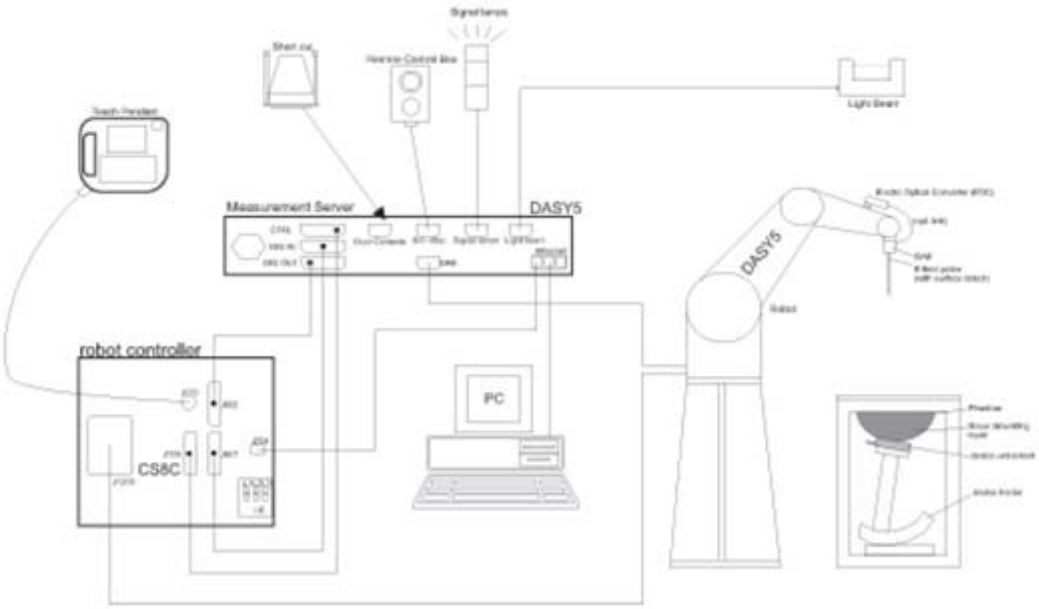
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

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.

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	1012	May 28, 2015	May 27, 2016
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 20, 2015	Mar. 19, 2016
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 14, 2014	Nov. 13, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 24, 2015	Mar. 23, 2016
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 21, 2014	Aug. 20, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 21, 2014	Aug. 20, 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1040	Jun. 22, 2015	Jun. 21, 2016
SPEAG	Data Acquisition Electronics	DAE4	778	Aug. 21, 2014	Aug. 20, 2015
SPEAG	Data Acquisition Electronics	DAE4	1388	Sep. 24, 2014	Sep. 23, 2015
SPEAG	Data Acquisition Electronics	DAE3	577	Oct. 06, 2014	Oct. 05, 2015
SPEAG	Data Acquisition Electronics	DAE4	916	Dec. 29, 2014	Dec. 28, 2015
SPEAG	Data Acquisition Electronics	DAE3	495	May 22, 2015	May 21, 2016
SPEAG	Data Acquisition Electronics	DAE4	1338	Nov. 14, 2014	Nov. 13, 2015
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 26, 2014	Sep. 25, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3697	Sep. 29, 2014	Sep. 28, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 21, 2014	Nov. 20, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May 27, 2015	May 26, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	Nov. 18, 2014	Nov. 17, 2015
SPEAG	SAM Twin Phantom	SAM	TP-1303	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1718	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1719	NCR	NCR
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Wisewind	Thermometer	ETP-101	TM560	Oct. 21, 2014	Oct. 20, 2015
WonDer	Thermometer	WD-5015	TM685	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	HTC-1	TM642	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	HTC-1	TM281	Oct. 21, 2014	Oct. 20, 2015
H.M.IRIS	Thermometer	TH-08	TM658	Oct. 21, 2014	Oct. 20, 2015
Wisewind	Thermometer	ETP-101	TM225	Oct. 21, 2014	Oct. 20, 2015
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 06, 2015	Feb. 05, 2016
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May 14, 2015	May 13, 2016
R&S	Bluetooth Tester	CBT	101137	Sep. 17, 2014	Sep. 16, 2015
Agilent	Signal Generator	N5181A	MY50145381	Dec. 11, 2014	Dec. 10, 2015
R&S	Signal Generator	MG3710A	6201502524	May 25, 2015	May 24, 2016
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 11, 2015	Feb. 10, 2016
SPEAG	Dielectric Probe Kit	DAK-3.5	1047	Nov. 04, 2014	Nov. 03, 2015
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	Nov. 18, 2014	Nov. 17, 2015
Anritsu	Power Meter	ML2495A	1419002	May 13, 2015	May 12, 2016
Anritsu	Power Sensor	MA2411B	1339124	May 13, 2015	May 12, 2016
Anritsu	Power Meter	ML2495A	1349001	Dec. 03, 2014	Dec. 02, 2015
Anritsu	Power Sensor	MA2411B	1306099	Dec. 03, 2014	Dec. 02, 2015
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 23, 2014	Aug. 22, 2015
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 17, 2015	Jun. 16, 2016
Agilent	Dual Directional Coupler	778D	50422	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	
AR	Power Amplifier	5S1G4M2	0328767	Note 1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 1	

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
1750	55.2	0	0	0.3	0	44.5	1.37	40.1
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
1750	70.2	0	0	0.4	0	29.4	1.49	53.4
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	0.895	41.900	0.89	41.90	0.56	0.00	±5	Jul. 29, 2015
750	Body	22.5	0.967	57.868	0.96	55.50	0.73	4.27	±5	Jul. 26, 2015
835	Head	22.5	0.916	41.200	0.90	41.50	1.78	-0.72	±5	Jul. 29, 2015
835	Head	22.5	0.906	42.966	0.90	41.50	0.67	3.53	±5	Aug. 06, 2015
835	Body	22.3	0.994	56.003	0.97	55.20	2.47	1.45	±5	Jul. 26, 2015
835	Body	22.5	0.981	56.423	0.97	55.20	1.13	2.22	±5	Jul. 27, 2015
835	Body	22.4	0.987	54.900	0.97	55.20	1.75	-0.54	±5	Jul. 28, 2015
835	Body	22.5	0.975	52.906	0.97	55.20	0.52	-4.16	±5	Aug. 06, 2015
1750	Head	22.4	1.370	40.300	1.37	40.10	0.00	0.50	±5	Jul. 28, 2015
1750	Body	22.4	1.529	52.312	1.49	53.40	2.62	-2.04	±5	Jul. 25, 2015
1750	Body	22.4	1.529	52.312	1.49	53.40	2.62	-2.04	±5	Jul. 25, 2015
1900	Head	22.4	1.430	38.900	1.40	40.00	2.14	-2.75	±5	Jul. 28, 2015
1900	Head	22.2	1.430	39.100	1.40	40.00	2.14	-2.25	±5	Jul. 31, 2015
1900	Body	22.4	1.544	52.320	1.52	53.30	1.58	-1.84	±5	Jul. 25, 2015
1900	Body	22.4	1.544	52.320	1.52	53.30	1.58	-1.84	±5	Jul. 25, 2015
1900	Body	22.2	1.550	51.100	1.52	53.30	1.97	-4.13	±5	Jul. 31, 2015
2450	Head	22.3	1.860	38.900	1.80	39.20	3.33	-0.77	±5	Jul. 31, 2015
2450	Head	22.6	1.844	40.245	1.80	39.20	2.44	2.67	±5	Aug. 08, 2015
2450	Body	22.4	1.990	52.400	1.95	52.70	2.05	-0.57	±5	Jul. 30, 2015
2450	Body	22.6	1.931	53.584	1.95	52.70	-0.97	1.68	±5	Aug. 08, 2015
2600	Head	22.4	1.940	39.500	1.96	39.00	-1.02	1.28	±5	Jul. 30, 2015
2600	Body	22.6	2.209	51.123	2.16	52.50	2.27	-2.62	±5	Jul. 25, 2015
5200	Head	22.3	4.812	35.445	4.66	36.00	3.26	-1.54	±5	Aug. 07, 2015
5200	Body	22.3	5.284	47.499	5.30	49.00	-0.30	-3.06	±5	Aug. 07, 2015
5800	Head	22.6	5.421	34.333	5.27	35.30	2.87	-2.74	±5	Aug. 07, 2015
5800	Body	22.6	6.179	46.434	6.00	48.20	2.98	-3.66	±5	Aug. 07, 2015

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.

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 (%)
Jul. 29, 2015	750	Head	250	1012	3954	916	2.08	8.22	8.32	1.22
Jul. 26, 2015	750	Body	250	1012	3931	577	2.01	8.61	8.04	-6.62
Jul. 29, 2015	835	Head	250	499	3954	916	2.24	9.20	8.96	-2.61
Aug. 06, 2015	835	Head	250	499	3935	1338	2.12	9.20	8.48	-7.83
Jul. 26, 2015	835	Body	250	499	3697	1388	2.51	9.30	10.04	7.96
Jul. 27, 2015	835	Body	250	499	3931	916	2.47	9.30	9.88	6.24
Jul. 28, 2015	835	Body	250	499	3954	916	2.22	9.30	8.88	-4.52
Aug. 06, 2015	835	Body	250	499	3935	1338	2.36	9.30	9.44	1.51
Jul. 28, 2015	1750	Head	250	1068	3954	916	8.60	36.80	34.4	-6.52
Jul. 25, 2015	1750	Body	250	1068	3697	1388	9.60	38.00	38.4	1.05
Jul. 25, 2015	1750	Body	250	1068	3270	778	8.94	38.00	35.76	-5.89
Jul. 28, 2015	1900	Head	250	5d041	3954	916	10.00	40.00	40	0.00
Jul. 31, 2015	1900	Head	250	5d041	3697	916	9.21	40.00	36.84	-7.90
Jul. 25, 2015	1900	Body	250	5d041	3697	1388	9.70	39.80	38.8	-2.51
Jul. 25, 2015	1900	Body	250	5d041	3270	778	10.20	39.80	40.8	2.51
Jul. 31, 2015	1900	Body	250	5d041	3697	916	9.77	39.80	39.08	-1.81
Jul. 31, 2015	2450	Head	250	736	3697	916	13.50	51.80	54	4.25
Aug. 08, 2015	2450	Head	250	736	3925	495	13.70	51.80	54.8	5.79
Jul. 30, 2015	2450	Body	250	736	3697	916	13.00	50.60	52	2.77
Aug. 08, 2015	2450	Body	250	736	3925	495	11.70	50.60	46.8	-7.51
Jul. 30, 2015	2600	Head	250	1008	3697	916	13.80	57.10	55.2	-3.33
Jul. 25, 2015	2600	Body	250	1008	3697	1388	14.80	55.30	59.2	7.05
Aug. 07, 2015	5200	Head	100	1040	3935	1338	7.55	78.30	75.5	-3.58
Aug. 07, 2015	5200	Body	100	1040	3935	1338	7.42	73.70	74.2	0.68
Aug. 07, 2015	5800	Head	100	1040	3935	1338	7.91	80.60	79.1	-1.86
Aug. 07, 2015	5800	Body	100	1040	3935	1338	7.57	76.60	75.7	-1.17

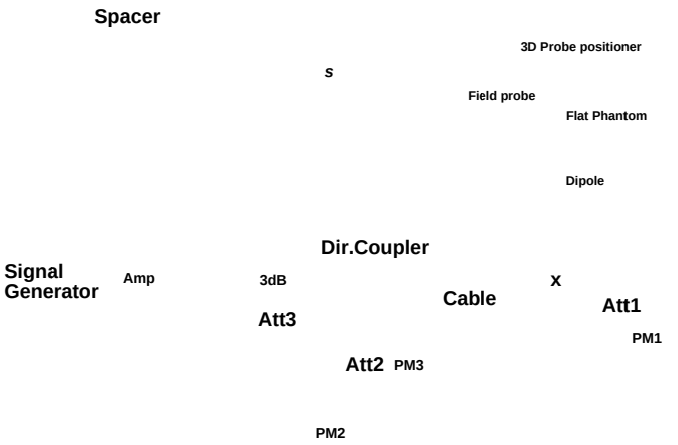


Fig 8.3.1 System Performance Check Setup

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.

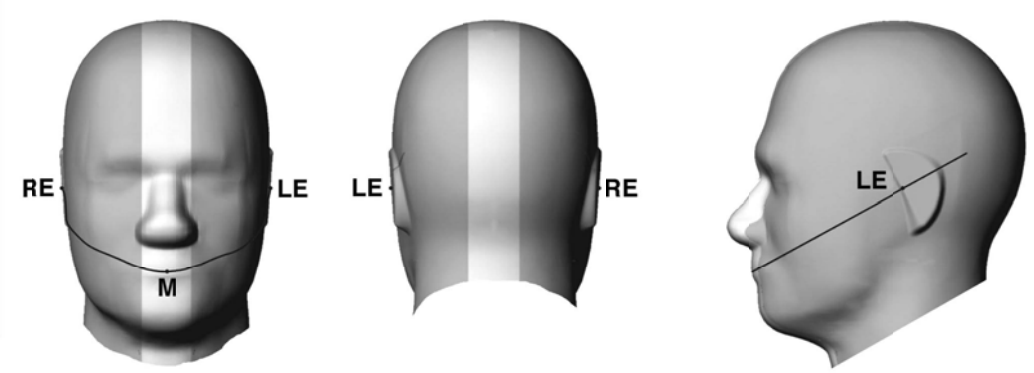


Fig 9.1.1 Front, back, and side views of SAM twin phantom

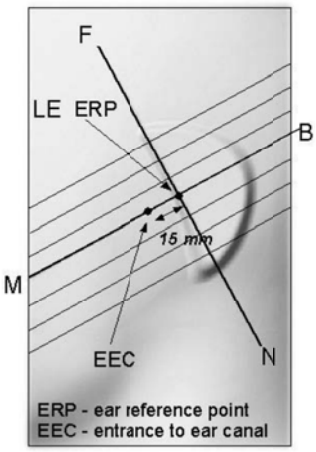


Fig 9.1.2 Close-up side view of phantom showing the ear region.

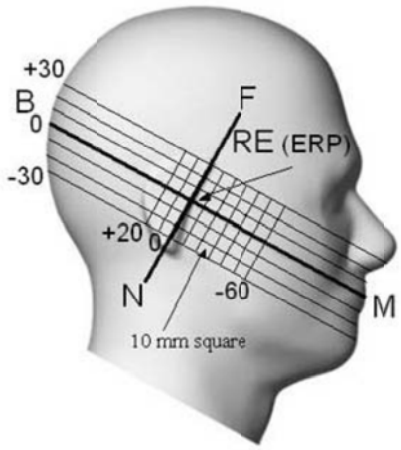


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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.

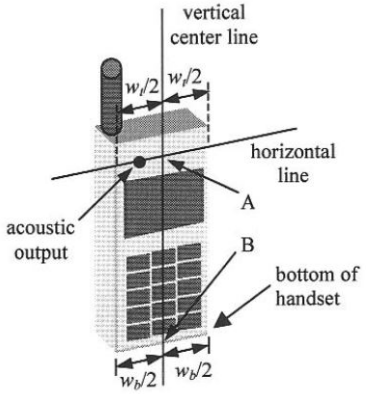


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

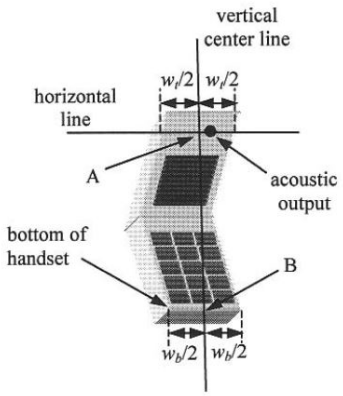


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

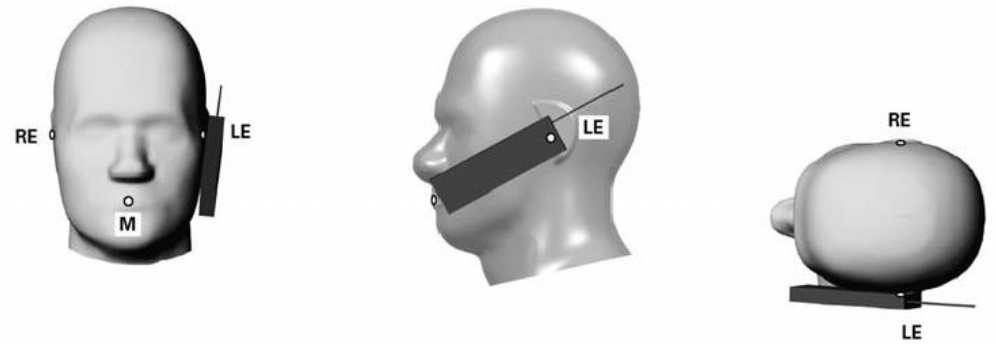


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

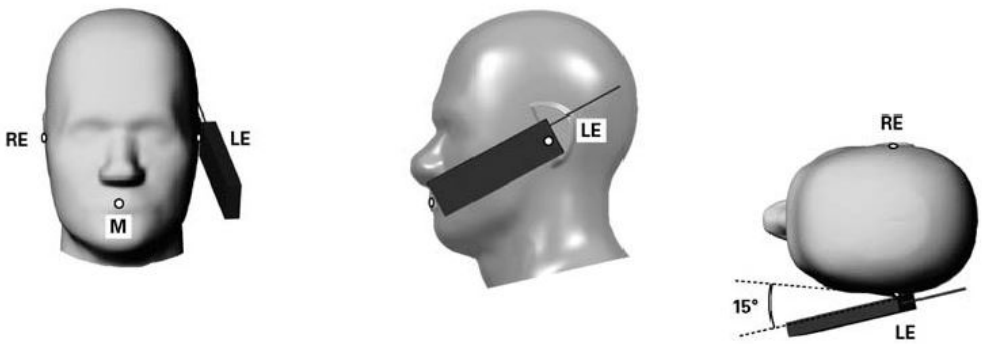


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 KDB 648474 D04v01r02, 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 D01v05r02 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.

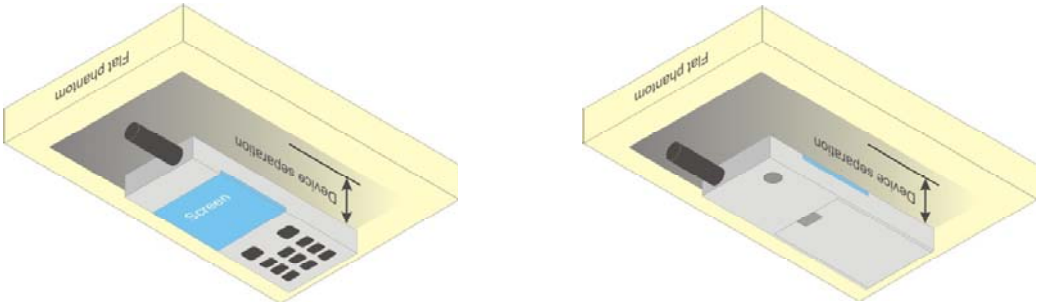


Fig 9.4 Body Worn Position

11.5 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 HDB Publication 941225 D06 v02 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 D01v05r02 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 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and 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 EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
3. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.

Band 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 (GMSK, 1 Tx slot)	32.01	32.43	32.49	33.00	23.01	23.43	23.49	24.00
GPRS (GMSK, 1 Tx slot)	32.01	32.41	**32.50**	33.00	23.01	23.41	23.50	24.00
GPRS (GMSK, 2 Tx slots)	31.83	32.29	32.27	33.00	25.83	26.29	26.27	27.00
GPRS (GMSK, 3 Tx slots)	30.60	30.98	30.99	31.00	26.34	26.72	26.73	26.74
GPRS (GMSK, 4 Tx slots)	29.41	29.85	30.00	31.00	26.41	26.85	**27.00**	28.00
EDGE (8PSK, 1 Tx slot)	26.35	26.49	26.53	27.00	17.35	17.49	17.53	18.00
EDGE (8PSK, 2 Tx slots)	26.26	26.38	26.36	27.00	20.26	20.38	20.36	21.00
EDGE (8PSK, 3 Tx slots)	26.09	26.23	26.25	27.00	21.83	21.97	21.99	22.74
EDGE (8PSK, 4 Tx slots)	25.92	26.02	26.04	27.00	22.92	23.02	23.04	24.00
Band 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 (GMSK, 1 Tx slot)	30.09	30.37	30.48	30.50	21.09	21.37	21.48	21.50
GPRS (GMSK, 1 Tx slot)	30.12	30.42	**30.50**	30.50	21.12	21.42	21.50	21.50
GPRS (GMSK, 2 Tx slots)	30.08	30.20	30.32	30.50	24.08	24.20	24.32	24.50
GPRS (GMSK, 3 Tx slots)	29.93	29.96	30.04	30.50	25.67	25.70	25.78	26.24
GPRS (GMSK, 4 Tx slots)	29.59	29.86	29.78	30.50	26.59	**26.86**	26.78	27.50
EDGE (8PSK, 1 Tx slot)	25.98	26.01	26.01	27.00	16.98	17.01	17.01	18.00
EDGE (8PSK, 2 Tx slots)	25.86	25.89	25.87	27.00	19.86	19.89	19.87	21.00
EDGE (8PSK, 3 Tx slots)	25.74	25.75	25.76	27.00	21.48	21.49	21.50	22.74
EDGE (8PSK, 4 Tx slots)	25.55	25.54	25.48	27.00	22.55	22.54	22.48	24.00

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

<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 D01 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	β_{ed}1: 47/15 β_{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.		

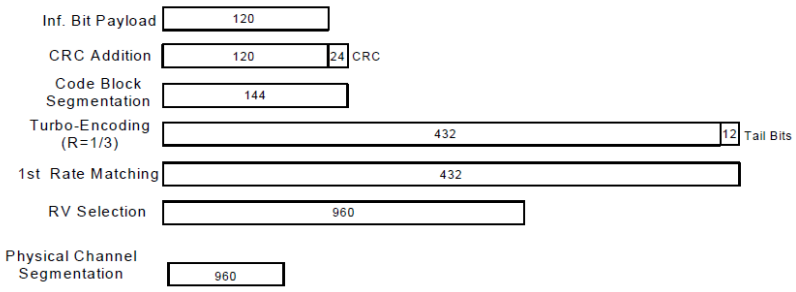


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for head / hotspot / body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03, 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.

Band			WCDMA Band V			WCDMA Band II			WCDMA Band IV		
TX Channel			4132	4182	4233	9262	9400	9538	1312	1413	1513
Rx Channel			4357	4407	4458	9662	9800	9938	1537	1638	1738
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	23.66	23.83	23.52	23.48	23.99	23.39	23.65	23.74	24.07
		RMC 12.2Kbps	23.67	**23.84**	23.54	23.50	**24.00**	23.40	23.66	23.75	**24.09**
0	3GPP Rel 6	HSDPA Subtest-1	22.90	23.19	22.69	22.90	23.38	22.84	22.88	22.94	23.19
0	3GPP Rel 6	HSDPA Subtest-2	22.78	23.24	22.72	22.95	23.39	22.89	22.94	22.96	23.16
0.5	3GPP Rel 6	HSDPA Subtest-3	22.43	22.67	22.22	22.44	22.90	22.32	22.41	22.47	22.82
0.5	3GPP Rel 6	HSDPA Subtest-4	22.30	22.64	22.23	22.47	22.92	22.38	22.46	22.48	22.75
0	3GPP Rel 8	DC-HSDPA Subtest-1	22.85	23.18	22.65	22.84	23.34	22.83	23.90	22.78	22.85
0	3GPP Rel 8	DC-HSDPA Subtest-2	22.70	23.18	22.70	22.90	23.37	22.81	23.94	22.86	22.88
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	22.34	22.64	22.14	22.40	22.85	22.28	23.47	22.39	22.39
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	22.24	22.61	22.16	22.39	22.88	22.33	23.46	22.43	22.44
0	3GPP Rel 6	HSUPA Subtest-1	22.39	22.66	22.39	22.36	23.00	22.35	22.69	22.90	22.47
2	3GPP Rel 6	HSUPA Subtest-2	21.79	22.00	21.56	21.71	21.99	21.86	21.93	21.74	22.00
1	3GPP Rel 6	HSUPA Subtest-3	21.56	22.05	21.28	21.76	21.78	21.40	21.80	21.36	21.95
2	3GPP Rel 6	HSUPA Subtest-4	21.97	22.00	21.99	21.90	22.00	21.95	21.84	22.00	21.91
0	3GPP Rel 6	HSUPA Subtest-5	22.39	22.82	22.30	22.52	23.05	22.45	22.51	22.60	22.84

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

<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	23.31	23.33	23.30	24.00	0
10	QPSK	1	24	23.30	23.25	23.15		
10	QPSK	1	49	23.29	23.26	23.24		
10	QPSK	25	0	23.23	23.27	23.25	24.00	0-1
10	QPSK	25	12	23.22	23.22	23.21		
10	QPSK	25	24	23.13	23.17	23.18		
10	QPSK	50	0	23.16	23.27	23.23		
10	16QAM	1	0	23.10	23.09	23.18	24.00	0-1
10	16QAM	1	24	23.17	23.09	23.07		
10	16QAM	1	49	23.23	23.15	23.21		
10	16QAM	25	0	22.25	22.23	22.24	24.00	0-2
10	16QAM	25	12	22.23	22.27	22.27		
10	16QAM	25	24	22.34	22.30	22.29		
10	16QAM	50	0	22.24	22.31	22.27		
Channel				23035	23095	23155	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.25	23.24	23.07	24.00	0
5	QPSK	1	12	23.09	23.25	23.19		
5	QPSK	1	24	23.24	23.27	23.23		
5	QPSK	12	0	23.20	23.28	23.20	24.00	0-1
5	QPSK	12	6	23.21	23.22	23.25		
5	QPSK	12	11	23.21	23.30	23.28		
5	QPSK	25	0	23.22	23.22	23.20		
5	16QAM	1	0	23.17	23.08	23.01	24.00	0-1
5	16QAM	1	12	23.01	23.13	23.12		
5	16QAM	1	24	23.14	23.11	23.15		
5	16QAM	12	0	22.24	22.32	22.26	24.00	0-2
5	16QAM	12	6	22.23	22.28	22.29		
5	16QAM	12	11	22.26	22.29	22.28		
5	16QAM	25	0	22.24	22.28	22.26		

Channel				23025	23095	23165	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.22	23.22	23.08	24.00	0
3	QPSK	1	7	23.07	23.22	23.19		
3	QPSK	1	14	23.23	23.23	23.25		
3	QPSK	8	0	23.21	23.29	23.20	24.00	0-1
3	QPSK	8	4	23.19	23.23	23.24		
3	QPSK	8	7	23.24	23.22	23.29		
3	QPSK	15	0	23.21	23.24	23.22		
3	16QAM	1	0	23.14	23.04	23.03	24.00	0-1
3	16QAM	1	7	22.96	23.10	23.14		
3	16QAM	1	14	23.09	23.12	23.19		
3	16QAM	8	0	22.24	22.29	22.26	24.00	0-2
3	16QAM	8	4	22.24	22.28	22.26		
3	16QAM	8	7	22.23	22.26	22.26		
3	16QAM	15	0	22.26	22.29	22.27		
Channel				23017	23095	23173	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	23.32	23.24	23.24	24.00	0
1.4	QPSK	1	2	23.21	23.24	23.26		
1.4	QPSK	1	5	23.22	23.26	23.23		
1.4	QPSK	3	0	23.24	23.26	23.23		
1.4	QPSK	3	1	23.14	23.23	23.26		
1.4	QPSK	3	2	23.23	23.26	23.24		
1.4	QPSK	6	0	23.30	23.27	23.30	24.00	0-1
1.4	16QAM	1	0	23.21	23.17	23.17	24.00	0-1
1.4	16QAM	1	2	23.11	23.16	23.20		
1.4	16QAM	1	5	23.15	23.23	23.17		
1.4	16QAM	3	0	23.27	23.24	23.17		
1.4	16QAM	3	1	23.23	23.16	23.21		
1.4	16QAM	3	2	23.19	23.22	23.19		
1.4	16QAM	6	0	22.22	22.16	22.16	24.00	0-2

<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	23.71	23.62	23.67	24.00	0
10	QPSK	1	24	23.70	23.71	23.79		
10	QPSK	1	49	23.78	**23.86**	23.83		
10	QPSK	25	0	23.23	23.22	23.24	24.00	0-1
10	QPSK	25	12	23.24	23.24	23.23		
10	QPSK	25	24	23.27	23.30	23.25		
10	QPSK	50	0	23.35	23.38	23.36		
10	16QAM	1	0	23.23	23.17	23.22	24.00	0-1
10	16QAM	1	24	23.09	23.19	23.26		
10	16QAM	1	49	23.18	23.30	23.33		
10	16QAM	25	0	22.28	22.27	22.28	24.00	0-2
10	16QAM	25	12	22.29	22.27	22.25		
10	16QAM	25	24	22.32	22.27	22.25		
10	16QAM	50	0	22.28	22.31	22.31		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.65	23.66	23.77	24.00	0
5	QPSK	1	12	23.71	23.66	23.73		
5	QPSK	1	24	23.73	23.75	23.81		
5	QPSK	12	0	23.33	23.21	23.21	24.00	0-1
5	QPSK	12	6	23.27	23.23	23.12		
5	QPSK	12	11	23.26	23.28	23.16		
5	QPSK	25	0	23.28	23.22	23.20		
5	16QAM	1	0	23.13	23.14	23.46	24.00	0-1
5	16QAM	1	12	23.21	23.14	23.20		
5	16QAM	1	24	23.16	23.17	23.29		
5	16QAM	12	0	22.32	22.25	22.20	24.00	0-2
5	16QAM	12	6	22.32	22.26	22.12		
5	16QAM	12	11	22.30	22.29	22.17		
5	16QAM	25	0	22.32	22.25	22.11		

<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	23.32	23.36	23.29	24.00	0
10	QPSK	1	24	23.25	23.26	23.24		
10	QPSK	1	49	23.26	23.22	23.23		
10	QPSK	25	0	23.28	23.31	23.27	24.00	0-1
10	QPSK	25	12	23.27	23.22	23.28		
10	QPSK	25	24	23.21	23.23	23.25		
10	QPSK	50	0	23.26	23.27	23.25		
10	16QAM	1	0	23.20	23.15	23.16	24.00	0-1
10	16QAM	1	24	23.19	23.14	23.14		
10	16QAM	1	49	23.18	23.14	23.11		
10	16QAM	25	0	22.82	22.83	22.83	24.00	0-2
10	16QAM	25	12	22.84	22.82	22.79		
10	16QAM	25	24	22.84	22.81	22.78		
10	16QAM	50	0	22.80	22.83	22.76		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.24	23.24	23.21	24.00	0
5	QPSK	1	12	23.23	23.19	23.23		
5	QPSK	1	24	23.31	23.12	23.21		
5	QPSK	12	0	23.30	23.22	23.22	24.00	0-1
5	QPSK	12	6	23.28	23.25	23.25		
5	QPSK	12	11	23.27	23.22	23.26		
5	QPSK	25	0	23.29	23.24	23.23		
5	16QAM	1	0	23.21	23.15	23.15	24.00	0-1
5	16QAM	1	12	23.15	23.14	23.10		
5	16QAM	1	24	23.16	23.04	23.09		
5	16QAM	12	0	22.84	22.81	22.75	24.00	0-2
5	16QAM	12	6	22.85	22.80	22.76		
5	16QAM	12	11	22.79	22.80	22.72		
5	16QAM	25	0	22.82	22.82	22.75		

Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.26	23.23	23.19	24.00	0
3	QPSK	1	7	23.24	23.22	23.23		
3	QPSK	1	14	23.27	23.12	23.22		
3	QPSK	8	0	23.29	23.27	23.22	24.00	0-1
3	QPSK	8	4	23.31	23.25	23.24		
3	QPSK	8	7	23.33	23.23	23.25		
3	QPSK	15	0	23.31	23.26	23.24		
3	16QAM	1	0	23.15	23.18	23.14	24.00	0-1
3	16QAM	1	7	23.19	23.14	23.11		
3	16QAM	1	14	23.22	23.09	23.13		
3	16QAM	8	0	22.85	22.80	22.77	24.00	0-2
3	16QAM	8	4	22.86	22.79	22.75		
3	16QAM	8	7	22.82	22.76	22.78		
3	16QAM	15	0	22.79	22.77	22.77		
Channel				20407	20525	20643	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.31	23.27	23.24	24.00	0
1.4	QPSK	1	2	23.32	23.26	23.24		
1.4	QPSK	1	5	23.31	23.25	23.21		
1.4	QPSK	3	0	23.35	23.24	23.29		
1.4	QPSK	3	1	23.34	23.28	23.24		
1.4	QPSK	3	2	23.36	23.30	23.22		
1.4	QPSK	6	0	23.32	23.27	23.27	24.00	0-1
1.4	16QAM	1	0	23.29	23.23	23.16	24.00	0-1
1.4	16QAM	1	2	23.25	23.21	23.17		
1.4	16QAM	1	5	23.27	23.21	23.16		
1.4	16QAM	3	0	23.25	23.20	23.15		
1.4	16QAM	3	1	23.29	23.19	23.11		
1.4	16QAM	3	2	23.30	23.22	23.14		
1.4	16QAM	6	0	22.74	22.68	22.67	24.00	0-2

<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	23.19	23.80	23.57	24.50	0
20	QPSK	1	49	23.72	**24.25**	23.89		
20	QPSK	1	99	23.61	23.84	23.77		
20	QPSK	50	0	22.55	23.01	22.87	23.50	0-1
20	QPSK	50	24	22.65	23.18	22.97		
20	QPSK	50	49	22.63	23.11	22.87		
20	QPSK	100	0	22.43	23.02	22.84		
20	16QAM	1	0	22.41	23.08	22.86	23.50	0-1
20	16QAM	1	49	23.03	23.45	23.24		
20	16QAM	1	99	22.92	23.14	23.10		
20	16QAM	50	0	21.40	22.04	21.82	22.50	0-2
20	16QAM	50	24	21.64	22.21	22.02		
20	16QAM	50	49	21.67	22.12	21.88		
20	16QAM	100	0	21.42	22.03	21.82		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.57	23.96	24.09	24.50	0
15	QPSK	1	37	23.66	23.94	24.19		
15	QPSK	1	74	23.82	23.89	24.17		
15	QPSK	36	0	22.61	23.03	23.20	23.50	0-1
15	QPSK	36	18	22.65	23.08	23.33		
15	QPSK	36	37	22.70	22.98	23.30		
15	QPSK	75	0	22.62	23.00	23.22		
15	16QAM	1	0	22.82	23.20	23.37	23.50	0-1
15	16QAM	1	37	22.92	23.24	23.45		
15	16QAM	1	74	23.09	23.16	23.43		
15	16QAM	36	0	21.56	22.04	22.23	22.50	0-2
15	16QAM	36	18	21.61	22.12	22.35		
15	16QAM	36	37	21.67	22.03	22.31		
15	16QAM	75	0	21.57	22.03	22.23		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.60	24.06	24.15	24.50	0
10	QPSK	1	24	23.70	23.96	24.21		
10	QPSK	1	49	23.92	23.87	24.14		
10	QPSK	25	0	22.62	23.09	23.36	23.50	0-1
10	QPSK	25	12	22.66	23.07	23.39		
10	QPSK	25	24	22.75	23.01	23.32		
10	QPSK	50	0	22.69	23.04	23.31		
10	16QAM	1	0	22.89	23.34	23.38	23.50	0-1
10	16QAM	1	24	22.94	23.27	23.41		
10	16QAM	1	49	23.10	23.20	23.33		
10	16QAM	25	0	21.58	22.12	22.38	22.50	0-2
10	16QAM	25	12	21.63	22.12	22.40		
10	16QAM	25	24	21.71	22.06	22.41		
10	16QAM	50	0	21.65	22.09	22.37		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.44	24.00	24.19	24.50	0
5	QPSK	1	12	23.57	23.98	24.22		
5	QPSK	1	24	23.63	23.93	24.12		
5	QPSK	12	0	22.50	23.10	23.34	23.50	0-1
5	QPSK	12	6	22.54	23.08	23.40		
5	QPSK	12	11	22.59	23.07	23.34		
5	QPSK	25	0	22.52	23.06	23.36		
5	16QAM	1	0	22.66	23.27	23.45	23.50	0-1
5	16QAM	1	12	22.83	23.22	23.43		
5	16QAM	1	24	22.87	23.17	23.31		
5	16QAM	12	0	21.49	22.15	22.41	22.50	0-2
5	16QAM	12	6	21.53	22.10	22.41		
5	16QAM	12	11	21.58	22.09	22.35		
5	16QAM	25	0	21.51	22.06	22.32		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.47	24.04	24.15	24.50	0
3	QPSK	1	7	23.52	23.99	24.09		
3	QPSK	1	14	23.66	23.97	24.17		
3	QPSK	8	0	22.46	23.06	23.30	23.50	0-1
3	QPSK	8	4	22.51	23.07	23.31		
3	QPSK	8	7	22.49	23.07	23.24		
3	QPSK	15	0	22.47	23.08	23.26		
3	16QAM	1	0	22.70	23.29	23.46	23.50	0-1
3	16QAM	1	7	22.75	23.30	23.37		
3	16QAM	1	14	22.90	23.24	23.44		
3	16QAM	8	0	21.49	22.14	22.34	22.50	0-2
3	16QAM	8	4	21.55	22.16	22.35		
3	16QAM	8	7	21.50	22.11	22.27		
3	16QAM	15	0	21.45	22.09	22.27		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.32	23.89	24.15	24.50	0
1.4	QPSK	1	2	23.45	24.00	24.18		
1.4	QPSK	1	5	23.38	23.92	24.01		
1.4	QPSK	3	0	23.39	23.95	24.19		
1.4	QPSK	3	1	23.44	24.02	24.16		
1.4	QPSK	3	2	23.50	24.01	24.16		
1.4	QPSK	6	0	22.37	23.01	23.13	23.50	0-1
1.4	16QAM	1	0	22.55	23.17	23.38	23.50	0-1
1.4	16QAM	1	2	22.70	23.28	23.45		
1.4	16QAM	1	5	22.62	23.19	23.26		
1.4	16QAM	3	0	22.39	23.03	23.23		
1.4	16QAM	3	1	22.44	23.09	23.20		
1.4	16QAM	3	2	22.51	23.09	23.19		
1.4	16QAM	6	0	21.44	22.13	22.19	22.50	0-2

<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	23.95	24.22	24.16	24.50	0
20	QPSK	1	49	23.94	23.98	23.87		
20	QPSK	1	99	23.78	23.97	24.00		
20	QPSK	50	0	22.97	23.12	22.98	23.50	0-1
20	QPSK	50	24	22.95	23.07	22.96		
20	QPSK	50	49	22.88	23.03	22.97		
20	QPSK	100	0	22.93	23.07	23.01		
20	16QAM	1	0	22.83	22.91	22.90	23.50	0-1
20	16QAM	1	49	22.84	22.85	22.91		
20	16QAM	1	99	22.70	22.95	22.98		
20	16QAM	50	0	21.99	22.16	22.04	22.50	0-2
20	16QAM	50	24	22.05	22.02	21.99		
20	16QAM	50	49	21.92	22.05	21.98		
20	16QAM	100	0	22.08	22.12	22.08		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.89	24.03	23.90	24.50	0
15	QPSK	1	37	23.97	23.99	24.03		
15	QPSK	1	74	23.90	23.98	24.11		
15	QPSK	36	0	22.90	23.07	22.94	23.50	0-1
15	QPSK	36	18	22.94	22.99	22.94		
15	QPSK	36	37	22.91	23.00	22.98		
15	QPSK	75	0	22.94	23.06	22.99		
15	16QAM	1	0	22.85	22.98	22.83	23.50	0-1
15	16QAM	1	37	22.95	22.88	22.81		
15	16QAM	1	74	22.83	22.95	23.01		
15	16QAM	36	0	21.94	21.95	21.96	22.50	0-2
15	16QAM	36	18	21.91	22.01	21.95		
15	16QAM	36	37	21.98	22.02	21.96		
15	16QAM	75	0	22.00	22.05	22.00		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.90	24.04	23.94	24.50	0
10	QPSK	1	24	23.88	23.95	23.91		
10	QPSK	1	49	23.96	23.89	24.21		
10	QPSK	25	0	22.90	23.08	22.95	23.50	0-1
10	QPSK	25	12	22.88	22.80	22.99		
10	QPSK	25	24	22.94	23.09	23.09		
10	QPSK	50	0	22.88	23.00	23.03		
10	16QAM	1	0	22.80	22.97	22.94	23.50	0-1
10	16QAM	1	24	22.78	22.86	22.85		
10	16QAM	1	49	22.83	22.87	23.03		
10	16QAM	25	0	21.94	22.23	22.03	22.50	0-2
10	16QAM	25	12	22.01	22.01	22.04		
10	16QAM	25	24	22.00	22.08	22.17		
10	16QAM	50	0	21.93	21.89	22.01		

Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.85	24.08	23.97	24.50	0
5	QPSK	1	12	23.85	23.93	24.16		
5	QPSK	1	24	23.90	23.99	24.06		
5	QPSK	12	0	22.85	23.01	23.06	23.50	0-1
5	QPSK	12	6	22.83	23.04	23.05		
5	QPSK	12	11	22.82	22.95	23.12		
5	QPSK	25	0	22.83	23.06	23.08		
5	16QAM	1	0	22.77	22.94	22.88	23.50	0-1
5	16QAM	1	12	22.75	22.83	22.96		
5	16QAM	1	24	22.86	22.86	23.07		
5	16QAM	12	0	21.90	22.04	22.14	22.50	0-2
5	16QAM	12	6	21.91	22.04	22.17		
5	16QAM	12	11	21.93	22.00	22.21		
5	16QAM	25	0	21.96	22.10	22.20		
Channel				18615	18900	19185	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.87	23.95	24.11	24.50	0
3	QPSK	1	7	23.84	23.93	24.19		
3	QPSK	1	14	23.86	23.97	24.16		
3	QPSK	8	0	22.84	23.02	23.09	23.50	0-1
3	QPSK	8	4	22.83	22.91	23.13		
3	QPSK	8	7	22.85	22.91	23.10		
3	QPSK	15	0	22.86	22.88	23.13		
3	16QAM	1	0	22.79	22.87	23.04	23.50	0-1
3	16QAM	1	7	22.84	22.91	22.99		
3	16QAM	1	14	22.80	22.90	23.05		
3	16QAM	8	0	21.91	22.01	22.17	22.50	0-2
3	16QAM	8	4	21.91	22.04	22.20		
3	16QAM	8	7	21.94	22.06	22.23		
3	16QAM	15	0	21.90	21.99	22.30		
Channel				18607	18900	19193	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.88	24.00	24.18	24.50	0
1.4	QPSK	1	2	23.89	24.00	24.16		
1.4	QPSK	1	5	23.88	24.03	24.19		
1.4	QPSK	3	0	23.92	24.02	24.18		
1.4	QPSK	3	1	23.91	24.00	24.18		
1.4	QPSK	3	2	23.94	24.00	24.20		
1.4	QPSK	6	0	22.86	22.93	23.15	23.50	0-1
1.4	16QAM	1	0	22.89	22.92	23.06	23.50	0-1
1.4	16QAM	1	2	22.87	22.91	23.12		
1.4	16QAM	1	5	22.84	22.95	23.10		
1.4	16QAM	3	0	22.78	22.92	23.04		
1.4	16QAM	3	1	22.86	22.89	23.01		
1.4	16QAM	3	2	22.83	22.92	22.97		
1.4	16QAM	6	0	21.83	21.96	22.12	22.50	0-2

<LTE Band 7>

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				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.74	**23.98**	23.91	24.50	0
20	QPSK	1	49	23.64	23.78	23.74		
20	QPSK	1	99	23.68	23.84	23.42		
20	QPSK	50	0	22.70	22.87	22.77	23.50	0-1
20	QPSK	50	24	22.67	22.80	22.76		
20	QPSK	50	49	22.62	22.86	22.63		
20	QPSK	100	0	22.66	22.79	22.73		
20	16QAM	1	0	22.50	22.70	22.90	23.50	0-1
20	16QAM	1	49	22.64	22.69	22.67		
20	16QAM	1	99	22.62	22.86	22.43		
20	16QAM	50	0	21.70	21.76	21.89	22.50	0-2
20	16QAM	50	24	21.76	21.80	21.80		
20	16QAM	50	49	21.70	21.88	21.76		
20	16QAM	100	0	21.74	21.81	21.76		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.61	23.77	23.83	24.50	0
15	QPSK	1	37	23.70	23.83	23.63		
15	QPSK	1	74	23.63	23.92	23.43		
15	QPSK	36	0	22.65	22.71	22.75	23.50	0-1
15	QPSK	36	18	22.66	22.82	22.60		
15	QPSK	36	37	22.72	22.85	22.55		
15	QPSK	75	0	22.63	22.77	22.60		
15	16QAM	1	0	22.57	22.71	22.78	23.50	0-1
15	16QAM	1	37	22.58	22.69	22.57		
15	16QAM	1	74	22.56	22.82	22.50		
15	16QAM	36	0	21.68	21.75	21.82	22.50	0-2
15	16QAM	36	18	21.77	21.83	21.66		
15	16QAM	36	37	21.79	21.89	21.62		
15	16QAM	75	0	21.70	21.81	21.66		

Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.59	23.70	23.73	24.50	0
10	QPSK	1	24	23.65	23.80	23.62		
10	QPSK	1	49	23.70	23.90	23.42		
10	QPSK	25	0	22.67	22.76	22.62	23.50	0-1
10	QPSK	25	12	22.60	22.81	22.59		
10	QPSK	25	24	22.71	22.83	22.54		
10	QPSK	50	0	22.62	22.83	22.62		
10	16QAM	1	0	22.59	22.59	22.68	23.50	0-1
10	16QAM	1	24	22.53	22.69	22.55		
10	16QAM	1	49	22.58	22.77	22.44		
10	16QAM	25	0	21.76	21.81	21.70	22.50	0-2
10	16QAM	25	12	21.73	21.90	21.69		
10	16QAM	25	24	21.78	21.88	21.63		
10	16QAM	50	0	21.72	21.79	21.71		
Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.63	23.77	23.58	24.50	0
5	QPSK	1	12	23.67	23.76	23.48		
5	QPSK	1	24	23.66	23.85	23.42		
5	QPSK	12	0	22.64	22.79	22.56	23.50	0-1
5	QPSK	12	6	22.65	22.81	22.47		
5	QPSK	12	11	22.62	22.80	22.48		
5	QPSK	25	0	22.69	22.83	22.46		
5	16QAM	1	0	22.58	22.73	22.52	23.50	0-1
5	16QAM	1	12	22.62	22.72	22.43		
5	16QAM	1	24	22.52	22.79	22.28		
5	16QAM	12	0	21.68	21.88	21.65	22.50	0-2
5	16QAM	12	6	21.76	21.86	21.58		
5	16QAM	12	11	21.71	21.88	21.54		
5	16QAM	25	0	21.78	21.90	21.57		

LTE Carrier Aggregation Conducted Power

General Note:

i. According to KDB941225 D05A v01, 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 only supports downlink carrier aggregation. Uplink carrier aggregation is not supported. Power measurements were performed with two DL carriers for the Release 8 configuration that had the highest output power across all bandwidths, channels and RB configuration for each band.

iv. During the carrier aggregation conducted power measurements we have attention to throughput traffic to make sure all the power measurement is corrected.

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 10 Tx. Power (dBm)	LTE Rel 8 Tx. Power (dBm)
Inter-Band	Band 2	20M	1860	18700	1	0	Band 12	10M	707.5	23095	23.90	23.95
	Band 2	20M	1880	18900	1	0	Band 12	10M	707.5	23095	24.20	24.22
	Band 2	20M	1900	19100	1	0	Band 12	10M	707.5	23095	24.10	24.16
	Band 12	10M	704	23060	1	0	Band 2	20M	1880	18900	23.30	23.31
	Band 12	10M	707.5	23095	1	0	Band 2	20M	1880	18900	23.30	23.33
	Band 12	10M	711	23130	1	0	Band 2	20M	1880	18900	23.25	23.30
	Band 2	10M	1860	18700	1	0	Band 17	10M	710	23790	23.90	23.95
	Band 2	10M	1880	18900	1	0	Band 17	10M	710	23790	24.20	24.22
	Band 2	10M	1900	19100	1	0	Band 17	10M	710	23790	24.10	24.16
	Band 17	10M	709	23780	1	0	Band 2	10M	1880	18900	23.70	23.71
	Band 17	10M	710	23790	1	0	Band 2	10M	1880	18900	23.60	23.62
	Band 17	10M	711	23800	1	0	Band 2	10M	1880	18900	23.65	23.67
	Band 12	10M	704	23060	1	0	Band 4	20M	1732.5	20175	23.30	23.31
	Band 12	10M	707.5	23095	1	0	Band 4	20M	1732.5	20175	23.30	23.33
	Band 12	10M	711	23130	1	0	Band 4	20M	1732.5	20175	23.25	23.30
	Band 4	20M	1720	20050	1	0	Band 17	10M	710	23790	23.18	23.19
	Band 4	20M	1732.5	20175	1	0	Band 17	10M	710	23790	23.78	23.80
	Band 4	20M	1745	20300	1	0	Band 17	10M	710	23790	23.54	23.57
	Band 17	10M	709	23780	1	0	Band 4	10M	1732.5	20175	23.70	23.71
	Band 17	10M	710	23790	1	0	Band 4	10M	1732.5	20175	23.60	23.62
	Band 17	10M	711	23800	1	0	Band 4	10M	1732.5	20175	23.65	23.67

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r01, 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.

<WLAN 2.4GHz>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	14.91	16.00	97.64
		CH 6	2437		**15.31**	16.00	
		CH 11	2462		14.51	16.00	
	802.11g	CH 1	2412	6Mbps	14.07	14.50	87.01
		CH 6	2437		14.27	14.50	
		CH 11	2462		13.73	14.50	
	802.11n-HT20	CH 1	2412	MCS0	13.17	13.50	86.18
		CH 6	2437		13.21	13.50	
		CH 11	2462		13.00	13.50	

<WLAN 5GHz>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11ac-VHT20	CH 36	5180	MCS0	**11.18**	11.50	96.42
		CH 40	5200		11.12	11.50	
		CH 44	5220		10.99	11.50	
		CH 48	5240		10.95	11.50	
	802.11ac-VHT40	CH 38	5190	MCS0	10.82	11.50	93.17
		CH 46	5230		10.60	11.50	
	802.11ac-VHT80	CH 42	5210	MCS0	11.14	11.50	85.93

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11ac-VHT20	CH 149	5745	MCS0	**11.13**	11.50	96.42
		CH 157	5785		10.88	11.50	
		CH 165	5825		10.90	11.50	
	802.11ac-VHT40	CH 151	5755	MCS0	10.74	11.50	93.17
		CH 159	5795		10.49	11.50	
	802.11ac-VHT80	CH 155	5775	MCS0	11.05	11.50	85.93

<Bluetooth>

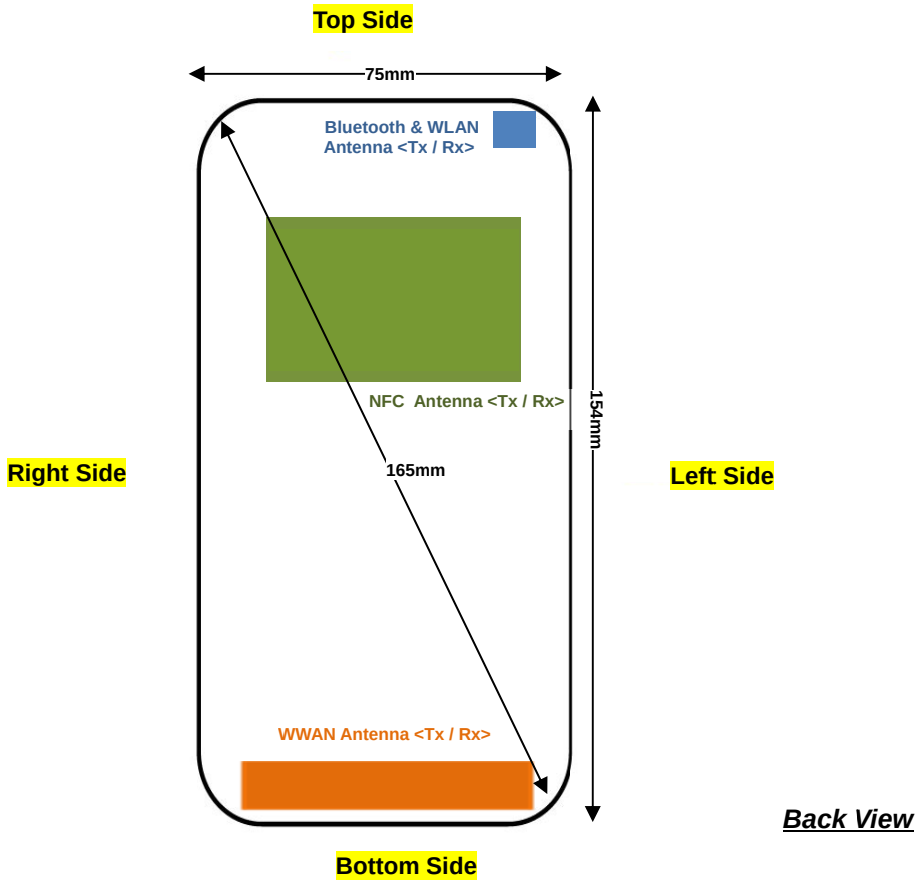
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The duty factor is selected theoretical 83.3% perform Bluetooth SAR testing.

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
V2.1 with EDR	CH 00	2402	4.50	2.35	2.58
	CH 39	2441	5.75	3.88	4.24
	CH 78	2480	4.38	1.37	1.65

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.0 with LE	CH 00	2402	4.50
	CH 19	2440	**6.11**
	CH 39	2480	4.12

13. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	142mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	140mm	59mm	≤ 25mm

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

General Note:
Referring to KDB 941225 D06 v02, 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.

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   b. 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.
   c. 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)"
   d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   e. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, 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

GSM Note:

1. Per KDB 941225 D01v03, considering the possibility of e.g. 3rd party VoIP operation for Head and body-worn SAR test reduction for GSM and GPRS and 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 EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
2. Per KDB 941225 D01v03, for Hotspot SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the EUT was set in GPRS (4Tx slots) for GSM850/GSM1900.
3. Per KDB 648474 D04v01r02, 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.

WCDMA Note:

1. Per KDB 941225 D01v03, SAR for next to the ear head / hotspot / body-worn exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03, 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.

LTE Note:

1. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.
6. LTE band 12 frequency band covered the LTE band 17 and the maximum tune-up limit of them are the same, so for SAR testing, we only chose LTE band 12.

WLAN Note:

1. Per KDB 248227 D01v02r01, 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. 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.
3. 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.
4. This device 2.4GHz WLAN supports Hotspot operation, and 5.2GHz / 5.8 GHz supports WiFi Direct (GO/GC).
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(4 Tx slots)	Right Cheek	251	848.8	30.00	31.00	1.259	-0.02	0.378	0.476
	GSM850	GPRS(4 Tx slots)	Right Cheek	128	824.2	29.41	31.00	1.442	-0.11	0.392	0.565
#01	GSM850	GPRS(4 Tx slots)	Right Cheek	189	836.4	29.85	31.00	1.303	-0.05	0.506	**0.659**
	GSM850	GPRS(4 Tx slots)	Right Tilted	251	848.8	30.00	31.00	1.259	-0.1	0.224	0.282
	GSM850	GPRS(4 Tx slots)	Left Cheek	251	848.8	30.00	31.00	1.259	-0.04	0.349	0.439
	GSM850	GPRS(4 Tx slots)	Left Tilted	251	848.8	30.00	31.00	1.259	-0.04	0.238	0.300
	GSM1900	GPRS(4 Tx slots)	Right Cheek	661	1880	29.86	30.50	1.159	-0.088	0.138	0.160
	GSM1900	GPRS(4 Tx slots)	Right Cheek	512	1850.2	29.59	30.50	1.233	0.028	0.120	0.148
#02	GSM1900	GPRS(4 Tx slots)	Right Cheek	810	1909.8	29.78	30.50	1.180	0.061	0.156	**0.184**
	GSM1900	GPRS(4 Tx slots)	Right Tilted	661	1880	29.86	30.50	1.159	-0.027	0.038	0.044
	GSM1900	GPRS(4 Tx slots)	Left Cheek	661	1880	29.86	30.50	1.159	0.07	0.129	0.149
	GSM1900	GPRS(4 Tx slots)	Left Tilted	661	1880	29.86	30.50	1.159	0.084	0.059	0.068

<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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4182	836.4	23.84	24.00	1.038	0.009	0.274	0.284
#03	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4132	826.4	23.67	24.00	1.079	0.084	0.265	**0.286**
	WCDMA Band V	RMC 12.2Kbps	Right Cheek	4233	846.6	23.54	24.00	1.112	-0.016	0.190	0.211
	WCDMA Band V	RMC 12.2Kbps	Right Tilted	4182	836.4	23.84	24.00	1.038	-0.014	0.166	0.172
	WCDMA Band V	RMC 12.2Kbps	Left Cheek	4182	836.4	23.84	24.00	1.038	0.073	0.238	0.247
	WCDMA Band V	RMC 12.2Kbps	Left Tilted	4182	836.4	23.84	24.00	1.038	0.05	0.165	0.171
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1513	1752.6	24.09	24.50	1.099	0.04	0.158	0.174
#04	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1312	1712.4	23.66	24.50	1.213	0.064	0.167	**0.203**
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	1413	1732.6	23.75	24.50	1.189	0.038	0.158	0.188
	WCDMA Band IV	RMC 12.2Kbps	Right Tilted	1513	1752.6	24.09	24.50	1.099	-0.026	0.062	0.068
	WCDMA Band IV	RMC 12.2Kbps	Left Cheek	1513	1752.6	24.09	24.50	1.099	0.09	0.153	0.168
	WCDMA Band IV	RMC 12.2Kbps	Left Tilted	1513	1752.6	24.09	24.50	1.099	-0.073	0.101	0.111
	WCDMA Band II	RMC 12.2Kbps	Right Cheek	9400	1880	24.00	24.00	1.000	0.007	0.155	0.155
	WCDMA Band II	RMC 12.2Kbps	Right Tilted	9400	1880	24.00	24.00	1.000	0.021	0.038	0.038
#05	WCDMA Band II	RMC 12.2Kbps	Left Cheek	9400	1880	24.00	24.00	1.000	0.194	0.162	**0.162**
	WCDMA Band II	RMC 12.2Kbps	Left Cheek	9262	1852.4	23.50	24.00	1.122	-0.046	0.136	0.153
	WCDMA Band II	RMC 12.2Kbps	Left Cheek	9538	1907.6	23.40	24.00	1.148	0.047	0.129	0.148
	WCDMA Band II	RMC 12.2Kbps	Left Tilted	9400	1880	24.00	24.00	1.000	0.006	0.074	0.074

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	RB Size	RB Offset	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#06	LTE Band 12	10M	QPSK	1	0	Right Cheek	23095	707.5	23.33	24.00	1.167	0.032	0.017	**0.020**
	LTE Band 12	10M	QPSK	25	0	Right Cheek	23095	707.5	23.27	24.00	1.183	0.086	0.016	0.019
	LTE Band 12	10M	QPSK	1	0	Right Tilted	23095	707.5	23.33	24.00	1.167	0.074	0.008	0.010
	LTE Band 12	10M	QPSK	25	0	Right Tilted	23095	707.5	23.27	24.00	1.183	0.059	0.008	0.009
	LTE Band 12	10M	QPSK	1	0	Left Cheek	23095	707.5	23.33	24.00	1.167	0.077	0.016	0.019
	LTE Band 12	10M	QPSK	25	0	Left Cheek	23095	707.5	23.27	24.00	1.183	-0.076	0.014	0.017
	LTE Band 12	10M	QPSK	1	0	Left Tilted	23095	707.5	23.33	24.00	1.167	0.117	0.008	0.010
	LTE Band 12	10M	QPSK	25	0	Left Tilted	23095	707.5	23.27	24.00	1.183	0.076	0.008	0.009
	LTE Band 5	10M	QPSK	1	0	Right Cheek	20525	836.5	23.36	24.00	1.159	-0.069	0.298	0.345
	LTE Band 5	10M	QPSK	1	0	Right Cheek	20450	829	23.32	24.00	1.169	-0.028	0.302	0.353
#07	LTE Band 5	10M	QPSK	1	0	Right Cheek	20600	844	23.29	24.00	1.178	-0.038	0.324	**0.382**
	LTE Band 5	10M	QPSK	25	0	Right Cheek	20525	836.5	23.31	24.00	1.172	-0.011	0.266	0.312
	LTE Band 5	10M	QPSK	1	0	Right Tilted	20525	836.5	23.36	24.00	1.159	-0.033	0.162	0.188
	LTE Band 5	10M	QPSK	25	0	Right Tilted	20525	836.5	23.31	24.00	1.172	-0.013	0.144	0.169
	LTE Band 5	10M	QPSK	1	0	Left Cheek	20525	836.5	23.36	24.00	1.159	0.104	0.255	0.295
	LTE Band 5	10M	QPSK	25	0	Left Cheek	20525	836.5	23.31	24.00	1.172	0.107	0.224	0.263
	LTE Band 5	10M	QPSK	1	0	Left Tilted	20525	836.5	23.36	24.00	1.159	-0.033	0.173	0.200
	LTE Band 5	10M	QPSK	25	0	Left Tilted	20525	836.5	23.31	24.00	1.172	0.007	0.138	0.162
#08	LTE Band 4	20M	QPSK	1	49	Right Cheek	20175	1732.5	24.25	24.50	1.059	0.032	0.165	**0.175**
	LTE Band 4	20M	QPSK	1	49	Right Cheek	20050	1720	23.72	24.50	1.197	0.167	0.130	0.156
	LTE Band 4	20M	QPSK	1	49	Right Cheek	20300	1745	23.89	24.50	1.151	-0.049	0.149	0.171
	LTE Band 4	20M	QPSK	50	24	Right Cheek	20175	1732.5	23.18	23.50	1.076	-0.035	0.134	0.144
	LTE Band 4	20M	QPSK	1	49	Right Tilted	20175	1732.5	24.25	24.50	1.059	0.048	0.053	0.056
	LTE Band 4	20M	QPSK	50	24	Right Tilted	20175	1732.5	23.18	23.50	1.076	0.192	0.045	0.048
	LTE Band 4	20M	QPSK	1	49	Left Cheek	20175	1732.5	24.25	24.50	1.059	0.024	0.129	0.137
	LTE Band 4	20M	QPSK	50	24	Left Cheek	20175	1732.5	23.18	23.50	1.076	-0.002	0.106	0.114
	LTE Band 4	20M	QPSK	1	49	Left Tilted	20175	1732.5	24.25	24.50	1.059	-0.02	0.080	0.085
	LTE Band 4	20M	QPSK	50	24	Left Tilted	20175	1732.5	23.18	23.50	1.076	0.031	0.065	0.070
	LTE Band 2	20M	QPSK	1	0	Right Cheek	18900	1880	24.22	24.50	1.067	0.013	0.150	0.160
	LTE Band 2	20M	QPSK	50	0	Right Cheek	18900	1880	23.12	23.50	1.091	0.016	0.122	0.133
	LTE Band 2	20M	QPSK	1	0	Right Tilted	18900	1880	24.22	24.50	1.067	-0.019	0.056	0.060
	LTE Band 2	20M	QPSK	50	0	Right Tilted	18900	1880	23.12	23.50	1.091	-0.001	0.046	0.050
#09	LTE Band 2	20M	QPSK	1	0	Left Cheek	18900	1880	24.22	24.50	1.067	0.03	0.163	**0.174**
	LTE Band 2	20M	QPSK	1	0	Left Cheek	18700	1860	23.95	24.50	1.135	0.029	0.146	0.166
	LTE Band 2	20M	QPSK	1	0	Left Cheek	19100	1900	24.16	24.50	1.081	-0.054	0.153	0.165
	LTE Band 2	20M	QPSK	50	0	Left Cheek	18900	1880	23.12	23.50	1.091	-0.059	0.123	0.134
	LTE Band 2	20M	QPSK	1	0	Left Tilted	18900	1880	24.22	24.50	1.067	0.029	0.096	0.102
	LTE Band 2	20M	QPSK	50	0	Left Tilted	18900	1880	23.12	23.50	1.091	-0.002	0.078	0.085
	LTE Band 7	20M	QPSK	1	0	Right Cheek	21100	2535	23.98	24.50	1.127	0.099	0.114	0.129
	LTE Band 7	20M	QPSK	1	0	Right Cheek	20850	2510	23.74	24.50	1.191	0.039	0.099	0.118
#10	LTE Band 7	20M	QPSK	1	0	Right Cheek	21350	2560	23.91	24.50	1.146	0.022	0.129	**0.148**
	LTE Band 7	20M	QPSK	50	0	Right Cheek	21100	2535	22.87	23.50	1.156	0.171	0.091	0.105
	LTE Band 7	20M	QPSK	1	0	Right Tilted	21100	2535	23.98	24.50	1.127	0.013	0.015	0.017
	LTE Band 7	20M	QPSK	50	0	Right Tilted	21100	2535	22.87	23.50	1.156	-0.02	0.012	0.014
	LTE Band 7	20M	QPSK	1	0	Left Cheek	21100	2535	23.98	24.50	1.127	0.105	0.036	0.041
	LTE Band 7	20M	QPSK	50	0	Left Cheek	21100	2535	22.87	23.50	1.156	0.127	0.014	0.016
	LTE Band 7	20M	QPSK	1	0	Left Tilted	21100	2535	23.98	24.50	1.127	0.144	0.015	0.017
	LTE Band 7	20M	QPSK	50	0	Left Tilted	21100	2535	22.87	23.50	1.156	0.129	0.014	0.016

<WLAN2.4GHz SAR>

Plot No.	Band	Mode	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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	6	2437	15.31	16.00	1.172	97.64	1.024	-0.01	0.266	0.319
#11	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	1	2412	14.91	16.00	1.285	97.64	1.024	0.105	0.290	**0.382**
	WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	11	2462	14.51	16.00	1.409	97.64	1.024	-0.045	0.260	0.375
	WLAN 2.4GHz	802.11b 1Mbps	Right Tilted	6	2437	15.31	16.00	1.172	97.64	1.024	0.068	0.172	0.206
	WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	6	2437	15.31	16.00	1.172	97.64	1.024	0.055	0.145	0.174
	WLAN 2.4GHz	802.11b 1Mbps	Left Tilted	6	2437	15.31	16.00	1.172	97.64	1.024	0.08	0.156	0.187

<WLAN 5GHz SAR>

Plot No.	Band	Mode	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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#12	WLAN 5.2GHz	802.11ac VHT80 MCS0	Right Cheek	42	5210	11.14	11.50	1.087	85.93	1.164	0.14	0.211	**0.267**
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Right Tilted	42	5210	11.14	11.50	1.087	85.93	1.164	0.11	0.191	0.242
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Left Cheek	42	5210	11.14	11.50	1.087	85.93	1.164	-0.02	0.187	0.237
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Left Tilted	42	5210	11.14	11.50	1.087	85.93	1.164	-0.08	0.168	0.213
#13	WLAN 5.8GHz	802.11ac VHT80 MCS0	Right Cheek	155	5775	11.05	11.50	1.110	85.93	1.164	0.05	0.082	**0.106**
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Right Tilted	155	5775	11.05	11.50	1.110	85.93	1.164	0.05	0.080	0.103
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Left Cheek	155	5775	11.05	11.50	1.110	85.93	1.164	-0.07	0.057	0.074
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Left Tilted	155	5775	11.05	11.50	1.110	85.93	1.164	-0.09	0.058	0.075

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth v4.0 LE	GFSK	Right Cheek	19	2440	6.11	6.50	1.094	0.17	0.041	0.045
#14	Bluetooth v4.0 LE	GFSK	Right Cheek	0	2402	4.50	6.50	1.585	0.14	0.030	**0.048**
	Bluetooth v4.0 LE	GFSK	Right Cheek	39	2480	4.12	6.50	1.730	-0.15	0.023	0.040
	Bluetooth v4.0 LE	GFSK	Right Tilted	19	2440	6.11	6.50	1.094	-0.14	0.023	0.025
	Bluetooth v4.0 LE	GFSK	Left Cheek	19	2440	6.11	6.50	1.094	-0.13	0.021	0.023
	Bluetooth v4.0 LE	GFSK	Left Tilted	19	2440	6.11	6.50	1.094	-0.18	0.020	0.022

14.2 Hotspot SAR

Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Main	≤ 25mm	≤ 25mm	142mm	≤ 25mm	≤ 25mm	≤ 25mm
BT&WLAN	≤ 25mm	≤ 25mm	≤ 25mm	140mm	59mm	≤ 25mm

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

General Note:
Referring to KDB 941225 D06 v02, 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.

<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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(4 Tx slots)	Front	10	251	848.8	30.00	31.00	1.259	-0.09	0.392	0.493
	GSM850	GPRS(4 Tx slots)	Back	10	251	848.8	30.00	31.00	1.259	-0.14	0.597	0.752
	GSM850	GPRS(4 Tx slots)	Left Side	10	251	848.8	30.00	31.00	1.259	-0.06	0.551	0.694
	GSM850	GPRS(4 Tx slots)	Right Side	10	251	848.8	30.00	31.00	1.259	0.06	0.667	0.840
	GSM850	GPRS(4 Tx slots)	Right Side	10	128	824.2	29.41	31.00	1.442	-0.02	0.623	0.898
#15	GSM850	GPRS(4 Tx slots)	Right Side	10	189	836.4	29.85	31.00	1.303	-0.04	0.836	**1.089**
	GSM850	GPRS(4 Tx slots)	Bottom Side	10	251	848.8	30.00	31.00	1.259	-0.05	0.159	0.200
	GSM1900	GPRS(4 Tx slots)	Front	10	661	1880	29.86	30.50	1.159	-0.13	0.398	0.461
	GSM1900	GPRS(4 Tx slots)	Back	10	661	1880	29.86	30.50	1.159	0.026	0.692	0.802
	GSM1900	GPRS(4 Tx slots)	Back	10	512	1850.2	29.59	30.50	1.233	0.073	0.616	0.760
	GSM1900	GPRS(4 Tx slots)	Back	10	810	1909.8	29.78	30.50	1.180	0.01	0.849	1.002
	GSM1900	GPRS(4 Tx slots)	Left Side	10	661	1880	29.86	30.50	1.159	0.077	0.173	0.200
	GSM1900	GPRS(4 Tx slots)	Right Side	10	661	1880	29.86	30.50	1.159	-0.143	0.101	0.117
	GSM1900	GPRS(4 Tx slots)	Bottom Side	10	661	1880	29.86	30.50	1.159	-0.009	0.836	0.969
	GSM1900	GPRS(4 Tx slots)	Bottom Side	10	512	1850.2	29.59	30.50	1.233	-0.012	0.818	1.009
#16	GSM1900	GPRS(4 Tx slots)	Bottom Side	10	810	1909.8	29.78	30.50	1.180	-0.017	0.967	**1.141**

<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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front	10	4182	836.4	23.84	24.00	1.038	-0.01	0.373	0.387
	WCDMA Band V	RMC 12.2Kbps	Back	10	4182	836.4	23.84	24.00	1.038	0.01	0.568	0.589
#17	WCDMA Band V	RMC 12.2Kbps	Back	10	4132	826.4	23.67	24.00	1.079	-0.02	0.567	**0.612**
	WCDMA Band V	RMC 12.2Kbps	Back	10	4233	846.6	23.54	24.00	1.112	-0.12	0.527	0.586
	WCDMA Band V	RMC 12.2Kbps	Left Side	10	4182	836.4	23.84	24.00	1.038	-0.037	0.350	0.363
	WCDMA Band V	RMC 12.2Kbps	Right Side	10	4182	836.4	23.84	24.00	1.038	0	0.509	0.528
	WCDMA Band V	RMC 12.2Kbps	Bottom Side	10	4182	836.4	23.84	24.00	1.038	0.037	0.126	0.131
	WCDMA Band IV	RMC 12.2Kbps	Front	10	1513	1752.6	24.09	24.50	1.099	0.11	0.507	0.557
	WCDMA Band IV	RMC 12.2Kbps	Back	10	1513	1752.6	24.09	24.50	1.099	-0.07	0.839	0.922
#18	WCDMA Band IV	RMC 12.2Kbps	Back	10	1312	1712.4	23.66	24.50	1.213	-0.08	0.789	**0.957**
	WCDMA Band IV	RMC 12.2Kbps	Back	10	1413	1732.6	23.75	24.50	1.189	-0.08	0.786	0.934
	WCDMA Band IV	RMC 12.2Kbps	Left Side	10	1513	1752.6	24.09	24.50	1.099	-0.07	0.240	0.264
	WCDMA Band IV	RMC 12.2Kbps	Right Side	10	1513	1752.6	24.09	24.50	1.099	-0.14	0.165	0.181
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	10	1513	1752.6	24.09	24.50	1.099	0.04	0.701	0.770
	WCDMA Band II	RMC 12.2Kbps	Front	10	9400	1880	24.00	24.00	1.000	0.06	0.515	0.515
#19	WCDMA Band II	RMC 12.2Kbps	Back	10	9400	1880	24.00	24.00	1.000	-0.17	0.951	**0.951**
	WCDMA Band II	RMC 12.2Kbps	Back	10	9262	1852.4	23.50	24.00	1.122	-0.12	0.788	0.884
	WCDMA Band II	RMC 12.2Kbps	Back	10	9538	1907.6	23.40	24.00	1.148	-0.16	0.817	0.938
	WCDMA Band II	RMC 12.2Kbps	Left Side	10	9400	1880	24.00	24.00	1.000	-0.07	0.222	0.222
	WCDMA Band II	RMC 12.2Kbps	Right Side	10	9400	1880	24.00	24.00	1.000	-0.12	0.110	0.110
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	10	9400	1880	24.00	24.00	1.000	0.03	0.803	0.803
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	10	9262	1852.4	23.50	24.00	1.122	0.02	0.670	0.752
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	10	9538	1907.6	23.40	24.00	1.148	0.01	0.660	0.758

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	0	Front	10	23095	707.5	23.33	24.00	1.167	-0.04	0.026	0.030
	LTE Band 12	10M	QPSK	25	0	Front	10	23095	707.5	23.27	24.00	1.183	-0.17	0.022	0.026
#20	LTE Band 12	10M	QPSK	1	0	Back	10	23095	707.5	23.33	24.00	1.167	-0.14	0.059	**0.069**
	LTE Band 12	10M	QPSK	25	0	Back	10	23095	707.5	23.27	24.00	1.183	0.05	0.049	0.058
	LTE Band 12	10M	QPSK	1	0	Left Side	10	23095	707.5	23.33	24.00	1.167	-0.12	0.026	0.030
	LTE Band 12	10M	QPSK	25	0	Left Side	10	23095	707.5	23.27	24.00	1.183	0	0.022	0.026
	LTE Band 12	10M	QPSK	1	0	Right Side	10	23095	707.5	23.33	24.00	1.167	0.09	0.033	0.039
	LTE Band 12	10M	QPSK	25	0	Right Side	10	23095	707.5	23.27	24.00	1.183	-0.03	0.029	0.034
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10	23095	707.5	23.33	24.00	1.167	0	0.008	0.010
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10	23095	707.5	23.27	24.00	1.183	-0.01	0.007	0.008
	LTE Band 5	10M	QPSK	1	0	Front	10	20525	836.5	23.36	24.00	1.159	-0.1	0.291	0.337
	LTE Band 5	10M	QPSK	25	0	Front	10	20525	836.5	23.31	24.00	1.172	0.07	0.254	0.298
#21	LTE Band 5	10M	QPSK	1	0	Back	10	20525	836.5	23.36	24.00	1.159	0.02	0.530	**0.614**
	LTE Band 5	10M	QPSK	1	0	Back	10	20450	829	23.32	24.00	1.169	0.03	0.409	0.478
	LTE Band 5	10M	QPSK	1	0	Back	10	20600	844	23.29	24.00	1.178	-0.01	0.332	0.391
	LTE Band 5	10M	QPSK	25	0	Back	10	20525	836.5	23.31	24.00	1.172	-0.05	0.423	0.496
	LTE Band 5	10M	QPSK	1	0	Left Side	10	20525	836.5	23.36	24.00	1.159	-0.03	0.337	0.391
	LTE Band 5	10M	QPSK	25	0	Left Side	10	20525	836.5	23.31	24.00	1.172	-0.02	0.297	0.348
	LTE Band 5	10M	QPSK	1	0	Right Side	10	20525	836.5	23.36	24.00	1.159	0.01	0.499	0.578
	LTE Band 5	10M	QPSK	25	0	Right Side	10	20525	836.5	23.31	24.00	1.172	-0.02	0.443	0.519
	LTE Band 5	10M	QPSK	1	0	Bottom Side	10	20525	836.5	23.36	24.00	1.159	-0.06	0.124	0.144
	LTE Band 5	10M	QPSK	25	0	Bottom Side	10	20525	836.5	23.31	24.00	1.172	-0.08	0.111	0.130
	LTE Band 4	20M	QPSK	1	49	Front	10	20175	1732.5	24.25	24.50	1.059	-0.05	0.418	0.443
	LTE Band 4	20M	QPSK	50	24	Front	10	20175	1732.5	23.18	23.50	1.076	-0.01	0.359	0.386
#22	LTE Band 4	20M	QPSK	1	49	Back	10	20175	1732.5	24.25	24.50	1.059	-0.08	0.685	**0.726**
	LTE Band 4	20M	QPSK	1	49	Back	10	20050	1720	23.72	24.50	1.197	-0.12	0.534	0.639
	LTE Band 4	20M	QPSK	1	49	Back	10	20300	1745	23.89	24.50	1.151	-0.11	0.623	0.717
	LTE Band 4	20M	QPSK	50	24	Back	10	20175	1732.5	23.18	23.50	1.076	-0.1	0.511	0.550
	LTE Band 4	20M	QPSK	1	49	Left Side	10	20175	1732.5	24.25	24.50	1.059	-0.03	0.207	0.219
	LTE Band 4	20M	QPSK	50	24	Left Side	10	20175	1732.5	23.18	23.50	1.076	-0.13	0.172	0.185
	LTE Band 4	20M	QPSK	1	49	Right Side	10	20175	1732.5	24.25	24.50	1.059	-0.09	0.134	0.142
	LTE Band 4	20M	QPSK	50	24	Right Side	10	20175	1732.5	23.18	23.50	1.076	-0.07	0.112	0.121
	LTE Band 4	20M	QPSK	1	49	Bottom Side	10	20175	1732.5	24.25	24.50	1.059	-0.17	0.661	0.700
	LTE Band 4	20M	QPSK	50	24	Bottom Side	10	20175	1732.5	23.18	23.50	1.076	-0.17	0.524	0.564

Plot No.	Band	BW (MHz)	Mode	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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	10	18900	1880	24.22	24.50	1.067	0.02	0.497	0.530
	LTE Band 2	20M	QPSK	50	0	Front	10	18900	1880	23.12	23.50	1.091	0.03	0.362	0.395
	LTE Band 2	20M	QPSK	1	0	Back	10	18900	1880	24.22	24.50	1.067	-0.11	0.878	0.936
	LTE Band 2	20M	QPSK	1	0	Back	10	18700	1860	23.95	24.50	1.135	-0.12	0.799	0.907
#23	LTE Band 2	20M	QPSK	1	0	Back	10	19100	1900	24.16	24.50	1.081	-0.11	0.904	**0.978**
	LTE Band 2	20M	QPSK	50	0	Back	10	18900	1880	23.12	23.50	1.091	-0.07	0.568	0.620
	LTE Band 2	20M	QPSK	100	0	Back	10	18900	1880	23.07	23.50	1.104	-0.07	0.565	0.624
	LTE Band 2	20M	QPSK	1	0	Left Side	10	18900	1880	24.22	24.50	1.067	-0.04	0.205	0.219
	LTE Band 2	20M	QPSK	50	0	Left Side	10	18900	1880	23.12	23.50	1.091	-0.07	0.158	0.172
	LTE Band 2	20M	QPSK	1	0	Right Side	10	18900	1880	24.22	24.50	1.067	-0.08	0.131	0.140
	LTE Band 2	20M	QPSK	50	0	Right Side	10	18900	1880	23.12	23.50	1.091	-0.05	0.102	0.111
	LTE Band 2	20M	QPSK	1	0	Bottom Side	10	18900	1880	24.22	24.50	1.067	-0.15	0.633	0.675
	LTE Band 2	20M	QPSK	50	0	Bottom Side	10	18900	1880	23.12	23.50	1.091	-0.19	0.517	0.564
	LTE Band 7	20M	QPSK	1	0	Front	10	21100	2535	23.98	24.50	1.127	0.11	0.299	0.337
	LTE Band 7	20M	QPSK	50	0	Front	10	21100	2535	22.87	23.50	1.156	0.19	0.245	0.283
	LTE Band 7	20M	QPSK	1	0	Back	10	21100	2535	23.98	24.50	1.127	0.01	0.796	0.897
	LTE Band 7	20M	QPSK	1	0	Back	10	20850	2510	23.74	24.50	1.191	0.01	0.726	0.865
	LTE Band 7	20M	QPSK	1	0	Back	10	21350	2560	23.91	24.50	1.146	0	0.878	1.006
	LTE Band 7	20M	QPSK	50	0	Back	10	21100	2535	22.87	23.50	1.156	0.18	0.637	0.736
	LTE Band 7	20M	QPSK	100	0	Back	10	21100	2535	22.79	23.50	1.178	0	0.644	0.758
	LTE Band 7	20M	QPSK	1	0	Left Side	10	21100	2535	23.98	24.50	1.127	-0.01	0.045	0.051
	LTE Band 7	20M	QPSK	50	0	Left Side	10	21100	2535	22.87	23.50	1.156	0.06	0.021	0.024
	LTE Band 7	20M	QPSK	1	0	Right Side	10	21100	2535	23.98	24.50	1.127	-0.1	0.084	0.095
	LTE Band 7	20M	QPSK	50	0	Right Side	10	21100	2535	22.87	23.50	1.156	-0.1	0.068	0.079
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10	21100	2535	23.98	24.50	1.127	-0.03	0.741	0.835
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10	20850	2510	23.74	24.50	1.191	-0.1	0.665	0.792
#24	LTE Band 7	20M	QPSK	1	0	Bottom Side	10	21350	2560	23.91	24.50	1.146	-0.08	0.903	**1.034**
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10	21100	2535	22.87	23.50	1.156	-0.1	0.604	0.698
	LTE Band 7	20M	QPSK	100	0	Bottom Side	10	21100	2535	22.79	23.50	1.178	-0.04	0.477	0.562

<WLAN2.4GHz SAR>

Plot No.	Band	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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Front	10	6	2437	15.31	16.00	1.172	97.64	1.024	0.039	0.052	0.062
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	6	2437	15.31	16.00	1.172	97.64	1.024	0.059	0.059	0.071
#25	WLAN 2.4GHz	802.11b 1Mbps	Back	10	1	2412	14.91	16.00	1.285	97.64	1.024	-0.002	0.079	**0.104**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	11	2462	14.51	16.00	1.409	97.64	1.024	0.007	0.070	0.101
	WLAN 2.4GHz	802.11b 1Mbps	Left Side	10	6	2437	15.31	16.00	1.172	97.64	1.024	-0.04	0.052	0.062
	WLAN 2.4GHz	802.11b 1Mbps	Top Side	10	6	2437	15.31	16.00	1.172	97.64	1.024	-0.026	0.049	0.059

<WLAN 5GHz SAR>

Plot No.	Band	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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Front	10	42	5210	11.14	11.50	1.087	85.93	1.164	-0.17	0.033	0.042
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Back	10	42	5210	11.14	11.50	1.087	85.93	1.164	-0.14	0.048	0.061
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Left Side	10	42	5210	11.14	11.50	1.087	85.93	1.164	-0.19	0.019	0.024
#26	WLAN 5.2GHz	802.11ac VHT80 MCS0	Top Side	10	42	5210	11.14	11.50	1.087	85.93	1.164	-0.15	0.048	**0.061**
#27	WLAN 5.8GHz	802.11ac VHT80 MCS0	Front	10	155	5775	11.05	11.50	1.110	85.93	1.164	-0.09	0.023	**0.030**
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Back	10	155	5775	11.05	11.50	1.110	85.93	1.164	-0.05	0.022	0.028
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Left Side	10	155	5775	11.05	11.50	1.110	85.93	1.164	-0.03	0.016	0.021
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Top Side	10	155	5775	11.05	11.50	1.110	85.93	1.164	-0.02	0.021	0.027

<Bluetooth 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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth v4.0 LE	GFSK	Front	10	19	2440	6.11	6.50	1.094	-0.17	0.004	0.004
	Bluetooth v4.0 LE	GFSK	Back	10	19	2440	6.11	6.50	1.094	-0.14	0.006	0.007
#28	Bluetooth v4.0 LE	GFSK	Back	10	0	2402	4.50	6.50	1.585	-0.17	0.005	**0.008**
	Bluetooth v4.0 LE	GFSK	Back	10	39	2480	4.12	6.00	1.542	-0.06	0.002	0.003
	Bluetooth v4.0 LE	GFSK	Left Side	10	19	2440	6.11	6.50	1.094	0	0.001	0.001
	Bluetooth v4.0 LE	GFSK	Top Side	10	19	2440	6.11	6.50	1.094	-0.15	0.003	0.003

14.3 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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(4 Tx slots)	Front	10	251	848.8	30.00	31.00	1.259	-0.09	0.392	0.493
	GSM850	GPRS(4 Tx slots)	Back	10	251	848.8	30.00	31.00	1.259	-0.14	0.597	0.752
	GSM850	GPRS(4 Tx slots)	Back	10	128	824.2	29.41	31.00	1.442	-0.08	0.642	0.926
#29	GSM850	GPRS(4 Tx slots)	Back	10	189	836.4	29.85	31.00	1.303	-0.01	0.737	**0.960**
	GSM1900	GPRS(4 Tx slots)	Front	10	661	1880	29.86	30.50	1.159	-0.13	0.398	0.461
	GSM1900	GPRS(4 Tx slots)	Back	10	661	1880	29.86	30.50	1.159	0.026	0.692	0.802
	GSM1900	GPRS(4 Tx slots)	Back	10	512	1850.2	29.59	30.50	1.233	0.073	0.616	0.760
#30	GSM1900	GPRS(4 Tx slots)	Back	10	810	1909.8	29.78	30.50	1.180	0.01	0.849	**1.002**

<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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front	10	4182	836.4	23.84	24.00	1.038	-0.01	0.373	0.387
	WCDMA Band V	RMC 12.2Kbps	Back	10	4182	836.4	23.84	24.00	1.038	0.01	0.568	0.589
#17	WCDMA Band V	RMC 12.2Kbps	Back	10	4132	826.4	23.67	24.00	1.079	-0.02	0.567	**0.612**
	WCDMA Band V	RMC 12.2Kbps	Back	10	4233	846.6	23.54	24.00	1.112	-0.12	0.527	0.586
	WCDMA Band IV	RMC 12.2Kbps	Front	10	1513	1752.6	24.09	24.50	1.099	0.11	0.507	0.557
	WCDMA Band IV	RMC 12.2Kbps	Back	10	1513	1752.6	24.09	24.50	1.099	-0.07	0.839	0.922
#18	WCDMA Band IV	RMC 12.2Kbps	Back	10	1312	1712.4	23.66	24.50	1.213	-0.08	0.789	**0.957**
	WCDMA Band IV	RMC 12.2Kbps	Back	10	1413	1732.6	23.75	24.50	1.189	-0.08	0.786	0.934
	WCDMA Band II	RMC 12.2Kbps	Front	10	9400	1880	24.00	24.00	1.000	0.06	0.515	0.515
#19	WCDMA Band II	RMC 12.2Kbps	Back	10	9400	1880	24.00	24.00	1.000	-0.17	0.951	**0.951**
	WCDMA Band II	RMC 12.2Kbps	Back	10	9262	1852.4	23.50	24.00	1.122	-0.12	0.788	0.884
	WCDMA Band II	RMC 12.2Kbps	Back	10	9538	1907.6	23.40	24.00	1.148	-0.16	0.817	0.938

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	0	Front	10	23095	707.5	23.33	24.00	1.167	-0.04	0.026	0.030
	LTE Band 12	10M	QPSK	25	0	Front	10	23095	707.5	23.27	24.00	1.183	-0.17	0.022	0.026
#20	LTE Band 12	10M	QPSK	1	0	Back	10	23095	707.5	23.33	24.00	1.167	-0.14	0.059	**0.069**
	LTE Band 12	10M	QPSK	25	0	Back	10	23095	707.5	23.27	24.00	1.183	0.05	0.049	0.058
	LTE Band 5	10M	QPSK	1	0	Front	10	20525	836.5	23.36	24.00	1.159	-0.1	0.291	0.337
	LTE Band 5	10M	QPSK	25	0	Front	10	20525	836.5	23.31	24.00	1.172	0.07	0.254	0.298
#21	LTE Band 5	10M	QPSK	1	0	Back	10	20525	836.5	23.36	24.00	1.159	0.02	0.530	**0.614**
	LTE Band 5	10M	QPSK	1	0	Back	10	20450	829	23.32	24.00	1.169	0.03	0.409	0.478
	LTE Band 5	10M	QPSK	1	0	Back	10	20600	844	23.29	24.00	1.178	-0.01	0.332	0.391
	LTE Band 5	10M	QPSK	25	0	Back	10	20525	836.5	23.31	24.00	1.172	-0.05	0.423	0.496
	LTE Band 4	20M	QPSK	1	49	Front	10	20175	1732.5	24.25	24.50	1.059	-0.05	0.418	0.443
	LTE Band 4	20M	QPSK	50	24	Front	10	20175	1732.5	23.18	23.50	1.076	-0.01	0.359	0.386
#22	LTE Band 4	20M	QPSK	1	49	Back	10	20175	1732.5	24.25	24.50	1.059	-0.08	0.685	**0.726**
	LTE Band 4	20M	QPSK	1	49	Back	10	20050	1720	23.72	24.50	1.197	-0.12	0.534	0.639
	LTE Band 4	20M	QPSK	1	49	Back	10	20300	1745	23.89	24.50	1.151	-0.11	0.623	0.717
	LTE Band 4	20M	QPSK	50	24	Back	10	20175	1732.5	23.18	23.50	1.076	-0.1	0.511	0.550
	LTE Band 2	20M	QPSK	1	0	Front	10	18900	1880	24.22	24.50	1.067	0.02	0.497	0.530
	LTE Band 2	20M	QPSK	50	0	Front	10	18900	1880	23.12	23.50	1.091	0.03	0.362	0.395
	LTE Band 2	20M	QPSK	1	0	Back	10	18900	1880	24.22	24.50	1.067	-0.11	0.878	0.936
	LTE Band 2	20M	QPSK	1	0	Back	10	18700	1860	23.95	24.50	1.135	-0.12	0.799	0.907
#23	LTE Band 2	20M	QPSK	1	0	Back	10	19100	1900	24.16	24.50	1.081	-0.11	0.904	**0.978**
	LTE Band 2	20M	QPSK	50	0	Back	10	18900	1880	23.12	23.50	1.091	-0.07	0.568	0.620
	LTE Band 2	20M	QPSK	100	0	Back	10	18900	1880	23.07	23.50	1.104	-0.07	0.565	0.624
	LTE Band 7	20M	QPSK	1	0	Front	10	21100	2535	23.98	24.50	1.127	0.11	0.299	0.337
	LTE Band 7	20M	QPSK	50	0	Front	10	21100	2535	22.87	23.50	1.156	0.19	0.245	0.283
	LTE Band 7	20M	QPSK	1	0	Back	10	21100	2535	23.98	24.50	1.127	0.01	0.796	0.897
	LTE Band 7	20M	QPSK	1	0	Back	10	20850	2510	23.74	24.50	1.191	0.01	0.726	0.865
#31	LTE Band 7	20M	QPSK	1	0	Back	10	21350	2560	23.91	24.50	1.146	0	0.878	**1.006**
	LTE Band 7	20M	QPSK	50	0	Back	10	21100	2535	22.87	23.50	1.156	0.18	0.637	0.736
	LTE Band 7	20M	QPSK	100	0	Back	10	21100	2535	22.79	23.50	1.178	0	0.644	0.758

<WLAN2.4GHz SAR>

Plot No.	Band	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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 2.4GHz	802.11b 1Mbps	Front	10	6	2437	15.31	16.00	1.172	97.64	1.024	0.039	0.052	0.062
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	6	2437	15.31	16.00	1.172	97.64	1.024	0.059	0.059	0.071
#25	WLAN 2.4GHz	802.11b 1Mbps	Back	10	1	2412	14.91	16.00	1.285	97.64	1.024	-0.002	0.079	**0.104**
	WLAN 2.4GHz	802.11b 1Mbps	Back	10	11	2462	14.51	16.00	1.409	97.64	1.024	0.007	0.070	0.101

<WLAN 5GHz SAR>

Plot No.	Band	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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 5.2GHz	802.11ac VHT80 MCS0	Front	10	42	5210	11.14	11.50	1.087	85.93	1.164	-0.17	0.033	0.042
#32	WLAN 5.2GHz	802.11ac VHT80 MCS0	Back	10	42	5210	11.14	11.50	1.087	85.93	1.164	-0.14	0.048	**0.061**
#27	WLAN 5.8GHz	802.11ac VHT80 MCS0	Front	10	155	5775	11.05	11.50	1.110	85.93	1.164	-0.09	0.023	**0.030**
	WLAN 5.8GHz	802.11ac VHT80 MCS0	Back	10	155	5775	11.05	11.50	1.110	85.93	1.164	-0.05	0.022	0.028

<Bluetooth 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)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth v4.0 LE	GFSK	Front	10	19	2440	6.11	6.50	1.094	-0.17	0.004	0.004
	Bluetooth v4.0 LE	GFSK	Back	10	19	2440	6.11	6.50	1.094	-0.14	0.006	0.007
#28	Bluetooth v4.0 LE	GFSK	Back	10	0	2402	4.50	6.50	1.585	-0.17	0.005	**0.008**
	Bluetooth v4.0 LE	GFSK	Back	10	39	2480	4.12	6.00	1.542	-0.06	0.002	0.003

14.4 Repeated SAR Measurement

No.	Band	BW (MHz)	Mode	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)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM850	-	GPRS (4 Tx slots)	-	-	Right Side	10	189	836.4	29.85	31.00	1.303	-0.04	0.836	1	1.089
2nd	GSM850	-	GPRS (4 Tx slots)	-	-	Right Side	10	189	836.4	29.85	31.00	1.303	0.02	0.774	1.080	1.009
1st	GSM1900	-	GPRS (4 Tx slots)	-	-	Bottom Side	10	810	1909.8	29.78	30.50	1.180	-0.017	0.967	1	1.141
2nd	GSM1900	-	GPRS (4 Tx slots)	-	-	Bottom Side	10	810	1909.8	29.78	30.50	1.180	0.037	0.871	1.110	1.028
1st	WCDMA Band IV	-	RMC 12.2Kbps	-	-	Back	10	1513	1752.6	24.09	24.50	1.099	-0.07	0.839	1	0.922
2nd	WCDMA Band IV	-	RMC 12.2Kbps	-	-	Back	10	1513	1752.6	24.09	24.50	1.099	-0.09	0.822	1.021	0.903
1st	LTE Band 7	20M	QPSK	1	0	Bottom Side	10	21350	2560	23.91	24.50	1.146	-0.08	0.903	1	1.034
2nd	LTE Band 7	20M	QPSK	1	0	Bottom Side	10	21350	2560	23.91	24.50	1.146	-0.05	0.901	1.002	1.032

General Note:

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

15. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes	Yes		
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes	Yes		
3.	LTE(Voice) + WLAN2.4GHz(data)	Yes	Yes		
4.	GSM(Voice) + Bluetooth(data)	Yes	Yes		
5.	WCDMA((Voice) + Bluetooth(data)	Yes	Yes		
6.	LTE((Voice) + Bluetooth(data)	Yes	Yes		
7.	GSM(Voice) + WLAN5GHz(data)	Yes	Yes		
8.	WCDMA((Voice) + WLAN5GHz(data)	Yes	Yes		
9.	LTE((Voice) + WLAN5GHz(data)	Yes	Yes		
10.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
11.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
12.	LTE(Data) + WLAN2.4GHz(data)	Yes	Yes	Yes	2.4GHz Hotspot
13.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
14.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
15.	LTE(Data) + Bluetooth(data)	Yes	Yes	Yes	Bluetooth Tethering
16.	GPRS/EDGE(data) + WLAN5GHz(data)	Yes	Yes	Yes	WiFi Direct
17.	WCDMA(data) + WLAN5GHz(data)	Yes	Yes	Yes	WiFi Direct
18.	LTE(data) + WLAN5GHz(data)	Yes	Yes	Yes	WiFi Direct

General Note:

1. This device supported VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. 3rd party VoIP).
2. This device 2.4GHz WLAN supports hotspot operation and 5.2GHz / 5.8GHz supports WiFi Direct (GO/GC).
3. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
4. 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.
5. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
6. The reported SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) 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.

15.1 Head Exposure Conditions

<WWAN PCE + WLAN DTS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Right Cheek	0.659	0.382	1.04
		Right Tilted	0.282	0.206	0.49
		Left Cheek	0.439	0.174	0.61
		Left Tilted	0.300	0.187	0.49
	GSM1900	Right Cheek	0.184	0.382	0.57
		Right Tilted	0.044	0.206	0.25
		Left Cheek	0.149	0.174	0.32
		Left Tilted	0.068	0.187	0.26
WCDMA	Band V	Right Cheek	0.286	0.382	0.67
		Right Tilted	0.172	0.206	0.38
		Left Cheek	0.247	0.174	0.42
		Left Tilted	0.171	0.187	0.36
	Band IV	Right Cheek	0.203	0.382	0.59
		Right Tilted	0.068	0.206	0.27
		Left Cheek	0.168	0.174	0.34
		Left Tilted	0.111	0.187	0.30
	Band II	Right Cheek	0.155	0.382	0.54
		Right Tilted	0.038	0.206	0.24
		Left Cheek	0.162	0.174	0.34
		Left Tilted	0.074	0.187	0.26
LTE	Band 12	Right Cheek	0.020	0.382	0.40
		Right Tilted	0.010	0.206	0.22
		Left Cheek	0.019	0.174	0.19
		Left Tilted	0.010	0.187	0.20
	Band 5	Right Cheek	0.382	0.382	0.76
		Right Tilted	0.188	0.206	0.39
		Left Cheek	0.295	0.174	0.47
		Left Tilted	0.200	0.187	0.39
	Band 4	Right Cheek	0.175	0.382	0.56
		Right Tilted	0.056	0.206	0.26
		Left Cheek	0.137	0.174	0.31
		Left Tilted	0.085	0.187	0.27
	Band 2	Right Cheek	0.160	0.382	0.54
		Right Tilted	0.060	0.206	0.27
		Left Cheek	0.174	0.174	0.35
		Left Tilted	0.102	0.187	0.29
	Band 7	Right Cheek	0.148	0.382	0.53
		Right Tilted	0.017	0.206	0.22
		Left Cheek	0.041	0.174	0.22
		Left Tilted	0.017	0.187	0.20

<WWAN PCE + WLAN NII>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN NII Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Right Cheek	0.659	0.267	0.93
		Right Tilted	0.282	0.242	0.52
		Left Cheek	0.439	0.237	0.68
		Left Tilted	0.300	0.213	0.51
	GSM1900	Right Cheek	0.184	0.267	0.45
		Right Tilted	0.044	0.242	0.29
		Left Cheek	0.149	0.237	0.39
		Left Tilted	0.068	0.213	0.28
WCDMA	Band V	Right Cheek	0.286	0.267	0.55
		Right Tilted	0.172	0.242	0.41
		Left Cheek	0.247	0.237	0.48
		Left Tilted	0.171	0.213	0.38
	Band IV	Right Cheek	0.203	0.267	0.47
		Right Tilted	0.068	0.242	0.31
		Left Cheek	0.168	0.237	0.41
		Left Tilted	0.111	0.213	0.32
	Band II	Right Cheek	0.155	0.267	0.42
		Right Tilted	0.038	0.242	0.28
		Left Cheek	0.162	0.237	0.40
		Left Tilted	0.074	0.213	0.29
LTE	Band 12	Right Cheek	0.020	0.267	0.29
		Right Tilted	0.010	0.242	0.25
		Left Cheek	0.019	0.237	0.26
		Left Tilted	0.010	0.213	0.22
	Band 5	Right Cheek	0.382	0.267	0.65
		Right Tilted	0.188	0.242	0.43
		Left Cheek	0.295	0.237	0.53
		Left Tilted	0.200	0.213	0.41
	Band 4	Right Cheek	0.175	0.267	0.44
		Right Tilted	0.056	0.242	0.30
		Left Cheek	0.137	0.237	0.37
		Left Tilted	0.085	0.213	0.30
	Band 2	Right Cheek	0.160	0.267	0.43
		Right Tilted	0.060	0.242	0.30
		Left Cheek	0.174	0.237	0.41
		Left Tilted	0.102	0.213	0.32
	Band 7	Right Cheek	0.148	0.267	0.42
		Right Tilted	0.017	0.242	0.26
		Left Cheek	0.041	0.237	0.28
		Left Tilted	0.017	0.213	0.23

<WWAN PCE + Bluetooth DSS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Right Cheek	0.659	0.048	0.71
		Right Tilted	0.282	0.025	0.31
		Left Cheek	0.439	0.023	0.46
		Left Tilted	0.300	0.022	0.32
	GSM1900	Right Cheek	0.184	0.048	0.23
		Right Tilted	0.044	0.025	0.07
		Left Cheek	0.149	0.023	0.17
		Left Tilted	0.068	0.022	0.09
WCDMA	Band V	Right Cheek	0.286	0.048	0.33
		Right Tilted	0.172	0.025	0.20
		Left Cheek	0.247	0.023	0.27
		Left Tilted	0.171	0.022	0.19
	Band IV	Right Cheek	0.203	0.048	0.25
		Right Tilted	0.068	0.025	0.09
		Left Cheek	0.168	0.023	0.19
		Left Tilted	0.111	0.022	0.13
	Band II	Right Cheek	0.155	0.048	0.20
		Right Tilted	0.038	0.025	0.06
		Left Cheek	0.162	0.023	0.19
		Left Tilted	0.074	0.022	0.10
LTE	Band 12	Right Cheek	0.020	0.048	0.07
		Right Tilted	0.010	0.025	0.04
		Left Cheek	0.019	0.023	0.04
		Left Tilted	0.010	0.022	0.03
	Band 5	Right Cheek	0.382	0.048	0.43
		Right Tilted	0.188	0.025	0.21
		Left Cheek	0.295	0.023	0.32
		Left Tilted	0.200	0.022	0.22
	Band 4	Right Cheek	0.175	0.048	0.22
		Right Tilted	0.056	0.025	0.08
		Left Cheek	0.137	0.023	0.16
		Left Tilted	0.085	0.022	0.11
	Band 2	Right Cheek	0.160	0.048	0.21
		Right Tilted	0.060	0.025	0.09
		Left Cheek	0.174	0.023	0.20
		Left Tilted	0.102	0.022	0.12
	Band 7	Right Cheek	0.148	0.048	0.20
		Right Tilted	0.017	0.025	0.04
		Left Cheek	0.041	0.023	0.06
		Left Tilted	0.017	0.022	0.04

15.2 Hotspot Exposure Conditions

<WWAN PCE + WLAN DTS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Front	0.493	0.062	0.56
		Back	0.752	0.104	0.86
		Left Side	0.694	0.062	0.76
		Right Side	1.089		1.09
		Top Side		0.059	0.06
		Bottom Side	0.200		0.20
	GSM1900	Front	0.461	0.062	0.52
		Back	1.002	0.104	1.11
		Left Side	0.200	0.062	0.26
		Right Side	0.117		0.12
		Top Side		0.059	0.06
		Bottom Side	1.141		**1.14**
WCDMA	Band V	Front	0.387	0.062	0.45
		Back	0.612	0.104	0.72
		Left Side	0.363	0.062	0.43
		Right Side	0.528		0.53
		Top Side		0.059	0.06
		Bottom Side	0.131		0.13
	Band IV	Front	0.557	0.062	0.62
		Back	0.957	0.104	1.06
		Left Side	0.264	0.062	0.33
		Right Side	0.181		0.18
		Top Side		0.059	0.06
		Bottom Side	0.770		0.77
	Band II	Front	0.515	0.062	0.58
		Back	0.951	0.104	1.06
		Left Side	0.222	0.062	0.28
		Right Side	0.110		0.11
		Top Side		0.059	0.06
		Bottom Side	0.803		0.80

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
LTE	Band 12	Front	0.030	0.062	0.09
		Back	0.069	0.104	0.17
		Left Side	0.030	0.062	0.09
		Right Side	0.039		0.04
		Top Side		0.059	0.06
		Bottom Side	0.010		0.01
	Band 5	Front	0.337	0.062	0.40
		Back	0.614	0.104	0.72
		Left Side	0.391	0.062	0.45
		Right Side	0.578		0.58
		Top Side		0.059	0.06
		Bottom Side	0.144		0.14
	Band 4	Front	0.443	0.062	0.51
		Back	0.726	0.104	0.83
		Left Side	0.219	0.062	0.28
		Right Side	0.142		0.14
		Top Side		0.059	0.06
		Bottom Side	0.700		0.70
	Band 2	Front	0.530	0.062	0.59
		Back	0.978	0.104	1.08
		Left Side	0.219	0.062	0.28
		Right Side	0.140		0.14
		Top Side		0.059	0.06
		Bottom Side	0.675		0.68
	Band 7	Front	0.337	0.062	0.40
		Back	1.006	0.104	1.11
		Left Side	0.051	0.062	0.11
		Right Side	0.095		0.10
		Top Side		0.059	0.06
		Bottom Side	1.034		1.03

<WWAN PCE + WLAN NII>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN NII Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Front	0.493	0.042	0.54
		Back	0.752	0.061	0.81
		Left Side	0.694	0.024	0.72
		Right Side	1.089		1.09
		Top Side		0.061	0.06
		Bottom Side	0.200		0.20
	GSM1900	Front	0.461	0.042	0.50
		Back	1.002	0.061	1.06
		Left Side	0.200	0.024	0.22
		Right Side	0.117		0.12
		Top Side		0.061	0.06
		Bottom Side	1.141		**1.14**
WCDMA	Band V	Front	0.387	0.042	0.43
		Back	0.612	0.061	0.67
		Left Side	0.363	0.024	0.39
		Right Side	0.528		0.53
		Top Side		0.061	0.06
		Bottom Side	0.131		0.13
	Band IV	Front	0.557	0.042	0.60
		Back	0.957	0.061	1.02
		Left Side	0.264	0.024	0.29
		Right Side	0.181		0.18
		Top Side		0.061	0.06
		Bottom Side	0.770		0.77
	Band II	Front	0.515	0.042	0.56
		Back	0.951	0.061	1.01
		Left Side	0.222	0.024	0.25
		Right Side	0.110		0.11
		Top Side		0.061	0.06
		Bottom Side	0.803		0.80

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN NII Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
LTE	Band 12	Front	0.030	0.042	0.07
		Back	0.069	0.061	0.13
		Left Side	0.030	0.024	0.05
		Right Side	0.039		0.04
		Top Side		0.061	0.06
		Bottom Side	0.010		0.01
	Band 5	Front	0.337	0.042	0.38
		Back	0.614	0.061	0.68
		Left Side	0.391	0.024	0.42
		Right Side	0.578		0.58
		Top Side		0.061	0.06
		Bottom Side	0.144		0.14
	Band 4	Front	0.443	0.042	0.49
		Back	0.726	0.061	0.79
		Left Side	0.219	0.024	0.24
		Right Side	0.142		0.14
		Top Side		0.061	0.06
		Bottom Side	0.700		0.70
	Band 2	Front	0.530	0.042	0.57
		Back	0.978	0.061	1.04
		Left Side	0.219	0.024	0.24
		Right Side	0.140		0.14
		Top Side		0.061	0.06
		Bottom Side	0.675		0.68
	Band 7	Front	0.337	0.042	0.38
		Back	1.006	0.061	1.07
		Left Side	0.051	0.024	0.08
		Right Side	0.095		0.10
		Top Side		0.061	0.06
		Bottom Side	1.034		1.03

<WWAN PCE + Bluetooth DSS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Front	0.493	0.004	0.50
		Back	0.752	0.008	0.76
		Left Side	0.694	0.001	0.70
		Right Side	1.089		1.09
		Top Side		0.003	<0.01
		Bottom Side	0.200		0.20
	GSM1900	Front	0.461	0.004	0.47
		Back	1.002	0.008	1.01
		Left Side	0.200	0.001	0.20
		Right Side	0.117		0.12
		Top Side		0.003	<0.01
		Bottom Side	1.141		**1.14**
WCDMA	Band V	Front	0.387	0.004	0.39
		Back	0.612	0.008	0.62
		Left Side	0.363	0.001	0.36
		Right Side	0.528		0.53
		Top Side		0.003	<0.01
		Bottom Side	0.131		0.13
	Band IV	Front	0.557	0.004	0.56
		Back	0.957	0.008	0.97
		Left Side	0.264	0.001	0.27
		Right Side	0.181		0.18
		Top Side		0.003	<0.01
		Bottom Side	0.770		0.77
	Band II	Front	0.515	0.004	0.52
		Back	0.951	0.008	0.96
		Left Side	0.222	0.001	0.22
		Right Side	0.110		0.11
		Top Side		0.003	<0.01
		Bottom Side	0.803		0.80

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
LTE	Band 12	Front	0.030	0.004	0.03
		Back	0.069	0.008	0.08
		Left Side	0.030	0.001	0.03
		Right Side	0.039		0.04
		Top Side		0.003	<0.01
		Bottom Side	0.010		0.01
	Band 5	Front	0.337	0.004	0.34
		Back	0.614	0.008	0.62
		Left Side	0.391	0.001	0.39
		Right Side	0.578		0.58
		Top Side		0.003	<0.01
		Bottom Side	0.144		0.14
	Band 4	Front	0.443	0.004	0.45
		Back	0.726	0.008	0.73
		Left Side	0.219	0.001	0.22
		Right Side	0.142		0.14
		Top Side		0.003	<0.01
		Bottom Side	0.700		0.70
	Band 2	Front	0.530	0.004	0.53
		Back	0.978	0.008	0.99
		Left Side	0.219	0.001	0.22
		Right Side	0.140		0.14
		Top Side		0.003	<0.01
		Bottom Side	0.675		0.68
	Band 7	Front	0.337	0.004	0.34
		Back	1.006	0.008	1.01
		Left Side	0.051	0.001	0.05
		Right Side	0.095		0.10
		Top Side		0.003	<0.01
		Bottom Side	1.034		1.03

15.3 Body-Worn Accessory Exposure Conditions

<WWAN PCE + WLAN DTS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN DTS Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Front	0.493	0.062	0.56
		Back	0.752	0.104	0.86
	GSM1900	Front	0.461	0.062	0.52
		Back	1.002	0.104	1.11
WCDMA	Band V	Front	0.387	0.062	0.45
		Back	0.612	0.104	0.72
	Band IV	Front	0.557	0.062	0.62
		Back	0.957	0.104	1.06
	Band II	Front	0.515	0.062	0.58
		Back	0.951	0.104	1.06
LTE	Band 12	Front	0.030	0.062	0.09
		Back	0.069	0.104	0.17
	Band 5	Front	0.337	0.062	0.40
		Back	0.614	0.104	0.72
	Band 4	Front	0.443	0.062	0.51
		Back	0.726	0.104	0.83
	Band 2	Front	0.530	0.062	0.59
		Back	0.978	0.104	1.08
	Band 7	Front	0.337	0.062	0.40
		Back	1.006	0.104	1.11

<WWAN PCE + WLAN NII>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	WLAN NII Max. WLAN SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Front	0.493	0.042	0.54
		Back	0.752	0.061	0.81
	GSM1900	Front	0.461	0.042	0.50
		Back	1.002	0.061	1.06
WCDMA	Band V	Front	0.387	0.042	0.43
		Back	0.612	0.061	0.67
	Band IV	Front	0.557	0.042	0.60
		Back	0.957	0.061	1.02
	Band II	Front	0.515	0.042	0.56
		Back	0.951	0.061	1.01
LTE	Band 12	Front	0.030	0.042	0.07
		Back	0.069	0.061	0.13
	Band 5	Front	0.337	0.042	0.38
		Back	0.614	0.061	0.68
	Band 4	Front	0.443	0.042	0.49
		Back	0.726	0.061	0.79
	Band 2	Front	0.530	0.042	0.57
		Back	0.978	0.061	1.04
	Band 7	Front	0.337	0.042	0.38
		Back	1.006	0.061	1.07

<WWAN PCE + Bluetooth DSS>

WWAN Band		Exposure Position	WWAN PCE Max. WWAN SAR (W/kg)	Bluetooth DSS Max. Bluetooth SAR (W/kg)	Summed SAR (W/kg)
GSM	GSM850	Front	0.493	0.004	0.50
		Back	0.752	0.008	0.76
	GSM1900	Front	0.461	0.004	0.47
		Back	1.002	0.008	1.01
WCDMA	Band V	Front	0.387	0.004	0.39
		Back	0.612	0.008	0.62
	Band IV	Front	0.557	0.004	0.56
		Back	0.957	0.008	0.97
	Band II	Front	0.515	0.004	0.52
		Back	0.951	0.008	0.96
LTE	Band 12	Front	0.030	0.004	0.03
		Back	0.069	0.008	0.08
	Band 5	Front	0.337	0.004	0.34
		Back	0.614	0.008	0.62
	Band 4	Front	0.443	0.004	0.45
		Back	0.726	0.008	0.73
	Band 2	Front	0.530	0.004	0.53
		Back	0.978	0.008	0.99
	Band 7	Front	0.337	0.004	0.34
		Back	1.006	0.008	1.01

Test Engineer： Frank Qiao

16. 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 16.1. 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 16.2. 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	6.55	N	1	1	1	6.6	6.6
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						12.5%	12.5%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.0%	24.9%

Table 16.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

17. 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”, September 2013.

[4] SPEAG DASY System Handbook

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

[6] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.

[7] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, February 2014.

[8] FCC KDB 648474 D04 v01r02, “SAR Evaluation Considerations for Wireless Handsets”, December 2013

[9] FCC KDB 248227 D01 v02r01, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, June 2015.

[10] FCC KDB 941225 D01 v03, “3G SAR MEAUREMENT PROCEDURES”, October 2014

[11] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, December 2013.

[12] FCC KDB 941225 D05A v01r01, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, August 2014.

[13] FCC KDB 941225 D06 v02, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", October 2014.

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/29

System Check_Head_750MHz_150729

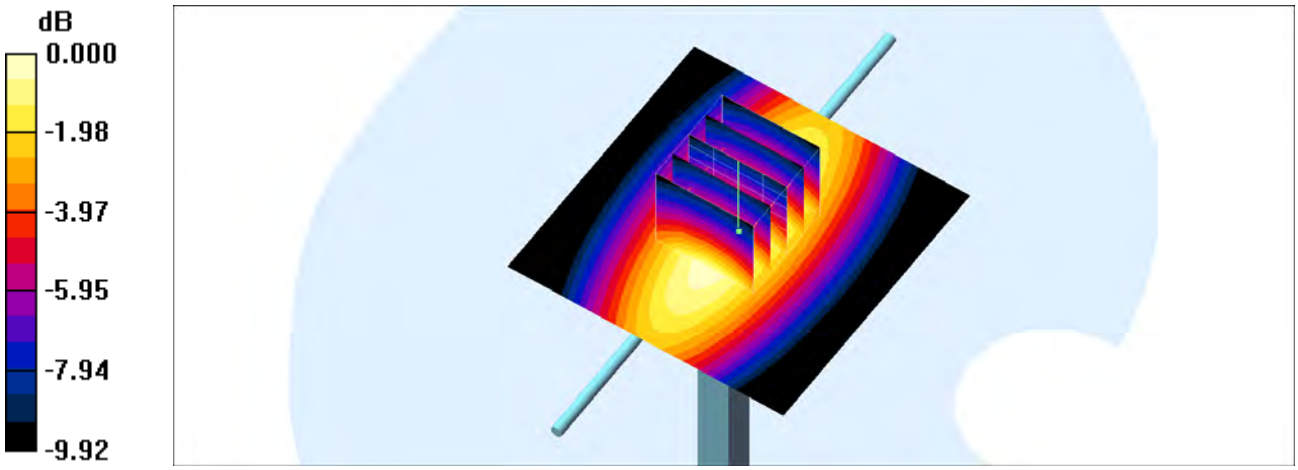
DUT: D750V3-1012

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750_150729 Medium parameters used: f = 750 MHz; σ = 0.895 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.93, 10.93, 10.93); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.60 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.4 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 3.06 W/kg
SAR(1 g) = 2.08 mW/g; SAR(10 g) = 1.39 mW/g
Maximum value of SAR (measured) = 2.62 mW/g



0 dB = 2.62mW/g

System Check_Body_750MHz_150726

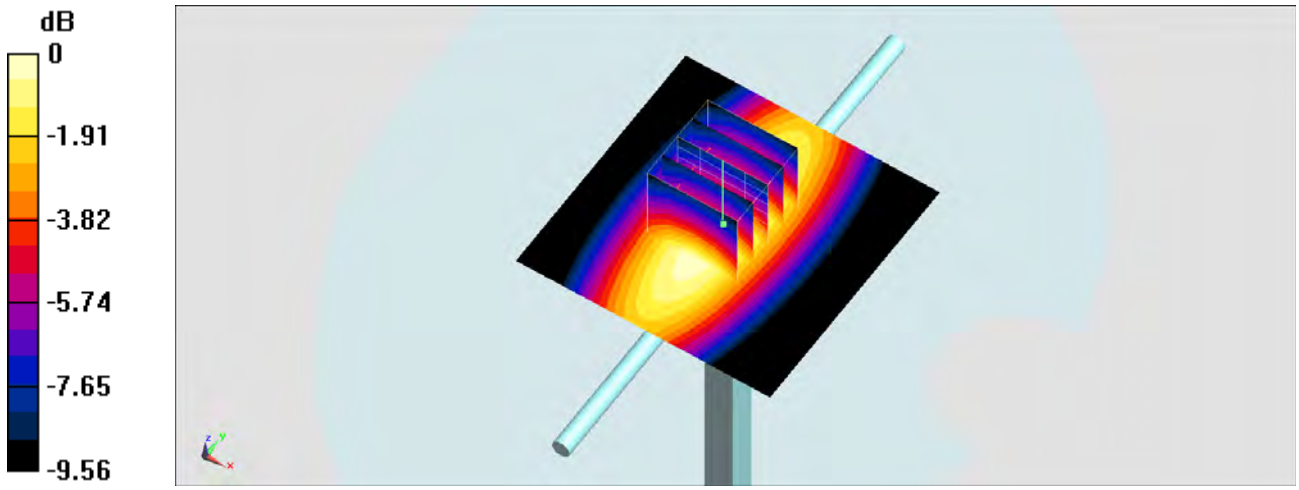
DUT: D750V3-1012

Communication System: CW ; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: MSL_750_150726 Medium parameters used: f = 750 MHz; σ = 0.967 S/m; ε_r = 57.868; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3931; ConvF(10.1, 10.1, 10.1); Calibrated: 2014/9/25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2014/10/6
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.49 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 51.70 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.87 W/kg
SAR(1 g) = 2.01 W/kg; SAR(10 g) = 1.36 W/kg
Maximum value of SAR (measured) = 2.49 W/kg



0 dB = 2.49 W/kg = 3.96 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/29

System Check_Head_835MHz_150729

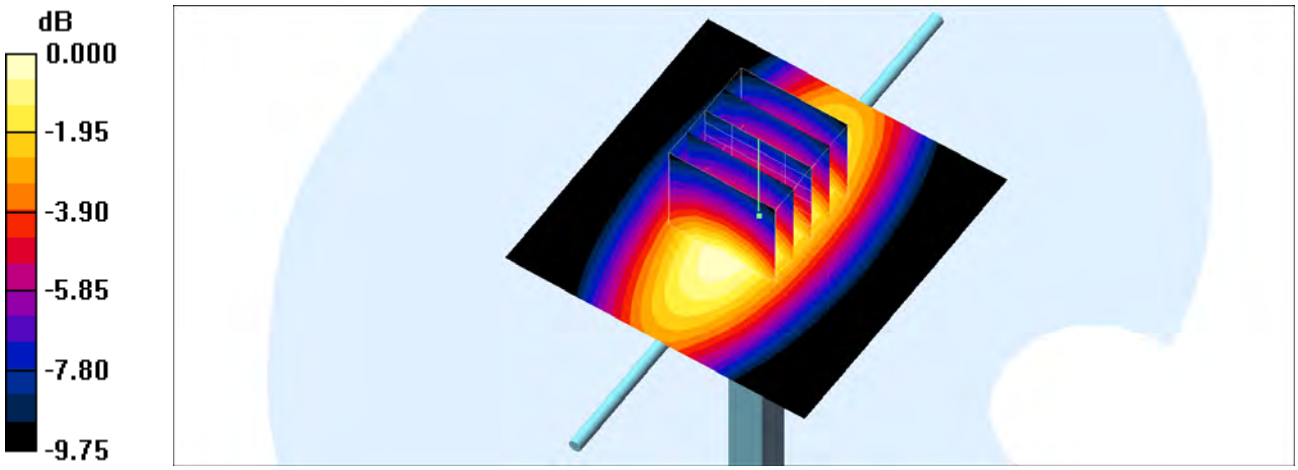
DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850_150729 Medium parameters used: f = 835 MHz; σ = 0.916 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.33, 10.33, 10.33); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.88 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.4 V/m; Power Drift = -0.149 dB
Peak SAR (extrapolated) = 3.21 W/kg
SAR(1 g) = 2.24 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.77 mW/g



0 dB = 2.77mW/g

System Check_Head_835MHz_150806

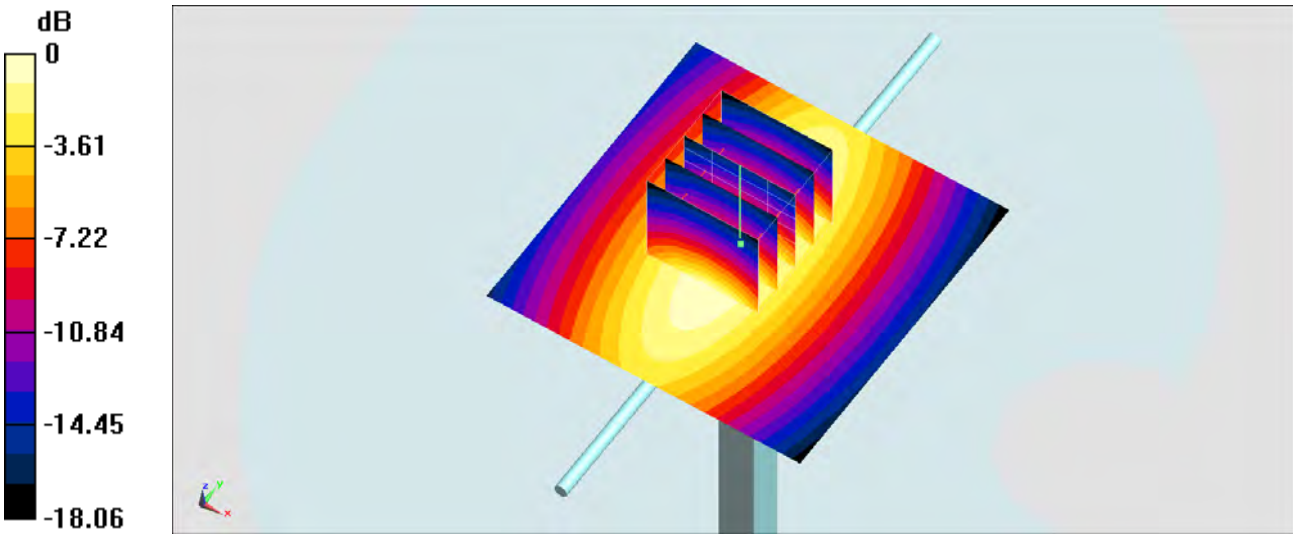
DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_850_150806 Medium parameters used: f = 835 MHz; σ = 0.906 S/m; ε_r = 42.966; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(10.36, 10.36, 10.36); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.85 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.71 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 2.12 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.86 W/kg



0 dB = 2.85 W/kg = 4.55 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/26

System Check_Body_835MHz_150726

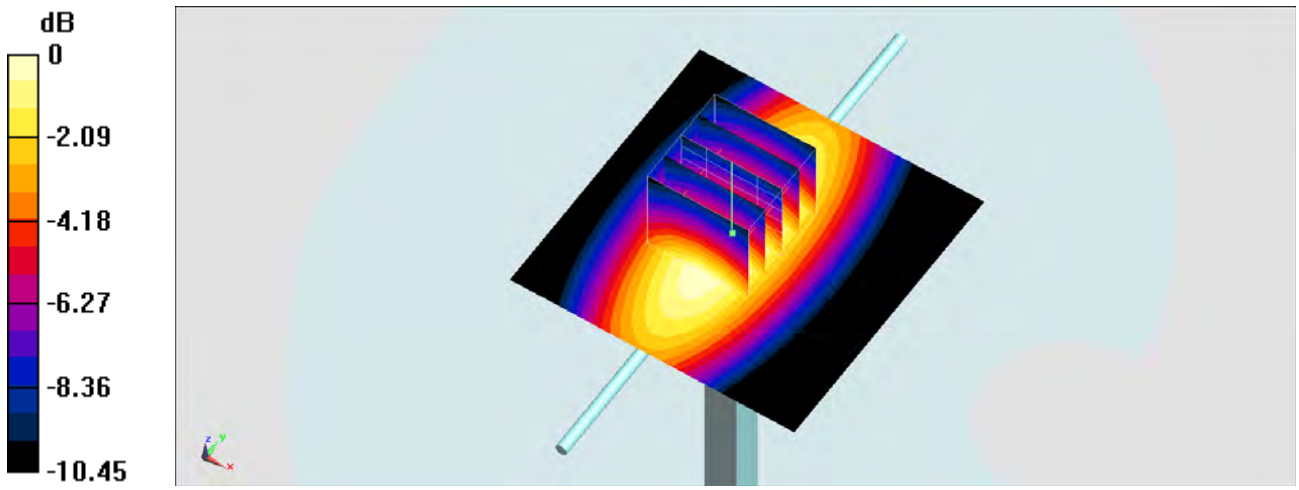
DUT: D835V2-499

Communication System: CW ; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850_150726 Medium parameters used: f = 835 MHz; σ = 0.994 S/m; ε_r = 56.003; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(8.75, 8.75, 8.75); Calibrated: 2014/9/29;
- Sensor-Surface: 1.6mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.21 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 58.98 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 2.51 W/kg; SAR(10 g) = 1.66 W/kg
Maximum value of SAR (measured) = 3.14 W/kg



0 dB = 3.14 W/kg = 4.97 dBW/kg

System Check_Body_835MHz_150727

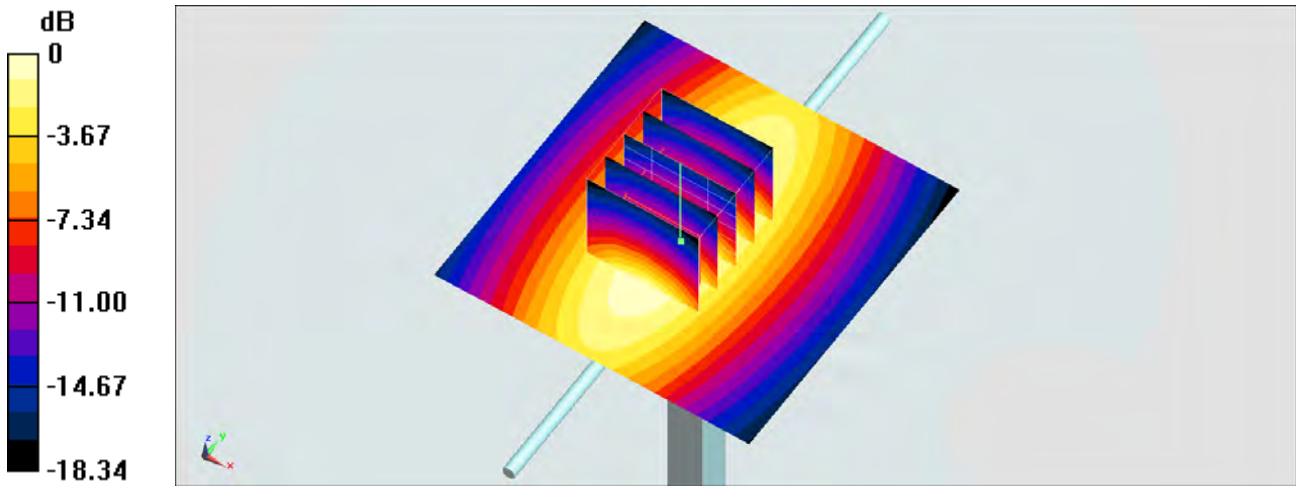
DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850_150727 Medium parameters used: f = 835 MHz; σ = 0.981 S/m; ε_r = 56.423; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3931; ConvF(10.13, 10.13, 10.13); Calibrated: 2014/9/25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.07 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.08 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.65 W/kg
Maximum value of SAR (measured) = 3.09 W/kg



0 dB = 3.07 W/kg = 4.87 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/28

System Check_Body_835MHz_150728

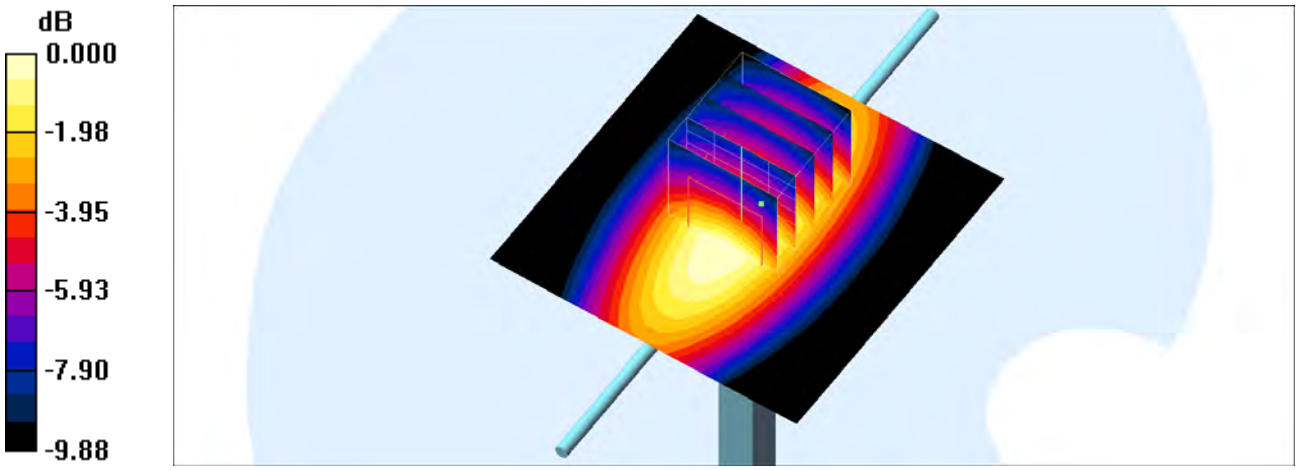
DUT: D835V2-499

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850_150728 Medium parameters used: f = 835 MHz; σ = 0.987 mho/m; ε_r = 54.9; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.01, 10.01, 10.01); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.76 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.0 V/m; Power Drift = -0.101 dB
Peak SAR (extrapolated) = 3.10 W/kg
SAR(1 g) = 2.22 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.72 mW/g



0 dB = 2.72mW/g

System Check_Body_835MHz_150806

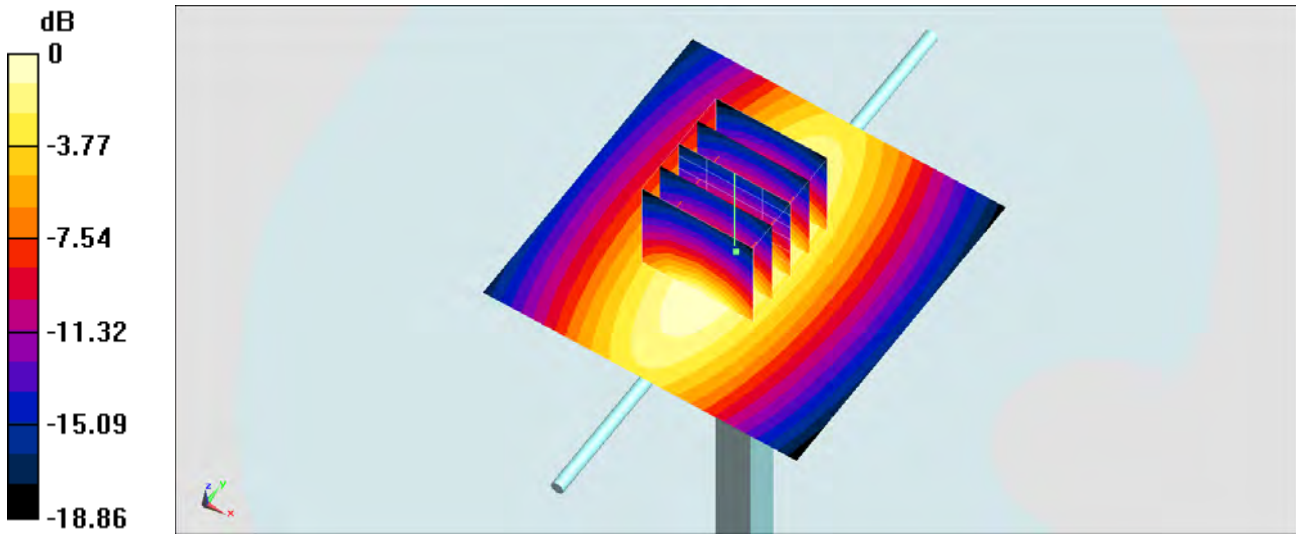
DUT: D835V2-499

Communication System: CW ; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_850_150806 Medium parameters used: f = 835 MHz; σ = 0.975 S/m; ε_r = 52.906; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(10.19, 10.19, 10.19); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.14 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 58.94 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.54 W/kg
SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.56 W/kg
Maximum value of SAR (measured) = 3.13 W/kg



0 dB = 3.14 W/kg = 4.97 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/28

System Check_Head_1750MHz_150728

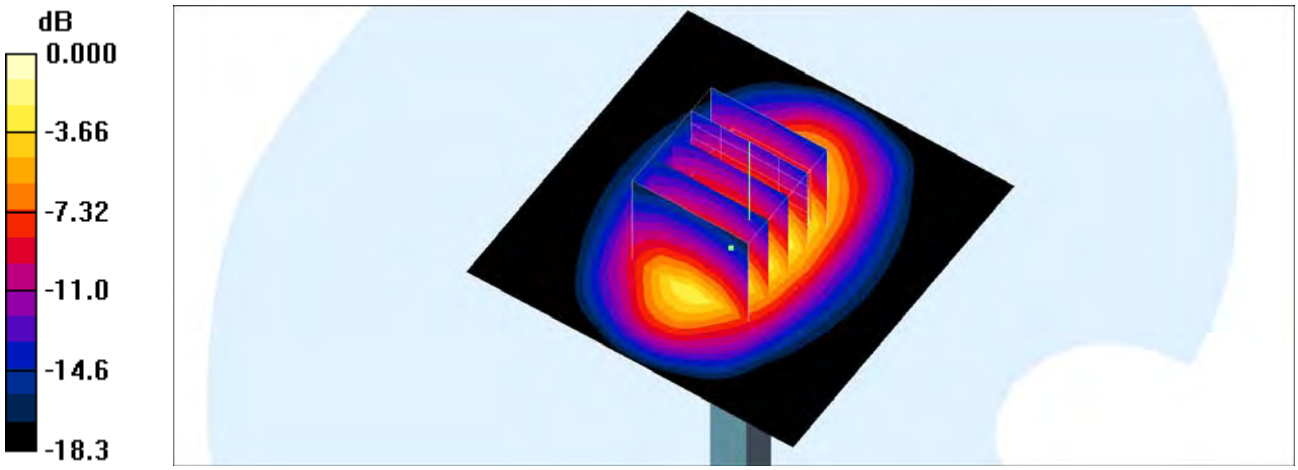
DUT: D1750V2-1068

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750_150728 Medium parameters used: f = 1750 MHz; σ = 1.37 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(8.35, 8.35, 8.35); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.5 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 95.0 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 15.2 W/kg
SAR(1 g) = 8.6 mW/g; SAR(10 g) = 4.64 mW/g
Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8mW/g

System Check_Body_1750MHz_150725

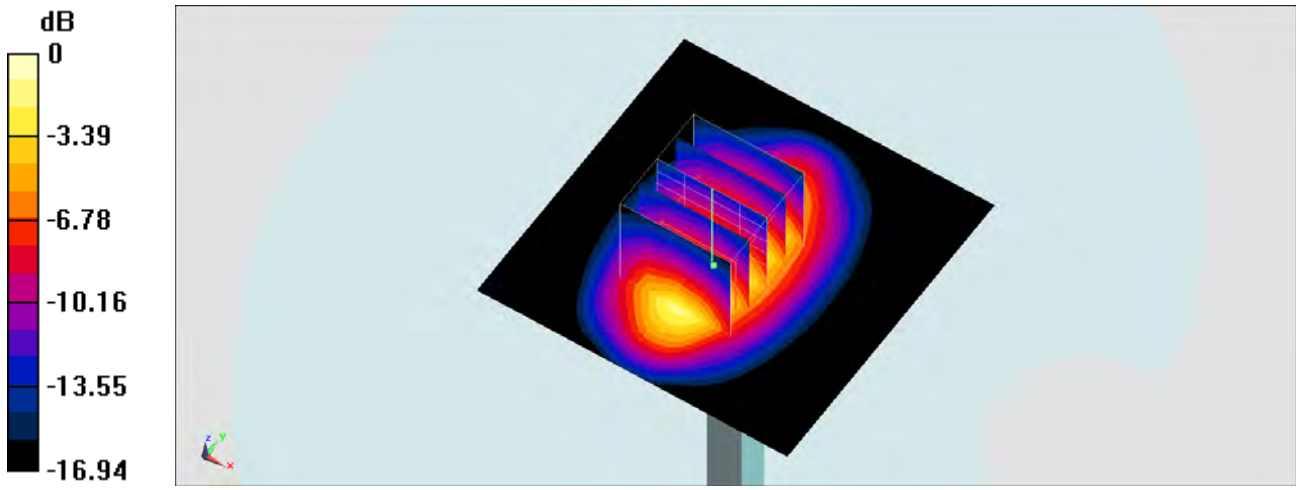
DUT: D1750V2-1068

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150725 Medium parameters used: f = 1750 MHz; σ = 1.529 S/m; ε_r = 52.312; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(7.38, 7.38, 7.38); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.06 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.6 W/kg; SAR(10 g) = 5.15 W/kg
Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.3 W/kg = 11.24 dBW/kg

System Check_Body_1750MHz_150725

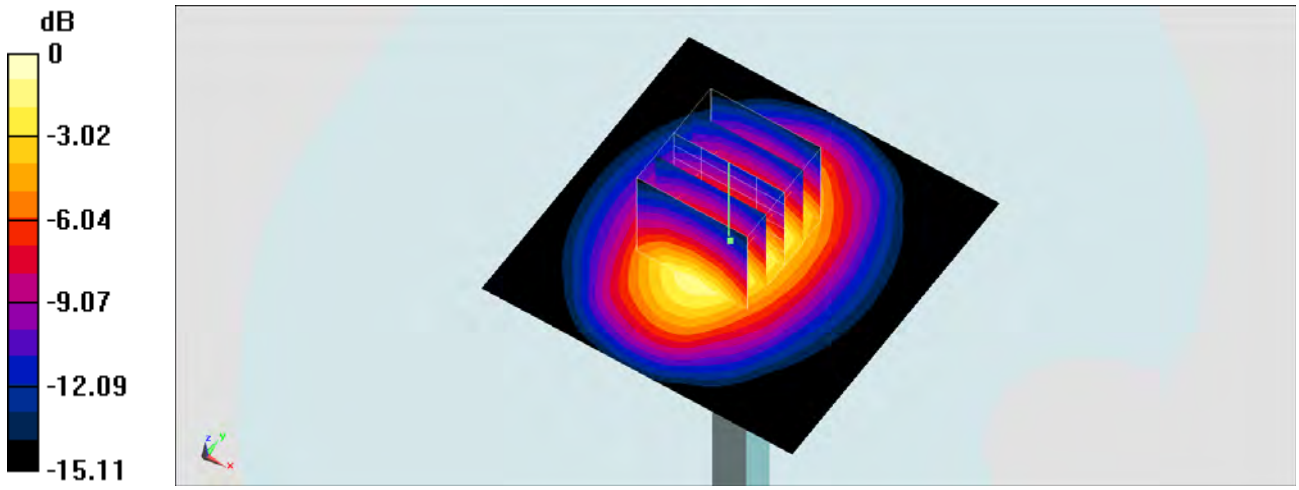
DUT: D1750V2-1068

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150725 Medium parameters used: f = 1750 MHz; σ = 1.529 S/m; ε_r = 52.312; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: ES3DV3 - SN3270; ConvF(4.95, 4.95, 4.95); Calibrated: 2014/9/26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2014/8/21
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 10.9 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 81.39 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 13.7 W/kg
SAR(1 g) = 8.94 W/kg; SAR(10 g) = 5.21 W/kg
Maximum value of SAR (measured) = 10.7 W/kg



0 dB = 10.7 W/kg = 10.29 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/28

System Check_Head_1900MHz_150728

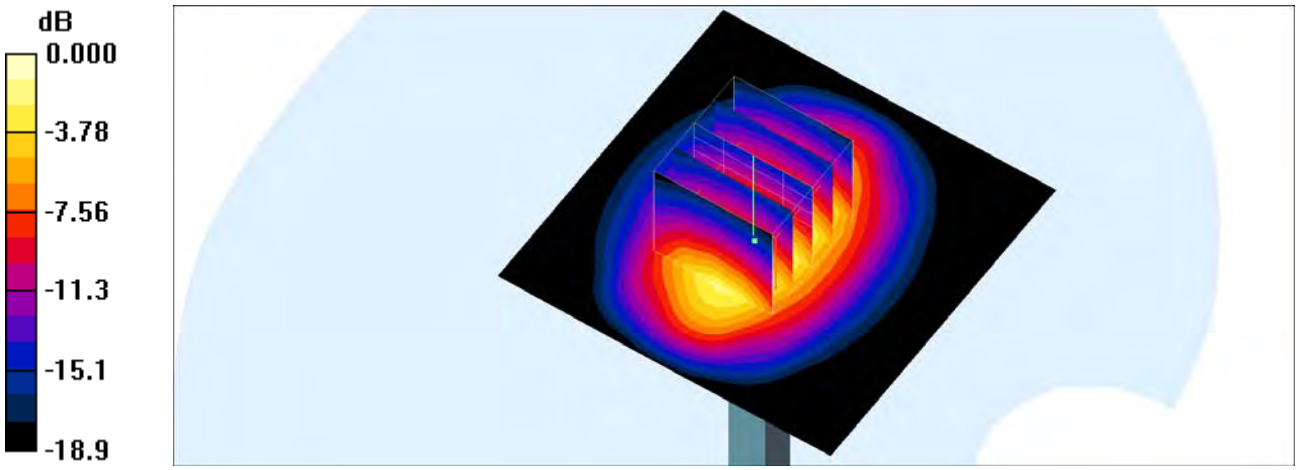
DUT: D1900V2-5d041

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150728 Medium parameters used: f = 1900 MHz; σ = 1.43 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(8.1, 8.1, 8.1); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.6 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 100.0 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 18.9 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.17 mW/g
Maximum value of SAR (measured) = 14.4 mW/g



0 dB = 14.4mW/g

System Check_Head_1900MHz_150731

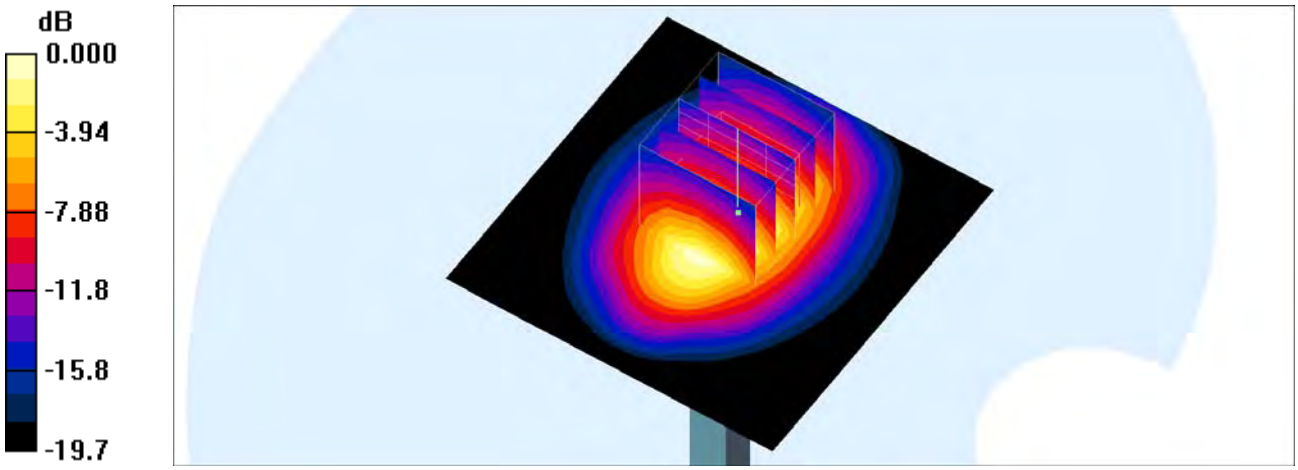
DUT: D1900V2-5d041

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150731 Medium parameters used: f = 1900 MHz; σ = 1.43 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.2 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(7.71, 7.71, 7.71); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.3 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 100.9 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 9.21 mW/g; SAR(10 g) = 4.94 mW/g
Maximum value of SAR (measured) = 13.4 mW/g



0 dB = 13.4mW/g

System Check_Body_1900MHz_150725

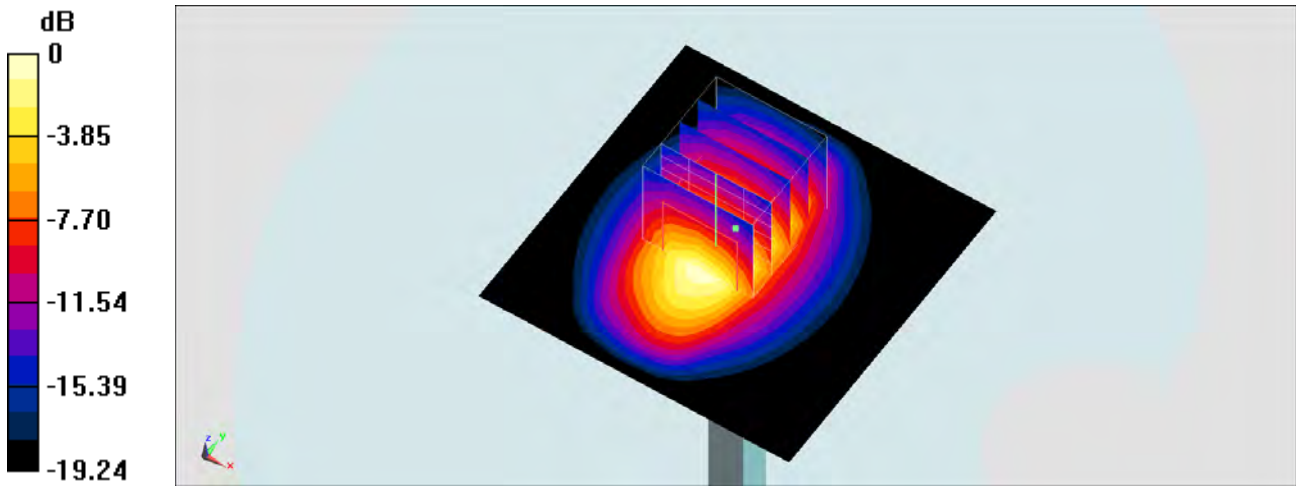
DUT: D1900V2-5d041

Communication System: CW ; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150725 Medium parameters used: f = 1900 MHz; σ = 1.544 S/m; ε_r = 52.32; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 15.1 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 93.72 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.7 W/kg; SAR(10 g) = 5.09 W/kg
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 dBW/kg

System Check_Body_1900MHz_150725

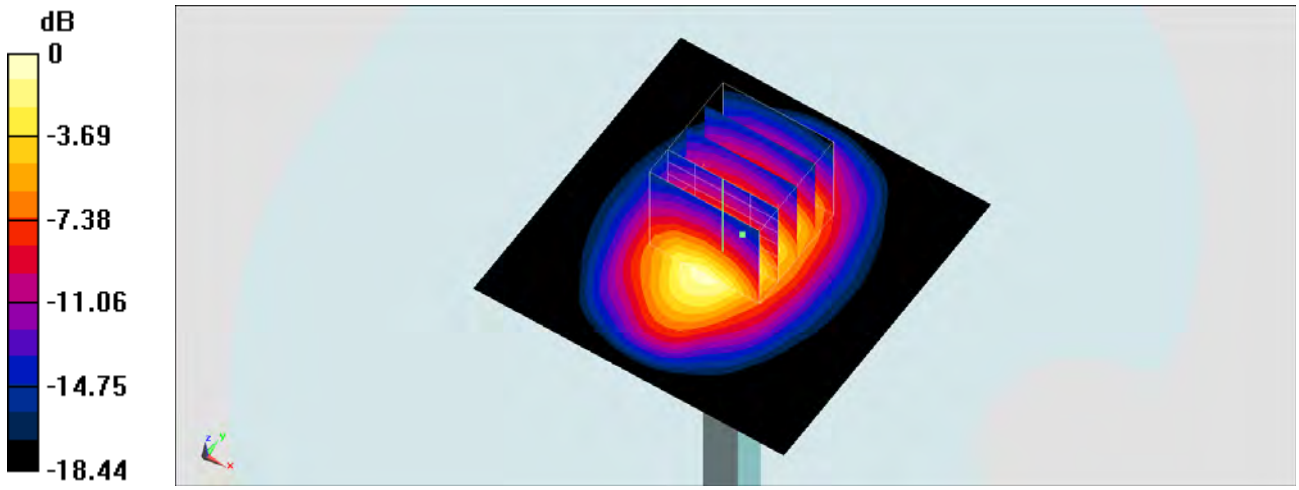
DUT: D1900V2-5d041

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150725 Medium parameters used: f = 1900 MHz; σ = 1.544 S/m; ε_r = 52.32; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: ES3DV3 - SN3270; ConvF(4.7, 4.7, 4.7); Calibrated: 2014/9/26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2014/8/21
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 12.9 W/kg

Configuration/Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 107.6 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.36 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 11.07 dBW/kg

System Check_Body_1900MHz_150731

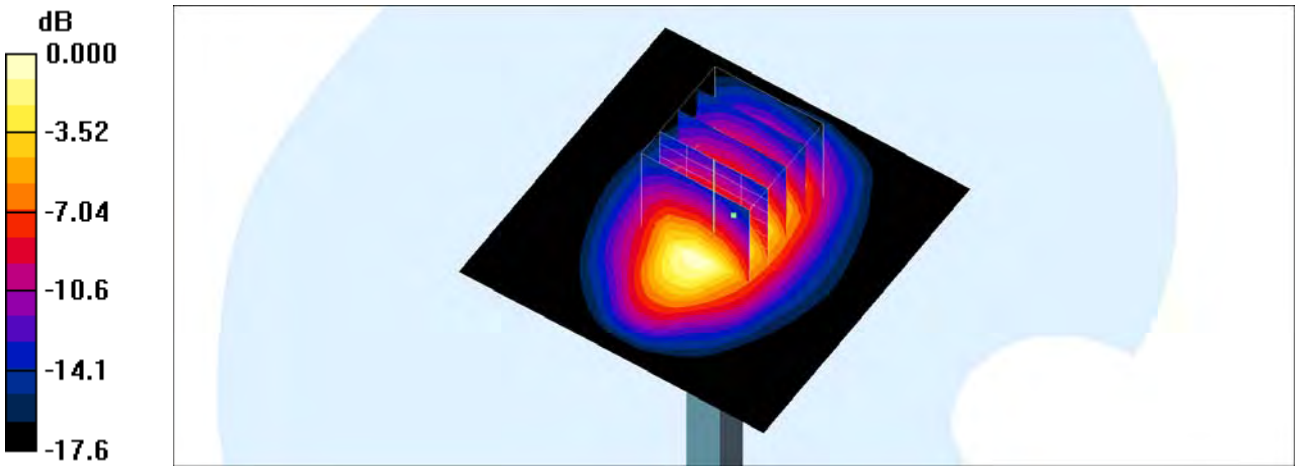
DUT: D1900V2-5d041

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150731 Medium parameters used: f = 1900 MHz; σ = 1.55 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.2 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.5 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 101.7 V/m; Power Drift = -0.123 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.77 mW/g; SAR(10 g) = 5.17 mW/g
Maximum value of SAR (measured) = 14.5 mW/g



0 dB = 14.5mW/g

System Check_Head_2450MHz_150731

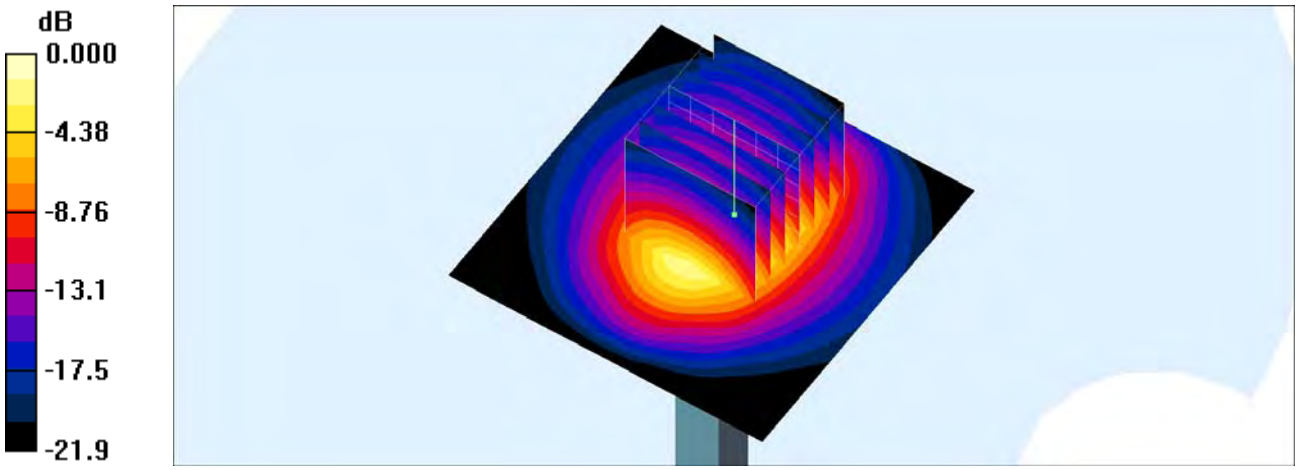
DUT: D2450V2-736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150731 Medium parameters used: f = 2450 MHz; σ = 1.86 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.3 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(6.92, 6.92, 6.92); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 22.3 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.9 V/m; Power Drift = -0.156 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.23 mW/g
Maximum value of SAR (measured) = 20.7 mW/g



0 dB = 20.7mW/g

System Check_Head_2450MHz_150808

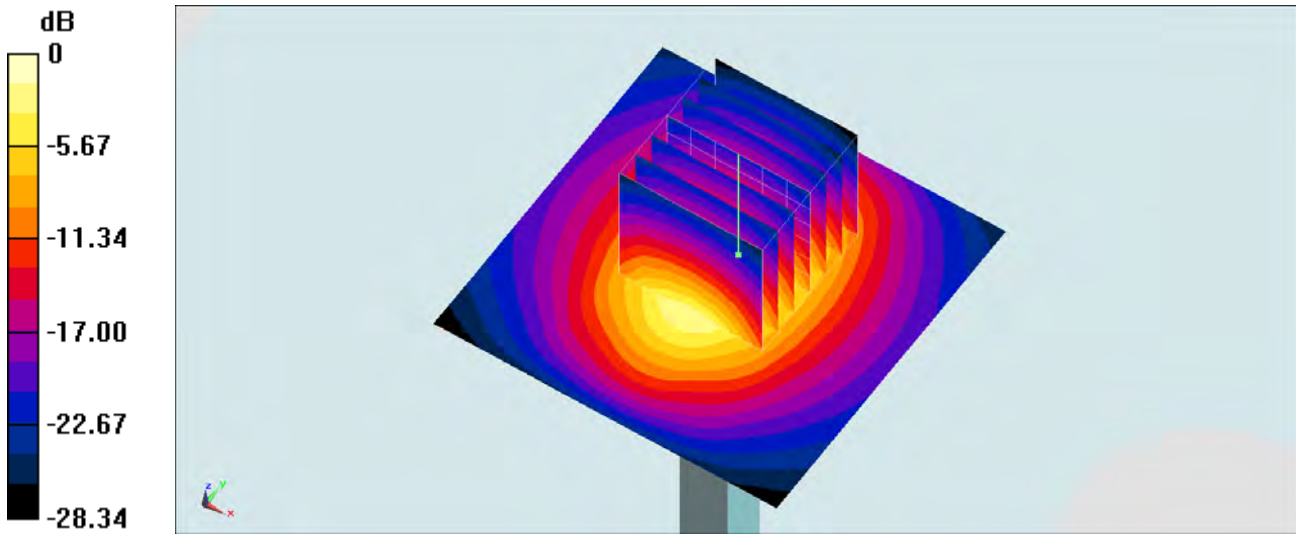
DUT: D2450V2-736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150808 Medium parameters used: f = 2450 MHz; σ = 1.844 S/m; ε_r = 40.245; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3925; ConvF(7.38, 7.38, 7.38); Calibrated: 2015/5/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2015/5/22
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.9 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 29.7 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.34 W/kg
Maximum value of SAR (measured) = 21.1 W/kg



0 dB = 22.9 W/kg = 13.60 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/30

System Check_Body_2450MHz_150730

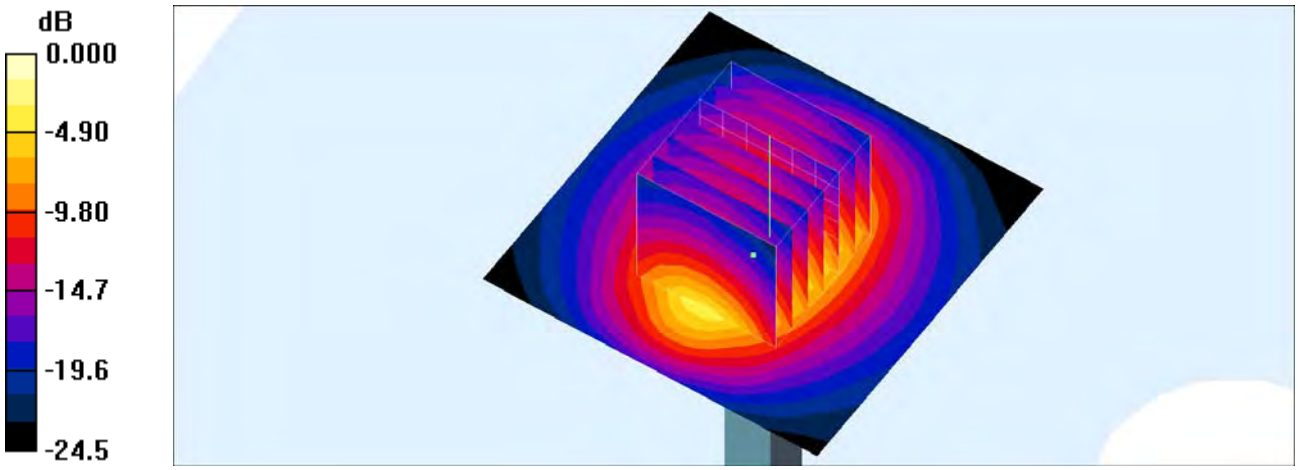
DUT: D2450V2-736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150730 Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(6.78, 6.78, 6.78); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 22.8 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.9 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 27.1 W/kg
SAR(1 g) = 13 mW/g; SAR(10 g) = 6.01 mW/g
Maximum value of SAR (measured) = 21.6 mW/g



0 dB = 21.6mW/g

System Check_Body_2450MHz_150808

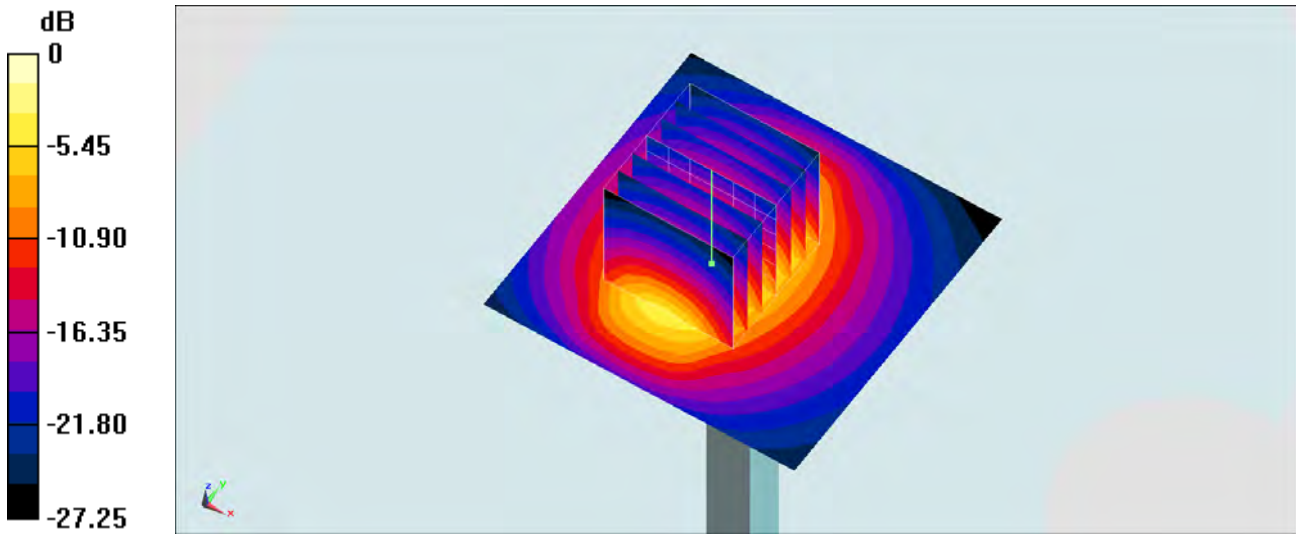
DUT: D2450V2-736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150808 Medium parameters used: f = 2450 MHz; σ = 1.931 S/m; ε_r = 53.584; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3925; ConvF(7.54, 7.54, 7.54); Calibrated: 2015/5/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2015/5/22
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 20.2 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.26 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 24.2 W/kg
SAR(1 g) = 11.7 W/kg; SAR(10 g) = 5.32 W/kg
Maximum value of SAR (measured) = 17.7 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/30

System Check_Head_2600MHz_150730

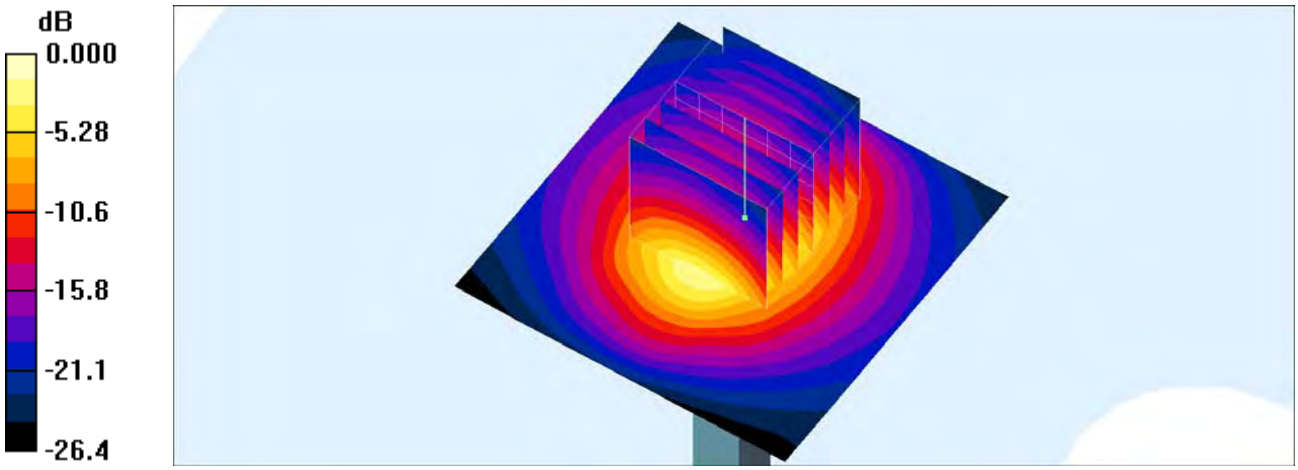
DUT: D2600V2-1008

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600_150730 Medium parameters used: f = 2600 MHz; σ = 1.94 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(6.71, 6.71, 6.71); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 26.0 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 106.4 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 5.98 mW/g
Maximum value of SAR (measured) = 24.0 mW/g



0 dB = 24.0mW/g

System Check_Body_2600MHz_150725

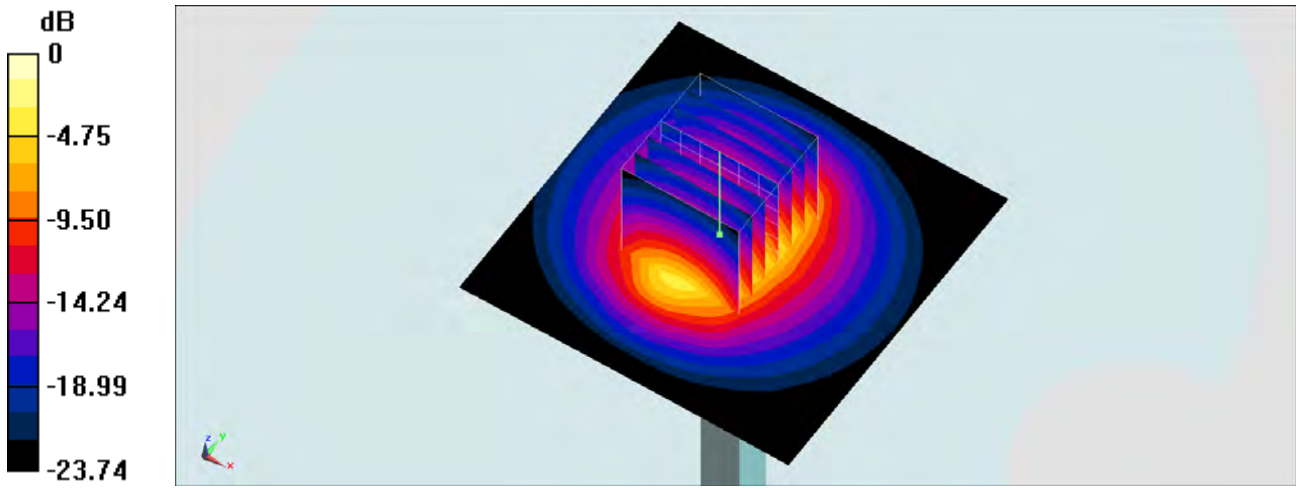
DUT: D2600V2-1008

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150725 Medium parameters used: f = 2600 MHz; σ = 2.209 S/m; ε_r = 51.123; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(6.63, 6.63, 6.63); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 26.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.3 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 33.4 W/kg
SAR(1 g) = 14.8 W/kg; SAR(10 g) = 6.65 W/kg
Maximum value of SAR (measured) = 26.1 W/kg



0 dB = 26.1 W/kg = 14.17 dBW/kg

System Check_Head_5200MHz_150807

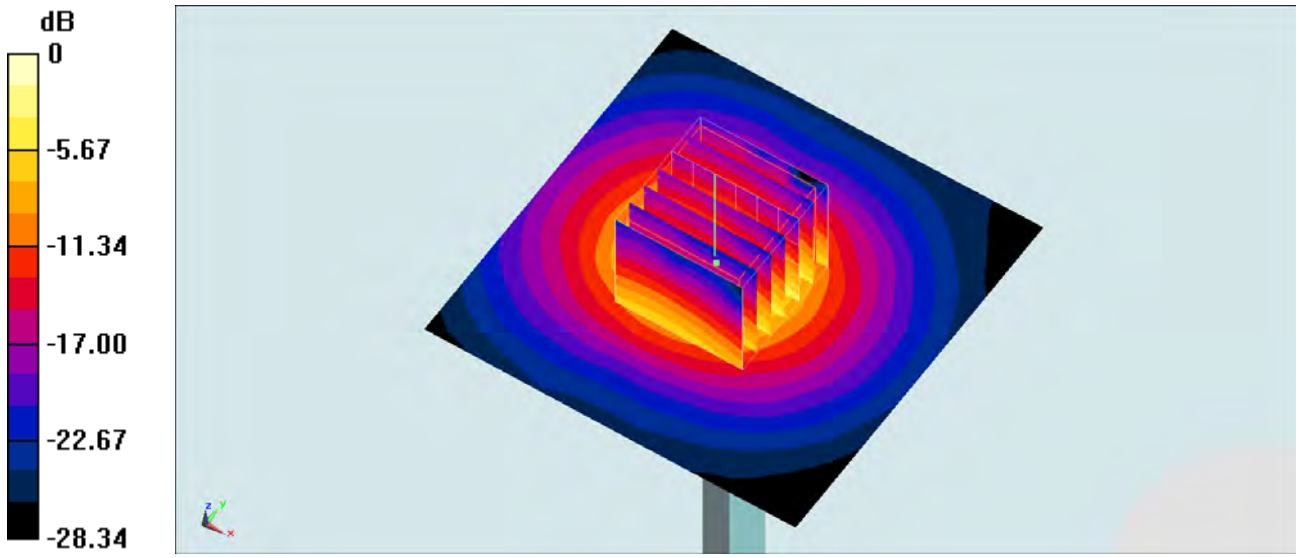
DUT: D5GHzV2-1040

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: HSL_5G_150807 Medium parameters used: f = 5200 MHz; σ = 4.812 S/m; ε_r = 35.445; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(5.16, 5.16, 5.16); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.2 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.73 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 31.2 W/kg
SAR(1 g) = 7.55 W/kg; SAR(10 g) = 2.12 W/kg
Maximum value of SAR (measured) = 18.4 W/kg



0 dB = 19.2 W/kg = 12.83 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/8/7

System Check_Body_5200MHz_150807

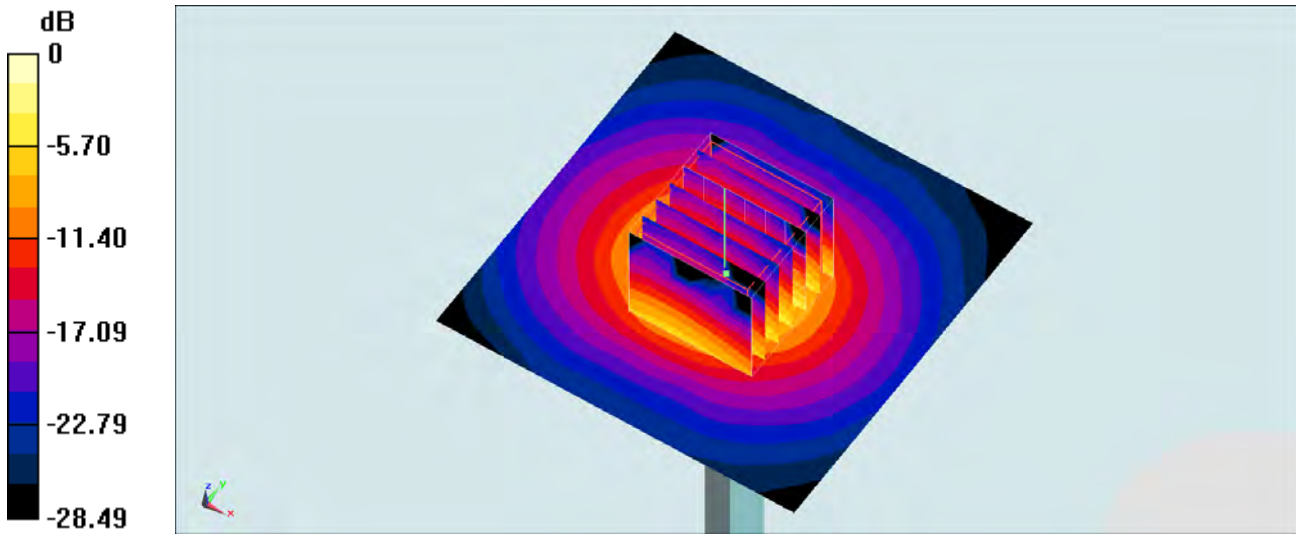
DUT: D5GHzV2-1040

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_150807 Medium parameters used: f = 5200 MHz; σ = 5.284 S/m; ε_r = 47.499; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(4.49, 4.49, 4.49); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.0 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 68.61 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 31.0 W/kg
SAR(1 g) = 7.42 W/kg; SAR(10 g) = 2 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.0 W/kg = 12.55 dBW/kg

System Check_Head_5800MHz_150807

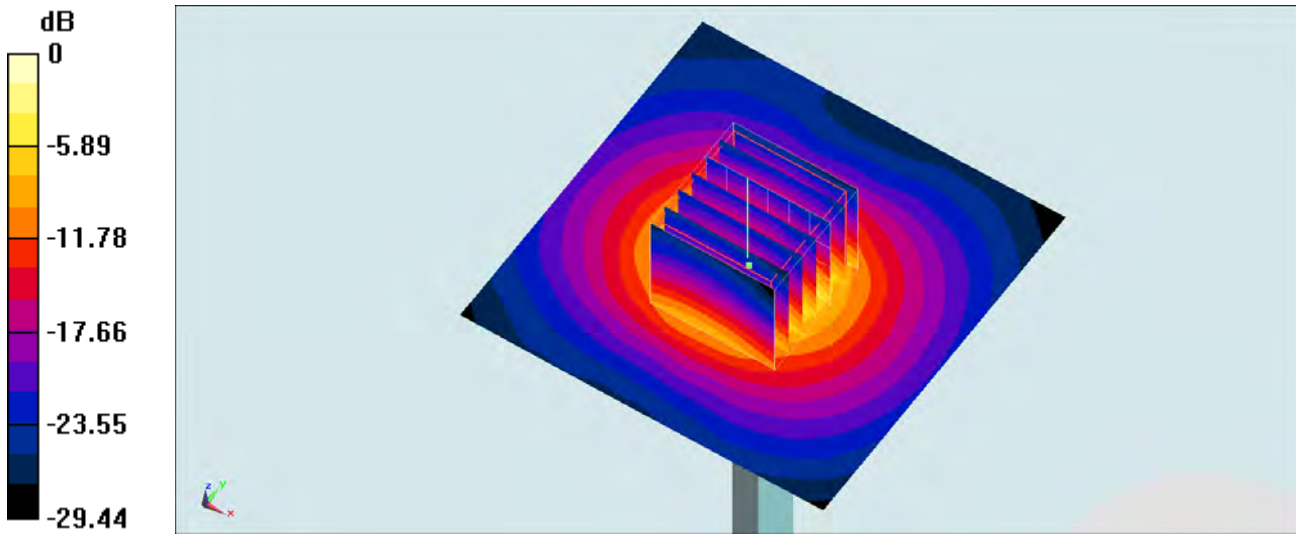
DUT: D5GHzV2-1040

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL_5G_150807 Medium parameters used: f = 5800 MHz; σ = 5.421 S/m; ε_r = 34.333; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(4.44, 4.44, 4.44); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.9 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 51.63 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 30.2 W/kg
SAR(1 g) = 7.91 W/kg; SAR(10 g) = 2.25 W/kg
Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 20.9 W/kg = 13.20 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/8/7

System Check_Body_5800MHz_150807

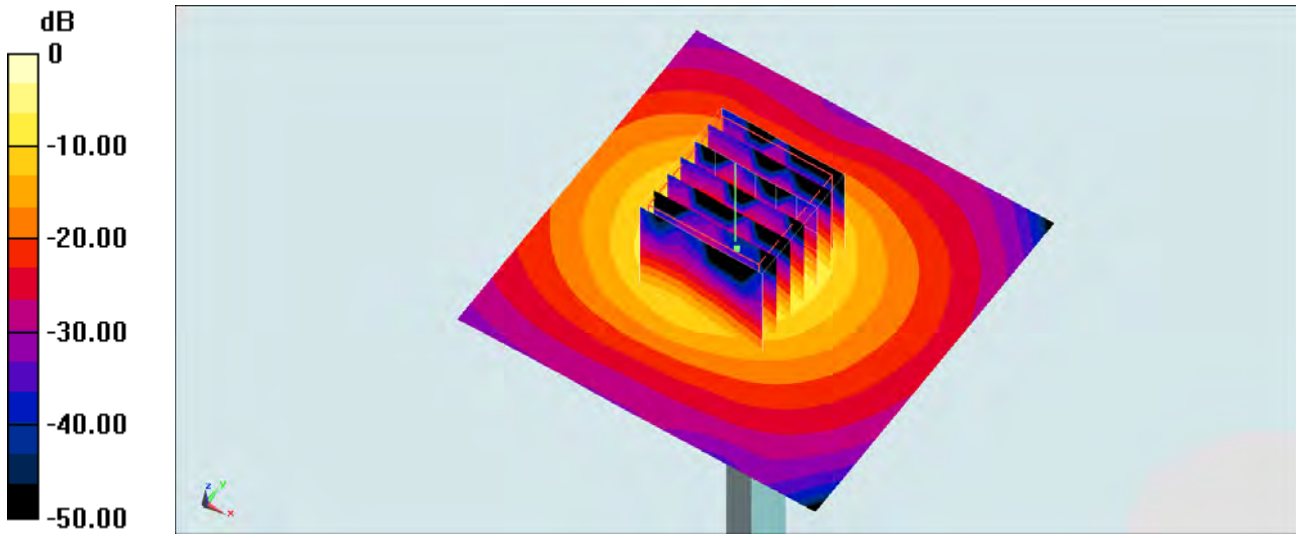
DUT: D5GHzV2-1040

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_150807 Medium parameters used: f = 5800 MHz; σ = 6.179 S/m; ε_r = 46.434; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(3.97, 3.97, 3.97); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.2 W/kg

Configuration/Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 51.55 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 34.8 W/kg
SAR(1 g) = 7.57 W/kg; SAR(10 g) = 2.03 W/kg
Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.2 W/kg = 13.05 dBW/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

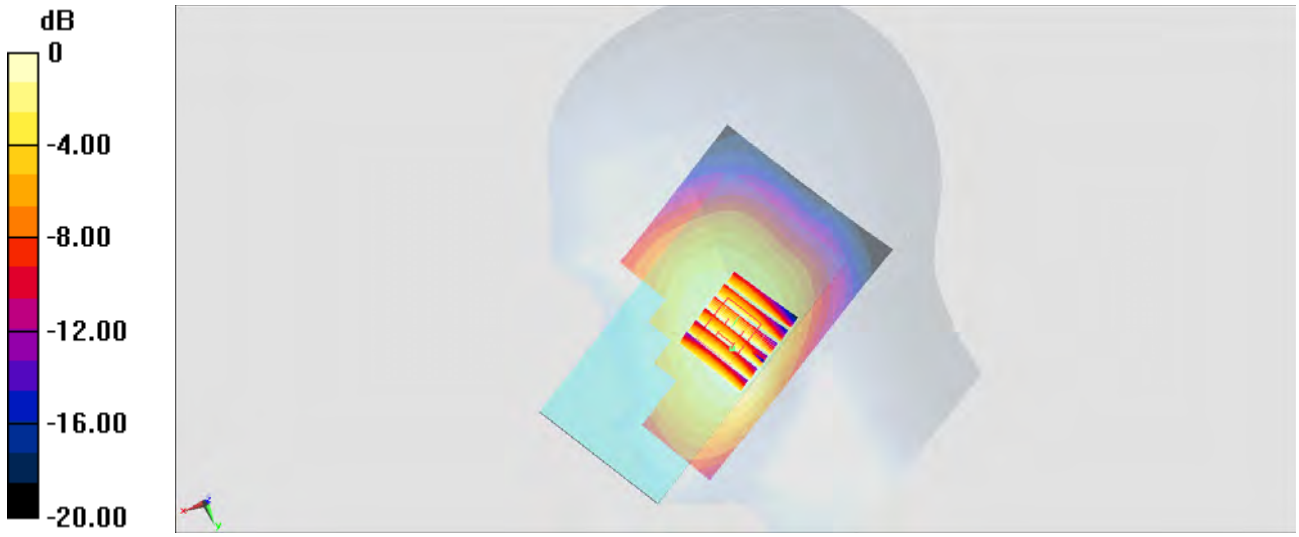
#01_GSM850_GPRS(4 Tx slots)_Right Cheek_Ch189

Communication System: GSM850 ; Frequency: 836.4 MHz;Duty Cycle: 1:2.08
Medium: HSL_850_150806 Medium parameters used : f = 836.4 MHz; σ = 0.907 S/m; ε_r = 42.95; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(10.36, 10.36, 10.36); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch189/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.597 W/kg

Configuration/Ch189/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.67 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.652 W/kg
SAR(1 g) = 0.506 W/kg; SAR(10 g) = 0.393 W/kg
Maximum value of SAR (measured) = 0.603 W/kg



0 dB = 0.597 W/kg = -2.24 dBW/kg

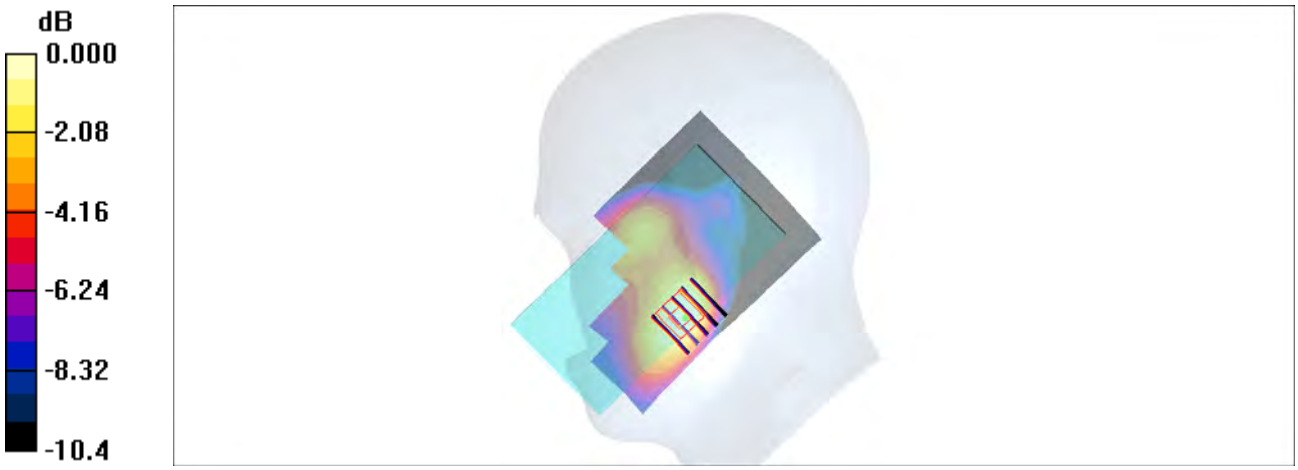
#02_GSM1900_GPRS(4 Tx slots)_Right Cheek_Ch810

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:2.08
Medium: HSL_1900_150731 Medium parameters used: f = 1909.8 MHz; σ = 1.44 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.2 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(7.71, 7.71, 7.71); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch810/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.214 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = 0.061 dB
Peak SAR (extrapolated) = 0.230 W/kg
SAR(1 g) = 0.156 mW/g; SAR(10 g) = 0.099 mW/g
Maximum value of SAR (measured) = 0.199 mW/g



0 dB = 0.199mW/g

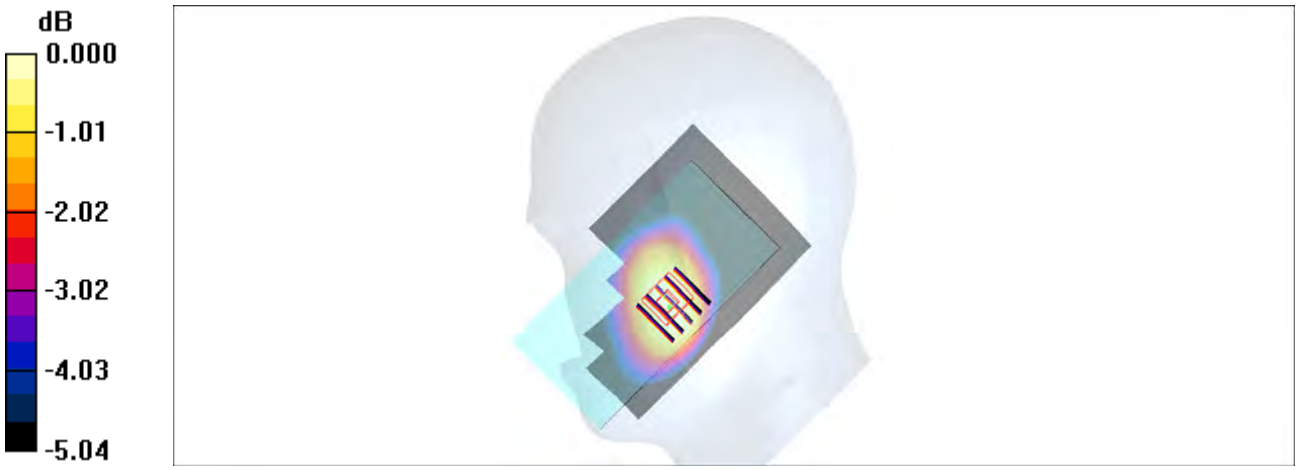
#03_WCDMA Band V_RMC 12.2Kbps_Right Cheek_Ch4132

Communication System: WCDMA; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: HSL_850_150729 Medium parameters used: f = 826.4 MHz; σ = 0.909 mho/m; ε_r = 41.3; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.33, 10.33, 10.33); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch4132/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.304 mW/g

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.0 V/m; Power Drift = 0.084 dB
Peak SAR (extrapolated) = 0.323 W/kg
SAR(1 g) = 0.265 mW/g; SAR(10 g) = 0.210 mW/g
Maximum value of SAR (measured) = 0.304 mW/g



0 dB = 0.304mW/g

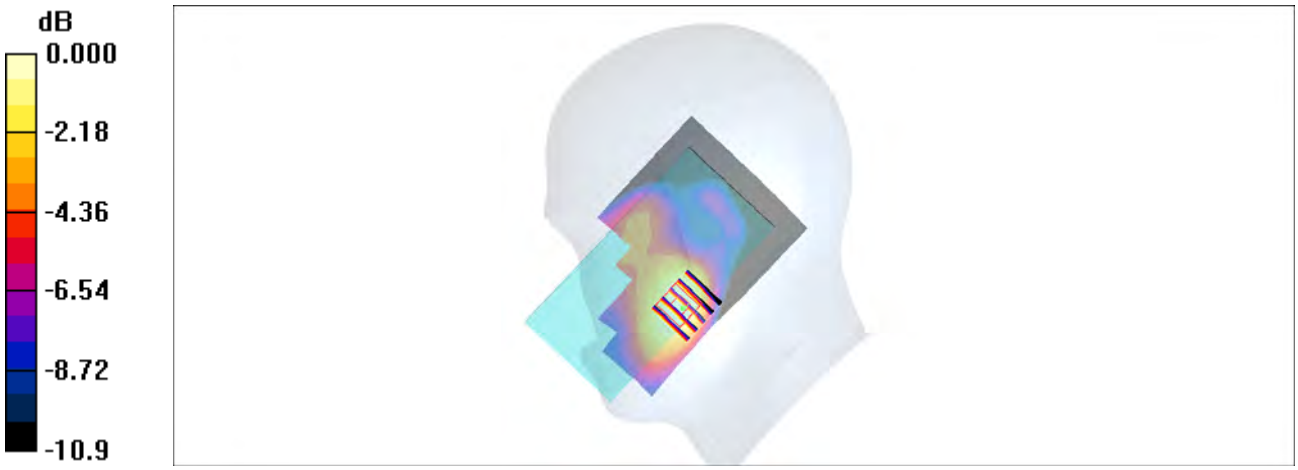
#04_WCDMA Band IV_RMC 12.2Kbps_Right Cheek_Ch1312

Communication System: WCDMA; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: HSL_1750_150728 Medium parameters used: f = 1712.4 MHz; σ = 1.34 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(8.35, 8.35, 8.35); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch1312/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.226 mW/g

Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.1 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 0.241 W/kg
SAR(1 g) = 0.167 mW/g; SAR(10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.212 mW/g



0 dB = 0.212mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/28

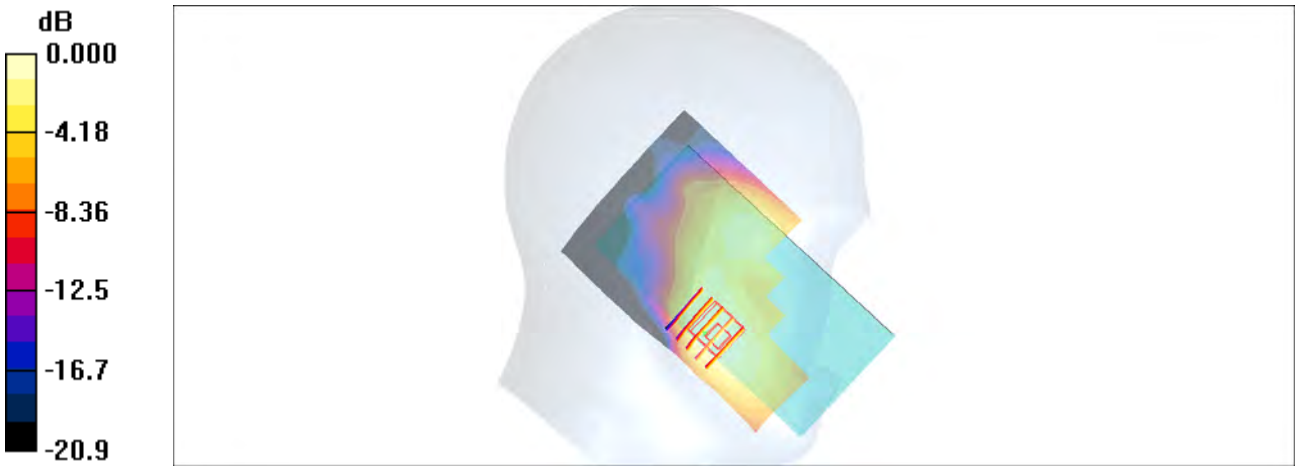
#05_WCDMA Band II_RMC 12.2Kbps_Left Cheek_Ch9400

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150728 Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(8.1, 8.1, 8.1); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch9400/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.225 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = 0.194 dB
Peak SAR (extrapolated) = 0.247 W/kg
SAR(1 g) = 0.162 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.218 mW/g



0 dB = 0.218mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015/7/29

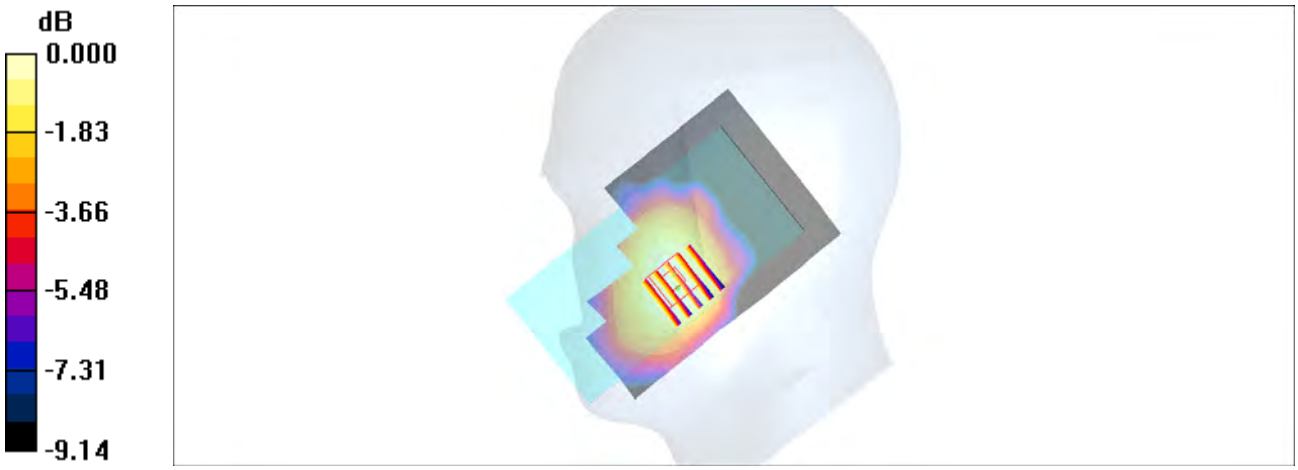
#06_LTE Band 12_10M_QPSK_1RB_0Offset_Right Cheek_Ch23095

Communication System: LTE; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750_150729 Medium parameters used: f = 707.5 MHz; σ = 0.855 mho/m; ε_r = 42.5; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.93, 10.93, 10.93); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch23095/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.020 mW/g

Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.01 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 0.021 W/kg
SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.020 mW/g



0 dB = 0.020mW/g

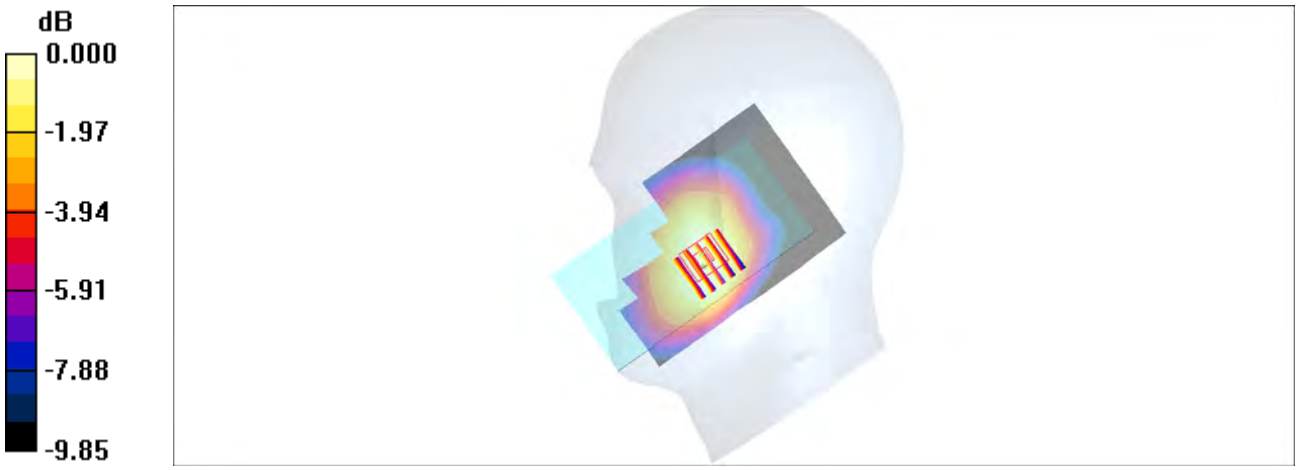
#07_LTE Band 5_10M_QPSK_1RB_0Offset_Right Cheek_Ch20600

Communication System: LTE; Frequency: 844 MHz;Duty Cycle: 1:1
Medium: HSL_850_150729 Medium parameters used: f = 844 MHz; σ = 0.924 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：22.5 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(10.33, 10.33, 10.33); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch20600/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.378 mW/g

Ch20600/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.1 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.409 W/kg
SAR(1 g) = 0.324 mW/g; SAR(10 g) = 0.249 mW/g
Maximum value of SAR (measured) = 0.384 mW/g



0 dB = 0.384mW/g

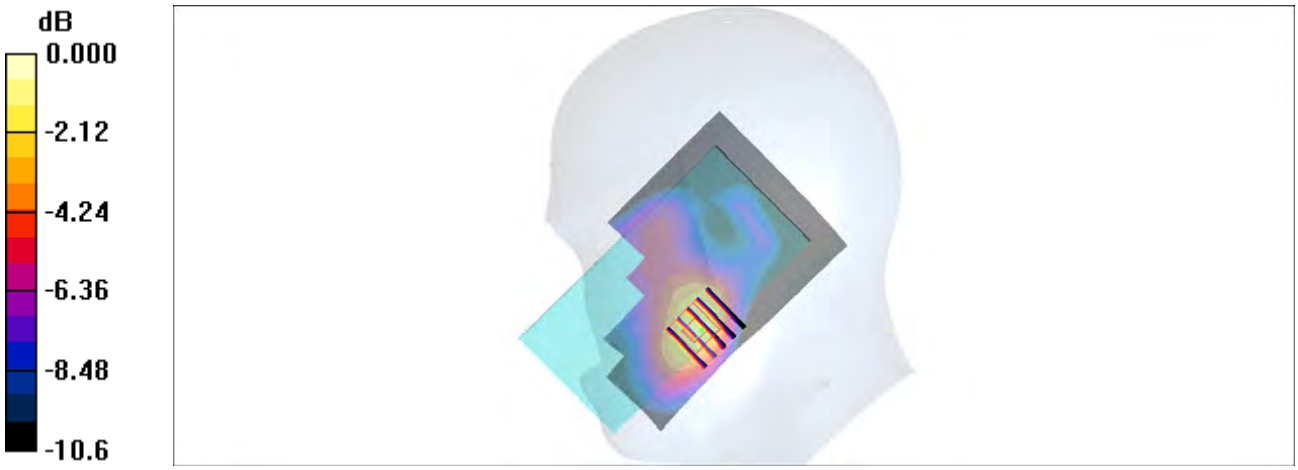
#08_LTE Band 4_20M_QPSK_1RB_49Offset_Right Cheek_Ch20175

Communication System: LTE; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: HSL_1750_150728 Medium parameters used: f = 1732.5 MHz; σ = 1.35 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(8.35, 8.35, 8.35); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch20175/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.141 mW/g

Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.28 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 0.239 W/kg
SAR(1 g) = 0.165 mW/g; SAR(10 g) = 0.108 mW/g
Maximum value of SAR (measured) = 0.212 mW/g



0 dB = 0.212mW/g

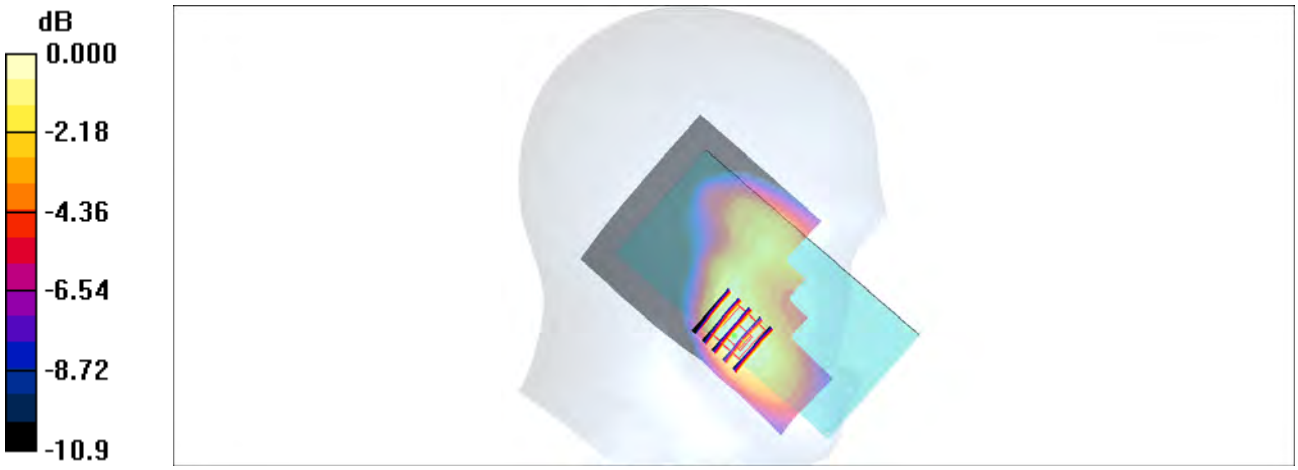
#09_LTE Band 2_20M_QPSK_1RB_0Offset_Left Cheek_Ch18900

Communication System: LTE; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150728 Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3954; ConvF(8.1, 8.1, 8.1); Calibrated: 2014/11/21
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch18900/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.216 mW/g

Ch18900/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.030 dB
Peak SAR (extrapolated) = 0.237 W/kg
SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.107 mW/g
Maximum value of SAR (measured) = 0.212 mW/g



0 dB = 0.212mW/g

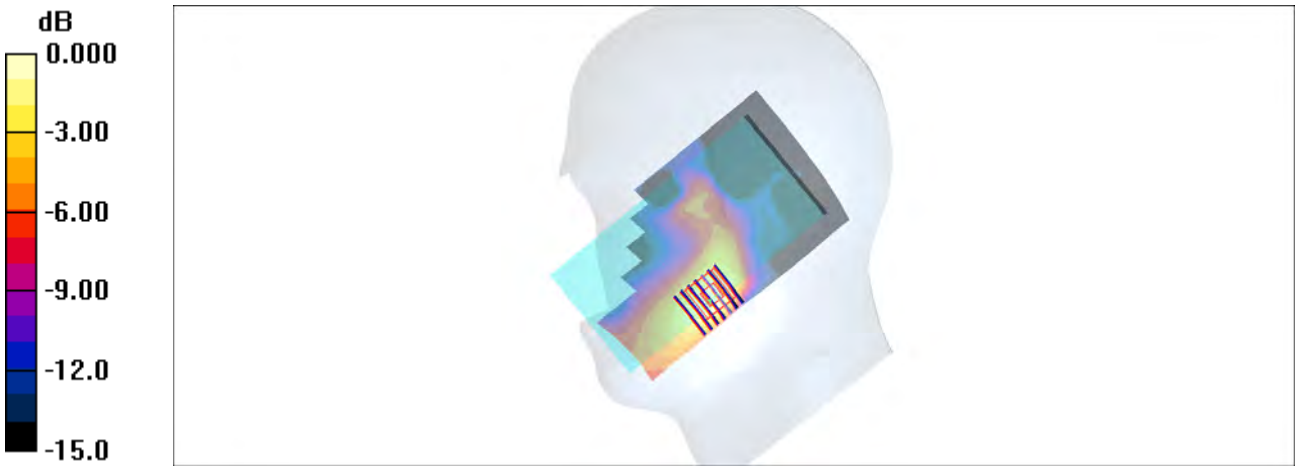
#10_LTE Band 7_20M_QPSK_1RB_0Offset_Right Cheek_Ch21350

Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium: HSL_2600_150730 Medium parameters used: f = 2560 MHz; σ = 1.88 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(6.71, 6.71, 6.71); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch21350/Area Scan (81x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.209 mW/g

Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.2 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 0.232 W/kg
SAR(1 g) = 0.129 mW/g; SAR(10 g) = 0.068 mW/g
Maximum value of SAR (measured) = 0.194 mW/g



0 dB = 0.194mW/g

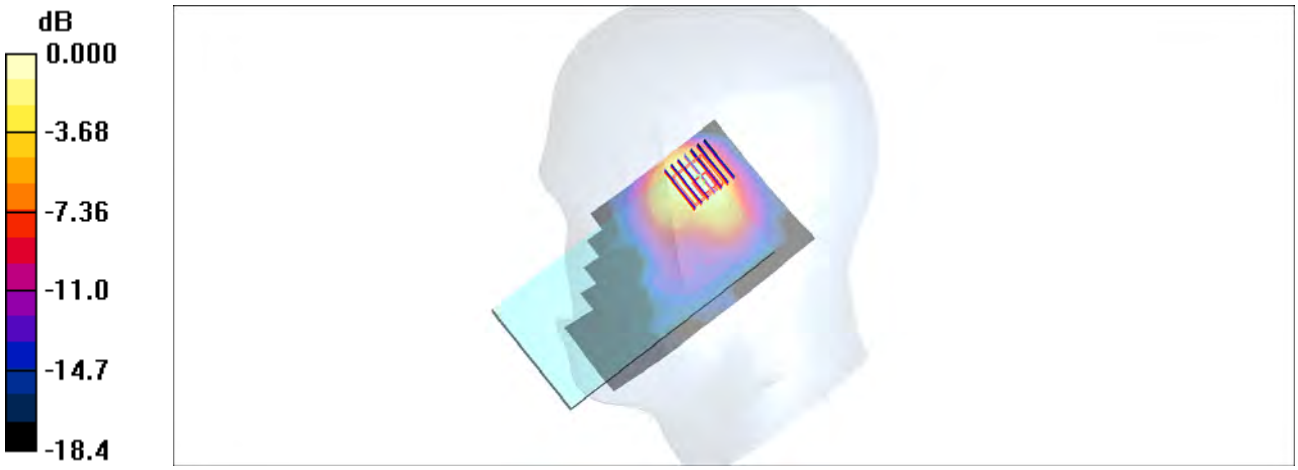
#11_WLAN 2.4GH_802.11b 1Mbps_Right Cheek_Ch1

Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1.024
Medium: HSL_2450_150731 Medium parameters used: f = 2412 MHz; σ = 1.81 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：22.3 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(6.92, 6.92, 6.92); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch1/Area Scan (81x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.548 mW/g

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 0.624 W/kg
SAR(1 g) = 0.290 mW/g; SAR(10 g) = 0.146 mW/g
Maximum value of SAR (measured) = 0.461 mW/g



0 dB = 0.461mW/g

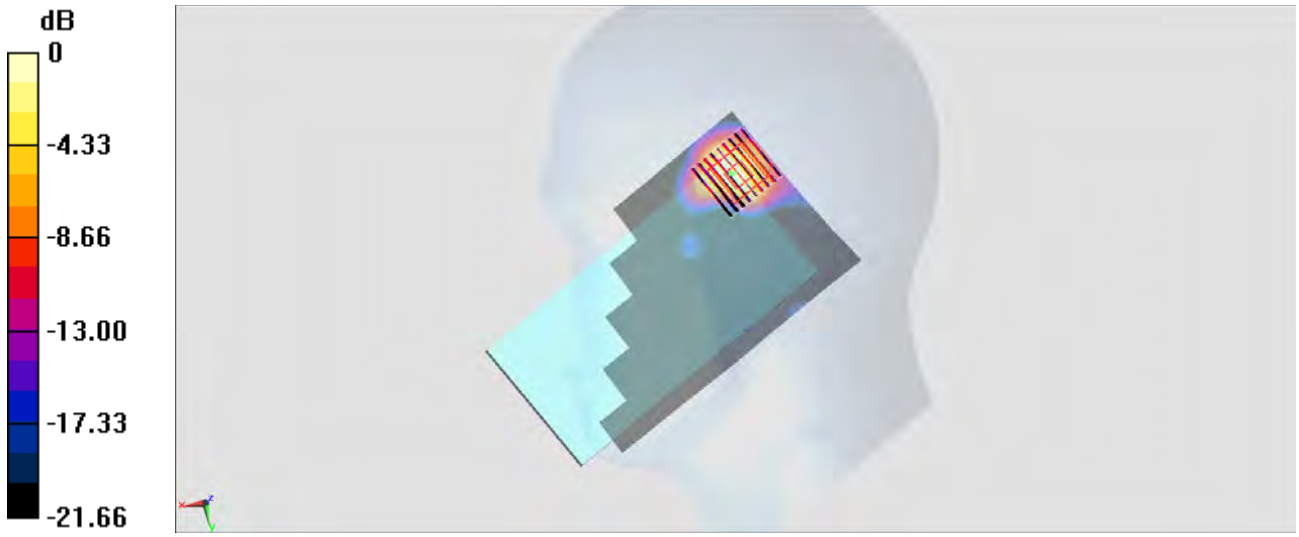
#12_WLAN 5.2GHz_802.11ac-VHT80 MCS0_Right Cheek_Ch42

Communication System: 802.11ac; Frequency: 5210 MHz;Duty Cycle: 1:1.164
Medium: HSL_5G_150807 Medium parameters used: f = 5210 MHz; σ = 4.824 S/m; ε_r = 35.432; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(5.16, 5.16, 5.16); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch42/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.374 W/kg

Configuration/Ch42/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 9.099 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.901 W/kg
SAR(1 g) = 0.211 W/kg; SAR(10 g) = 0.054 W/kg
Maximum value of SAR (measured) = 0.537 W/kg



0 dB = 0.374 W/kg = -4.27 dBW/kg

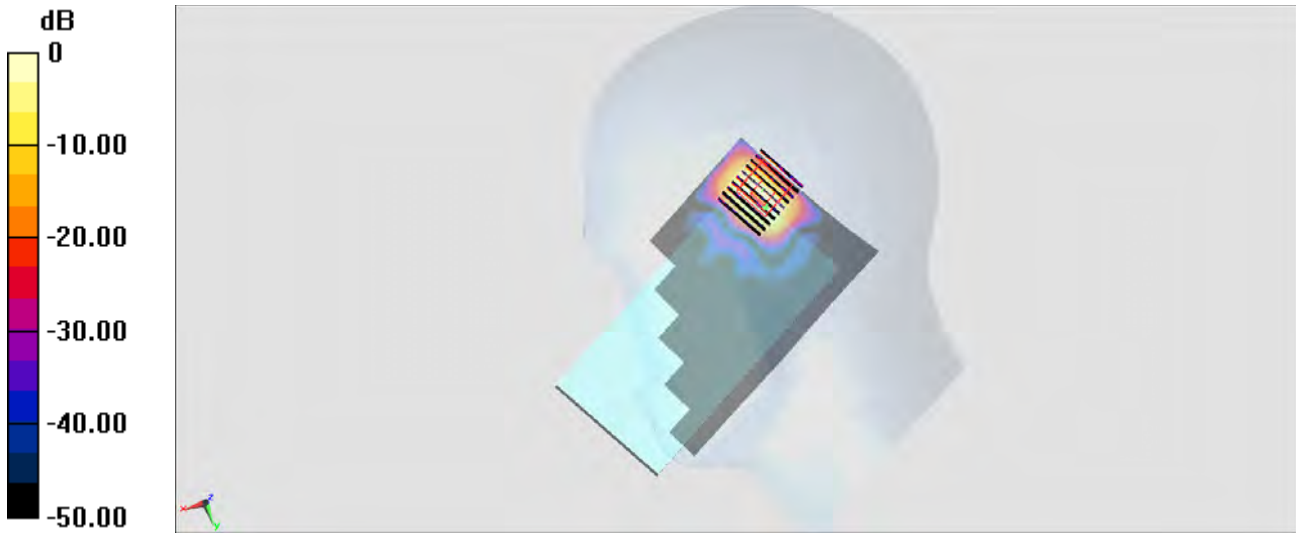
#13_WLAN 5.8GHz_802.11ac-VHT80 MCS0_Right Cheek_Ch155

Communication System: 802.11ac; Frequency: 5775 MHz;Duty Cycle: 1:1.164
Medium: HSL_5G_150807 Medium parameters used: f = 5775 MHz; σ = 5.405 S/m; ε_r = 34.403; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(4.44, 4.44, 4.44); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch155/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.0545 W/kg

Configuration/Ch155/Zoom Scan (10x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 3.008 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.452 W/kg
SAR(1 g) = 0.082 W/kg; SAR(10 g) = 0.017 W/kg
Maximum value of SAR (measured) = 0.259 W/kg



0 dB = 0.0545 W/kg = -12.64 dBW/kg

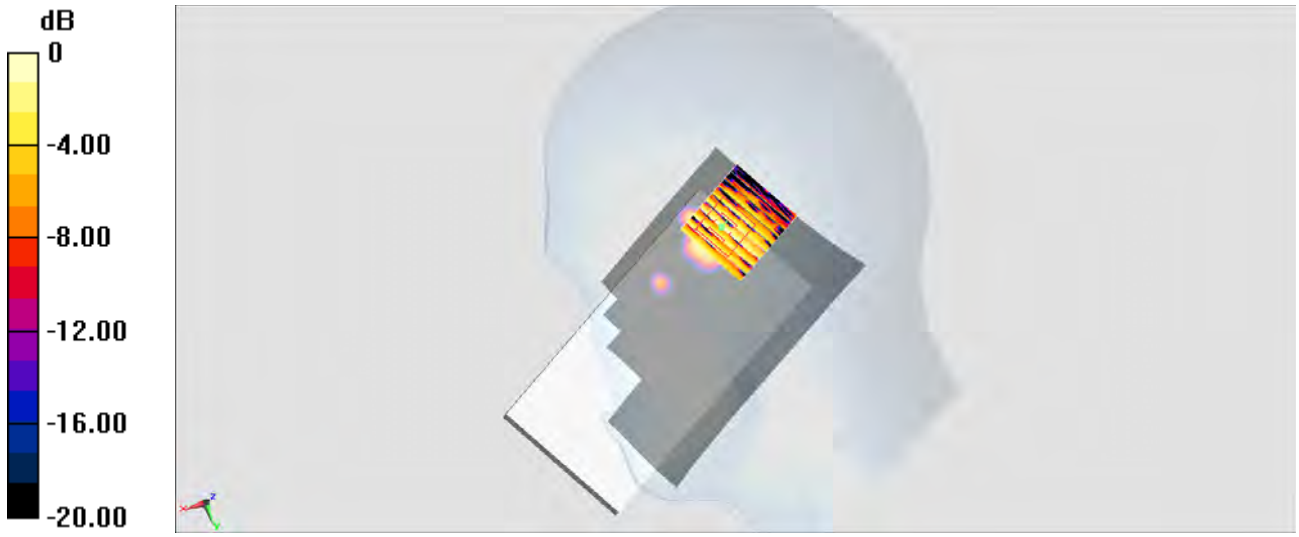
#14_Bluetooth v4.0 LE_GFSK_Right Cheek_Ch0

Communication System: Bluetooth ; Frequency: 2402 MHz;Duty Cycle: 1:1.2
Medium: HSL_2450_150808 Medium parameters used: f = 2402 MHz; σ = 1.794 S/m; ε_r = 40.394; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3925; ConvF(7.38, 7.38, 7.38); Calibrated: 2015/5/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2015/5/22
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch0/Area Scan (81x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.100 W/kg

Configuration/Ch0/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.462 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.0630 W/kg
SAR(1 g) = 0.030 W/kg; SAR(10 g) = 0.014 W/kg
Maximum value of SAR (measured) = 0.0498 W/kg



0 dB = 0.100 W/kg = -10.00 dBW/kg

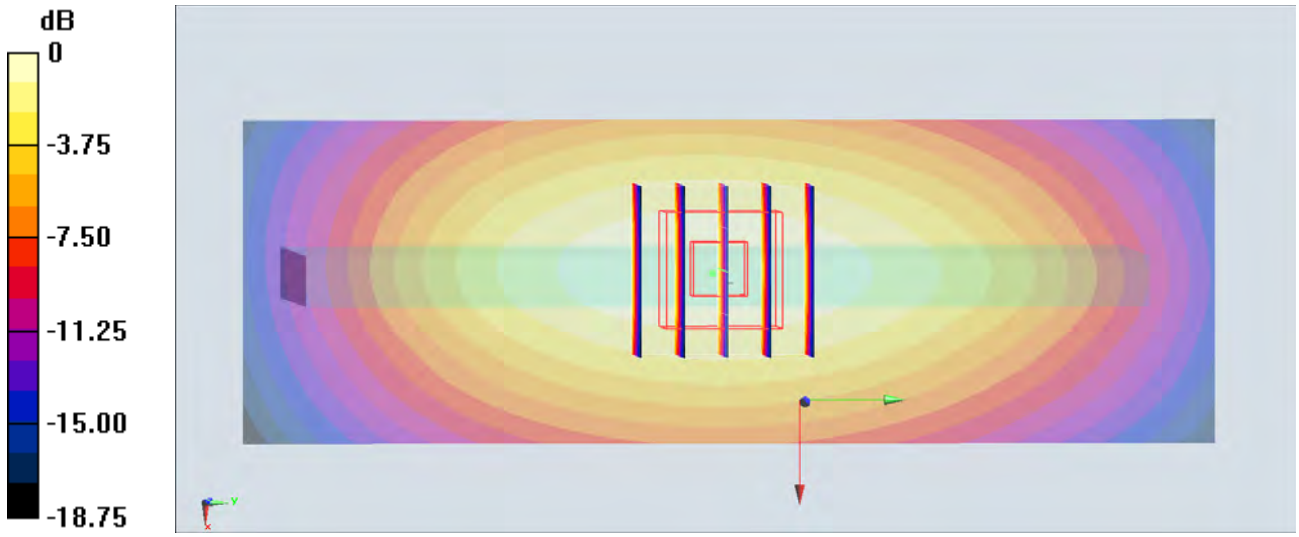
#15_GSM850_GPRS(4 Tx slots)_Right Side_10mm_Ch189

Communication System: GSM850; Frequency: 836.4 MHz;Duty Cycle: 1:2.08
Medium: MSL_850_150806 Medium parameters used: f = 836.4 MHz; σ = 0.977 S/m; ε_r = 52.888; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(10.19, 10.19, 10.19); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch189/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.970 W/kg

Configuration/Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.02 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.836 W/kg; SAR(10 g) = 0.559 W/kg
Maximum value of SAR (measured) = 1.15 W/kg



0 dB = 0.970 W/kg = -0.13 dBW/kg

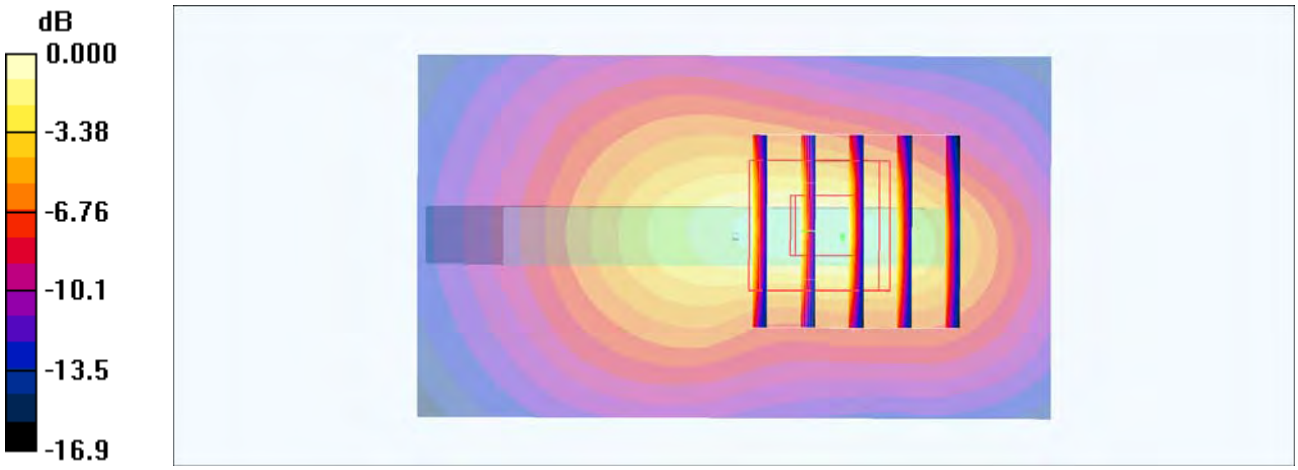
#16_GSM1900_GPRS(4 Tx slots)_Bottom Side_10mm_Ch810

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:2.08
Medium: MSL_1900_150731 Medium parameters used: f = 1909.8 MHz; σ = 1.56 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃； Liquid Temperature：22.2 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch810/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.45 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.7 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.967 mW/g; SAR(10 g) = 0.512 mW/g
Maximum value of SAR (measured) = 1.47 mW/g



0 dB = 1.47mW/g

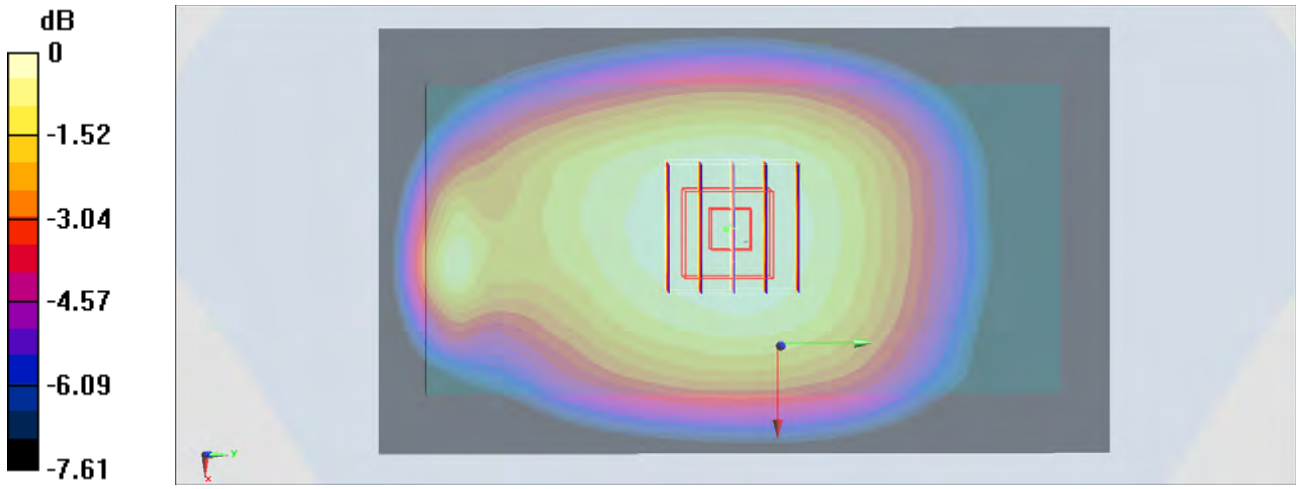
#17_WCDMA Ban V_RMC 12.2Kbps_Back_10mm_Ch4132

Communication System: WCDMA; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_850_150726 Medium parameters used : f = 826.4 MHz; σ = 0.986 S/m; ε_r = 56.062; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(8.75, 8.75, 8.75); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch4132/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.674 W/kg

Configuration/Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.32 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.730 W/kg
SAR(1 g) = 0.567 W/kg; SAR(10 g) = 0.440 W/kg
Maximum value of SAR (measured) = 0.672 W/kg



0 dB = 0.672 W/kg = -1.73 dBW/kg

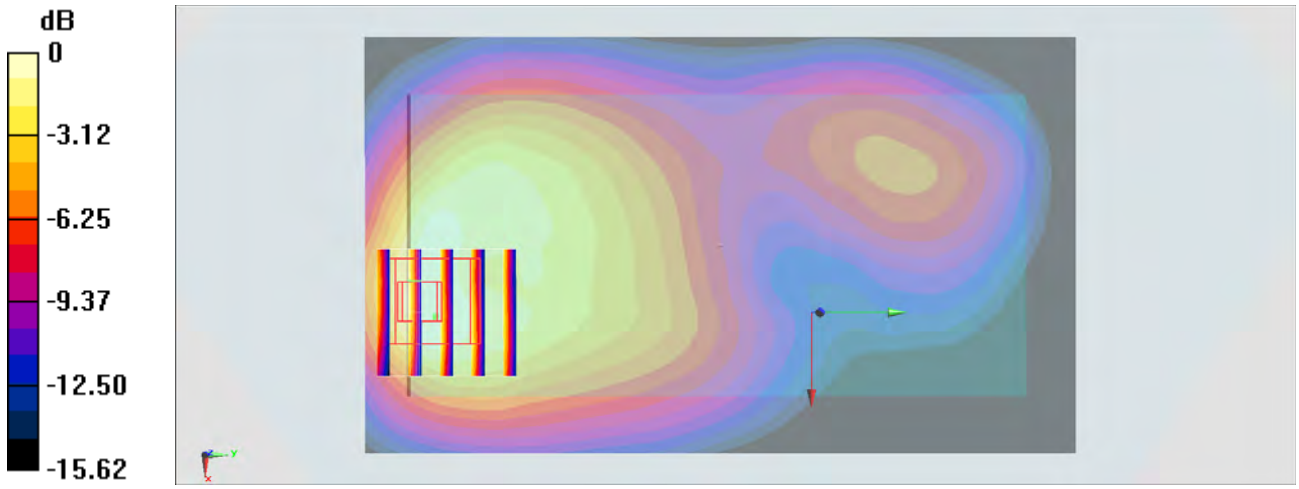
#18_WCDMA Band IV_RMC 12.2Kbps_Back_10mm_Ch1312

Communication System: WCDMA ; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150725 Medium parameters used : f = 1712.4 MHz; σ = 1.489 S/m; ε_r = 52.463; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(7.38, 7.38, 7.38); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch1312/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.22 W/kg

Configuration/Ch1312/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.34 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.789 W/kg; SAR(10 g) = 0.449 W/kg
Maximum value of SAR (measured) = 1.11 W/kg



0 dB = 1.11 W/kg = 0.45 dBW/kg

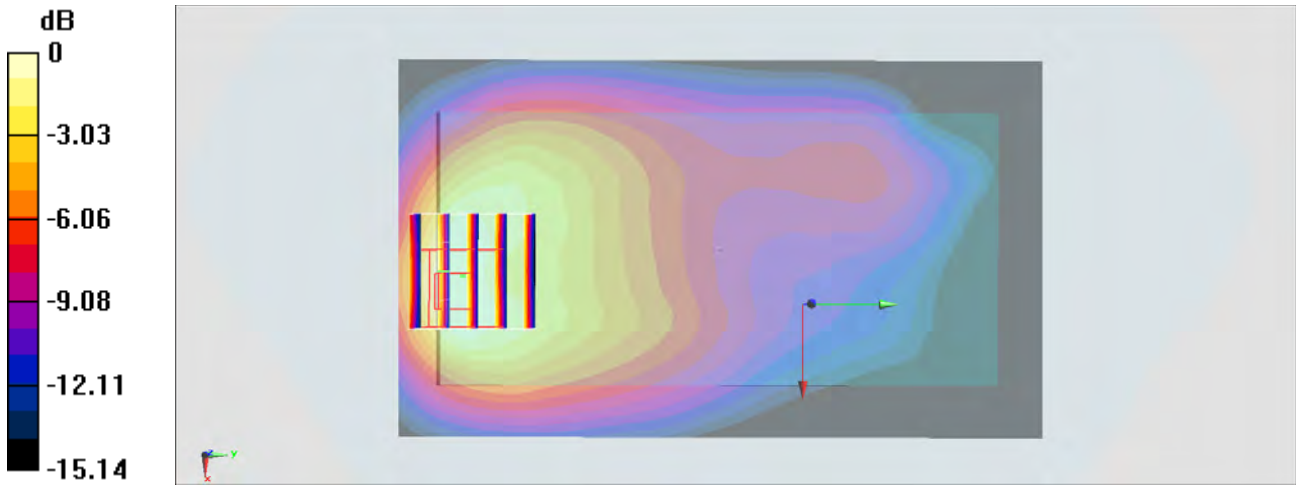
#19_WCDMA Band II_RMC 12.2Kbps_Back_10mm_Ch9400

Communication System: WCDMA ; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150725 Medium parameters used: f = 1880 MHz; σ = 1.521 S/m; ε_r = 52.419; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch9400/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.51 W/kg

Configuration/Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.58 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.951 W/kg; SAR(10 g) = 0.525 W/kg
Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

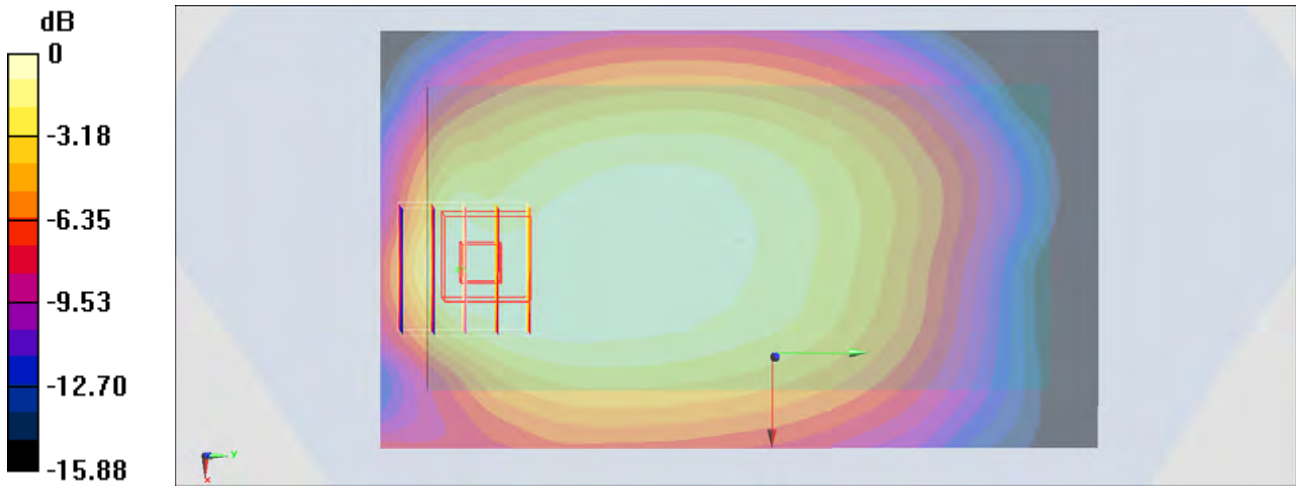
#20_LTE Band 12_10M_QPSK_1RB_0Offset_Back_10mm_Ch23095

Communication System: LTE; Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: MSL_750_150726 Medium parameters used : f = 707.5 MHz; σ = 0.929 S/m; ε_r = 58.27; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3931; ConvF(10.1, 10.1, 10.1); Calibrated: 2014/9/25;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2014/10/6
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch23095/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.0855 W/kg

Configuration/Ch23095/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.632 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.0930 W/kg
SAR(1 g) = 0.059 W/kg; SAR(10 g) = 0.041 W/kg
Maximum value of SAR (measured) = 0.0802 W/kg



0 dB = 0.0802 W/kg = -10.96 dBW/kg

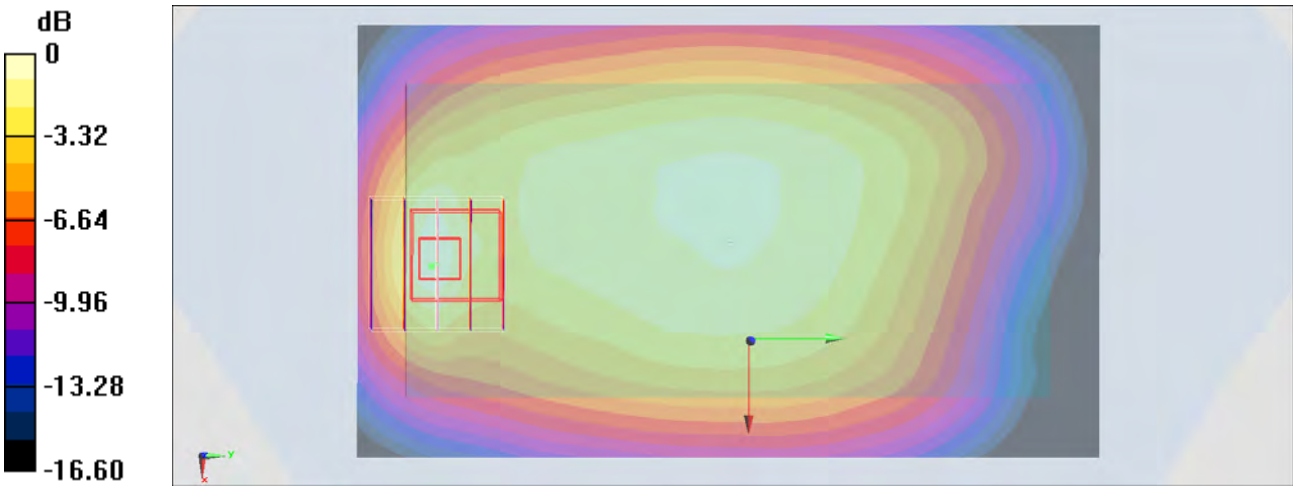
#21_LTE Band 5_10M_QPSK_1RB_0Offset_Back_10mm_Ch20525

Communication System: LTE ; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: MSL_850_150726 Medium parameters used : f = 836.5 MHz; σ = 0.996 S/m; ε_r = 56.005; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(8.75, 8.75, 8.75); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch20525/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.788 W/kg

Configuration/Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.84 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.530 W/kg; SAR(10 g) = 0.303 W/kg
Maximum value of SAR (measured) = 0.826 W/kg



0 dB = 0.826 W/kg = -0.83 dBW/kg

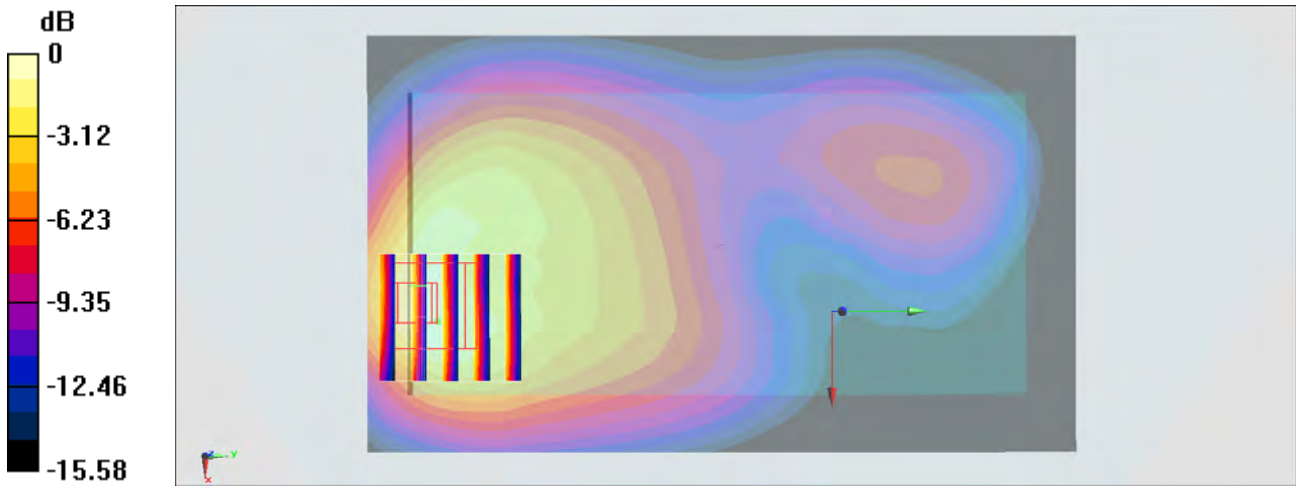
#22_LTE Band 4_20M_QPSK_1RB_49Offset_Back_10mm_Ch20175

Communication System: LTE ; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150725 Medium parameters used : f = 1732.5 MHz; σ = 1.51 S/m; ε_r = 52.377; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: ES3DV3 - SN3270; ConvF(4.95, 4.95, 4.95); Calibrated: 2014/9/26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2014/8/21
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch20175/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.991 W/kg

Configuration/Ch20175/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.34 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.685 W/kg; SAR(10 g) = 0.373 W/kg
Maximum value of SAR (measured) = 1.00 W/kg



0 dB = 1.00 W/kg = 0.00 dBW/kg

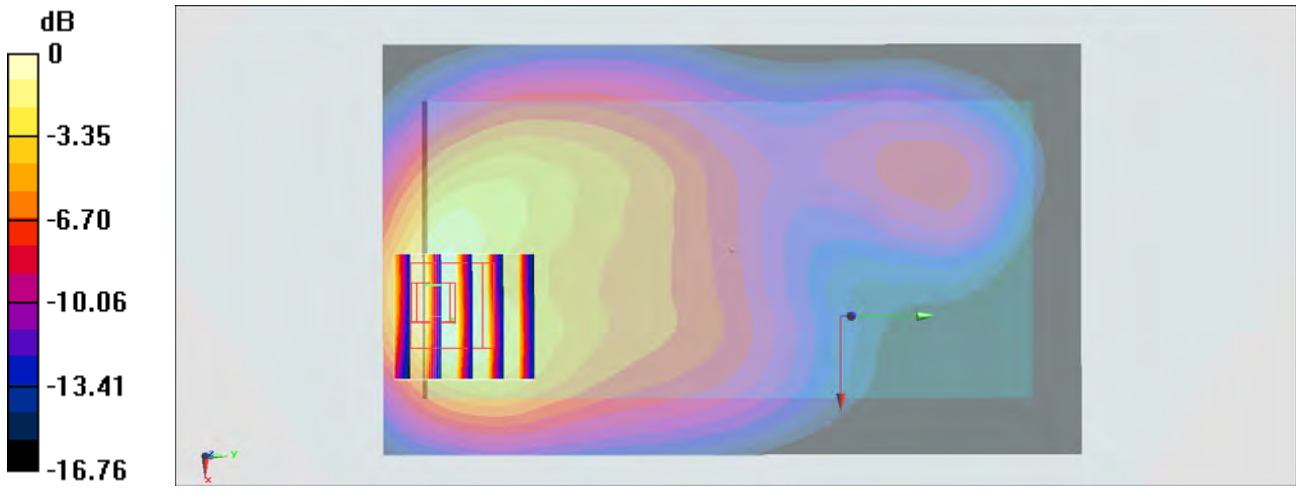
#23_LTE Band 2_20M_QPSK_1RB_0Offset_Back_10mm_Ch19100

Communication System: LTE ; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150725 Medium parameters used: f = 1900 MHz; σ = 1.544 S/m; ε_r = 52.32; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.4 ℃

DASY5 Configuration
- Probe: ES3DV3 - SN3270; ConvF(4.7, 4.7, 4.7); Calibrated: 2014/9/26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2014/8/21
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch19100/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.29 W/kg

Configuration/Ch19100/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.00 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 0.904 W/kg; SAR(10 g) = 0.482 W/kg
Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

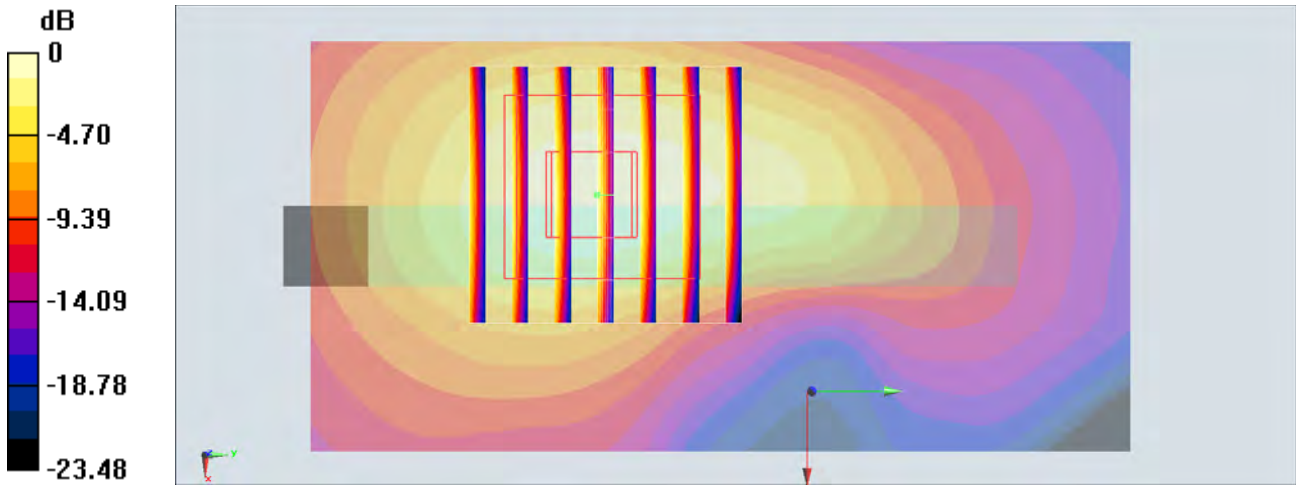
#24_LTE Band 7_20M_QPSK_1RB_0Offset_Bottom Side_10mm_Ch21350

Communication System: LTE ; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150725 Medium parameters used: f = 2560 MHz; σ = 2.156 S/m; ε_r = 51.082; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(6.63, 6.63, 6.63); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch21350/Area Scan (41x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.40 W/kg

Configuration/Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.60 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.903 W/kg; SAR(10 g) = 0.437 W/kg
Maximum value of SAR (measured) = 1.45 W/kg



0 dB = 1.45 W/kg = 1.61 dBW/kg

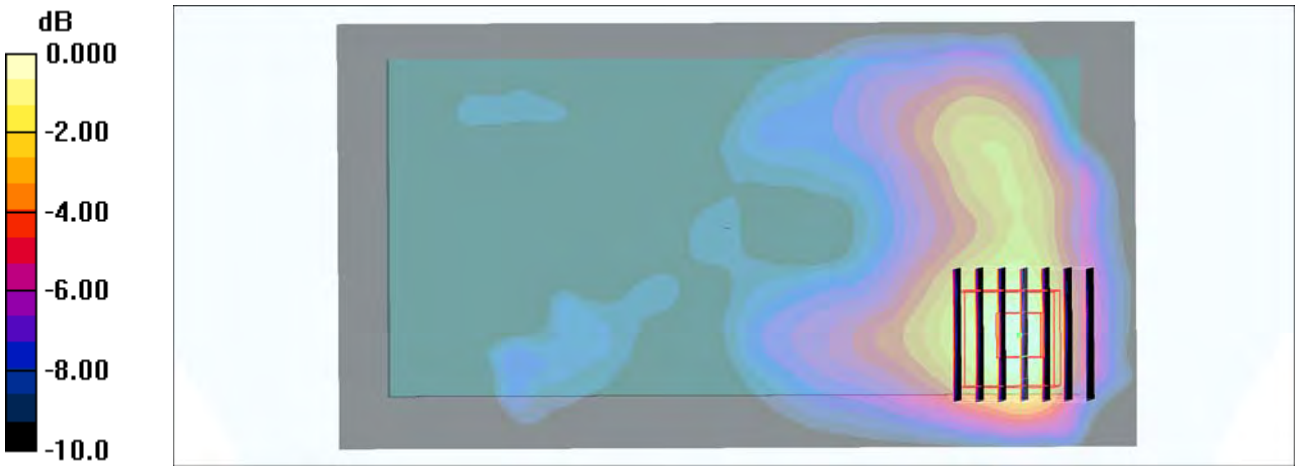
#25_WLAN 2.4GHz_802.11b 1Mbps_Back_10mm_Ch1

Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1.024
Medium: MSL_2450_150730 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.4 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(6.78, 6.78, 6.78); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch1/Area Scan (81x151x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.126 mW/g

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.16 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.144 W/kg
SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.040 mW/g
Maximum value of SAR (measured) = 0.120 mW/g



0 dB = 0.120mW/g

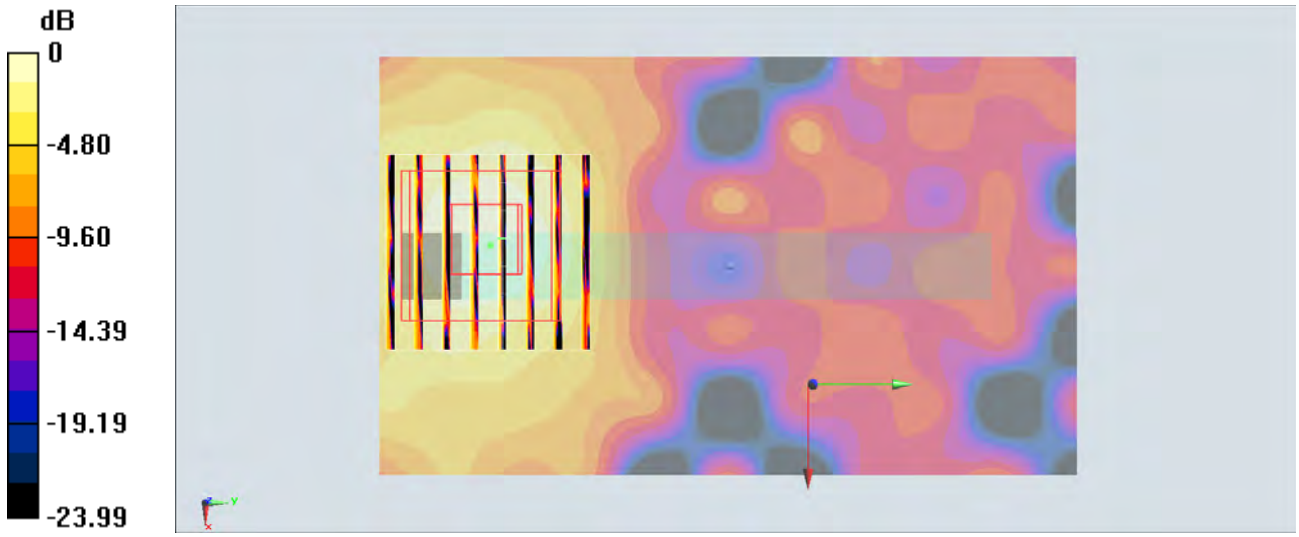
#26_WLAN 5.2GHz_802.11ac-VHT80 MCS0_Top Side_10mm_Ch42

Communication System: 802.11ac; Frequency: 5210 MHz;Duty Cycle: 1:1.164
Medium: MSL_5G_150807 Medium parameters used: f = 5210 MHz; σ = 5.29 S/m; ε_r = 47.467; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(4.49, 4.49, 4.49); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch42/Area Scan (61x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.115 W/kg

Configuration/Ch42/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 4.782 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.183 W/kg
SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.016 W/kg
Maximum value of SAR (measured) = 0.113 W/kg



0 dB = 0.115 W/kg = -9.39 dBW/kg

#27_WLAN 5.8GHz_802.11ac-VHT80 MCS0_Front_10mm_Ch155

Communication System: 802.11ac; Frequency: 5775 MHz;Duty Cycle: 1:1.164
Medium: MSL_5G_150807 Medium parameters used: f = 5775 MHz; σ = 6.156 S/m; ε_r = 46.541; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(3.97, 3.97, 3.97); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch155/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.0618 W/kg

Configuration/Ch155/Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 3.393 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.352 W/kg
SAR(1 g) = 0.023 W/kg; SAR(10 g) = 0.00675 W/kg
Maximum value of SAR (measured) = 0.0592 W/kg

0 dB = 0.0618 W/kg = -12.09 dBW/kg

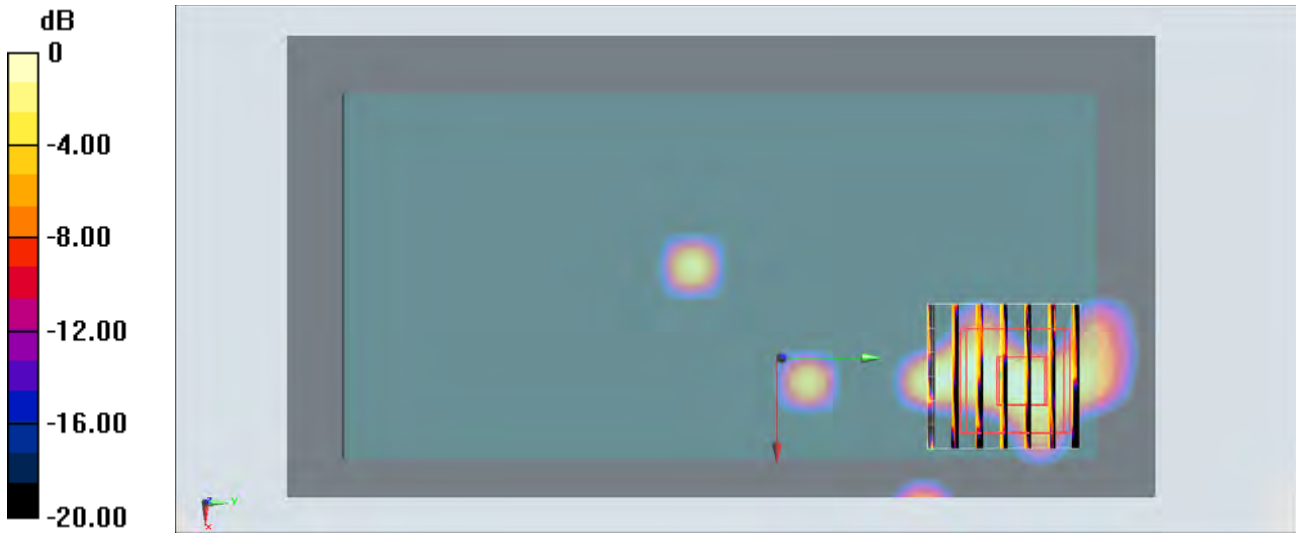
#28_Bluetooth v4.0 LE_GFSK_Back_10mm_Ch0

Communication System: Bluetooth ; Frequency: 2402 MHz;Duty Cycle: 1:1.2
Medium: MSL_2450_150808 Medium parameters used: f = 2402 MHz; σ = 1.869 S/m; ε_r = 53.702; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3925; ConvF(7.54, 7.54, 7.54); Calibrated: 2015/5/27;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2015/5/22
- Phantom: SAM_RIGHT; Type: QD000P40CD; Serial: 1719
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch0/Area Scan (81x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0168 W/kg

Configuration/Ch0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.142 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.0250 W/kg
SAR(1 g) = 0.005 W/kg; SAR(10 g) = 0.00165 W/kg
Maximum value of SAR (measured) = 0.0149 W/kg



0 dB = 0.0168 W/kg = -17.75 dBW/kg

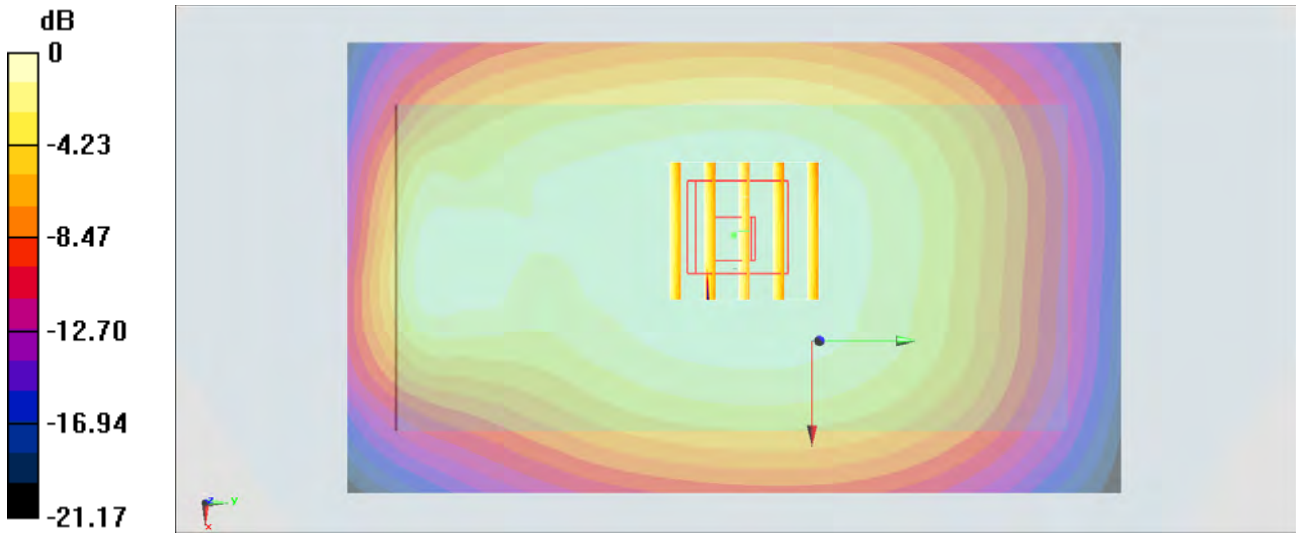
#29_GSM850_GPRS(4 Tx slots)_Back_10mm_Ch189

Communication System: GSM850 ; Frequency: 836.4 MHz;Duty Cycle: 1:2.08
Medium: MSL_850_150806 Medium parameters used : f = 836.4 MHz; σ = 0.977 S/m; ε_r = 52.888; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(10.19, 10.19, 10.19); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch189/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.855 W/kg

Configuration/Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.16 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.954 W/kg
SAR(1 g) = 0.737 W/kg; SAR(10 g) = 0.561 W/kg
Maximum value of SAR (measured) = 0.877 W/kg



0 dB = 0.855 W/kg = -0.68 dBW/kg

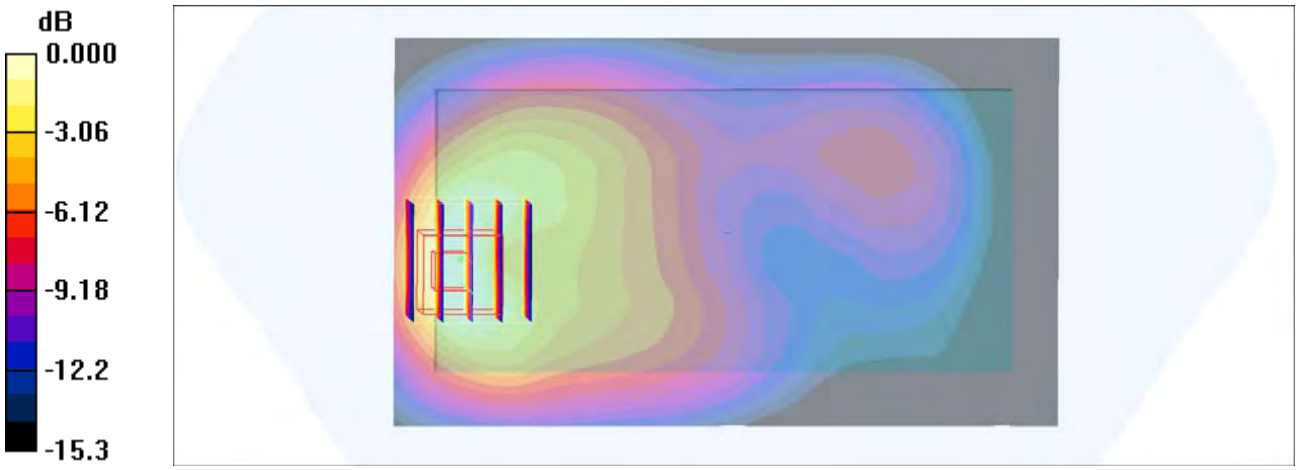
#30_GSM1900_GPRS(4 Tx slots)_Back_10mm_Ch810

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:2.08
Medium: MSL_1900_150731 Medium parameters used: f = 1909.8 MHz; σ = 1.56 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.2 ℃

DASY4 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(7.06, 7.06, 7.06); Calibrated: 2014/9/29
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn916; Calibrated: 2014/12/29
- Phantom: SAM_Right; Type: SAM; Serial: TP-1303
- ;Postprocessing SW: SEMCAD, V1.8 Build 159

Ch810/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.37 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.7 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.467 mW/g
Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

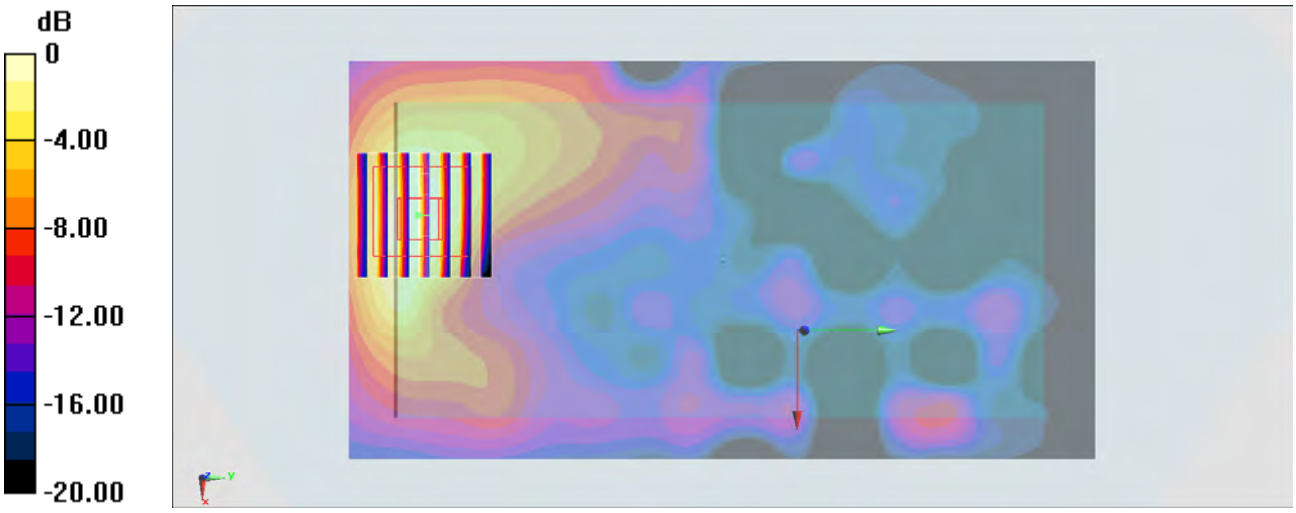
#31_LTE Band 7_20M_QPSK_1RB_0Offset_Back_10mm_Ch21350

Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150725 Medium parameters used: f = 2560 MHz; σ = 2.156 S/m; ε_r = 51.082; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3697; ConvF(6.63, 6.63, 6.63); Calibrated: 2014/9/29;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1388; Calibrated: 2014/9/24
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch21350/Area Scan (81x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.35 W/kg

Configuration/Ch21350/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.44 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.878 W/kg; SAR(10 g) = 0.420 W/kg
Maximum value of SAR (measured) = 1.42 W/kg



0 dB = 1.35 W/kg = 1.30 dBW/kg

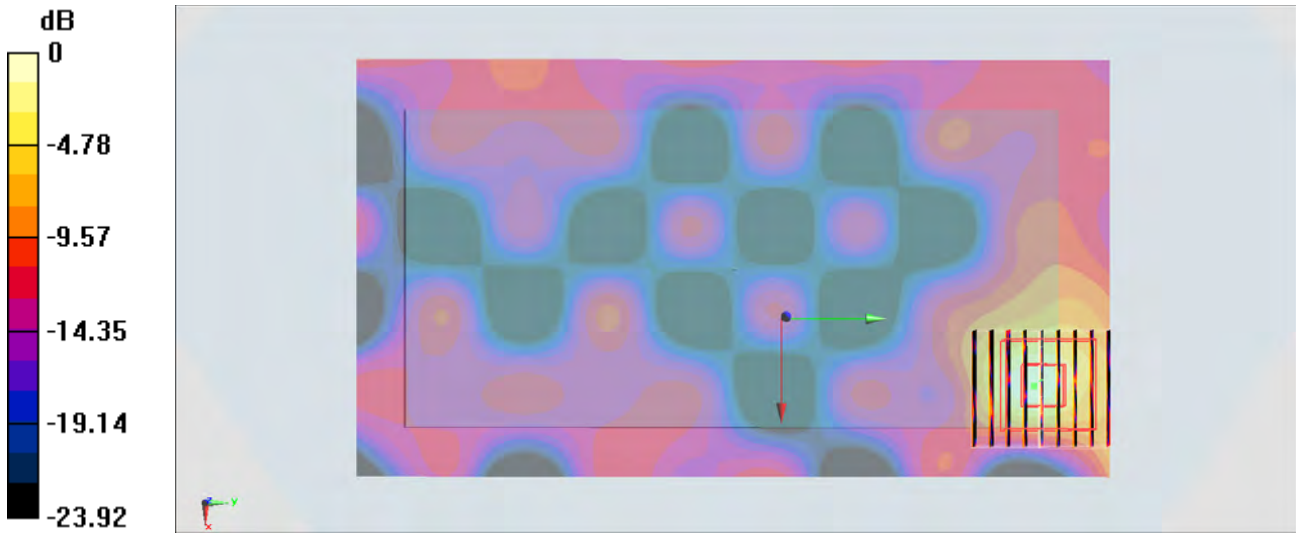
#32_WLAN 5.2GHz_802.11ac-VHT80 MCS0_Back_10mm_Ch42

Communication System: 802.11ac; Frequency: 5210 MHz;Duty Cycle: 1:1.164
Medium: MSL_5G_150807 Medium parameters used: f = 5210 MHz; σ = 5.29 S/m; ε_r = 47.467; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.3 ℃

DASY5 Configuration
- Probe: EX3DV4 - SN3935; ConvF(4.49, 4.49, 4.49); Calibrated: 2014/11/18;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2014/11/14
- Phantom: SAM LEFT; Type: QD000P40CD; Serial: TP:1718
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Configuration/Ch42/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.126 W/kg

Configuration/Ch42/Zoom Scan (8x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 5.072 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.194 W/kg
SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.014 W/kg
Maximum value of SAR (measured) = 0.124 W/kg



0 dB = 0.126 W/kg = -9.00 dBW/kg