FCC SAR Test Report

APPLICANT	:	Lenovo(Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	:	Portable Tablet Computer
BRAND NAME	:	Lenovo
MODEL NAME	:	Lenovo YT3-X90X
FCC ID	:	O57YT3X90X
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

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

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
2627

SPORTON INTERNATIONAL (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA571615	Rev. 01	Initial issue of report	Sep. 21, 2015
FA571615	Rev. 02	Update the sensor line chart on page 14 and page 15	Sep. 24, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Lenovo(Shanghai) Electronics Technology Co., Ltd., Portable Tablet Computer, Lenovo YT3-X90X** are as follows.

Equipment Class	Frequency Band	Highest SAR Summary	
		Body 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
PCB	GSM850	0.61	1.58
	GSM1900	1.01	
	WCDMA Band V	0.62	
	WCDMA Band IV	1.00	
	WCDMA Band II	0.94	
	LTE Band 5	0.49	
	LTE Band 26	0.43	
	LTE Band 4	0.89	
	LTE Band 25	0.90	
	LTE Band 7	0.99	
	LTE Band 41	0.56	
DTS	2.4GHz WLAN	1.12	1.58
NII	5.2GHz WLAN	1.10	1.58
	5.3GHz WLAN	1.05	
	5.5GHz WLAN	0.93	
	5.8GHz WLAN	**1.39**	
Date of Testing:		Aug. 19, 2015 ~ Sep. 01, 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 and FCC KDB publications

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958

Applicant	
Company Name	Lenovo(Shanghai) Electronics Technology Co., Ltd.
Address	NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, CHINA

Manufacturer	
Company Name	Lenovo PC HK Limited
Address	23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

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 248227 D01 802.11 Wi-Fi SAR v02r01
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 3G SAR Procedures v03
- FCC KDB 941225 D05 SAR for LTE Devices v02r03

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Portable Tablet Computer
Brand Name	Lenovo
Model Name	Lenovo YT3-X90X
FCC ID	O57YT3X90X
IMEI Code	867232020015674
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 26: 814.7 MHz ~ 848.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	· GPRS/EGPRS · RMC 12.2Kbps · HSDPA · HSUPA · DC-HSDPA · HSPA+ (Downlink Only) · LTE: QPSK, 16QAM · 802.11b/g/n HT20 · 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 · Bluetooth v3.0+EDR, Bluetooth v4.1 LE
HW Version	LenovoPad YT3-X90X
SW Version	YT3-X90X_150710
EUT Stage	Identical Prototype

Remark:
1. 802.11n-HT40 is not supported in 2.4GHz WLAN.
2. This device supports GRPS/EGPRS mode up to multi-slot class33.
3. This device does not support DTM operation.

4.2 Component List

Note: There are two types of EUT, the details refer the following table. According to the difference, we evaluate is not affect SAR test, so only choose sample 1 to perform SAR test.

Component	Sample 1	Sample 2
CPU	Intel_Z8500 Cherry Trail T4 Z8500,2.55 GHz Quad Core	Intel_ Z8500 Cherry Trail T4 Z8500,2.55 GHz Quad Core
BT/WIFI Module	Broadcom_BCM4356XKUBG BT/WIFI;BCM4356XKUBG;WLBGA192	Broadcom_ BCM4356XKUBG BT/WIFI;BCM4356XKUBG;WLBGA192
2G/3G/LTE Module	Intel_PMB5747 E302 SMARTi4.5 P20(PMB5747 E302)	Intel_ PMB5747 E302 SMARTi4.5 P20(PMB5747 E302)
Flash	Samsung_K3QF2F2 OEMAGCE EMMC;KLMAG2WEPD-B031;16GB; FBGA153 LPDDR3;K3QF2F2 OEM-AGCE；1GB;1600Mbps	Toshiba & Micron_ ELPIDA-F8164A3MA-GD-F EMMC;THGBMFG7C2LBAIL;16GB;WFBGA153L PDDR3;EDF8164A3MA-GD-F-R;1GB;1600Mbps
LCM	AUO_B101QAN01 B101QAN01.0;10.1inch;IPS;2560x1600	Innolux_ P101SFA-AF0 P101SFA-AF0;10.1inch;IPS;2560x1600
TP	Ofilm_IST940E 152011 Yoga3 X10 _GFF TP MCF-101-2261	GIS_ S7813 5141 334 0037 ACFM727 YT3X10_GFF TC101GFL09V.B IST9400E
Front_camera	Sunny_F1521 CCM D5V13C 5M OV5693 COB 25PIN ZIF	Ofilm_ L5693F40 CCM L5693F40 5M OV5693 COB 25PIN ZIF
Back_camera	Sunny_F13M01D CCM F13M01D 13M AR1335 COB 30PIN BtoB	Ofilm_ L1335A00 CCM L1335A00 13M AR1335 COB 30PIN BtoB
Main Battery	SUNWODA_L15D2K32 LG-ICR18650E1-3200mAh	SCUD_ L15D2K32 ICR18650-3200mAh
Ancillary Battery	SCUD_L15D1P31 CA3448F2HV-4000mAh	SUNWODA_ L15D1P31 ATL-3448F2 -4000mAh

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	O57YT3X90X
Equipment Name	Portable Tablet Computer
Operating Frequency Range of each LTE transmission band	LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz
Channel Bandwidth	LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK, and 16QAM
LTE Voice / Data requirements	Data only
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)
LTE Release	R9,Cat 4
CA Support	NO
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.
Power reduction applied to satisfy SAR compliance	Yes, Proximity Sensor.

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

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 26

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 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 25

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 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

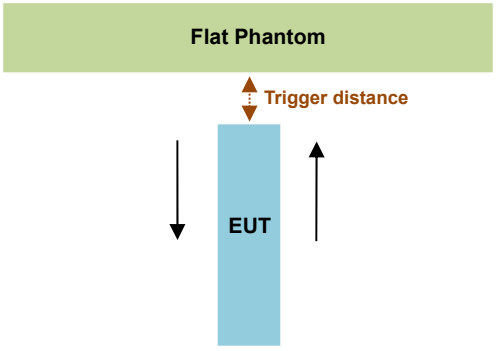
LTE Band 41

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
L M	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2590	40620	2593	40620	2593
H M	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

5. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 6.2)>:

Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed. The details are illustrated in the exhibit "P-Sensor operational description", and the shortest triggering distances were reported and used for SAR assessment.
In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering distance than that for 1900MHz, and the tissue-equivalent medium for 1900MHz was used for formal proximity sensor triggering testing.



Proximity Sensor Trigger Distance For Low frequency Ant. (mm)		
Position	Bottom Face	Edge 4
Minimum	30	28

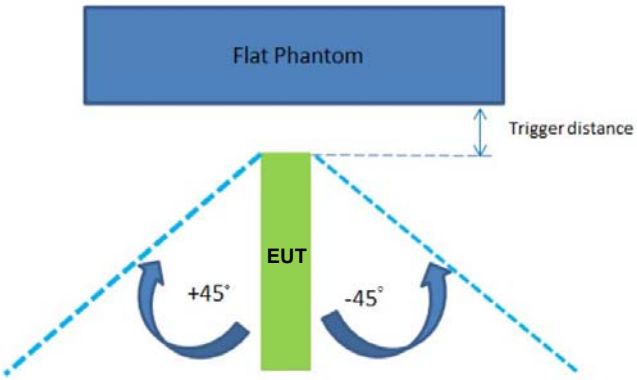
Proximity Sensor Trigger Distance For High frequency Ant. (mm)		
Position	Bottom Face	Edge 4
Minimum	15	14

<Proximity Sensor Triggering Coverage (KDB 616217 D04 section 6.3)>:

If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and "along the direction of maximum antenna and sensor offset".
Illustrated in the internal photo exhibit, although the senor is spatially offset, there is no trigger condition where the antenna is next to the user but the sensor is laterally further away, therefore proximity sensor coverage testing is not required.
This procedure is not required because antenna and sensor are collocated and the peak SAR location is overlapping with the sensor.

<Tablet Tilt angle influences to proximity sensor triggering (KDB 616217 D04 section 6.4)>:

The influence of table tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at 14mm separation .
Rotating the tablet around the edge next to the phantom in ≤ 10° increments until the tablet is ± 45° from the vertical position at 0°, and the maximum output power remains in the reduced mode.



The Sensor Trigger Distance For High frequency Ant. (mm)	
Position	Edge 4
Minimum	14

Proximity sensor power reduction

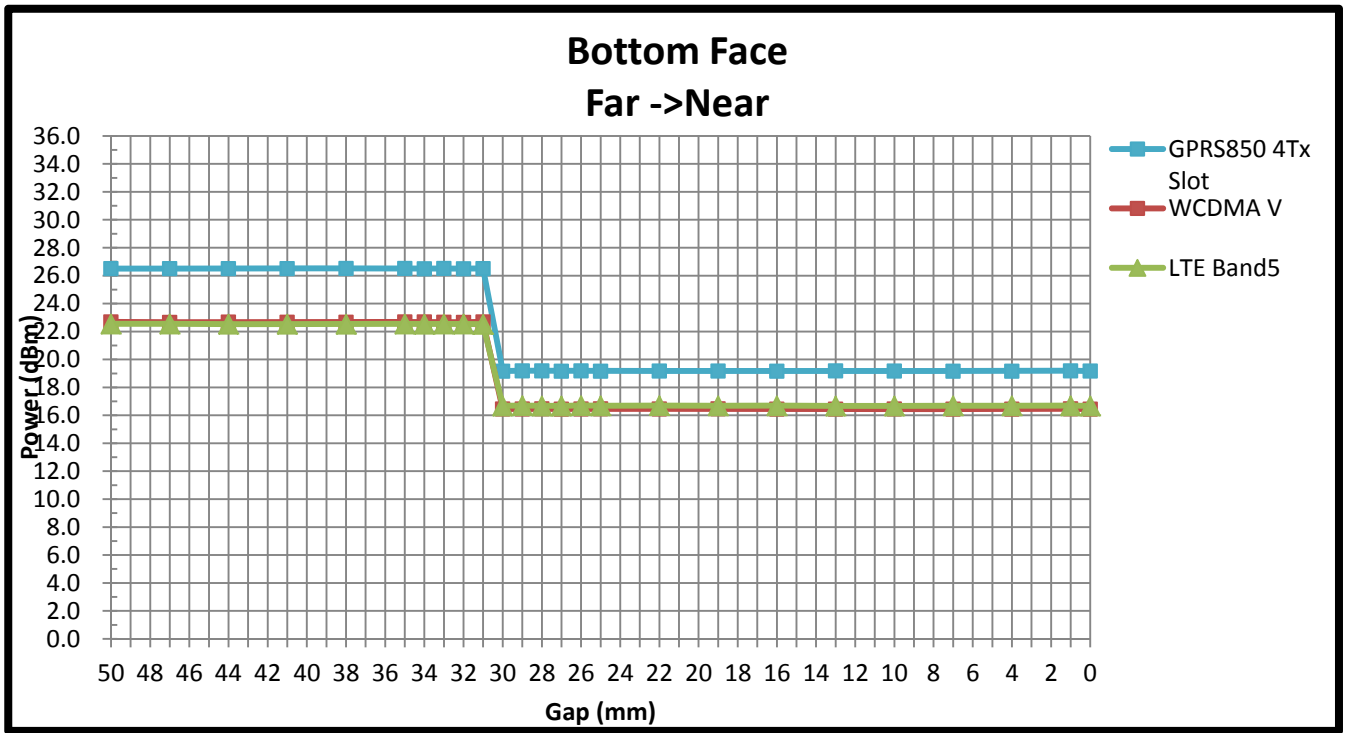
Exposure Position / wireless mode	Bottom Face(1)	Edge 1	Edge 2	Edge 3	Edge 4(1)
GSM850 GPRS (GMSK 1 Tx slot) - CS1	6.5 dB	0 dB	0 dB	0 dB	6.5 dB
GSM850 GPRS (GMSK 2 Tx slot) - CS1	7 dB	0 dB	0 dB	0 dB	7 dB
GSM850 GPRS (GMSK 3 Tx slot) - CS1	7 dB	0 dB	0 dB	0 dB	7 dB
GSM850 GPRS (GMSK 4 Tx slot) - CS1	7 dB	0 dB	0 dB	0 dB	7 dB
GSM850 EDGE (8PSK 1 Tx slot) - MCS5	7 dB	0 dB	0 dB	0 dB	7 dB
GSM850 EDGE (8PSK 2 Tx slot) - MCS5	7 dB	0 dB	0 dB	0 dB	7 dB
GSM850 EDGE (8PSK 3 Tx slot) - MCS5	7.5 dB	0 dB	0 dB	0 dB	7.5 dB
GSM850 EDGE (8PSK 4 Tx slot) - MCS5	7 dB	0 dB	0 dB	0 dB	7 dB
GSM1900 GPRS (GMSK 1 Tx slot) - CS1	5 dB	0 dB	0 dB	0 dB	5 dB
GSM1900 GPRS (GMSK 2 Tx slot) - CS1	5.5 dB	0 dB	0 dB	0 dB	5.5 dB
GSM1900 GPRS (GMSK 3 Tx slot) - CS1	6 dB	0 dB	0 dB	0 dB	6 dB
GSM1900 GPRS (GMSK 4 Tx slot) - CS1	5.5 dB	0 dB	0 dB	0 dB	5.5 dB
GSM1900 EDGE (8PSK 1 Tx slot) - MCS5	6 dB	0 dB	0 dB	0 dB	6 dB
GSM1900 EDGE (8PSK 2 Tx slot) - MCS5	6 dB	0 dB	0 dB	0 dB	6 dB
GSM1900 EDGE (8PSK 3 Tx slot) - MCS5	6 dB	0 dB	0 dB	0 dB	6 dB
GSM1900 EDGE (8PSK 4 Tx slot) - MCS5	6.5 dB	0 dB	0 dB	0 dB	6.5 dB
WCDMA Band V	6 dB	0 dB	0 dB	0 dB	6 dB
WCDMA Band II	8 dB	0 dB	0 dB	0 dB	8 dB
WCDMA Band IV	8 dB	0 dB	0 dB	0 dB	8 dB
LTE Band 5	6 dB	0 dB	0 dB	0 dB	6 dB
LTE Band 4	8.5 dB	0 dB	0 dB	0 dB	8.5 dB
LTE Band 2	9 dB	0 dB	0 dB	0 dB	9 dB
LTE Band 25	9 dB	0 dB	0 dB	0 dB	9 dB
LTE Band 7	9 dB	0 dB	0 dB	0 dB	9 dB
LTE Band 41	9 dB	0 dB	0 dB	0 dB	9 dB

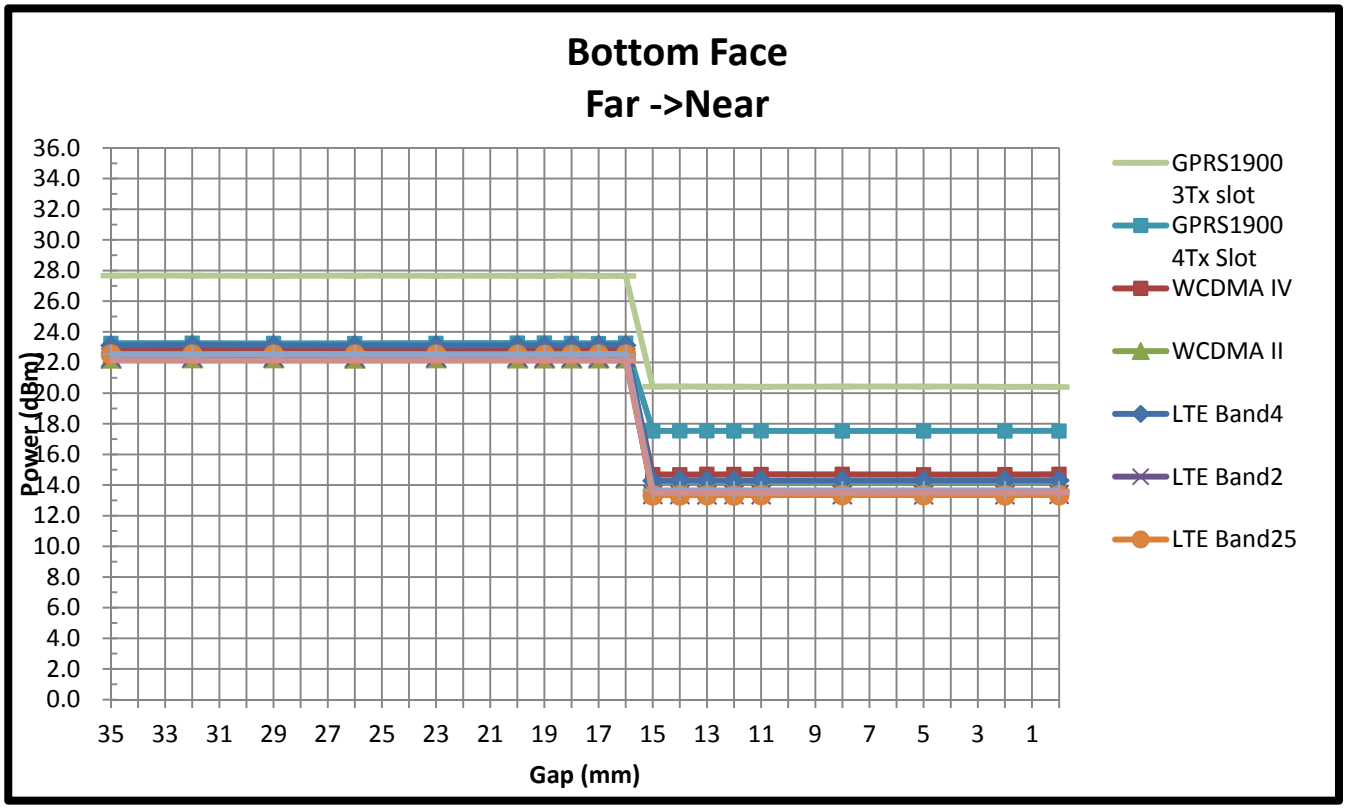
Remark:

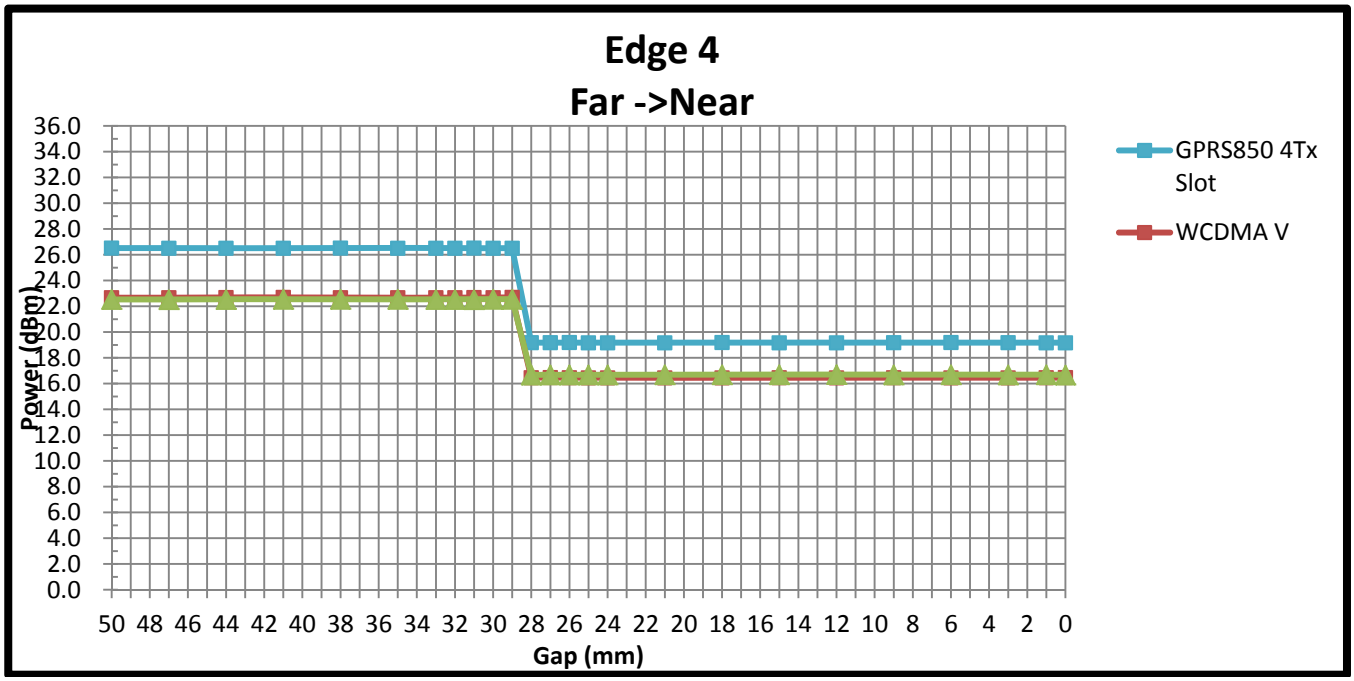
1. (1): Reduced maximum limit applied by activation of proximity sensor.
2. Power reduction is not applicable for WLAN and Bluetooth.
3. Proximity sensor disabled at LTE BAND 26.
4. Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown and described in exhibit “P-Sensor operational description
5. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
   - Bottom Face: 10 mm
   - Edge 4: 10 mm

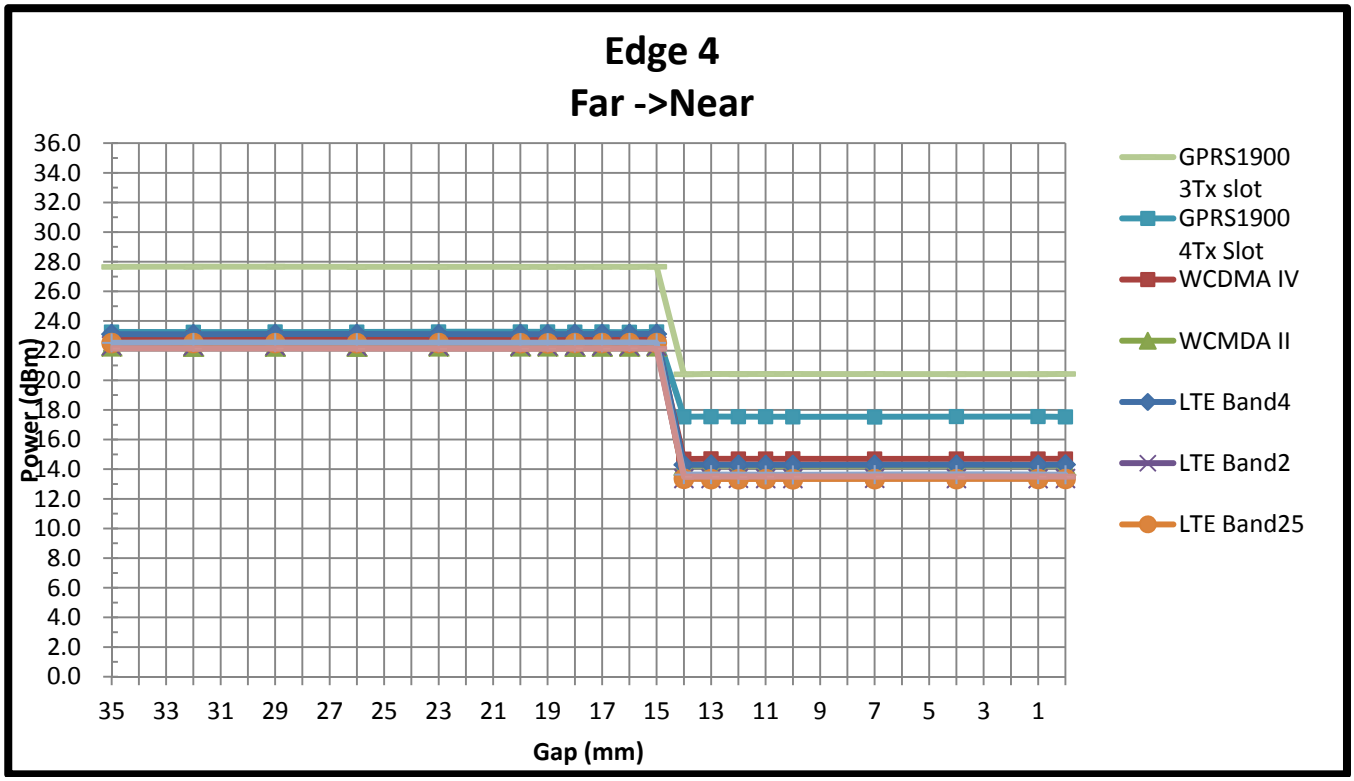
Power Measurement during Sensor Trigger distance testing

Band/Mode	Ch #	Measured power reduction (dBm)		Reduction Levels
		w/o power back-off	w/ power back-off	(dB)
GSM850 GPRS (GMSK 4 Tx slot)	189	26.43	19.12	7.31
GSM1900 GPRS (GMSK 3 Tx slot	661	24.42	18.71	5.71
GSM1900 GPRS (GMSK 4 Tx slot)	661	23.24	17.52	5.72
WCDMA Band V (RMC 12.2Kbps)	4182	22.57	16.22	6.35
WCDMA Band IV (RMC 12.2Kbps)	1413	22.80	14.74	8.06
WCDMA Band II (RMC 12.2Kbps)	9400	22.28	14.23	8.05
LTE Band 5 10M 1RB 0offset	20525	22.52	16.67	5.85
LTE Band 4 20M 1RB 0offset	20175	22.90	13.77	9.13
LTE Band 2 20M 1RB 49offset	18900	22.30	12.93	9.37
LTE Band 25 20M 1RB 0offset	26340	22.15	12.48	9.67
LTE Band 7 20M 1RB 49offset	21100	22.31	13.26	9.05
LTE Band 41 20M 1RB 0offset	40620	22.12	13.48	8.64


Bottom Face
Far ->Near
Power (dBm)
36.0
34.0
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Gap (mm)
GPRS850 4Tx Slot
WCDMA V
LTE Band5


Bottom Face
Far ->Near
Power (dBm)
36.0
34.0
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
35 33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1
Gap (mm)
GPRS1900 3Tx slot
GPRS1900 4Tx Slot
WCDMA IV
WCDMA II
LTE Band4
LTE Band2
LTE Band25


Edge 4
Far ->Near
Power (dBm)
36.0
34.0
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
50 48 46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
Gap (mm)
GPRS850 4Tx Slot
WCDMA V


Edge 4
Far ->Near
Power (dBm)
36.0
34.0
32.0
30.0
28.0
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
35 33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1
Gap (mm)
GPRS1900 3Tx slot
GPRS1900 4Tx Slot
WCDMA IV
WCMDA II
LTE Band4
LTE Band2
LTE Band25

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

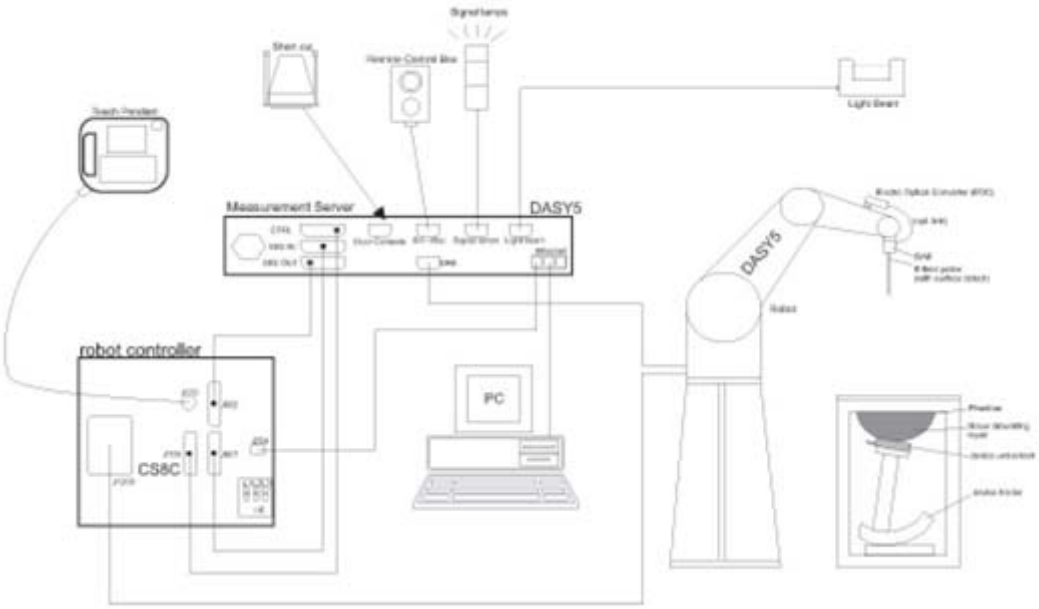
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



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

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

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

9.4 Zoom Scan

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

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

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 21, 2014	Nov. 20, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1069	Nov. 21, 2014	Nov. 20, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2014	Nov. 20, 2015
SPEAG	2450MHz System Validation Kit	D2450V2	840	Nov. 19, 2014	Nov. 18, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1061	Nov. 19, 2014	Nov. 18, 2015
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	Nov. 24, 2014	Nov. 23, 2015
SPEAG	Data Acquisition Electronics	DAE4	1210	May 21, 2015	May 20, 2016
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	May 28, 2015	May 27, 2016
SPEAG	ELI4 Phantom	QD OVA 001 BB	TP-1079	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300654	Aug. 10, 2015	Aug. 09, 2016
Agilent	Wireless Communication Test Set	E5515C	MY52102706	May 04, 2015	May 03, 2016
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	May 04, 2015	May 03, 2016
Agilent	Dielectric Probe Kit	85070E	MY44300475	NCR	NCR
R&S	Signal Generator	SMBV100A	258305	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Senor	MA2411B	0917070	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Meter	ML2495A	1005002	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Senor	MA2411B	1339163	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Meter	ML2495A	1435004	Jan. 23, 2015	Jan. 22, 2016
ARRA	Power Divider	A3200-2	N/A	NA	NA
R&S	CBT BLUETOOTH TESTER	CBT	100783	Aug. 10, 2015	Aug. 09, 2016
R&S	Spectrum Analyzer	FSP40	100319	Oct. 28, 2014	Oct. 27, 2015
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.

11. System Verification

11.1 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 Body								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Body	22.9	0.98	54.463	0.97	55.2	1.03	-1.34	±5	Aug. 22, 2015
1750	Body	22.8	1.515	55.246	1.49	53.4	1.68	3.46	±5	Aug. 21, 2015
1900	Body	22.8	1.552	53.419	1.52	53.3	2.11	0.22	±5	Aug. 21, 2015
2450	Body	22.9	1.955	51.529	1.95	52.7	0.26	-2.22	±5	Aug. 24, 2015
2600	Body	22.7	2.165	53.823	2.16	52.5	0.23	2.52	±5	Aug. 19, 2015
5200	Body	22.6	5.264	48.303	5.30	49	-0.68	-1.42	±5	Aug. 30, 2015
5300	Body	22.6	5.404	48.094	5.42	48.9	-0.30	-1.65	±5	Aug. 30, 2015
5600	Body	22.5	5.834	47.448	5.77	48.5	1.11	-2.17	±5	Aug. 31, 2015
5800	Body	22.5	6.096	46.929	6.00	48.2	1.60	-2.64	±5	Sep. 01, 2015

11.2 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 SAR (W/kg)	Targeted SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
Aug. 22, 2015	835	Body	250	4d091	3857	1210	2.29	9.6	9.16	-4.58
Aug. 21, 2015	1750	Body	250	1069	3857	1210	10	38.1	40	4.99
Aug. 21, 2015	1900	Body	250	5d118	3857	1210	10.5	40	42	5.00
Aug. 24, 2015	2450	Body	250	840	3857	1210	12.2	51	48.8	-4.31
Aug. 19, 2015	2600	Body	250	1061	3857	1210	13.9	54.9	55.6	1.28
Aug. 30, 2015	5200	Body	100	1113	3857	1210	7.45	74.9	74.5	-0.53
Aug. 30, 2015	5300	Body	100	1113	3857	1210	8.08	77.8	80.8	3.86
Aug. 31, 2015	5600	Body	100	1113	3857	1210	8.31	81.5	83.1	1.96
Sep. 01, 2015	5800	Body	100	1113	3857	1210	7.79	75.4	77.9	3.32

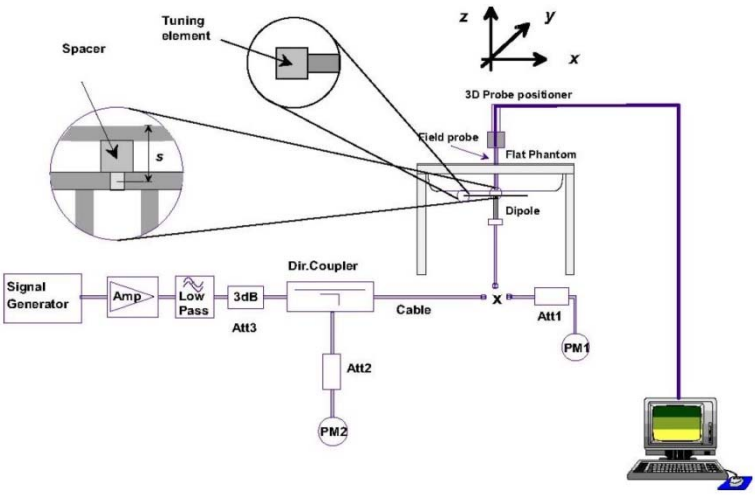


Fig 8.3.1 System Performance Check Setup

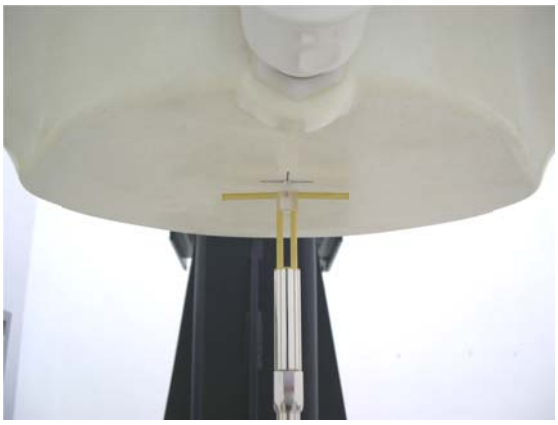


Fig 8.3.2 Setup Photo

12. RF Exposure Positions

12.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v05r02 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

13. 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, for Body 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 GPRS 4Tx slots mode for GSM850 and GPRS 3Tx for GSM1900 were selected when EUT operating without power back-off ; The GPRS 4Tx slots modes was selected for GSM850/GSM1900 when EUT operating with power back-off, according to the highest source-based time-averaged output power.

Maximum Average RF Power (Proximity Sensor Inactive)

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	
GPRS (GMSK, 1 Tx slot) – CS1	32.22	32.29	**32.33**	32.50	23.22	23.29	23.33	23.50
GPRS (GMSK, 2 Tx slots) – CS1	29.42	29.51	29.57	30.00	23.42	23.51	23.57	24.00
GPRS (GMSK, 3 Tx slots) – CS1	27.57	27.67	27.64	28.00	23.31	23.41	23.38	23.74
GPRS (GMSK, 4 Tx slots) – CS1	26.35	26.43	26.49	27.00	23.35	23.43	23.49	24.00
EDGE (8PSK, 1 Tx slot) – MCS5	27.20	27.14	27.00	27.50	18.20	18.14	18.00	18.50
EDGE (8PSK, 2 Tx slots) – MCS5	27.16	27.11	26.99	27.50	21.16	21.11	20.99	21.50
EDGE (8PSK, 3 Tx slots) – MCS5	26.32	26.25	26.13	27.00	22.06	21.99	21.87	22.74
EDGE (8PSK, 4 Tx slots) – MCS5	25.06	25.00	24.78	25.50	22.06	22.00	21.78	22.50
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	
GPRS (GMSK, 1 Tx slot) – CS1	28.68	**28.80**	28.78	29.00	19.68	19.80	19.78	20.00
GPRS (GMSK, 2 Tx slots) – CS1	26.07	26.16	26.06	26.50	20.07	20.16	20.06	20.50
GPRS (GMSK, 3 Tx slots) – CS1	24.35	24.42	24.23	25.00	20.09	20.16	19.97	20.74
GPRS (GMSK, 4 Tx slots) – CS1	23.11	23.24	23.03	23.50	20.11	20.24	20.03	20.50
EDGE (8PSK, 1 Tx slot) – MCS5	24.79	25.05	25.43	26.00	15.79	16.05	16.43	17.00
EDGE (8PSK, 2 Tx slots) – MCS5	24.76	25.06	25.42	26.00	18.76	19.06	19.42	20.00
EDGE (8PSK, 3 Tx slots) – MCS5	24.03	24.24	24.38	24.50	19.77	19.98	20.12	20.24
EDGE (8PSK, 4 Tx slots) – MCS5	22.89	23.21	23.54	24.00	19.89	20.21	20.54	21.00

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

Reduced Average RF Power (Proximity Sensor active)

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	
GPRS (GMSK, 1 Tx slot) – CS1	25.19	25.27	**25.31**	26.00	16.19	16.27	16.31	17.00
GPRS (GMSK, 2 Tx slots) – CS1	22.17	22.21	22.26	23.00	16.17	16.21	16.26	17.00
GPRS (GMSK, 3 Tx slots) – CS1	20.30	20.40	20.40	21.00	16.04	16.14	16.14	16.74
GPRS (GMSK, 4 Tx slots) – CS1	19.07	19.12	19.16	20.00	16.07	16.12	16.16	17.00
EDGE (8PSK, 1 Tx slot) – MCS5	19.75	19.84	19.89	20.50	10.75	10.84	10.89	11.50
EDGE (8PSK, 2 Tx slots) – MCS5	19.69	19.80	19.85	20.50	13.69	13.80	13.85	14.50
EDGE (8PSK, 3 Tx slots) – MCS5	18.92	19.02	19.03	19.50	14.66	14.76	14.77	15.24
EDGE (8PSK, 4 Tx slots) – MCS5	17.71	17.91	17.94	18.50	14.71	14.91	14.94	15.50
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	
GPRS (GMSK, 1 Tx slot) – CS1	23.33	**23.46**	23.26	24.00	14.33	14.46	14.26	15.00
GPRS (GMSK, 2 Tx slots) – CS1	20.38	20.48	20.27	21.00	14.38	14.48	14.27	15.00
GPRS (GMSK, 3 Tx slots) – CS1	18.56	18.71	18.48	19.00	14.30	14.45	14.22	14.74
GPRS (GMSK, 4 Tx slots) – CS1	17.39	17.52	17.32	18.00	14.39	14.52	14.32	15.00
EDGE (8PSK, 1 Tx slot) – MCS5	19.21	19.51	19.85	20.00	10.21	10.51	10.85	11.00
EDGE (8PSK, 2 Tx slots) – MCS5	19.18	19.46	19.79	20.00	13.18	13.46	13.79	14.00
EDGE (8PSK, 3 Tx slots) – MCS5	18.39	18.66	18.46	19.00	14.13	14.40	14.20	14.74
EDGE (8PSK, 4 Tx slots) – MCS5	17.26	17.42	17.30	17.50	14.26	14.42	14.30	14.50

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

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 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.		

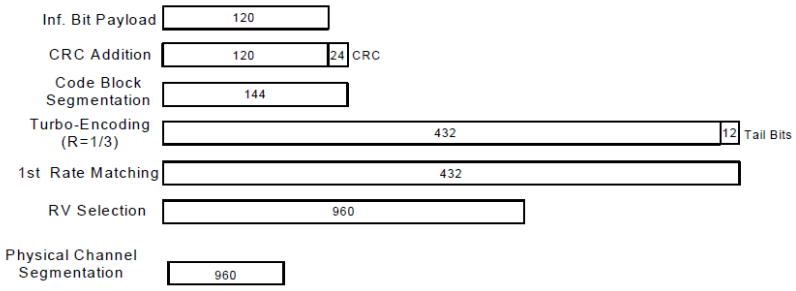


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, SAR for Body 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.

Maximum Average RF Power (Proximity Sensor Inactive)

Band		WCDMA Band V			Tune-up Limit (dBm)	WCDMA Band II			Tune-up Limit (dBm)
TX Channel		4132	4182	4233		9262	9400	9538	
Rx Channel		4357	4407	4458		9662	9800	9938	
Frequency (MHz)		826.4	836.4	846.6		1852.4	1880	1907.6	
3GPP Rel 99	RMC 12.2Kbps	22.65	22.57	**22.66**	23.00	22.21	**22.28**	22.04	22.50
3GPP Rel 6	HSDPA Subtest-1	22.43	22.35	22.46	22.50	21.76	22.11	21.88	22.50
3GPP Rel 6	HSDPA Subtest-2	22.40	22.33	22.42	22.50	21.98	22.11	21.92	22.50
3GPP Rel 6	HSDPA Subtest-3	22.47	22.33	22.40	22.50	22.02	22.13	21.89	22.50
3GPP Rel 6	HSDPA Subtest-4	22.20	22.33	22.35	22.50	21.98	22.09	21.87	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.38	22.30	22.42	22.50	21.72	22.08	21.85	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	22.37	22.31	22.40	22.50	21.88	22.05	21.88	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	22.42	22.30	22.36	22.50	21.96	22.12	21.84	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.39	22.29	22.34	22.50	21.95	22.07	21.83	22.50
3GPP Rel 6	HSUPA Subtest-1	22.35	22.35	22.42	22.50	21.25	21.34	21.20	22.00
3GPP Rel 6	HSUPA Subtest-2	21.25	21.26	21.38	22.50	20.18	20.22	20.36	22.00
3GPP Rel 6	HSUPA Subtest-3	21.71	21.61	21.57	22.50	21.50	21.56	21.08	22.00
3GPP Rel 6	HSUPA Subtest-4	20.88	20.80	20.95	22.50	20.70	20.81	20.32	22.00
3GPP Rel 6	HSUPA Subtest-5	22.35	22.26	22.33	22.50	21.76	21.86	21.59	22.00

Band		WCDMA Band IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513	
Rx Channel		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6	
3GPP Rel 99	RMC 12.2Kbps	**22.84**	22.80	22.60	23.00
3GPP Rel 6	HSDPA Subtest-1	22.09	22.07	22.01	22.50
3GPP Rel 6	HSDPA Subtest-2	22.11	22.09	21.99	22.50
3GPP Rel 6	HSDPA Subtest-3	21.91	22.08	22.03	22.50
3GPP Rel 6	HSDPA Subtest-4	22.09	22.08	22.01	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.02	22.03	21.98	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	22.04	22.02	21.98	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	21.95	22.01	21.95	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	21.99	22.03	21.96	22.50
3GPP Rel 6	HSUPA Subtest-1	21.30	21.35	21.18	22.00
3GPP Rel 6	HSUPA Subtest-2	20.16	20.20	20.35	22.00
3GPP Rel 6	HSUPA Subtest-3	21.47	21.58	21.15	22.00
3GPP Rel 6	HSUPA Subtest-4	20.45	20.78	20.33	22.00
3GPP Rel 6	HSUPA Subtest-5	22.30	22.35	22.21	22.50

Reduced Average RF Power (Proximity Sensor active)

Band		WCDMA Band V			Tune-up Limit (dBm)	WCDMA Band II			Tune-up Limit (dBm)
TX Channel		4132	4182	4233		9262	9400	9538	
Rx Channel		4357	4407	4458		9662	9800	9938	
Frequency (MHz)		826.4	836.4	846.6		1852.4	1880	1907.6	
3GPP Rel 99	RMC 12.2Kbps	16.33	16.22	**16.44**	17.00	**14.27**	14.23	14.00	14.50
3GPP Rel 6	HSDPA Subtest-1	16.13	16.01	16.19	16.50	14.03	13.98	13.92	14.50
3GPP Rel 6	HSDPA Subtest-2	16.11	15.98	16.14	16.50	14.05	13.92	13.89	14.50
3GPP Rel 6	HSDPA Subtest-3	16.16	16.00	16.18	16.50	14.02	13.92	13.90	14.50
3GPP Rel 6	HSDPA Subtest-4	16.14	15.96	16.15	16.50	14.00	13.94	13.91	14.50
3GPP Rel 8	DC-HSDPA Subtest-1	16.08	16.00	16.10	16.50	13.95	13.89	13.88	14.50
3GPP Rel 8	DC-HSDPA Subtest-2	16.09	15.95	16.09	16.50	13.99	13.88	13.85	14.50
3GPP Rel 8	DC-HSDPA Subtest-3	16.11	15.93	16.11	16.50	14.02	13.91	13.92	14.50
3GPP Rel 8	DC-HSDPA Subtest-4	16.08	15.94	16.12	16.50	14.02	13.92	13.90	14.50
3GPP Rel 6	HSUPA Subtest-1	15.92	15.98	16.02	16.50	13.35	13.25	13.22	14.00
3GPP Rel 6	HSUPA Subtest-2	14.95	14.95	15.05	15.50	12.28	12.18	12.19	14.00
3GPP Rel 6	HSUPA Subtest-3	15.25	15.27	15.32	15.50	13.41	13.29	13.25	14.00
3GPP Rel 6	HSUPA Subtest-4	14.38	14.39	14.45	15.00	12.79	12.72	12.73	14.00
3GPP Rel 6	HSUPA Subtest-5	15.98	16.02	16.05	16.50	13.88	13.82	13.85	14.00

Band		WCDMA Band IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513	
Rx Channel		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6	
3GPP Rel 99	RMC 12.2Kbps	14.68	**14.74**	14.55	15.00
3GPP Rel 6	HSDPA Subtest-1	14.02	14.10	13.95	14.50
3GPP Rel 6	HSDPA Subtest-2	14.03	14.11	13.92	14.50
3GPP Rel 6	HSDPA Subtest-3	14.00	14.09	13.92	14.50
3GPP Rel 6	HSDPA Subtest-4	14.03	14.08	13.94	14.50
3GPP Rel 8	DC-HSDPA Subtest-1	13.95	14.08	13.92	14.50
3GPP Rel 8	DC-HSDPA Subtest-2	13.95	14.03	13.94	14.50
3GPP Rel 8	DC-HSDPA Subtest-3	13.93	14.02	13.95	14.50
3GPP Rel 8	DC-HSDPA Subtest-4	13.98	14.08	13.92	14.50
3GPP Rel 6	HSUPA Subtest-1	13.25	13.35	13.28	14.00
3GPP Rel 6	HSUPA Subtest-2	12.08	12.25	12.16	14.00
3GPP Rel 6	HSUPA Subtest-3	13.42	13.52	13.49	14.00
3GPP Rel 6	HSUPA Subtest-4	12.39	13.56	12.45	14.00
3GPP Rel 6	HSUPA Subtest-5	14.28	14.36	14.25	14.50

<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.

Maximum Average RF Power (Proximity Sensor Inactive)

<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	22.40	**22.52**	22.36	23.00	0
10	QPSK	1	24	22.36	22.31	22.26		
10	QPSK	1	49	22.28	22.17	22.18		
10	QPSK	25	0	21.56	21.57	21.40	22.00	0-1
10	QPSK	25	12	21.44	21.41	21.35		
10	QPSK	25	24	21.30	21.39	21.26		
10	QPSK	50	0	21.42	21.44	21.30		
10	16QAM	1	0	21.61	21.60	21.58	22.00	0-1
10	16QAM	1	24	21.60	21.56	21.57		
10	16QAM	1	49	21.59	21.58	21.43		
10	16QAM	25	0	20.37	20.33	20.30	21.00	0-2
10	16QAM	25	12	20.39	20.23	20.26		
10	16QAM	25	24	20.36	20.27	20.21		
10	16QAM	50	0	20.33	20.35	20.32		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.48	22.51	22.46	23.00	0
5	QPSK	1	12	22.29	22.20	22.05		
5	QPSK	1	24	22.46	22.46	22.34		
5	QPSK	12	0	21.52	21.40	21.44	22.00	0-1
5	QPSK	12	6	21.41	21.28	21.19		
5	QPSK	12	11	21.40	21.31	21.20		
5	QPSK	25	0	21.52	21.37	21.30		
5	16QAM	1	0	21.86	21.61	21.98	22.00	0-1
5	16QAM	1	12	21.77	21.62	21.56		
5	16QAM	1	24	21.88	21.92	21.83		
5	16QAM	12	0	20.54	20.55	20.40	21.00	0-2
5	16QAM	12	6	20.49	20.14	20.16		
5	16QAM	12	11	20.39	20.17	20.16		
5	16QAM	25	0	20.39	20.32	20.24		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.31	22.20	22.11	23.00	0
3	QPSK	1	7	22.29	22.14	22.09		
3	QPSK	1	14	22.28	22.14	22.01		
3	QPSK	8	0	21.50	21.38	21.30	22.00	0-1
3	QPSK	8	4	21.45	21.34	21.28		
3	QPSK	8	7	21.49	21.39	21.26		
3	QPSK	15	0	21.47	21.35	21.29		
3	16QAM	1	0	21.43	21.24	21.26	22.00	0-1
3	16QAM	1	7	21.35	21.23	21.25		
3	16QAM	1	14	21.36	21.22	21.19		
3	16QAM	8	0	20.40	20.52	20.30	21.00	0-2
3	16QAM	8	4	20.38	20.28	20.26		
3	16QAM	8	7	20.40	20.26	20.27		
3	16QAM	15	0	20.36	20.15	20.18		

Channel				20407	20525	20643	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.40	22.26	22.16	23.00	0
1.4	QPSK	1	2	22.45	22.23	22.11		
1.4	QPSK	1	5	22.36	22.25	22.12		
1.4	QPSK	3	0	22.42	22.27	22.15		
1.4	QPSK	3	1	22.44	22.29	22.16		
1.4	QPSK	3	2	22.39	22.31	22.17		
1.4	QPSK	6	0	21.44	21.35	21.26	22.00	0-1
1.4	16QAM	1	0	21.61	21.66	21.57	22.00	0-1
1.4	16QAM	1	2	21.57	21.69	21.55		
1.4	16QAM	1	5	21.87	21.73	21.53		
1.4	16QAM	3	0	21.54	21.38	21.23		
1.4	16QAM	3	1	21.49	21.34	21.29		
1.4	16QAM	3	2	21.54	21.40	21.26		
1.4	16QAM	6	0	20.68	20.45	20.37	21.00	0-2

<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	16.87	**16.88**	16.75	17.00	0
15	QPSK	1	37	16.18	16.34	16.07		
15	QPSK	1	74	16.69	16.63	16.40		
15	QPSK	36	0	15.43	15.56	15.43	16.00	0-1
15	QPSK	36	18	15.23	15.22	15.15		
15	QPSK	36	37	15.39	15.29	15.27		
15	QPSK	75	0	15.40	15.48	15.37		
15	16QAM	1	0	15.86	15.91	15.59	16.00	0-1
15	16QAM	1	37	15.85	15.50	15.30		
15	16QAM	1	74	15.90	15.78	15.51		
15	16QAM	36	0	14.80	14.76	14.72	15.00	0-2
15	16QAM	36	18	14.68	14.49	14.49		
15	16QAM	36	37	14.73	14.58	14.53		
15	16QAM	75	0	14.76	14.80	14.63		
Channel				26740	26865	26990	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	16.77	16.56	16.38	17.00	0
10	QPSK	1	24	16.56	16.49	16.31		
10	QPSK	1	49	16.58	16.41	16.13		
10	QPSK	25	0	15.65	15.51	15.41	16.00	0-1
10	QPSK	25	12	15.57	15.56	15.38		
10	QPSK	25	24	15.53	15.42	15.35		
10	QPSK	50	0	15.60	15.50	15.43		
10	16QAM	1	0	15.48	15.93	15.38	16.00	0-1
10	16QAM	1	24	15.36	15.55	15.45		
10	16QAM	1	49	15.70	15.60	15.58		
10	16QAM	25	0	14.88	14.75	14.69	15.00	0-2
10	16QAM	25	12	14.94	14.74	14.72		
10	16QAM	25	24	14.91	14.59	14.63		
10	16QAM	50	0	14.88	14.75	14.66		
Channel				26715	26865	27015	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	16.83	16.62	16.53	17.00	0
5	QPSK	1	12	16.42	16.31	16.10		
5	QPSK	1	24	16.69	16.58	16.40		
5	QPSK	12	0	15.68	15.54	15.38	16.00	0-1
5	QPSK	12	6	15.53	15.38	15.23		
5	QPSK	12	11	15.52	15.40	15.24		
5	QPSK	25	0	15.64	15.40	15.33		
5	16QAM	1	0	15.78	15.88	15.82	16.00	0-1
5	16QAM	1	12	15.84	15.39	15.51		
5	16QAM	1	24	15.79	15.60	15.40		
5	16QAM	12	0	14.97	14.90	14.75	15.00	0-2
5	16QAM	12	6	14.76	14.63	14.57		
5	16QAM	12	11	14.84	14.67	14.55		
5	16QAM	25	0	14.91	14.79	14.59		

Channel				26705	26865	27025	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	16.60	16.45	16.32	17.00	0
3	QPSK	1	7	16.63	16.36	16.23		
3	QPSK	1	14	16.59	16.39	16.18		
3	QPSK	8	0	15.67	15.51	15.31	16.00	0-1
3	QPSK	8	4	15.60	15.44	15.27		
3	QPSK	8	7	15.62	15.42	15.31		
3	QPSK	15	0	15.65	15.46	15.29		
3	16QAM	1	0	15.73	15.75	15.44	16.00	0-1
3	16QAM	1	7	15.58	15.79	15.29		
3	16QAM	1	14	15.65	15.47	15.58		
3	16QAM	8	0	14.85	14.83	14.48	15.00	0-2
3	16QAM	8	4	14.96	14.81	14.57		
3	16QAM	8	7	14.97	14.75	14.59		
3	16QAM	15	0	14.97	14.74	14.52		
Channel				26697	26865	27033	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	16.66	16.51	16.27	17.00	0
1.4	QPSK	1	2	16.58	16.43	16.24		
1.4	QPSK	1	5	16.58	16.46	16.29		
1.4	QPSK	3	0	16.61	16.47	16.27		
1.4	QPSK	3	1	16.61	16.47	16.24		
1.4	QPSK	3	2	16.61	16.49	16.27		
1.4	QPSK	6	0	15.61	15.46	15.26	16.00	0-1
1.4	16QAM	1	0	15.87	15.79	15.67	16.00	0-1
1.4	16QAM	1	2	15.55	15.69	15.46		
1.4	16QAM	1	5	15.70	15.86	15.64		
1.4	16QAM	3	0	15.63	15.48	15.11		
1.4	16QAM	3	1	15.54	15.48	15.27		
1.4	16QAM	3	2	15.61	15.51	15.29		
1.4	16QAM	6	0	14.82	14.95	14.60	15.00	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	22.51	22.90	23.10	23.50	0
20	QPSK	1	49	22.50	22.66	22.89		
20	QPSK	1	99	22.25	22.68	22.71		
20	QPSK	50	0	21.67	21.95	22.04	22.50	0-1
20	QPSK	50	24	21.57	21.80	21.96		
20	QPSK	50	49	21.58	21.85	21.91		
20	QPSK	100	0	21.63	21.91	21.97		
20	16QAM	1	0	21.80	22.20	22.17	22.80	0-1
20	16QAM	1	49	21.74	21.88	22.16		
20	16QAM	1	99	21.55	22.05	21.83		
20	16QAM	50	0	20.70	20.96	21.06	21.50	0-2
20	16QAM	50	24	20.59	20.79	20.97		
20	16QAM	50	49	20.58	20.86	20.91		
20	16QAM	100	0	20.61	20.88	20.95		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.46	22.87	23.08	23.50	0
15	QPSK	1	37	22.33	22.70	22.86		
15	QPSK	1	74	22.36	22.53	22.72		
15	QPSK	36	0	21.65	21.91	22.09	22.50	0-1
15	QPSK	36	18	21.42	21.84	21.84		
15	QPSK	36	37	21.63	21.83	21.96		
15	QPSK	75	0	21.66	21.86	22.01		
15	16QAM	1	0	22.47	22.55	22.75	22.80	0-1
15	16QAM	1	37	21.66	21.90	22.06		
15	16QAM	1	74	22.27	22.48	22.48		
15	16QAM	36	0	20.72	20.91	21.11	21.50	0-2
15	16QAM	36	18	20.45	20.82	20.87		
15	16QAM	36	37	20.61	20.79	20.95		
15	16QAM	75	0	20.65	20.85	21.01		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.39	22.85	23.02	23.50	0
10	QPSK	1	24	22.27	22.81	23.01		
10	QPSK	1	49	22.11	22.78	22.86		
10	QPSK	25	0	21.62	21.87	22.12	22.50	0-1
10	QPSK	25	12	21.56	21.84	22.08		
10	QPSK	25	24	21.65	21.84	22.02		
10	QPSK	50	0	21.66	21.86	22.07		
10	16QAM	1	0	21.97	22.07	22.41	22.80	0-1
10	16QAM	1	24	21.90	22.06	22.37		
10	16QAM	1	49	21.93	22.00	22.17		
10	16QAM	25	0	20.70	20.89	21.17	21.50	0-2
10	16QAM	25	12	20.63	20.84	21.10		
10	16QAM	25	24	20.67	20.86	21.05		
10	16QAM	50	0	20.68	20.89	21.11		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.42	22.79	22.92	23.50	0
5	QPSK	1	12	22.37	22.72	22.88		
5	QPSK	1	24	22.30	22.56	22.65		
5	QPSK	12	0	21.59	21.93	22.17	22.50	0-1
5	QPSK	12	6	21.45	21.77	22.01		
5	QPSK	12	11	21.49	21.84	22.04		
5	QPSK	25	0	21.54	21.87	22.08		
5	16QAM	1	0	22.06	22.33	22.64	22.80	0-1
5	16QAM	1	12	21.72	21.93	22.16		
5	16QAM	1	24	21.96	22.27	22.44		
5	16QAM	12	0	20.63	20.94	21.19	21.50	0-2
5	16QAM	12	6	20.50	20.76	21.04		
5	16QAM	12	11	20.56	20.81	21.06		
5	16QAM	25	0	20.61	20.88	21.14		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.50	22.80	23.05	23.50	0
3	QPSK	1	7	22.48	22.75	23.00		
3	QPSK	1	14	22.48	22.79	22.95		
3	QPSK	8	0	21.59	21.88	22.10	22.50	0-1
3	QPSK	8	4	21.56	21.84	22.05		
3	QPSK	8	7	21.56	21.84	22.05		
3	QPSK	15	0	21.57	21.84	22.07		
3	16QAM	1	0	21.81	22.04	22.30	22.80	0-1
3	16QAM	1	7	21.83	21.98	22.26		
3	16QAM	1	14	21.74	22.00	22.22		
3	16QAM	8	0	20.64	20.91	21.18	21.50	0-2
3	16QAM	8	4	20.61	20.88	21.13		
3	16QAM	8	7	20.63	20.91	21.12		
3	16QAM	15	0	20.64	20.89	21.14		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.44	22.85	23.06	23.50	0
1.4	QPSK	1	2	22.33	22.84	23.05		
1.4	QPSK	1	5	22.22	22.85	23.02		
1.4	QPSK	3	0	22.46	22.89	23.02		
1.4	QPSK	3	1	22.42	22.88	22.98		
1.4	QPSK	3	2	22.41	22.88	22.85		
1.4	QPSK	6	0	21.54	21.83	22.05	22.50	0-1
1.4	16QAM	1	0	21.79	22.11	22.37	22.80	0-1
1.4	16QAM	1	2	21.88	22.07	22.32		
1.4	16QAM	1	5	21.84	22.09	22.36		
1.4	16QAM	3	0	21.64	21.92	22.17		
1.4	16QAM	3	1	21.61	21.92	22.16		
1.4	16QAM	3	2	21.60	21.90	22.14		
1.4	16QAM	6	0	20.64	20.95	21.18	21.50	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	21.66	21.97	22.01	23.00	0
20	QPSK	1	49	22.21	**22.30**	22.28		
20	QPSK	1	99	21.89	21.64	22.18		
20	QPSK	50	0	21.63	21.90	21.36	22.00	0-1
20	QPSK	50	24	20.83	21.10	21.25		
20	QPSK	50	49	20.83	21.01	21.35		
20	QPSK	100	0	20.89	21.09	21.35		
20	16QAM	1	0	21.12	21.31	21.57	22.00	0-1
20	16QAM	1	49	21.00	21.34	21.48		
20	16QAM	1	99	20.91	20.98	21.45		
20	16QAM	50	0	19.91	20.16	20.31	21.00	0-2
20	16QAM	50	24	19.81	20.09	20.24		
20	16QAM	50	49	19.82	20.01	20.33		
20	16QAM	100	0	19.83	20.05	20.32		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.09	22.12	22.01	23.00	0
15	QPSK	1	37	21.61	21.92	22.21		
15	QPSK	1	74	22.07	22.16	22.06		
15	QPSK	36	0	20.87	21.20	21.27	22.00	0-1
15	QPSK	36	18	20.63	20.94	21.17		
15	QPSK	36	37	20.76	21.01	21.33		
15	QPSK	75	0	20.82	21.06	21.33		
15	16QAM	1	0	21.55	21.80	22.00	22.00	0-1
15	16QAM	1	37	20.82	21.21	21.37		
15	16QAM	1	74	21.34	21.53	21.91		
15	16QAM	36	0	19.89	20.14	20.34	21.00	0-2
15	16QAM	36	18	19.66	19.94	20.24		
15	16QAM	36	37	19.76	19.98	20.29		
15	16QAM	75	0	19.83	20.03	20.29		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	21.82	22.18	22.20	23.00	0
10	QPSK	1	24	21.75	22.09	22.02		
10	QPSK	1	49	21.65	22.05	22.12		
10	QPSK	25	0	20.82	21.21	21.38	22.00	0-1
10	QPSK	25	12	20.80	21.15	21.39		
10	QPSK	25	24	20.77	21.11	21.38		
10	QPSK	50	0	20.79	21.14	21.37		
10	16QAM	1	0	21.09	21.47	21.61	22.00	0-1
10	16QAM	1	24	21.08	21.42	21.67		
10	16QAM	1	49	20.93	21.32	21.52		
10	16QAM	25	0	19.82	20.19	20.40	21.00	0-2
10	16QAM	25	12	19.79	20.15	20.40		
10	16QAM	25	24	19.76	20.11	20.38		
10	16QAM	50	0	19.79	20.16	20.40		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.97	22.19	22.13	23.00	0
5	QPSK	1	12	21.61	21.97	22.26		
5	QPSK	1	24	21.94	22.02	22.01		
5	QPSK	12	0	20.85	21.22	21.51	22.00	0-1
5	QPSK	12	6	20.70	21.08	21.35		
5	QPSK	12	11	20.74	21.12	21.40		
5	QPSK	25	0	20.76	21.15	21.42		
5	16QAM	1	0	21.23	21.68	21.90	22.00	0-1
5	16QAM	1	12	20.91	21.33	21.50		
5	16QAM	1	24	21.18	21.59	21.82		
5	16QAM	12	0	19.86	20.25	20.51	21.00	0-2
5	16QAM	12	6	19.71	20.09	20.35		
5	16QAM	12	11	19.75	20.13	20.37		
5	16QAM	25	0	19.80	20.19	20.43		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.70	22.11	22.03	23.00	0
3	QPSK	1	7	21.69	22.08	22.01		
3	QPSK	1	14	21.69	22.05	22.05		
3	QPSK	8	0	20.77	21.19	21.44	22.00	0-1
3	QPSK	8	4	20.75	21.16	21.42		
3	QPSK	8	7	20.77	21.15	21.45		
3	QPSK	15	0	20.77	21.18	21.43		
3	16QAM	1	0	21.04	21.40	21.63	22.00	0-1
3	16QAM	1	7	21.03	21.43	21.60		
3	16QAM	1	14	20.97	21.37	21.59		
3	16QAM	8	0	19.82	20.21	20.46	21.00	0-2
3	16QAM	8	4	19.81	20.18	20.43		
3	16QAM	8	7	19.84	20.19	20.46		
3	16QAM	15	0	19.87	20.20	20.44		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.76	22.13	22.12	23.00	0
1.4	QPSK	1	2	21.75	22.11	22.26		
1.4	QPSK	1	5	21.75	22.11	22.08		
1.4	QPSK	3	0	21.81	22.19	22.00		
1.4	QPSK	3	1	21.78	22.18	22.21		
1.4	QPSK	3	2	21.79	22.17	22.06		
1.4	QPSK	6	0	20.76	21.17	21.43	22.00	0-1
1.4	16QAM	1	0	21.07	21.49	21.67	22.00	0-1
1.4	16QAM	1	2	21.09	21.51	21.65		
1.4	16QAM	1	5	21.07	21.49	21.65		
1.4	16QAM	3	0	20.91	21.33	21.54		
1.4	16QAM	3	1	20.91	21.33	21.52		
1.4	16QAM	3	2	20.88	21.30	21.54		
1.4	16QAM	6	0	19.84	20.24	20.53	21.00	0-2

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	21.72	22.15	22.50	23.00	0
20	QPSK	1	49	21.71	22.04	22.31		
20	QPSK	1	99	21.51	21.89	22.30		
20	QPSK	50	0	20.86	21.29	21.56	22.00	0-1
20	QPSK	50	24	20.81	21.19	21.45		
20	QPSK	50	49	20.80	21.19	21.55		
20	QPSK	100	0	20.80	21.22	21.54		
20	16QAM	1	0	20.99	21.49	21.76	22.00	0-1
20	16QAM	1	49	20.98	21.44	21.66		
20	16QAM	1	99	20.77	21.23	21.75		
20	16QAM	50	0	19.83	20.30	20.50	21.00	0-2
20	16QAM	50	24	19.80	20.15	20.44		
20	16QAM	50	49	19.76	20.17	20.50		
20	16QAM	100	0	19.77	20.18	20.47		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	21.65	22.04	22.42	23.00	0
15	QPSK	1	37	21.56	21.92	22.20		
15	QPSK	1	74	21.32	21.46	22.27		
15	QPSK	36	0	20.90	21.30	21.47	22.00	0-1
15	QPSK	36	18	20.70	21.06	21.32		
15	QPSK	36	37	20.85	21.16	21.48		
15	QPSK	75	0	20.88	21.22	21.47		
15	16QAM	1	0	21.58	21.93	21.60	22.00	0-1
15	16QAM	1	37	20.84	21.31	21.50		
15	16QAM	1	74	21.45	21.77	21.70		
15	16QAM	36	0	19.89	20.29	20.47	21.00	0-2
15	16QAM	36	18	19.65	20.04	20.29		
15	16QAM	36	37	19.77	20.13	20.41		
15	16QAM	75	0	19.83	20.20	20.43		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	21.67	22.07	22.46	23.00	0
10	QPSK	1	24	21.55	21.98	22.42		
10	QPSK	1	49	21.41	21.82	22.31		
10	QPSK	25	0	20.88	21.28	21.56	22.00	0-1
10	QPSK	25	12	20.84	21.23	21.58		
10	QPSK	25	24	20.84	21.23	21.60		
10	QPSK	50	0	20.87	21.26	21.58		
10	16QAM	1	0	21.14	21.58	21.77	22.00	0-1
10	16QAM	1	24	21.12	21.56	21.72		
10	16QAM	1	49	21.10	21.46	21.80		
10	16QAM	25	0	19.89	20.31	20.56	21.00	0-2
10	16QAM	25	12	19.84	20.24	20.55		
10	16QAM	25	24	19.82	20.23	20.58		
10	16QAM	50	0	19.87	20.27	20.56		

Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	21.66	22.03	22.45	23.00	0
5	QPSK	1	12	21.63	22.06	22.33		
5	QPSK	1	24	21.42	21.76	22.26		
5	QPSK	12	0	20.88	21.31	21.68	22.00	0-1
5	QPSK	12	6	20.73	21.17	21.59		
5	QPSK	12	11	20.79	21.21	21.65		
5	QPSK	25	0	20.78	21.24	21.67		
5	16QAM	1	0	21.32	21.74	21.83	22.00	0-1
5	16QAM	1	12	20.97	21.43	21.77		
5	16QAM	1	24	21.28	21.69	21.89		
5	16QAM	12	0	19.90	20.32	20.66	21.00	0-2
5	16QAM	12	6	19.74	20.18	20.56		
5	16QAM	12	11	19.80	20.20	20.63		
5	16QAM	25	0	19.83	20.25	20.65		
Channel				26055	26340	26675	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	21.68	22.11	22.40	23.00	0
3	QPSK	1	7	21.54	22.02	22.32		
3	QPSK	1	14	21.43	21.86	22.11		
3	QPSK	8	0	20.82	21.27	21.72	22.00	0-1
3	QPSK	8	4	20.77	21.22	21.72		
3	QPSK	8	7	20.81	21.24	21.73		
3	QPSK	15	0	20.80	21.23	21.72		
3	16QAM	1	0	21.08	21.53	21.81	22.00	0-1
3	16QAM	1	7	21.07	21.48	21.94		
3	16QAM	1	14	21.03	21.50	21.93		
3	16QAM	8	0	19.85	20.27	20.71	21.00	0-2
3	16QAM	8	4	19.85	20.27	20.71		
3	16QAM	8	7	19.85	20.29	20.74		
3	16QAM	15	0	19.84	20.30	20.72		
Channel				26047	26340	26683	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	21.65	22.11	22.42	23.00	0
1.4	QPSK	1	2	21.57	22.03	22.37		
1.4	QPSK	1	5	21.41	21.85	22.29		
1.4	QPSK	3	0	21.33	22.09	22.41		
1.4	QPSK	3	1	21.22	21.93	22.26		
1.4	QPSK	3	2	21.02	21.86	22.19		
1.4	QPSK	6	0	20.80	21.27	21.76	22.00	0-1
1.4	16QAM	1	0	21.09	21.57	21.92	22.00	0-1
1.4	16QAM	1	2	21.12	21.56	21.87		
1.4	16QAM	1	5	21.13	21.59	21.80		
1.4	16QAM	3	0	20.95	21.42	21.88		
1.4	16QAM	3	1	20.96	21.40	21.88		
1.4	16QAM	3	2	20.94	21.39	21.86		
1.4	16QAM	6	0	19.86	20.33	20.83	21.00	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	22.34	22.21	22.13	23.00	0
20	QPSK	1	49	22.52	22.31	22.26		
20	QPSK	1	99	21.89	21.76	21.62		
20	QPSK	50	0	21.51	21.40	21.35	22.00	0-1
20	QPSK	50	24	21.38	21.27	21.25		
20	QPSK	50	49	21.28	21.17	21.15		
20	QPSK	100	0	21.39	21.29	21.20		
20	16QAM	1	0	21.53	21.42	21.44	22.00	0-1
20	16QAM	1	49	21.58	21.47	21.46		
20	16QAM	1	99	21.09	20.98	20.90		
20	16QAM	50	0	20.54	20.44	20.47	21.00	0-2
20	16QAM	50	24	20.46	20.34	20.30		
20	16QAM	50	49	20.32	20.22	20.18		
20	16QAM	100	0	20.43	20.30	20.25		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.45	22.24	22.18	23.00	0
15	QPSK	1	37	22.13	22.03	21.99		
15	QPSK	1	74	22.40	22.19	22.24		
15	QPSK	36	0	21.50	21.42	21.35	22.00	0-1
15	QPSK	36	18	21.32	21.17	21.10		
15	QPSK	36	37	21.30	21.23	21.14		
15	QPSK	75	0	21.39	21.30	21.21		
15	16QAM	1	0	22.00	21.99	21.94	22.00	0-1
15	16QAM	1	37	21.47	21.35	21.26		
15	16QAM	1	74	21.75	21.67	21.49		
15	16QAM	36	0	20.50	20.47	20.38	21.00	0-2
15	16QAM	36	18	20.28	20.23	20.14		
15	16QAM	36	37	20.32	20.28	20.16		
15	16QAM	75	0	20.41	20.37	20.28		

Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.47	22.22	22.14	23.00	0
10	QPSK	1	24	22.49	22.01	22.03		
10	QPSK	1	49	22.30	22.13	22.09		
10	QPSK	25	0	21.55	21.42	21.35	22.00	0-1
10	QPSK	25	12	21.47	21.37	21.29		
10	QPSK	25	24	21.44	21.32	21.25		
10	QPSK	50	0	21.47	21.37	21.28		
10	16QAM	1	0	21.68	21.58	21.57	22.00	0-1
10	16QAM	1	24	21.65	21.57	21.53		
10	16QAM	1	49	21.51	21.36	21.25		
10	16QAM	25	0	20.59	20.49	20.43	21.00	0-2
10	16QAM	25	12	20.53	20.43	20.39		
10	16QAM	25	24	20.50	20.39	20.30		
10	16QAM	50	0	20.56	20.44	20.33		
Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.41	22.15	22.21	23.00	0
5	QPSK	1	12	22.43	22.09	22.16		
5	QPSK	1	24	22.39	22.11	22.20		
5	QPSK	12	0	21.57	21.44	21.37	22.00	0-1
5	QPSK	12	6	21.41	21.29	21.02		
5	QPSK	12	11	21.45	21.35	21.24		
5	QPSK	25	0	21.48	21.37	21.29		
5	16QAM	1	0	21.87	21.78	21.68	22.00	0-1
5	16QAM	1	12	21.72	21.61	21.54		
5	16QAM	1	24	21.77	21.70	21.58		
5	16QAM	12	0	20.63	20.51	20.44	21.00	0-2
5	16QAM	12	6	20.47	20.35	20.26		
5	16QAM	12	11	20.49	20.39	20.27		
5	16QAM	25	0	20.58	20.31	20.34		

Reduced Average RF Power (Proximity Sensor active)

<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	16.51	16.67	16.42	17.00	0
10	QPSK	1	24	16.43	16.38	16.34		
10	QPSK	1	49	16.30	16.17	16.16		
10	QPSK	25	0	15.54	15.45	15.45	16.00	0-1
10	QPSK	25	12	15.49	15.44	15.38		
10	QPSK	25	24	15.45	15.38	15.28		
10	QPSK	50	0	15.47	15.42	15.43		
10	16QAM	1	0	15.87	15.64	15.31	16.00	0-1
10	16QAM	1	24	15.61	15.39	15.54		
10	16QAM	1	49	15.75	15.38	15.01		
10	16QAM	25	0	14.85	14.70	14.76	15.00	0-2
10	16QAM	25	12	14.77	14.72	14.67		
10	16QAM	25	24	14.66	14.66	14.62		
10	16QAM	50	0	14.84	14.71	14.78		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	16.65	16.65	16.56	17.00	0
5	QPSK	1	12	16.28	16.22	16.21		
5	QPSK	1	24	16.64	16.42	16.42		
5	QPSK	12	0	15.62	15.45	15.38	16.00	0-1
5	QPSK	12	6	15.38	15.28	15.19		
5	QPSK	12	11	15.46	15.35	15.25		
5	QPSK	25	0	15.50	15.45	15.30		
5	16QAM	1	0	15.77	15.52	15.86	16.00	0-1
5	16QAM	1	12	15.76	15.39	15.47		
5	16QAM	1	24	15.73	15.88	15.32		
5	16QAM	12	0	14.85	14.65	14.71	15.00	0-2
5	16QAM	12	6	14.88	14.61	14.50		
5	16QAM	12	11	14.80	14.54	14.50		
5	16QAM	25	0	14.83	14.72	14.56		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	16.48	16.37	16.23	17.00	0
3	QPSK	1	7	16.44	16.30	16.33		
3	QPSK	1	14	16.47	16.29	16.25		
3	QPSK	8	0	15.53	15.37	15.31	16.00	0-1
3	QPSK	8	4	15.47	15.38	15.28		
3	QPSK	8	7	15.52	15.38	15.28		
3	QPSK	15	0	15.50	15.37	15.29		
3	16QAM	1	0	15.79	15.67	15.56	16.00	0-1
3	16QAM	1	7	15.59	15.37	15.02		
3	16QAM	1	14	15.30	15.59	15.59		
3	16QAM	8	0	14.84	14.75	14.68	15.00	0-2
3	16QAM	8	4	14.89	14.60	14.62		
3	16QAM	8	7	14.89	14.65	14.41		
3	16QAM	15	0	14.83	14.65	14.61		

Channel				20407	20525	20643	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	16.51	16.43	16.29	17.00	0
1.4	QPSK	1	2	16.53	16.41	16.24		
1.4	QPSK	1	5	16.55	16.37	16.21		
1.4	QPSK	3	0	16.56	16.37	16.26		
1.4	QPSK	3	1	16.50	16.36	16.24		
1.4	QPSK	3	2	16.51	16.38	16.22		
1.4	QPSK	6	0	15.54	15.38	15.27	16.00	0-1
1.4	16QAM	1	0	15.84	15.71	15.73	16.00	0-1
1.4	16QAM	1	2	15.74	15.34	15.16		
1.4	16QAM	1	5	15.36	15.15	15.31		
1.4	16QAM	3	0	15.56	15.26	15.32		
1.4	16QAM	3	1	15.57	15.27	15.27		
1.4	16QAM	3	2	15.64	15.24	15.25		
1.4	16QAM	6	0	14.92	14.70	14.64	15.00	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	13.60	13.77	14.28	15.00	0
20	QPSK	1	49	13.42	13.61	13.82		
20	QPSK	1	99	13.30	13.47	13.76		
20	QPSK	50	0	12.71	12.91	13.24	14.00	0-1
20	QPSK	50	24	12.63	12.82	13.08		
20	QPSK	50	49	12.64	12.82	13.10		
20	QPSK	100	0	12.68	12.87	13.18		
20	16QAM	1	0	12.85	12.98	13.40	14.00	0-1
20	16QAM	1	49	12.79	12.91	13.19		
20	16QAM	1	99	12.62	12.80	13.11		
20	16QAM	50	0	11.73	11.93	12.26	13.00	0-2
20	16QAM	50	24	11.65	11.83	12.08		
20	16QAM	50	49	11.65	11.84	12.10		
20	16QAM	100	0	11.68	11.87	12.17		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	13.56	13.65	14.15	15.00	0
15	QPSK	1	37	13.37	13.59	13.89		
15	QPSK	1	74	13.42	13.12	14.05		
15	QPSK	36	0	12.70	12.94	13.22	14.00	0-1
15	QPSK	36	18	12.45	12.68	12.91		
15	QPSK	36	37	12.63	12.85	13.04		
15	QPSK	75	0	12.67	12.89	13.12		
15	16QAM	1	0	13.36	13.55	13.83	14.00	0-1
15	16QAM	1	37	12.61	12.78	13.09		
15	16QAM	1	74	13.25	13.36	13.60		
15	16QAM	36	0	11.73	11.95	12.23	13.00	0-2
15	16QAM	36	18	11.49	11.69	11.93		
15	16QAM	36	37	11.64	11.83	12.03		
15	16QAM	75	0	11.70	11.91	12.11		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	13.46	13.68	14.16	15.00	0
10	QPSK	1	24	13.40	13.75	13.95		
10	QPSK	1	49	13.40	13.58	13.92		
10	QPSK	25	0	12.60	12.93	13.22	14.00	0-1
10	QPSK	25	12	12.59	12.88	13.11		
10	QPSK	25	24	12.57	12.88	13.08		
10	QPSK	50	0	12.59	12.91	13.14		
10	16QAM	1	0	12.84	13.13	13.50	14.00	0-1
10	16QAM	1	24	12.83	13.01	13.32		
10	16QAM	1	49	12.78	13.08	13.27		
10	16QAM	25	0	11.65	11.95	12.23	13.00	0-2
10	16QAM	25	12	11.61	11.91	12.15		
10	16QAM	25	24	11.61	11.91	12.12		
10	16QAM	50	0	11.64	11.95	12.18		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	13.58	13.69	14.27	15.00	0
5	QPSK	1	12	13.30	13.65	13.85		
5	QPSK	1	24	13.56	13.57	14.14		
5	QPSK	12	0	12.51	12.96	13.21	14.00	0-1
5	QPSK	12	6	12.49	12.81	13.05		
5	QPSK	12	11	12.55	12.86	13.06		
5	QPSK	25	0	12.58	12.90	13.12		
5	16QAM	1	0	13.02	13.28	13.61	14.00	0-1
5	16QAM	1	12	12.68	12.92	13.20		
5	16QAM	1	24	12.99	13.24	13.43		
5	16QAM	12	0	11.67	11.97	12.25	13.00	0-2
5	16QAM	12	6	11.53	11.82	12.08		
5	16QAM	12	11	11.57	11.85	12.10		
5	16QAM	25	0	11.62	11.94	12.18		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	13.43	13.68	14.00	15.00	0
3	QPSK	1	7	13.39	13.55	13.97		
3	QPSK	1	14	13.41	13.46	13.92		
3	QPSK	8	0	12.56	12.93	13.13	14.00	0-1
3	QPSK	8	4	12.56	12.90	13.10		
3	QPSK	8	7	12.56	12.90	13.09		
3	QPSK	15	0	12.55	12.90	13.11		
3	16QAM	1	0	12.76	13.03	13.33	14.00	0-1
3	16QAM	1	7	12.74	13.00	13.28		
3	16QAM	1	14	12.75	12.99	13.22		
3	16QAM	8	0	11.60	11.95	12.19	13.00	0-2
3	16QAM	8	4	11.58	11.93	12.15		
3	16QAM	8	7	11.62	11.96	12.15		
3	16QAM	15	0	11.62	11.95	12.19		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	13.45	13.73	14.04	15.00	0
1.4	QPSK	1	2	13.42	13.60	14.01		
1.4	QPSK	1	5	13.43	13.52	14.00		
1.4	QPSK	3	0	13.49	13.68	14.07		
1.4	QPSK	3	1	13.47	13.56	14.04		
1.4	QPSK	3	2	13.50	13.55	14.04		
1.4	QPSK	6	0	12.53	12.88	13.10	14.00	0-1
1.4	16QAM	1	0	12.83	13.09	13.37	14.00	0-1
1.4	16QAM	1	2	12.78	13.05	13.35		
1.4	16QAM	1	5	12.80	13.06	13.30		
1.4	16QAM	3	0	12.59	12.95	13.19		
1.4	16QAM	3	1	12.59	12.94	13.18		
1.4	16QAM	3	2	12.58	12.94	13.18		
1.4	16QAM	6	0	11.64	12.01	12.23	13.00	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	12.75	13.36	13.23	14.00	0
20	QPSK	1	49	12.68	12.93	13.02		
20	QPSK	1	99	12.58	12.71	13.06		
20	QPSK	50	0	11.88	12.23	12.22	13.00	0-1
20	QPSK	50	24	11.79	12.07	12.16		
20	QPSK	50	49	11.83	12.04	12.26		
20	QPSK	100	0	11.84	12.11	12.23		
20	16QAM	1	0	12.16	12.55	12.47	13.00	0-1
20	16QAM	1	49	12.00	12.36	12.45		
20	16QAM	1	99	11.99	12.16	12.43		
20	16QAM	50	0	10.98	11.33	11.31	12.00	0-2
20	16QAM	50	24	10.86	11.17	11.26		
20	16QAM	50	49	10.90	11.13	11.35		
20	16QAM	100	0	10.89	11.17	11.30		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	13.18	13.01	13.09	14.00	0
15	QPSK	1	37	12.48	12.79	12.95		
15	QPSK	1	74	13.08	13.16	13.01		
15	QPSK	36	0	11.81	12.14	12.20	13.00	0-1
15	QPSK	36	18	11.60	11.90	12.05		
15	QPSK	36	37	11.75	11.97	12.24		
15	QPSK	75	0	11.77	12.02	12.21		
15	16QAM	1	0	12.56	12.84	12.84	13.00	0-1
15	16QAM	1	37	11.82	12.23	12.39		
15	16QAM	1	74	12.45	12.56	12.83		
15	16QAM	36	0	10.92	11.22	11.30	12.00	0-2
15	16QAM	36	18	10.69	11.01	11.17		
15	16QAM	36	37	10.82	11.04	11.29		
15	16QAM	75	0	10.85	11.09	11.28		

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	12.65	13.08	13.17	14.00	0
10	QPSK	1	24	12.69	13.04	13.08		
10	QPSK	1	49	12.61	12.88	13.09		
10	QPSK	25	0	11.79	12.18	12.35	13.00	0-1
10	QPSK	25	12	11.79	12.15	12.39		
10	QPSK	25	24	11.78	12.11	12.43		
10	QPSK	50	0	11.78	12.13	12.41		
10	16QAM	1	0	12.12	12.57	12.72	13.00	0-1
10	16QAM	1	24	12.13	12.58	12.81		
10	16QAM	1	49	12.00	12.51	12.65		
10	16QAM	25	0	10.92	11.35	11.51	12.00	0-2
10	16QAM	25	12	10.90	11.28	11.52		
10	16QAM	25	24	10.89	11.26	11.53		
10	16QAM	50	0	10.91	11.31	11.52		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	12.85	13.29	13.01	14.00	0
5	QPSK	1	12	12.54	12.93	13.09		
5	QPSK	1	24	12.87	13.20	13.12		
5	QPSK	12	0	11.84	12.23	12.51	13.00	0-1
5	QPSK	12	6	11.69	12.11	12.38		
5	QPSK	12	11	11.75	12.13	12.44		
5	QPSK	25	0	11.77	12.18	12.47		
5	16QAM	1	0	12.37	12.81	13.00	13.00	0-1
5	16QAM	1	12	11.99	12.41	12.63		
5	16QAM	1	24	12.28	12.70	12.91		
5	16QAM	12	0	10.95	11.35	11.63	12.00	0-2
5	16QAM	12	6	10.82	11.17	11.48		
5	16QAM	12	11	10.83	11.21	11.51		
5	16QAM	25	0	10.90	11.28	11.59		

Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	12.64	13.08	13.21	14.00	0
3	QPSK	1	7	12.62	13.05	13.09		
3	QPSK	1	14	12.65	13.00	13.18		
3	QPSK	8	0	11.76	12.18	12.46	13.00	0-1
3	QPSK	8	4	11.74	12.15	12.45		
3	QPSK	8	7	11.76	12.15	12.47		
3	QPSK	15	0	11.78	12.19	12.48		
3	16QAM	1	0	12.05	12.52	12.71	13.00	0-1
3	16QAM	1	7	12.10	12.54	12.72		
3	16QAM	1	14	12.04	12.43	12.68		
3	16QAM	8	0	10.89	11.32	11.59	12.00	0-2
3	16QAM	8	4	10.86	11.30	11.58		
3	16QAM	8	7	10.88	11.31	11.61		
3	16QAM	15	0	10.90	11.32	11.61		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	12.70	13.13	13.12	14.00	0
1.4	QPSK	1	2	12.68	13.12	13.19		
1.4	QPSK	1	5	12.69	13.09	13.03		
1.4	QPSK	3	0	12.70	13.17	13.09		
1.4	QPSK	3	1	12.73	13.15	13.08		
1.4	QPSK	3	2	12.71	13.16	13.21		
1.4	QPSK	6	0	11.74	12.15	12.46	13.00	0-1
1.4	16QAM	1	0	12.14	12.60	12.79	13.00	0-1
1.4	16QAM	1	2	12.12	12.57	12.77		
1.4	16QAM	1	5	12.11	12.55	12.78		
1.4	16QAM	3	0	11.86	12.29	12.58		
1.4	16QAM	3	1	11.87	12.26	12.57		
1.4	16QAM	3	2	11.84	12.24	12.55		
1.4	16QAM	6	0	10.87	11.34	11.66	12.00	0-2

<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	12.55	12.48	13.22	14.00	0
20	QPSK	1	49	12.42	12.52	13.23		
20	QPSK	1	99	12.68	12.64	13.33		
20	QPSK	50	0	11.95	12.20	12.39	13.00	0-1
20	QPSK	50	24	11.86	12.11	12.36		
20	QPSK	50	49	11.98	12.22	12.45		
20	QPSK	100	0	11.92	12.09	12.43		
20	16QAM	1	0	12.26	12.43	12.65	13.00	0-1
20	16QAM	1	49	12.07	12.45	12.65		
20	16QAM	1	99	12.09	12.04	12.73		
20	16QAM	50	0	11.03	11.30	11.49	12.00	0-2
20	16QAM	50	24	10.93	11.19	11.45		
20	16QAM	50	49	10.97	11.10	11.56		
20	16QAM	100	0	10.95	11.14	11.47		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	12.56	12.35	13.25	14.00	0
15	QPSK	1	37	12.49	12.45	13.15		
15	QPSK	1	74	12.32	12.56	13.26		
15	QPSK	36	0	11.83	12.21	12.40	13.00	0-1
15	QPSK	36	18	11.67	11.99	12.29		
15	QPSK	36	37	11.79	12.05	12.47		
15	QPSK	75	0	11.83	12.12	12.44		
15	16QAM	1	0	12.61	12.32	12.98	13.00	0-1
15	16QAM	1	37	11.90	12.30	12.56		
15	16QAM	1	74	12.44	12.62	12.87		
15	16QAM	36	0	10.97	11.31	11.51	12.00	0-2
15	16QAM	36	18	10.75	11.08	11.37		
15	16QAM	36	37	10.87	11.13	11.54		
15	16QAM	75	0	10.91	11.20	11.51		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	12.24	12.26	13.10	14.00	0
10	QPSK	1	24	12.38	12.36	13.25		
10	QPSK	1	49	12.48	12.45	13.31		
10	QPSK	25	0	11.88	12.27	12.59	13.00	0-1
10	QPSK	25	12	11.85	12.20	12.61		
10	QPSK	25	24	11.87	12.15	12.66		
10	QPSK	50	0	11.87	12.20	12.61		
10	16QAM	1	0	12.26	12.63	12.97	13.00	0-1
10	16QAM	1	24	12.15	12.60	12.84		
10	16QAM	1	49	12.14	12.45	12.91		
10	16QAM	25	0	10.98	11.36	11.68	12.00	0-2
10	16QAM	25	12	10.94	11.31	11.66		
10	16QAM	25	24	10.94	11.28	11.72		
10	16QAM	50	0	10.96	11.32	11.68		

Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	12.39	12.59	13.09	14.00	0
5	QPSK	1	12	12.42	12.46	13.16		
5	QPSK	1	24	12.59	12.39	13.28		
5	QPSK	12	0	11.83	12.28	12.72	13.00	0-1
5	QPSK	12	6	11.70	12.12	12.58		
5	QPSK	12	11	11.73	12.15	12.67		
5	QPSK	25	0	11.77	12.20	12.71		
5	16QAM	1	0	12.36	12.57	12.95	13.00	0-1
5	16QAM	1	12	11.97	12.45	12.80		
5	16QAM	1	24	12.30	12.23	12.87		
5	16QAM	12	0	10.96	11.40	11.79	12.00	0-2
5	16QAM	12	6	10.80	11.23	11.65		
5	16QAM	12	11	10.85	11.24	11.73		
5	16QAM	25	0	10.90	11.32	11.79		
Channel				26055	26340	26675	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	12.66	12.49	13.09	14.00	0
3	QPSK	1	7	12.67	12.33	13.11		
3	QPSK	1	14	12.61	12.26	13.29		
3	QPSK	8	0	11.77	12.25	12.72	13.00	0-1
3	QPSK	8	4	11.76	12.19	12.73		
3	QPSK	8	7	11.75	12.20	12.73		
3	QPSK	15	0	11.78	12.21	12.71		
3	16QAM	1	0	12.03	12.55	12.89	13.00	0-1
3	16QAM	1	7	12.08	12.54	12.98		
3	16QAM	1	14	12.04	12.48	12.97		
3	16QAM	8	0	10.88	11.34	11.82	12.00	0-2
3	16QAM	8	4	10.88	11.33	11.82		
3	16QAM	8	7	10.87	11.33	11.85		
3	16QAM	15	0	10.91	11.37	11.83		
Channel				26047	26340	26683	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	12.32	12.56	13.12	14.00	0
1.4	QPSK	1	2	12.45	12.48	13.21		
1.4	QPSK	1	5	12.56	12.39	13.30		
1.4	QPSK	3	0	12.11	12.45	13.08		
1.4	QPSK	3	1	12.23	12.33	13.12		
1.4	QPSK	3	2	12.55	12.21	13.28		
1.4	QPSK	6	0	11.75	12.21	12.75	13.00	0-1
1.4	16QAM	1	0	12.15	12.63	12.89	13.00	0-1
1.4	16QAM	1	2	12.17	12.60	12.91		
1.4	16QAM	1	5	12.15	12.61	12.98		
1.4	16QAM	3	0	11.90	12.36	12.87		
1.4	16QAM	3	1	11.89	12.35	12.86		
1.4	16QAM	3	2	11.87	12.33	12.84		
1.4	16QAM	6	0	10.91	11.38	11.93	12.00	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	13.47	13.17	13.14	14.00	0
20	QPSK	1	49	**13.62**	13.26	13.26		
20	QPSK	1	99	12.95	12.71	12.70		
20	QPSK	50	0	12.50	12.39	12.39	13.00	0-1
20	QPSK	50	24	12.05	11.84	11.82		
20	QPSK	50	49	12.17	12.20	12.03		
20	QPSK	100	0	12.34	12.30	11.64		
20	16QAM	1	0	12.77	12.54	12.54	13.00	0-1
20	16QAM	1	49	12.93	12.62	12.64		
20	16QAM	1	99	12.35	12.10	12.05		
20	16QAM	50	0	11.77	10.83	11.45	12.00	0-2
20	16QAM	50	24	11.69	11.35	11.05		
20	16QAM	50	49	11.38	11.38	11.24		
20	16QAM	100	0	10.95	10.86	11.00		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	13.45	13.15	13.21	14.00	0
15	QPSK	1	37	13.21	13.09	13.03		
15	QPSK	1	74	13.47	13.21	13.20		
15	QPSK	36	0	12.58	12.13	12.35	13.00	0-1
15	QPSK	36	18	12.33	12.20	12.08		
15	QPSK	36	37	12.18	12.25	12.22		
15	QPSK	75	0	12.26	12.32	12.29		
15	16QAM	1	0	12.83	12.85	12.76	13.00	0-1
15	16QAM	1	37	12.55	12.42	12.42		
15	16QAM	1	74	12.82	12.70	12.64		
15	16QAM	36	0	11.47	11.20	11.10	12.00	0-2
15	16QAM	36	18	11.41	11.06	11.22		
15	16QAM	36	37	11.29	11.08	11.12		
15	16QAM	75	0	11.17	11.07	11.17		

Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	13.49	13.23	13.08	14.00	0
10	QPSK	1	24	13.48	13.14	13.16		
10	QPSK	1	49	13.28	13.14	13.12		
10	QPSK	25	0	11.87	11.78	12.42	13.00	0-1
10	QPSK	25	12	12.37	11.68	12.38		
10	QPSK	25	24	12.18	12.33	11.70		
10	QPSK	50	0	12.52	12.37	12.20		
10	16QAM	1	0	12.81	12.69	12.71	13.00	0-1
10	16QAM	1	24	12.80	12.68	12.67		
10	16QAM	1	49	12.63	12.48	12.40		
10	16QAM	25	0	11.20	10.78	11.01	12.00	0-2
10	16QAM	25	12	11.60	10.73	11.24		
10	16QAM	25	24	11.08	11.11	11.34		
10	16QAM	50	0	11.13	11.16	11.35		
Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	13.61	13.11	13.11	14.00	0
5	QPSK	1	12	13.59	13.23	13.08		
5	QPSK	1	24	13.60	13.25	13.19		
5	QPSK	12	0	12.63	11.96	11.88	13.00	0-1
5	QPSK	12	6	12.08	12.27	11.84		
5	QPSK	12	11	12.35	12.28	12.09		
5	QPSK	25	0	12.08	11.88	11.82		
5	16QAM	1	0	12.91	12.88	12.85	13.00	0-1
5	16QAM	1	12	12.83	12.71	12.66		
5	16QAM	1	24	12.89	12.74	12.68		
5	16QAM	12	0	11.52	11.35	11.31	12.00	0-2
5	16QAM	12	6	11.07	10.90	10.98		
5	16QAM	12	11	11.53	10.86	11.16		
5	16QAM	25	0	11.05	10.86	10.82		

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

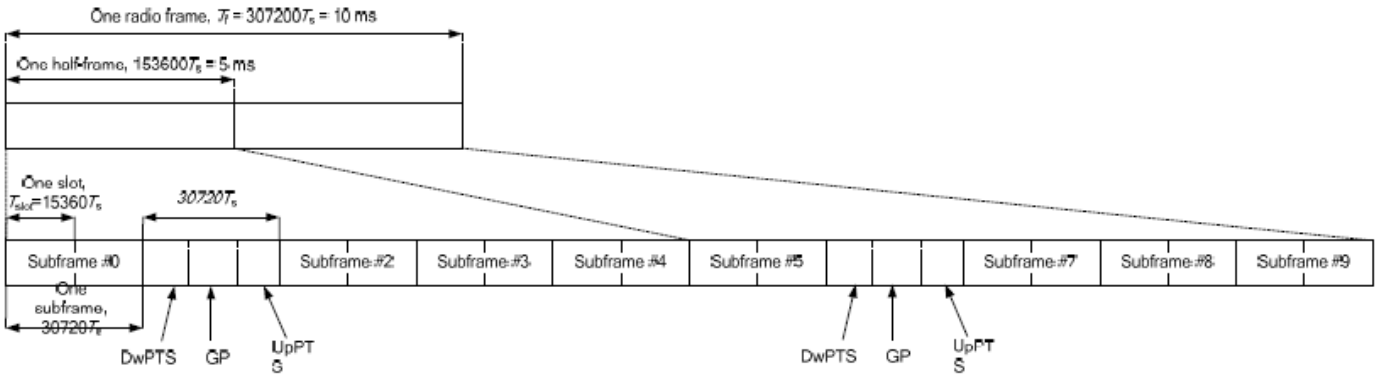


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

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

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

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

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

Maximum Average RF Power (Proximity Sensor Inactive)

<TDD LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	21.97	21.86	22.12	21.82	21.68	23.00	0
20	QPSK	1	49	21.95	21.85	22.07	21.81	21.59		
20	QPSK	1	99	21.38	21.31	21.53	21.24	20.99		
20	QPSK	50	0	20.96	21.12	21.37	21.04	20.85	22.00	0-1
20	QPSK	50	24	20.78	20.97	21.22	20.90	20.68		
20	QPSK	50	49	20.58	20.86	21.09	20.74	20.55		
20	QPSK	100	0	20.76	20.97	21.20	20.86	20.68		
20	16QAM	1	0	21.09	21.01	21.23	20.90	20.75	22.00	0-1
20	16QAM	1	49	21.06	20.90	21.15	20.81	20.61		
20	16QAM	1	99	20.48	20.36	20.59	20.28	20.06		
20	16QAM	50	0	19.95	20.13	20.40	20.10	19.86	21.00	0-2
20	16QAM	50	24	19.84	20.03	20.27	19.96	19.71		
20	16QAM	50	49	19.70	19.90	20.10	19.81	19.54		
20	16QAM	100	0	19.49	19.99	20.22	19.90	19.67		
Channel				39725	40173	40620	41068	41515	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	21.95	21.69	22.08	21.79	21.58	23.00	0
15	QPSK	1	37	21.90	21.78	22.00	21.70	21.59		
15	QPSK	1	74	21.72	21.55	22.06	21.66	21.62		
15	QPSK	36	0	20.87	21.06	21.32	20.95	20.80	22.00	0-1
15	QPSK	36	18	20.99	20.84	21.06	20.70	20.52		
15	QPSK	36	37	21.02	20.86	21.09	20.76	20.56		
15	QPSK	75	0	20.94	20.98	21.21	20.85	20.70		
15	16QAM	1	0	21.55	21.42	21.70	21.33	21.24	22.00	0-1
15	16QAM	1	37	20.93	20.87	21.02	20.73	20.56		
15	16QAM	1	74	21.16	21.00	21.23	20.92	20.78		
15	16QAM	36	0	20.02	20.10	20.33	19.99	19.81	21.00	0-2
15	16QAM	36	18	20.12	19.83	20.06	19.71	19.54		
15	16QAM	36	37	20.47	19.83	20.08	19.73	19.54		
15	16QAM	75	0	20.31	20.02	20.22	19.89	19.71		

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39700	40160	40620	41080	41540		
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	21.85	21.80	22.08	21.73	21.56	23.00	0
10	QPSK	1	24	21.72	21.65	22.01	21.63	21.45		
10	QPSK	1	49	21.58	21.79	21.98	21.69	21.48		
10	QPSK	25	0	20.76	21.12	21.31	21.03	20.80	22.00	0-1
10	QPSK	25	12	20.68	21.07	21.23	20.97	20.73		
10	QPSK	25	24	20.62	20.99	21.18	20.91	20.63		
10	QPSK	50	0	20.67	21.05	21.24	20.97	20.71		
10	16QAM	1	0	21.24	21.13	21.32	21.08	20.92	22.00	0-1
10	16QAM	1	24	21.15	21.05	21.22	21.01	20.78		
10	16QAM	1	49	20.96	20.86	21.00	20.81	20.55		
10	16QAM	25	0	19.69	20.19	20.35	20.08	19.84	21.00	0-2
10	16QAM	25	12	19.56	20.07	20.27	20.00	19.75		
10	16QAM	25	24	19.99	20.01	20.21	19.96	19.69		
10	16QAM	50	0	19.90	20.09	20.37	19.98	19.79		
Channel				39675	40148	40620	41093	41565	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	21.91	21.79	22.06	21.74	21.56	23.00	0
5	QPSK	1	12	21.80	21.65	22.02	21.56	21.61		
5	QPSK	1	24	21.71	21.56	21.98	21.45	21.49		
5	QPSK	12	0	20.78	21.09	21.29	21.07	20.79	22.00	0-1
5	QPSK	12	6	20.80	20.93	21.14	20.88	20.65		
5	QPSK	12	11	20.63	20.97	21.19	20.90	20.65		
5	QPSK	25	0	20.90	21.03	21.23	20.90	20.72		
5	16QAM	1	0	21.41	21.29	21.49	21.28	21.06	22.00	0-1
5	16QAM	1	12	21.09	20.95	21.14	20.92	20.71		
5	16QAM	1	24	21.32	21.15	21.35	21.11	20.90		
5	16QAM	12	0	20.14	20.15	20.37	20.05	19.82	21.00	0-2
5	16QAM	12	6	19.65	20.00	20.24	19.91	19.66		
5	16QAM	12	11	19.75	20.01	20.23	19.92	19.69		
5	16QAM	25	0	19.84	20.16	20.38	20.08	19.80		

Note:
TDD LTE Band 41 has 5 required test channels was according to KDB 447498 D01v05r02.

Reduced Average RF Power (Proximity Sensor Active)
<TDD LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	13.09	13.07	13.48	13.00	12.77	14.00	0
20	QPSK	1	49	13.07	13.03	13.21	12.95	12.66		
20	QPSK	1	99	12.51	12.52	12.90	12.44	12.10		
20	QPSK	50	0	12.20	11.74	12.39	12.09	11.84	13.00	0-1
20	QPSK	50	24	12.08	11.42	12.24	11.97	11.69		
20	QPSK	50	49	11.95	11.62	12.13	11.85	11.54		
20	QPSK	100	0	12.06	12.03	12.23	11.93	11.65		
20	16QAM	1	0	12.15	12.17	12.34	12.11	11.85	13.00	0-1
20	16QAM	1	49	12.10	12.11	12.29	12.00	11.75		
20	16QAM	1	99	11.59	11.59	11.88	11.54	11.14		
20	16QAM	50	0	11.22	10.89	11.40	11.12	10.89	12.00	0-2
20	16QAM	50	24	11.12	10.81	11.29	11.00	10.74		
20	16QAM	50	49	10.95	10.49	11.13	10.83	10.58		
20	16QAM	100	0	11.06	11.03	11.23	10.87	10.69		
Channel				39725	40173	40620	41068	41515	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	13.40	13.42	13.42	13.44	13.29	14.00	0
15	QPSK	1	37	12.99	13.15	12.95	12.92	12.67		
15	QPSK	1	74	13.21	13.40	13.22	13.12	12.81		
15	QPSK	36	0	11.94	12.39	11.95	12.07	11.78	13.00	0-1
15	QPSK	36	18	11.94	12.65	11.94	11.90	11.63		
15	QPSK	36	37	11.96	12.30	11.92	11.87	11.64		
15	QPSK	75	0	12.09	12.47	12.03	11.96	11.65		
15	16QAM	1	0	12.40	12.35	12.42	12.47	12.32	13.00	0-1
15	16QAM	1	37	12.01	12.20	12.00	11.91	11.64		
15	16QAM	1	74	12.20	12.27	12.21	12.17	11.84		
15	16QAM	36	0	11.15	11.34	10.95	11.00	10.80	12.00	0-2
15	16QAM	36	18	10.95	11.24	10.92	10.84	10.66		
15	16QAM	36	37	11.19	11.20	10.93	10.84	10.65		
15	16QAM	75	0	11.16	11.18	11.07	10.99	10.71		

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				39700	40160	40620	41080	41540		
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	13.25	13.41	13.19	13.14	12.90	14.00	0
10	QPSK	1	24	13.17	13.33	13.14	13.06	12.79		
10	QPSK	1	49	12.96	13.14	12.97	12.88	12.57		
10	QPSK	25	0	11.92	12.23	11.54	12.11	11.83	13.00	0-1
10	QPSK	25	12	11.57	11.87	11.49	12.04	11.76		
10	QPSK	25	24	11.63	11.79	11.53	11.97	11.68		
10	QPSK	50	0	11.61	12.17	11.63	12.01	11.75		
10	16QAM	1	0	12.30	12.45	12.30	12.24	12.00	13.00	0-1
10	16QAM	1	24	12.23	12.39	12.21	12.12	11.88		
10	16QAM	1	49	12.04	12.22	12.02	11.93	11.66		
10	16QAM	25	0	10.79	10.76	10.54	11.14	10.86	12.00	0-2
10	16QAM	25	12	10.57	10.71	10.51	11.06	10.79		
10	16QAM	25	24	10.61	11.12	10.76	11.00	10.72		
10	16QAM	50	0	11.03	10.91	11.17	11.09	10.81		
Channel				39675	40148	40620	41093	41565	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.3	2687.5		
5	QPSK	1	0	13.40	13.47	13.38	13.33	13.06	14.00	0
5	QPSK	1	12	13.03	13.23	13.03	12.92	12.68		
5	QPSK	1	24	13.27	13.46	13.22	13.14	12.88		
5	QPSK	12	0	11.76	11.89	11.74	12.07	11.82	13.00	0-1
5	QPSK	12	6	11.77	11.95	11.73	11.84	11.66		
5	QPSK	12	11	11.71	12.26	11.78	11.95	11.68		
5	QPSK	25	0	11.73	12.34	11.76	12.02	11.76		
5	16QAM	1	0	12.41	12.45	12.49	12.41	12.14	13.00	0-1
5	16QAM	1	12	12.12	12.29	12.11	12.03	11.77		
5	16QAM	1	24	12.38	12.48	12.32	12.24	11.99		
5	16QAM	12	0	10.95	11.09	10.76	11.14	10.88	12.00	0-2
5	16QAM	12	6	10.75	10.93	10.72	10.97	10.70		
5	16QAM	12	11	10.71	10.97	10.79	10.93	10.67		
5	16QAM	25	0	11.12	10.99	10.99	10.97	10.79		

Note:
TDD LTE Band 41 has 5 required test channels was according to KDB 447498 D01v05r02.

<WLAN Conducted Power>

General Note:

1. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
2. Per KDB 248227 D01v02r01, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio < 0.04, no additional SAR measurements for MIMO.
3. 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.
4. 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).
5. 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.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN Antenna 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Antenna 1	802.11b	CH 1	2412	1Mbps	15.79	16.50	98.86
		CH 6	2437		15.73	16.50	
		CH 11	2462		**15.94**	16.50	
	802.11g	CH 1	2412	6Mbps	13.87	14.00	93.64
		CH 6	2437		13.72	14.00	
		CH 11	2462		13.80	14.00	
	802.11n-HT20	CH 1	2412	MCS0	14.13	15.00	95.28
		CH 6	2437		14.12	15.00	
		CH 11	2462		13.87	15.00	

<2.4GHz WLAN Antenna 2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Antenna 2	802.11b	CH 1	2412	1Mbps	**16.12**	16.50	98.86
		CH 6	2437		15.92	16.50	
		CH 11	2462		15.80	16.50	
	802.11g	CH 1	2412	6Mbps	15.07	15.50	93.64
		CH 6	2437		14.98	15.50	
		CH 11	2462		14.90	15.50	
	802.11n-HT20	CH 1	2412	MCS0	15.05	15.50	95.28
		CH 6	2437		14.84	15.50	
		CH 11	2462		14.43	15.50	

<2.4GHz WLAN Antenna 1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Antenna 1+2	802.11n-HT20	CH 1	2412	MCS0	**14.91**	15.50	91.38
		CH 6	2437		14.72	15.50	
		CH 11	2462		14.60	15.00	

<5GHz WLAN Antenna 1>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Antenna 1	802.11a	CH 36	5180	6Mbps	14.67	15.00	92.86
		CH 40	5200		14.01	15.00	
		CH 44	5220		14.66	15.00	
		CH 48	5240		**14.82**	15.00	
	802.11n-HT20	CH 36	5180	MCS0	13.68	14.00	95.05
		CH 40	5200		13.65	14.00	
		CH 44	5220		13.74	14.00	
		CH 48	5240		13.90	14.00	
	802.11n-HT40	CH 38	5190	MCS0	12.49	13.00	90.38
		CH 46	5230		12.42	13.00	
	802.11ac-VHT20	CH 36	5180	MCS0	12.06	13.00	95.20
		CH 40	5200		11.82	13.00	
		CH 44	5220		11.93	13.00	
		CH 48	5240		11.86	13.00	
	802.11ac-VHT40	CH 38	5190	MCS0	12.50	13.00	87.22
		CH 46	5230		12.40	13.00	
	802.11ac-VHT80	CH 42	5210	MCS0	11.55	13.00	77.17

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Antenna 1	802.11a	CH 52	5260	6Mbps	13.74	14.00	92.86
		CH 56	5280		12.84	14.00	
		CH 60	5300		13.41	14.00	
		CH 64	5320		13.13	14.00	
	802.11n-HT20	CH 52	5260	MCS0	13.57	14.00	95.05
		CH 56	5280		13.54	14.00	
		CH 60	5300		13.67	14.00	
		CH 64	5320		13.49	14.00	
	802.11n-HT40	CH 54	5270	MCS0	11.99	12.50	90.38
		CH 62	5310		11.87	12.50	
	802.11ac-VHT20	CH 52	5260	MCS0	11.75	12.50	95.20
		CH 56	5280		11.57	12.50	
		CH 60	5300		11.62	12.50	
		CH 64	5320		11.64	12.50	
	802.11ac-VHT40	CH 54	5270	MCS0	12.22	12.50	87.22
		CH 62	5310		12.04	12.50	
	802.11ac-VHT80	CH 58	5290	MCS0	11.04	12.50	77.17

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 1	802.11a	CH 100	5500	6Mbps	**12.99**	13.30	92.86
		CH 116	5580		12.85	13.30	
		CH 124	5620		12.57	13.30	
		CH 132	5660		12.54	13.30	
		CH 140	5700		12.38	13.30	
	802.11n-HT20	CH 100	5500	MCS0	11.86	12.00	95.05
		CH 116	5580		11.09	12.00	
		CH 124	5620		11.28	12.00	
		CH 132	5660		11.30	12.00	
		CH 140	5700		11.47	12.00	
	802.11n-HT40	CH 102	5510	MCS0	11.50	12.00	90.38
		CH 110	5550		11.42	12.00	
		CH 126	5630		10.61	12.00	
		CH 134	5670		10.65	12.00	
	802.11ac-VHT20	CH 100	5500	MCS0	10.95	11.50	95.20
		CH 116	5580		10.19	11.50	
		CH 124	5620		10.21	11.50	
		CH 132	5660		10.20	11.50	
		CH 140	5700		10.42	11.50	
	802.11ac-VHT40	CH 102	5510	MCS0	11.28	11.50	87.22
		CH 110	5550		10.97	11.50	
		CH 126	5630		10.72	11.50	
		CH 134	5670		10.60	11.50	
	802.11ac-VHT80	CH 106	5530	MCS0	10.10	10.50	77.17
		CH 122	5610		9.83	10.50	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Antenna 1	802.11a	CH 149	5745	6Mbps	**11.15**	11.30	92.86
		CH 157	5785		11.02	11.30	
		CH 165	5825		11.07	11.30	
	802.11n-HT20	CH 149	5745	MCS0	9.64	10.00	95.05
		CH 157	5785		9.61	10.00	
		CH 165	5825		9.45	10.00	
	802.11n-HT40	CH 151	5755	MCS0	10.35	10.50	90.38
		CH 159	5795		10.44	10.50	
	802.11ac-VHT20	CH 149	5745	MCS0	10.45	10.50	95.20
		CH 157	5785		10.33	10.50	
		CH 165	5825		10.44	10.50	
	802.11ac-VHT40	CH 151	5755	MCS0	10.48	10.50	87.22
		CH 159	5795		10.41	10.50	
	802.11ac-VHT80	CH 155	5775	MCS0	10.31	10.50	77.17

<5GHz WLAN Antenna 2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Antenna 2	802.11a	CH 36	5180	6Mbps	12.50	13.00	92.86
		CH 40	5200		11.92	13.00	
		CH 44	5220		12.58	13.00	
		CH 48	5240		**12.67**	13.00	
	802.11n-HT20	CH 36	5180	MCS0	12.17	12.80	95.05
		CH 40	5200		12.31	12.80	
		CH 44	5220		12.38	12.80	
		CH 48	5240		12.58	12.80	
	802.11n-HT40	CH 38	5190	MCS0	12.59	12.80	90.38
		CH 46	5230		12.58	12.80	
	802.11ac-VHT20	CH 36	5180	MCS0	12.28	12.80	95.20
		CH 40	5200		11.98	12.80	
		CH 44	5220		12.04	12.80	
		CH 48	5240		12.15	12.80	
	802.11ac-VHT40	CH 38	5190	MCS0	12.63	12.80	87.22
		CH 46	5230		12.44	12.80	
	802.11ac-VHT80	CH 42	5210	MCS0	12.01	12.80	77.17

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Antenna 2	802.11a	CH 52	5260	6Mbps	12.53	13.00	92.86
		CH 56	5280		11.43	13.00	
		CH 60	5300		12.25	13.00	
		CH 64	5320		12.44	13.00	
	802.11n-HT20	CH 52	5260	MCS0	11.11	11.50	95.05
		CH 56	5280		11.10	11.50	
		CH 60	5300		11.15	11.50	
		CH 64	5320		11.08	11.50	
	802.11n-HT40	CH 54	5270	MCS0	12.51	12.80	90.38
		CH 62	5310		12.35	12.80	
	802.11ac-VHT20	CH 52	5260	MCS0	11.98	12.50	95.20
		CH 56	5280		11.51	12.50	
		CH 60	5300		11.56	12.50	
		CH 64	5320		11.75	12.50	
	802.11ac-VHT40	CH 54	5270	MCS0	12.48	12.80	87.22
		CH 62	5310		12.43	12.80	
	802.11ac-VHT80	CH 58	5290	MCS0	11.89	12.50	77.17

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 2	802.11a	CH 100	5500	6Mbps	**10.56**	11.00	92.86
		CH 116	5580		10.41	11.00	
		CH 124	5620		10.21	11.00	
		CH 132	5660		10.14	11.00	
		CH 140	5700		10.26	11.00	
	802.11n-HT20	CH 100	5500	MCS0	10.50	11.00	95.05
		CH 116	5580		10.24	11.00	
		CH 124	5620		10.14	11.00	
		CH 132	5660		10.06	11.00	
		CH 140	5700		10.03	11.00	
	802.11n-HT40	CH 102	5510	MCS0	10.20	10.50	90.38
		CH 110	5550		10.12	10.50	
		CH 126	5630		10.06	10.50	
		CH 134	5670		9.56	10.50	
	802.11ac-VHT20	CH 100	5500	MCS0	9.75	10.00	95.20
		CH 116	5580		9.70	10.00	
		CH 124	5620		9.52	10.00	
		CH 132	5660		9.42	10.00	
		CH 140	5700		9.23	10.00	
	802.11ac-VHT40	CH 102	5510	MCS0	10.51	10.80	87.22
		CH 110	5550		10.46	10.80	
		CH 126	5630		10.34	10.80	
		CH 134	5670		10.40	10.80	
	802.11ac-VHT80	CH 106	5530	MCS0	10.04	10.50	77.17
		CH 122	5610		10.03	10.50	

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Antenna 2	802.11a	CH 149	5745	6Mbps	11.21	11.50	92.86
		CH 157	5785		**11.35**	11.50	
		CH 165	5825		11.18	11.50	
	802.11n-HT20	CH 149	5745	MCS0	10.46	11.00	95.05
		CH 157	5785		10.38	11.00	
		CH 165	5825		10.13	11.00	
	802.11n-HT40	CH 151	5755	MCS0	10.75	11.00	90.38
		CH 159	5795		10.78	11.00	
	802.11ac-VHT20	CH 149	5745	MCS0	11.30	11.50	95.20
		CH 157	5785		11.27	11.50	
		CH 165	5825		10.37	11.50	
	802.11ac-VHT40	CH 151	5755	MCS0	10.95	11.30	87.22
		CH 159	5795		10.90	11.30	
	802.11ac-VHT80	CH 155	5775	MCS0	11.19	11.30	77.17

<5GHz WLAN Antenna 1+2>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Antenna 1+2	802.11n-HT20	CH 36	5180	MCS0	**15.25**	15.50	90.68
		CH 40	5200		15.10	15.50	
		CH 44	5220		15.17	15.50	
		CH 48	5240		15.12	15.50	
	802.11n-HT40	CH 38	5190	MCS0	14.78	15.00	82.78
		CH 46	5230		14.65	15.00	
	802.11ac-VHT20	CH 36	5180	MCS0	15.22	15.50	87.48
		CH 40	5200		15.02	15.50	
		CH 44	5220		15.04	15.50	
		CH 48	5240		14.88	15.50	
	802.11ac-VHT40	CH 38	5190	MCS0	15.13	15.30	87.31
		CH 46	5230		14.91	15.30	
	802.11ac-VHT80	CH 42	5210	MCS0	14.65	15.00	66.44

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Antenna 1+2	802.11n-HT20	CH 52	5260	MCS0	14.85	15.50	90.68
		CH 56	5280		14.81	15.50	
		CH 60	5300		**14.95**	15.50	
		CH 64	5320		14.87	15.50	
	802.11n-HT40	CH 54	5270	MCS0	14.37	14.50	82.78
		CH 62	5310		14.31	14.50	
	802.11ac-VHT20	CH 52	5260	MCS0	14.72	15.00	87.48
		CH 56	5280		14.49	15.00	
		CH 60	5300		14.51	15.00	
		CH 64	5320		14.47	15.00	
	802.11ac-VHT40	CH 54	5270	MCS0	14.80	15.00	87.31
		CH 62	5310		14.67	15.00	
	802.11ac-VHT80	CH 58	5290	MCS0	14.43	15.00	66.44

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Antenna 1+2	802.11n-HT20	CH 100	5500	MCS0	**13.74**	14.00	90.68
		CH 116	5580		13.45	14.00	
		CH 124	5620		13.27	14.00	
		CH 132	5660		13.26	14.00	
		CH 140	5700		13.28	14.00	
	802.11n-HT40	CH 102	5510	MCS0	13.68	13.80	82.78
		CH 110	5550		13.56	13.80	
		CH 126	5630		13.21	13.80	
		CH 134	5670		12.97	13.80	
	802.11ac-VHT20	CH 100	5500	MCS0	13.60	13.80	87.48
		CH 116	5580		13.34	13.80	
		CH 124	5620		13.27	13.80	
		CH 132	5660		13.25	13.80	
		CH 140	5700		13.16	13.80	
	802.11ac-VHT40	CH 102	5510	MCS0	13.61	13.80	87.31
		CH 110	5550		13.49	13.80	
		CH 126	5630		13.33	13.80	
		CH 134	5670		13.55	13.80	
	802.11ac-VHT80	CH 106	5530	MCS0	12.96	13.50	66.44
		CH 122	5610		12.81	13.50	

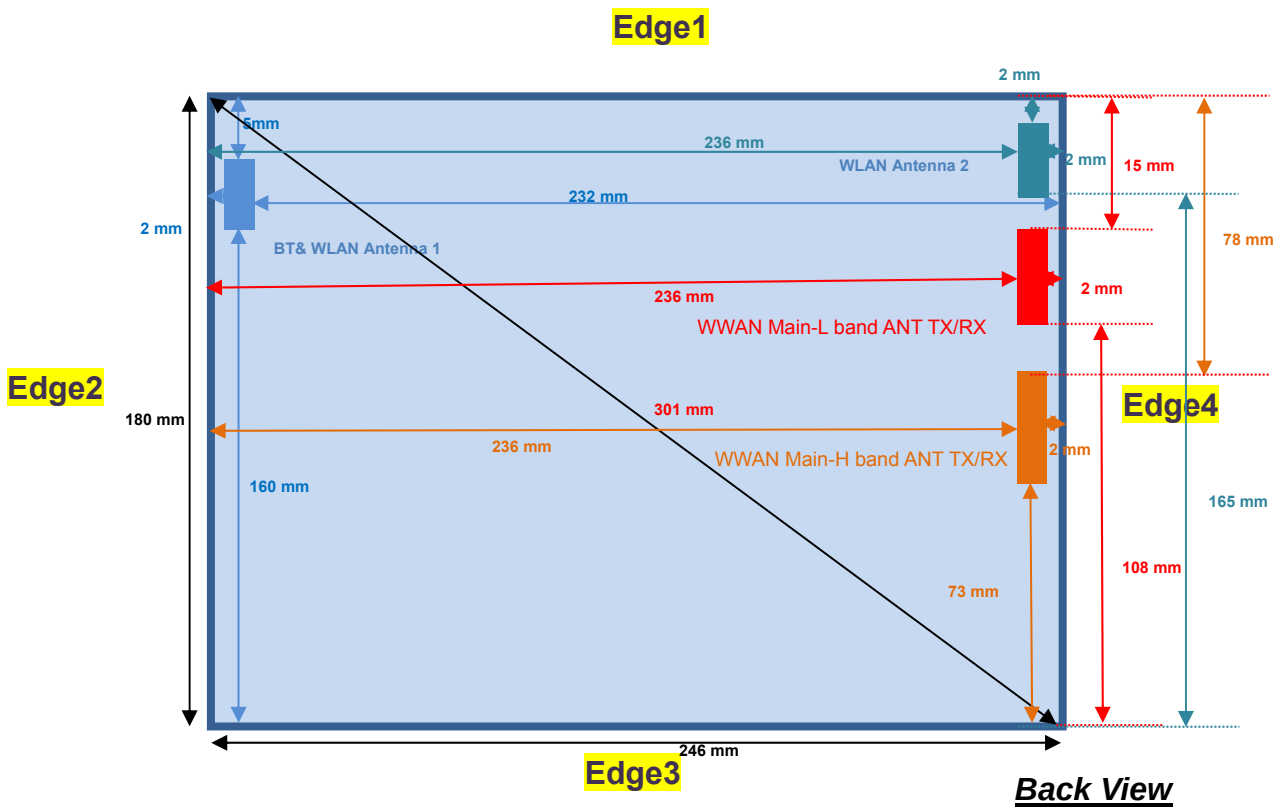
	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Antenna 1+2	802.11n-HT20	CH 149	5745	MCS0	**14.38**	14.50	90.68
		CH 157	5785		13.99	14.50	
		CH 165	5825		13.95	14.50	
	802.11n-HT40	CH 151	5755	MCS0	13.51	13.80	82.78
		CH 159	5795		13.66	13.80	
	802.11ac-VHT20	CH 149	5745	MCS0	13.85	14.00	87.48
		CH 157	5785		13.98	14.00	
		CH 165	5825		13.90	14.00	
	802.11ac-VHT40	CH 151	5755	MCS0	13.75	13.80	87.31
		CH 159	5795		13.74	13.80	
	802.11ac-VHT80	CH 155	5775	MCS0	13.72	13.80	66.44

<Bluetooth Conducted Power>

Mode	Channel	Frequency (MHz)	Average power (dBm)			Tune-up Limit
			1Mbps	2Mbps	3Mbps	
v3.0 with EDR	CH 00	2402	9.05	6.45	6.40	9.50
	CH 39	2441	**9.43**	7.15	7.23	
	CH 78	2480	9.30	7.35	7.30	

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-up Limit
			GFSK	
v4.1 with LE	CH 00	2402	6.17	7.50
	CH 19	2440	7.00	
	CH 39	2480	7.17	

14. Antenna Location



General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v05r02, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v05r02, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v05r02, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz
7. For the bottom-face that proximity sensor power reduction is applied for SAR compliance, additional SAR testing at “sensor trigger distance – 1mm” with EUT transmitting full power in normal mode was performed.

SAR test exclusion table distance is ≤ 50mm

Exposure Position	Wireless Interface	GPRS 850 Class 10	WCDMA Band V	LTE Band 5	LTE Band 26	GPRS 1900 Class 10	WCDMA Band IV	WCDMA Band II	LTE Band 4	LTE Band 25	LTE Band 7	LTE Band 41
	Calculated Frequency	848MHz	846MHz	848MHz	831.5MHz	1909MHz	1750MHz	1907MHz	1909MHz	1914MHz	2570MHz	2688MHz
	Maximum power (dBm)	24	23.00	23	17	20.74	23	22.5	23.5	23	23	23
	Maximum rated power(mW)	251.0	200.0	200.0	50.0	119.0	200.0	178.0	224.0	200.0	200.0	200.0
Bottom Face	Separation distance(mm)	0				0						
	exclusion threshold	92.3	36.8	36.8	59.3	32.9	52.9	49.2	61.9	55.3	64.1	65.6
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 1	Separation distance(mm)	15.0										
	exclusion threshold	30.8	12.3	12.3	19.8							
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**							
Edge 4	Separation distance(mm)	2.0				2.0						
	exclusion threshold	92.3	36.8	36.8	59.3	32.9	52.9	49.2	61.9	55.3	64.1	65.6
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Exposure Position	Wireless Interface	BT	802.11b Ant 1	802.11b Ant 2	802.11a Ant 1	802.11a Ant 2
	Calculated Frequency	2480MHz	2462MHz	2462MHz	5825MHz	5825MHz
	Maximum power (dBm)	9.5	16.5	16.5	15	13
	Maximum rated power(mW)	9.0	45.0	45.0	32.0	20.0
Bottom Face	Separation distance(mm)	0		0	0	0
	exclusion threshold	2.8	14.1	14.1	15.5	9.7
	Testing required?	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 1	Separation distance(mm)	5.0		5.0	5.0	5.0
	exclusion threshold	2.8	14.1	14.1	15.5	9.7
	Testing required?	**No**	**Yes**	**Yes**	**Yes**	**Yes**
Edge 2	Separation distance(mm)	2.0			2.0	
	exclusion threshold	2.8	14.1		15.5	
	Testing required?	**No**	**Yes**		**Yes**	
Edge 4	Separation distance(mm)			2.0		2.0
	exclusion threshold			14.1		9.7
	Testing required?			**Yes**		**Yes**

SAR test exclusion table distance is > 50mm

Exposure Position	Wireless Interface	GPRS 850 Class 10	WCDMA Band V	LTE Band 5	LTE Band 26	GPRS 1900 Class 10	WCDMA Band IV	WCDMA Band II	LTE Band 4	LTE Band 25	LTE Band 7	LTE Band 41
	Calculated Frequency	848MHz	846MHz	848MHz	831.5MHz	1909MHz	1750MHz	1907MHz	1909MHz	1914MHz	2570MHz	2688MHz
	Maximum power (dBm)	24	23.00	23	17	20.74	23	22.5	23.5	23	23	23
	Maximum rated power(mW)	251.0	200.0	200.0	50.0	119.0	200.0	178.0	224.0	200.0	200.0	200.0
Edge 1	Separation distance(mm)					78.0						
	exclusion threshold					389.0	393.0	389.0	389.0	388.0	374.0	371.0
	Testing required?					**No**	**No**	**No**	**No**	**No**	**No**	**No**
Edge 2	Separation distance(mm)	236.0				236.0						
	exclusion threshold	1214.0	1212.0	1214.0	1973.0	1969.0	1973.0	1969.0	1969.0	1968.0	1954.0	1951.0
	Testing required?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Edge 3	Separation distance(mm)	108.0				73.0						
	exclusion threshold	491.0	490.0	491.0	693.0	339.0	343.0	339.0	339.0	338.0	324.0	321.0
	Testing required?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Exposure Position	Wireless Interface	BT	802.11b Ant 1	802.11b Ant 2	802.11a Ant 1	802.11a Ant 2
	Calculated Frequency	2480MHz	2462MHz	2462MHz	5825MHz	5825MHz
	Maximum power (dBm)	9.5	16.5	16.5	15	13
	Maximum rated power(mW)	9.0	45.0	45.0	32.0	20.0
Edge 2	Separation distance(mm)			236.0		236.0
	exclusion threshold			1956.0		1956.0
	Testing required?			**No**		**No**
Edge 3	Separation distance(mm)	160.0		165.0	160.0	165.0
	exclusion threshold	1195.0	1196.0	1246.0	1162.0	1246.0
	Testing required?	**No**	**No**	**No**	**No**	**No**
Edge 4	Separation distance(mm)	232.0			232.0	
	exclusion threshold	1915.0	1916.0		1882.0	
	Testing required?	**No**	**No**		**No**	

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 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
3. For LTE Band 25 frequency band can cover LTE Band 2, and also considering the maximum turn-up power, chose LTE band 25 for SAR evaluated can representative for LTE Band 2.

Tablet Note:

1. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in normal mode was performed; 1.0cm for bottom face, 1.0cm for edge4
2. Considering the curvature transition from bottom face to the edge, SAR testing at the curvature was performed. The SAR test setup is included in test setup photo exhibit, and the details of the curvature are included in operation description exhibit.
3. Per KDB 616217 D04v01r01, the additional separation introduced by the contour against a flat phantom is < 5 mm on this device and reported SAR is < 1.2 W/kg, a curved or contoured back surface or edge SAR is not required, more detail information please refer to the setup photo.
4. For SAR testing of the curved region of the device, the device was placed directly against the phantom at the point where the distance between the antenna and device exterior is a minimum.

GSM Note:

1. Per KDB 941225 D01v03, for Body 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 GPRS 4Tx slots mode for GSM850 and GPRS 3Tx for GSM1900 were selected when EUT operating without power back-off ; The GPRS 4Tx slots modes was selected for GSM850/GSM1900 when EUT operating with power back-off, according to the highest source-based time-averaged output power.

UMTS Note:

1. Per KDB 941225 D01v03, SAR for Body 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.

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. Per KDB 248227 D01v02r01, for U-NII-1 Head and Body-worn SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r01, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6W/kg and SAR peak to location ratio < 0.04, no additional SAR measurements for MIMO.
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
8. WLAN bottom 1cm SAR tested for co-located with WWAN analysis.

15.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sensor	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)	Bottom Face	0	On	251	848.8	19.16	20.00	1.213	-0.05	0.358	0.434
	GSM850	GPRS (4 Tx slots)	Edge4	0	On	251	848.8	19.16	20.00	1.213	0.0012	0.295	0.358
	GSM850	GPRS (4 Tx slots)	Bottom Face Curved surface of Edge4 Tited31	0	On	251	848.8	19.16	20.00	1.213	0.13	0.365	0.443
	GSM850	GPRS (4 Tx slots)	Edge1	0	Off	251	848.8	26.49	27.00	1.125	-0.03	0.419	0.471
#01	GSM850	GPRS (4 Tx slots)	Bottom Face	1	Off	251	848.8	26.49	27.00	1.125	-0.08	0.538	**0.605**
	GSM850	GPRS (4 Tx slots)	Edge4	1	Off	251	848.8	26.49	27.00	1.125	0.0097	0.347	0.390
	GSM1900	GPRS (4 Tx slots)	Bottom Face	0	On	661	1880	17.52	18.00	1.117	-0.01	0.695	0.776
	GSM1900	GPRS (4 Tx slots)	Edge4	0	On	661	1880	17.52	18.00	1.117	-0.12	0.630	0.704
	GSM1900	GPRS (4 Tx slots)	Bottom Face Curved surface of Edge4 Tited31	0	On	661	1880	17.52	18.00	1.117	0.07	0.903	1.009
#02	GSM1900	GPRS (4 Tx slots)	Bottom Face Curved surface of Edge4 Tited31	0	On	512	1850.2	17.39	18.00	1.151	-0.08	0.878	**1.010**
	GSM1900	GPRS (4 Tx slots)	Bottom Face Curved surface of Edge4 Tited31	0	On	810	1909.8	17.32	18.00	1.169	-0.089	0.852	0.996
	GSM1900	GPRS (3 Tx slots)	Bottom Face	1	Off	661	1880	24.42	25.00	1.143	0.09	0.425	0.486
	GSM1900	GPRS (3 Tx slots)	Edge4	1	Off	661	1880	24.42	25.00	1.143	0.04	0.384	0.439

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sensor	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	Bottom Face	0	On	4233	846.6	16.44	17.00	1.138	-0.07	0.428	0.487
	WCDMA Band V	RMC 12.2Kbps	Edge4	0	On	4233	846.6	16.44	17.00	1.138	0.01	0.308	0.350
	WCDMA Band V	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	4233	846.6	16.44	17.00	1.138	-0.09	0.459	0.522
	WCDMA Band V	RMC 12.2Kbps	Edge1	0	Off	4233	846.6	22.66	23.00	1.081	-0.09	0.421	0.455
#03	WCDMA Band V	RMC 12.2Kbps	Bottom Face	1	Off	4233	846.6	22.66	23.00	1.081	-0.04	0.574	**0.621**
	WCDMA Band V	RMC 12.2Kbps	Edge4	1	Off	4233	846.6	22.66	23.00	1.081	-0.02	0.367	0.397
#04	WCDMA Band IV	RMC 12.2Kbps	Bottom Face	0	On	1413	1732.6	14.74	15.00	1.062	-0.16	0.938	**0.996**
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face	0	On	1312	1712.4	14.68	15.00	1.076	-0.06	0.832	0.896
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face	0	On	1513	1752.6	14.55	15.00	1.109	-0.08	0.878	0.974
	WCDMA Band IV	RMC 12.2Kbps	Edge4	0	On	1413	1732.6	14.74	15.00	1.062	0.02	0.725	0.770
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	1413	1732.6	14.74	15.00	1.062	-0.086	0.885	0.940
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	1312	1712.4	14.68	15.00	1.076	-0.074	0.857	0.923
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	1513	1752.6	14.55	15.00	1.109	-0.041	0.785	0.871
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face	1	Off	1312	1712.4	22.84	23.00	1.038	0.026	0.850	0.882
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face	1	Off	1413	1732.6	22.80	23.00	1.047	-0.07	0.801	0.839
	WCDMA Band IV	RMC 12.2Kbps	Bottom Face	1	Off	1513	1752.6	22.60	23.00	1.096	-0.097	0.848	0.930
	WCDMA Band IV	RMC 12.2Kbps	Edge4	1	Off	1312	1712.4	22.84	23.00	1.038	-0.02	0.402	0.417
	WCDMA Band II	RMC 12.2Kbps	Bottom Face	0	On	9262	1852.4	14.27	14.50	1.054	-0.08	0.735	0.775
	WCDMA Band II	RMC 12.2Kbps	Edge4	0	On	9262	1852.4	14.27	14.50	1.054	0.19	0.807	0.851
	WCDMA Band II	RMC 12.2Kbps	Edge4	0	On	9400	1880	14.23	14.50	1.064	0.18	0.798	0.849
	WCDMA Band II	RMC 12.2Kbps	Edge4	0	On	9538	1907.6	14.00	14.50	1.122	0.07	0.740	0.830
	WCDMA Band II	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	9262	1852.4	14.27	14.50	1.054	0.07	0.831	0.876
	WCDMA Band II	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	9400	1880	14.23	14.50	1.064	0.06	0.872	0.928
	WCDMA Band II	RMC 12.2Kbps	Bottom Face Curved surface of Edge4 Tited31	0	On	9538	1907.6	14.00	14.50	1.122	-0.09	0.834	0.936
	WCDMA Band II	RMC 12.2Kbps	Bottom Face	1	Off	9400	1880	22.28	22.50	1.052	-0.03	0.815	0.857
	WCDMA Band II	RMC 12.2Kbps	Bottom Face	1	Off	9262	1852.4	22.21	22.50	1.069	0.11	0.760	0.812
#05	WCDMA Band II	RMC 12.2Kbps	Bottom Face	1	Off	9538	1907.6	22.04	22.50	1.112	-0.09	0.849	**0.944**
	WCDMA Band II	RMC 12.2Kbps	Edge4	1	Off	9400	1880	22.28	22.50	1.052	0.04	0.711	0.748

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Sensor	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 Band5	10M	QPSK	1	0	Bottom Face	0	On	20525	836.5	16.67	17.00	1.079	-0.03	0.395	0.426
	LTE Band5	10M	QPSK	25	0	Bottom Face	0	On	20450	829	15.54	16.00	1.112	-0.1	0.317	0.352
	LTE Band5	10M	QPSK	1	0	Edge4	0	On	20525	836.5	16.67	17.00	1.079	0.01	0.298	0.322
	LTE Band5	10M	QPSK	25	0	Edge4	0	On	20450	829	15.54	16.00	1.112	0.03	0.239	0.266
	LTE Band5	10M	QPSK	1	0	Bottom Face Curved surface of Edge4 Tited31	0	On	20525	836.5	16.67	17.00	1.079	-0.02	0.399	0.430
	LTE Band5	10M	QPSK	25	0	Bottom Face Curved surface of Edge4 Tited31	0	On	20450	829	15.54	16.00	1.112	-0.1	0.319	0.355
	LTE Band5	10M	QPSK	1	0	Edge1	0	Off	20525	836.5	22.52	23.00	1.117	-0.13	0.346	0.386
	LTE Band5	10M	QPSK	25	0	Edge1	0	Off	20525	836.5	21.57	22.00	1.104	-0.03	0.276	0.305
#06	LTE Band5	10M	QPSK	1	0	Bottom Face	1	Off	20525	836.5	22.52	23.00	1.117	-0.08	0.436	**0.487**
	LTE Band5	10M	QPSK	25	0	Bottom Face	1	Off	20525	836.5	21.57	22.00	1.104	-0.02	0.362	0.400
	LTE Band5	10M	QPSK	1	0	Edge4	1	Off	20525	836.5	22.52	23.00	1.117	-0.16	0.235	0.262
	LTE Band5	10M	QPSK	25	0	Edge4	1	Off	20525	836.5	21.57	22.00	1.104	-0.05	0.192	0.212
	LTE Band26	15M	QPSK	1	0	Bottom Face	0	Off	26865	831.5	16.88	17.00	1.028	0.01	0.403	0.414
	LTE Band26	15M	QPSK	36	0	Bottom Face	0	Off	26865	831.5	15.56	16.00	1.107	-0.05	0.319	0.353
	LTE Band26	15M	QPSK	1	0	Edge4	0	Off	26865	831.5	16.88	17.00	1.028	0.00024	0.228	0.234
	LTE Band26	15M	QPSK	36	0	Edge4	0	Off	26865	831.5	15.56	16.00	1.107	-0.03	0.174	0.193
#07	LTE Band26	15M	QPSK	1	0	Bottom Face Curved surface of Edge4 Tited31	0	Off	26865	831.5	16.88	17.00	1.028	-0.051	0.413	**0.425**
	LTE Band26	15M	QPSK	36	0	Bottom Face Curved surface of Edge4 Tited31	0	Off	26865	831.5	15.56	16.00	1.107	-0.03	0.304	0.336
	LTE Band26	15M	QPSK	1	0	Edge1	0	Off	26865	831.5	16.88	17.00	1.028	0.05	0.342	0.352
	LTE Band26	15M	QPSK	36	0	Edge1	0	Off	26865	831.5	15.56	16.00	1.107	-0.14	0.259	0.287

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Sensor	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 Band4	20M	QPSK	1	0	Bottom Face	0	On	20300	1745	14.28	15.00	1.180	-0.15	0.667	0.787
	LTE Band4	20M	QPSK	50	0	Bottom Face	0	On	20300	1745	13.24	14.00	1.191	-0.08	0.541	0.644
	LTE Band4	20M	QPSK	1	0	Edge4	0	On	20300	1745	14.28	15.00	1.180	0.11	0.656	0.774
	LTE Band4	20M	QPSK	50	0	Edge4	0	On	20300	1745	13.24	14.00	1.191	0.19	0.503	0.599
	LTE Band4	20M	QPSK	1	0	Bottom Face Curved surface of Edge4 Tited31	0	On	20300	1745	14.28	15.00	1.180	0.08	0.648	0.765
	LTE Band4	20M	QPSK	50	0	Bottom Face Curved surface of Edge4 Tited31	0	On	20300	1745	13.24	14.00	1.191	-0.04	0.556	0.662
#08	LTE Band4	20M	QPSK	1	0	Bottom Face	1	Off	20300	1745	23.10	23.50	1.096	-0.01	0.812	**0.890**
	LTE Band4	20M	QPSK	1	0	Bottom Face	1	Off	20050	1720	22.51	23.50	1.256	-0.12	0.644	0.809
	LTE Band4	20M	QPSK	1	0	Bottom Face	1	Off	20175	1732.5	22.90	23.50	1.148	-0.1	0.721	0.828
	LTE Band4	20M	QPSK	50	0	Bottom Face	1	Off	20300	1745	22.04	22.50	1.112	0.02	0.683	0.759
	LTE Band4	20M	QPSK	100	0	Bottom Face	1	Off	20300	1745	21.97	22.50	1.130	-0.09	0.675	0.763
	LTE Band4	20M	QPSK	1	0	Edge4	1	Off	20300	1745	23.10	23.50	1.096	-0.19	0.386	0.423
	LTE Band4	20M	QPSK	50	0	Edge4	1	Off	20300	1745	22.04	22.50	1.112	0.01	0.351	0.390
	LTE Band25	20M	QPSK	1	99	Bottom Face	0	On	26590	1905	13.33	14.00	1.167	-0.073	0.549	0.641
	LTE Band25	20M	QPSK	50	49	Bottom Face	0	On	26590	1905	12.45	13.00	1.135	0.01	0.437	0.496
	LTE Band25	20M	QPSK	1	99	Edge4	0	On	26590	1905	13.33	14.00	1.167	0.07	0.576	0.672
	LTE Band25	20M	QPSK	50	49	Edge4	0	On	26590	1905	12.45	13.00	1.135	0.08	0.468	0.531
	LTE Band25	20M	QPSK	1	99	Bottom Face Curved surface of Edge4 Tited31	0	On	26590	1905	13.33	14.00	1.167	-0.03	0.704	0.821
	LTE Band25	20M	QPSK	1	99	Bottom Face Curved surface of Edge4 Tited31	0	On	26140	1860	12.68	14.00	1.355	-0.08	0.623	0.844
	LTE Band25	20M	QPSK	1	99	Bottom Face Curved surface of Edge4 Tited31	0	On	26340	1880	12.64	14.00	1.368	-0.13	0.626	0.856
	LTE Band25	20M	QPSK	50	49	Bottom Face Curved surface of Edge4 Tited31	0	On	26590	1905	12.45	13.00	1.135	0.09	0.579	0.657
	LTE Band25	20M	QPSK	100	0	Bottom Face Curved surface of Edge4 Tited31	0	On	26590	1905	12.43	13.00	1.140	0.059	0.586	0.668
	LTE Band25	20M	QPSK	1	0	Bottom Face	1	Off	26590	1905	22.50	23.00	1.122	-0.1	0.777	0.872
#09	LTE Band25	20M	QPSK	1	0	Bottom Face	1	Off	26140	1860	21.72	23.00	1.343	0.15	0.667	**0.896**
	LTE Band25	20M	QPSK	1	0	Bottom Face	1	Off	26340	1880	22.15	23.00	1.216	-0.05	0.734	0.893
	LTE Band25	20M	QPSK	50	0	Bottom Face	1	Off	26590	1905	21.56	22.00	1.107	-0.01	0.647	0.716
	LTE Band25	20M	QPSK	100	0	Bottom Face	1	Off	26590	1905	21.54	22.00	1.112	0.05	0.645	0.717
	LTE Band25	20M	QPSK	1	0	Edge4	1	Off	26590	1905	22.50	23.00	1.122	0.09	0.719	0.807
	LTE Band25	20M	QPSK	1	0	Edge4	1	Off	26140	1860	21.72	23.00	1.343	0.01	0.494	0.663
	LTE Band25	20M	QPSK	1	0	Edge4	1	Off	26340	1880	22.15	23.00	1.216	0.05	0.476	0.579
	LTE Band25	20M	QPSK	50	0	Edge4	1	Off	26590	1905	21.56	22.00	1.107	-0.08	0.624	0.691
	LTE Band25	20M	QPSK	100	0	Edge4	1	Off	26590	1905	21.54	22.00	1.112	0.12	0.516	0.574

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Sensor	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 Band7	20M	QPSK	1	49	Bottom Face	0	On	20850	2510	13.62	14.00	1.091	-0.04	0.638	0.696
	LTE Band7	20M	QPSK	50	0	Bottom Face	0	On	20850	2510	12.50	13.00	1.122	0.03	0.485	0.544
	LTE Band7	20M	QPSK	1	49	Edge4	0	On	20850	2510	13.62	14.00	1.091	-0.03	0.665	0.726
	LTE Band7	20M	QPSK	50	0	Edge4	0	On	20850	2510	12.50	13.00	1.122	0.05	0.508	0.570
#10	LTE Band7	20M	QPSK	1	49	Bottom Face Curved surface of Edge4 Tited31	0	On	20850	2510	13.62	14.00	1.091	-0.084	0.905	**0.988**
	LTE Band7	20M	QPSK	1	49	Bottom Face Curved surface of Edge4 Tited31	0	On	21100	2535	13.26	14.00	1.186	-0.08	0.832	0.987
	LTE Band7	20M	QPSK	1	49	Bottom Face Curved surface of Edge4 Tited31	0	On	21350	2560	13.26	14.00	1.186	-0.09	0.799	0.947
	LTE Band7	20M	QPSK	50	0	Bottom Face Curved surface of Edge4 Tited31	0	On	20850	2510	12.50	13.00	1.122	-0.12	0.766	0.859
	LTE Band7	20M	QPSK	50	0	Bottom Face Curved surface of Edge4 Tited31	0	On	21100	2535	12.39	13.00	1.151	0.06	0.642	0.739
	LTE Band7	20M	QPSK	50	0	Bottom Face Curved surface of Edge4 Tited31	0	On	21350	2560	12.39	13.00	1.151	0.03	0.645	0.742
	LTE Band7	20M	QPSK	100	0	Bottom Face Curved surface of Edge4 Tited31	0	On	20850	2510	12.34	13.00	1.164	0.05	0.723	0.842
	LTE Band7	20M	QPSK	1	49	Bottom Face	1	Off	20850	2510	22.52	23.00	1.117	0.14	0.492	0.549
	LTE Band7	20M	QPSK	50	0	Bottom Face	1	Off	20850	2510	21.51	22.00	1.119	-0.12	0.375	0.420
	LTE Band7	20M	QPSK	1	49	Edge4	1	Off	20850	2510	22.52	23.00	1.117	0.09	0.701	0.783
	LTE Band7	20M	QPSK	50	0	Edge4	1	Off	20850	2510	21.51	22.00	1.119	0.04	0.593	0.664

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB off set	Test Position	Gap (cm)	Sensor	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)
	TDD LTE Band41	20M	QPSK	1	0	Bottom Face	0	On	40620	2593	13.48	14.00	1.127	62.9	1.006	-0.02	0.238	0.270
	TDD LTE Band41	20M	QPSK	50	0	Bottom Face	0	On	40620	2593	12.39	13.00	1.151	62.9	1.006	-0.0051	0.171	0.198
	TDD LTE Band41	20M	QPSK	1	0	Edge4	0	On	40620	2593	13.48	14.00	1.127	62.9	1.006	-0.05	0.369	0.418
	TDD LTE Band41	20M	QPSK	50	0	Edge4	0	On	40620	2593	12.39	13.00	1.151	62.9	1.006	-0.06	0.272	0.315
#11	TDD LTE Band41	20M	QPSK	1	0	Bottom Face Curved surface of Edge4 Tited31	0	On	40620	2593	13.48	14.00	1.127	62.9	1.006	0.07	0.490	**0.556**
	TDD LTE Band41	20M	QPSK	50	0	Bottom Face Curved surface of Edge4 Tited31	0	On	40620	2593	12.39	13.00	1.151	62.9	1.006	0.01	0.402	0.465
	TDD LTE Band41	20M	QPSK	1	0	Bottom Face	1	Off	40620	2593	22.12	23.00	1.225	62.9	1.006	-0.02	0.206	0.254
	TDD LTE Band41	20M	QPSK	50	0	Bottom Face	1	Off	40620	2593	21.37	22.00	1.156	62.9	1.006	-0.14	0.165	0.192
	TDD LTE Band41	20M	QPSK	1	0	Edge4	1	Off	40620	2593	22.12	23.00	1.225	62.9	1.006	-0.05	0.244	0.301
	TDD LTE Band41	20M	QPSK	50	0	Edge4	1	Off	40620	2593	21.37	22.00	1.156	62.9	1.006	-0.08	0.200	0.233

<WLAN2.4G SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ant.	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Area Scan Max SAR (W/kg)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0	Ant. 1	11	2462	15.94	16.50	1.138	98.86	1.012	-0.051		0.737	0.848
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0	Ant. 1	1	2412	15.79	16.50	1.178	98.86	1.012	-0.08		0.711	0.847
	WLAN2.4GHz	802.11b 1Mbps	Edge1	0	Ant. 1	11	2462	15.94	16.50	1.138	98.86	1.012	-0.027		0.313	0.360
	WLAN2.4GHz	802.11b 1Mbps	Edge2	0	Ant. 1	11	2462	15.94	16.50	1.138	98.86	1.012	-0.023		0.873	1.005
	WLAN2.4GHz	802.11b 1Mbps	Edge2	0	Ant. 1	1	2412	15.79	16.50	1.178	98.86	1.012	0.02		0.86	1.025
#12	WLAN2.4GHz	802.11b 1Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	11	2462	15.94	16.50	1.138	98.86	1.012	-0.07		0.969	**1.116**
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	1	2412	15.79	16.50	1.178	98.86	1.012	0.14		0.847	1.009
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	1	Ant. 1	11	2462	15.94	16.50	1.138	98.86	1.012	0.05		0.158	0.182
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0	Ant. 2	1	2412	16.12	16.50	1.091	98.86	1.012	-0.03		0.639	0.706
	WLAN2.4GHz	802.11b 1Mbps	Edge1	0	Ant. 2	1	2412	16.12	16.50	1.091	98.86	1.012	-0.14		0.963	1.064
#13	WLAN2.4GHz	802.11b 1Mbps	Edge1	0	Ant. 2	6	2437	15.92	16.50	1.143	98.86	1.012	-0.0086		0.961	**1.111**
	WLAN2.4GHz	802.11b 1Mbps	Edge4	0	Ant. 2	1	2412	16.12	16.50	1.091	98.86	1.012	0.06		0.204	0.225
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	1	2412	16.12	16.50	1.091	98.86	1.012	-0.01		0.455	0.503
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	1	Ant. 2	1	2412	16.12	16.50	1.091	98.86	1.012	-0.06		0.097	0.107
	WLAN2.4GHz	802.11b 1Mbps	Edge4	1	Ant. 2	1	2412	16.12	16.50	1.091	98.86	1.012	0.09		0.055	0.061
	WLAN2.4GHz	802.11n-HT20_MCS0	Bottom Face	0	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094		0.48		
#14	WLAN2.4GHz	802.11n-HT20_MCS0	Edge1	0	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094	-0.06	0.725	0.348	**0.436**
	WLAN2.4GHz	802.11n-HT20_MCS0	Edge2	0	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094		0.476		
	WLAN2.4GHz	802.11n-HT20_MCS0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094	0.03	0.577	0.334	0.419
	WLAN2.4GHz	802.11n-HT20_MCS0	Edge4	0	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094		0.148		
	WLAN2.4GHz	802.11n-HT20_MCS0	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094		0.293		
	WLAN2.4GHz	802.11n-HT20_MCS0	Bottom Face	1	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094		0.062		
	WLAN2.4GHz	802.11n-HT20_MCS0	Edge4	1	Ant. 1+2	1	2412	14.91	15.50	1.146	91.38	1.094		0.046		

<WLAN5G SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ant.	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN 5.2GHz	802.11a 6Mbps	Bottom Face	0	Ant. 1	48	5240	14.82	15.00	1.042	92.86	1.077	-0.03	0.438	0.492
	WLAN 5.2GHz	802.11a 6Mbps	Edge1	0	Ant. 1	48	5240	14.82	15.00	1.042	92.86	1.077	-0.07	0.251	0.282
	WLAN 5.2GHz	802.11a 6Mbps	Edge2	0	Ant. 1	48	5240	14.82	15.00	1.042	92.86	1.077	-0.091	0.695	0.780
#15	WLAN 5.2GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	48	5240	14.82	15.00	1.042	92.86	1.077	-0.037	0.976	**1.096**
	WLAN 5.2GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	36	5180	14.67	15.00	1.079	92.86	1.077	0.024	0.544	0.632
	WLAN 5.2GHz	802.11a 6Mbps	Bottom Face	1	Ant. 1	48	5240	14.82	15.00	1.042	92.86	1.077	0.05	0.035	0.039
	WLAN 5.3GHz	802.11a 6Mbps	Bottom Face	0	Ant. 2	52	5260	12.53	13.00	1.114	92.86	1.077	0.03	0.561	0.673
	WLAN 5.3GHz	802.11a 6Mbps	Edge1	0	Ant. 2	52	5260	12.53	13.00	1.114	92.86	1.077	-0.1	0.297	0.356
	WLAN 5.3GHz	802.11a 6Mbps	Edge4	0	Ant. 2	52	5260	12.53	13.00	1.114	92.86	1.077	-0.01	0.5	0.600
#16	WLAN 5.3GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	52	5260	12.53	13.00	1.114	92.86	1.077	-0.12	0.871	**1.045**
	WLAN 5.3GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	64	5320	12.44	13.00	1.138	92.86	1.077	-0.17	0.748	0.916
	WLAN 5.3GHz	802.11a 6Mbps	Bottom Face	1	Ant. 2	52	5260	12.53	13.00	1.114	92.86	1.077	-0.11	0.056	0.067
	WLAN 5.3GHz	802.11a 6Mbps	Edge4	1	Ant. 2	52	5260	12.53	13.00	1.114	92.86	1.077	-0.08	0.084	0.101
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Bottom Face	0	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	-0.02	0.434	0.543
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Edge1	0	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	0.06	0.24	0.300
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Edge2	0	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	0.06	0.603	0.755
#17	WLAN 5.3GHz	802.11n-HT20_ MCS0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	-0.07	0.836	**1.047**
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	64	5320	14.87	15.50	1.156	90.68	1.103	-0.04	0.775	0.988
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Edge4	0	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	0.1	0.448	0.561
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	0.17	0.815	1.020
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 1+2	64	5320	14.87	15.50	1.156	90.68	1.103	-0.01	0.766	0.977
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Bottom Face	1	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	0.13	0.042	0.053
	WLAN 5.3GHz	802.11n-HT20_ MCS0	Edge4	1	Ant. 1+2	60	5300	14.95	15.50	1.135	90.68	1.103	0.08	0.085	0.106

Plot No.	Band	Mode	Test Position	Gap (cm)	Ant.	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 5.5GHz	802.11a 6Mbps	Bottom Face	0	Ant. 1	100	5500	12.99	13.30	1.074	92.86	1.077	-0.07	0.239	0.276
	WLAN 5.5GHz	802.11a 6Mbps	Edge1	0	Ant. 1	100	5500	12.99	13.30	1.074	92.86	1.077	0.1	0.158	0.183
	WLAN 5.5GHz	802.11a 6Mbps	Edge2	0	Ant. 1	100	5500	12.99	13.30	1.074	92.86	1.077	-0.11	0.401	0.464
#18	WLAN 5.5GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	100	5500	12.99	13.30	1.074	92.86	1.077	0.16	0.670	**0.775**
	WLAN 5.5GHz	802.11a 6Mbps	Bottom Face	1	Ant. 1	100	5500	12.99	13.30	1.074	92.86	1.077	0.05	0.039	0.045
	WLAN 5.5GHz	802.11a 6Mbps	Bottom Face	0	Ant. 2	100	5500	10.56	11.00	1.107	92.86	1.077	0.01	0.380	0.453
	WLAN 5.5GHz	802.11a 6Mbps	Edge1	0	Ant. 2	100	5500	10.56	11.00	1.107	92.86	1.077	0.06	0.144	0.172
	WLAN 5.5GHz	802.11a 6Mbps	Edge4	0	Ant. 2	100	5500	10.56	11.00	1.107	92.86	1.077	0.079	0.444	0.529
	WLAN 5.5GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	100	5500	10.56	11.00	1.107	92.86	1.077	0.05	0.675	0.804
#19	WLAN 5.5GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	116	5580	10.41	11.00	1.146	92.86	1.077	-0.032	0.757	**0.934**
	WLAN 5.5GHz	802.11a 6Mbps	Bottom Face	1	Ant. 2	100	5500	10.56	11.00	1.107	92.86	1.077	-0.05	0.056	0.067
	WLAN 5.5GHz	802.11a 6Mbps	Edge4	1	Ant. 2	100	5500	10.56	11.00	1.107	92.86	1.077	-0.07	0.093	0.111
	WLAN 5.5GHz	802.11n-HT20_MCS0	Bottom Face	0	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	-0.07	0.358	0.419
	WLAN 5.5GHz	802.11n-HT20_MCS0	Edge1	0	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	0.05	0.108	0.126
	WLAN 5.5GHz	802.11n-HT20_MCS0	Edge2	0	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	0.05	0.163	0.191
	WLAN 5.5GHz	802.11n-HT20_MCS0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	0.076	0.352	0.412
	WLAN 5.5GHz	802.11n-HT20_MCS0	Edge4	0	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	0.01	0.552	0.646
#20	WLAN 5.5GHz	802.11n-HT20_MCS0	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	-0.022	0.668	**0.782**
	WLAN 5.5GHz	802.11n-HT20_MCS0	Bottom Face	1	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	0.09	0.040	0.047
	WLAN 5.5GHz	802.11n-HT20_MCS0	Edge4	1	Ant. 1+2	100	5500	13.74	14.00	1.062	90.68	1.103	0.13	0.083	0.097

Plot No.	Band	Mode	Test Position	Gap (cm)	Ant.	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 5.8GHz	802.11a 6Mbps	Bottom Face	0	Ant. 1	149	5745	11.15	11.30	1.035	92.86	1.077	0.1	0.553	0.617
	WLAN 5.8GHz	802.11a 6Mbps	Edge1	0	Ant. 1	149	5745	11.15	11.30	1.035	92.86	1.077	0.06	0.210	0.234
	WLAN 5.8GHz	802.11a 6Mbps	Edge2	0	Ant. 1	149	5745	11.15	11.30	1.035	92.86	1.077	-0.033	0.903	1.007
	WLAN 5.8GHz	802.11a 6Mbps	Edge2	0	Ant. 1	165	5825	11.07	11.30	1.054	92.86	1.077	0.01	0.888	1.008
	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	149	5745	11.15	11.30	1.035	92.86	1.077	-0.01	1.070	1.193
#21	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	157	5785	11.02	11.30	1.067	92.86	1.077	0.17	1.210	**1.390**
	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1	165	5825	11.07	11.30	1.054	92.86	1.077	0.053	1.080	1.226
	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face	1	Ant. 1	149	5745	11.15	11.30	1.035	92.86	1.077	0.03	0.050	0.056
	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face	0	Ant. 2	157	5785	11.35	11.50	1.035	92.86	1.077	0.08	0.312	0.348
	WLAN 5.8GHz	802.11a 6Mbps	Edge1	0	Ant. 2	157	5785	11.35	11.50	1.035	92.86	1.077	0.03	0.180	0.201
	WLAN 5.8GHz	802.11a 6Mbps	Edge4	0	Ant. 2	157	5785	11.35	11.50	1.035	92.86	1.077	0.07	0.461	0.514
#22	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	157	5785	11.35	11.50	1.035	92.86	1.077	0.032	0.746	**0.832**
	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 2	149	5745	11.21	11.50	1.069	92.86	1.077	0.14	0.688	0.792
	WLAN 5.8GHz	802.11a 6Mbps	Bottom Face	1	Ant. 2	157	5785	11.35	11.50	1.035	92.86	1.077	0.04	0.046	0.051
	WLAN 5.8GHz	802.11a 6Mbps	Edge4	1	Ant. 2	157	5785	11.35	11.50	1.035	92.86	1.077	0.05	0.078	0.087
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Bottom Face	0	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.06	0.435	0.493
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Edge1	0	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.06	0.126	0.143
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Edge2	0	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.11	0.581	0.659
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.02	1.060	1.202
#23	WLAN 5.8GHz	802.11n-HT20_MCS 0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	157	5785	13.99	14.50	1.125	90.68	1.103	-0.05	1.120	**1.389**
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Bottom Face Curved surface of Edge2 Tited31	0	Ant. 1+2	165	5825	13.95	14.50	1.135	90.68	1.103	0.07	1.090	1.365
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Edge4	0	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.07	0.421	0.477
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Bottom Face Curved surface of Edge4 Tited31	0	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	-0.01	0.642	0.728
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Bottom Face	1	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.02	0.042	0.048
	WLAN 5.8GHz	802.11n-HT20_MCS 0	Edge4	1	Ant. 1+2	149	5745	14.38	14.50	1.028	90.68	1.103	0.03	0.083	0.094

15.2 Repeated SAR Measurement

No.	Band	BW (MHz)	Mode	RB Size	RB offset	Test Position	Gap (mm)	Ant.	Sensor	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM1900	-	GPRS (4 Tx slots)	-	-	Bottom Face Curved surface of Edge4 Tited31	0	-	on	661	1880	17.52	18.00	1.117	100	1.000	0.07	0.903	1	1.009
2nd	GSM1900	-	GPRS (4 Tx slots)	-	-	Bottom Face Curved surface of Edge4 Tited31	0	-	on	661	1880	17.52	18.00	1.117	100	1.000	0.03	0.902	1.002	1.007
1st	WCDMA Band IV	-	RMC 12.2Kbps	-	-	Bottom Face	0	-	on	1413	1732.6	14.74	15.00	1.062	100	1.000	-0.16	0.938	1	0.996
2nd	WCDMA Band IV	-	RMC 12.2Kbps	-	-	Bottom Face	0	-	on	1413	1732.6	14.74	15.00	1.062	100	1.000	-0.06	0.935	1.003	0.993
1st	LTE Band 7	20M	QPSK	1	49	Bottom Face Curved surface of Edge4 Tited31	0	-	on	20850	2510	13.62	14.00	1.091	100	1.000	-0.084	0.905	1	0.988
2nd	LTE Band 7	20M	QPSK	1	49	Bottom Face Curved surface of Edge4 Tited31	0	-	on	20850	2510	13.62	14.00	1.091	100	1.000	-0.04	0.901	1.005	0.983
1st	WLAN2.4GHz	-	802.11b 1Mbps	-	-	Bottom Face Curved surface of Edge2 Tited31	0	Ant.1	-	11	2462	15.94	16.50	1.138	98.86	1.012	-0.07	0.969	1	1.116
2nd	WLAN2.4GHz	-	802.11b 1Mbps	-	-	Bottom Face Curved surface of Edge2 Tited31	0	Ant.1	-	11	2462	15.94	16.50	1.138	98.86	1.012	-0.07	0.965	1.005	1.111
1st	WLAN 5.2GHz	-	802.11a 6Mbps	-	-	Bottom Face Curved surface of Edge2 Tited31	0	Ant.1	-	48	5240	14.82	15.00	1.042	92.86	1.077	-0.037	0.976	1	1.096
2nd	WLAN 5.2GHz	-	802.11a 6Mbps	-	-	Bottom Face Curved surface of Edge2 Tited31	0	Ant.1	-	48	5240	14.82	15.00	1.042	92.86	1.077	-0.04	0.974	1.003	1.093
1st	WLAN 5.3GHz	-	802.11a 6Mbps	-	-	Bottom Face Curved surface of Edge4 Tited31	0	Ant.1	-	52	5260	12.53	13.00	1.114	92.86	1.077	-0.12	0.871	1	1.045
2nd	WLAN 5.3GHz	-	802.11a 6Mbps	-	-	Bottom Face Curved surface of Edge4 Tited31	0	Ant.1	-	52	5260	12.53	13.00	1.114	92.86	1.077	-0.02	0.868	1.003	1.042
1st	WLAN 5.8GHz	-	802.11a 6Mbps	-	-	Bottom Face Curved surface of Edge2 Tited31	0	Ant.1	-	157	5785	11.02	11.30	1.067	92.86	1.077	0.17	1.210	1	1.390
2nd	WLAN 5.8GHz	-	802.11a 6Mbps	-	-	Bottom Face Curved surface of Edge2 Tited31	0	Ant.1	-	157	5785	11.02	11.30	1.067	92.86	1.077	0.07	1.190	1.017	1.367

General Note:

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

16. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Tablet Body
1.	GPRS/EDGE + WLAN2.4GHz	Yes
2.	WCDMA + WLAN2.4GHz	Yes
3.	LTE + WLAN2.4GHz	Yes
4.	GPRS/EDGE + Bluetooth	Yes
5.	WCDMA+ Bluetooth	Yes
6.	LTE + Bluetooth	Yes
7.	GPRS/EDGE + WLAN5GHz	Yes
8.	WCDMA + WLAN5GHz	Yes
9.	LTE + WLAN5GHz	Yes

General Note:

1. EUT will choose each GPRS, EGPRS, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. WLAN and Bluetooth share the same antenna 1 for tablet mode, so WLAN and Bluetooth cannot transmit simultaneously.
3. According to EUT character, Bluetooth with antenna 1 can not transmit simultaneously with WLAN antenna 2.
4. For WLAN SAR chose the worse SAR of all 5G Band at the same position for co-located with WWAN analysis.
5. The reported SAR summation is calculated based on the same configuration and test position.
6. 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.

In this report, 50mm separation is applied to conservatively estimate SAR value for separation distance > 50mm

Max Power (dBm)	Exposure Position	Bottom Face	Bottom Face	Edge 1	Edge 2	Edge 4	Edge 4	Curved surface of Edge2	Curved surface of Edge4
	Test separation (mm)	0	10	0	0	0	10	0	0
9.5	Antenna to user distance(mm)	5	10	5	2	232	242	2	232
	Estimated SAR (W/kg)	0.378	0.189	0.378	0.378	0.009	0.009	0.378	0.009

16.1 Tablet Body Exposure Conditions

<WWAN + WLAN2.4G Ant.1>

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 1 cm	0.605	0.182	0.79		
		Edge4 at 1 cm	0.390		0.39		
		Bottom Face at 0cm	0.434	0.848	1.28		
		Edge1 at 0cm	0.471	0.360	0.83		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.358		0.36		
		Bottom Face Curved surface of Edge4 Tited31	0.443		0.44		
	GSM1900	Bottom Face at 1 cm	0.486	0.182	0.67		
		Edge4 at 1 cm	0.439		0.44		
		Bottom Face at 0cm	0.776	0.848	**1.62**	**0.01**	**#01**
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.704		0.70		
		Bottom Face Curved surface of Edge4 Tited31	1.010		1.01		
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.182	0.80		
		Edge4 at 1 cm	0.397		0.40		
		Bottom Face at 0cm	0.487	0.848	1.34		
		Edge1 at 0cm	0.455	0.360	0.82		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.350		0.35		
		Bottom Face Curved surface of Edge4 Tited31	0.522		0.52		
	Band IV	Bottom Face at 1 cm	0.930	0.182	1.11		
		Edge4 at 1 cm	0.417		0.42		
		Bottom Face at 0cm	0.996	0.848	**1.84**	**0.01**	**#02**
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.770		0.77		
		Bottom Face Curved surface of Edge4 Tited31	0.940		0.94		
	Band II	Bottom Face at 1 cm	0.944	0.182	1.13		
		Edge4 at 1 cm	0.748		0.75		
		Bottom Face at 0cm	0.775	0.848	**1.62**	**0.01**	**#03**
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.851		0.85		
		Bottom Face Curved surface of Edge4 Tited31	0.936		0.94		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.182	0.67		
		Edge4 at 1 cm	0.262		0.26		
		Bottom Face at 0cm	0.426	0.848	1.27		
		Edge1 at 0cm	0.386	0.360	0.75		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.322		0.32		
		Bottom Face Curved surface of Edge4 Tited31	0.430		0.43		
	Band 26	Bottom Face at 0cm	0.414	0.848	1.26		
		Edge1 at 0cm	0.352	0.360	0.71		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.234		0.23		
		Bottom Face Curved surface of Edge4 Tited31	0.425		0.43		
	Band 4	Bottom Face at 1 cm	0.890	0.182	1.07		
		Edge4 at 1 cm	0.423		0.42		
		Bottom Face at 0cm	0.787	0.848	**1.64**	**0.01**	**#04**
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.774		0.77		
		Bottom Face Curved surface of Edge4 Tited31	0.765		0.77		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 25	Bottom Face at 1 cm	0.896	0.182	1.08		
		Edge4 at 1 cm	0.807		0.81		
		Bottom Face at 0cm	0.641	0.848	1.49		
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.672		0.67		
		Bottom Face Curved surface of Edge4 Tited31	0.856		0.86		
	Band 7	Bottom Face at 1 cm	0.549	0.182	0.73		
		Edge4 at 1 cm	0.783		0.78		
		Bottom Face at 0cm	0.696	0.848	1.54		
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.726		0.73		
		Bottom Face Curved surface of Edge4 Tited31	0.988		0.99		
	Band 41	Bottom Face at 1 cm	0.254	0.182	0.44		
		Edge4 at 1 cm	0.301		0.30		
		Bottom Face at 0cm	0.270	0.848	1.12		
		Edge1 at 0cm		0.360	0.36		
		Edge2 at 0cm		1.025	1.03		
		Bottom Face Curved surface of Edge2 Tited31		1.116	1.12		
		Edge4 at 0cm	0.418		0.42		
		Bottom Face Curved surface of Edge4 Tited31	0.556		0.56		

<WWAN + WLAN5G Ant.1>

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 1 cm	0.605	0.056	0.66		
		Edge4 at 1 cm	0.390		0.39		
		Bottom Face at 0cm	0.434	0.617	1.05		
		Edge1 at 0cm	0.471	0.282	0.75		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.358		0.36		
		Bottom Face Curved surface of Edge4 Tited31	0.443		0.44		
	GSM1900	Bottom Face at 1 cm	0.486	0.056	0.54		
		Edge4 at 1 cm	0.439		0.44		
		Bottom Face at 0cm	0.776	0.617	1.39		
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.704		0.70		
		Bottom Face Curved surface of Edge4 Tited31	1.010		1.01		
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.056	0.68		
		Edge4 at 1 cm	0.397		0.40		
		Bottom Face at 0cm	0.487	0.617	1.10		
		Edge1 at 0cm	0.455	0.282	0.74		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.350		0.35		
		Bottom Face Curved surface of Edge4 Tited31	0.522		0.52		
	Band IV	Bottom Face at 1 cm	0.930	0.056	0.99		
		Edge4 at 1 cm	0.417		0.42		
		Bottom Face at 0cm	0.996	0.617	**1.61**	**0.01**	**#05**
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.770		0.77		
		Bottom Face Curved surface of Edge4 Tited31	0.940		0.94		
	Band II	Bottom Face at 1 cm	0.944	0.056	1.00		
		Edge4 at 1 cm	0.748		0.75		
		Bottom Face at 0cm	0.775	0.617	1.39		
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.851		0.85		
		Bottom Face Curved surface of Edge4 Tited31	0.936		0.94		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.056	0.54		
		Edge4 at 1 cm	0.262		0.26		
		Bottom Face at 0cm	0.426	0.617	1.04		
		Edge1 at 0cm	0.386	0.282	0.67		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.322		0.32		
		Bottom Face Curved surface of Edge4 Tited31	0.430		0.43		
	Band 26	Bottom Face at 0cm	0.414	0.617	1.03		
		Edge1 at 0cm	0.352	0.282	0.63		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.234		0.23		
		Bottom Face Curved surface of Edge4 Tited31	0.425		0.43		
	Band 4	Bottom Face at 1 cm	0.890	0.056	0.95		
		Edge4 at 1 cm	0.423		0.42		
		Bottom Face at 0cm	0.787	0.617	1.40		
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.774		0.77		
		Bottom Face Curved surface of Edge4 Tited31	0.765		0.77		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 25	Bottom Face at 1 cm	0.896	0.056	0.95		
		Edge4 at 1 cm	0.807		0.81		
		Bottom Face at 0cm	0.641	0.617	1.26		
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.672		0.67		
		Bottom Face Curved surface of Edge4 Tited31	0.856		0.86		
	Band 7	Bottom Face at 1 cm	0.549	0.056	0.61		
		Edge4 at 1 cm	0.783		0.78		
		Bottom Face at 0cm	0.696	0.617	1.31		
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.726		0.73		
		Bottom Face Curved surface of Edge4 Tited31	0.988		0.99		
	Band 41	Bottom Face at 1 cm	0.254	0.056	0.31		
		Edge4 at 1 cm	0.301		0.30		
		Bottom Face at 0cm	0.270	0.617	0.89		
		Edge1 at 0cm		0.282	0.28		
		Edge2 at 0cm		1.008	1.01		
		Bottom Face Curved surface of Edge2 Tited31		1.390	1.39		
		Edge4 at 0cm	0.418		0.42		
		Bottom Face Curved surface of Edge4 Tited31	0.556		0.56		

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN	Bluetooth	Summed SAR (W/kg)	SPLSR	Case No
			Max. WWAN SAR (W/kg)	Bluetooth SAR (W/kg)			
GSM	GSM850	Bottom Face at 1 cm	0.605	0.189	0.79		
		Edge4 at 1 cm	0.390	0.009	0.40		
		Bottom Face at 0cm	0.434	0.378	0.81		
		Edge1 at 0cm	0.471	0.378	0.85		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.358	0.009	0.37		
		Bottom Face Curved surface of Edge4 Tited31	0.443	0.009	0.45		
	GSM1900	Bottom Face at 1 cm	0.486	0.189	0.68		
		Edge4 at 1 cm	0.439	0.009	0.45		
		Bottom Face at 0cm	0.776	0.378	1.15		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.704	0.009	0.71		
		Bottom Face Curved surface of Edge4 Tited31	1.010	0.009	1.02		
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.189	0.81		
		Edge4 at 1 cm	0.397	0.009	0.41		
		Bottom Face at 0cm	0.487	0.378	0.87		
		Edge1 at 0cm	0.455	0.378	0.83		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.350	0.009	0.36		
		Bottom Face Curved surface of Edge4 Tited31	0.522	0.009	0.53		
	Band IV	Bottom Face at 1 cm	0.930	0.189	1.12		
		Edge4 at 1 cm	0.417	0.009	0.43		
		Bottom Face at 0cm	0.996	0.378	1.37		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.770	0.009	0.78		
		Bottom Face Curved surface of Edge4 Tited31	0.940	0.009	0.95		
	Band II	Bottom Face at 1 cm	0.944	0.189	1.13		
		Edge4 at 1 cm	0.748	0.009	0.76		
		Bottom Face at 0cm	0.775	0.378	1.15		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.851	0.009	0.86		
		Bottom Face Curved surface of Edge4 Tited31	0.936	0.009	0.95		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	Bluetooth Bluetooth SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.189	0.68		
		Edge4 at 1 cm	0.262	0.009	0.27		
		Bottom Face at 0cm	0.426	0.378	0.80		
		Edge1 at 0cm	0.386	0.378	0.76		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.322	0.009	0.33		
		Bottom Face Curved surface of Edge4 Tited31	0.430	0.009	0.44		
	Band 26	Bottom Face at 0cm	0.414	0.378	0.79		
		Edge1 at 0cm	0.352	0.378	0.73		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.234	0.009	0.24		
		Bottom Face Curved surface of Edge4 Tited31	0.425	0.009	0.43		
	Band 4	Bottom Face at 1 cm	0.890	0.189	1.08		
		Edge4 at 1 cm	0.423	0.009	0.43		
		Bottom Face at 0cm	0.787	0.378	1.17		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.774	0.009	0.78		
		Bottom Face Curved surface of Edge4 Tited31	0.765	0.009	0.77		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	Bluetooth Bluetooth SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 25	Bottom Face at 1 cm	0.896	0.189	1.09		
		Edge4 at 1 cm	0.807	0.009	0.82		
		Bottom Face at 0cm	0.641	0.378	1.02		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.672	0.009	0.68		
		Bottom Face Curved surface of Edge4 Tited31	0.856	0.009	0.87		
	Band 7	Bottom Face at 1 cm	0.549	0.189	0.74		
		Edge4 at 1 cm	0.783	0.009	0.79		
		Bottom Face at 0cm	0.696	0.378	1.07		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.726	0.009	0.74		
		Bottom Face Curved surface of Edge4 Tited31	0.988	0.009	1.00		
	Band 41	Bottom Face at 1 cm	0.254	0.189	0.44		
		Edge4 at 1 cm	0.301	0.009	0.31		
		Bottom Face at 0cm	0.270	0.378	0.65		
		Edge1 at 0cm		0.378	0.38		
		Edge2 at 0cm		0.378	0.38		
		Bottom Face Curved surface of Edge2 Tited31		0.378	0.38		
		Edge4 at 0cm	0.418	0.009	0.43		
		Bottom Face Curved surface of Edge4 Tited31	0.556	0.009	0.57		

<WWAN + WLAN2.4G Ant.2>

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 1 cm	0.605	0.107	0.71		
		Edge4 at 1 cm	0.390	0.061	0.45		
		Bottom Face at 0cm	0.434	0.706	1.14		
		Edge1 at 0cm	0.471	1.111	**1.58**		
		Edge4 at 0cm	0.358	0.225	0.58		
		Bottom Face Curved surface of Edge4 Tited31	0.443	0.503	0.95		
	GSM1900	Bottom Face at 1 cm	0.486	0.107	0.59		
		Edge4 at 1 cm	0.439	0.061	0.50		
		Bottom Face at 0cm	0.776	0.706	1.48		
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.704	0.225	0.93		
		Bottom Face Curved surface of Edge4 Tited31	1.010	0.503	1.51		
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.107	0.73		
		Edge4 at 1 cm	0.397	0.061	0.46		
		Bottom Face at 0cm	0.487	0.706	1.19		
		Edge1 at 0cm	0.455	1.111	1.57		
		Edge4 at 0cm	0.350	0.225	0.58		
		Bottom Face Curved surface of Edge4 Tited31	0.522	0.503	1.03		
	Band IV	Bottom Face at 1 cm	0.930	0.107	1.04		
		Edge4 at 1 cm	0.417	0.061	0.48		
		Bottom Face at 0cm	0.996	0.706	**1.70**	**0.03**	**#06**
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.770	0.225	1.00		
		Bottom Face Curved surface of Edge4 Tited31	0.940	0.503	1.44		
	Band II	Bottom Face at 1 cm	0.944	0.107	1.05		
		Edge4 at 1 cm	0.748	0.061	0.81		
		Bottom Face at 0cm	0.775	0.706	1.48		
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.851	0.225	1.08		
		Bottom Face Curved surface of Edge4 Tited31	0.936	0.503	1.44		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.107	0.59		
		Edge4 at 1 cm	0.262	0.061	0.32		
		Bottom Face at 0cm	0.426	0.706	1.13		
		Edge1 at 0cm	0.386	1.111	1.50		
		Edge4 at 0cm	0.322	0.225	0.55		
		Bottom Face Curved surface of Edge4 Tited31	0.430	0.503	0.93		
	Band 26	Bottom Face at 0cm	0.414	0.107	0.52		
		Edge1 at 0cm	0.352	1.111	1.46		
		Edge4 at 0cm	0.234	0.225	0.46		
		Bottom Face Curved surface of Edge4 Tited31	0.425	0.503	0.93		
	Band 4	Bottom Face at 1 cm	0.890	0.107	1.00		
		Edge4 at 1 cm	0.423	0.061	0.48		
		Bottom Face at 0cm	0.787	0.706	1.49		
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.774	0.225	1.00		
		Bottom Face Curved surface of Edge4 Tited31	0.765	0.503	1.27		
LTE	Band 25	Bottom Face at 1 cm	0.896	0.107	1.00		
		Edge4 at 1 cm	0.807	0.061	0.87		
		Bottom Face at 0cm	0.641	0.706	1.35		
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.672	0.225	0.90		
		Bottom Face Curved surface of Edge4 Tited31	0.856	0.503	1.36		
	Band 7	Bottom Face at 1 cm	0.549	0.107	0.66		
		Edge4 at 1 cm	0.783	0.061	0.84		
		Bottom Face at 0cm	0.696	0.706	1.40		
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.726	0.225	0.95		
		Bottom Face Curved surface of Edge4 Tited31	0.988	0.503	1.49		
	Band 41	Bottom Face at 1 cm	0.254	0.107	0.36		
		Edge4 at 1 cm	0.301	0.061	0.36		
		Bottom Face at 0cm	0.27	0.706	0.98		
		Edge1 at 0cm		1.111	1.11		
		Edge4 at 0cm	0.418	0.225	0.64		
		Bottom Face Curved surface of Edge4 Tited31	0.556	0.503	1.06		

<WWAN + WLAN5G Ant.2>

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 1 cm	0.605	0.067	0.67		
		Edge4 at 1 cm	0.390	0.111	0.50		
		Bottom Face at 0cm	0.434	0.673	1.11		
		Edge1 at 0cm	0.471	0.356	0.83		
		Edge4 at 0cm	0.358	0.600	0.96		
		Bottom Face Curved surface of Edge4 Tited31	0.443	1.045	1.49		
	GSM1900	Bottom Face at 1 cm	0.486	0.067	0.55		
		Edge4 at 1 cm	0.439	0.111	0.55		
		Bottom Face at 0cm	0.776	0.673	1.45		
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.704	0.600	1.30		
		Bottom Face Curved surface of Edge4 Tited31	1.010	1.045	**2.06**	**0.04**	**#07**
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.067	0.69		
		Edge4 at 1 cm	0.397	0.111	0.51		
		Bottom Face at 0cm	0.487	0.673	1.16		
		Edge1 at 0cm	0.455	0.356	0.81		
		Edge4 at 0cm	0.350	0.600	0.95		
		Bottom Face Curved surface of Edge4 Tited31	0.522	1.045	1.57		
	Band IV	Bottom Face at 1 cm	0.930	0.067	1.00		
		Edge4 at 1 cm	0.417	0.111	0.53		
		Bottom Face at 0cm	0.996	0.673	**1.67**	**0.03**	**#08**
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.770	0.600	1.37		
		Bottom Face Curved surface of Edge4 Tited31	0.940	1.045	**1.99**	**0.04**	**#09**
	Band II	Bottom Face at 1 cm	0.944	0.067	1.01		
		Edge4 at 1 cm	0.748	0.111	0.86		
		Bottom Face at 0cm	0.775	0.673	1.45		
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.851	0.600	1.45		
		Bottom Face Curved surface of Edge4 Tited31	0.936	1.045	**1.98**	**0.04**	**#10**

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.067	0.55		
		Edge4 at 1 cm	0.262	0.111	0.37		
		Bottom Face at 0cm	0.426	0.673	1.10		
		Edge1 at 0cm	0.386	0.356	0.74		
		Edge4 at 0cm	0.322	0.600	0.92		
		Bottom Face Curved surface of Edge4 Tited31	0.430	1.045	1.48		
	Band 26	Bottom Face at 0cm	0.414	0.673	1.09		
		Edge1 at 0cm	0.352	0.356	0.71		
		Edge4 at 0cm	0.234	0.600	0.83		
		Bottom Face Curved surface of Edge4 Tited31	0.425	1.045	1.47		
	Band 4	Bottom Face at 1 cm	0.890	0.067	0.96		
		Edge4 at 1 cm	0.423	0.111	0.53		
		Bottom Face at 0cm	0.787	0.673	1.46		
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.774	0.600	1.37		
		Bottom Face Curved surface of Edge4 Tited31	0.765	1.045	**1.81**	**0.03**	**#11**
LTE	Band 25	Bottom Face at 1 cm	0.896	0.067	0.96		
		Edge4 at 1 cm	0.807	0.111	0.92		
		Bottom Face at 0cm	0.641	0.673	1.31		
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.672	0.600	1.27		
		Bottom Face Curved surface of Edge4 Tited31	0.856	1.045	**1.90**	**0.04**	**#12**
	Band 7	Bottom Face at 1 cm	0.549	0.067	0.62		
		Edge4 at 1 cm	0.783	0.111	0.89		
		Bottom Face at 0cm	0.696	0.673	1.37		
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.726	0.600	1.33		
		Bottom Face Curved surface of Edge4 Tited31	0.988	1.045	**2.03**	**0.03**	**#13**
	Band 41	Bottom Face at 1 cm	0.254	0.067	0.32		
		Edge4 at 1 cm	0.301	0.111	0.41		
		Bottom Face at 0cm	0.270	0.673	0.94		
		Edge1 at 0cm		0.356	0.36		
		Edge4 at 0cm	0.418	0.600	1.02		
		Bottom Face Curved surface of Edge4 Tited31	0.556	1.045	**1.60**	**0.02**	**#14**

<WWAN + WLAN2.4G Ant.1+2>

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 1 cm	0.605	0.436	1.04		
		Edge4 at 1 cm	0.390	0.436	0.83		
		Bottom Face at 0cm	0.434	0.436	0.87		
		Edge1 at 0cm	0.471	0.436	0.91		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.358	0.436	0.79		
		Bottom Face Curved surface of Edge4 Tited31	0.443	0.436	0.88		
	GSM1900	Bottom Face at 1 cm	0.486	0.436	0.92		
		Edge4 at 1 cm	0.439	0.436	0.88		
		Bottom Face at 0cm	0.776	0.436	1.21		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.704	0.436	1.14		
		Bottom Face Curved surface of Edge4 Tited31	1.010	0.436	1.45		
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.436	1.06		
		Edge4 at 1 cm	0.397	0.436	0.83		
		Bottom Face at 0cm	0.487	0.436	0.92		
		Edge1 at 0cm	0.455	0.436	0.89		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.350	0.436	0.79		
		Bottom Face Curved surface of Edge4 Tited31	0.522	0.436	0.96		
	Band IV	Bottom Face at 1 cm	0.930	0.436	1.37		
		Edge4 at 1 cm	0.417	0.436	0.85		
		Bottom Face at 0cm	0.996	0.436	1.43		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.770	0.436	1.21		
		Bottom Face Curved surface of Edge4 Tited31	0.940	0.436	1.38		
	Band II	Bottom Face at 1 cm	0.944	0.436	1.38		
		Edge4 at 1 cm	0.748	0.436	1.18		
		Bottom Face at 0cm	0.775	0.436	1.21		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.851	0.436	1.29		
		Bottom Face Curved surface of Edge4 Tited31	0.936	0.436	1.37		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.436	0.92		
		Edge4 at 1 cm	0.262	0.436	0.70		
		Bottom Face at 0cm	0.426	0.436	0.86		
		Edge1 at 0cm	0.386	0.436	0.82		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.322	0.436	0.76		
		Bottom Face Curved surface of Edge4 Tited31	0.430	0.436	0.87		
	Band 26	Bottom Face at 0cm	0.414	0.436	0.85		
		Edge1 at 0cm	0.352	0.436	0.79		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.234	0.436	0.67		
		Bottom Face Curved surface of Edge4 Tited31	0.425	0.436	0.86		
	Band 4	Bottom Face at 1 cm	0.890	0.436	1.33		
		Edge4 at 1 cm	0.423	0.436	0.86		
		Bottom Face at 0cm	0.787	0.436	1.22		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.774	0.436	1.21		
		Bottom Face Curved surface of Edge4 Tited31	0.765	0.436	1.20		

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 25	Bottom Face at 1 cm	0.896	0.436	1.33		
		Edge4 at 1 cm	0.807	0.436	1.24		
		Bottom Face at 0cm	0.641	0.436	1.08		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.672	0.436	1.11		
		Bottom Face Curved surface of Edge4 Tited31	0.856	0.436	1.29		
	Band 7	Bottom Face at 1 cm	0.549	0.436	0.99		
		Edge4 at 1 cm	0.783	0.436	1.22		
		Bottom Face at 0cm	0.696	0.436	1.13		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.726	0.436	1.16		
		Bottom Face Curved surface of Edge4 Tited31	0.988	0.436	1.42		
	Band 41	Bottom Face at 1 cm	0.254	0.436	0.69		
		Edge4 at 1 cm	0.301	0.436	0.74		
		Bottom Face at 0cm	0.270	0.436	0.71		
		Edge1 at 0cm		0.436	0.44		
		Edge2 at 0cm		0.436	0.44		
		Bottom Face Curved surface of Edge2 Tited31		0.419	0.42		
		Edge4 at 0cm	0.418	0.436	0.85		
		Bottom Face Curved surface of Edge4 Tited31	0.556	0.436	0.99		

<WWAN + WLAN5G Ant.1+2>

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 1 cm	0.605	0.053	0.66		
		Edge4 at 1 cm	0.390	0.106	0.50		
		Bottom Face at 0cm	0.434	0.543	0.98		
		Edge1 at 0cm	0.471	0.300	0.77		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.358	0.646	1.00		
		Bottom Face Curved surface of Edge4 Tited31	0.443	1.020	1.46		
	GSM1900	Bottom Face at 1 cm	0.486	0.053	0.54		
		Edge4 at 1 cm	0.439	0.106	0.55		
		Bottom Face at 0cm	0.776	0.543	1.32		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.704	0.646	1.35		
		Bottom Face Curved surface of Edge4 Tited31	1.010	1.020	**2.03**	**0.04**	**#15**
WCDMA	Band V	Bottom Face at 1 cm	0.621	0.053	0.67		
		Edge4 at 1 cm	0.397	0.106	0.50		
		Bottom Face at 0cm	0.487	0.543	1.03		
		Edge1 at 0cm	0.455	0.300	0.76		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.350	0.646	1.00		
		Bottom Face Curved surface of Edge4 Tited31	0.522	1.020	1.54		
	Band IV	Bottom Face at 1 cm	0.930	0.053	0.98		
		Edge4 at 1 cm	0.417	0.106	0.52		
		Bottom Face at 0cm	0.996	0.543	1.54		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.770	0.646	1.42		
		Bottom Face Curved surface of Edge4 Tited31	0.940	1.020	**1.96**	**0.04**	**#16**
	Band II	Bottom Face at 1 cm	0.944	0.053	1.00		
		Edge4 at 1 cm	0.748	0.106	0.85		
		Bottom Face at 0cm	0.775	0.543	1.32		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.851	0.646	1.50		
		Bottom Face Curved surface of Edge4 Tited31	0.936	1.020	**1.96**	**0.04**	**#17**

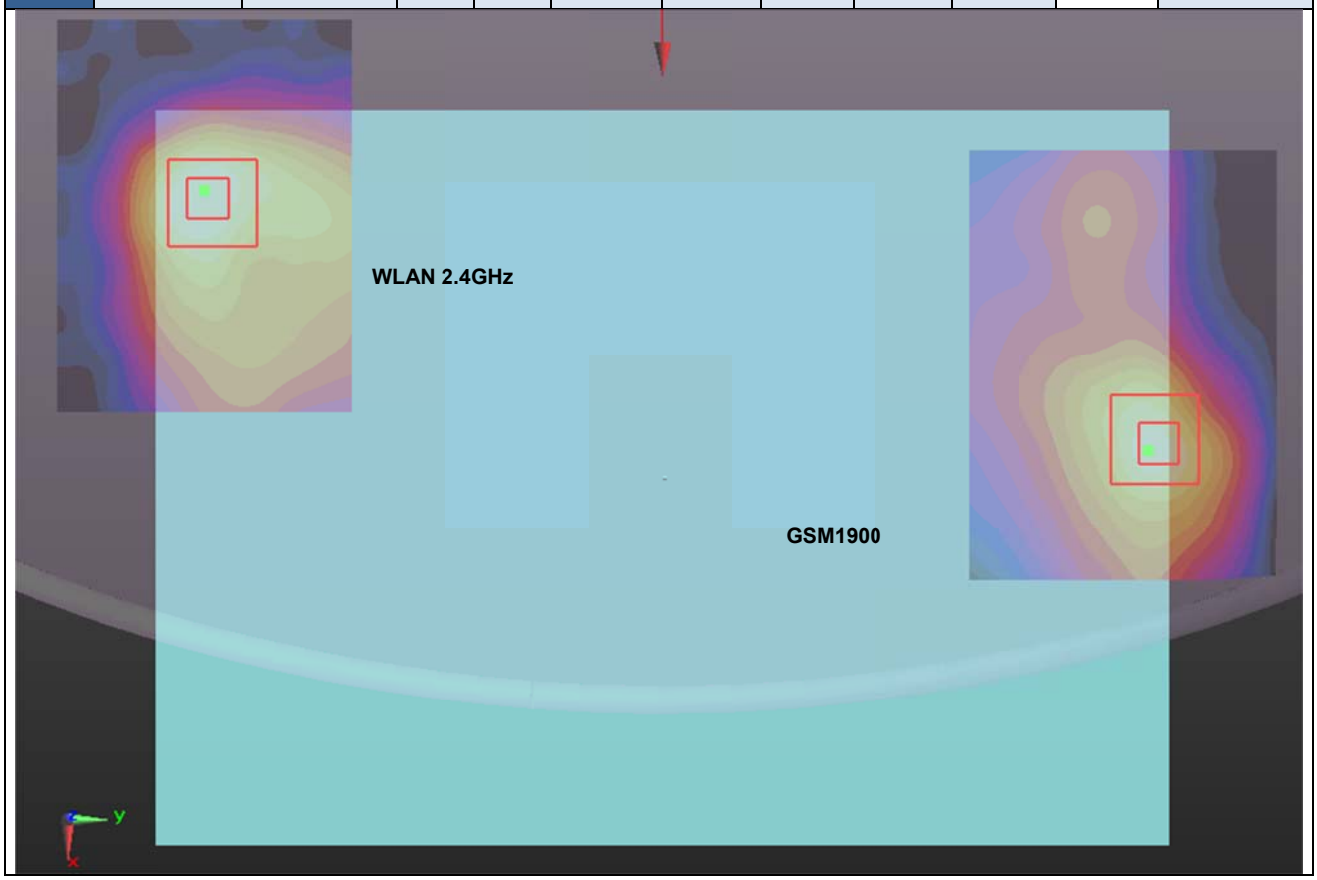
WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 5	Bottom Face at 1 cm	0.487	0.053	0.54		
		Edge4 at 1 cm	0.262	0.106	0.37		
		Bottom Face at 0cm	0.426	0.543	0.97		
		Edge1 at 0cm	0.386	0.300	0.69		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.322	0.646	0.97		
		Bottom Face Curved surface of Edge4 Tited31	0.430	1.020	1.45		
	Band 26	Bottom Face at 0cm	0.414	0.543	0.96		
		Edge1 at 0cm	0.352	0.300	0.65		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.234	0.646	0.88		
		Bottom Face Curved surface of Edge4 Tited31	0.425	1.020	1.45		
	Band 4	Bottom Face at 1 cm	0.890	0.053	0.94		
		Edge4 at 1 cm	0.423	0.106	0.53		
		Bottom Face at 0cm	0.787	0.543	1.33		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.774	0.646	1.42		
		Bottom Face Curved surface of Edge4 Tited31	0.765	1.020	**1.79**	**0.03**	**#18**

WWAN Band		Exposure Position	WWAN Max. WWAN SAR (W/kg)	WLAN Max. WLAN SAR (W/kg)	Summed SAR (W/kg)	SPLSR	Case No
LTE	Band 25	Bottom Face at 1 cm	0.896	0.053	0.95		
		Edge4 at 1 cm	0.807	0.106	0.91		
		Bottom Face at 0cm	0.641	0.543	1.18		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.672	0.646	1.32		
		Bottom Face Curved surface of Edge4 Tited31	0.856	1.020	**1.88**	**0.04**	**#19**
	Band 7	Bottom Face at 1 cm	0.549	0.053	0.60		
		Edge4 at 1 cm	0.783	0.106	0.89		
		Bottom Face at 0cm	0.696	0.543	1.24		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.726	0.646	1.37		
		Bottom Face Curved surface of Edge4 Tited31	0.988	1.020	**2.01**	**0.04**	**#20**
	Band 41	Bottom Face at 1 cm	0.254	0.053	0.31		
		Edge4 at 1 cm	0.301	0.106	0.41		
		Bottom Face at 0cm	0.270	0.543	0.81		
		Edge1 at 0cm		0.300	0.30		
		Edge2 at 0cm		0.755	0.76		
		Bottom Face Curved surface of Edge2 Tited31		1.389	1.39		
		Edge4 at 0cm	0.418	0.646	1.06		
		Bottom Face Curved surface of Edge4 Tited31	0.556	1.020	**1.58**		

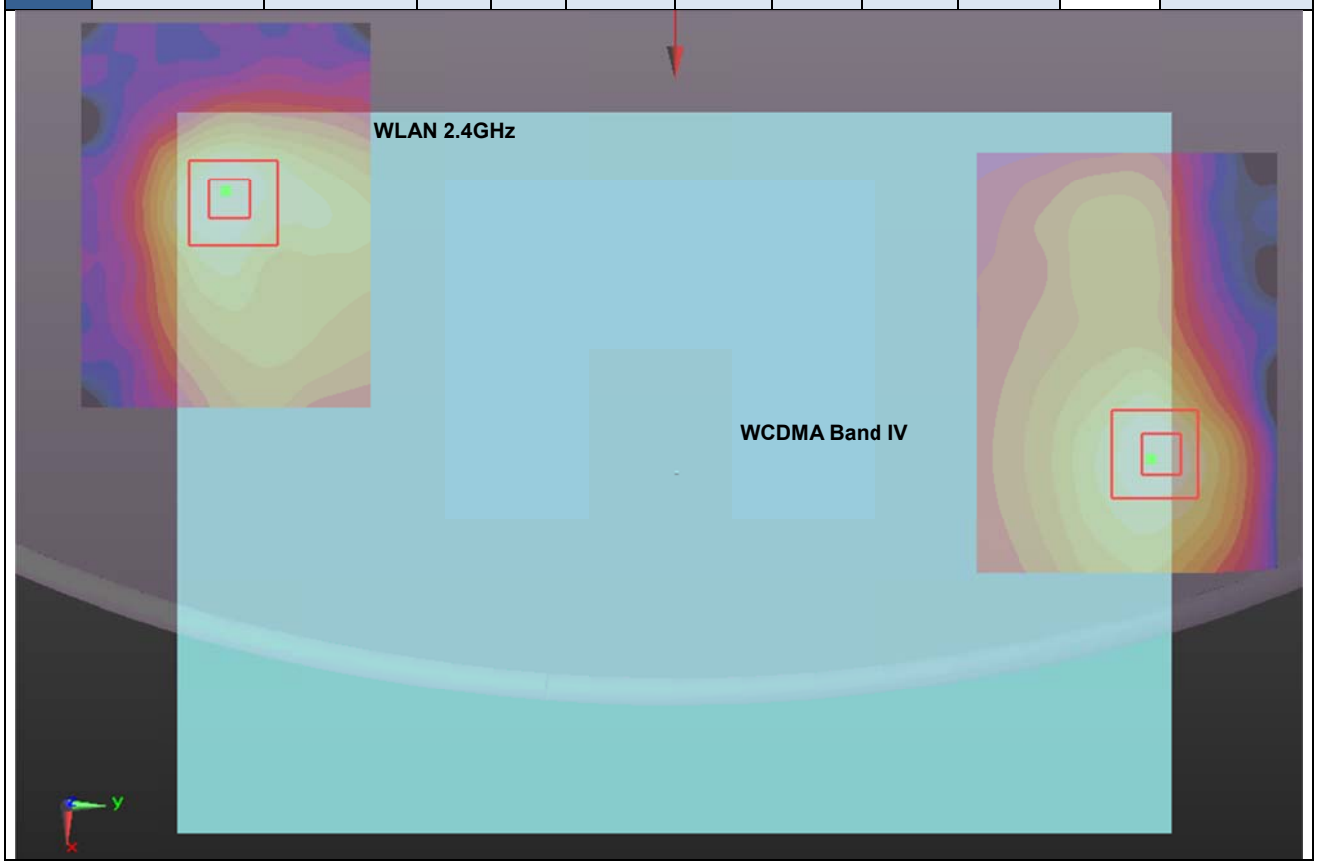
16.2 SPLSR Evaluation and Analysis

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

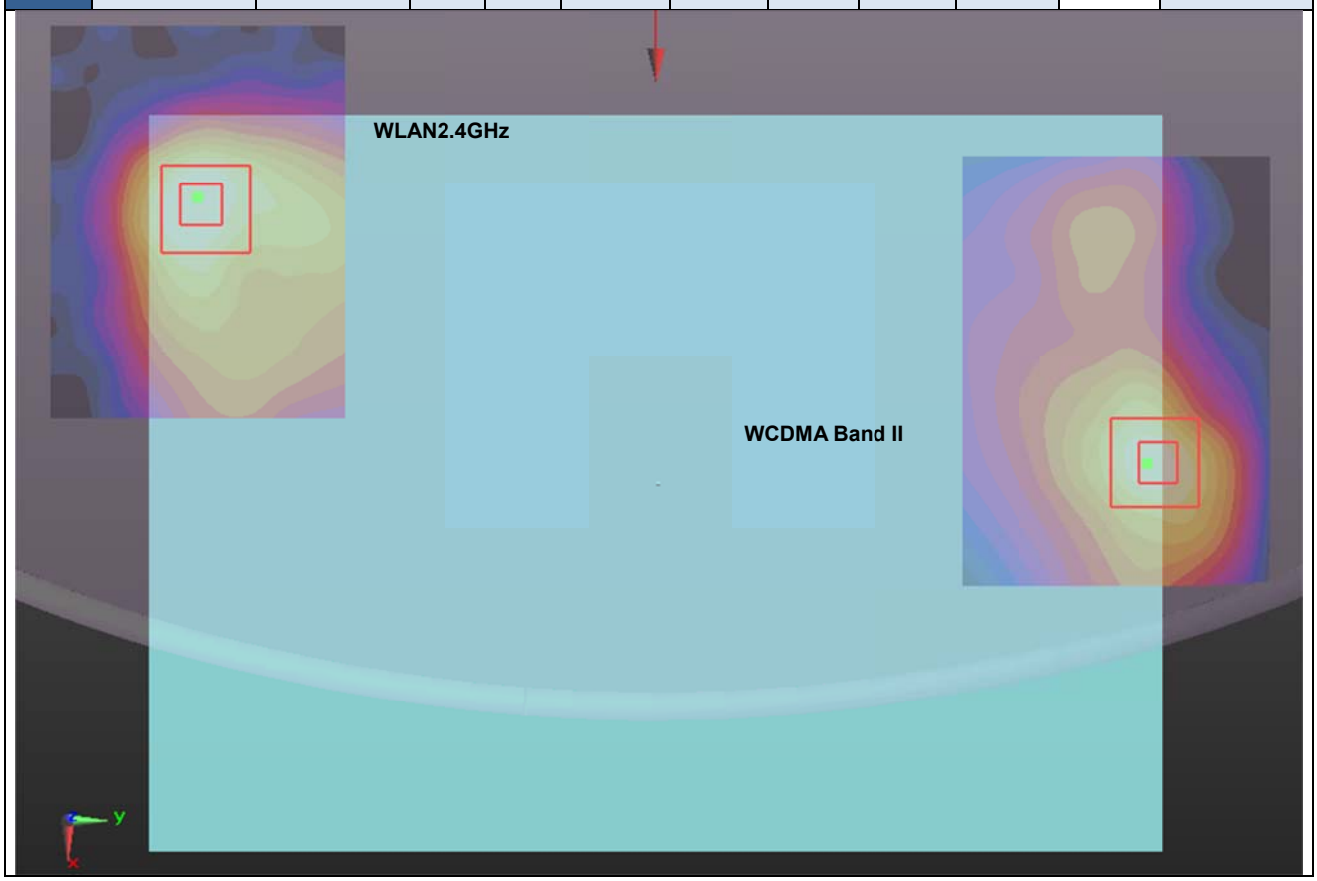
Case 1	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900	Bottom Face	0.776	0	-0.001	0.0065	-0.179	138.1	1.62	0.01	Not required
	WLAN 2.4GHz		0.848	0	0.07	-0.112	-0.178				



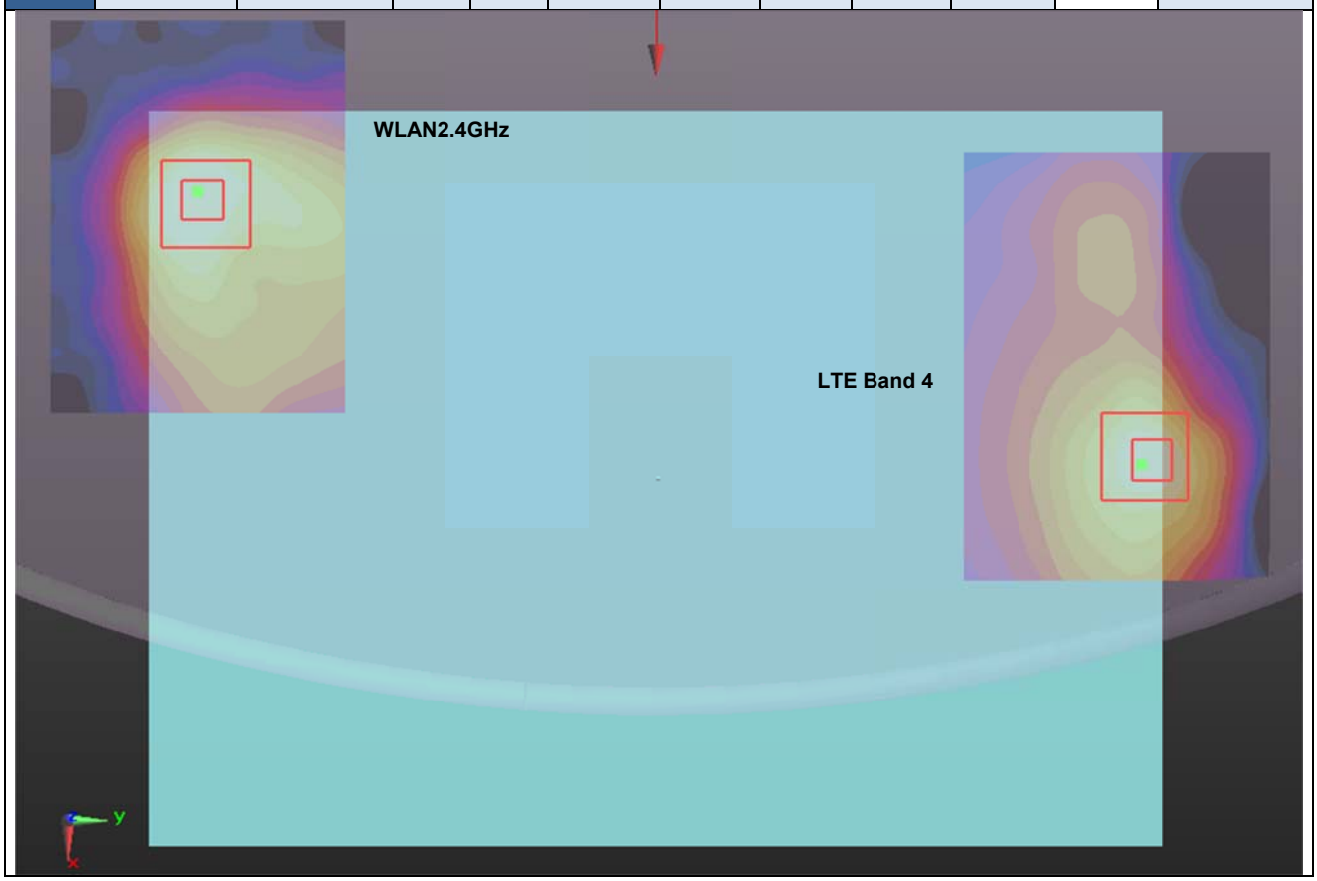
Case 2	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Bottom Face	0.996	0	0.136	0.12	-0.176	241.2	1.84	0.01	Not required
	WLAN2.4GHz		0.848	0	0.07	-0.112	-0.178				



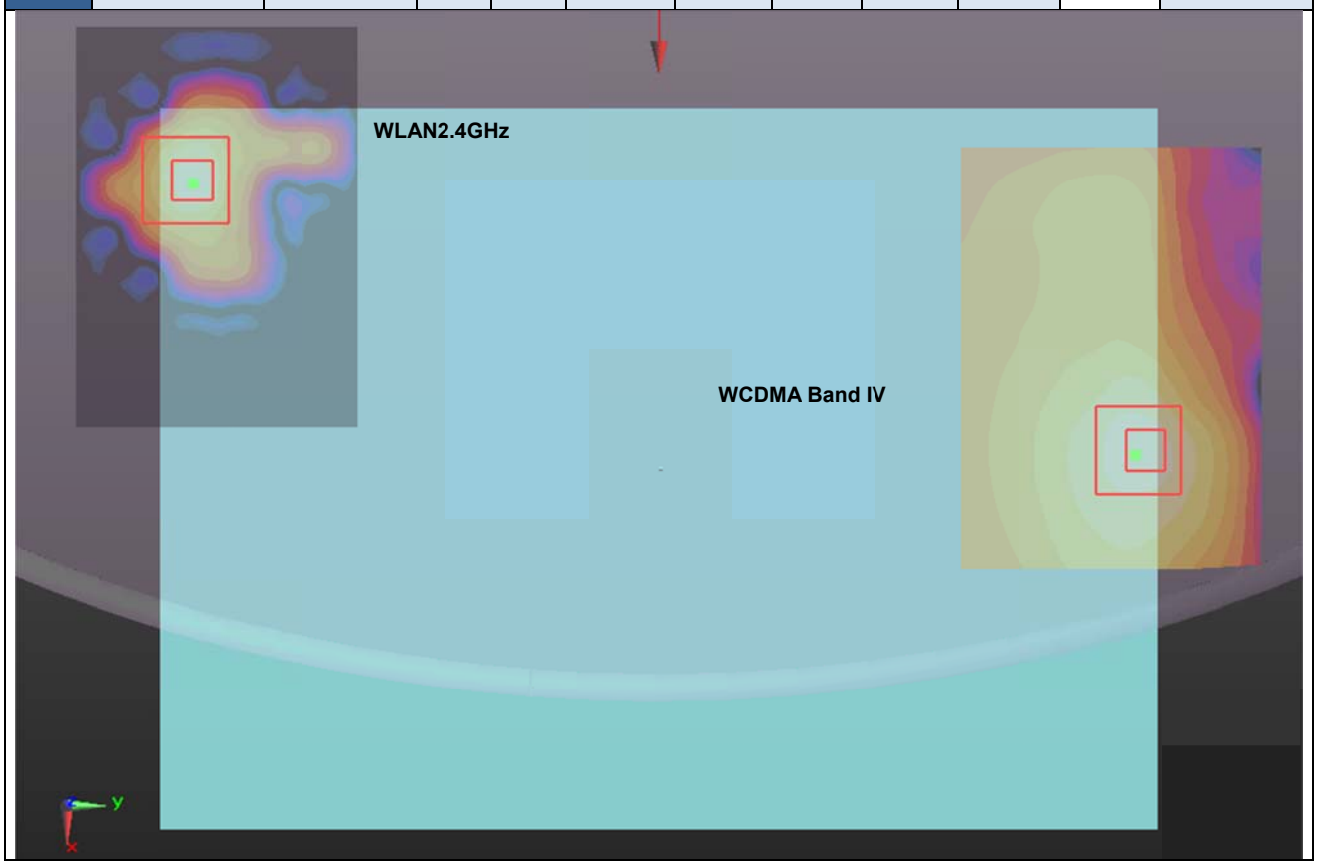
Case 3	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II	Bottom Face	0.775	0	0.134	0.121	-0.176	241.6	1.62	0.01	Not required
	WLAN2.4GHz		0.848	0	0.07	-0.112	-0.178				



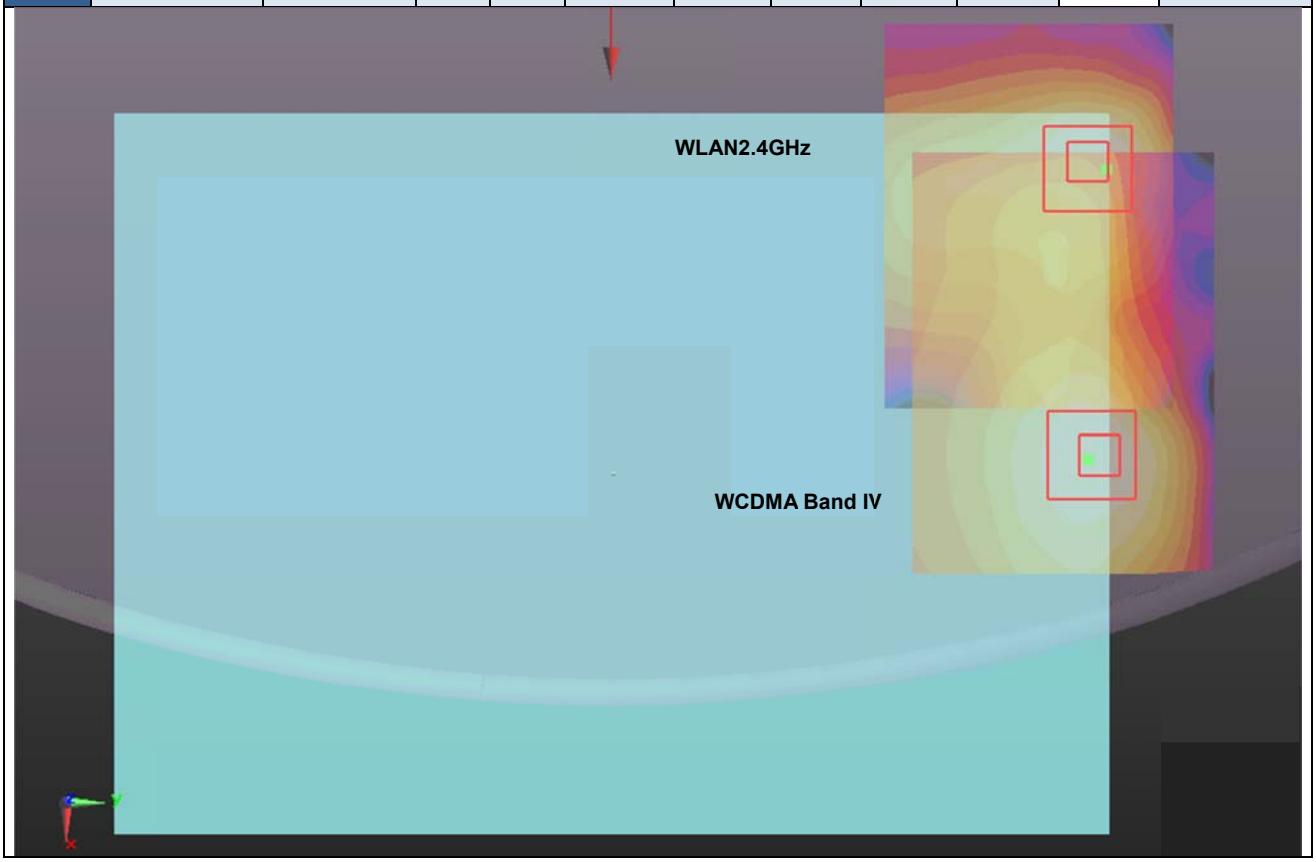
Case 4	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 4	Bottom Face	0.787	0	0.137	0.119	-0.176	240.5	1.64	0.01	Not required
	WLAN2.4GHz		0.848	0	0.07	-0.112	-0.178				



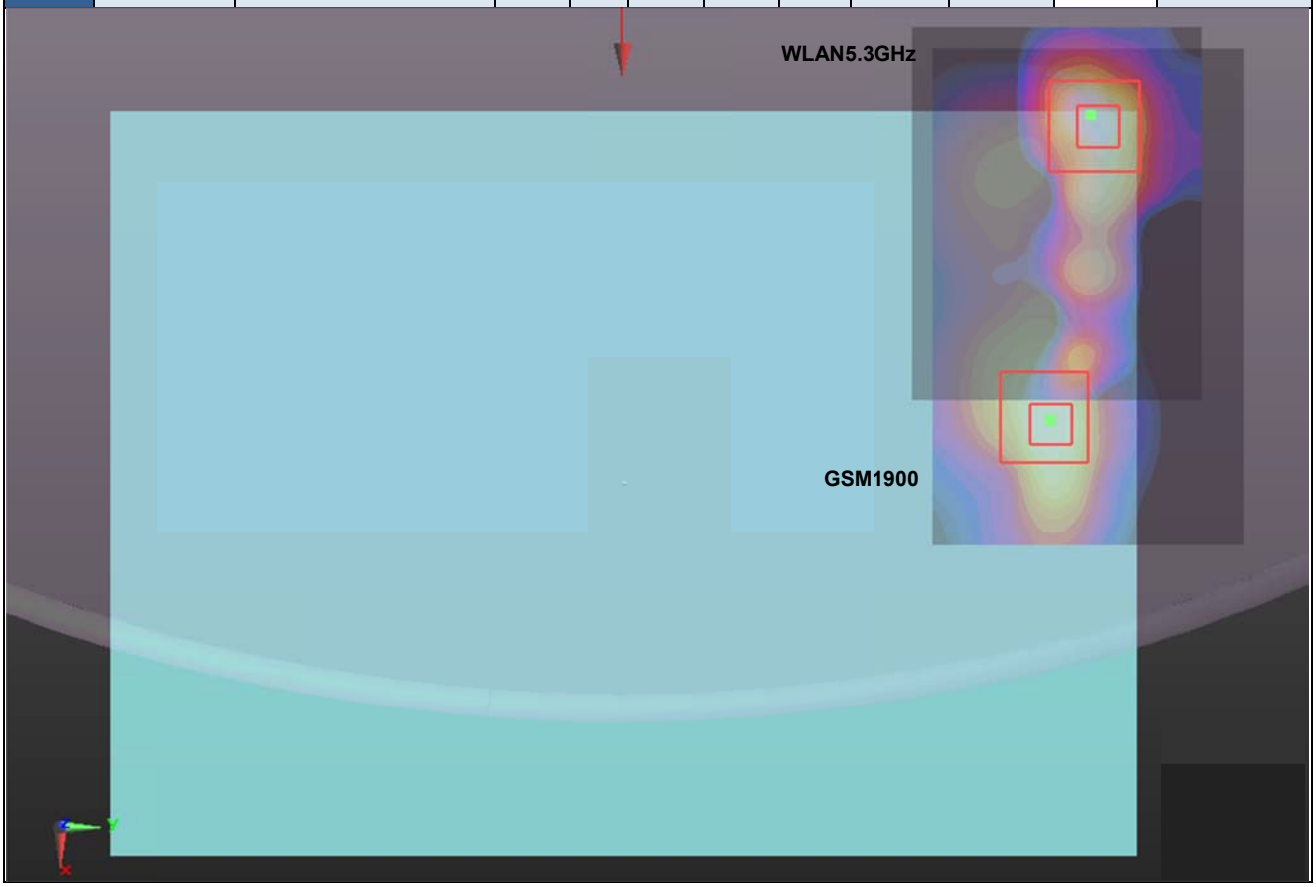
Case 5	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Bottom Face	0.996	0	0.136	0.12	-0.176	244.0	1.61	0.01	Not required
	WLAN2.4GHz		0.617	0	0.067	-0.114	-0.178				



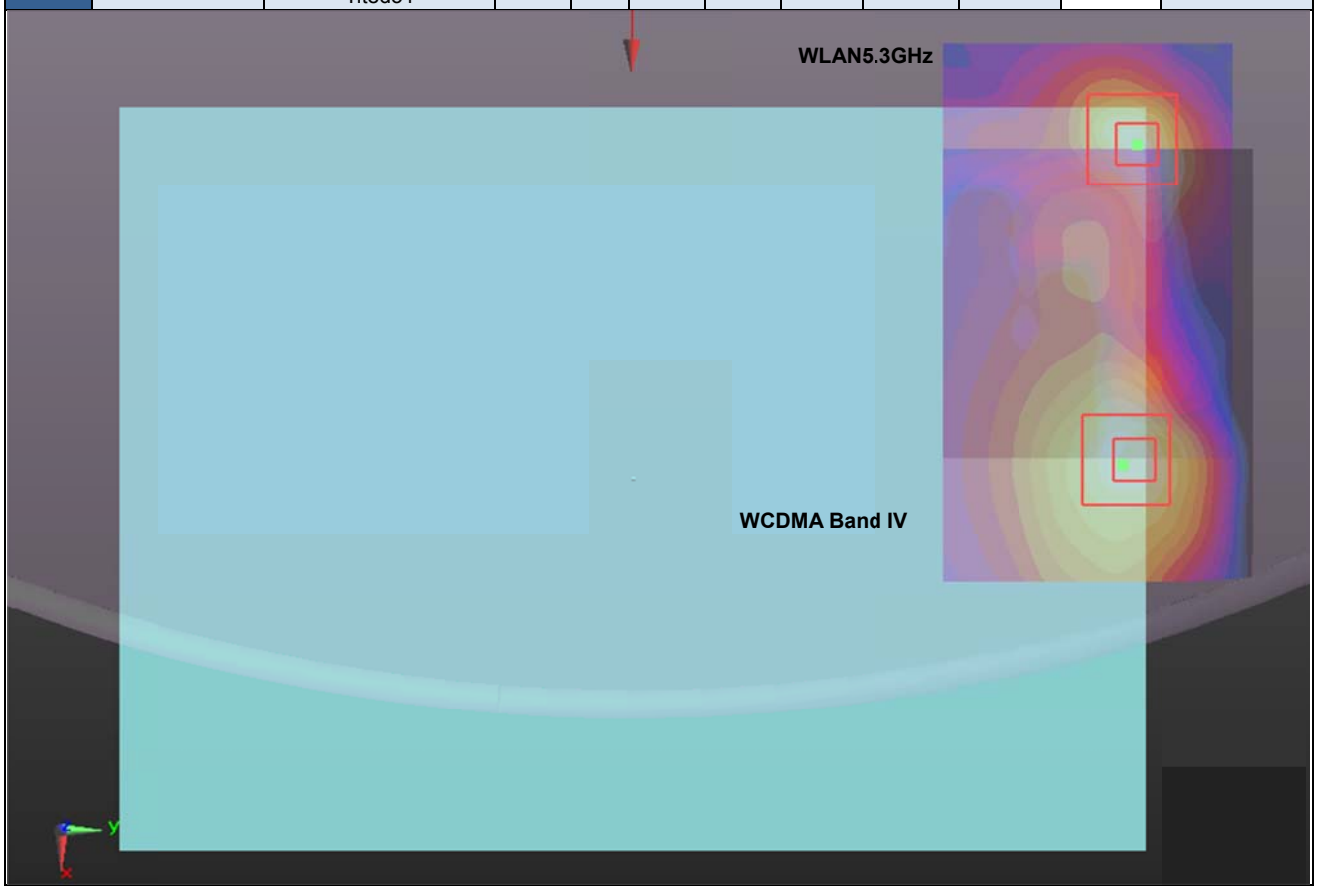
Case 6	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Bottom Face	0.996	0	0.136	0.12	-0.176	77.1	1.70	0.03	Not required
	WLAN2.4GHz		0.706	0	0.059	0.118	-0.178				



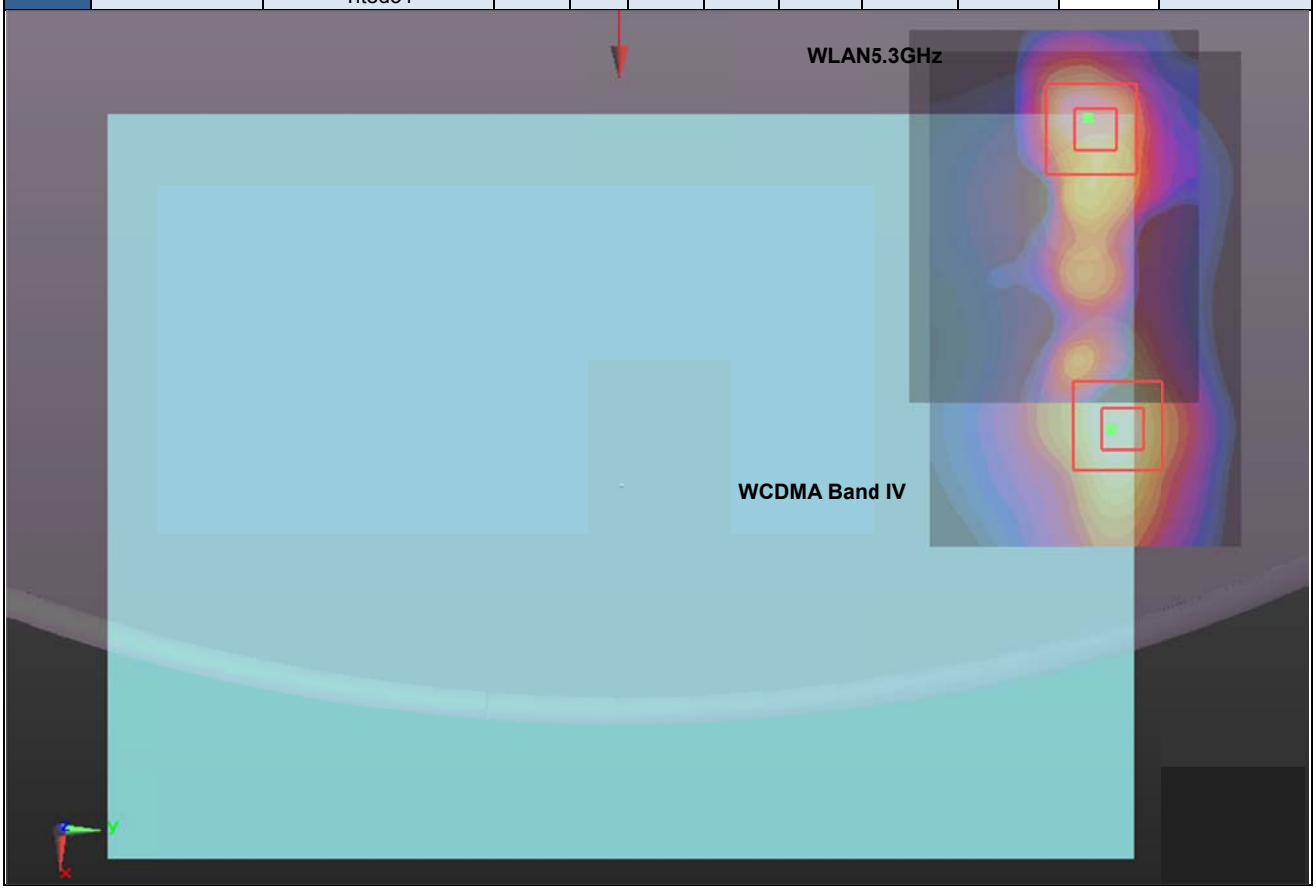
Case 7	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900	Bottom Face Curved surface of Edge4 Tited31	1.010	0	0.124	0.105	-0.177	71.7	2.06	0.04	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



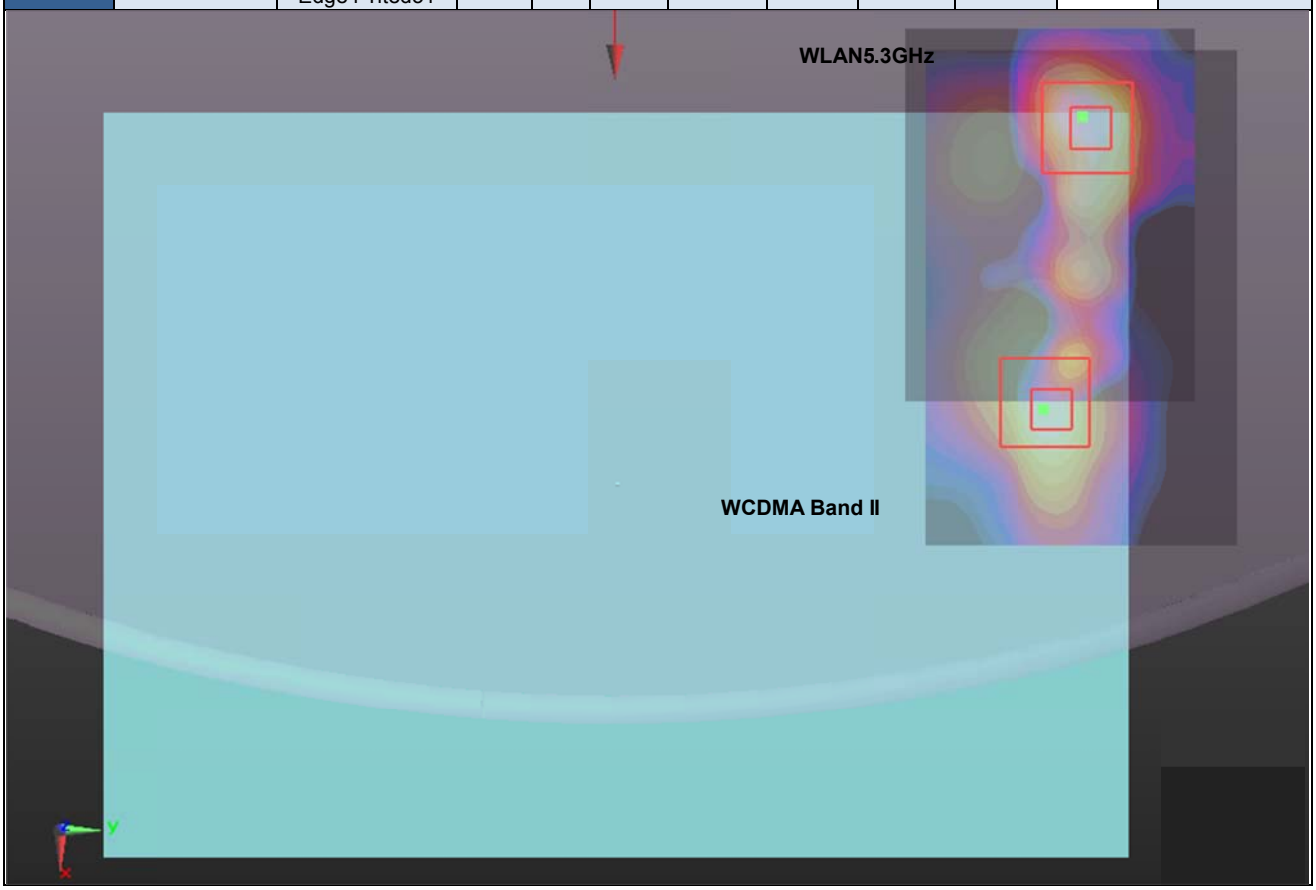
Case 8	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Bottom Face Curved surface of Edge4 Tited31	0.996	0	0.136	0.12	-0.176	79.0	1.67	0.03	Not required
	WLAN5.3GHz		0.673	0	0.057	0.12	-0.178				



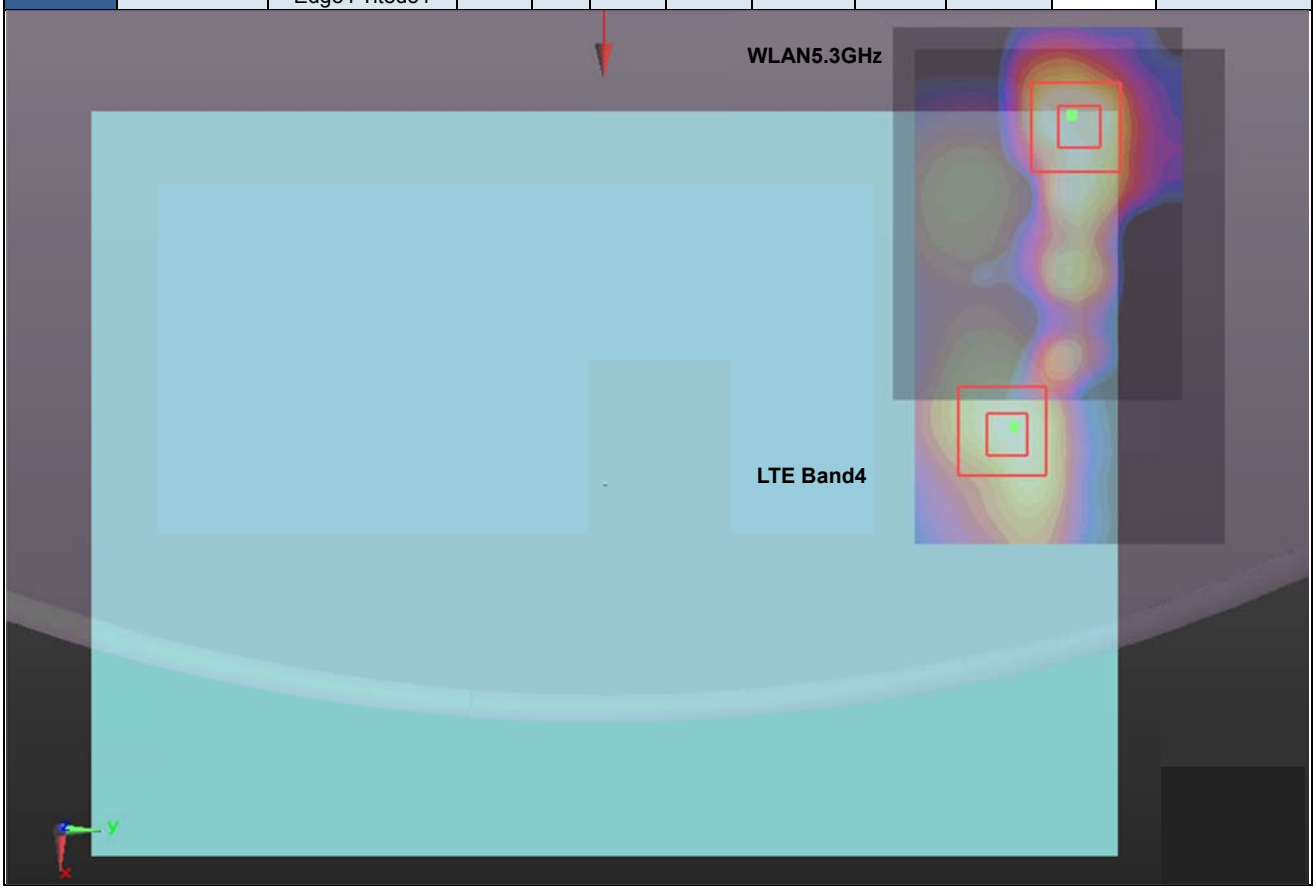
Case 9	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Bottom Face Curved surface of Edge4 Tited31	0.940	0	0.126	0.12	-0.177	73.2	1.99	0.04	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



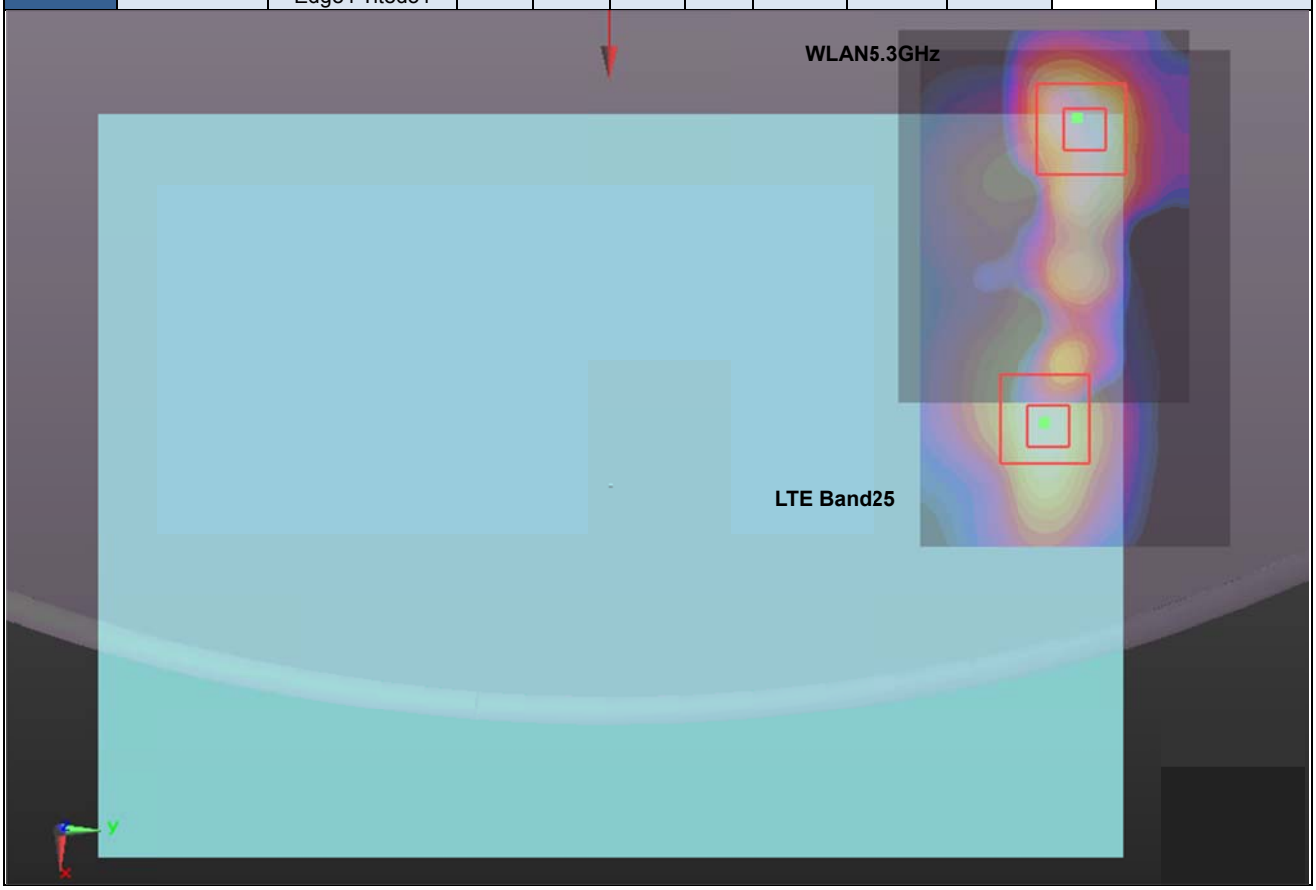
Case 10	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II	Bottom Face Curved surface of Edge4 Tited31	0.936	0	0.121	0.105	-0.177	68.8	1.98	0.04	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



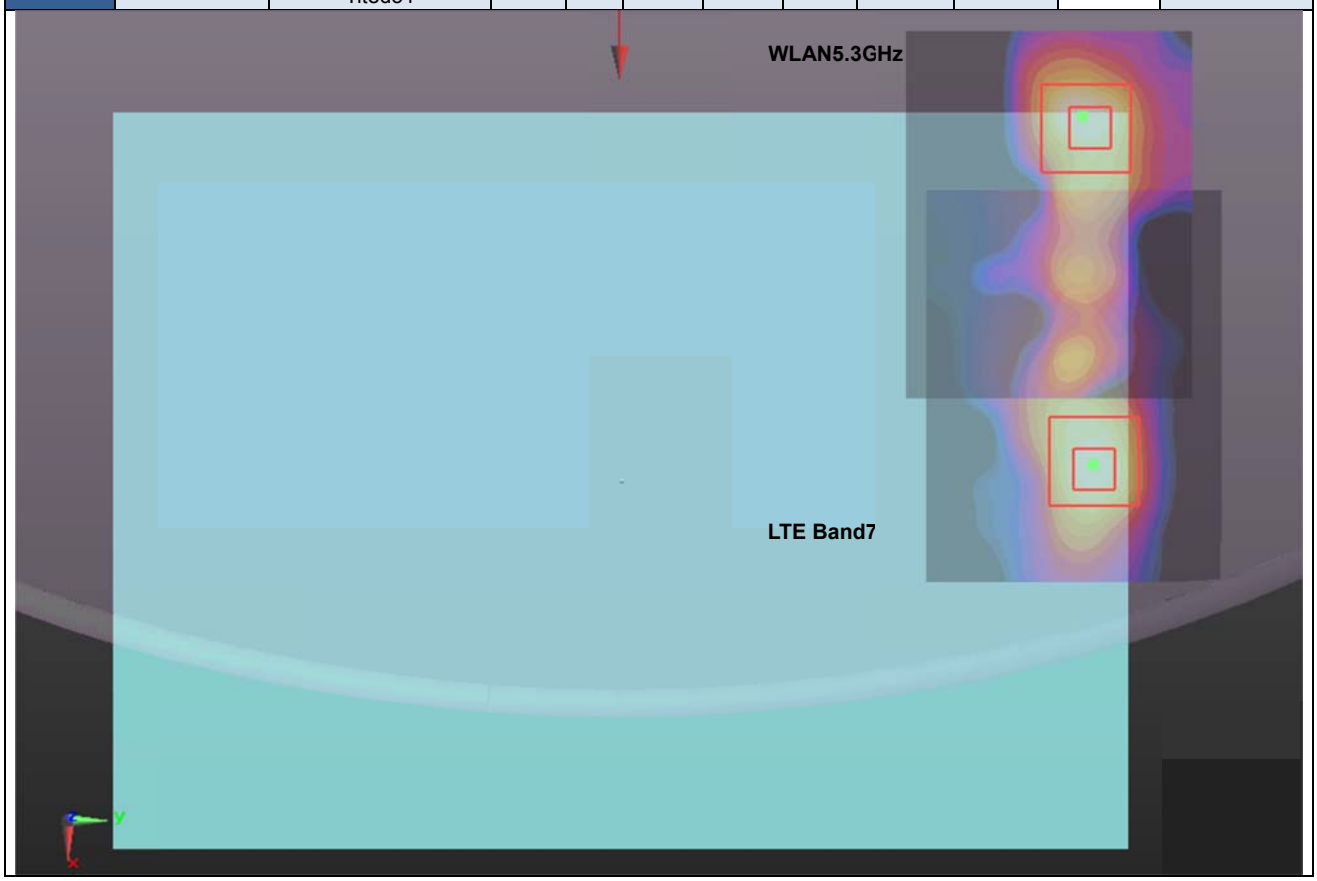
Case 11	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band4	Bottom Face Curved surface of Edge4 Tited31	0.765	0	0.134	0.1	-0.177	82.4	1.81	0.03	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



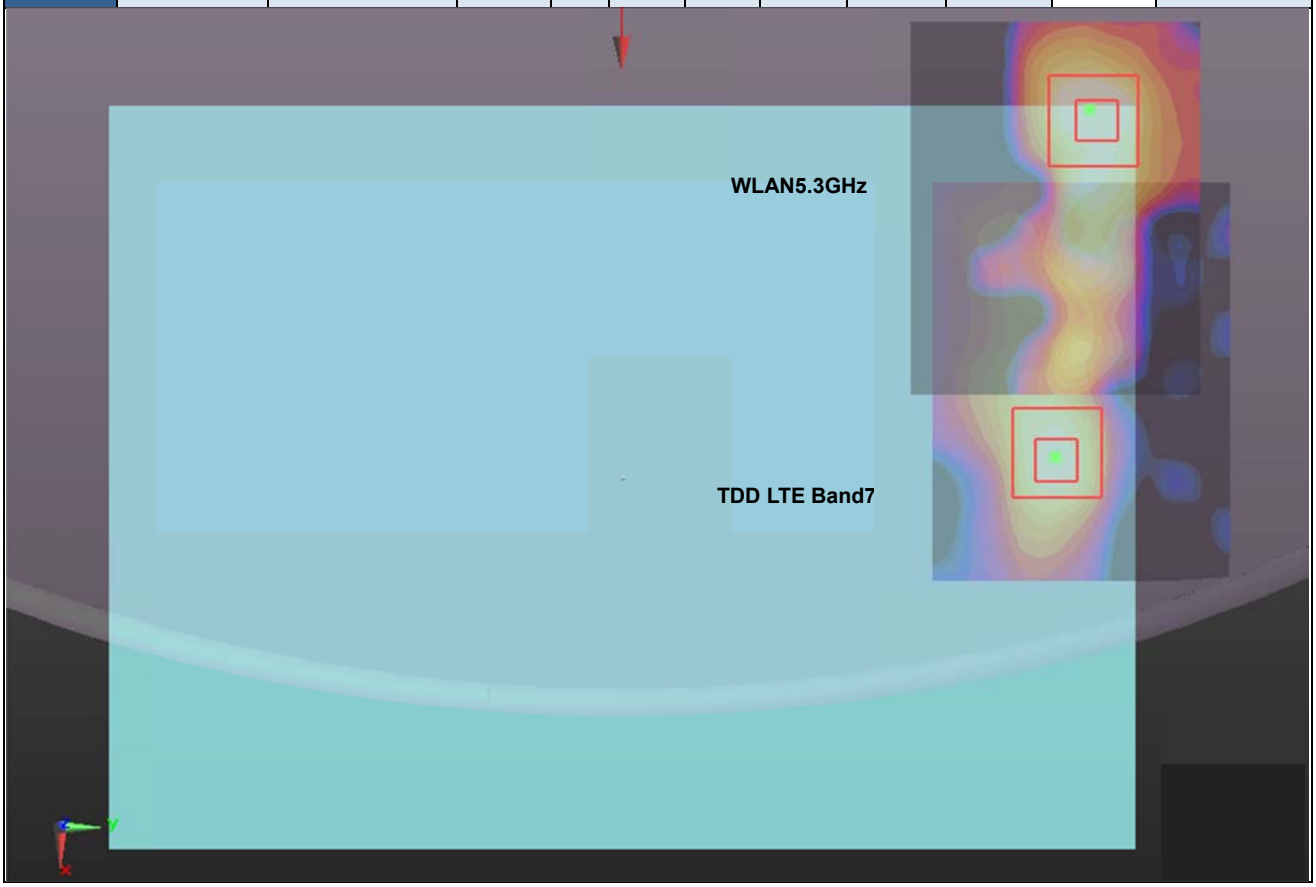
Case 12	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band25	Bottom Face Curved surface of Edge4 Tited31	0.856	0	0.124	0.106	-0.177	71.6	1.90	0.04	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



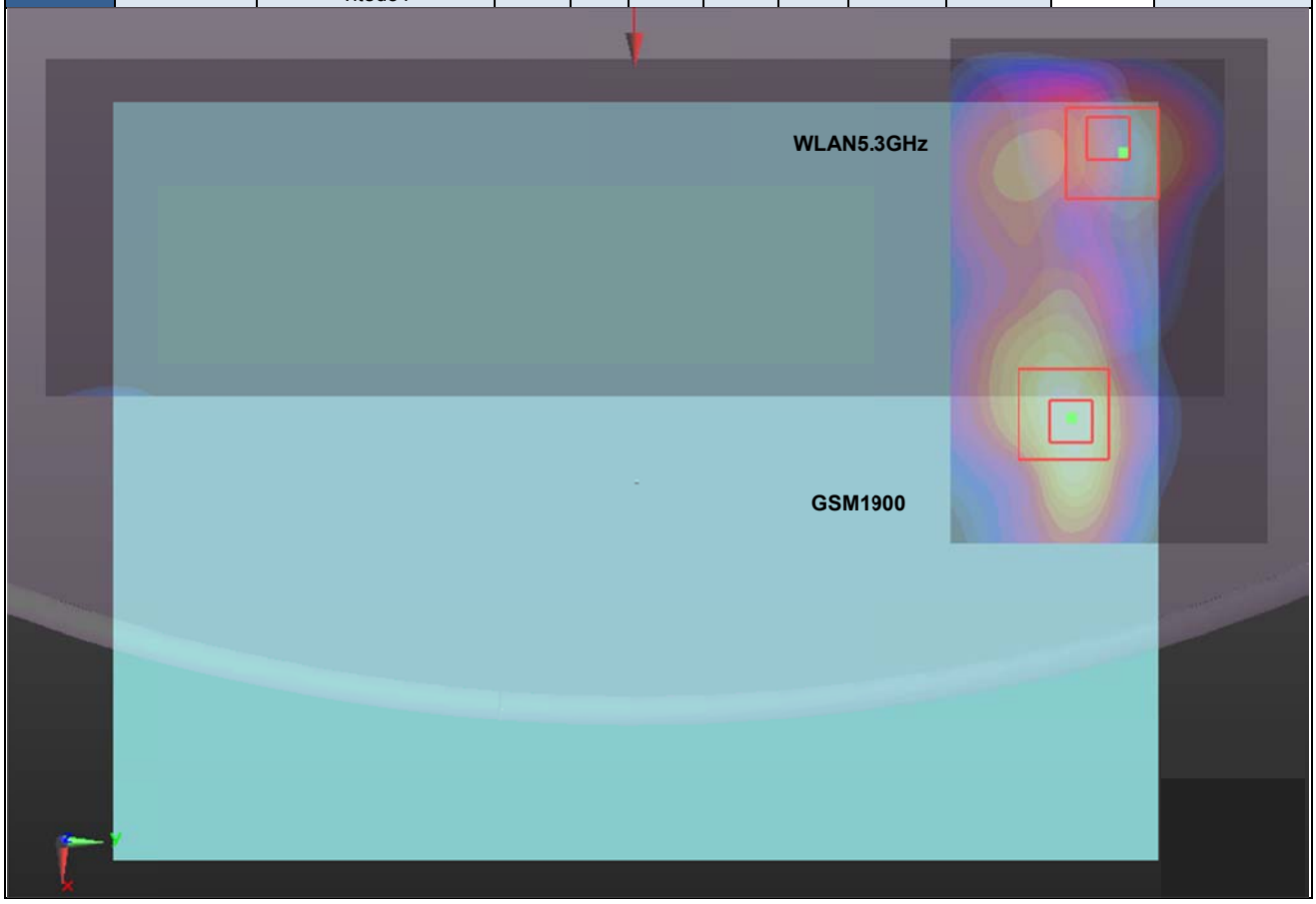
Case 13	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band7	Bottom Face Curved surface of Edge4 Tited31	0.988	0	0.136	0.116	-0.177	83.0	2.03	0.03	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



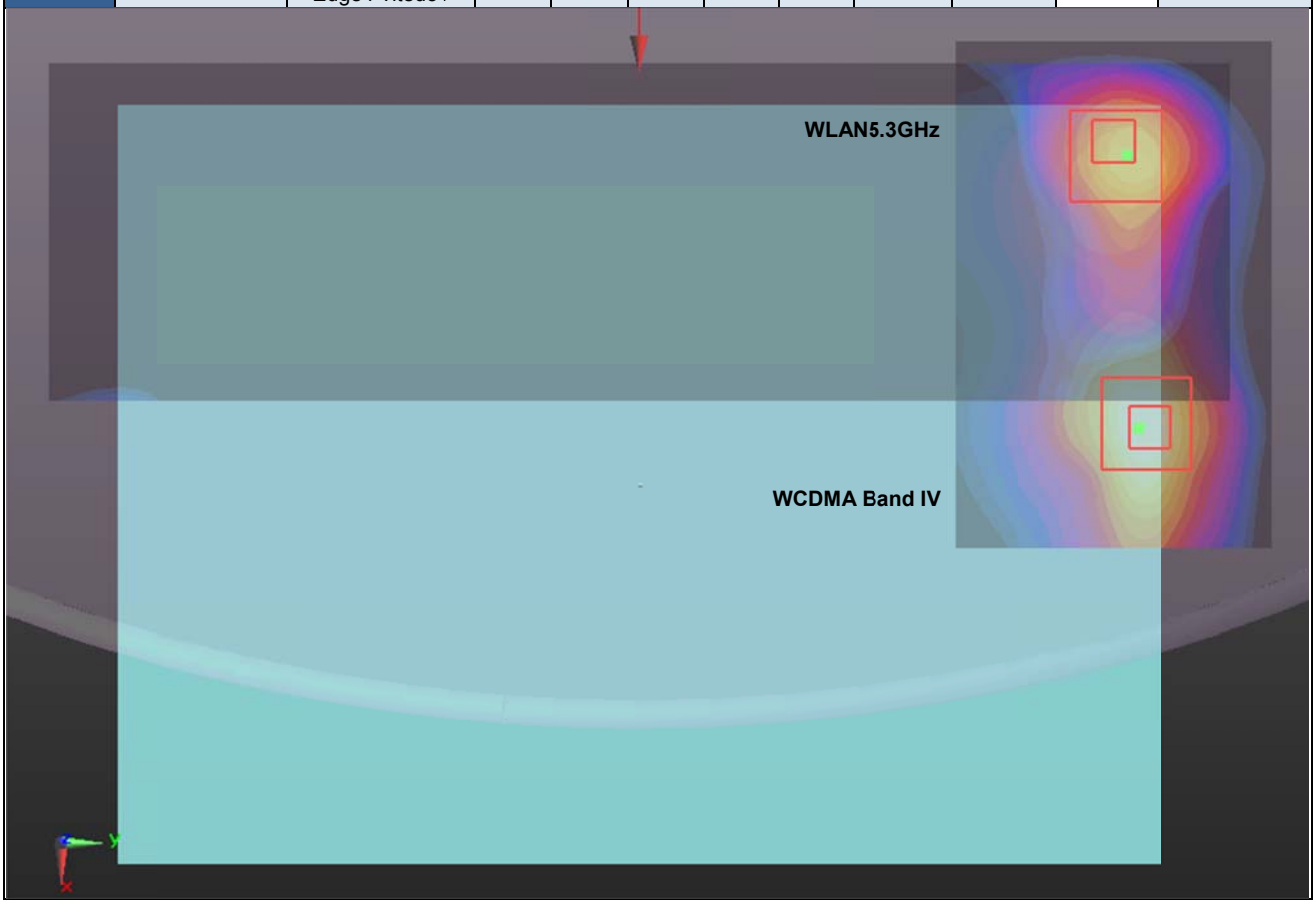
Case 14	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	TDD LTE Band7	Bottom Face Curved surface of Edge4 Tited31	0.556	0	0.135	0.105	-0.177	116.3	1.60	0.02	Not required
	WLAN5.3GHz		1.045	0	0.053	0.115	-0.179				



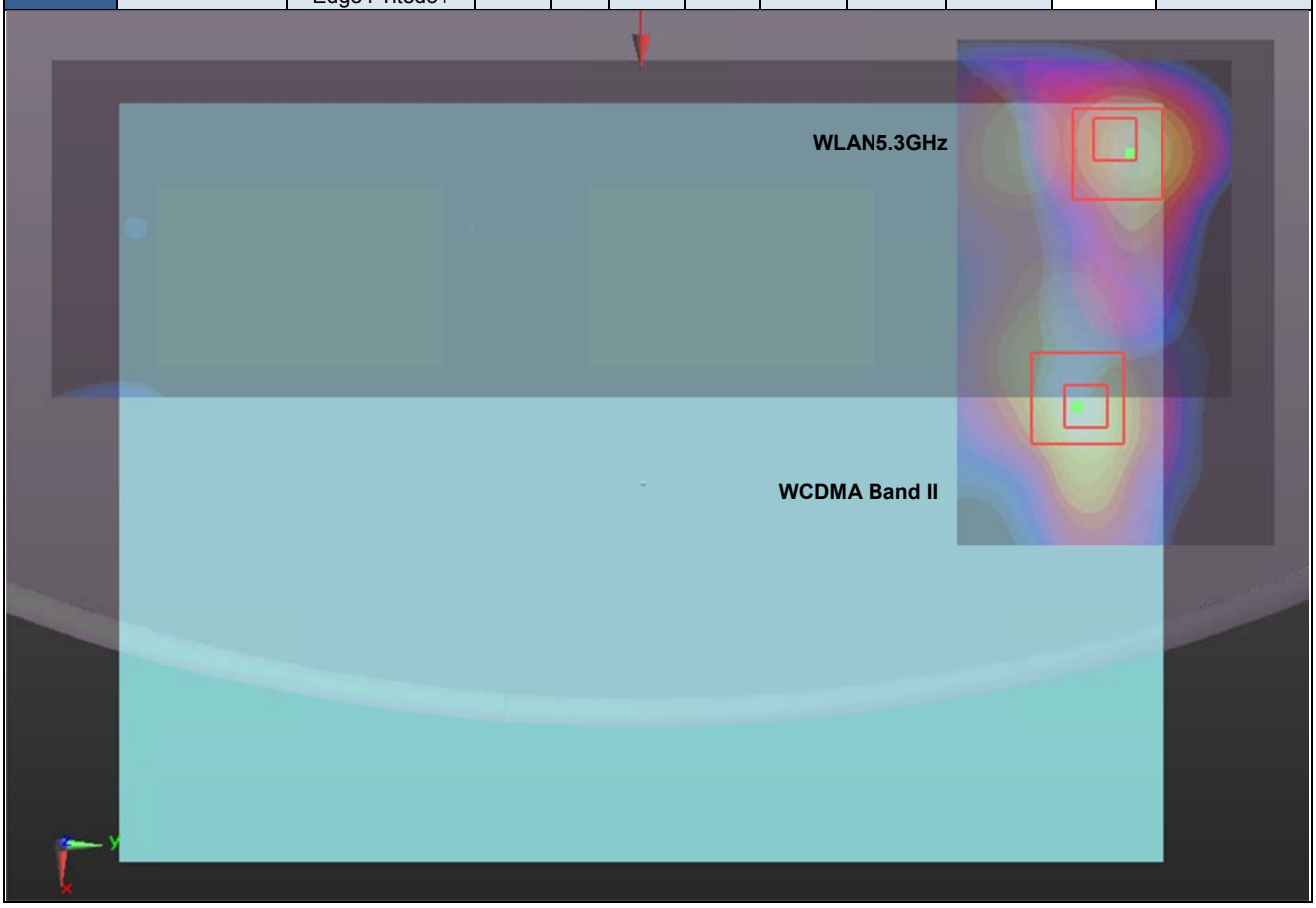
Case 15	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900	Bottom Face Curved surface of Edge4 Tited31	1.010	0	0.124	0.105	-0.177	64.7	2.03	0.04	Not required
	WLAN5.3GHz		1.020	0	0.06	0.114	-0.179				



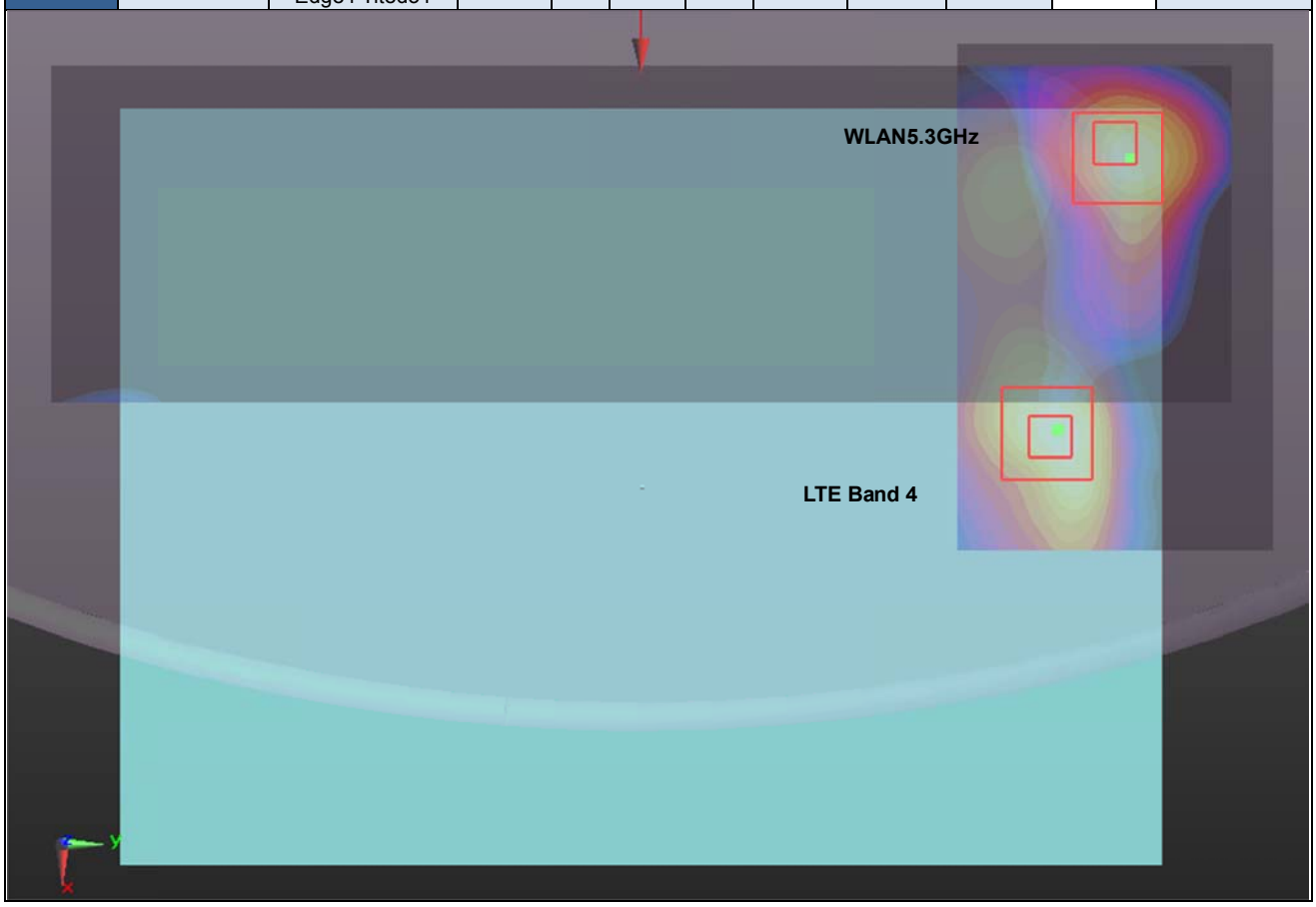
Case 16	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band IV	Bottom Face Curved surface of Edge4 Tited31	0.940	0	0.126	0.12	-0.177	66.3	1.96	0.04	Not required
	WLAN5.3GHz		1.020	0	0.06	0.114	-0.179				



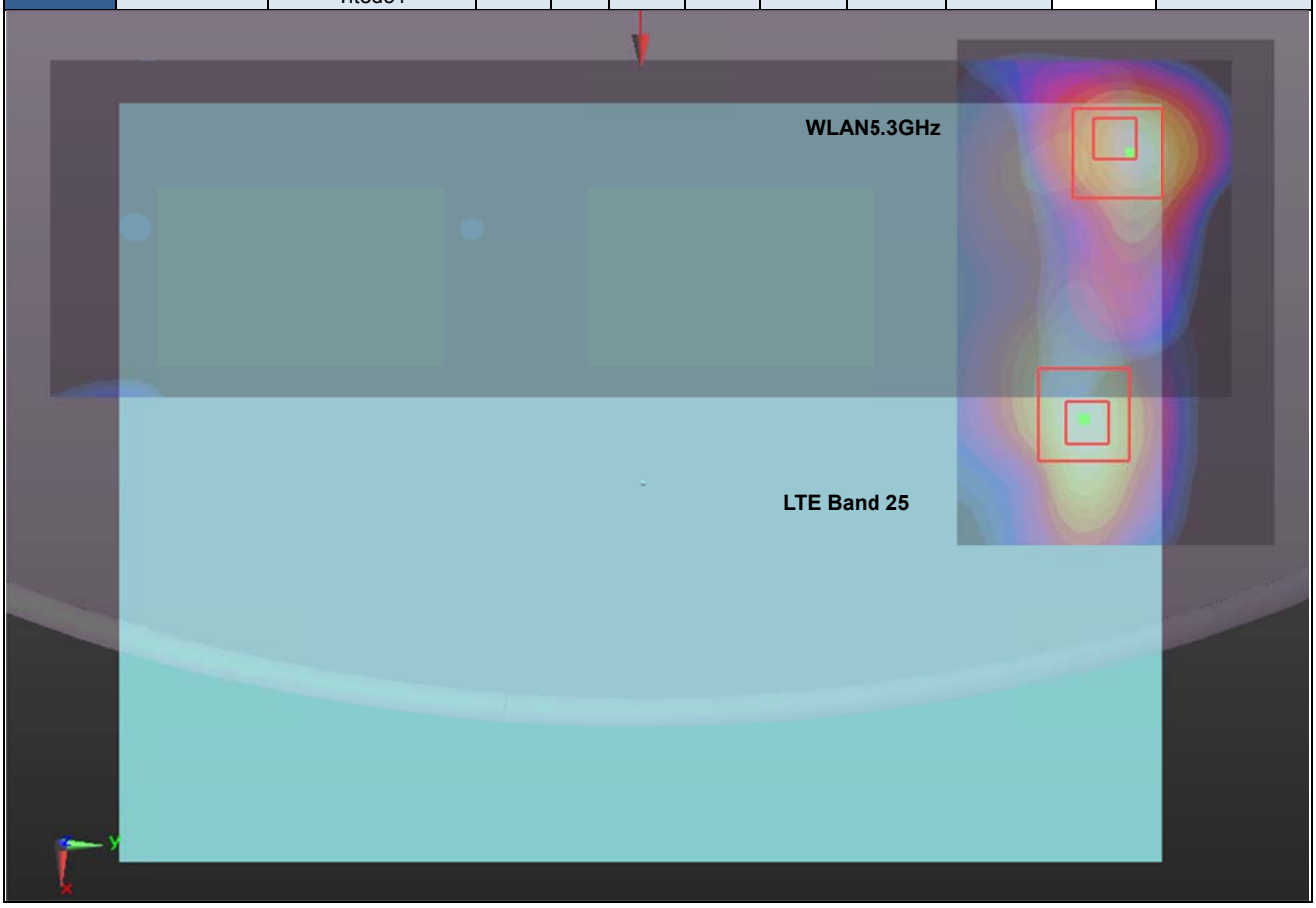
Case 17	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA Band II	Bottom Face Curved surface of Edge4 Tited31	0.936	0	0.121	0.105	-0.177	61.7	1.96	0.04	Not required
	WLAN5.3GHz		1.020	0	0.06	0.114	-0.179				



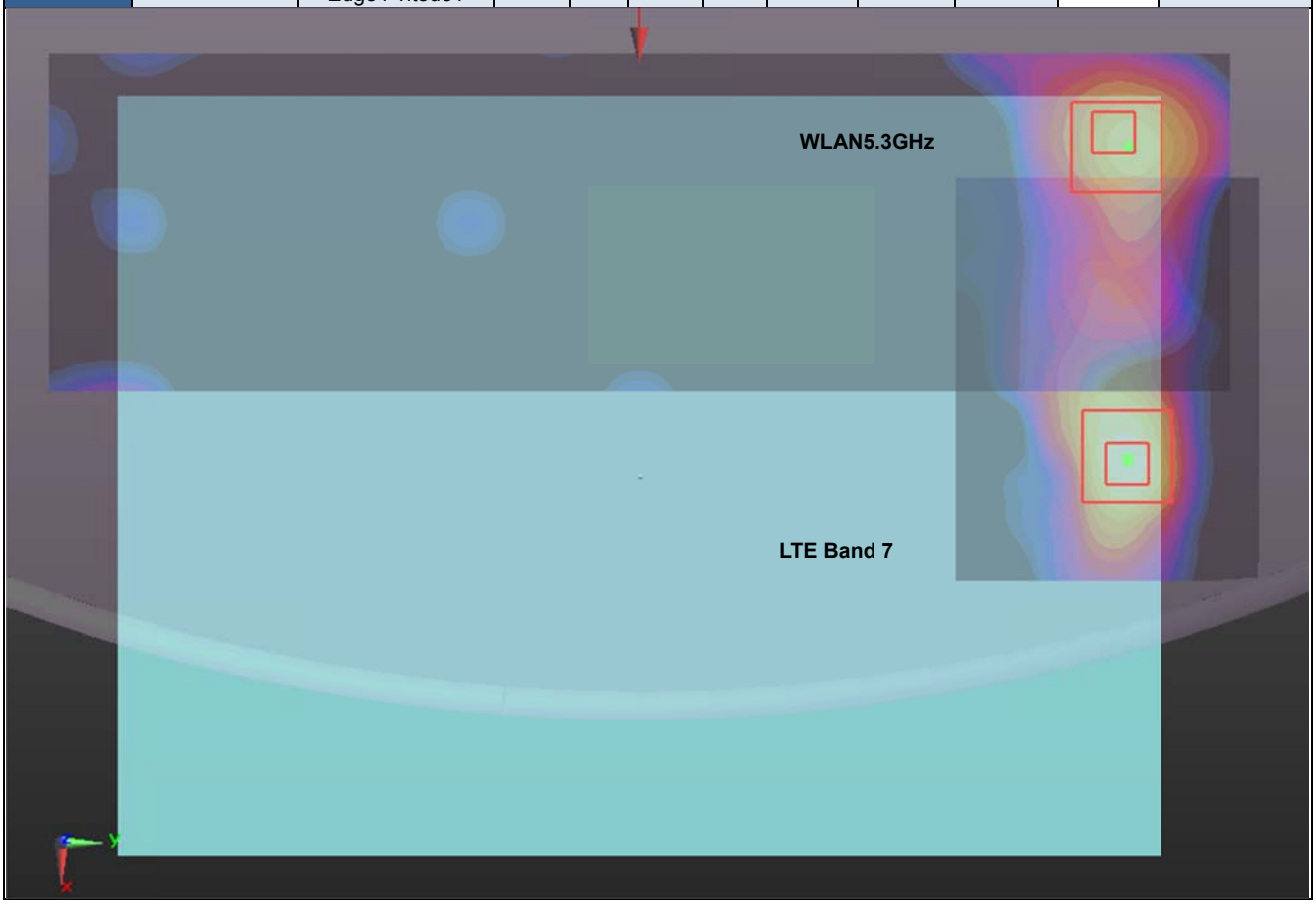
Case 18	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 4	Bottom Face Curved surface of Edge4 Tited31	0.765	0	0.134	0.1	-0.177	75.3	1.79	0.03	Not required
	WLAN5.3GHz		1.020	0	0.06	0.114	-0.179				



Case 19	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 25	Bottom Face Curved surface of Edge4 Tited31	0.856	0	0.124	0.106	-0.177	64.5	1.88	0.04	Not required
	WLAN5.3GHz		1.020	0	0.06	0.114	-0.179				



Case 20	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7	Bottom Face Curved surface of Edge4 Tited31	0.988	0	0.136	0.116	-0.177	76.1	2.01	0.04	Not required
	WLAN5.3GHz		1.020	0	0.06	0.114	-0.179				



Test Engineer : Fulu Hu

17. Uncertainty Assessment

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

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

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

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

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

(b) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

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

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

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

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

Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	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 17.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

18. References

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

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

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

[4] SPEAG DASY System Handbook

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

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

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

[8] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, Dec 2013

[9] FCC KDB 616217 D04 v01r01, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, May 2013

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.22

System Check_Body_835MHz_150822

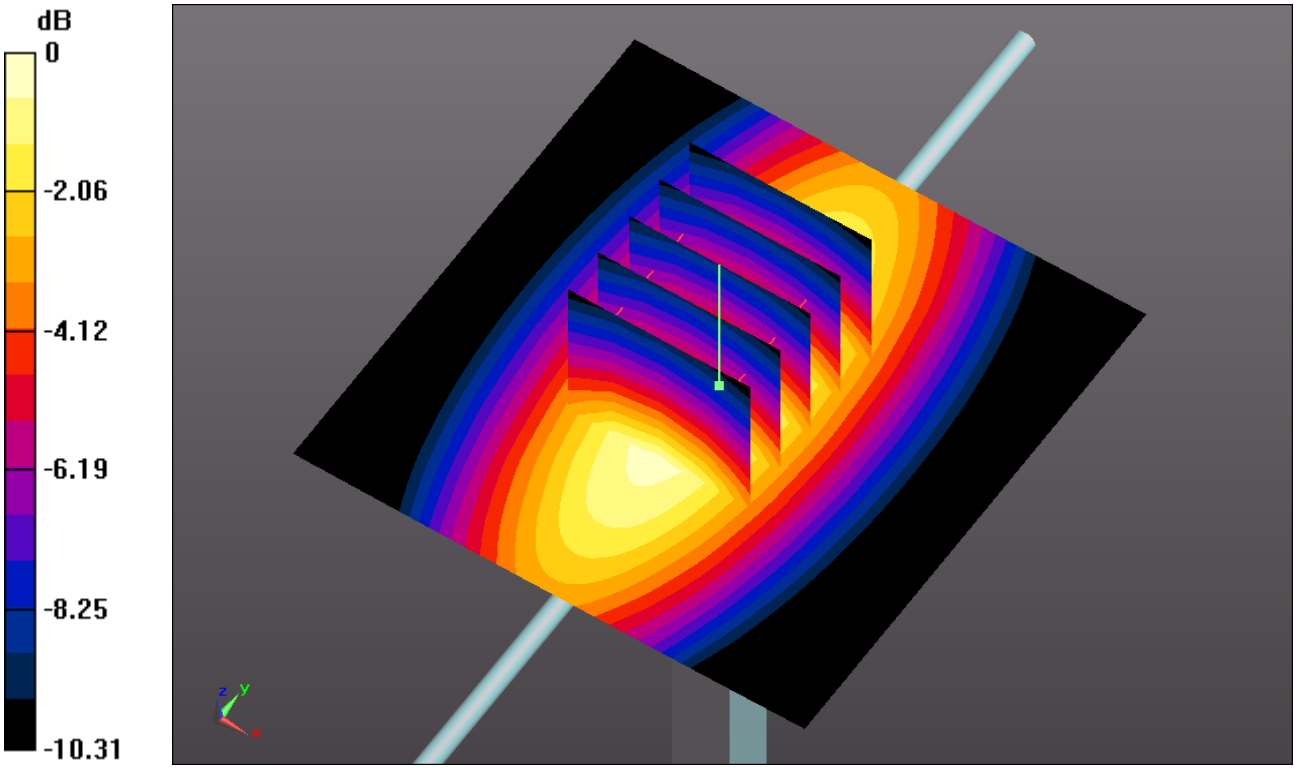
DUT: D835V2 - SN:4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_150822 Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.463; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.861 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.078 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.340 W/kg
SAR(1 g) = 2.29 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.881 mW/g



0 dB = 2.880mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.21

System Check_Body_1750MHz_150821

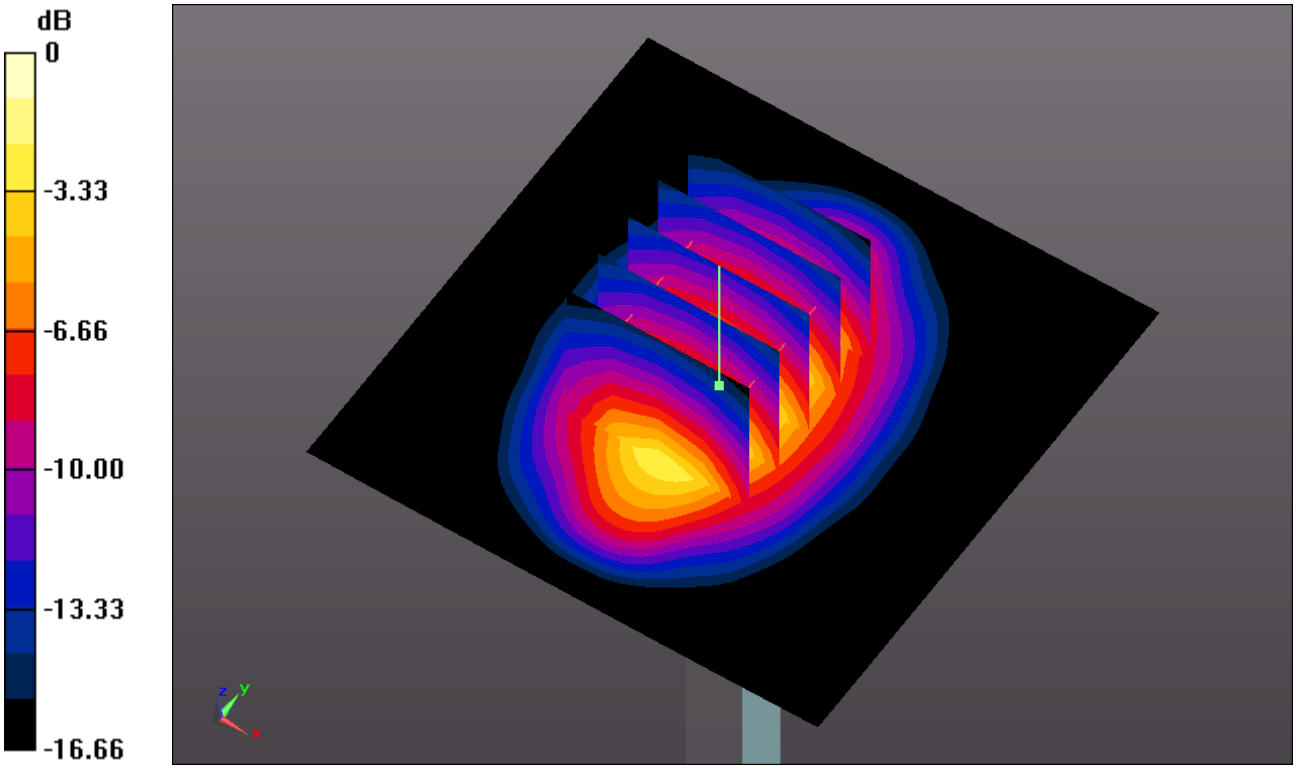
DUT: D1750V2 - SN:1069

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150821 Medium parameters used: f = 1750 MHz; σ = 1.515 mho/m; ε_r = 55.246; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.77, 7.77, 7.77); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.134 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.302 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.544 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.34 mW/g
Maximum value of SAR (measured) = 14.148 mW/g



0 dB = 14.150mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.21

System Check_Body_1900MHz_150821

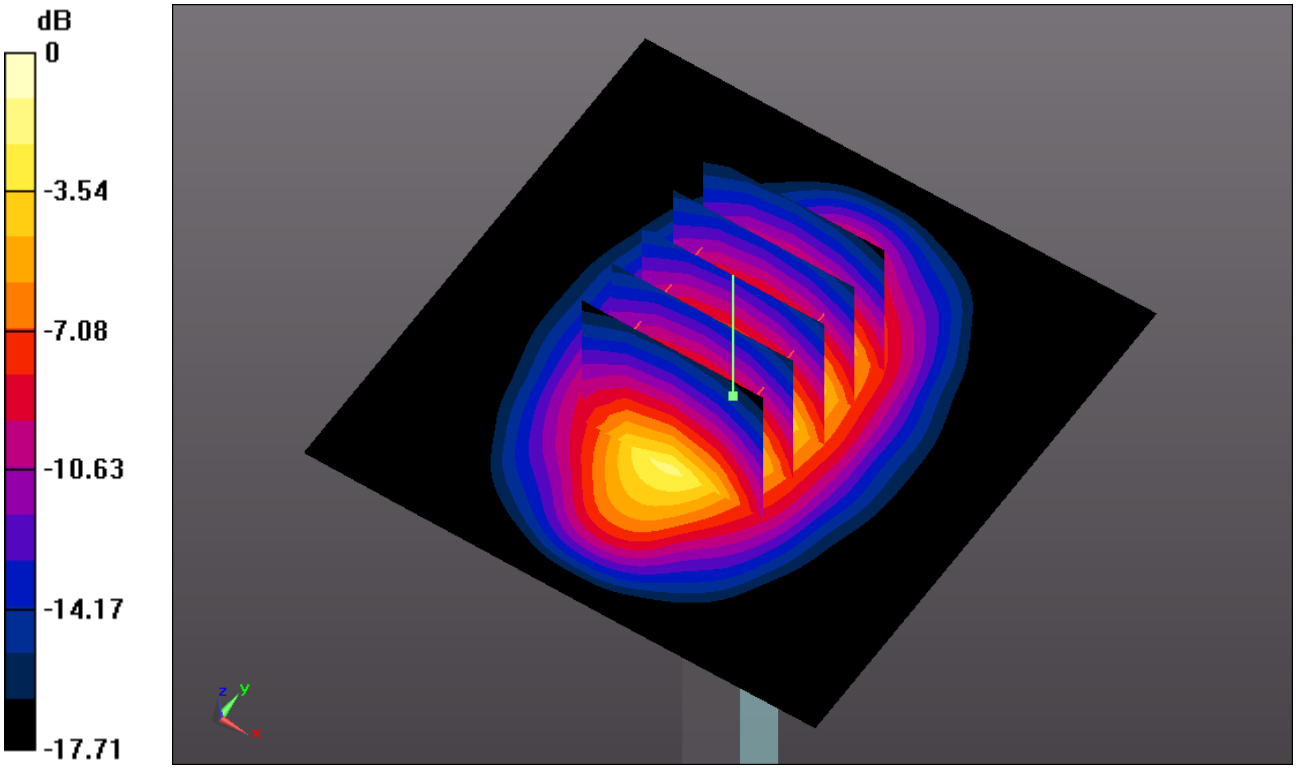
DUT: D1900V2 - SN:5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150821 Medium parameters used: f = 1900 MHz; σ = 1.552 mho/m; ε_r = 53.419; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.923 mW/g

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 87.238 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 18.657 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.45 mW/g
Maximum value of SAR (measured) = 14.933 mW/g



0 dB = 14.930mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.24

System Check_Body_2450MHz_150824

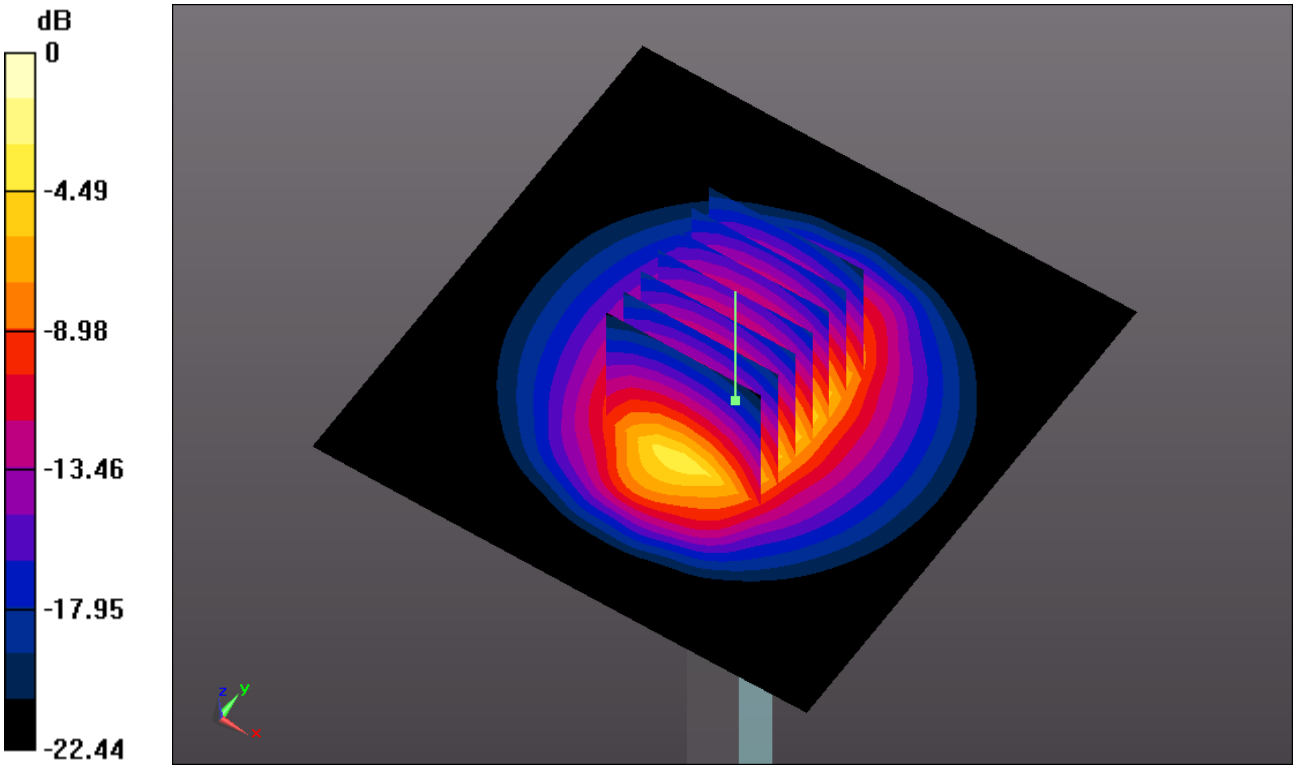
DUT: D2450V2 - SN:840

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_150824 Medium parameters used: f = 2450 MHz; σ = 1.955 mho/m; ε_r = 51.529; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.29, 7.29, 7.29); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 18.077 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.721 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 24.525 W/kg
SAR(1 g) = 12.2 mW/g; SAR(10 g) = 5.74 mW/g
Maximum value of SAR (measured) = 18.508 mW/g



0 dB = 18.510mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.19

System Check_Body_2600MHz_150819

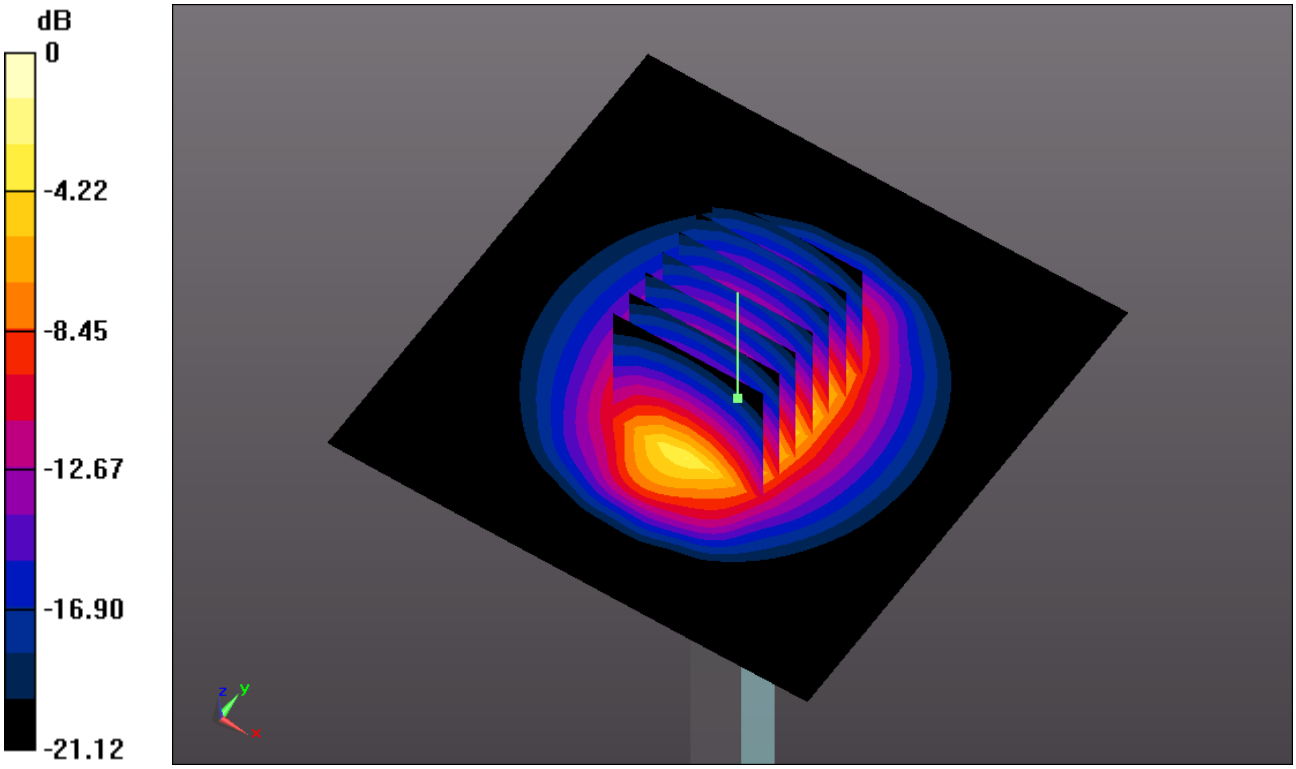
DUT: D2600V2 - SN:1061

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150819 Medium parameters used: f = 2600 MHz; σ = 2.165 mho/m; ε_r = 53.823; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.17, 7.17, 7.17); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=250mW/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.959 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.266 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 29.488 W/kg
SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.35 mW/g
Maximum value of SAR (measured) = 21.446 mW/g



0 dB = 21.450mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.30

System Check_Body_5200MHz_150830

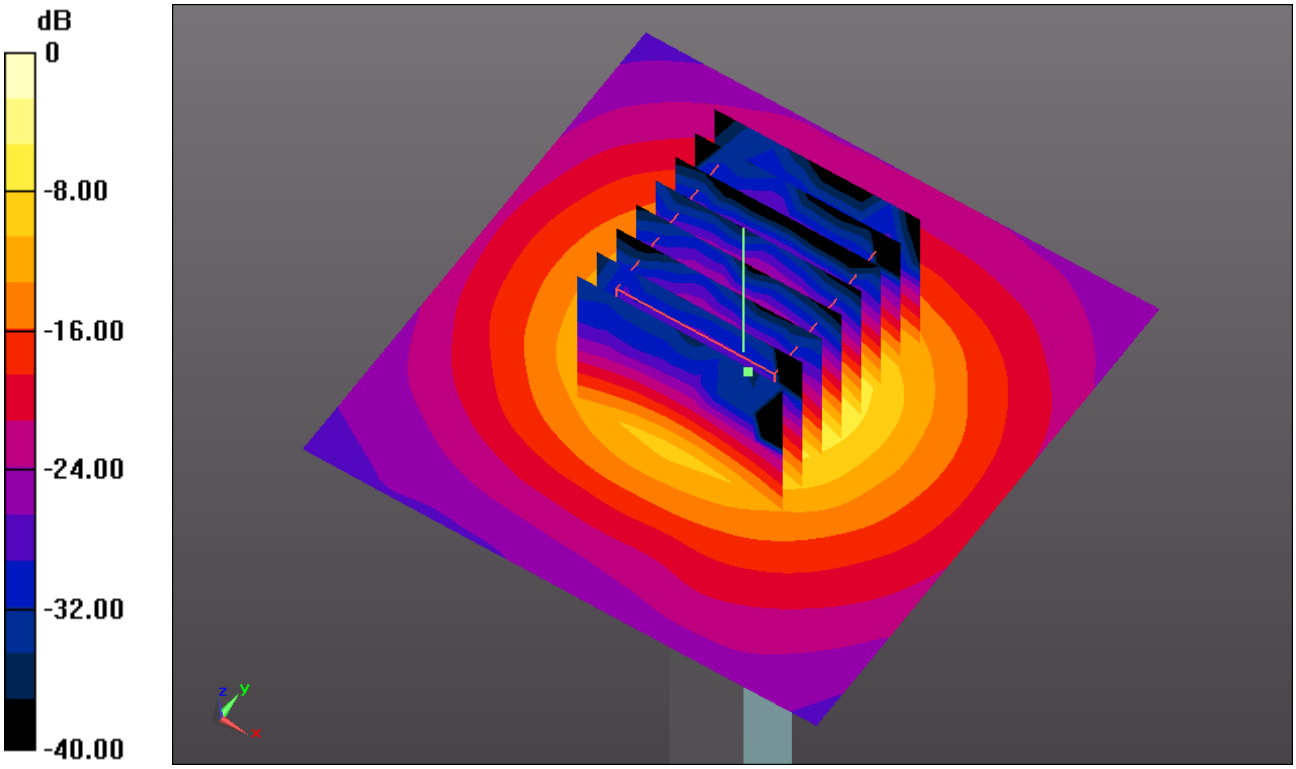
DUT: D5GHzV2-SN:1113

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5000_150830 Medium parameters used: f = 5200 MHz; σ = 5.264 mho/m; ε_r = 48.303; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.45, 4.45, 4.45); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.643 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 40.225 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 29.770 W/kg
SAR(1 g) = 7.45 mW/g; SAR(10 g) = 2.12 mW/g
Maximum value of SAR (measured) = 17.176 mW/g



0 dB = 17.180mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.30

System Check_Body_5300MHz_150830

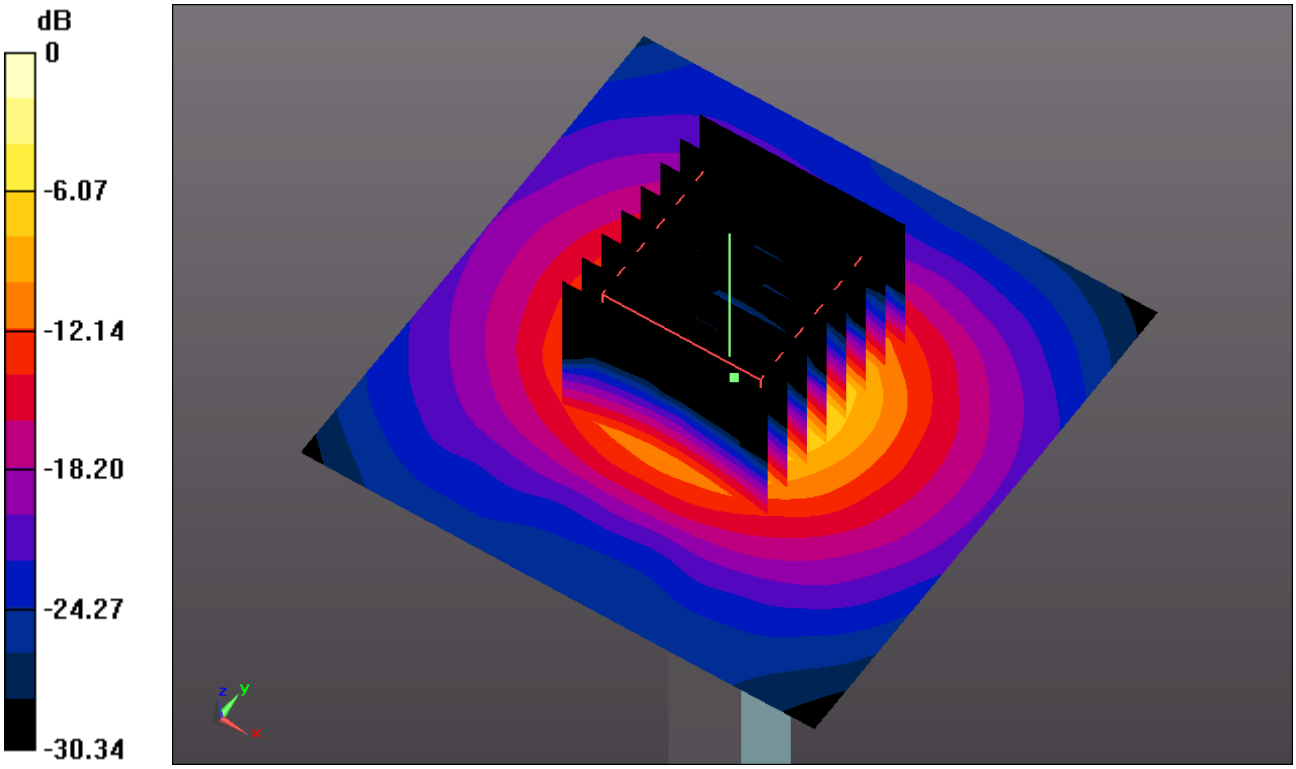
DUT: D5GHzV2-SN:1113

Communication System: CW (0); Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5000_150830 Medium parameters used: f = 5300 MHz; σ = 5.404 mho/m; ε_r = 48.094; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.25, 4.25, 4.25); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.734 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 41.811 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 34.309 W/kg
SAR(1 g) = 8.08 mW/g; SAR(10 g) = 2.28 mW/g
Maximum value of SAR (measured) = 19.013 mW/g



0 dB = 19.730mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.31

System Check_Body_5600MHz_150831

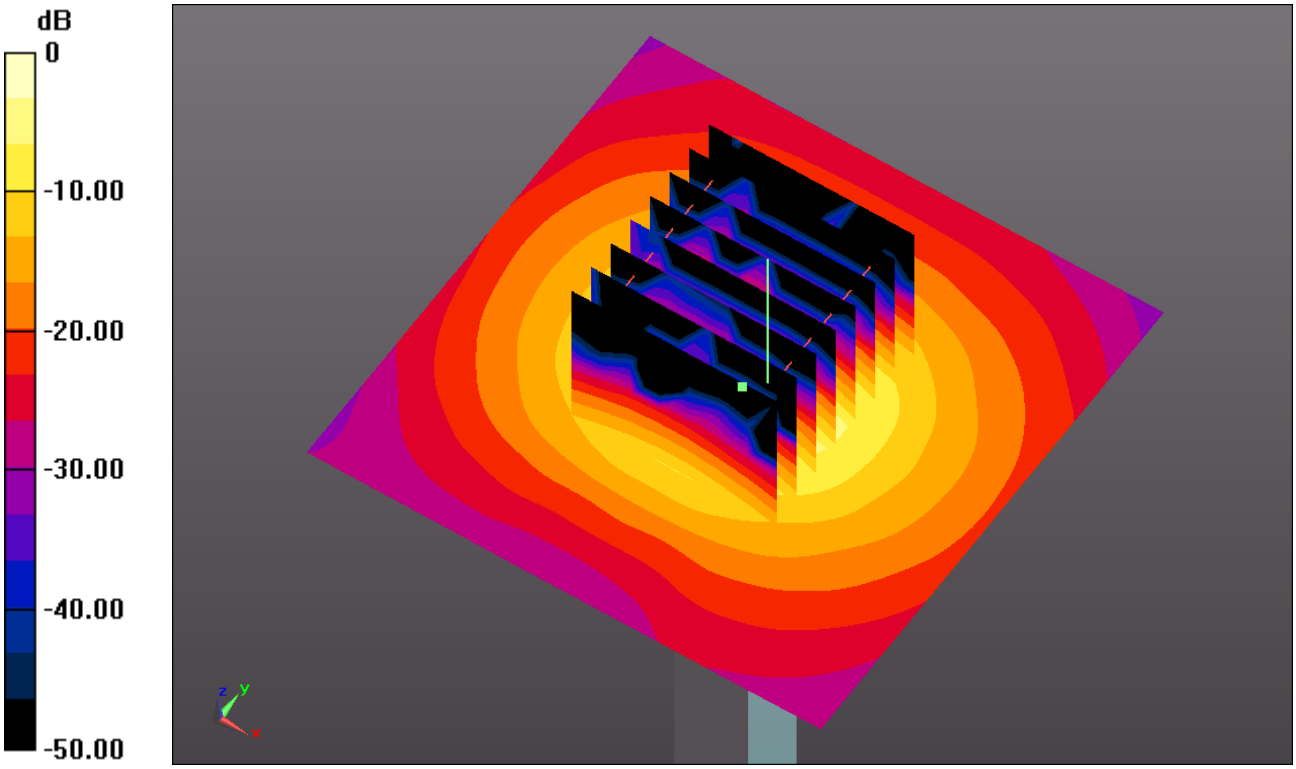
DUT: D5GHzV2-SN:1113

Communication System: CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: MSL_5000_150831 Medium parameters used: f = 5600 MHz; σ = 5.834 mho/m; ε_r = 47.448; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(3.8, 3.8, 3.8); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.483 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 40.599 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 35.966 W/kg
SAR(1 g) = 8.31 mW/g; SAR(10 g) = 2.38 mW/g
Maximum value of SAR (measured) = 20.220 mW/g



0 dB = 20.220mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.09.01

System Check_Body_5800MHz_150901

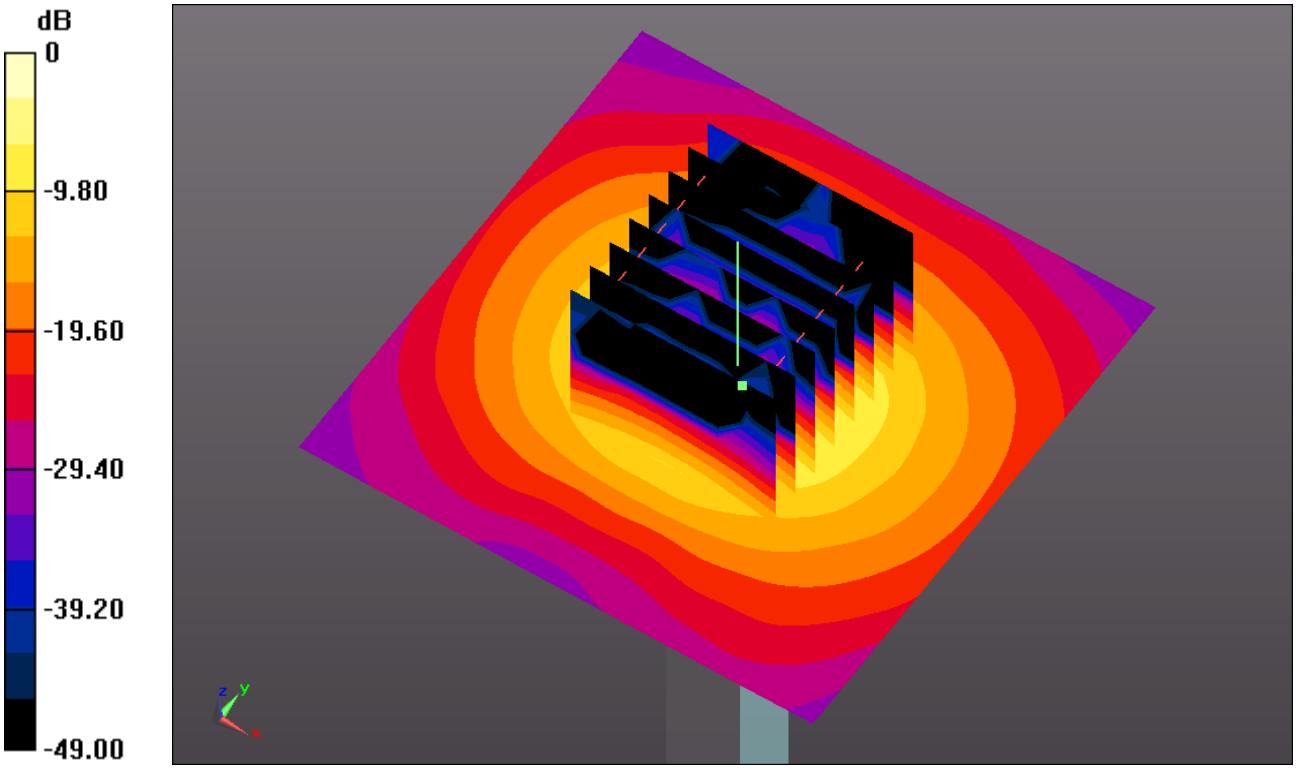
DUT: D5GHzV2-SN:1113

Communication System: CW (0); Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5000_150901 Medium parameters used: f = 5800 MHz; σ = 6.096 mho/m; ε_r = 46.929; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.16, 4.16, 4.16); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Pin=100mW/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.123 mW/g

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 37.975 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 36.071 W/kg
SAR(1 g) = 7.79 mW/g; SAR(10 g) = 2.21 mW/g
Maximum value of SAR (measured) = 19.526 mW/g



0 dB = 19.530mW/g

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.22

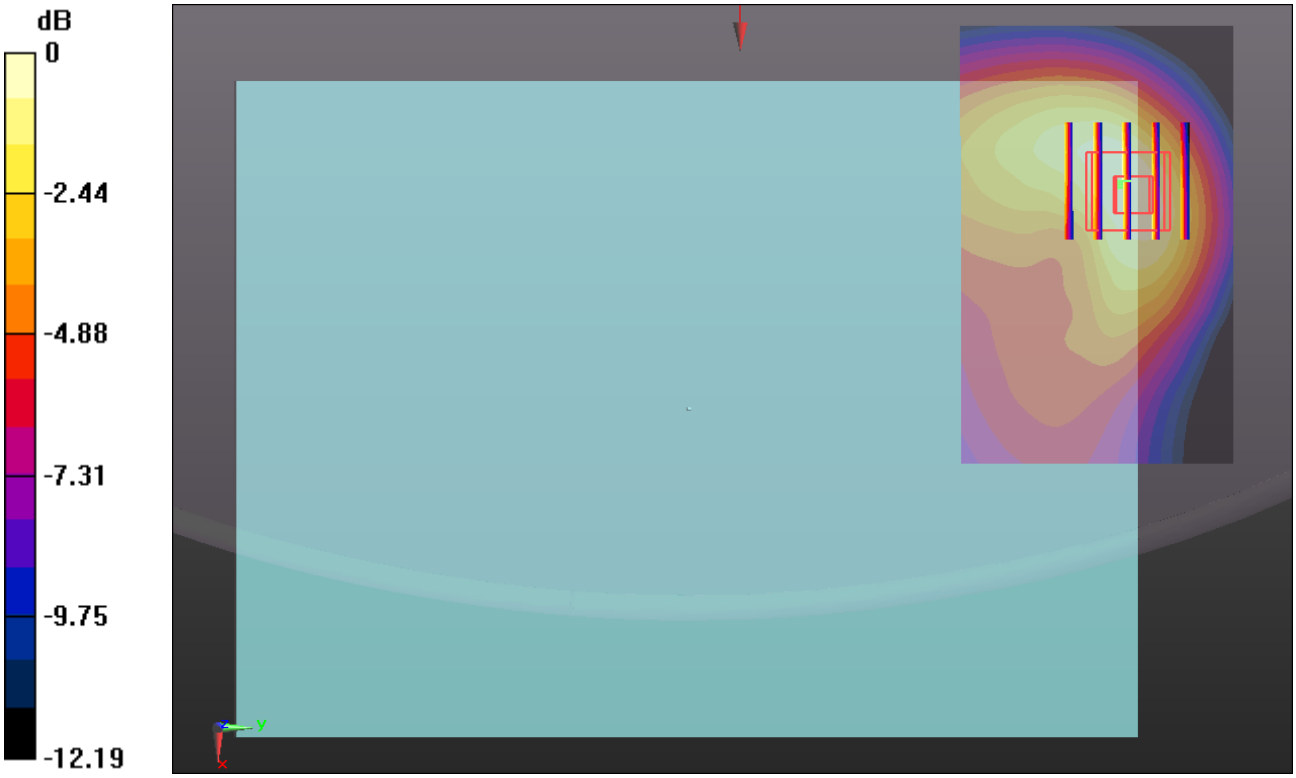
#01 GSM850_GPRS (4 Tx slots)_Bottom Face 1cm_Ch251_Sensor off

Communication System: GPRS/EDGE (4 Tx slots) (0); Frequency: 848.8 MHz;Duty Cycle: 1:2.08
Medium: MSL_835_150822 Medium parameters used: f = 848.8 MHz; σ = 0.994 mho/m; ε_r = 54.311; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch251/Area Scan (81x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.683 mW/g

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.208 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.829 W/kg
SAR(1 g) = 0.538 mW/g; SAR(10 g) = 0.339 mW/g
Maximum value of SAR (measured) = 0.683 mW/g



0 dB = 0.680mW/g

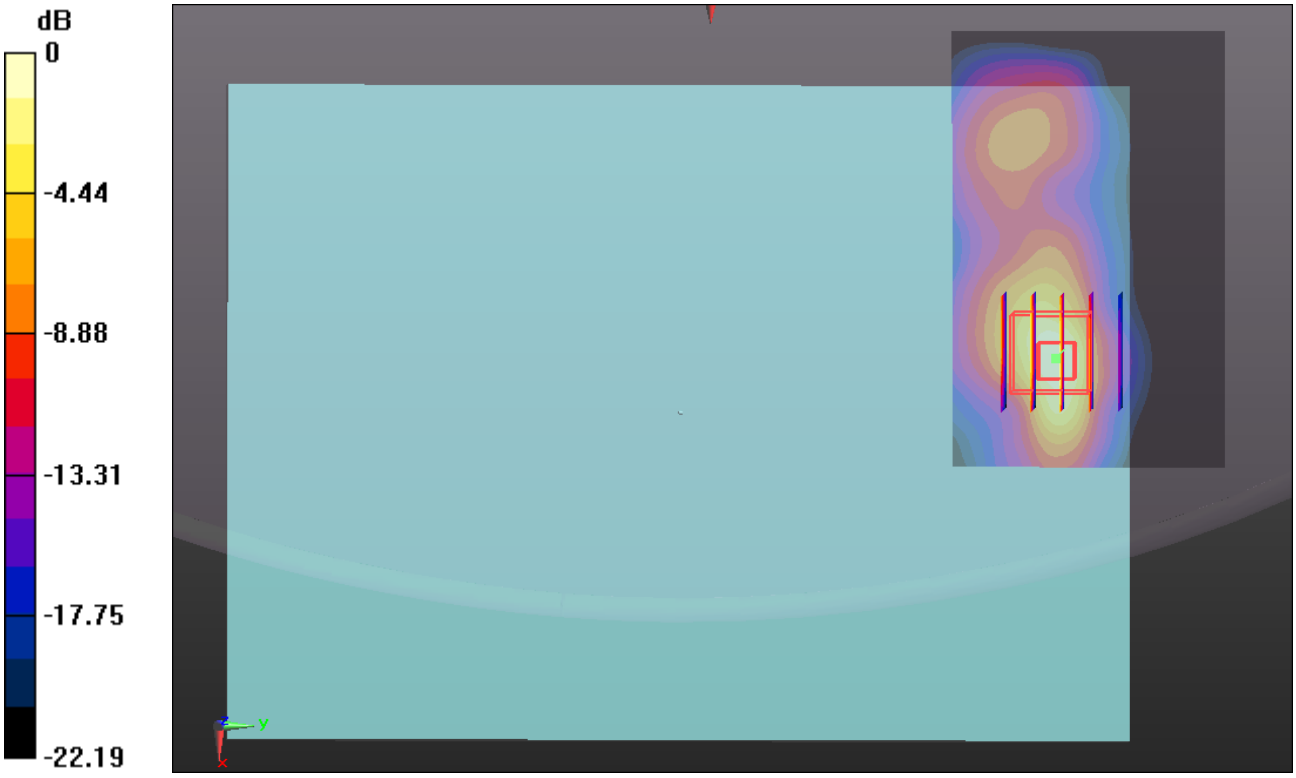
#02 GSM1900_GPRS (4 Tx slots)_Bottom Face Curved of Edge4 Tited31 0cm_Ch512_Sensor on

Communication System: GPRS/EDGE (4 Tx slots) (0); Frequency: 1850.2 MHz;Duty Cycle: 1:2.08
Medium: MSL_1900_150821 Medium parameters used: f = 1850.2 MHz; σ = 1.492 mho/m; ε_r = 53.535; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch512/Area Scan (81x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.534 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.165 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.923 W/kg
SAR(1 g) = 0.878 mW/g; SAR(10 g) = 0.382 mW/g
Maximum value of SAR (measured) = 1.426 mW/g



0 dB = 1.430mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.22

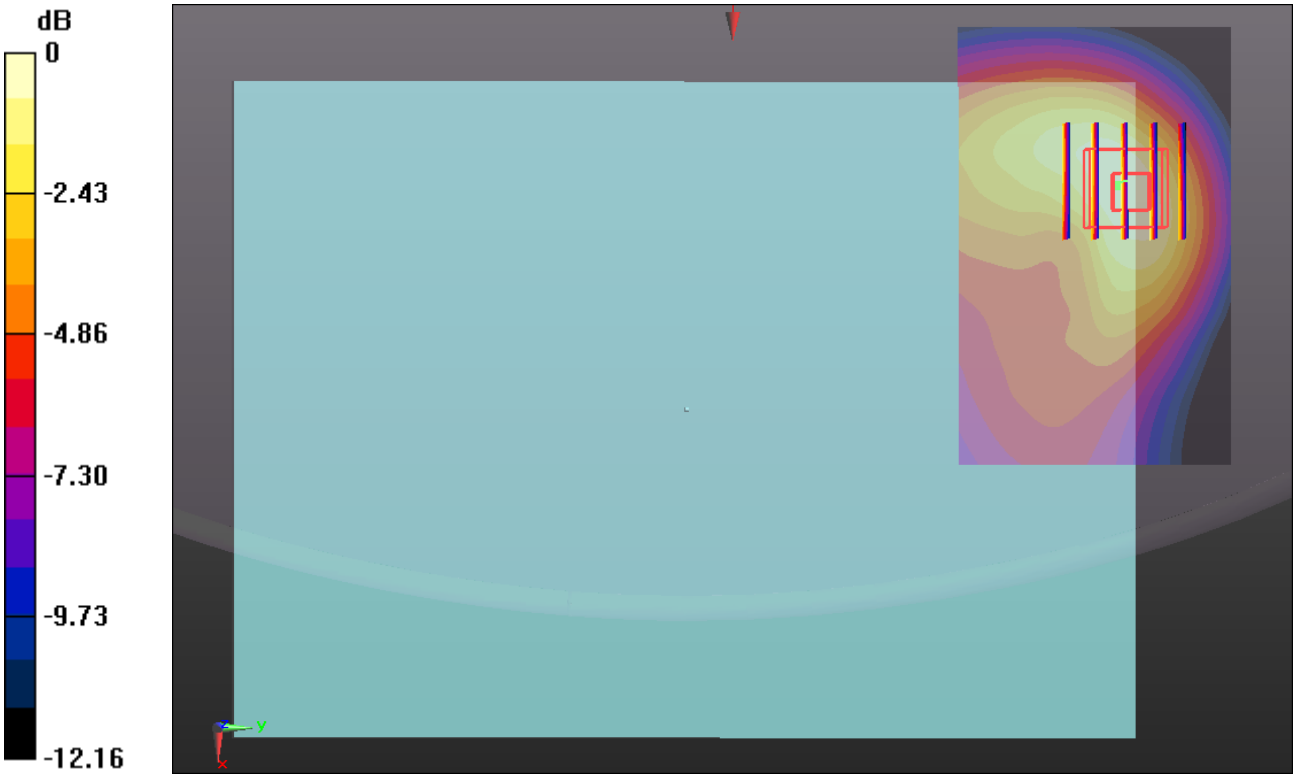
#03 WCDMA Band V_RMC 12.2Kbps_Bottom Face 1cm_Ch4233_Sensor off

Communication System: UMTS (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: MSL_835_150822 Medium parameters used: f = 846.6 MHz; σ = 0.992 mho/m; ε_r = 54.338; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch4233/Area Scan (81x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.732 mW/g

Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.067 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.881 W/kg
SAR(1 g) = 0.574 mW/g; SAR(10 g) = 0.363 mW/g
Maximum value of SAR (measured) = 0.732 mW/g



0 dB = 0.730mW/g

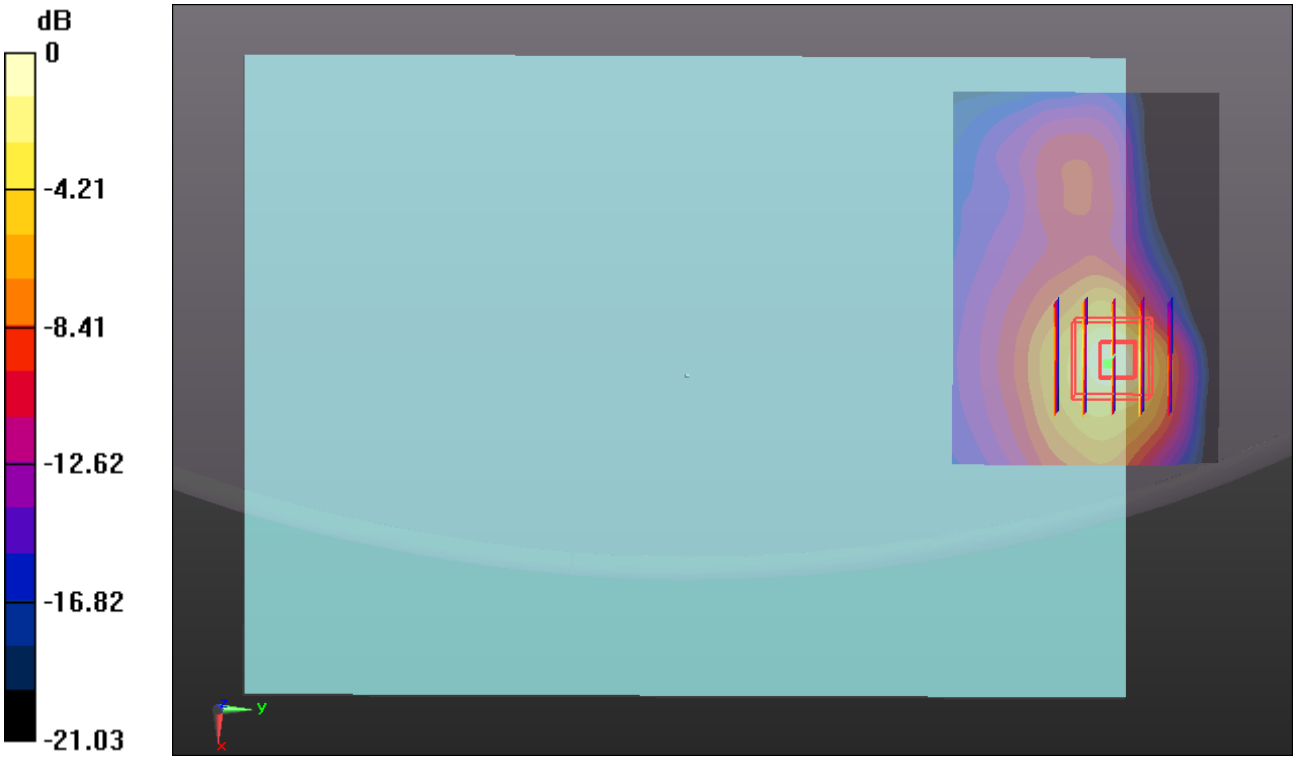
#04 WCDMA Band IV_RMC12.2Kbps_Bottom Face 0cm_Ch1413_Sensor on

Communication System: UMTS (0); Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150821 Medium parameters used: f = 1732.6 MHz; σ = 1.496 mho/m; ε_r = 55.275; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.77, 7.77, 7.77); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1413/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.506 mW/g

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.818 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.011 W/kg
SAR(1 g) = 0.938 mW/g; SAR(10 g) = 0.443 mW/g
Maximum value of SAR (measured) = 1.455 mW/g



0 dB = 1.450mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.21

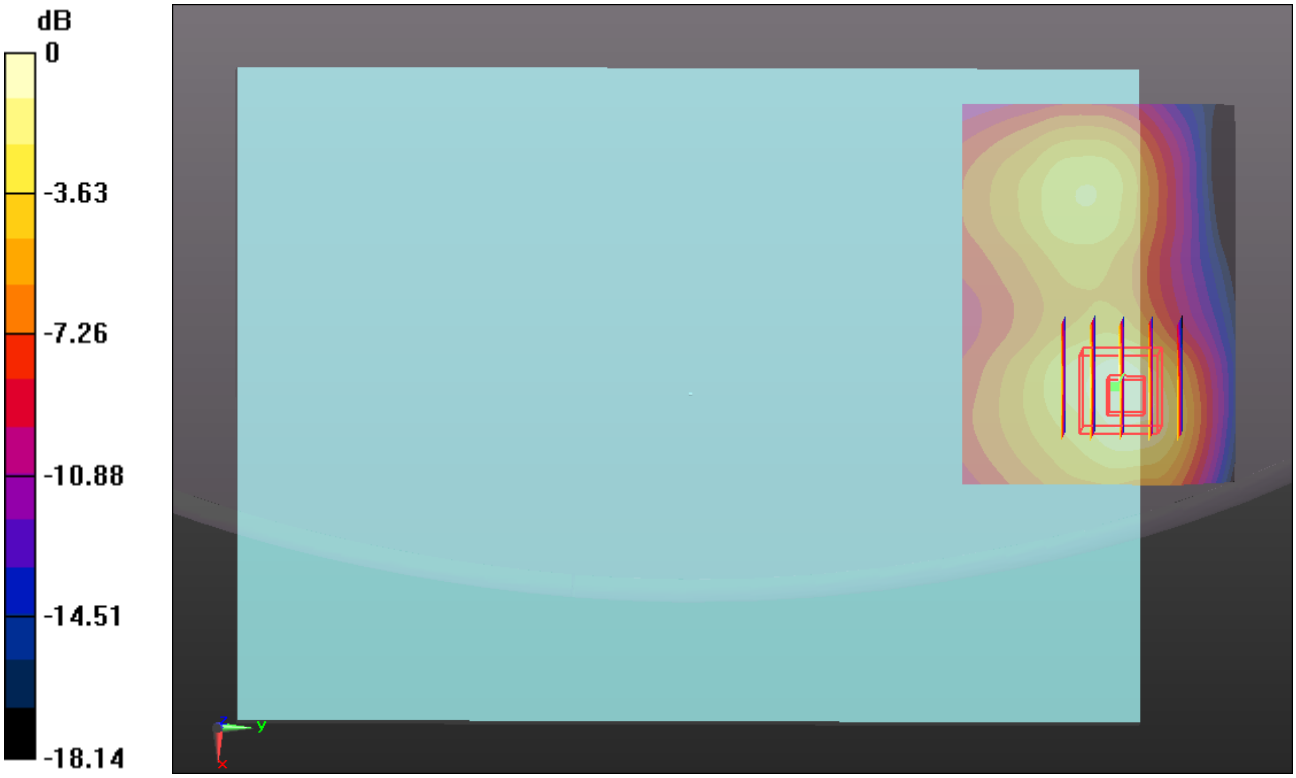
#05 WCDMA Band II_RMC12.2Kbps_Bottom Face 1cm_Ch9538_Sensor off

Communication System: UMTS (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150821 Medium parameters used: f = 1907.6 MHz; σ = 1.561 mho/m; ε_r = 53.395; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch9538/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.142 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.111 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.467 W/kg
SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.464 mW/g
Maximum value of SAR (measured) = 1.128 mW/g



0 dB = 1.130mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.22

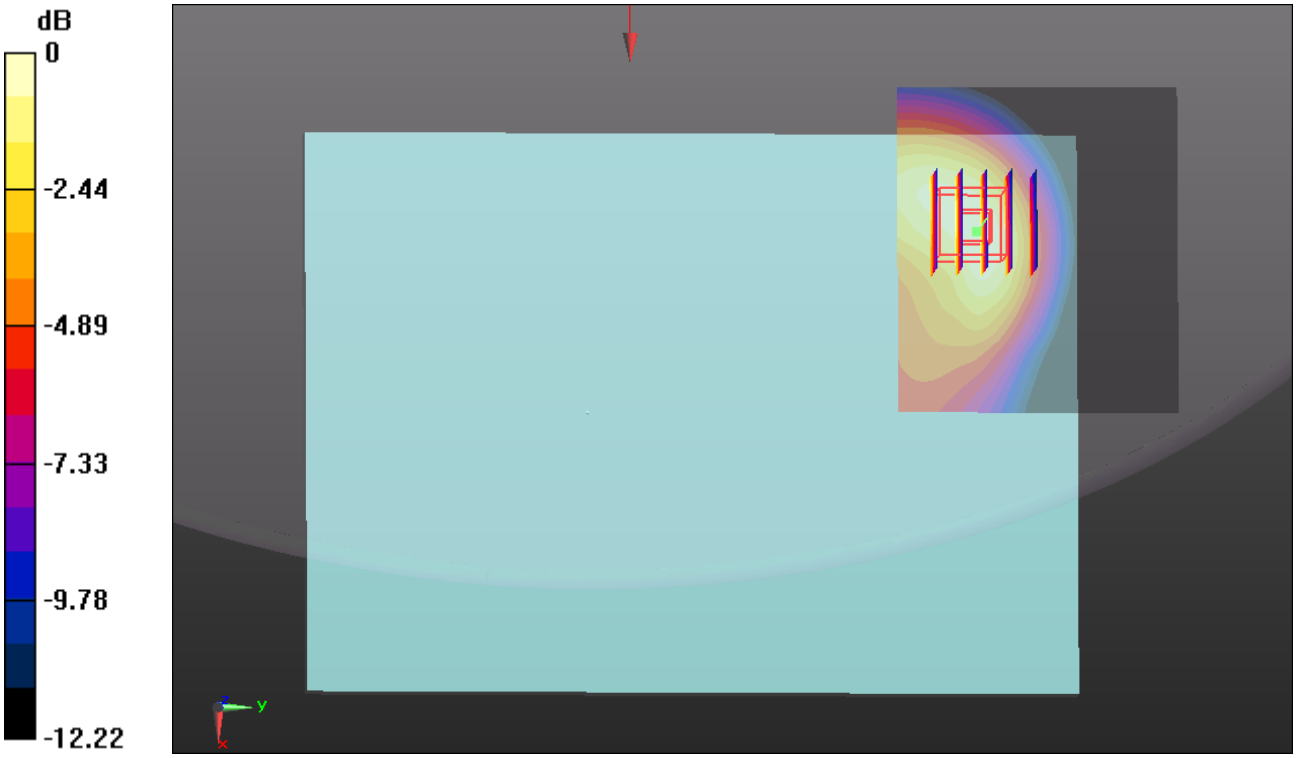
#06 LTE Band5_10M_QPSK(1,0)_Bottom Face 0cm_Ch20525_Sensor Off

Communication System: FDD_LTE (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: MSL_835_150822 Medium parameters used: f = 836.5 MHz; σ = 0.982 mho/m; ε_r = 54.447; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20525/Area Scan (71x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.587 mW/g

Ch20525/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.275 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.674 W/kg
SAR(1 g) = 0.436 mW/g; SAR(10 g) = 0.282 mW/g
Maximum value of SAR (measured) = 0.561 mW/g



0 dB = 0.560mW/g

#07 LTE Band 26_15M_QPSK(1,0)_Bottom Face Curved surface of Edge4 Tited31_Ch26865_Sensor on

Communication System: FDD_LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: MSL_835_150822 Medium parameters used: f = 831.5 MHz; σ = 0.977 mho/m; ε_r = 54.498; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(9.52, 9.52, 9.52); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch26865/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.662 mW/g

Ch26865/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.479 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 0.837 W/kg
SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.215 mW/g
Maximum value of SAR (measured) = 0.621 mW/g

0 dB = 0.620mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.21

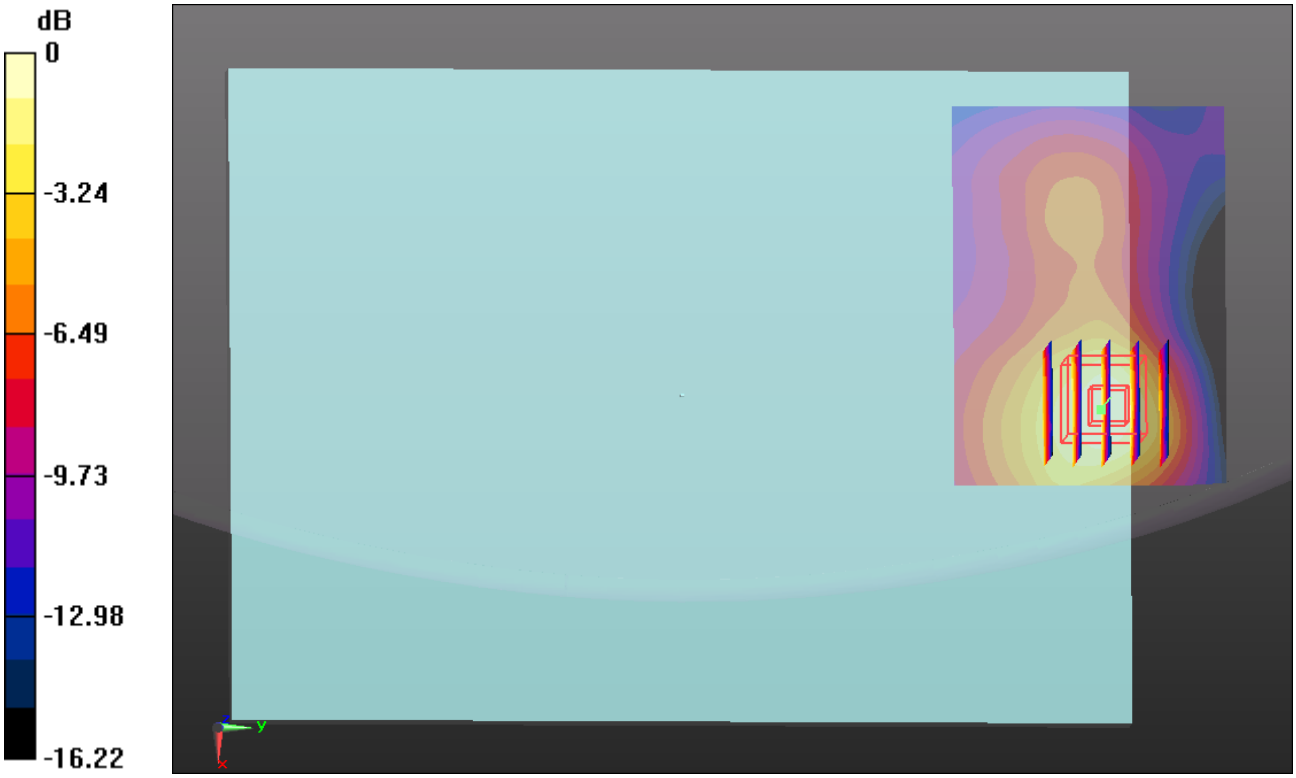
#08 LTE Band4_20M_QPSK(1,0)_Bottom Face 1cm_Ch20300_Sensor on

Communication System: FDD_LTE (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium: MSL_1750_150821 Medium parameters used: f = 1745 MHz; σ = 1.51 mho/m; ε_r = 55.255; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.77, 7.77, 7.77); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20300/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.127 mW/g

Ch20300/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.215 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.438 W/kg
SAR(1 g) = 0.812 mW/g; SAR(10 g) = 0.444 mW/g
Maximum value of SAR (measured) = 1.120 mW/g



0 dB = 1.120mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.21

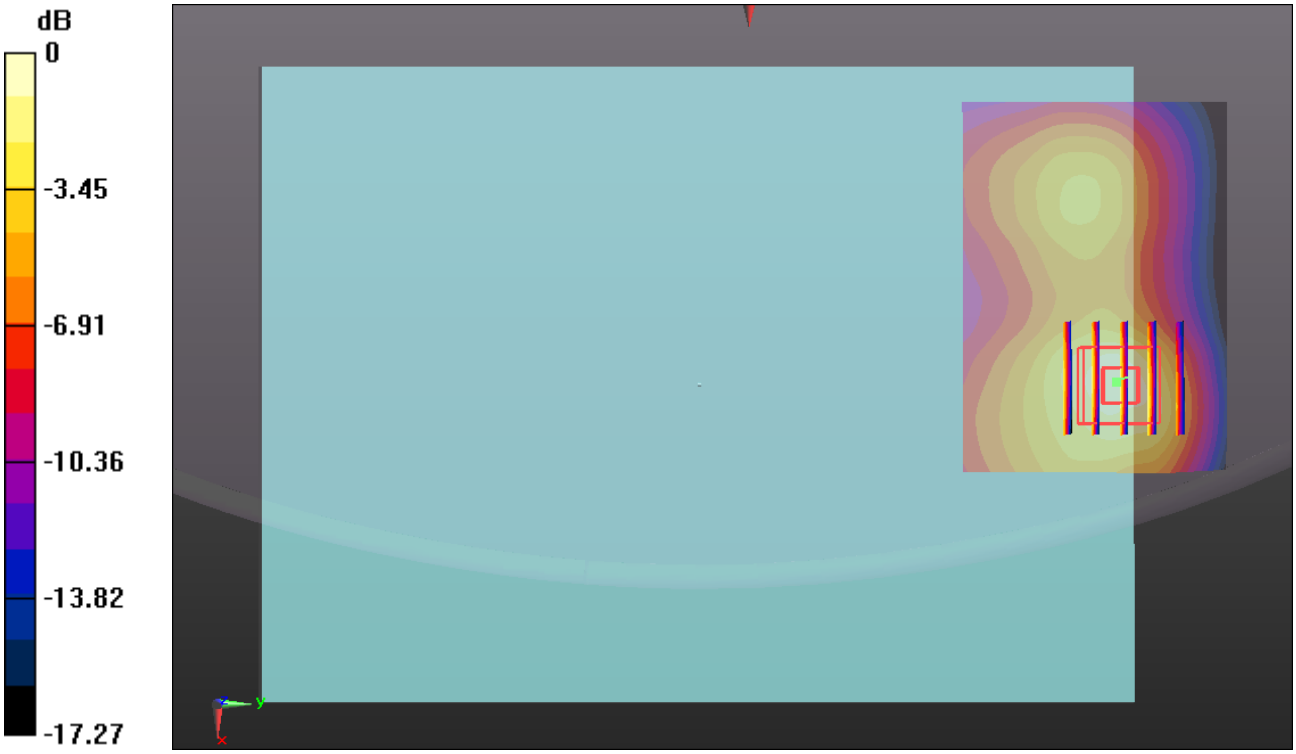
#09 LTE Band25_20M_QPSK(1,0)_Bottom Face 1cm_Ch26140_Sensor off

Communication System: FDD_LTE (0); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150821 Medium parameters used: f = 1860 MHz; σ = 1.503 mho/m; ε_r = 53.512; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.54, 7.54, 7.54); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch26140/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.904 mW/g

Ch26140/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.561 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.154 W/kg
SAR(1 g) = 0.667 mW/g; SAR(10 g) = 0.370 mW/g
Maximum value of SAR (measured) = 0.915 mW/g



0 dB = 0.920mW/g

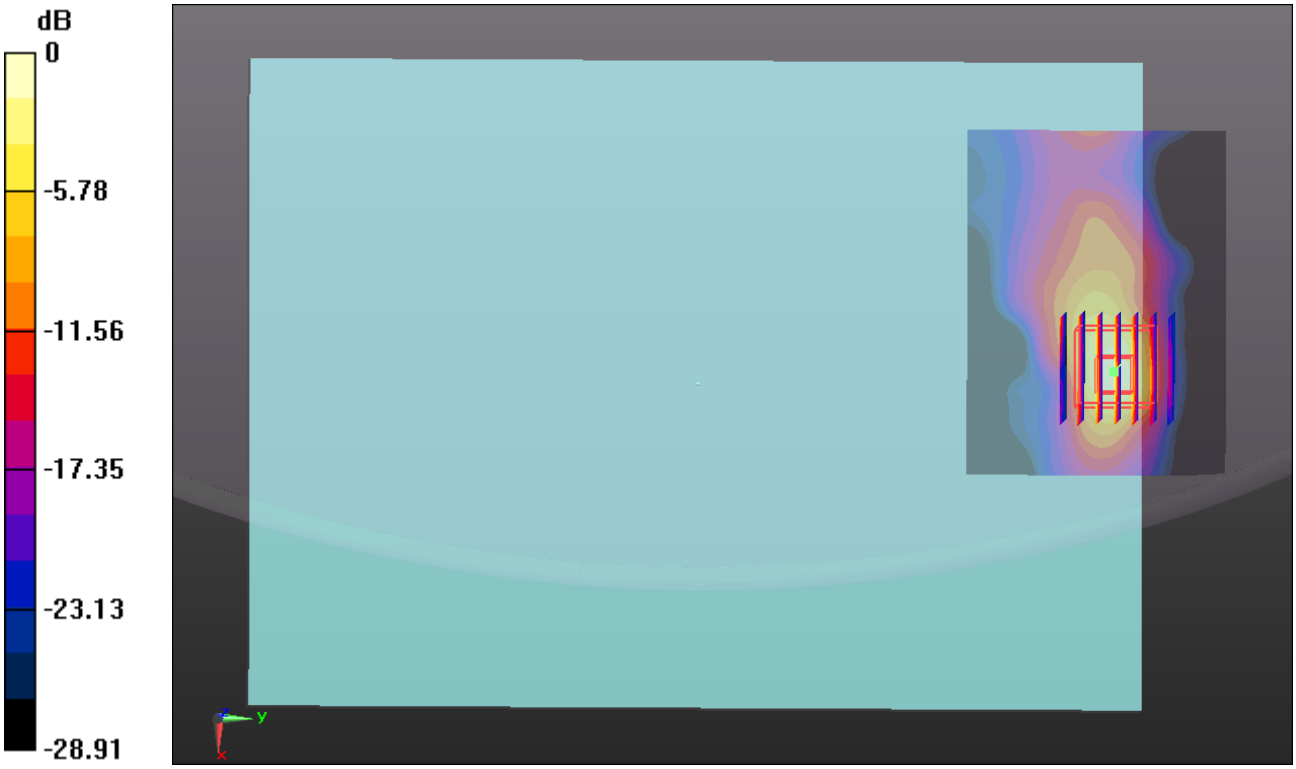
#10 LTE Band7_20M_QPSK(1,49)_Bottom Face Curved surface of Edge4 Tited31 0cm_Ch20850_Sensor on

Communication System: FDD_LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1
Medium: MSL_2600_150819 Medium parameters used: f = 2510 MHz; σ = 2.071 mho/m; ε_r = 53.993; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.17, 7.17, 7.17); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch20850/Area Scan (81x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.789 mW/g

Ch20850/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.752 V/m; Power Drift = -0.084 dB
Peak SAR (extrapolated) = 2.666 W/kg
SAR(1 g) = 0.905 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 1.731 mW/g



0 dB = 1.730mW/g

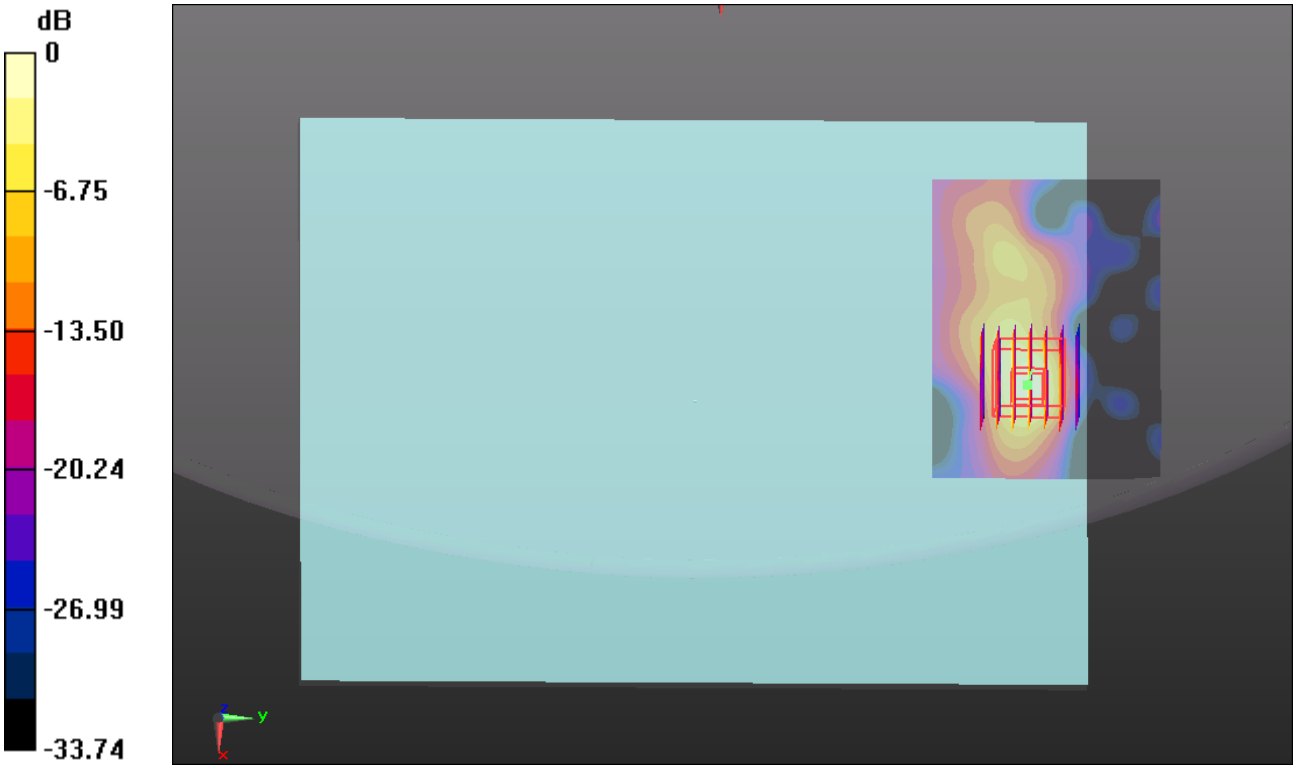
#11 LTE Band41_20M_QPSK(1,0)_Face Curved surface of Edge4 Tited31 0cm_Ch40620_Sensor on

Communication System: TDD_LTE (0); Frequency: 2593 MHz;Duty Cycle: 1:1.59
Medium: MSL_2600_150819 Medium parameters used: f = 2593 MHz; σ = 2.157 mho/m; ε_r = 53.805; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.17, 7.17, 7.17); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch40620/Area Scan (81x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.954 mW/g

Ch40620/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.815 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.474 W/kg
SAR(1 g) = 0.490 mW/g; SAR(10 g) = 0.162 mW/g
Maximum value of SAR (measured) = 0.940 mW/g



0 dB = 0.940mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.24

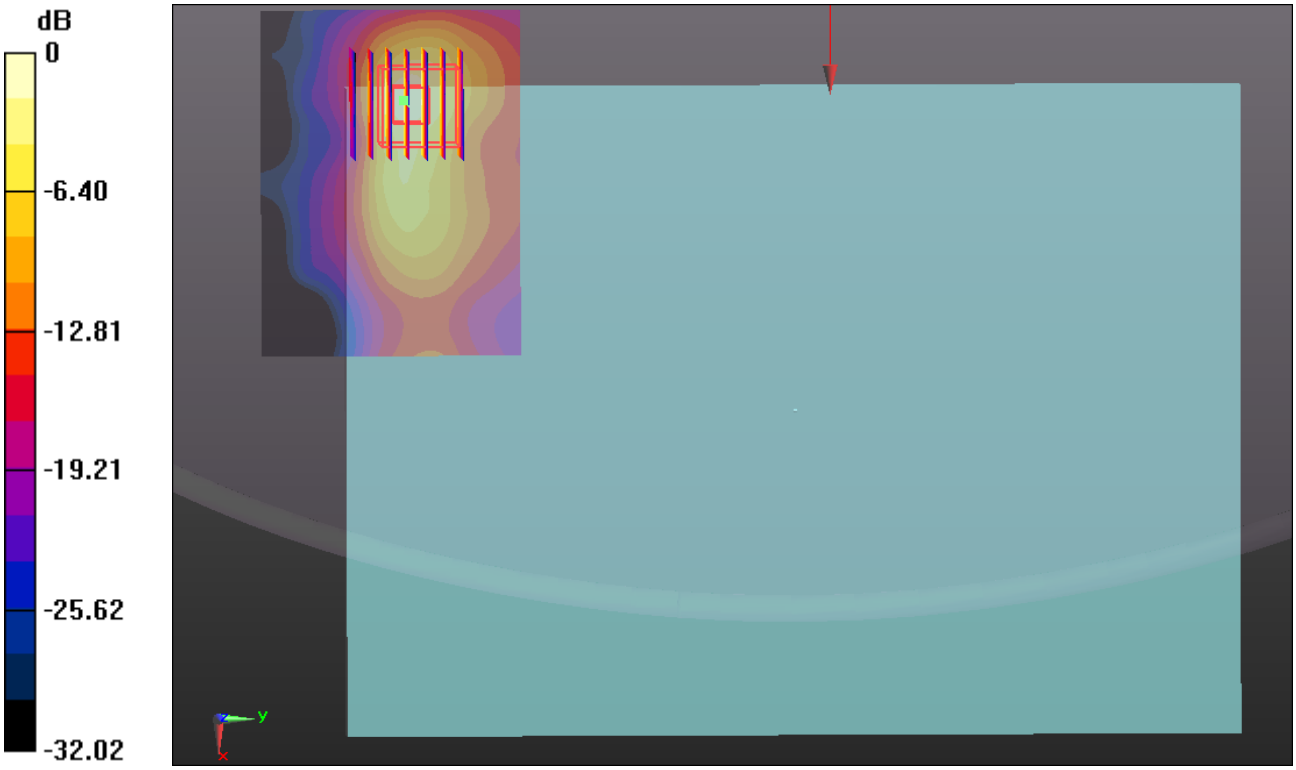
#12 WLAN2.4GHz_802.11b 1Mbps_Bottom Face Curved surface of Edge2 Tited31_Ch11_Ant.1

Communication System: WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.012
Medium: MSL_2450_150824 Medium parameters used: f = 2462 MHz; σ = 1.971 mho/m; ε_r = 51.475; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.29, 7.29, 7.29); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch11/Area Scan (81x61x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.920 mW/g

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.708 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.469 W/kg
SAR(1 g) = 0.969 mW/g; SAR(10 g) = 0.361 mW/g
Maximum value of SAR (measured) = 2.075 mW/g



0 dB = 2.070mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.24

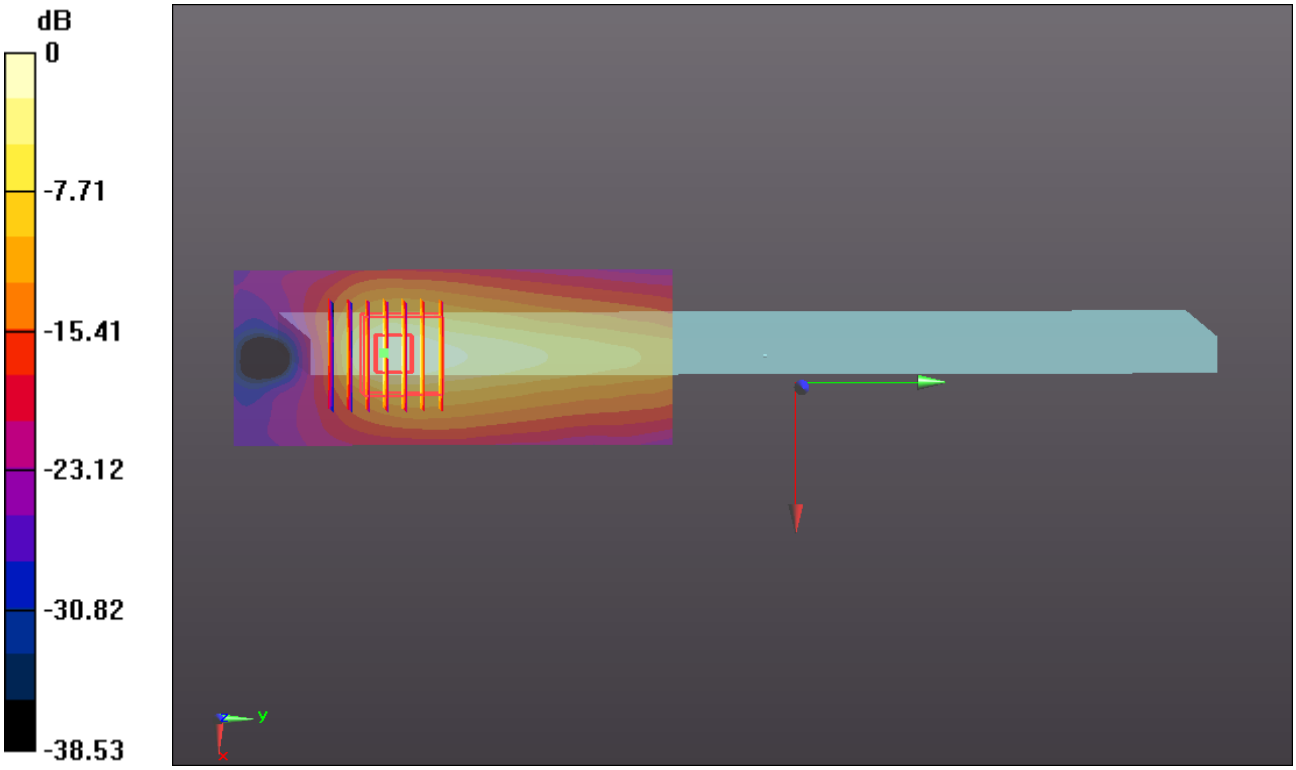
#13 WLAN 2.4GHz_802.11b 1Mbps_Edge1 0cm_Ch6_Ant.

Communication System: WIFI (0); Frequency: 2437 MHz;Duty Cycle: 1:1.012
Medium: MSL_2450_150824 Medium parameters used: f = 2437 MHz; σ = 1.937 mho/m; ε_r = 51.587; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.29, 7.29, 7.29); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch6/Area Scan (41x101x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.950 mW/g

Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.203 V/m; Power Drift = -0.0086 dB
Peak SAR (extrapolated) = 2.702 W/kg
SAR(1 g) = 0.961 mW/g; SAR(10 g) = 0.374 mW/g
Maximum value of SAR (measured) = 1.696 mW/g



0 dB = 1.700mW/g

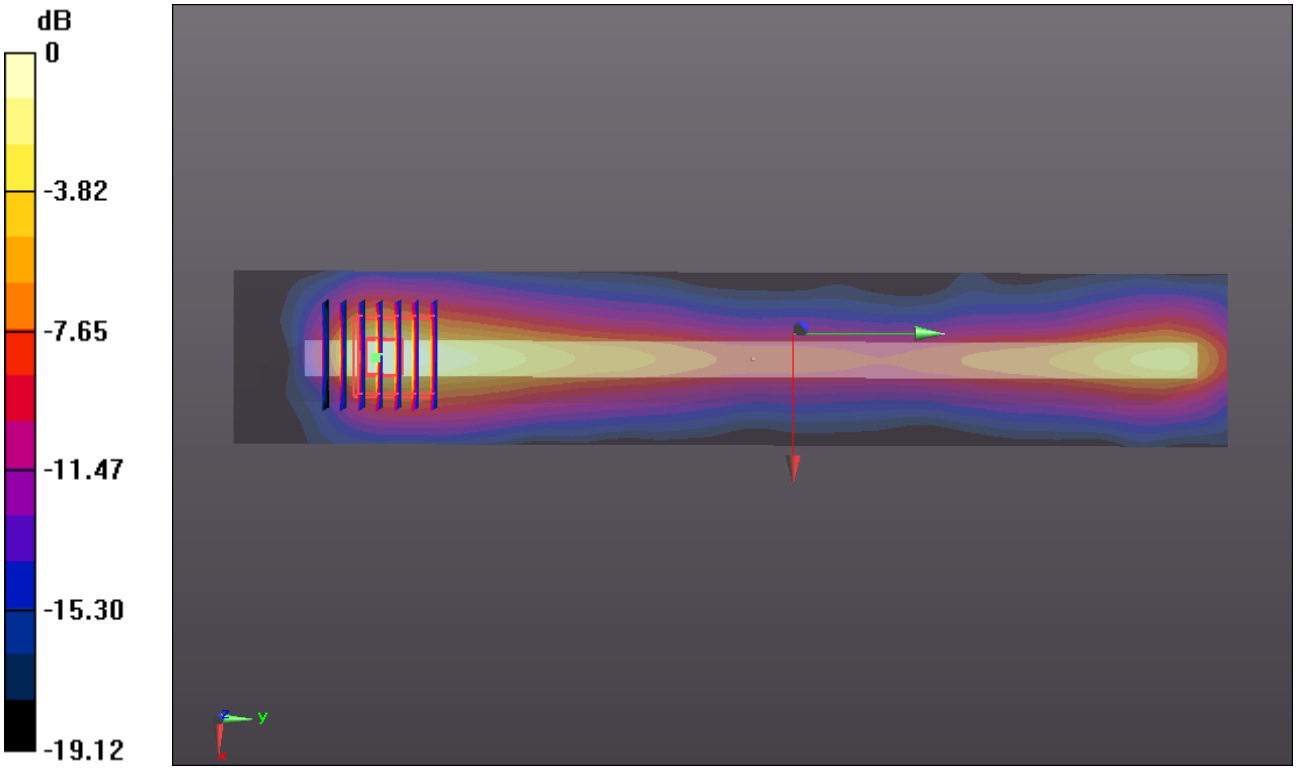
#14 WLAN 2.4GHz_802.11b 1Mbps_Edge1 0cm_Ch1_Ant.1+2

Communication System: WIFI (0); Frequency: 2412 MHz;Duty Cycle: 1:1.094
Medium: MSL_2450_150824 Medium parameters used: f = 2412 MHz; σ = 1.901 mho/m; ε_r = 51.696; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃； Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(7.29, 7.29, 7.29); Calibrated: 2015.05.28
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch1/Area Scan (41x231x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.725 mW/g

Ch1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.930 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.898 W/kg
SAR(1 g) = 0.348 mW/g; SAR(10 g) = 0.147 mW/g
Maximum value of SAR (measured) = 0.583 mW/g



0 dB = 0.580mW/g

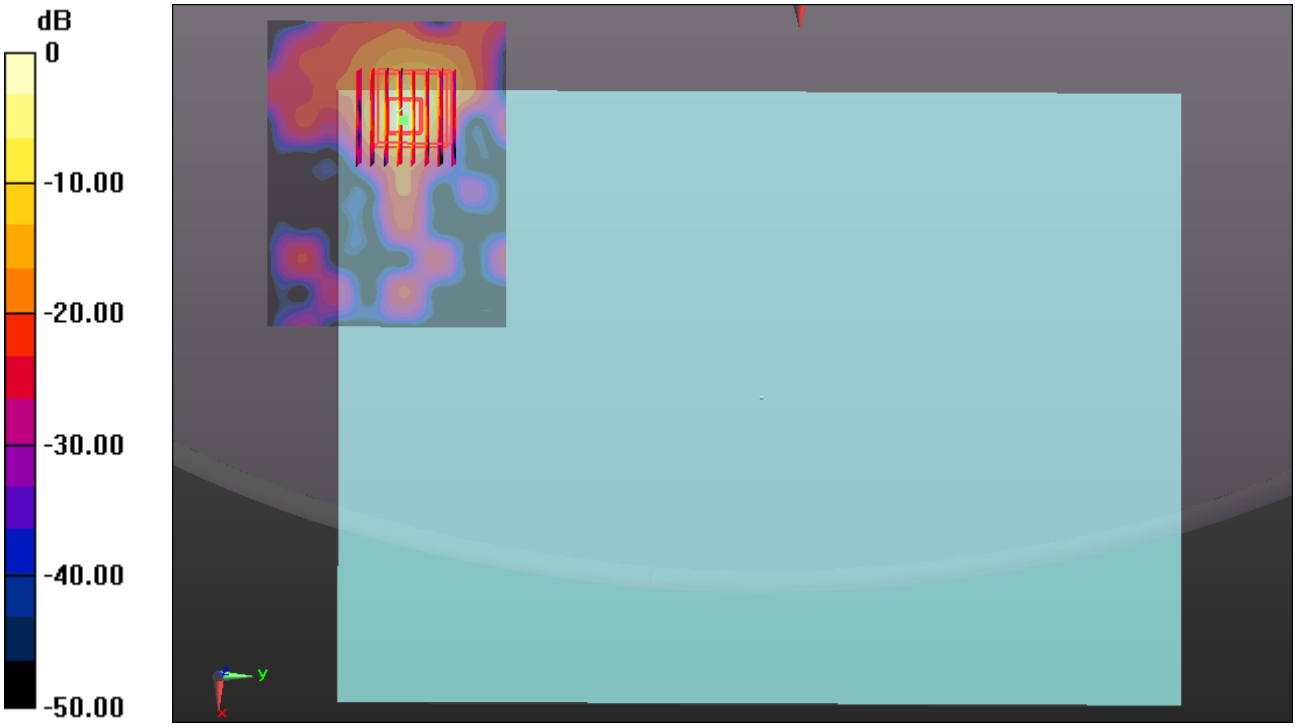
#15 WLAN 5.2GHz_802.11a 6Mbps_Bottom Face Curved surface of Edge2 Tited31 0cm_Ch48_Ant.1

Communication System: WIFI (0); Frequency: 5240 MHz;Duty Cycle: 1:1.077
Medium: MSL_5000_150830 Medium parameters used: f = 5240 MHz; σ = 5.325 mho/m; ε_r = 48.24; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.45, 4.45, 4.45); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch48/Area Scan (91x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 3.586 mW/g

Ch48/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.598 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 7.537 W/kg
SAR(1 g) = 0.976 mW/g; SAR(10 g) = 0.161 mW/g
Maximum value of SAR (measured) = 2.891 mW/g



0 dB = 2.890mW/g

#16 WLAN 5.2GHz_802.11a 6Mbps_Bottom Face Curved surface of Edge4 Tited31_Ch52_Ant.2

Communication System: WIFI (0); Frequency: 5260 MHz;Duty Cycle: 1:1.077
Medium: MSL_5000_150830 Medium parameters used: f = 5260 MHz; σ = 5.353 mho/m; ε_r = 48.198; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.25, 4.25, 4.25); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch52/Area Scan (91x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.104 mW/g

Ch52/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0.981 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 4.527 W/kg
SAR(1 g) = 0.871 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 2.623 mW/g

0 dB = 2.620mW/g

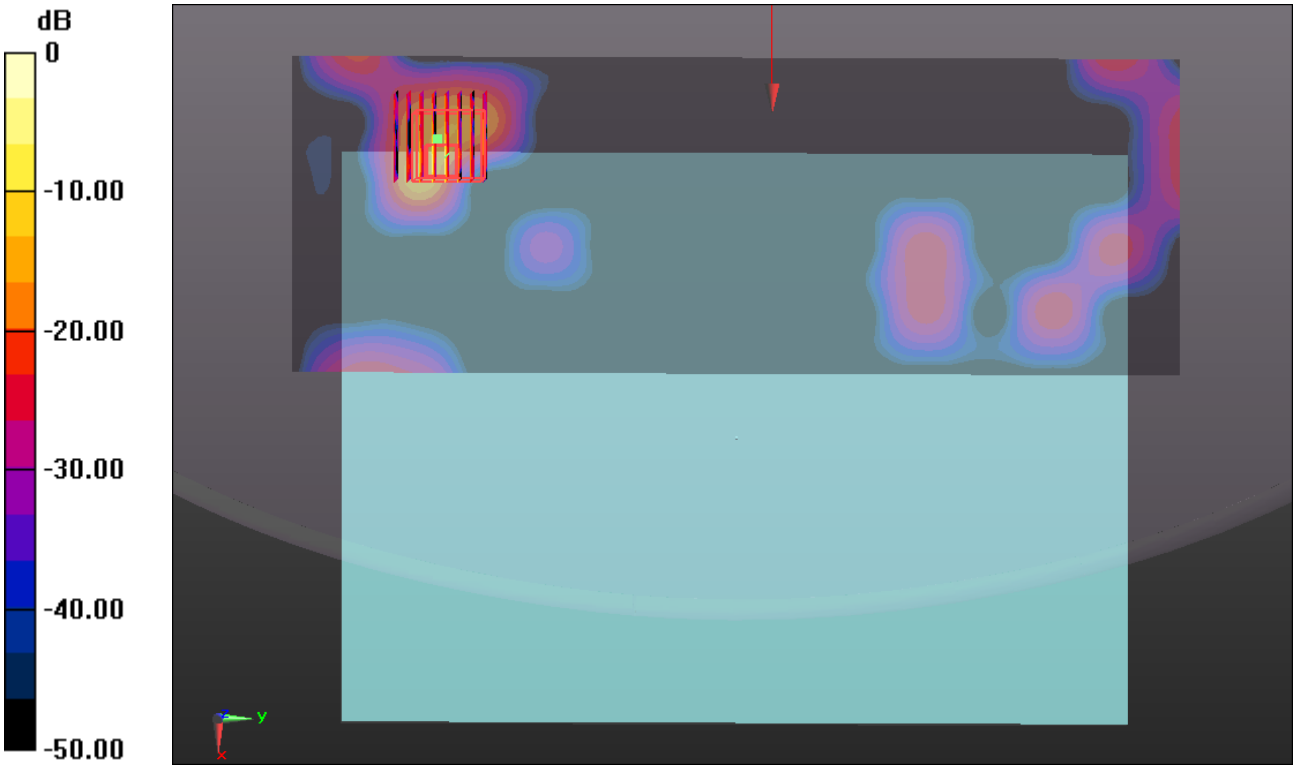
#17 WLAN 5.3GHz_802.11n-HT20_MCS0_Face Curved surface of Edge2 Tited31_Ch60_Ant.1+2

Communication System: WIFI (0); Frequency: 5300 MHz;Duty Cycle: 1:1.103
Medium: MSL_5000_150830 Medium parameters used: f = 5300 MHz; σ = 5.404 mho/m; ε_r = 48.094; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.25, 4.25, 4.25); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch60/Area Scan (101x281x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.159 mW/g

Ch60/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.002 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 6.302 W/kg
SAR(1 g) = 0.836 mW/g; SAR(10 g) = 0.132 mW/g
Maximum value of SAR (measured) = 2.984 mW/g



0 dB = 2.980mW/g

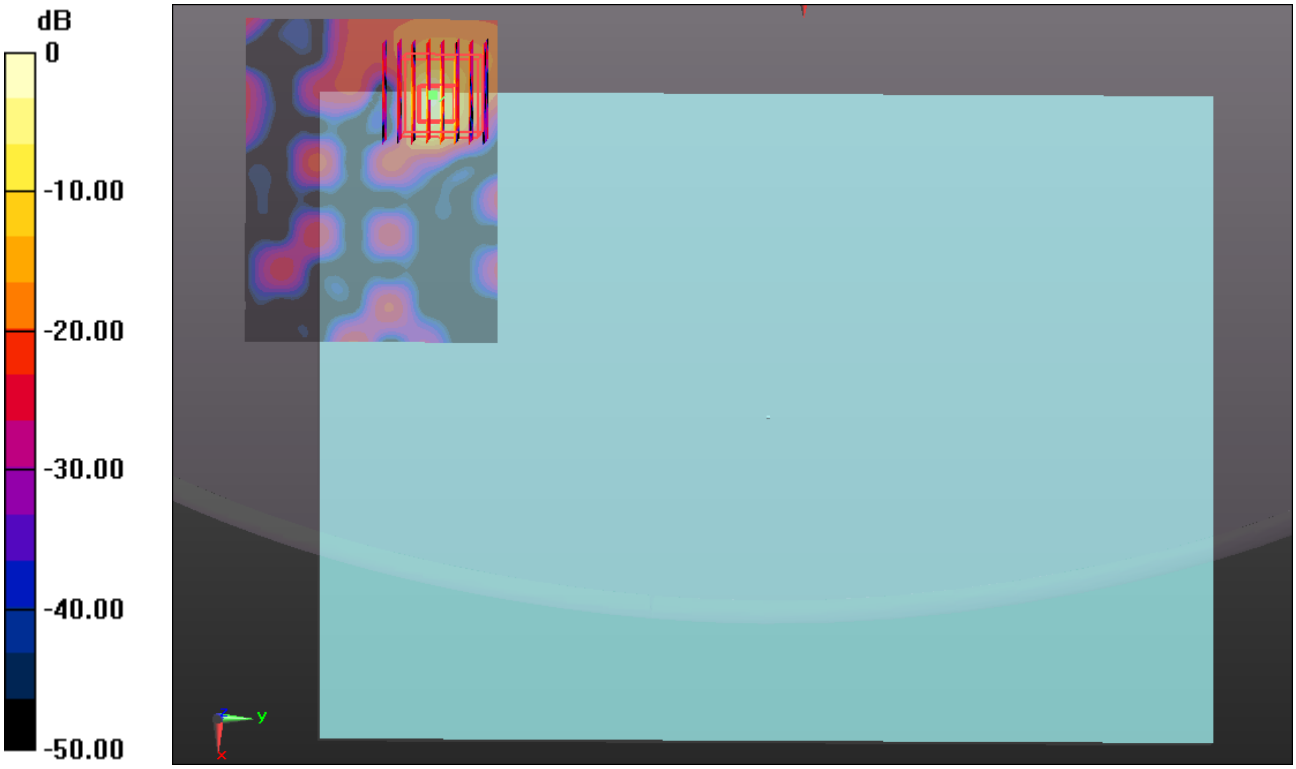
#18 WLAN 5.5GHz_802.11a 6Mbps_Bottom Face Curved surface of Edge2 Tited31 0cm_Ch100_Ant.1

Communication System: WIFI (0); Frequency: 5500 MHz;Duty Cycle: 1:1.077
Medium: MSL_5000_150831 Medium parameters used: f = 5500 MHz; σ = 5.7 mho/m; ε_r = 47.724; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(3.8, 3.8, 3.8); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch100/Area Scan (91x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.367 mW/g

Ch100/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.004 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 4.938 W/kg
SAR(1 g) = 0.670 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 2.493 mW/g



0 dB = 2.490mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2015.08.31

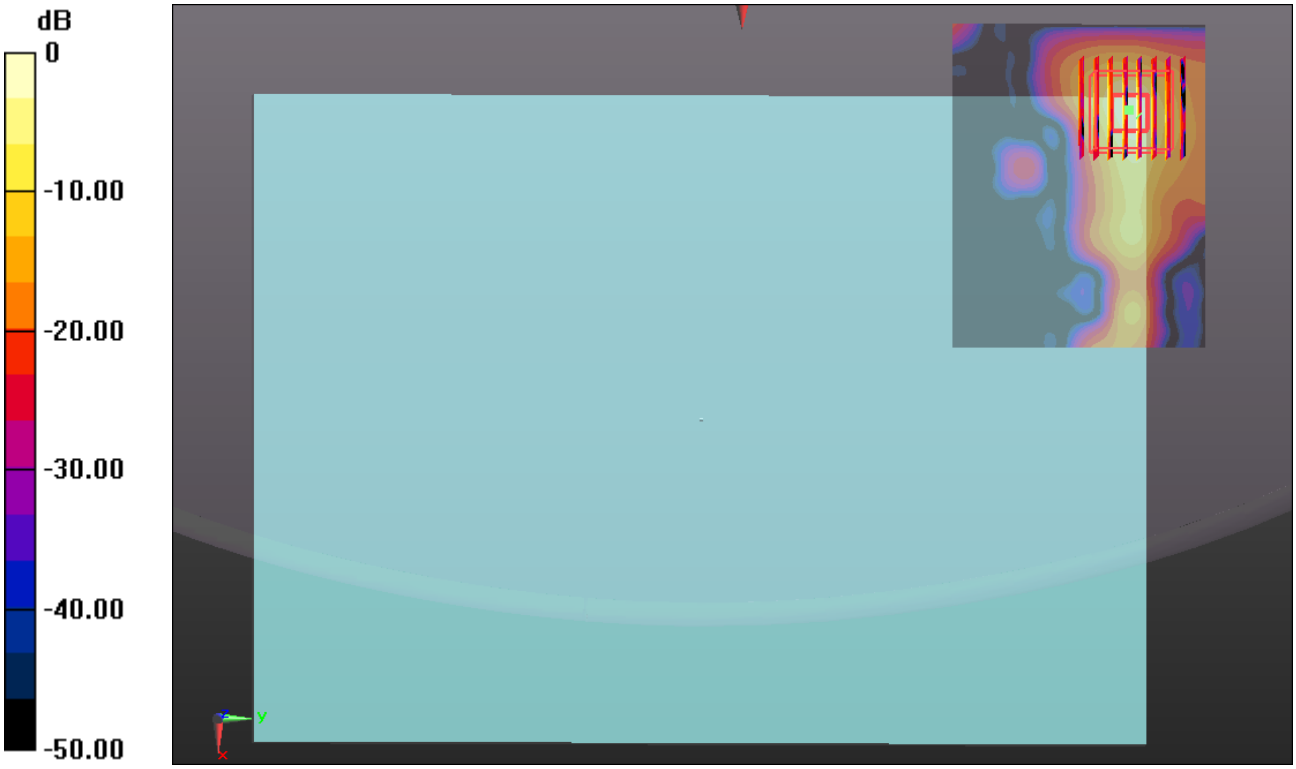
#19 WLAN 5.5GHz_802.11a 6Mbps_6M_Bottom Face Curved surface of Edge4 Tited31_Ch116_Ant.2

Communication System: WIFI (0); Frequency: 5580 MHz;Duty Cycle: 1:1.077
Medium: MSL_5000_150831 Medium parameters used: f = 5580 MHz; σ = 5.804 mho/m; ε_r = 47.49; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(3.8, 3.8, 3.8); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch116/Area Scan (91x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.772 mW/g

Ch116/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.508 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 4.353 W/kg
SAR(1 g) = 0.757 mW/g; SAR(10 g) = 0.152 mW/g
Maximum value of SAR (measured) = 2.240 mW/g



0 dB = 2.240mW/g

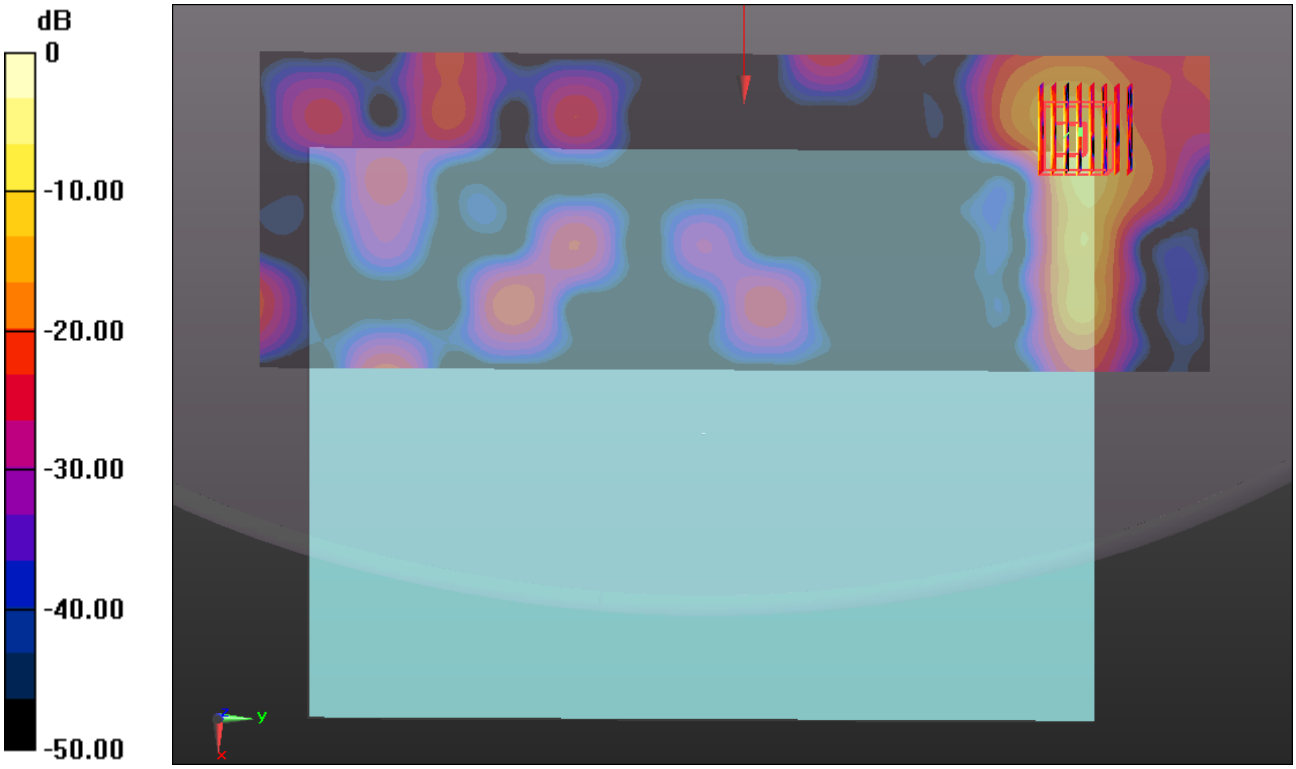
#20 WLAN 5.5GHz_802.11n-HT20_MCS0_Bottom Face Curved surface of Edge4 Tited31_Ch100_Ant.1+2

Communication System: WIFI (0); Frequency: 5500 MHz;Duty Cycle: 1:1.103
Medium: MSL_5000_150831 Medium parameters used: f = 5500 MHz; σ = 5.7 mho/m; ε_r = 47.724; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(3.8, 3.8, 3.8); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch100/Area Scan (51x151x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.397 mW/g

Ch100/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.189 V/m; Power Drift = -0.022 dB
Peak SAR (extrapolated) = 3.647 W/kg
SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.136 mW/g
Maximum value of SAR (measured) = 2.007 mW/g



0 dB = 2.010mW/g

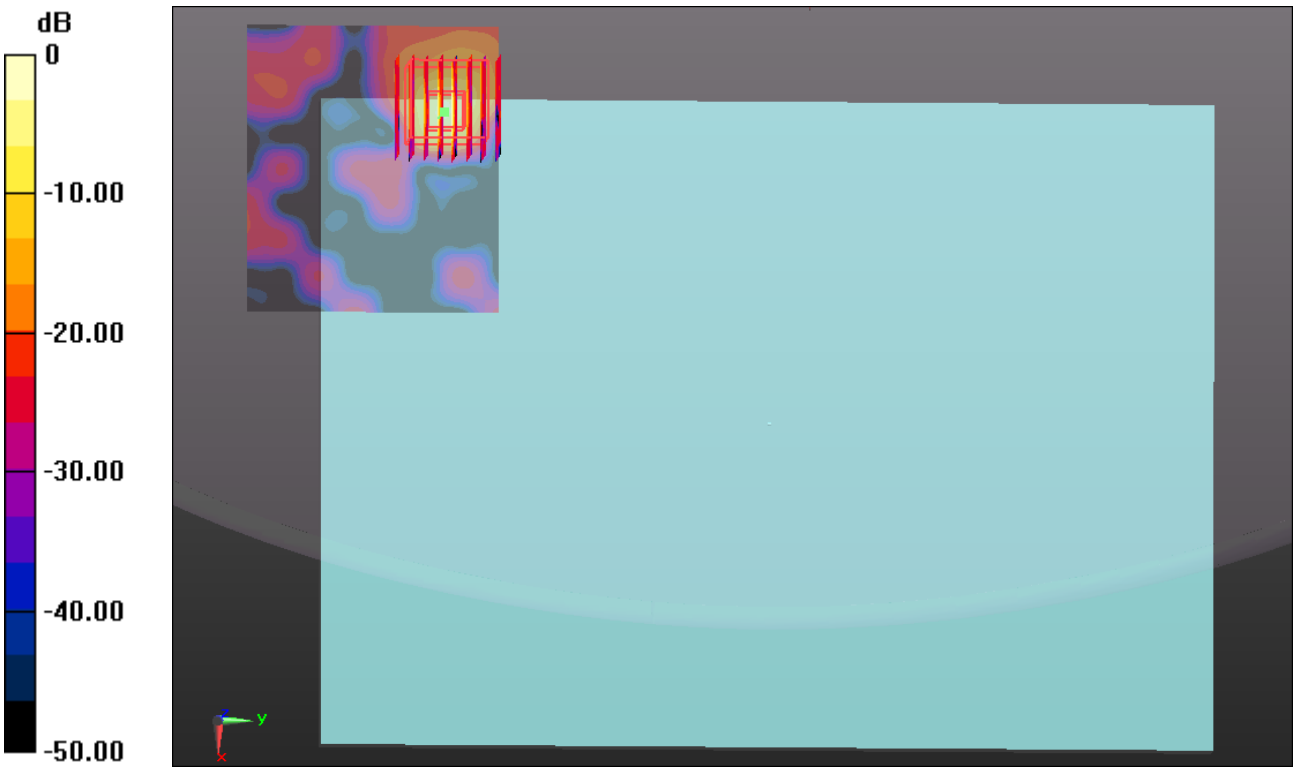
#21 WLAN 5.8GHz_802.11a 6Mbps_Face Curved surface of Edge2 Tited31 0cm_Ch157_Ant.1

Communication System: WIFI (0); Frequency: 5785 MHz;Duty Cycle: 1:1.077
Medium: MSL_5000_150901 Medium parameters used: f = 5785 MHz; σ = 6.079 mho/m; ε_r = 46.989; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.16, 4.16, 4.16); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch157/Area Scan (81x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.219 mW/g

Ch157/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.645 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 10.555 W/kg
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 3.748 mW/g



0 dB = 3.750mW/g

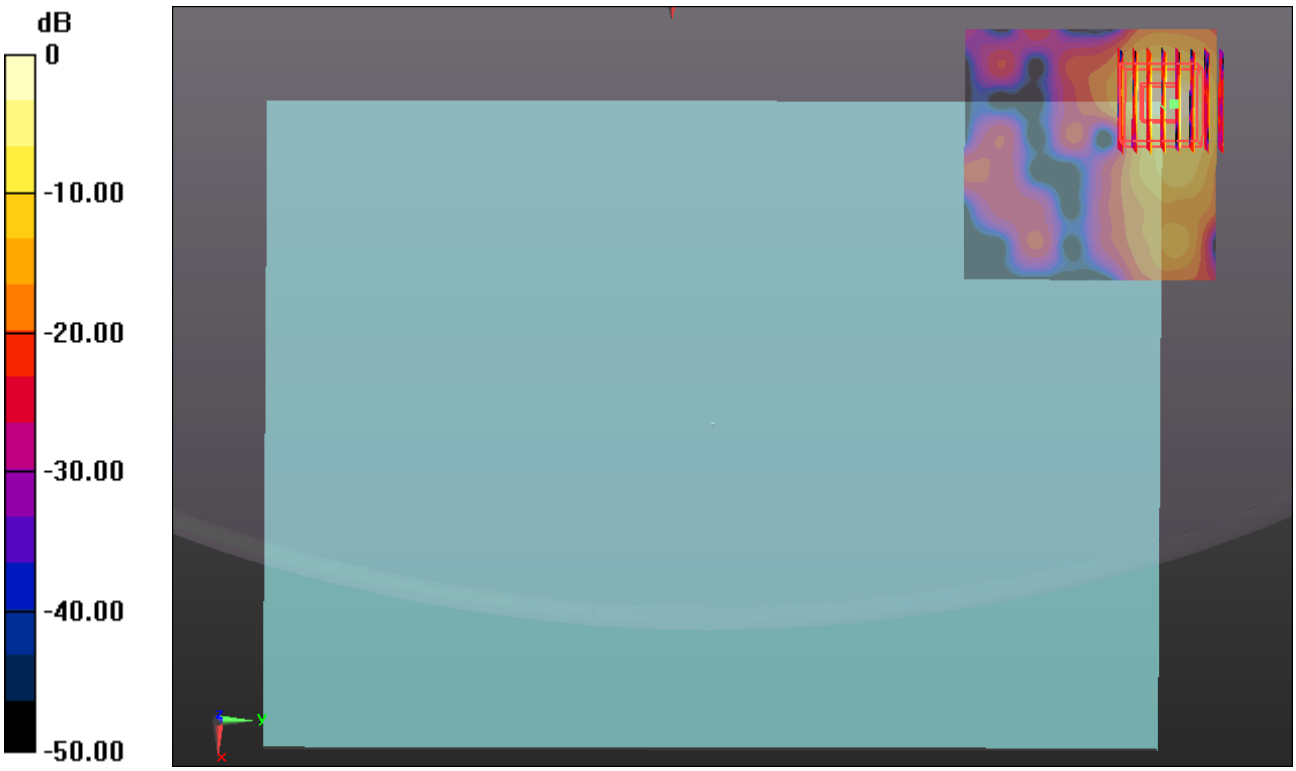
#22 WLAN 5.8GHz_802.11a 6Mbps_6M_Bottom Face Curved surface of Edge4 Tited31_Ch157_Ant.2

Communication System: WIFI (0); Frequency: 5785 MHz;Duty Cycle: 1:1.077
Medium: MSL_5000_150901 Medium parameters used: f = 5785 MHz; σ = 6.079 mho/m; ε_r = 46.989; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.16, 4.16, 4.16); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch157/Area Scan (71x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.016 mW/g

Ch157/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0.882 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 4.783 W/kg
SAR(1 g) = 0.746 mW/g; SAR(10 g) = 0.148 mW/g
Maximum value of SAR (measured) = 2.289 mW/g



0 dB = 2.290mW/g

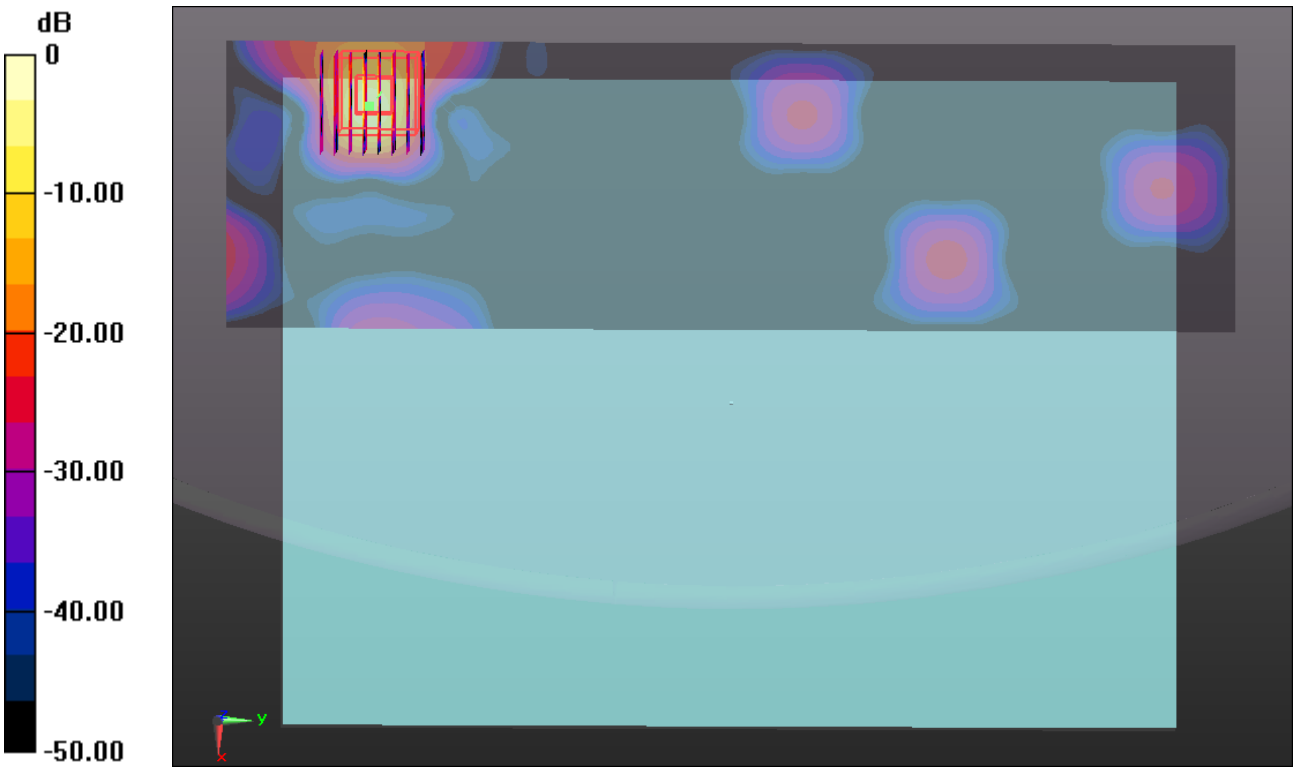
#23 WLAN 5.8GHz_802.11n-HT20_MCS0_Bottom Face Curved surface of Edge2 Tited31_Ch157_Ant.1+2

Communication System: WIFI (0); Frequency: 5785 MHz;Duty Cycle: 1:1.103
Medium: MSL_5000_150901 Medium parameters used: f = 5785 MHz; σ = 6.079 mho/m; ε_r = 46.989; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃； Liquid Temperature：22.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3857; ConvF(4.16, 4.16, 4.16); Calibrated: 2015.05.28
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2015.05.21
- Phantom: SAM3; Type: SAM; Serial: TP-1079
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.4.5 (3634)

Ch157/Area Scan (81x281x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.195 mW/g

Ch157/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 1.405 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 9.387 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.170 mW/g
Maximum value of SAR (measured) = 4.387 mW/g



0 dB = 4.390mW/g

Appendix C. DASY Calibration Certificate

The DASY calibration certificates are shown as follows.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Sporton-CN (Auden)**

Certificate No: D835V2-4d091_Nov14

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d091
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	November 21, 2014

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M. Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 21, 2014

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.2 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.11 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.50 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.95 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.5 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.48 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.60 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.31 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.7 Ω - 1.8 jΩ
Return Loss	- 32.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 4.2 jΩ
Return Loss	- 25.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.394 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 15, 2009

DASY5 Validation Report for Head TSL

Date: 19.11.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d091

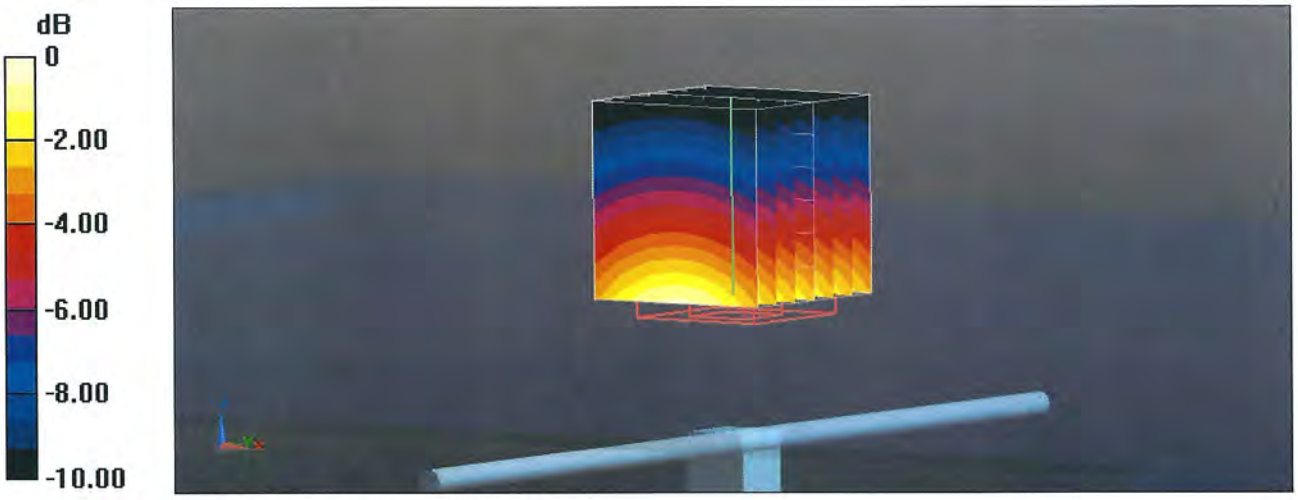
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.91 S/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

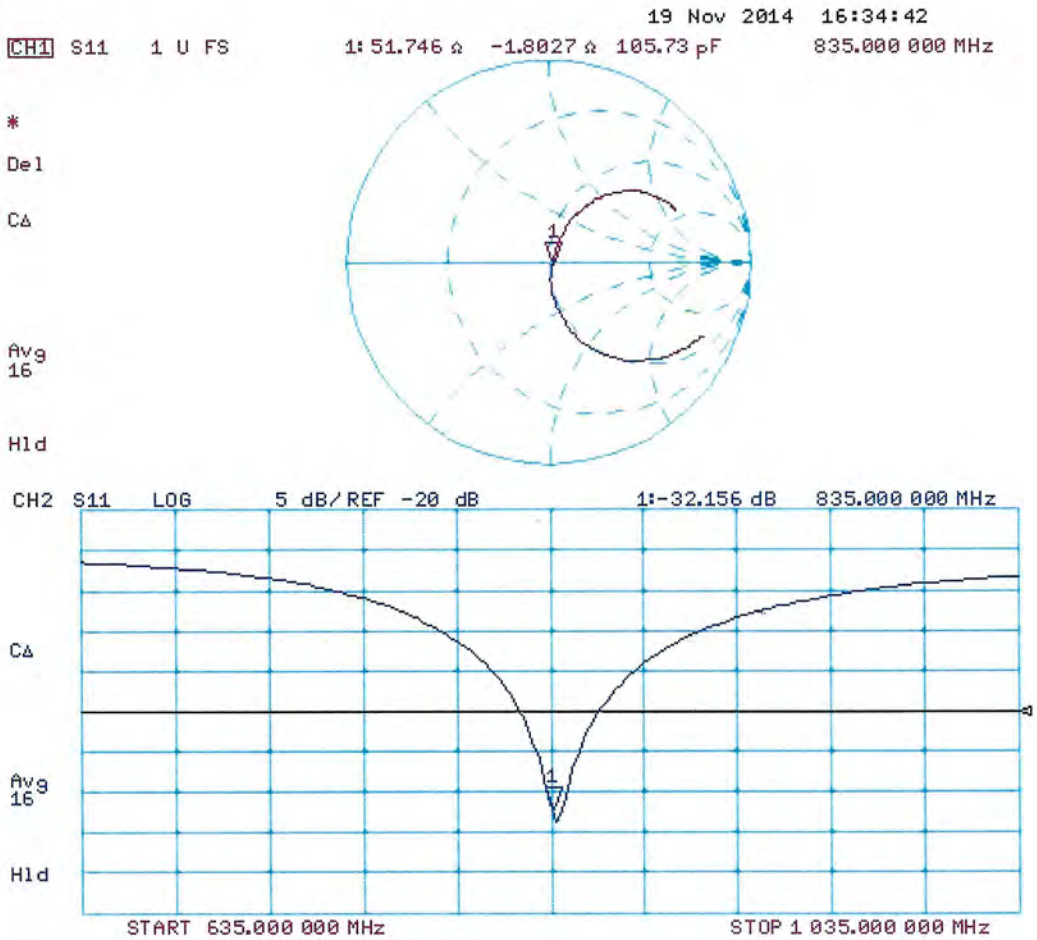
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.46 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.43 W/kg
SAR(1 g) = 2.3 W/kg; SAR(10 g) = 1.5 W/kg
Maximum value of SAR (measured) = 2.69 W/kg



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.11.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d091

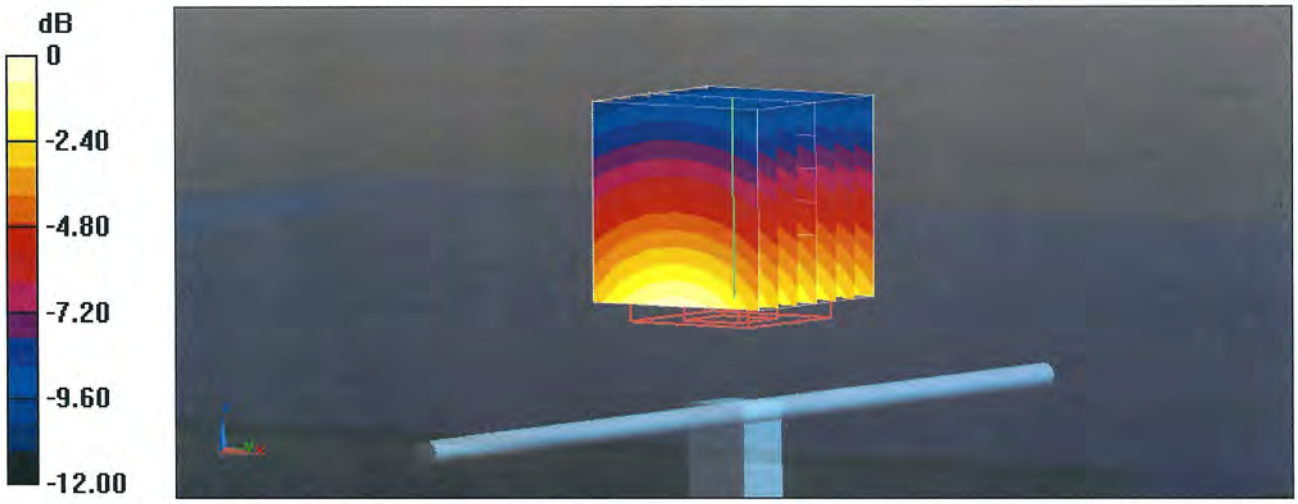
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.01 S/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.09, 6.09, 6.09); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

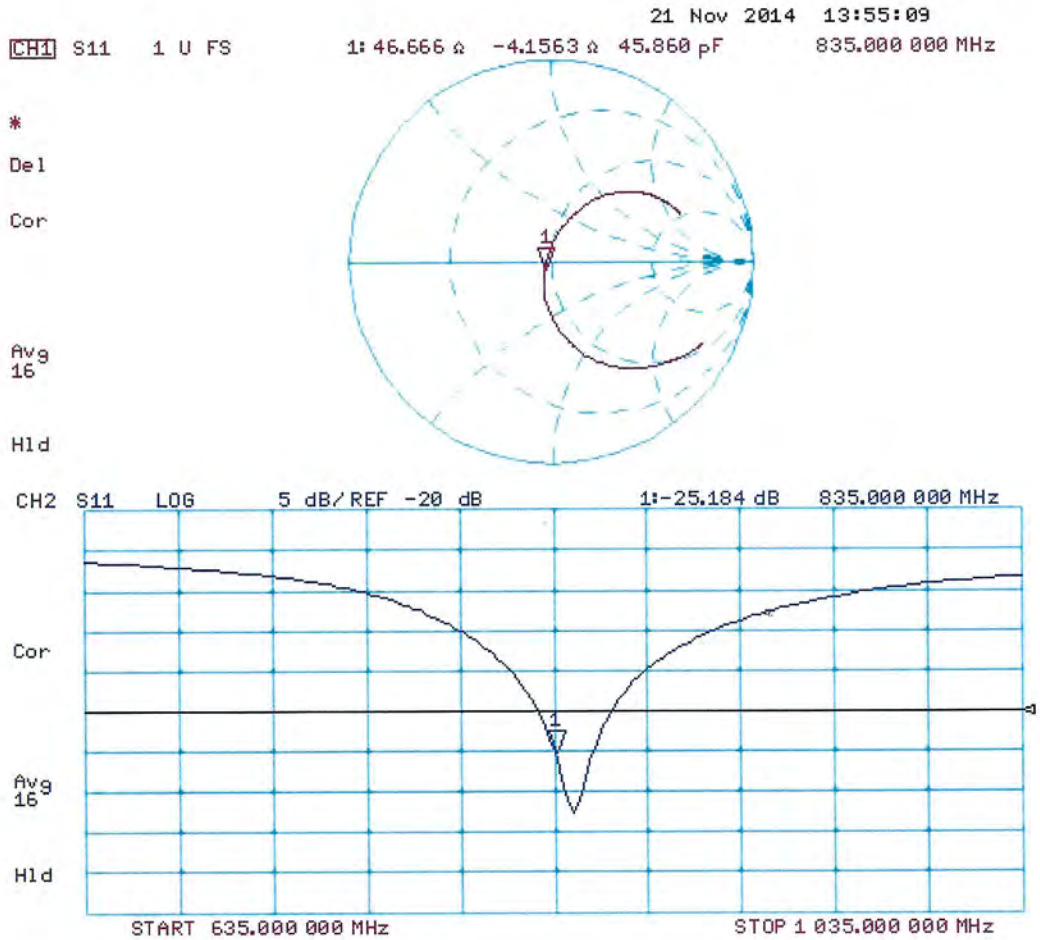
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.36 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.62 W/kg
Maximum value of SAR (measured) = 2.89 W/kg



0 dB = 2.89 W/kg = 4.61 dBW/kg

Impedance Measurement Plot for Body TSL



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Sporton-CN (Auden)**

Certificate No: D1750V2-1069_Nov14

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1069
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	November 21, 2014

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 21, 2014

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.4 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**37.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.97 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.8 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.2 ± 6 %	1.50 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**38.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.16 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.5 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.4 Ω + 1.3 jΩ
Return Loss	- 34.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.8 Ω + 1.7 jΩ
Return Loss	- 28.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.217 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 15, 2010

DASY5 Validation Report for Head TSL

Date: 21.11.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1069

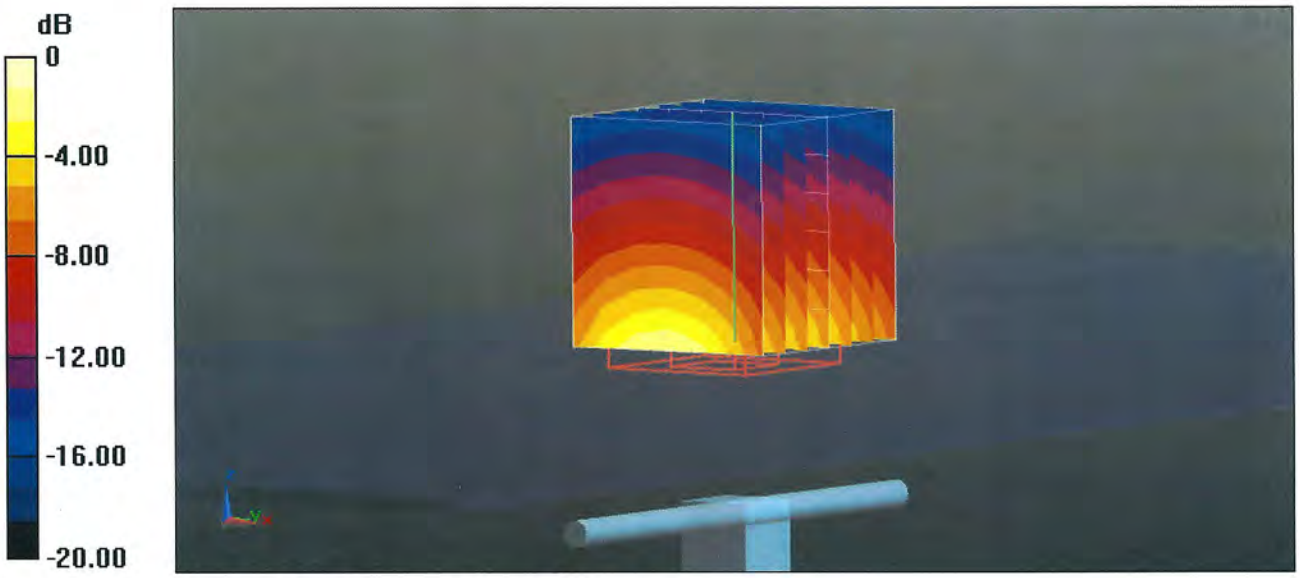
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.38 S/m; ε_r = 39.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.23, 5.23, 5.23); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

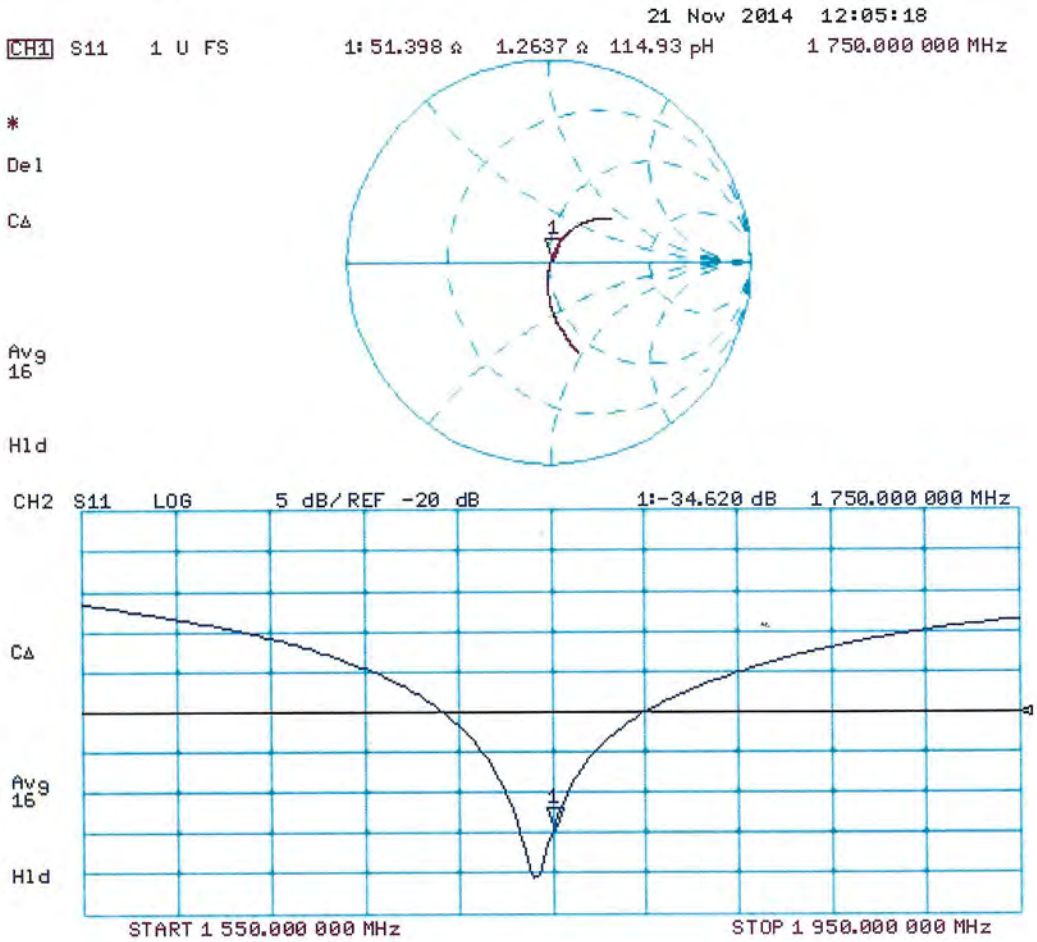
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.69 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.36 W/kg; SAR(10 g) = 4.97 W/kg
Maximum value of SAR (measured) = 11.8 W/kg



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

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 21.11.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1069

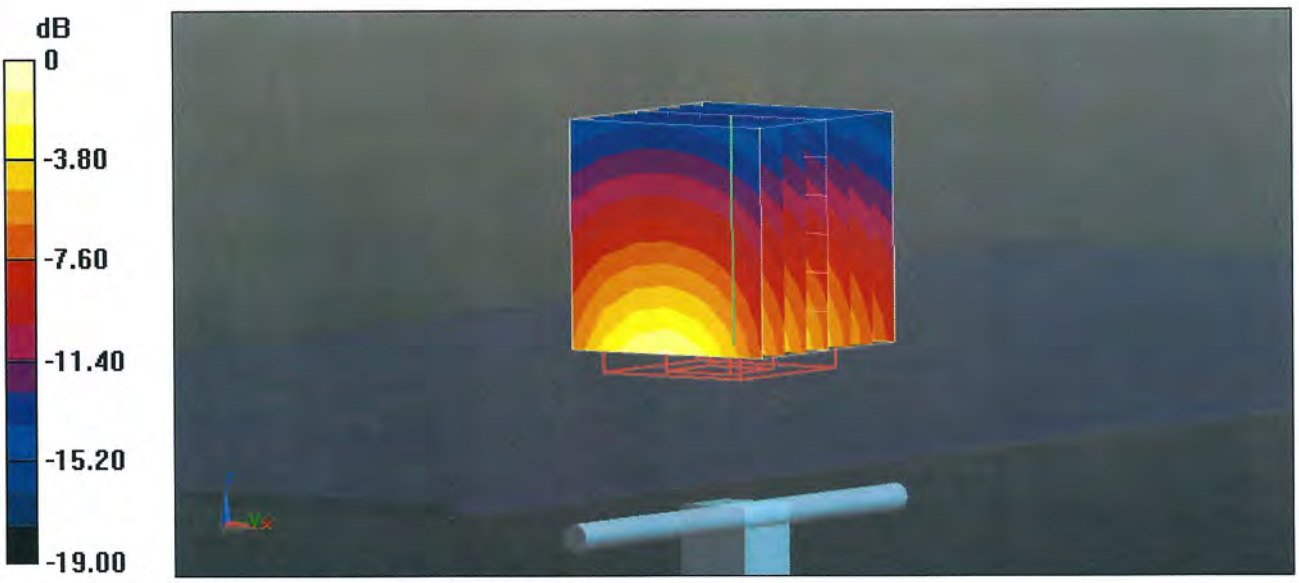
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.5 S/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

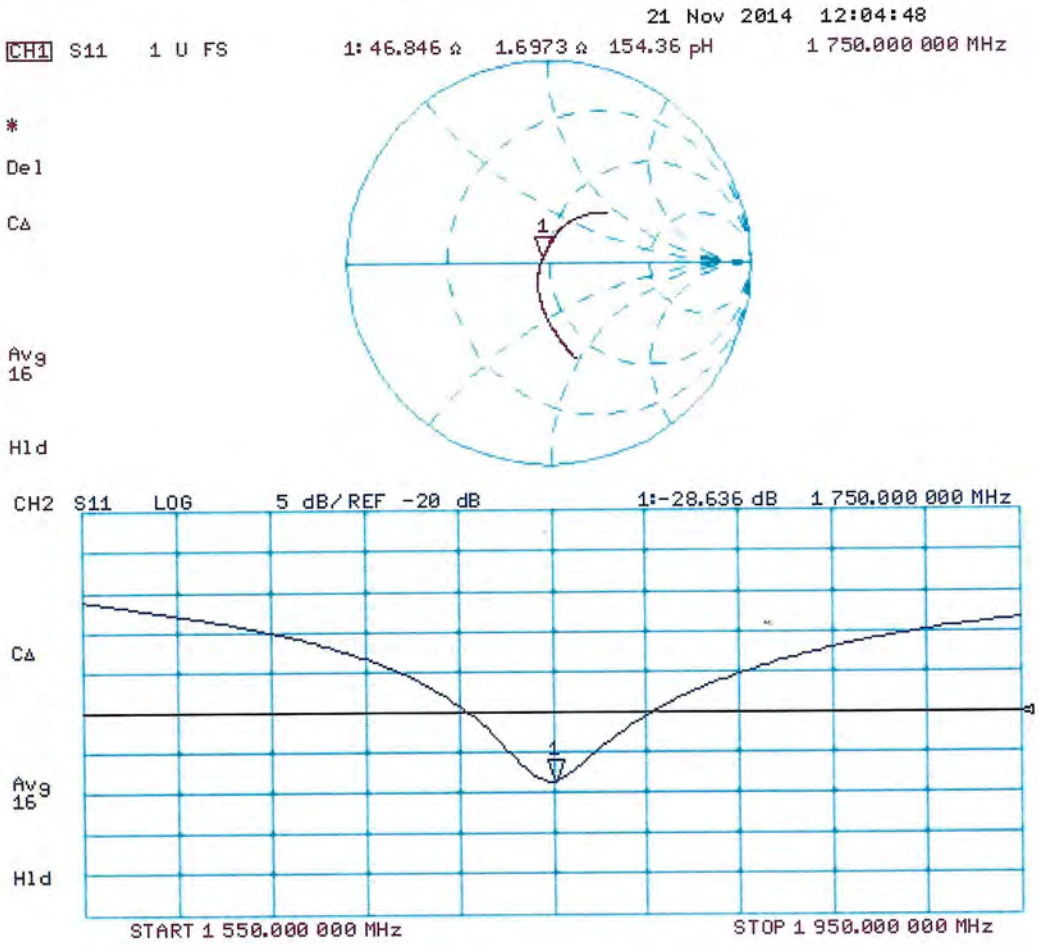
DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.89, 4.89, 4.89); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.56 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 9.62 W/kg; SAR(10 g) = 5.16 W/kg
Maximum value of SAR (measured) = 12.0 W/kg



0 dB = 12.0 W/kg = 10.79 dBW/kg

Impedance Measurement Plot for Body TSL