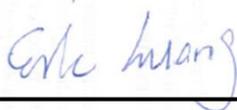


# FCC SAR Test Report

APPLICANT : Hewlett-Packard Company  
EQUIPMENT : Tablet PC  
BRAND NAME : hp  
MODEL NAME : HSTNN-C78C  
FCC ID : B94HNC78BWTXN  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2003

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

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



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Hewlett-Packard Company, Tablet PC, HSTNN-C78C, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary	
		Body 1g SAR (W/kg)	Simultaneous Transmission SAR (W/kg)
PCE	GSM850	1.48	1.58
	GSM1900	1.41	
	WCDMA Band V	1.21	
	WCDMA Band IV	1.29	
	WCDMA Band II	1.27	
	CDMA 2000 BC10	0.92	
	CDMA 2000 BC0	0.93	
	CDMA 2000 BC1	1.12	
	LTE Band 17	1.21	
	LTE Band 13	1.18	
	LTE Band 5	1.35	
	LTE Band 4	1.26	
	LTE Band 2	1.40	
	LTE Band 25	1.25	
Date of Testing:		10/06/2013 ~ 07/11/2014	

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 1528-2003.



## 2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Hewlett-Packard Company
Address	3000 Hanover Street, Palo Alto, California 94304, USA

Manufacturer	
Company Name	COMPAL ELECTRONICS, INC.
Address	No.581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan (R.O.C.)

## 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 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- FCC KDB 941225 D05 SAR for LTE Devices v02r03



### 4. Equipment Under Test (EUT)

#### 4.1 General Information

Product Feature & Specification	
Equipment Name	Tablet PC
Brand Name	hp
Model Name	HSTNN-C78C
FCC ID	B94HNC78BWTXN
Integrated Module	WWAN Module: Brand Name: Sierra Model Name: EM7355 WLAN Module: Brand Name: MITSUMI Model Name: DWM-W095A
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 CDMA 2000 BC10: 817.9 MHz ~ 823.1 MHz CDMA 2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 826.5 MHz ~ 846.5 MHz LTE Band 4: 1712.5 MHz ~ 1752.2 MHz LTE Band 2: 1852.5 MHz ~ 1907.5 MHz LTE Band 25: 1852.5 MHz ~ 1912.5 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: 2402MHz ~ 2480MHz
Mode	<ul style="list-style-type: none"> <li>• GPRS/EGPRS</li> <li>• RMC 12.2Kbps Rel 99</li> <li>• HSDPA Rel 7, Cat14</li> <li>• HSUPA Rel 6, Cat6</li> <li>• DC-HSDPA Rel 8 Cat24</li> <li>• CDMA2000: 1xRTT/1xEv-Do(Rel.0)/1xEv-Do(Rev.A)</li> <li>• LTE: QPSK, 16QAM</li> <li>• 802.11a/b/g/n HT20/HT40</li> <li>• Bluetooth v2.1+EDR , Bluetooth v4.0+LE</li> </ul>
EUT Stage	Identical Prototype
<b>Remark:</b> 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. This EUT has another variant version with WWAN module removal, and WLAN/Bluetooth SAR assessment was addressed in the Sporton SAR report (report no. FA392719-16 Rev.01) for FCC ID: B94HNC78CBXN. The WLAN/Bluetooth module and the antenna is exactly identical between 2 versions, and the WLAN/Bluetooth antenna is >5cm away from WWAN antenna, the WLAN/Bluetooth SAR test results in the B94HNC78CBXN SAR report is representative of WLAN/Bluetooth SAR performance in this EUT and will be submitted in this application.	



**4.2 Maximum Tune-up Limit**

Mode / Band	Burst Average Power (dBm)			
	GSM 850		GSM 1900	
Output Power Status	Full Power Mode	Reduced Power Mode	Full Power Mode	Reduced Power Mode
GPRS (GMSK, 1 Tx slot)	33.5	31	30.5	27.5
GPRS (GMSK, 2 Tx slots)	33	28	30	25
EDGE (8PSK, 1 Tx slot)	28	28	27	27
EDGE (8PSK, 2 Tx slots)	27	27	26	24
EDGE (8PSK, 3 Tx slot)	27	25	26	22
EDGE (8PSK, 4 Tx slots)	27	25	26	22

Mode / Band	Average Power (dBm)					
	WCDMA Band V		WCDMA Band II		WCDMA Band IV	
Output Power Status	Full Power Mode	Reduced Power Mode	Full Power Mode	Reduced Power Mode	Full Power Mode	Reduced Power Mode
RMC 12.2K	24	20	24	18	24	17.5
HSDPA Subtest-1	24	20	24	18	24	17.5
DC-HSDPA Subtest-1	24	20	24	18	24	17.5
HSUPA Subtest-5	24	20	24	18	24	17.5

Mode / Band	Average Power (dBm)					
	CDMA BC10		CDMA BC0		CDMA BC1	
Output Power Status	Full Power Mode	Reduced Power Mode	Full Power Mode	Reduced Power Mode	Full Power Mode	Reduced Power Mode
1xRTT RC1 SO55	24.5	19.5	24.5	19.5	24.5	17.5
1xRTT RC3 SO55	24.5	19.5	24.5	19.5	24.5	17.5
1xEV-DO Rev 0	24.5	19.5	24.5	19.5	24.5	17.5
1xEV-DO Rev A	24.5	19.5	24.5	19.5	24.5	17.5

LTE Band 17						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power Mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	10	≤ 12	0	24	0	22
QPSK	10	> 12	1	23	0	22
16QAM	10	≤ 12	1	23	0	22
16QAM	10	> 12	2	22	0	22
QPSK	5	≤ 8	0	24	0	22
QPSK	5	> 8	1	23	0	22
16QAM	5	≤ 8	1	23	0	22
16QAM	5	> 8	2	22	0	22



LTE Band 13						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power Mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	10	≤ 12	0	24	0	20
QPSK	10	> 12	1	23	0	20
16QAM	10	≤ 12	1	23	0	20
16QAM	10	> 12	2	22	0	20
QPSK	5	≤ 8	0	24	0	20
QPSK	5	> 8	1	23	0	20
16QAM	5	≤ 8	1	23	0	20
16QAM	5	> 8	2	22	0	20

LTE Band 5						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power Mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	10	≤ 12	0	24	0	21
QPSK	10	> 12	1	23	0	21
16QAM	10	≤ 12	1	23	0	21
16QAM	10	> 12	2	22	0	21
QPSK	5	≤ 8	0	24	0	21
QPSK	5	> 8	1	23	0	21
16QAM	5	≤ 8	1	23	0	21
16QAM	5	> 8	2	22	0	21

LTE Band 4						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power Mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	20	≤ 18	0	24	0	17.5
QPSK	20	> 18	1	23	0	17.5
16QAM	20	≤ 18	1	23	0	17.5
16QAM	20	> 18	2	22	0	17.5
QPSK	15	≤ 16	0	24	0	17.5
QPSK	15	> 16	1	23	0	17.5
16QAM	15	≤ 16	1	23	0	17.5
16QAM	15	> 16	2	22	0	17.5
QPSK	10	≤ 12	0	24	0	17.5
QPSK	10	> 12	1	23	0	17.5
16QAM	10	≤ 12	1	23	0	17.5
16QAM	10	> 12	2	22	0	17.5
QPSK	5	≤ 8	0	24	0	17.5
QPSK	5	> 8	1	23	0	17.5
16QAM	5	≤ 8	1	23	0	17.5
16QAM	5	> 8	2	22	0	17.5



LTE Band 2						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power Mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	20	≤ 18	0	24	0	19
QPSK	20	> 18	1	23	0	19
16QAM	20	≤ 18	1	23	0	19
16QAM	20	> 18	2	22	0	19
QPSK	15	≤ 16	0	24	0	19
QPSK	15	> 16	1	23	0	19
16QAM	15	≤ 16	1	23	0	19
16QAM	15	> 16	2	22	0	19
QPSK	10	≤ 12	0	24	0	19
QPSK	10	> 12	1	23	0	19
16QAM	10	≤ 12	1	23	0	19
16QAM	10	> 12	2	22	0	19
QPSK	5	≤ 8	0	24	0	19
QPSK	5	> 8	1	23	0	19
16QAM	5	≤ 8	1	23	0	19
16QAM	5	> 8	2	22	0	19

LTE Band 25						
Modulation	BW (MHz)	RB size	Full Power Mode		Reduced Power Mode	
			MPR	Average Power (dBm)	MPR	Average Power (dBm)
QPSK	20	≤ 18	0	24	0	19
QPSK	20	> 18	1	23	0	19
16QAM	20	≤ 18	1	23	0	19
16QAM	20	> 18	2	22	0	19
QPSK	15	≤ 16	0	24	0	19
QPSK	15	> 16	1	23	0	19
16QAM	15	≤ 16	1	23	0	19
16QAM	15	> 16	2	22	0	19
QPSK	10	≤ 12	0	24	0	19
QPSK	10	> 12	1	23	0	19
16QAM	10	≤ 12	1	23	0	19
16QAM	10	> 12	2	22	0	19
QPSK	5	≤ 8	0	24	0	19
QPSK	5	> 8	1	23	0	19
16QAM	5	≤ 8	1	23	0	19
16QAM	5	> 8	2	22	0	19



**4.3 General LTE SAR Test and Reporting Considerations**

Summarized necessary items addressed in KDB 941225 D05 v02r03																																																		
FCC ID	B94HNC78BWTXN																																																	
Equipment Name	Tablet PC																																																	
Operating Frequency Range of each LTE transmission band	LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 05: 824.7 MHz ~ 848.3 MHz LTE Band 04: 1710.7 MHz ~ 1754.3 MHz LTE Band 02: 1850.7 MHz ~ 1909.3 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz																																																	
Channel Bandwidth	LTE Band 17: 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 05: 5MHz, 10MHz LTE Band 04: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 02: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 25: 5MHz, 10MHz, 15MHz, 20MHz																																																	
uplink modulations used	QPSK, and 16QAM																																																	
LTE Voice / Data requirements	Data only																																																	
LTE MPR permanently built-in by design	<table border="1"> <thead> <tr> <th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</th> </tr> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>&gt;5</td> <td>&gt;4</td> <td>&gt;8</td> <td>&gt;12</td> <td>&gt;16</td> <td>&gt;18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>&gt;5</td> <td>&gt;4</td> <td>&gt;8</td> <td>&gt;12</td> <td>&gt;16</td> <td>&gt;18</td> <td>≤ 2</td> </tr> </tbody> </table>				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
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3																																																		
Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)																																											
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																												
QPSK	>5	>4	>8	>12	>16	>18	≤ 1																																											
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																											
16 QAM	>5	>4	>8	>12	>16	>18	≤ 2																																											
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																	
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																	
Power reduction applied to satisfy SAR compliance	Yes, proximity sensor triggered power reduction implemented on the host.																																																	
Transmission (H, M, L) channel numbers and frequencies in each LTE band																																																		
LTE Band 17																																																		
	Bandwidth 5 MHz		Bandwidth 10 MHz																																															
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)																																														
L	23755	706.5	23780	709																																														
M	23790	710	23790	710																																														
H	23825	713.5	23800	711																																														
LTE Band 13																																																		
	Bandwidth 5 MHz		Bandwidth 10 MHz																																															
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)																																														
L	23205	779.5																																																
M	23230	782	23230	782																																														
H	23255	784.5																																																
LTE Band 5																																																		
	Bandwidth 5 MHz		Bandwidth 10 MHz																																															
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)																																														
L	20425	826.5	20450	829																																														
M	20525	836.5	20525	836.5																																														
H	20625	846.5	20600	844																																														



LTE Band 4								
	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	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 2								
	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	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880
H	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 25								
	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	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880
H	26665	1912.5	26640	1910	26615	1907.5	26590	1905



### 5. Proximity Sensor Triggering Test

Target Power reduction applied for each wireless mode and orientation

Exposure Position / wireless mode	Bottom Face <sup>(1)</sup>	Edge 1 <sup>(1)</sup>	Edge 2	Edge 3	Edge 4
GSM850 GPRS (GMSK 1 Tx slot)	2.5 dB	2.5 dB	0 dB	0 dB	0 dB
GSM850 GPRS (GMSK 2 Tx slots)	5.0 dB	5.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 1 Tx slot)	0.0 dB	0.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 2 Tx slots)	0.0 dB	0.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 3 Tx slots)	2.0 dB	2.0 dB	0 dB	0 dB	0 dB
GSM850 EDGE (8PSK 4 Tx slots)	2.0 dB	2.0 dB	0 dB	0 dB	0 dB
GSM1900 GPRS (GMSK 1 Tx slot)	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
GSM1900 GPRS (GMSK 2 Tx slots)	5.0 dB	5.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 1 Tx slot)	0.0 dB	0.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 2 Tx slots)	2.0 dB	2.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 3 Tx slots)	4.0 dB	4.0 dB	0 dB	0 dB	0 dB
GSM1900 EDGE (8PSK 4 Tx slots)	4.0 dB	4.0 dB	0 dB	0 dB	0 dB
WCDMA Band V	4.0 dB	4.0 dB	0 dB	0 dB	0 dB
WCDMA Band IV	6.5 dB	6.5 dB	0 dB	0 dB	0 dB
WCDMA Band II	6.0 dB	6.0 dB	0 dB	0 dB	0 dB
CDMA2000 BC10	5.0 dB	5.0 dB	0 dB	0 dB	0 dB
CDMA2000 BC0	5.0 dB	5.0 dB	0 dB	0 dB	0 dB
CDMA2000 BC1	7.0 dB	7.0 dB	0 dB	0 dB	0 dB
LTE Band 17	2.0 dB	2.0 dB	0 dB	0 dB	0 dB
LTE Band 13	4.0 dB	4.0 dB	0 dB	0 dB	0 dB
LTE Band 5	3.0 dB	3.0 dB	0 dB	0 dB	0 dB
LTE Band 4	6.5 dB	6.5 dB	0 dB	0 dB	0 dB
LTE Band 2	5.0 dB	5.0 dB	0 dB	0 dB	0 dB
LTE Band 25	5.0 dB	5.0 dB	0 dB	0 dB	0 dB

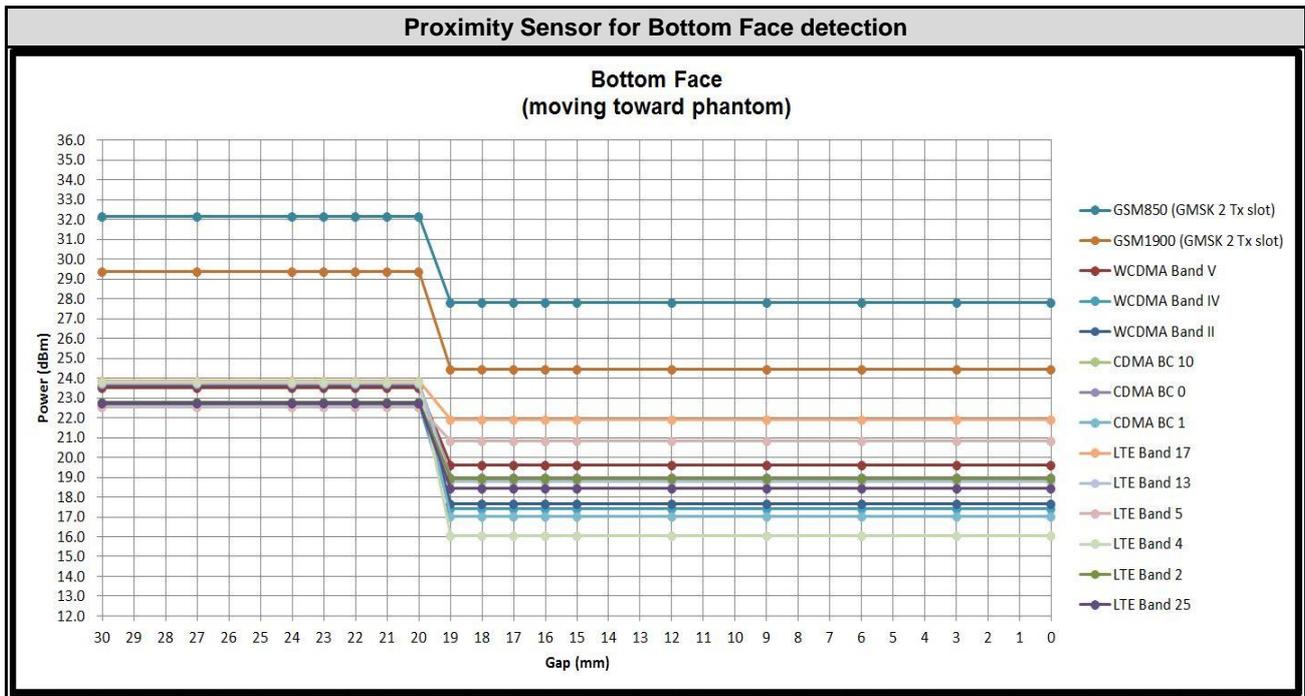
**Remark:**

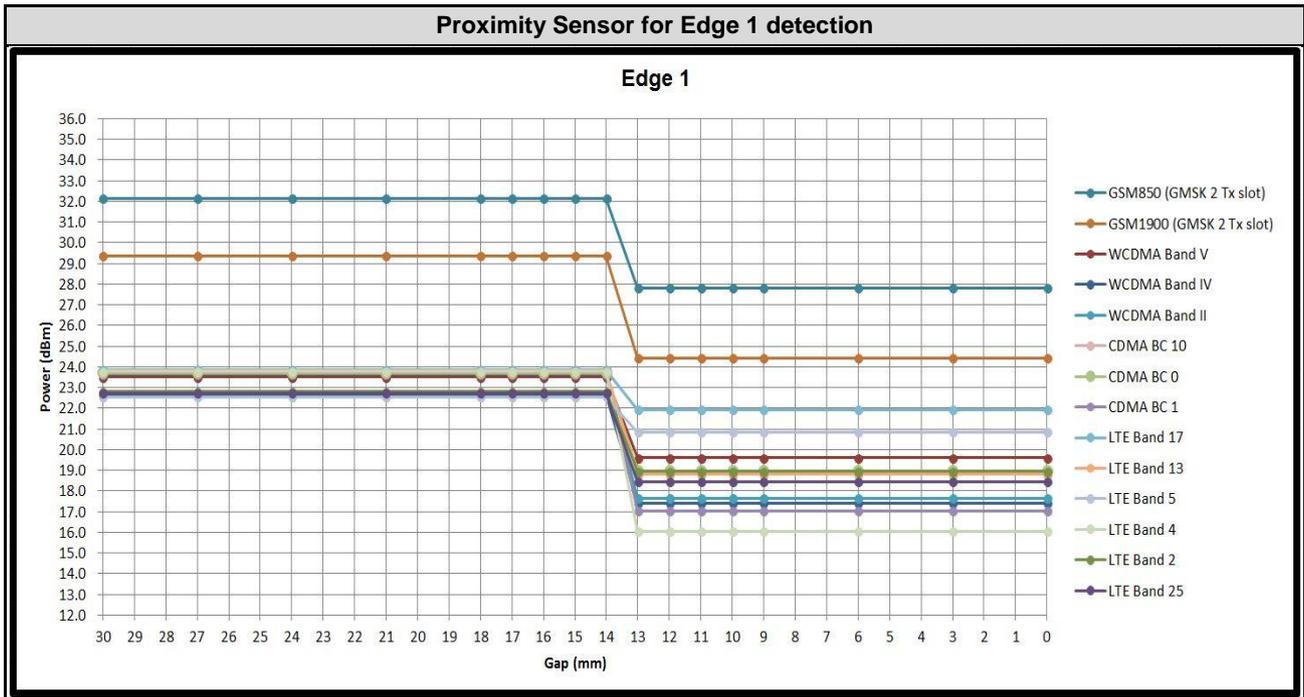
- <sup>(1)</sup>: Reduced maximum limit applied by activation of proximity sensor.



Measurement on EUT:

Band/Mode	Ch #	Measured power reduction (dBm)		Reduction Levels (dB)
		w/o power back-off	w/ power back-off	
GSM850 GPRS (GMSK 2 Tx slot)	189	32.16	27.82	4.34
GSM1900 GPRS (GMSK 2 Tx slot)	661	29.38	24.43	4.95
WCDMA Band V (RMC 12.2Kbps)	4182	23.51	19.61	3.90
WCDMA Band IV (RMC 12.2Kbps)	1413	22.69	17.41	5.28
WCDMA Band II (RMC 12.2Kbps)	9400	23.65	17.66	5.99
EVDO BC10 (RTAP 153.6Kbps)	580	23.78	18.98	4.80
EVDO BC0 (RTAP 153.6Kbps)	384	23.73	18.98	4.75
EVDO BC1 (RTAP 153.6Kbps)	600	23.80	17.03	6.77
LTE Band 17	23790	23.87	21.92	1.95
LTE Band 13	23230	23.74	18.80	4.94
LTE Band 5	20525	22.54	20.85	1.69
LTE Band 4	20175	23.79	16.05	7.74
LTE Band 2	18900	22.80	18.94	3.86
LTE Band 25	26365	22.75	18.46	4.29





**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 ( $\rho$ ). The equation description is as below:

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

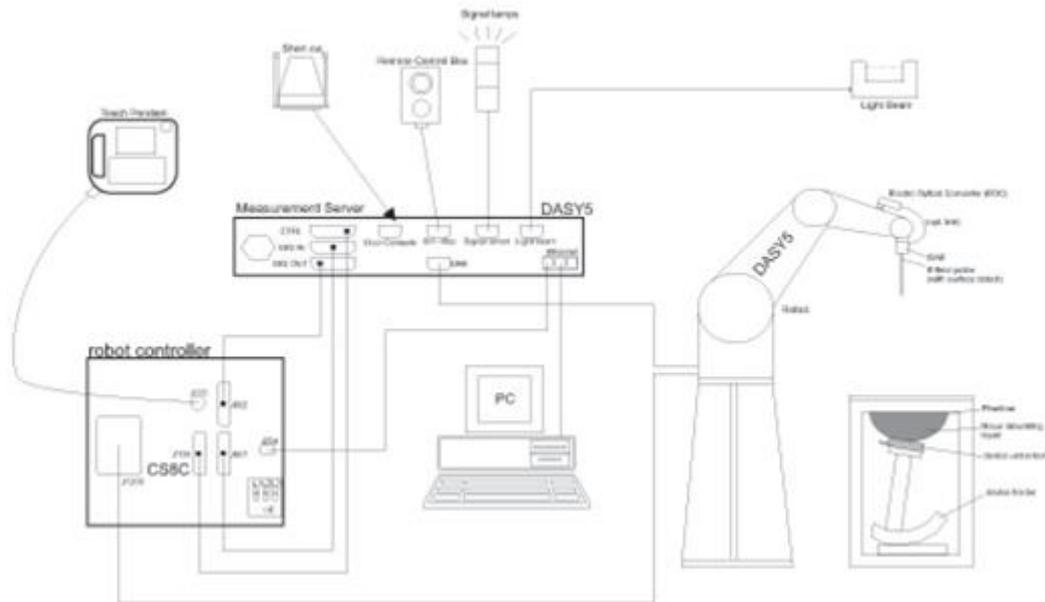
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  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 from 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 D01v01r03 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$	≤ 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 to 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 whose 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 D01v01r03 SAR measurement 100 MHz to 6 GHz.

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ 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	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
Note: $\delta$ 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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ 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 to 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 DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 28, 2013	May. 27, 2014
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 16, 2014	May. 15, 2015
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 18, 2013	Mar. 17, 2014
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 24, 2014	Mar. 23, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Jun. 20, 2012	Jun. 19, 2014
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 27, 2013	Nov. 26, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 20, 2013	Mar. 19, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 21, 2014	Mar. 20, 2015
SPEAG	Data Acquisition Electronics	DAE4	1279	Jan. 28, 2013	Jan. 27, 2014
SPEAG	Data Acquisition Electronics	DAE3	577	May. 08, 2013	May. 07, 2014
SPEAG	Data Acquisition Electronics	DAE4	778	Aug. 21, 2013	Aug. 20, 2014
SPEAG	Data Acquisition Electronics	DAE3	495	May. 19, 2014	May. 18, 2015
SPEAG	Data Acquisition Electronics	DAE4	1425	Mar. 03, 2014	Mar. 02, 2015
SPEAG	Dosimetric E-Field Probe	ES3DV3	3071	Jun. 18, 2013	Jun. 17, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 10, 2013	Sep. 09, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 04, 2013	Nov. 03, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 22, 2014	May. 21, 2015
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 24, 2013	Sep. 23, 2014
Wisewind	Thermometer	HTC-1	TM281	Oct. 22, 2013	Oct. 21, 2014
Wisewind	Thermometer	ETP-101	TM685	Oct. 22, 2013	Oct. 21, 2014
Wisewind	Thermometer	HTC-1	TM642	Nov. 13, 2012	Nov. 12, 2013
Wisewind	Thermometer	HTC-1	TM283	Nov. 13, 2012	Nov. 12, 2013
Wisewind	Thermometer	HTC-1	TM285	Nov. 13, 2012	Nov. 12, 2013
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Dec. 11, 2012	Dec. 10, 2013
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 11, 2014	Feb. 10, 2015
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 06, 2013	May. 05, 2015
R&S	Radio communication Tester	CMW500	116160	Jan. 09, 2013	Jan. 08, 2014
R&S	Radio communication Tester	CMW500	113998	Oct. 04, 2013	Oct. 03, 2014
SPEAG	Device Holder	N/A	N/A	NCR	NCR
R&S	Signal Generator	SMF 100A	101107	May. 27, 2013	May. 26, 2014
Agilent	Signal Generator	E4438C	MY49070755	Oct. 08, 2013	Oct. 07, 2014
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Jul. 23, 2013	Jul. 22, 2014
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	Nov. 03, 2013	Nov. 02, 2014
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 07, 2013	Feb. 06, 2014
Agilent	ENA Network Analyzer	E5071C	MY46316648	Feb. 07, 2014	Feb. 06, 2015
Anritsu	Power Meter	ML2495A	1132003	Aug. 28, 2013	Aug. 27, 2014
Anritsu	Power Sensor	MA2411B	1126017	Aug. 27, 2013	Aug. 26, 2014
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 09, 2013	Jul. 08, 2014
R&S	Spectrum Analyzer	FSP30	101067	Nov. 20, 2013	Nov. 19, 2014
Agilent	Dual Directional Coupler	778D	50422	Note 1	
Woken	Attenuator	WK0602-XX	N/A	Note 1	
PE	Attenuator	PE7005-10	N/A	Note 1	
PE	Attenuator	PE7005- 3	N/A	Note 1	
AR	Power Amplifier	5S1G4M2	0328767	Note 1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note 1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	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.
2. Referring to KDB 865664 D01v01r03, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D1750V2, SN: 1068 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.



## 11. System Verification

### 11.1 Tissue 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 ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
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%

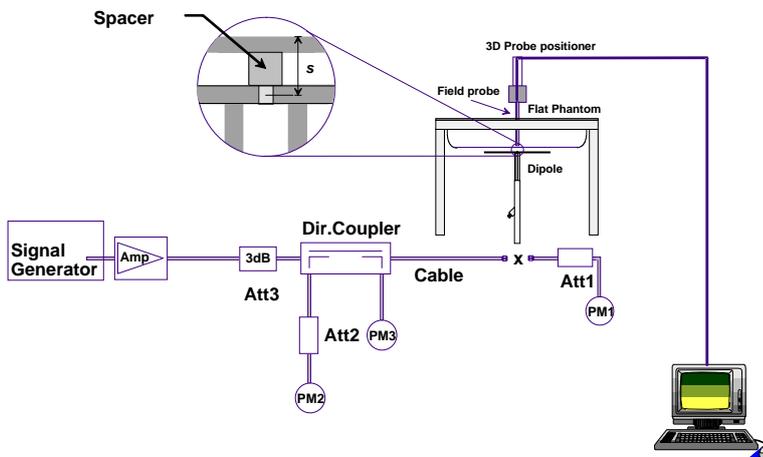
#### <Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Type	Liquid Temp. (°C)	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Conductivity Target ( $\sigma$ )	Permittivity Target ( $\epsilon_r$ )	Delta ( $\sigma$ ) (%)	Delta ( $\epsilon_r$ ) (%)	Limit (%)	Date
750	Body	22.2	0.974	53.292	0.96	55.50	1.46	-3.98	±5	2013/10/9
750	Body	22.2	0.967	53.993	0.96	55.50	0.73	-2.72	±5	2014/7/11
835	Body	22.5	0.962	54.559	0.97	55.2	-0.82	-1.16	±5	2013/10/6
835	Body	22.6	0.994	56.197	0.97	55.2	2.47	1.81	±5	2013/10/8
835	Body	22.3	0.988	54.88	0.97	55.2	1.86	-0.58	±5	2013/10/10
835	Body	22.2	0.996	55.38	0.97	55.2	2.68	0.33	±5	2014/7/10
1750	Body	22.4	1.509	52.01	1.52	53.3	-0.72	-2.42	±5	2013/10/6
1750	Body	22.6	1.491	52.702	1.52	53.3	-1.91	-1.12	±5	2013/10/8
1750	Body	22.3	1.522	53.843	1.52	53.3	0.13	1.02	±5	2013/12/9
1750	Body	22.2	1.508	52.41	1.52	53.3	-0.79	-1.67	±5	2014/7/9
1750	Body	22.3	1.529	52.312	1.52	53.3	0.59	-1.85	±5	2014/7/11
1900	Body	22.4	1.557	52.004	1.52	53.30	2.43	-2.43	±5	2013/10/6
1900	Body	22.6	1.534	51.986	1.52	53.3	0.92	-2.47	±5	2013/10/8
1900	Body	22.6	1.516	53.631	1.52	53.3	-0.26	0.62	±5	2014/7/8
1900	Body	22.6	1.516	53.631	1.52	53.3	-0.26	0.62	±5	2014/7/8

**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 (%)
2013/10/9	750	Body	250	D750V3-1012	3071	1279	8.83	2.25	9.00	1.93
2014/7/11	750	Body	250	D750V3-1012	3925	495	8.65	2.08	8.32	-3.82
2013/10/6	835	Body	250	D835V2-499	3071	1279	9.63	2.53	10.12	5.09
2013/10/8	835	Body	250	D835V2-499	3071	1279	9.63	2.46	9.84	2.18
2013/10/10	835	Body	250	D835V2-499	3071	1279	9.63	2.45	9.80	1.77
2014/7/10	835	Body	250	D835V2-499	3270	778	9.46	2.40	9.60	1.48
2013/10/6	1750	Body	250	D1750V2-1068	3071	1279	36.80	9.90	39.60	7.61
2013/10/8	1750	Body	250	D1750V2-1068	3071	1279	36.80	8.77	35.08	-4.67
2013/12/9	1750	Body	250	D1750V2-1068	3931	577	36.80	9.82	39.28	6.74
2014/7/9	1750	Body	250	D1750V2-1068	3270	778	37.50	8.97	35.88	-4.32
2014/7/11	1750	Body	250	D1750V2-1068	3925	495	36.80	9.18	36.72	-0.22
2013/10/6	1900	Body	250	D1900V2-5d041	3071	1279	40.80	11.00	44.00	7.84
2013/10/8	1900	Body	250	D1900V2-5d041	3071	1279	40.80	10.90	43.60	6.86
2014/7/8	1900	Body	250	D1900V2-5d041	3954	1425	41.00	10.40	41.60	1.46
2014/7/8	1900	Body	250	D1900V2-5d041	3270	778	41.00	10.00	40.00	-2.44



**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>**

**General Note:**

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. For Body SAR testing was following KDB 941225 D03v01, the GPRS 2Tx slots modes was selected when EUT operating without power back-off, the GPRS 2Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.

**Full Power mode (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	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot) – CS1	32.29	32.27	32.22	33.50	23.29	23.27	23.22	24.50
GPRS (GMSK, 2 Tx slots) – CS1	32.21	32.16	32.08	33.00	26.21	26.16	26.08	27.00
EDGE (8PSK, 1 Tx slot) – MCS5	27.02	26.96	26.91	28.00	18.02	17.96	17.91	19.00
EDGE (8PSK, 2 Tx slots) – MCS5	26.82	26.76	26.71	27.00	20.82	20.76	20.71	21.00
EDGE (8PSK, 3 Tx slots) – MCS5	26.63	26.50	26.47	27.00	22.37	22.24	22.21	22.74
EDGE (8PSK, 4 Tx slots) – MCS5	26.66	26.59	26.55	27.00	23.66	23.59	23.55	24.00

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	512	661		810	512	661	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot) – CS1	29.59	29.45	29.38	30.50	20.59	20.45	20.38	21.50
GPRS (GMSK, 2 Tx slots) – CS1	29.50	29.38	29.29	30.00	23.50	23.38	23.29	24.00
EDGE (8PSK, 1 Tx slot) – MCS5	25.36	25.30	25.31	27.00	16.36	16.30	16.31	18.00
EDGE (8PSK, 2 Tx slots) – MCS5	25.30	25.24	25.22	26.00	19.30	19.24	19.22	20.00
EDGE (8PSK, 3 Tx slots) – MCS5	25.15	25.13	25.12	26.00	20.89	20.87	20.86	21.74
EDGE (8PSK, 4 Tx slots) – MCS5	25.10	25.08	25.03	26.00	22.10	22.08	22.03	23.00

**Reduced Power Mode (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	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot) – CS1	30.52	30.28	30.43	31.00	21.52	21.28	21.43	22.00
GPRS (GMSK, 2 Tx slots) – CS1	27.86	27.82	27.84	28.00	21.86	21.82	21.84	22.00
EDGE (8PSK, 1 Tx slot) – MCS5	27.02	26.96	26.91	28.00	18.02	17.96	17.91	19.00
EDGE (8PSK, 2 Tx slots) – MCS5	26.82	26.76	26.71	27.00	20.82	20.76	20.71	21.00
EDGE (8PSK, 3 Tx slots) – MCS5	24.62	24.74	24.68	25.00	20.36	20.48	20.42	20.74
EDGE (8PSK, 4 Tx slots) – MCS5	23.62	23.78	23.69	25.00	20.62	20.78	20.69	22.00

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	TX Channel	512	661		810	512	661	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot) – CS1	27.35	27.28	27.33	27.50	18.35	18.28	18.33	18.50
GPRS (GMSK, 2 Tx slots) – CS1	24.47	24.43	24.44	25.00	18.47	18.43	18.44	19.00
EDGE (8PSK, 1 Tx slot) – MCS5	25.36	25.30	25.31	27.00	16.36	16.30	16.31	18.00
EDGE (8PSK, 2 Tx slots) – MCS5	23.63	23.56	23.48	24.00	17.63	17.56	17.48	18.00
EDGE (8PSK, 3 Tx slots) – MCS5	21.32	21.26	21.30	22.00	17.06	17.00	17.04	17.74
EDGE (8PSK, 4 Tx slots) – MCS5	20.96	20.98	20.93	22.00	17.96	17.98	17.93	19.00

**<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 ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note 1, 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:  $\Delta_{ACK}, \Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ .

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,  $\Delta_{ACK}$  and  $\Delta_{NACK} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ , and  $\Delta_{CQI} = 24/15$  with  $\beta_{HS} = 24/15 * \beta_c$ .

Note 3: CM = 1 for  $\beta_c/\beta_d = 12/15, \beta_{HS}/\beta_c = 24/15$ . For all other combinations of DPCCH, DPDCCH 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  $\beta_c/\beta_d$  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  $\beta_c = 11/15$  and  $\beta_d = 15/15$ .

**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 ( $\beta_c$  and  $\beta_d$ ) 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-TFCl
  - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

**Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note 1)	$\beta_{ec}$	$\beta_{ed}$ (Note 5) (Note 6)	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	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:  $\Delta_{ACK}, \Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ .

Note 2: CM = 1 for  $\beta_c/\beta_d = 12/15, \beta_{hs}/\beta_c = 24/15$ . 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  $\beta_c/\beta_d$  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  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .

Note 4: For subtest 5 the  $\beta_c/\beta_d$  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  $\beta_c = 14/15$  and  $\beta_d = 15/15$ .

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:  $\beta_{ed}$  can not be set directly, it is set by Absolute Grant Value.

**Setup Configuration**

**DC-HSDPA 3GPP release 8 Setup Configuration:**

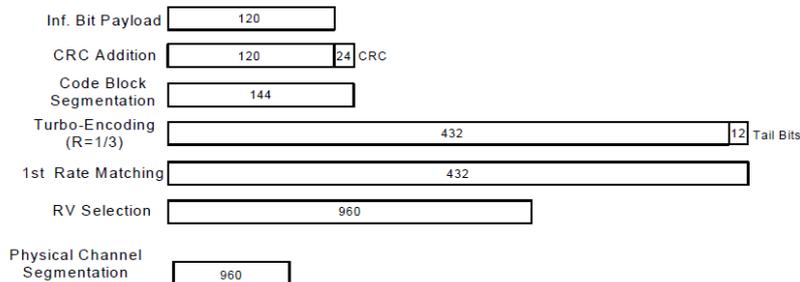
- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm
  - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
  - iv. Select HSDPA Uplink Parameters
  - v. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta_c/\beta_d=2/15$
    - b). Subtest 2:  $\beta_c/\beta_d=12/15$
    - c). Subtest 3:  $\beta_c/\beta_d=15/8$
    - d). Subtest 4:  $\beta_c/\beta_d=15/4$
  - 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:**

- Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is  $\leq 1.2W/kg$ , HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded..

**Full Power Mode (Proximity Sensor Inactive)**

Band		WCDMA V			WCDMA II			WCDMA IV		
TX Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	23.45	23.51	23.16	23.64	23.65	23.80	22.52	22.69	22.49
3GPP Rel 6	HSDPA Subtest-1	23.26	23.33	23.44	23.46	23.51	23.66	22.38	22.46	22.67
3GPP Rel 6	HSDPA Subtest-2	23.24	23.31	23.36	23.34	23.42	23.63	22.38	22.49	22.60
3GPP Rel 6	HSDPA Subtest-3	22.74	22.83	22.96	22.84	22.95	23.21	21.86	21.97	22.23
3GPP Rel 6	HSDPA Subtest-4	22.72	22.82	22.91	22.82	22.93	23.19	21.88	21.81	21.83
3GPP Rel 8	DC-HSDPA Subtest-1	23.25	23.29	23.40	23.44	23.48	23.60	22.34	22.45	22.63
3GPP Rel 8	DC-HSDPA Subtest-2	23.23	23.26	23.35	23.30	23.41	23.59	22.23	22.26	22.23
3GPP Rel 8	DC-HSDPA Subtest-3	22.72	22.80	22.94	22.81	22.94	23.19	21.84	21.94	22.19
3GPP Rel 8	DC-HSDPA Subtest-4	22.70	22.74	22.91	22.80	22.90	23.15	21.82	21.90	22.16
3GPP Rel 6	HSUPA Subtest-1	23.11	23.10	23.15	22.81	23.01	23.07	22.23	22.36	22.38
3GPP Rel 6	HSUPA Subtest-2	21.73	21.88	21.95	21.60	21.80	21.90	20.36	20.38	20.39
3GPP Rel 6	HSUPA Subtest-3	22.12	22.10	22.16	21.70	21.84	21.93	21.17	21.24	21.79
3GPP Rel 6	HSUPA Subtest-4	21.80	21.92	22.00	21.63	21.70	21.95	20.38	20.40	20.43
3GPP Rel 6	HSUPA Subtest-5	23.25	23.32	23.33	23.39	23.45	23.60	22.20	22.23	22.29

**Reduced Power Mode (Proximity Sensor active)**

Band		WCDMA V			WCDMA II			WCDMA IV		
TX Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	19.72	19.61	19.46	17.65	17.66	17.81	17.38	17.41	17.40
3GPP Rel 6	HSDPA Subtest-1	19.53	19.43	19.71	17.16	17.21	17.42	16.92	16.97	17.18
3GPP Rel 6	HSDPA Subtest-2	19.51	19.41	19.66	17.15	17.19	17.39	16.91	16.95	17.15
3GPP Rel 6	HSDPA Subtest-3	19.01	18.93	19.26	16.85	16.93	16.97	16.61	16.69	16.73
3GPP Rel 6	HSDPA Subtest-4	18.99	18.92	19.21	16.81	16.88	16.94	16.57	16.64	16.70
3GPP Rel 8	DC-HSDPA Subtest-1	19.52	19.39	19.70	17.14	17.18	17.39	16.90	16.94	17.15
3GPP Rel 8	DC-HSDPA Subtest-2	19.50	19.36	19.65	17.13	17.15	17.35	16.89	16.91	17.11
3GPP Rel 8	DC-HSDPA Subtest-3	18.99	18.90	19.24	16.81	16.90	16.95	16.57	16.66	16.71
3GPP Rel 8	DC-HSDPA Subtest-4	18.97	18.84	19.21	16.79	16.84	16.91	16.55	16.60	16.67
3GPP Rel 6	HSUPA Subtest-1	19.38	19.20	19.45	16.67	16.48	16.70	17.33	17.39	17.31
3GPP Rel 6	HSUPA Subtest-2	18.00	18.02	18.00	16.58	16.43	16.65	17.34	17.19	17.21
3GPP Rel 6	HSUPA Subtest-3	18.39	18.20	18.46	16.18	16.03	16.22	16.94	16.79	16.98
3GPP Rel 6	HSUPA Subtest-4	18.83	18.89	18.98	16.30	16.17	16.35	17.06	16.93	17.11
3GPP Rel 6	HSUPA Subtest-5	19.52	19.42	19.63	16.49	16.65	16.85	17.25	16.96	16.61



<CDMA2000 Conducted Power>

General Note:

- Referring to KDB 941225 D01v02, the data device SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps). If 1xRTT and Ev-Do Rev A (RETAP 4096 bits) power is less than 1/4dB higher than Re v0, SAR tests with those settings are not necessary.

Full Power Mode (Proximity Sensor Inactive)

Band	CDMA2000 BC0			CDMA2000 BC1			CDMA2000 BC10		
TX Channel	1013	384	777	25	600	1175	476	580	684
Frequency (MHz)	824.7	836.52	848.31	1851.25	1880	1908.75	817.9	820.5	823.1
1xRTT RC1 SO55	23.58	23.72	23.54	23.87	23.80	23.93	23.74	23.76	23.66
1xRTT RC3 SO55	23.55	23.71	23.50	23.93	23.79	23.92	23.63	23.72	23.70
1xEVDO RTAP 153.6Kbps	23.61	23.73	23.60	23.99	23.80	23.90	23.75	23.78	23.77
1xEVDO RETAP 4096Bits	23.50	23.72	23.52	23.85	23.76	23.84	23.70	23.63	23.75

Reduced Power Mode (Proximity Sensor active)

Band	CDMA2000 BC0			CDMA2000 BC1			CDMA2000 BC10		
TX Channel	1013	384	777	25	600	1175	476	580	684
Frequency (MHz)	824.7	836.52	848.31	1851.25	1880	1908.75	817.9	820.5	823.1
1xRTT RC1 SO55	18.84	19.00	19.13	17.30	16.92	17.16	18.92	18.95	18.93
1xRTT RC3 SO55	18.82	19.02	19.17	17.39	16.70	17.13	18.91	18.93	18.93
1xEVDO RTAP 153.6Kbps	19.08	18.98	19.05	17.45	17.03	17.26	18.96	18.98	18.95
1xEVDO RETAP 4096Bits	19.07	19.01	19.03	17.39	16.81	17.16	18.93	18.90	18.90

<LTE Conducted Power>

General Note:

- 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.
- 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.
- 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.
- Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
- 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  $\leq 0.8$  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.
- Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
- Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.



**Maximum Average RF Power (Proximity Sensor Inactive)**

**<LTE Band 17 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	23.50	23.57	23.50	24	0
10	QPSK	1	24	23.76	23.87	23.66		
10	QPSK	1	49	23.40	23.58	23.38		
10	QPSK	25	0	22.60	22.84	22.76	23	0-1
10	QPSK	25	12	22.52	22.74	22.70		
10	QPSK	25	24	22.52	22.64	22.49		
10	QPSK	50	0	22.37	22.61	22.60		
10	16QAM	1	0	22.46	22.60	22.70	23	0-1
10	16QAM	1	24	22.73	22.92	22.74		
10	16QAM	1	49	22.38	22.56	22.45		
10	16QAM	25	0	21.43	21.77	21.65	22	0-2
10	16QAM	25	12	21.51	21.69	21.57		
10	16QAM	25	24	21.43	21.60	21.43		
10	16QAM	50	0	21.34	21.58	21.55		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.45	23.72	23.68	24	0
5	QPSK	1	12	23.59	23.74	23.58		
5	QPSK	1	24	23.71	23.69	23.55		
5	QPSK	12	0	22.50	22.99	22.70	23	0-1
5	QPSK	12	6	22.64	22.90	22.62		
5	QPSK	12	11	22.74	22.75	22.57		
5	QPSK	25	0	22.46	22.77	22.54		
5	16QAM	1	0	22.37	22.77	22.63	23	0-1
5	16QAM	1	12	22.55	22.78	22.54		
5	16QAM	1	24	22.71	22.65	22.53		
5	16QAM	12	0	21.50	21.91	21.54	22	0-2
5	16QAM	12	6	21.59	21.87	21.58		
5	16QAM	12	11	21.69	21.73	21.50		
5	16QAM	25	0	21.40	21.74	21.46		



<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel					23230			
Frequency (MHz)					782			
10	QPSK	1	0		23.40		24	0
10	QPSK	1	24		23.74			
10	QPSK	1	49		23.62			
10	QPSK	25	0		22.47		23	0-1
10	QPSK	25	12		22.64			
10	QPSK	25	24		22.51			
10	QPSK	50	0		22.43			
10	16QAM	1	0		22.40		23	0-1
10	16QAM	1	24		22.75			
10	16QAM	1	49		22.54			
10	16QAM	25	0		21.36		22	0-2
10	16QAM	25	12		21.60			
10	16QAM	25	24		21.51			
10	16QAM	50	0		21.39			
Channel				23205	23230	23255	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	23.45	23.33	23.63	24	0
5	QPSK	1	12	23.40	23.69	23.51		
5	QPSK	1	24	23.61	23.54	23.38		
5	QPSK	12	0	22.43	22.59	22.54	23	0-1
5	QPSK	12	6	22.45	22.69	22.58		
5	QPSK	12	11	22.47	22.63	22.46		
5	QPSK	25	0	22.38	22.54	22.42		
5	16QAM	1	0	22.37	22.34	22.65	23	0-1
5	16QAM	1	12	22.43	22.75	22.52		
5	16QAM	1	24	22.64	22.53	22.40		
5	16QAM	12	0	21.42	21.65	21.53	22	0-2
5	16QAM	12	6	21.47	21.67	21.55		
5	16QAM	12	11	21.60	21.66	21.53		
5	16QAM	12	11	21.60	21.66	21.53		
5	16QAM	25	0	21.36	21.57	21.47		



<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	22.67	22.54	22.64	24	0
10	QPSK	1	24	22.50	22.50	22.53		
10	QPSK	1	49	22.46	22.46	22.54		
10	QPSK	25	0	21.71	21.55	21.54	23	0-1
10	QPSK	25	12	21.62	21.57	21.56		
10	QPSK	25	24	21.57	21.39	21.58		
10	QPSK	50	0	21.58	21.53	21.48		
10	16QAM	1	0	21.48	21.57	21.65	23	0-1
10	16QAM	1	24	21.51	21.53	21.70		
10	16QAM	1	49	21.46	21.46	21.58		
10	16QAM	25	0	20.63	20.51	20.48	22	0-2
10	16QAM	25	12	20.55	20.51	20.49		
10	16QAM	25	24	20.32	20.37	20.50		
10	16QAM	50	0	20.43	20.47	20.42		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.56	22.44	22.41	24	0
5	QPSK	1	12	22.61	22.39	22.64		
5	QPSK	1	24	22.49	22.39	22.54		
5	QPSK	12	0	21.67	21.53	21.59	23	0-1
5	QPSK	12	6	21.68	21.59	21.64		
5	QPSK	12	11	21.64	21.43	21.65		
5	QPSK	25	0	21.50	21.53	21.57	23	0-1
5	16QAM	1	0	21.61	21.49	21.47		
5	16QAM	1	12	21.59	21.45	21.64		
5	16QAM	1	24	21.54	21.37	21.51		
5	16QAM	12	0	20.60	20.55	20.65	22	0-2
5	16QAM	12	6	20.64	20.55	20.68		
5	16QAM	12	11	20.63	20.41	20.61		
5	16QAM	25	0	20.49	20.51	20.53		



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	23.79	23.79	23.87	24	0
20	QPSK	1	49	23.84	23.75	23.77		
20	QPSK	1	99	23.83	23.72	23.66		
20	QPSK	50	0	22.47	22.59	22.52	23	0-1
20	QPSK	50	24	22.49	22.50	22.45		
20	QPSK	50	49	22.51	22.38	22.51		
20	QPSK	100	0	22.52	22.70	22.47		
20	16QAM	1	0	22.83	22.90	22.84	23	0-1
20	16QAM	1	49	22.87	22.87	22.80		
20	16QAM	1	99	22.84	22.82	22.71		
20	16QAM	50	0	21.48	21.56	21.58	22	0-2
20	16QAM	50	24	21.45	21.41	21.56		
20	16QAM	50	49	21.49	21.49	21.53		
20	16QAM	100	0	21.51	21.57	21.48		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.79	23.80	23.82	24	0
15	QPSK	1	37	23.86	23.77	23.86		
15	QPSK	1	74	23.60	23.74	23.58		
15	QPSK	36	0	22.53	22.67	22.51	23	0-1
15	QPSK	36	18	22.57	22.60	22.67		
15	QPSK	36	37	22.49	22.53	22.50		
15	QPSK	75	0	22.48	22.70	22.51	23	0-1
15	16QAM	1	0	22.76	22.85	22.80		
15	16QAM	1	37	22.81	22.85	22.74		
15	16QAM	1	74	22.62	22.82	22.64		
15	16QAM	36	0	21.54	21.70	21.58	22	0-2
15	16QAM	36	18	21.50	21.61	21.65		
15	16QAM	36	37	21.49	21.59	21.62		
15	16QAM	75	0	21.44	21.57	21.52		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.80	23.85	23.78	24	0
10	QPSK	1	24	23.75	23.81	23.80		
10	QPSK	1	49	23.84	23.74	23.67		
10	QPSK	25	0	22.68	22.90	22.66	23	0-1
10	QPSK	25	12	22.64	22.69	22.70		
10	QPSK	25	24	22.58	22.69	22.73		
10	QPSK	50	0	22.43	22.68	22.40	23	0-1
10	16QAM	1	0	22.84	23.00	22.77		
10	16QAM	1	24	22.82	22.78	22.78		
10	16QAM	1	49	22.76	22.81	22.67	22	0-2
10	16QAM	25	0	21.67	21.77	21.75		
10	16QAM	25	12	21.67	21.68	21.69		
10	16QAM	25	24	21.63	21.58	21.73		
10	16QAM	50	0	21.46	21.66	21.52		



Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.76	23.83	23.70	24	0
5	QPSK	1	12	23.72	23.81	23.80		
5	QPSK	1	24	23.75	23.82	23.65		
5	QPSK	12	0	22.82	22.94	22.79	23	0-1
5	QPSK	12	6	22.80	22.86	22.84		
5	QPSK	12	11	22.68	22.85	22.69		
5	QPSK	25	0	22.57	22.78	22.60		
5	16QAM	1	0	22.82	22.83	22.80	23	0-1
5	16QAM	1	12	22.83	22.86	22.72		
5	16QAM	1	24	22.75	22.88	22.68		
5	16QAM	12	0	21.70	21.99	21.75	22	0-2
5	16QAM	12	6	21.69	21.83	21.90		
5	16QAM	12	11	21.68	21.76	21.79		
5	16QAM	25	0	21.54	21.77	21.72		



<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.80	22.80	22.88	24	0
20	QPSK	1	49	22.81	22.76	22.71		
20	QPSK	1	99	22.71	22.61	22.70		
20	QPSK	50	0	21.77	21.54	21.52	23	0-1
20	QPSK	50	24	21.51	21.54	21.50		
20	QPSK	50	49	21.41	21.54	21.54		
20	QPSK	100	0	21.61	21.63	21.57		
20	16QAM	1	0	21.78	21.94	21.84	23	0-1
20	16QAM	1	49	21.80	21.86	21.80		
20	16QAM	1	99	21.77	21.76	21.90		
20	16QAM	50	0	20.73	20.58	20.53	22	0-2
20	16QAM	50	24	20.45	20.56	20.39		
20	16QAM	50	49	20.48	20.51	20.54		
20	16QAM	100	0	20.50	20.58	20.51		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.78	22.69	22.74	24	0
15	QPSK	1	37	22.83	22.76	22.84		
15	QPSK	1	74	22.64	22.73	22.86		
15	QPSK	36	0	21.73	21.67	21.61	23	0-1
15	QPSK	36	18	21.54	21.68	21.64		
15	QPSK	36	37	21.55	21.53	21.64		
15	QPSK	75	0	21.47	21.59	21.59	23	0-1
15	16QAM	1	0	21.76	21.79	21.76		
15	16QAM	1	37	21.80	21.78	21.83		
15	16QAM	1	74	21.75	21.88	21.93		
15	16QAM	36	0	20.72	20.63	20.62	22	0-2
15	16QAM	36	18	20.57	20.55	20.63		
15	16QAM	36	37	20.47	20.63	20.65		
15	16QAM	75	0	20.44	20.52	20.61		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.80	22.78	22.73	24	0
10	QPSK	1	24	22.68	22.79	22.82		
10	QPSK	1	49	22.67	22.76	22.84		
10	QPSK	25	0	21.71	21.81	21.74	23	0-1
10	QPSK	25	12	21.75	21.70	21.70		
10	QPSK	25	24	21.62	21.72	21.76		
10	QPSK	50	0	21.42	21.45	21.60	23	0-1
10	16QAM	1	0	21.77	21.84	21.77		
10	16QAM	1	24	21.66	21.91	21.87		
10	16QAM	1	49	21.64	21.89	21.96		
10	16QAM	25	0	20.73	20.74	20.72	22	0-2
10	16QAM	25	12	20.90	20.66	20.76		
10	16QAM	25	24	20.66	20.58	20.76		
10	16QAM	50	0	20.54	20.60	20.55		



Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.72	22.80	22.82	24	0
5	QPSK	1	12	22.60	22.78	22.86		
5	QPSK	1	24	22.68	22.80	22.86		
5	QPSK	12	0	21.69	21.89	21.91	23	0-1
5	QPSK	12	6	21.57	21.82	21.84		
5	QPSK	12	11	21.70	21.78	21.97		
5	QPSK	25	0	21.46	21.67	21.77		
5	16QAM	1	0	21.71	21.77	21.84	23	0-1
5	16QAM	1	12	21.57	21.86	21.94		
5	16QAM	1	24	21.64	21.82	21.99		
5	16QAM	12	0	20.78	20.96	20.92	22	0-2
5	16QAM	12	6	20.59	20.81	20.85		
5	16QAM	12	11	20.73	20.93	20.97		
5	16QAM	25	0	20.50	20.66	20.77		
5	16QAM	25	0	20.50	20.66	20.77		



<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	22.80	22.79	22.72	24	0
20	QPSK	1	49	22.84	22.69	22.83		
20	QPSK	1	99	22.70	22.75	22.94		
20	QPSK	50	0	21.51	21.68	21.70	23	0-1
20	QPSK	50	24	21.52	21.52	21.59		
20	QPSK	50	49	21.46	21.62	21.62		
20	QPSK	100	0	21.75	21.66	21.72		
20	16QAM	1	0	21.83	21.88	21.84	23	0-1
20	16QAM	1	49	21.90	21.64	21.88		
20	16QAM	1	99	21.79	21.76	21.98		
20	16QAM	50	0	20.44	20.50	20.67	22	0-2
20	16QAM	50	24	20.60	20.46	20.64		
20	16QAM	50	49	20.58	20.65	20.61		
20	16QAM	100	0	20.82	20.65	20.71		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	22.76	22.74	22.90	24	0
15	QPSK	1	37	22.91	22.60	22.84		
15	QPSK	1	74	22.72	22.71	22.88		
15	QPSK	36	0	21.55	21.56	21.79	23	0-1
15	QPSK	36	18	21.64	21.52	21.77		
15	QPSK	36	37	21.52	21.78	21.86		
15	QPSK	75	0	21.72	21.55	21.69	23	0-1
15	16QAM	1	0	21.79	21.85	22.02		
15	16QAM	1	37	21.89	21.77	21.96		
15	16QAM	1	74	21.74	21.75	21.98		
15	16QAM	36	0	20.65	20.77	20.82	22	0-2
15	16QAM	36	18	20.65	20.56	20.78		
15	16QAM	36	37	20.43	20.72	20.81		
15	16QAM	75	0	20.67	20.64	20.76		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	22.70	22.81	22.90	24	0
10	QPSK	1	24	22.81	22.67	22.87		
10	QPSK	1	49	22.63	22.81	22.91		
10	QPSK	25	0	21.55	21.78	21.95	23	0-1
10	QPSK	25	12	21.62	21.54	21.86		
10	QPSK	25	24	21.49	21.85	21.83		
10	QPSK	50	0	21.69	21.57	21.81	23	0-1
10	16QAM	1	0	21.70	21.85	21.97		
10	16QAM	1	24	21.90	21.64	21.92		
10	16QAM	1	49	21.68	21.78	21.98		
10	16QAM	25	0	20.62	20.76	20.93	22	0-2
10	16QAM	25	12	20.83	20.54	20.85		
10	16QAM	25	24	20.59	20.80	20.91		
10	16QAM	50	0	20.82	20.62	20.77		



Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.70	22.77	22.93	24	0
5	QPSK	1	12	22.81	22.68	22.91		
5	QPSK	1	24	22.69	22.88	22.92		
5	QPSK	12	0	21.77	21.82	22.09	23	0-1
5	QPSK	12	6	21.67	21.79	22.05		
5	QPSK	12	11	21.65	21.96	21.98		
5	QPSK	25	0	21.78	21.89	22.03		
5	16QAM	1	0	21.64	21.77	21.93	23	0-1
5	16QAM	1	12	21.73	21.78	21.98		
5	16QAM	1	24	21.61	21.92	22.00		
5	16QAM	12	0	20.80	20.89	21.15	22	0-2
5	16QAM	12	6	20.91	20.68	21.06		
5	16QAM	12	11	20.81	21.01	21.05		
5	16QAM	25	0	20.76	20.87	21.03		



**Reduced Average RF Power (Proximity Sensor active)**

**<LTE Band 17 Conducted Power>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	21.41	21.42	21.52	22	0
10	QPSK	1	24	21.86	21.92	21.85		
10	QPSK	1	49	21.39	21.47	21.26		
10	QPSK	25	0	21.63	21.72	21.70	22	0-1
10	QPSK	25	12	21.75	21.87	21.83		
10	QPSK	25	24	21.65	21.58	21.56		
10	QPSK	50	0	21.52	21.70	21.66	22	0-1
10	16QAM	1	0	21.41	21.37	21.53		
10	16QAM	1	24	21.62	21.85	21.64		
10	16QAM	1	49	21.34	21.45	21.25	22	0-2
10	16QAM	25	0	21.33	21.60	21.50		
10	16QAM	25	12	21.39	21.74	21.54		
10	16QAM	25	24	21.36	21.50	21.30	22	0-2
10	16QAM	50	0	21.29	21.44	21.41		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	21.39	21.46	21.40	22	0
5	QPSK	1	12	21.57	21.67	21.52		
5	QPSK	1	24	21.64	21.45	21.35		
5	QPSK	12	0	21.47	21.63	21.33	22	0-1
5	QPSK	12	6	21.55	21.75	21.50		
5	QPSK	12	11	21.62	21.54	21.47		
5	QPSK	25	0	21.43	21.52	21.34	22	0-1
5	16QAM	1	0	21.38	21.48	21.42		
5	16QAM	1	12	21.52	21.71	21.51		
5	16QAM	1	24	21.68	21.45	21.45	22	0-2
5	16QAM	12	0	21.44	21.67	21.31		
5	16QAM	12	6	21.52	21.78	21.50		
5	16QAM	12	11	21.66	21.54	21.38	22	0-2
5	16QAM	25	0	21.35	21.49	21.32		



<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel					23230			
Frequency (MHz)					782			
10	QPSK	1	0		18.57		20	0
10	QPSK	1	24		18.80			
10	QPSK	1	49		18.72			
10	QPSK	25	0		18.60		20	0-1
10	QPSK	25	12		18.65			
10	QPSK	25	24		18.75			
10	QPSK	50	0		18.69			
10	16QAM	1	0		18.70		20	0-1
10	16QAM	1	24		18.79			
10	16QAM	1	49		18.71			
10	16QAM	25	0		18.61		20	0-2
10	16QAM	25	12		18.72			
10	16QAM	25	24		18.60			
10	16QAM	50	0		18.52			
Channel				23205	23230	23255	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	18.74	18.53	18.73	20	0
5	QPSK	1	12	18.68	18.61	18.79		
5	QPSK	1	24	18.75	18.78	18.60		
5	QPSK	12	0	18.68	18.71	18.75	20	0-1
5	QPSK	12	6	18.71	18.58	18.75		
5	QPSK	12	11	18.74	18.75	18.73		
5	QPSK	25	0	18.67	18.70	18.71		
5	16QAM	1	0	18.71	18.45	18.70	20	0-1
5	16QAM	1	12	18.71	18.65	18.78		
5	16QAM	1	24	18.73	18.67	18.61		
5	16QAM	12	0	18.67	18.66	18.74	20	0-2
5	16QAM	12	6	18.66	18.65	18.69		
5	16QAM	12	11	18.72	18.64	18.72		
5	16QAM	25	0	18.63	18.62	18.67		



<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	20.86	20.85	20.81	21	0
10	QPSK	1	24	20.81	20.70	20.73		
10	QPSK	1	49	20.75	20.68	20.68		
10	QPSK	25	0	20.79	20.70	20.70	21	0-1
10	QPSK	25	12	20.77	20.66	20.71		
10	QPSK	25	24	20.78	20.65	20.67		
10	QPSK	50	0	20.84	20.63	20.70		
10	16QAM	1	0	20.70	20.76	20.76	21	0-1
10	16QAM	1	24	20.85	20.71	20.73		
10	16QAM	1	49	20.77	20.68	20.68		
10	16QAM	25	0	20.75	20.67	20.75	21	0-2
10	16QAM	25	12	20.76	20.70	20.74		
10	16QAM	25	24	20.73	20.72	20.68		
10	16QAM	50	0	20.75	20.59	20.69		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	20.75	20.70	20.82	21	0
5	QPSK	1	12	20.79	20.68	20.59		
5	QPSK	1	24	20.77	20.62	20.68		
5	QPSK	12	0	20.71	20.64	20.66	21	0-1
5	QPSK	12	6	20.61	20.60	20.60		
5	QPSK	12	11	20.60	20.61	20.60		
5	QPSK	25	0	20.65	20.60	20.60		
5	16QAM	1	0	20.72	20.74	20.88	21	0-1
5	16QAM	1	12	20.81	20.70	20.73		
5	16QAM	1	24	20.77	20.68	20.67		
5	16QAM	12	0	20.65	20.58	20.62	21	0-2
5	16QAM	12	6	20.59	20.58	20.61		
5	16QAM	12	11	20.49	20.56	20.53		
5	16QAM	12	11	20.49	20.56	20.53		
5	16QAM	25	0	20.63	20.53	20.59		



<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	17.5	0
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	16.18	16.17	16.13	17.5	0
20	QPSK	1	49	16.30	16.05	16.03		
20	QPSK	1	99	16.20	16.12	16.00		
20	QPSK	50	0	15.93	16.02	15.96	17.5	0-1
20	QPSK	50	24	16.11	15.89	15.92		
20	QPSK	50	49	15.96	16.01	15.92		
20	QPSK	100	0	15.97	16.09	15.89		
20	16QAM	1	0	16.08	16.15	16.09	17.5	0-1
20	16QAM	1	49	16.25	16.10	16.01		
20	16QAM	1	99	16.12	16.14	15.95		
20	16QAM	50	0	15.86	16.02	15.91	17.5	0-2
20	16QAM	50	24	16.03	15.89	15.91		
20	16QAM	50	49	15.92	16.01	15.88		
20	16QAM	100	0	15.96	16.01	15.88		
Channel				20025	20175	20325	17.5	0
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	15.93	16.21	15.98	17.5	0
15	QPSK	1	37	16.13	16.04	15.93		
15	QPSK	1	74	15.91	16.14	15.87		
15	QPSK	36	0	15.83	16.07	15.82	17.5	0-1
15	QPSK	36	18	16.03	16.01	15.88		
15	QPSK	36	37	15.86	16.09	15.81		
15	QPSK	75	0	15.84	16.02	15.87		
15	16QAM	1	0	15.92	16.17	15.86	17.5	0-1
15	16QAM	1	37	16.13	16.01	15.88		
15	16QAM	1	74	15.90	16.07	15.83		
15	16QAM	36	0	15.82	16.01	15.82	17.5	0-2
15	16QAM	36	18	15.97	15.92	15.84		
15	16QAM	36	37	15.83	16.04	15.75		
15	16QAM	75	0	15.82	16.01	15.80		
Channel				20000	20175	20350	17.5	0
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	15.86	16.28	15.98	17.5	0
10	QPSK	1	24	15.99	16.01	15.97		
10	QPSK	1	49	15.99	16.12	15.86		
10	QPSK	25	0	15.85	16.09	15.89	17.5	0-1
10	QPSK	25	12	15.99	15.96	15.90		
10	QPSK	25	24	15.82	16.11	15.88		
10	QPSK	50	0	15.78	16.01	15.80		
10	16QAM	1	0	15.87	16.19	15.97	17.5	0-1
10	16QAM	1	24	16.06	16.06	15.93		
10	16QAM	1	49	16.01	16.13	15.85		
10	16QAM	25	0	15.77	15.99	15.89	17.5	0-2
10	16QAM	25	12	15.92	15.98	15.81		
10	16QAM	25	24	15.85	16.09	15.79		
10	16QAM	50	0	15.77	15.97	15.72		



Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	15.86	16.18	15.97	17.5	0
5	QPSK	1	12	16.05	16.06	15.94		
5	QPSK	1	24	15.92	16.16	15.84		
5	QPSK	12	0	15.93	16.16	15.96	17.5	0-1
5	QPSK	12	6	16.05	16.03	15.95		
5	QPSK	12	11	15.90	16.12	15.85		
5	QPSK	25	0	15.91	16.09	15.83		
5	16QAM	1	0	15.95	16.18	15.98	17.5	0-1
5	16QAM	1	12	16.08	16.07	15.93		
5	16QAM	1	24	15.94	16.16	15.86		
5	16QAM	12	0	15.94	16.17	15.96	17.5	0-2
5	16QAM	12	6	16.09	16.05	15.96		
5	16QAM	12	11	15.94	16.15	15.86		
5	16QAM	25	0	15.83	16.07	15.83		



<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	18.72	18.94	18.78	19	0
20	QPSK	1	49	18.82	18.81	18.75		
20	QPSK	1	99	18.69	18.69	18.83		
20	QPSK	50	0	18.71	18.69	18.46	19	0-1
20	QPSK	50	24	18.69	18.70	18.40		
20	QPSK	50	49	18.62	18.64	18.66		
20	QPSK	100	0	18.69	18.67	18.50		
20	16QAM	1	0	18.63	18.91	18.61	19	0-1
20	16QAM	1	49	18.72	18.90	18.52		
20	16QAM	1	99	18.78	18.71	18.81		
20	16QAM	50	0	18.59	18.63	18.39	19	0-2
20	16QAM	50	24	18.66	18.69	18.42		
20	16QAM	50	49	18.59	18.61	18.64		
20	16QAM	100	0	18.63	18.67	18.50		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	18.53	18.83	18.69	19	0
15	QPSK	1	37	18.57	18.84	18.66		
15	QPSK	1	74	18.64	18.86	18.89		
15	QPSK	36	0	18.56	18.71	18.61	19	0-1
15	QPSK	36	18	18.62	18.66	18.50		
15	QPSK	36	37	18.59	18.68	18.75		
15	QPSK	75	0	18.56	18.66	18.55		
15	16QAM	1	0	18.53	18.79	18.61	19	0-1
15	16QAM	1	37	18.59	18.84	18.62		
15	16QAM	1	74	18.64	18.83	18.90		
15	16QAM	36	0	18.55	18.67	18.52	19	0-2
15	16QAM	36	18	18.61	18.66	18.47		
15	16QAM	36	37	18.51	18.63	18.71		
15	16QAM	75	0	18.27	18.55	18.51		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	18.45	18.75	18.50	19	0
10	QPSK	1	24	18.67	18.77	18.48		
10	QPSK	1	49	18.57	18.83	18.84		
10	QPSK	25	0	18.42	18.76	18.56	19	0-1
10	QPSK	25	12	18.57	18.70	18.52		
10	QPSK	25	24	18.58	18.67	18.70		
10	QPSK	50	0	18.48	18.67	18.51		
10	16QAM	1	0	18.48	18.74	18.55	19	0-1
10	16QAM	1	24	18.63	18.76	18.52		
10	16QAM	1	49	18.59	18.82	18.86		
10	16QAM	25	0	18.43	18.66	18.68	19	0-2
10	16QAM	25	12	18.60	18.66	18.40		
10	16QAM	25	24	18.61	18.64	18.66		
10	16QAM	50	0	18.47	18.60	18.43		



Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	18.55	18.83	18.59	19	0
5	QPSK	1	12	18.54	18.85	18.59		
5	QPSK	1	24	18.56	18.78	18.84		
5	QPSK	12	0	18.53	18.82	18.61	19	0-1
5	QPSK	12	6	18.55	18.80	18.56		
5	QPSK	12	11	18.53	18.84	18.85		
5	QPSK	25	0	18.50	18.74	18.58	19	0-1
5	16QAM	1	0	18.49	18.84	18.60		
5	16QAM	1	12	18.54	18.83	18.63		
5	16QAM	1	24	18.56	18.80	18.86	19	0-2
5	16QAM	12	0	18.55	18.82	18.64		
5	16QAM	12	6	18.58	18.83	18.60		
5	16QAM	12	11	18.55	18.81	18.85	19	0-2
5	16QAM	25	0	18.45	18.71	18.53		



<LTE Band 25>

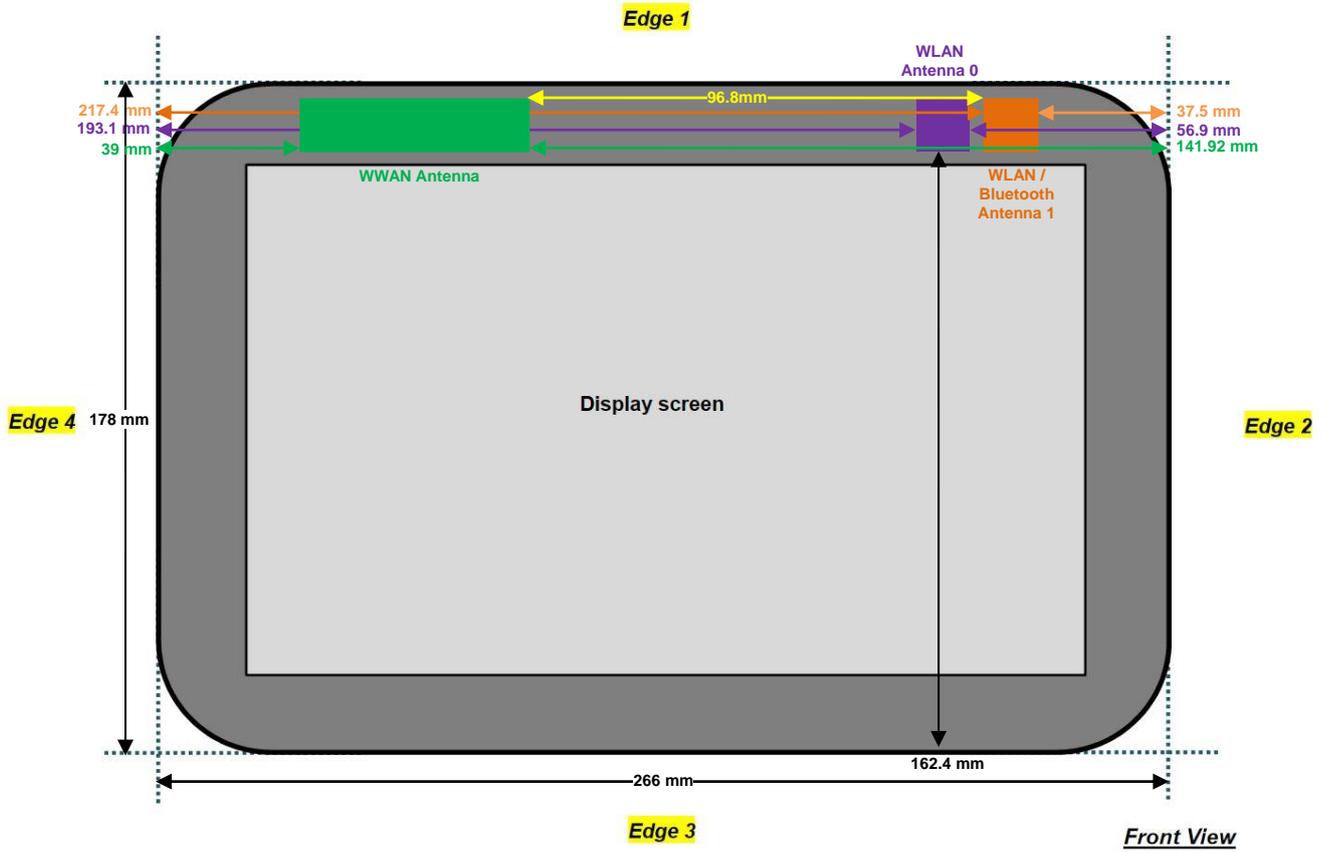
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	18.45	18.46	18.63	19	0
20	QPSK	1	49	18.51	18.52	18.50		
20	QPSK	1	99	18.42	18.45	18.55		
20	QPSK	50	0	18.30	18.40	18.39	19	0-1
20	QPSK	50	24	18.45	18.39	18.51		
20	QPSK	50	49	18.34	18.37	18.41		
20	QPSK	100	0	18.35	18.39	18.38		
20	16QAM	1	0	18.33	18.53	18.52	19	0-1
20	16QAM	1	49	18.47	18.56	18.50		
20	16QAM	1	99	18.36	18.53	18.54		
20	16QAM	50	0	18.10	18.50	18.46	19	0-2
20	16QAM	50	24	18.27	18.34	18.43		
20	16QAM	50	49	18.23	18.38	18.35		
20	16QAM	100	0	18.23	18.34	18.38		
Channel				26115	26340	26615	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	18.18	18.40	18.41	19	0
15	QPSK	1	37	18.35	18.47	18.48		
15	QPSK	1	74	18.25	18.43	18.54		
15	QPSK	36	0	18.04	18.33	18.22	19	0-1
15	QPSK	36	18	18.21	18.24	18.41		
15	QPSK	36	37	18.09	18.29	18.38		
15	QPSK	75	0	18.09	18.22	18.24		
15	16QAM	1	0	18.16	18.43	18.38	19	0-1
15	16QAM	1	37	18.39	18.46	18.46		
15	16QAM	1	74	18.20	18.38	18.47		
15	16QAM	36	0	18.17	18.27	18.19	19	0-2
15	16QAM	36	18	18.20	18.25	18.37		
15	16QAM	36	37	18.01	18.29	18.36		
15	16QAM	75	0	18.01	18.22	18.22		
Channel				26090	26340	26640	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	18.14	18.37	18.32	19	0
10	QPSK	1	24	18.33	18.39	18.47		
10	QPSK	1	49	18.13	18.38	18.51		
10	QPSK	25	0	18.07	18.38	18.31	19	0-1
10	QPSK	25	12	18.32	18.29	18.47		
10	QPSK	25	24	18.07	18.37	18.45		
10	QPSK	50	0	18.11	18.22	18.33		
10	16QAM	1	0	18.17	18.38	18.37	19	0-1
10	16QAM	1	24	18.34	18.43	18.46		
10	16QAM	1	49	18.12	18.38	18.48		
10	16QAM	25	0	18.05	18.32	18.30	19	0-2
10	16QAM	25	12	18.24	18.28	18.37		
10	16QAM	25	24	18.04	18.32	18.41		
10	16QAM	50	0	18.02	18.18	18.32		



Channel				26065	26340	26665	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	18.10	18.36	18.36	19	0
5	QPSK	1	12	18.27	18.43	18.51		
5	QPSK	1	24	18.17	18.37	18.37		
5	QPSK	12	0	18.14	18.37	18.39	19	0-1
5	QPSK	12	6	18.25	18.35	18.50		
5	QPSK	12	11	18.08	18.41	18.41		
5	QPSK	25	0	18.01	18.33	18.42	19	0-1
5	16QAM	1	0	18.09	18.36	18.39		
5	16QAM	1	12	18.28	18.43	18.55		
5	16QAM	1	24	18.13	18.41	18.40	19	0-2
5	16QAM	12	0	18.15	18.34	18.45		
5	16QAM	12	6	18.27	18.36	18.45		
5	16QAM	12	11	18.17	18.40	18.41	19	0-2
5	16QAM	25	0	18.10	18.25	18.41		

### 14. Antenna Location

<Tablet PC>





**<SAR test exclusion table>**

**General Note:**

- The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
- Maximum power is the source-based time-average power and represents the maximum RF output power among production units
- 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.
- 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.
- 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
- 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
  - [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·( f(MHz)/150)] mW, at 100 MHz to 1500 MHz
  - [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

Exposure Position	Wireless Interface	GPRS 850 Class 10	GPRS 1900 Class 10	WCDMA Band V	WCDMA Band IV	WCDMA Band II	CDMA 2000 BC10	CDMA 2000 BC0	CDMA 2000 BC1	LTE Band 13	LTE Band 5	LTE Band 4	LTE Band 2	LTE Band 25
		Tune-up Maximum power	27	24	24	24	24	24.5	24.5	24.5	24	24	24	24
	Tune-up Maximum rated power(mW)	501.00	251.00	251.00	251.00	251.00	282.00	282.00	282.00	251.00	251.00	251.00	251.00	251.00
Bottom Face	Separation Distance(mm)	5												
	SAR exclusion threshold (Ratio)	92.27	69.36	46.17	66.41	69.32	51.88	51.94	77.89	44.45	46.23	66.48	69.36	69.45
	SAR testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 1	Separation Distance(mm)	5												
	SAR exclusion threshold (Ratio)	92.27	69.36	46.17	66.41	69.32	51.88	51.94	77.89	44.45	46.23	66.48	69.36	69.45
	SAR testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 2	Separation Distance(mm)	149.45												
	SAR exclusion threshold (Ratio)	725.11	1103.06	723.98	1107.89	1103.12	723.98	725.11	1103.12	689.2	725.11	1107.76	1103.06	1102.92
	SAR testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 3	Separation Distance(mm)	162.4												
	SAR exclusion threshold (Ratio)	798.32	1232.56	797.02	1237.39	1232.62	797.02	798.32	1232.62	756.89	798.32	1237.26	1232.56	1232.42
	SAR testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 4	Separation Distance(mm)	39												
	SAR exclusion threshold (Ratio)	11.83	8.89	5.92	8.51	8.89	6.65	6.66	9.99	5.7	5.93	8.52	8.89	8.9
	SAR testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## 15. SAR Test Results

### General Note:

1. Per KDB 447498 D01v05r01, 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 WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)\*Tune-up Scaling Factor
2. Per KDB 447498 D01v05r01, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing is not necessary.
3. 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; 1.1cm for Bottom Face, 0.7cm for Edge 1.
4. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC12.2Kbps, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA SAR evaluation can be excluded.
5. Per KDB 941225 D05v02r03, when reported SAR of 1RB and 50%RB allocation for QPSK ≤0.8W/kg, and 100%RB with QPSK output power is less than 1RB and 50%RB, 100%RB allocation for QPSK is not required.
6. Per KDB 941225 D05v02r03, when reported SAR of 1RB and 50%RB allocation for QPSK >0.8W/kg for any exposure position, SAR testing of 100%RB allocation for QPSK is performed at the highest power channel.
7. 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.
8. 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 D05v02r02, smaller bandwidth SAR testing is not required.

### 15.1 Body SAR

#### <GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	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 (2 Tx slots)	Bottom Face	1.1cm	128	824.2	OFF	32.21	33	1.199	-0.05	1.080	1.295
	GSM850	GPRS (2 Tx slots)	Bottom Face	1.1cm	189	836.4	OFF	32.16	33	1.213	0.07	1.090	1.323
	GSM850	GPRS (2 Tx slots)	Bottom Face	1.1cm	251	848.8	OFF	32.08	33	1.236	0	1.020	1.261
	GSM850	GPRS (2 Tx slots)	Edge 1	0.7cm	128	824.2	OFF	32.21	33	1.199	-0.13	1.120	1.343
	GSM850	GPRS (2 Tx slots)	Edge 1	0.7cm	189	836.4	OFF	32.16	33	1.213	0.17	1.070	1.298
	GSM850	GPRS (2 Tx slots)	Edge 1	0.7cm	251	848.8	OFF	32.08	33	1.236	0.14	0.947	1.170
	GSM850	GPRS (2 Tx slots)	Edge 4	0cm	128	824.2	OFF	32.21	33	1.199	-0.06	0.251	0.301
	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	128	824.2	ON	27.86	28	1.033	0.07	1.260	1.301
	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	189	836.4	ON	27.82	28	1.042	0.01	1.400	1.459
01	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	251	848.8	ON	27.84	28	1.038	-0.07	1.430	1.484
	GSM850	GPRS (2 Tx slots)	Edge 1	0cm	128	824.2	ON	27.86	28	1.033	-0.18	0.767	0.792
	GSM1900	GPRS (2 Tx slots)	Bottom Face	1.1cm	512	1850.2	OFF	29.5	30	1.122	-0.03	0.600	0.673
	GSM1900	GPRS (2 Tx slots)	Edge 1	0.7cm	512	1850.2	OFF	29.5	30	1.122	0.04	0.771	0.865
	GSM1900	GPRS (2 Tx slots)	Edge 1	0.7cm	661	1880	OFF	29.38	30	1.153	-0.01	0.847	0.977
	GSM1900	GPRS (2 Tx slots)	Edge 1	0.7cm	810	1909.8	OFF	29.29	30	1.178	-0.02	0.865	1.019
	GSM1900	GPRS (2 Tx slots)	Edge 4	0cm	512	1850.2	OFF	29.5	30	1.122	-0.08	0.282	0.316
	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	512	1850.2	ON	24.47	25	1.130	0.01	1.020	1.152
	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	661	1880	ON	24.43	25	1.140	-0.04	1.130	1.288
02	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	810	1909.8	ON	24.44	25	1.138	-0.03	1.240	1.411
	GSM1900	GPRS (2 Tx slots)	Edge 1	0cm	512	1850.2	ON	24.47	25	1.130	-0.13	0.930	1.051
	GSM1900	GPRS (2 Tx slots)	Edge 1	0cm	661	1880	ON	24.43	25	1.140	-0.11	0.985	1.123
	GSM1900	GPRS (2 Tx slots)	Edge 1	0cm	810	1909.8	ON	24.44	25	1.138	-0.12	1.090	1.240



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	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 V	RMC12.2Kbps	Bottom Face	1.1cm	4182	836.4	OFF	23.51	24	1.119	-0.02	0.632	0.707
	WCDMA V	RMC 12.2Kbps	Edge 1	0.7cm	4182	836.4	OFF	23.51	24	1.119	-0.1	0.718	0.804
	WCDMA V	RMC 12.2Kbps	Edge 1	0.7cm	4132	826.4	OFF	23.45	24	1.135	-0.01	0.727	0.825
	WCDMA V	RMC 12.2Kbps	Edge 1	0.7cm	4233	846.6	OFF	23.16	24	1.213	-0.02	0.625	0.758
	WCDMA V	RMC12.2Kbps	Edge 4	0cm	4182	836.4	OFF	23.51	24	1.119	-0.13	0.134	0.150
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	4132	826.4	ON	19.72	20	1.067	-0.01	1.100	1.173
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	4182	836.4	ON	19.61	20	1.094	0.02	1.070	1.171
03	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	4233	846.6	ON	19.46	20	1.132	-0.02	1.070	1.212
	WCDMA V	RMC12.2Kbps	Edge 1	0cm	4132	826.4	ON	19.72	20	1.067	-0.07	0.394	0.420
	WCDMA IV	RMC12.2Kbps	Bottom Face	1.1cm	1413	1732.6	OFF	22.69	24	1.352	-0.03	0.591	0.799
	WCDMA IV	RMC 12.2Kbps	Edge 1	0.7cm	1413	1732.6	OFF	22.69	24	1.352	-0.06	0.867	1.172
04	WCDMA IV	RMC 12.2Kbps	Edge 1	0.7cm	1312	1712.4	OFF	22.52	24	1.406	-0.03	0.915	1.287
	WCDMA IV	RMC 12.2Kbps	Edge 1	0.7cm	1513	1752.6	OFF	22.49	24	1.416	-0.06	0.783	1.109
	WCDMA IV	RMC12.2Kbps	Edge 4	0cm	1413	1732.6	OFF	22.69	24	1.352	-0.03	0.360	0.487
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	1413	1732.6	ON	17.41	17.5	1.021	0.01	1.090	1.113
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	1312	1712.4	ON	17.38	17.5	1.028	-0.01	1.100	1.131
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	1513	1752.6	ON	17.4	17.5	1.023	0.05	1.010	1.034
	WCDMA IV	RMC12.2Kbps	Edge 1	0cm	1413	1732.6	ON	17.41	17.5	1.021	0.03	0.660	0.674
	WCDMA II	RMC12.2Kbps	Bottom Face	1.1cm	9538	1907.6	OFF	23.8	24	1.047	-0.03	0.706	0.739
05	WCDMA II	RMC 12.2Kbps	Edge 1	0.7cm	9538	1907.6	OFF	23.8	24	1.047	-0.01	1.210	1.267
	WCDMA II	RMC 12.2Kbps	Edge 1	0.7cm	9262	1852.4	OFF	23.64	24	1.086	0.06	1.110	1.206
	WCDMA II	RMC 12.2Kbps	Edge 1	0.7cm	9400	1880	OFF	23.65	24	1.084	-0.11	1.160	1.257
	WCDMA II	RMC12.2Kbps	Edge 4	0cm	9538	1907.6	OFF	23.8	24	1.047	-0.09	0.343	0.359
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	9538	1907.6	ON	17.81	18	1.045	0.05	0.869	0.908
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	9262	1852.4	ON	17.65	18	1.084	-0.01	0.871	0.944
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	9400	1880	ON	17.66	18	1.081	-0.03	0.853	0.922
	WCDMA II	RMC12.2Kbps	Edge 1	0cm	9538	1907.6	ON	17.81	18	1.045	-0.16	0.855	0.893
	WCDMA II	RMC12.2Kbps	Edge 1	0cm	9262	1852.4	ON	17.65	18	1.084	-0.12	0.783	0.849
	WCDMA II	RMC12.2Kbps	Edge 1	0cm	9400	1880	ON	17.66	18	1.081	-0.09	0.803	0.868

<CDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC10	RTAP 153.6Kbps	Bottom Face	1.1cm	580	820.5	OFF	23.78	24.5	1.180	-0.06	0.567	0.669
	CDMA BC10	RTAP 153.6Kbps	Edge 1	0.7cm	580	820.5	OFF	23.78	24.5	1.180	-0.04	0.672	0.793
	CDMA BC10	RTAP 153.6Kbps	Edge 4	0cm	580	820.5	OFF	23.78	24.5	1.180	0.06	0.114	0.135
06	CDMA BC10	RTAP 153.6Kbps	Bottom Face	0cm	580	820.5	ON	18.98	19.5	1.127	-0.09	0.817	0.921
	CDMA BC10	RTAP 153.6Kbps	Bottom Face	0cm	476	817.9	ON	18.96	19	1.009	0.06	0.811	0.819
	CDMA BC10	RTAP 153.6Kbps	Bottom Face	0cm	684	823.1	ON	18.95	19	1.012	0.05	0.817	0.826
	CDMA BC10	RTAP 153.6Kbps	Edge 1	0cm	580	820.5	ON	18.98	19.5	1.127	-0.09	0.305	0.344
	CDMA BC0	RTAP 153.6Kbps	Bottom Face	1.1cm	384	836.52	OFF	23.73	24.5	1.194	0.1	0.546	0.652
	CDMA BC0	RTAP 153.6Kbps	Edge 1	0.7cm	384	836.52	OFF	23.73	24.5	1.194	0.03	0.688	0.821
	CDMA BC0	RTAP 153.6Kbps	Edge 1	0.7cm	1013	824.7	OFF	23.61	24.5	1.227	-0.02	0.636	0.781
	CDMA BC0	RTAP 153.6Kbps	Edge 1	0.7cm	777	848.31	OFF	23.6	24.5	1.230	-0.03	0.554	0.682
	CDMA BC0	RTAP 153.6Kbps	Edge 4	0cm	384	836.52	OFF	23.73	24.5	1.194	-0.03	0.122	0.146
07	CDMA BC0	RTAP 153.6Kbps	Bottom Face	0cm	1013	824.7	ON	19.08	19.5	1.102	0.01	0.844	0.930
	CDMA BC0	RTAP 153.6Kbps	Bottom Face	0cm	384	836.52	ON	18.98	19.5	1.127	-0.03	0.815	0.919
	CDMA BC0	RTAP 153.6Kbps	Bottom Face	0cm	777	848.31	ON	19.05	19.5	1.109	0.05	0.821	0.911
	CDMA BC0	RTAP 153.6Kbps	Edge 1	0cm	1013	824.7	ON	19.08	19.5	1.102	-0.09	0.357	0.393



Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	CDMA BC1	RTAP 153.6Kbps	Bottom Face	1.1cm	25	1851.25	OFF	23.99	24.5	1.125	-0.03	0.871	0.980
	CDMA BC1	RTAP 153.6Kbps	Bottom Face	1.1cm	600	1880	OFF	23.8	24.5	1.175	-0.01	0.831	0.976
	CDMA BC1	RTAP 153.6Kbps	Bottom Face	1.1cm	1175	1908.75	OFF	23.9	24.5	1.148	0.01	0.839	0.963
	CDMA BC1	RTAP 153.6Kbps	Edge 1	0.7cm	25	1851.25	OFF	23.99	24.5	1.125	0.03	0.836	0.940
	CDMA BC1	RTAP 153.6Kbps	Edge 1	0.7cm	600	1880	OFF	23.8	24.5	1.175	0.04	0.868	1.020
	CDMA BC1	RTAP 153.6Kbps	Edge 1	0.7cm	1175	1908.75	OFF	23.9	24.5	1.148	0.04	0.888	1.020
	CDMA BC1	RTAP 153.6Kbps	Edge 4	0cm	25	1851.25	OFF	23.99	24.5	1.125	0.02	0.243	0.273
	CDMA BC1	RTAP 153.6Kbps	Bottom Face	0cm	25	1851.25	ON	17.45	17.5	1.012	-0.12	0.820	0.829
	CDMA BC1	RTAP 153.6Kbps	Bottom Face	0cm	600	1880	ON	17.03	17.5	1.114	-0.06	0.961	1.071
08	CDMA BC1	RTAP 153.6Kbps	Bottom Face	0cm	1175	1908.75	ON	17.26	17.5	1.057	-0.14	1.060	1.120
	CDMA BC1	RTAP 153.6Kbps	Edge 1	0cm	25	1851.25	ON	17.45	17.5	1.012	0.06	0.586	0.593

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 17	10M	QPSK	1	24	Bottom Face	1.1cm	23790	710	OFF	23.87	24	1.030	-0.09	0.383	0.395
	LTE Band 17	10M	QPSK	25	0	Bottom Face	1.1cm	23790	710	OFF	22.84	23	1.038	-0.04	0.279	0.289
	LTE Band 17	10M	QPSK	1	24	Edge 1	0.7cm	23790	710	OFF	23.87	24	1.030	0.05	0.493	0.508
	LTE Band 17	10M	QPSK	25	0	Edge 1	0.7cm	23790	710	OFF	22.84	23	1.038	0.02	0.372	0.386
	LTE Band 17	10M	QPSK	1	24	Edge 4	0cm	23790	710	OFF	23.87	24	1.030	-0.01	0.136	0.140
	LTE Band 17	10M	QPSK	25	0	Edge 4	0cm	23790	710	OFF	22.84	23	1.038	-0.06	0.102	0.106
	LTE Band 17	10M	QPSK	1	24	Bottom Face	0cm	23790	710	ON	21.92	22	1.019	0.04	1.110	1.131
	LTE Band 17	10M	QPSK	1	24	Bottom Face	0cm	23780	709	ON	21.86	22	1.033	-0.04	1.120	1.157
	LTE Band 17	10M	QPSK	1	24	Bottom Face	0cm	23800	711	ON	21.85	22	1.035	-0.01	1.150	1.190
	LTE Band 17	10M	QPSK	25	12	Bottom Face	0cm	23790	710	ON	21.87	22	1.030	0.01	1.150	1.185
	LTE Band 17	10M	QPSK	25	12	Bottom Face	0cm	23780	709	ON	21.75	22	1.059	0.01	1.140	1.208
	LTE Band 17	10M	QPSK	25	12	Bottom Face	0cm	23800	711	ON	21.83	22	1.040	0	1.160	1.206
09	LTE Band 17	10M	QPSK	50	0	Bottom Face	0cm	23790	710	ON	21.7	22	1.072	0.1	1.130	1.211
	LTE Band 17	10M	QPSK	1	24	Edge 1	0cm	23790	710	ON	21.92	22	1.019	-0.03	0.879	0.895
	LTE Band 17	10M	QPSK	1	24	Edge 1	0cm	23780	709	ON	21.86	22	1.033	-0.01	0.862	0.890
	LTE Band 17	10M	QPSK	1	24	Edge 1	0cm	23800	711	ON	21.85	22	1.035	-0.17	0.861	0.891
	LTE Band 17	10M	QPSK	25	12	Edge 1	0cm	23790	710	ON	21.87	22	1.030	-0.13	0.837	0.862
	LTE Band 17	10M	QPSK	25	12	Edge 1	0cm	23780	709	ON	21.75	22	1.059	-0.13	0.776	0.822
	LTE Band 17	10M	QPSK	25	12	Edge 1	0cm	23800	711	ON	21.83	22	1.040	-0.03	0.798	0.830
	LTE Band 17	10M	QPSK	50	0	Edge 1	0cm	23790	710	ON	21.7	22	1.072	-0.13	0.752	0.806
	LTE Band 13	10M	QPSK	1	24	Bottom Face	1.1cm	23230	782	OFF	23.74	24	1.062	-0.01	0.588	0.624
	LTE Band 13	10M	QPSK	25	12	Bottom Face	1.1cm	23230	782	OFF	22.64	23	1.086	0.04	0.471	0.512
	LTE Band 13	10M	QPSK	1	24	Edge 1	0.7cm	23230	782	OFF	23.74	24	1.062	-0.01	0.636	0.675
	LTE Band 13	10M	QPSK	25	12	Edge 1	0.7cm	23230	782	OFF	22.64	23	1.086	0.01	0.502	0.545
	LTE Band 13	10M	QPSK	1	24	Edge 4	0cm	23230	782	OFF	23.74	24	1.062	-0.15	0.136	0.144
	LTE Band 13	10M	QPSK	25	12	Edge 4	0cm	23230	782	OFF	22.64	23	1.086	-0.14	0.106	0.115
10	LTE Band 13	10M	QPSK	1	24	Bottom Face	0cm	23230	782	ON	18.8	20	1.318	-0.07	0.898	1.184
	LTE Band 13	10M	QPSK	25	24	Bottom Face	0cm	23230	782	ON	18.75	20	1.334	-0.01	0.885	1.180
	LTE Band 13	10M	QPSK	50	0	Bottom Face	0cm	23230	782	ON	18.69	20	1.352	0.02	0.854	1.155
	LTE Band 13	10M	QPSK	1	24	Edge 1	0cm	23230	782	ON	18.8	20	1.318	0.12	0.537	0.708
	LTE Band 13	10M	QPSK	25	24	Edge 1	0cm	23230	782	ON	18.75	20	1.334	-0.04	0.518	0.691



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 5	10M	QPSK	1	0	Bottom Face	1.1cm	20450	829	OFF	22.67	24	1.358	-0.01	0.430	0.584
	LTE Band 5	10M	QPSK	25	0	Bottom Face	1.1cm	20450	829	OFF	21.71	23	1.346	-0.04	0.341	0.459
	LTE Band 5	10M	QPSK	1	0	Edge 1	0.7cm	20450	829	OFF	22.67	24	1.358	-0.18	0.518	0.704
	LTE Band 5	10M	QPSK	25	0	Edge 1	0.7cm	20450	829	OFF	21.71	23	1.346	-0.17	0.372	0.501
	LTE Band 5	10M	QPSK	1	0	Edge 4	0cm	20450	829	OFF	22.67	24	1.358	-0.11	0.095	0.129
	LTE Band 5	10M	QPSK	25	0	Edge 4	0cm	20450	829	OFF	21.71	23	1.346	-0.06	0.075	0.101
	LTE Band 5	10M	QPSK	1	0	Bottom Face	0cm	20450	829	ON	20.86	21	1.033	0.03	1.290	1.332
	LTE Band 5	10M	QPSK	1	0	Bottom Face	0cm	20525	836.5	ON	20.85	21	1.035	0.16	1.300	1.346
11	LTE Band 5	10M	QPSK	1	0	Bottom Face	0cm	20600	844	ON	20.81	21	1.045	0	1.290	1.348
	LTE Band 5	10M	QPSK	25	0	Bottom Face	0cm	20450	829	ON	20.79	21	1.050	-0.12	1.280	1.343
	LTE Band 5	10M	QPSK	25	0	Bottom Face	0cm	20525	836.5	ON	20.7	21	1.072	0.01	1.240	1.329
	LTE Band 5	10M	QPSK	25	0	Bottom Face	0cm	20600	844	ON	20.7	21	1.072	0.08	1.230	1.318
	LTE Band 5	10M	QPSK	50	0	Bottom Face	0cm	20450	829	ON	20.84	21	1.038	0.02	1.220	1.266
	LTE Band 5	10M	QPSK	1	0	Edge 1	0cm	20450	829	ON	20.86	21	1.033	-0.05	0.460	0.475
	LTE Band 5	10M	QPSK	25	0	Edge 1	0cm	20450	829	ON	20.79	21	1.050	-0.15	0.452	0.474
	LTE Band 4	20M	QPSK	1	0	Bottom Face	1.1cm	20050	1720	OFF	23.79	24	1.050	0.06	1.050	1.102
	LTE Band 4	20M	QPSK	1	0	Bottom Face	1.1cm	20300	1745	OFF	23.87	24	1.030	0.05	1.150	1.185
	LTE Band 4	20M	QPSK	1	0	Bottom Face	1.1cm	20175	1732.5	OFF	23.79	24	1.050	-0.03	1.120	1.175
	LTE Band 4	20M	QPSK	50	0	Bottom Face	1.1cm	20175	1732.5	OFF	22.59	23	1.099	0	0.843	0.926
	LTE Band 4	20M	QPSK	50	0	Bottom Face	1.1cm	20050	1720	OFF	22.47	23	1.130	-0.01	0.824	0.931
	LTE Band 4	20M	QPSK	50	0	Bottom Face	1.1cm	20300	1745	OFF	22.52	23	1.117	0	0.874	0.976
	LTE Band 4	20M	QPSK	100	0	Bottom Face	1.1cm	20175	1732.5	OFF	22.7	23	1.072	-0.07	0.865	0.927
	LTE Band 4	20M	QPSK	1	0	Edge 1	0.7cm	20300	1745	OFF	23.87	24	1.030	0.06	0.849	0.875
	LTE Band 4	20M	QPSK	1	0	Edge 1	0.7cm	20050	1720	OFF	23.79	24	1.050	0.03	0.914	0.959
	LTE Band 4	20M	QPSK	1	0	Edge 1	0.7cm	20175	1732.5	OFF	23.79	24	1.050	0.01	0.847	0.889
	LTE Band 4	20M	QPSK	50	0	Edge 1	0.7cm	20175	1732.5	OFF	22.59	23	1.099	-0.06	0.599	0.658
	LTE Band 4	20M	QPSK	100	0	Edge 1	0.7cm	20175	1732.5	OFF	22.7	23	1.072	0.01	0.628	0.673
	LTE Band 4	20M	QPSK	1	0	Edge 4	0cm	20300	1745	OFF	23.87	24	1.030	0.1	0.435	0.448
	LTE Band 4	20M	QPSK	50	0	Edge 4	0cm	20175	1732.5	OFF	22.59	24	1.384	0.15	0.312	0.432
	LTE Band 4	20M	QPSK	1	49	Bottom Face	0cm	20050	1720	ON	16.3	17.5	1.318	-0.05	0.841	1.109
12	LTE Band 4	20M	QPSK	1	49	Bottom Face	0cm	20175	1732.5	ON	16.05	17.5	1.396	-0.05	0.903	1.261
	LTE Band 4	20M	QPSK	1	49	Bottom Face	0cm	20300	1745	ON	16.03	17.5	1.403	0	0.818	1.148
	LTE Band 4	20M	QPSK	50	24	Bottom Face	0cm	20050	1720	ON	16.03	17.5	1.403	0	0.872	1.223
	LTE Band 4	20M	QPSK	50	24	Bottom Face	0cm	20175	1732.5	ON	15.89	17.5	1.449	-0.02	0.771	1.117
	LTE Band 4	20M	QPSK	50	24	Bottom Face	0cm	20300	1745	ON	15.91	17.5	1.442	-0.01	0.851	1.227
	LTE Band 4	20M	QPSK	100	0	Bottom Face	0cm	20175	1732.5	ON	16.01	17.5	1.409	0.04	0.754	1.063
	LTE Band 4	20M	QPSK	1	49	Edge 1	0cm	20050	1720	ON	16.3	17.5	1.318	0.03	0.394	0.519
	LTE Band 4	20M	QPSK	50	24	Edge 1	0cm	20050	1720	ON	16.11	17.5	1.377	-0.06	0.270	0.372



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (cm)	Ch.	Freq. (MHz)	(Sensor) Power Back-off	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Bottom Face	1.1cm	19100	1900	OFF	22.88	24	1.294	0.03	0.509	0.659
	LTE Band 2	20M	QPSK	50	0	Bottom Face	1.1cm	18700	1860	OFF	21.77	23	1.327	0.05	0.389	0.516
	LTE Band 2	20M	QPSK	1	0	Edge 1	0.7cm	19100	1900	OFF	22.88	24	1.294	-0.09	0.843	1.091
	LTE Band 2	20M	QPSK	1	0	Edge 1	0.7cm	18700	1860	OFF	22.8	24	1.318	-0.07	0.784	1.034
	LTE Band 2	20M	QPSK	1	0	Edge 1	0.7cm	18900	1880	OFF	22.8	24	1.318	0.08	0.746	0.983
	LTE Band 2	20M	QPSK	50	0	Edge 1	0.7cm	18700	1860	OFF	21.77	23	1.327	-0.01	0.546	0.725
	LTE Band 2	20M	QPSK	100	0	Edge 1	0.7cm	18900	1880	OFF	21.63	23	1.371	-0.05	0.572	0.784
	LTE Band 2	20M	QPSK	1	0	Edge 4	0cm	19100	1900	OFF	22.88	24	1.294	0.1	0.276	0.357
	LTE Band 2	20M	QPSK	50	0	Edge 4	0cm	18700	1860	OFF	21.77	23	1.327	0.08	0.179	0.238
	LTE Band 2	20M	QPSK	1	0	Bottom Face	0cm	18900	1880	ON	18.94	19	1.014	-0.01	1.300	1.318
	LTE Band 2	20M	QPSK	1	0	Bottom Face	0cm	18700	1860	ON	18.72	19	1.067	-0.18	1.290	1.376
	LTE Band 2	20M	QPSK	1	0	Bottom Face	0cm	19100	1900	ON	18.78	19	1.052	-0.02	1.310	1.378
	LTE Band 2	20M	QPSK	50	0	Bottom Face	0cm	18700	1860	ON	18.69	19	1.074	0.04	1.250	1.342
	LTE Band 2	20M	QPSK	50	0	Bottom Face	0cm	18900	1880	ON	18.69	19	1.074	0	1.230	1.321
	LTE Band 2	20M	QPSK	50	0	Bottom Face	0cm	19100	1900	ON	18.46	19	1.132	0.09	1.110	1.257
	LTE Band 2	20M	QPSK	100	0	Bottom Face	0cm	18700	1860	ON	18.69	19	1.074	-0.05	1.280	1.375
	LTE Band 2	20M	QPSK	1	0	Edge 1	0cm	18900	1880	ON	18.94	19	1.014	-0.04	1.220	1.237
	LTE Band 2	20M	QPSK	1	0	Edge 1	0cm	18700	1860	ON	18.72	19	1.067	-0.04	1.130	1.205
	LTE Band 2	20M	QPSK	1	0	Edge 1	0cm	19100	1900	ON	18.78	19	1.052	-0.07	1.300	1.368
	LTE Band 2	20M	QPSK	50	0	Edge 1	0cm	18700	1860	ON	18.71	19	1.069	-0.09	1.250	1.336
13	LTE Band 2	20M	QPSK	50	0	Edge 1	0cm	18900	1880	ON	18.69	19	1.074	-0.13	1.300	1.396
	LTE Band 2	20M	QPSK	50	0	Edge 1	0cm	19100	1900	ON	18.46	19	1.132	-0.04	1.210	1.370
	LTE Band 2	20M	QPSK	100	0	Edge 1	0cm	18700	1860	ON	18.69	19	1.074	-0.11	1.270	1.364
	LTE Band 25	20M	QPSK	1	99	Bottom Face	1.1cm	26590	1905	OFF	22.94	24	1.276	0	0.498	0.636
	LTE Band 25	20M	QPSK	50	0	Bottom Face	1.1cm	26590	1905	OFF	21.7	23	1.349	0.02	0.380	0.513
	LTE Band 25	20M	QPSK	1	99	Edge 1	0.7cm	26590	1905	OFF	22.94	24	1.276	-0.03	0.780	0.996
	LTE Band 25	20M	QPSK	1	99	Edge 1	0.7cm	26140	1860	OFF	22.7	24	1.349	0.01	0.737	0.994
	LTE Band 25	20M	QPSK	1	99	Edge 1	0.7cm	26365	1882.5	OFF	22.75	24	1.334	0.04	0.752	1.003
	LTE Band 25	20M	QPSK	50	0	Edge 1	0.7cm	26590	1905	OFF	21.7	23	1.349	0.04	0.573	0.773
	LTE Band 25	20M	QPSK	100	0	Edge 1	0.7cm	26140	1860	OFF	21.75	23	1.334	0.07	0.558	0.744
	LTE Band 25	20M	QPSK	1	99	Edge 4	0cm	26590	1905	OFF	22.94	24	1.276	0.06	0.299	0.382
	LTE Band 25	20M	QPSK	50	0	Edge 4	0cm	26590	1905	OFF	21.7	23	1.349	0.03	0.199	0.268
	LTE Band 25	20M	QPSK	1	0	Bottom Face	0cm	26590	1905	ON	18.63	19	1.089	-0.04	1.120	1.220
14	LTE Band 25	20M	QPSK	1	0	Bottom Face	0cm	26140	1860	ON	18.45	19	1.135	0	1.100	1.249
	LTE Band 25	20M	QPSK	1	0	Bottom Face	0cm	26365	1882.5	ON	18.46	19	1.132	-0.17	1.080	1.223
	LTE Band 25	20M	QPSK	50	24	Bottom Face	0cm	26590	1905	ON	18.51	19	1.119	-0.04	1.100	1.231
	LTE Band 25	20M	QPSK	50	24	Bottom Face	0cm	26140	1860	ON	18.45	19	1.135	-0.01	1.040	1.180
	LTE Band 25	20M	QPSK	50	24	Bottom Face	0cm	26365	1882.5	ON	18.39	19	1.151	0.02	1.050	1.208
	LTE Band 25	20M	QPSK	100	0	Bottom Face	0cm	26365	1882.5	ON	18.39	19	1.151	-0.1	1.050	1.208
	LTE Band 25	20M	QPSK	1	0	Edge 1	0cm	26590	1905	ON	18.63	19	1.089	0.01	1.070	1.165
	LTE Band 25	20M	QPSK	1	0	Edge 1	0cm	26140	1860	ON	18.45	19	1.135	-0.13	0.975	1.107
	LTE Band 25	20M	QPSK	1	0	Edge 1	0cm	26365	1882.5	ON	18.46	19	1.132	-0.11	1.050	1.189
	LTE Band 25	20M	QPSK	50	24	Edge 1	0cm	26590	1905	ON	18.51	19	1.119	-0.15	1.050	1.175
	LTE Band 25	20M	QPSK	50	24	Edge 1	0cm	26140	1860	ON	18.45	19	1.135	-0.12	0.938	1.065
	LTE Band 25	20M	QPSK	50	24	Edge 1	0cm	26365	1882.5	ON	18.39	19	1.151	-0.13	1.000	1.151
	LTE Band 25	20M	QPSK	100	0	Edge 1	0cm	26365	1882.5	ON	18.39	19	1.151	-0.12	0.990	1.139



15.2 Repeated SAR Measurement

Table with 19 columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (cm), Ch., Freq. (MHz), (Sensor) Power Back-off, Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Power Drift (dB), Measured 1g SAR (W/kg), Ratio, Reported 1g SAR (W/kg). Rows include GSM850 and LTE Band 17/4/2 measurements.

General Note:

- 1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated measured SAR.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

**16. Simultaneous Transmission Analysis**

NO.	Simultaneous Transmission Configurations	Portable Tablet	Note
		Body	
1.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
2.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
3.	CDMA(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
4.	LTE(Data) + WLAN2.4GHz(data)	Yes	2.4GHz Hotspot
5.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	
6.	WCDMA(Data) + Bluetooth(data)	Yes	
7.	CDMA(Data) + Bluetooth(data)	Yes	
8.	LTE(Data) + Bluetooth(data)	Yes	
9.	GPRS/EDGE(data) + WLAN5GHz(data)	No	
10.	WCDMA(data) + WLAN5GHz(data)	No	
11.	CDMA(data) + WLAN5 GHz(data)	No	
12.	LTE(data) + WLAN5GHz(data)	No	

**General Note:**

1. WLAN SAR test result and Bluetooth maximum power in the Sporton SAR report FCC ID: B94HNC78CBXN (report no. FA392719-16 Rev.01) are used for simultaneous transmission analysis.
2. For simultaneous transmission analysis for exposure position of bottom face 1.1cm and Edge1 0.7cm, WLAN SAR tested at 0mm separation testing results are used for conservative SAR summation.
3. For co-location analysis:
  - i) For WWAN SAR testing was performed on bottom face, Edge1 and Edge4, according to KDB 447498 D01v05r02 exclusion thresholds which can be referred to page49.
  - ii) The WLAN SAR testing was performed on bottom face, Edge1 and Edge2, according to KDB 447498 D01v05r02 exclusion thresholds which can be referred to Sporton FCC SAR Report, FCC ID: B94HNC78CBRPR, Report No: FA392719-16 Rev.01 page25.
  - iii) For co-location analysis was performed at the same exposure positions, which are bottom face and Edge1, where both WWAN standalone SAR and WLAN standalone SAR was assessed.
4. 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  
If  $SPLSR \leq 0.04$ , simultaneously transmission SAR measurement is not necessary
  - iii) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg
5. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r02 based on the formula below.
  - i)  $(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)[\sqrt{f(GHz)/x}] W/kg$  for test separation distances  $\leq 50$  mm; where  $x = 7.5$  for 1-g SAR, and  $x = 18.75$  for 10-g SAR.
  - ii) When the minimum test separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
  - iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.
  - iv) Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
9.5 dBm	Estimated SAR (W/kg)	0.378 W/kg



16.1 Body Exposure Conditions

<WWAN+WLAN Antenna 0>

Position	WWAN		WLAN Ant 0	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	SAR (W/kg)			
Bottom Face At 1.1 cm	GSM850	1.323	1.161	2.48	0.03	Case1
	GSM1900	0.673	1.161	1.83	0.02	Case2
	WCDMA V	0.707	1.161	1.87	0.02	Case3
	WCDMA IV	0.799	1.161	1.96	0.02	Case4
	WCDMA II	0.739	1.161	1.90	0.02	Case5
	CDMA BC10	0.669	1.161	1.83	0.02	Case6
	CDMA BC0	0.652	1.161	1.81	0.02	Case7
	CDMA BC1	0.980	1.161	2.14	0.02	Case8
	LTE Band 17	0.395	1.161	1.56		
	LTE Band 13	0.624	1.161	1.79	0.02	Case9
	LTE Band 5	0.584	1.161	1.75	0.02	Case10
	LTE Band 4	1.185	1.161	2.35	0.03	Case11
	LTE Band 2	0.659	1.161	1.82	0.02	Case12
LTE Band 25	0.636	1.161	1.80	0.02	Case13	
Edge1 At 0.7 cm	GSM850	1.343	0.237	1.58		
	GSM1900	1.019	0.237	1.26		
	WCDMA V	0.825	0.237	1.06		
	WCDMA IV	1.287	0.237	1.52		
	WCDMA II	1.267	0.237	1.50		
	CDMA BC10	0.793	0.237	1.03		
	CDMA BC0	0.821	0.237	1.06		
	CDMA BC1	1.020	0.237	1.26		
	LTE Band 17	0.508	0.237	0.75		
	LTE Band 13	0.675	0.237	0.91		
	LTE Band 5	0.704	0.237	0.94		
	LTE Band 4	0.959	0.237	1.20		
	LTE Band 2	1.091	0.237	1.33		
LTE Band 25	1.003	0.237	1.24			
Bottom Face At 0cm	GSM850	1.484	1.161	2.65	0.04	Case14
	GSM1900	1.411	1.161	2.57	0.03	Case15
	WCDMA V	1.212	1.161	2.37	0.03	Case16
	WCDMA IV	1.131	1.161	2.29	0.03	Case17
	WCDMA II	0.944	1.161	2.11	0.02	Case18
	CDMA BC10	0.921	1.161	2.08	0.03	Case19
	CDMA BC0	0.93	1.161	2.09	0.03	Case20
	CDMA BC1	1.120	1.161	2.28	0.03	Case21
	LTE Band 17	1.211	1.161	2.37	0.03	Case22
	LTE Band 13	1.184	1.161	2.35	0.03	Case23
	LTE Band 5	1.348	1.161	2.51	0.03	Case24
	LTE Band 4	1.261	1.161	2.42	0.03	Case25
	LTE Band 2	1.378	1.161	2.54	0.03	Case26
LTE Band 25	1.249	1.161	2.41	0.03	Case27	



Position	WWAN		WLAN Ant 0	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	SAR (W/kg)			
Edge1 At 0cm	GSM850	0.792	0.237	1.03		
	GSM1900	1.240	0.237	1.48		
	WCDMA V	0.420	0.237	0.66		
	WCDMA IV	0.674	0.237	0.91		
	WCDMA II	0.893	0.237	1.13		
	CDMA BC10	0.344	0.237	0.58		
	CDMA BC0	0.393	0.237	0.63		
	CDMA BC1	0.593	0.237	0.83		
	LTE Band 17	0.895	0.237	1.13		
	LTE Band 13	0.708	0.237	0.95		
	LTE Band 5	0.475	0.237	0.71		
	LTE Band 4	0.519	0.237	0.76		
	LTE Band 2	1.396	0.237	1.63	0.02	Case28
LTE Band 25	1.189	0.237	1.43			

<WWAN+WLAN Antenna 1>

Position	WWAN		WLAN Ant 1	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	SAR (W/kg)			
Bottom Face At 1.1 cm	GSM850	1.323	0.676	2.00	0.02	Case29
	GSM1900	0.673	0.676	1.35		
	WCDMA V	0.707	0.676	1.38		
	WCDMA IV	0.799	0.676	1.48		
	WCDMA II	0.739	0.676	1.42		
	CDMA BC10	0.669	0.676	1.35		
	CDMA BC0	0.652	0.676	1.33		
	CDMA BC1	0.980	0.676	1.66	0.01	Case30
	LTE Band 17	0.395	0.676	1.07		
	LTE Band 13	0.624	0.676	1.30		
	LTE Band 5	0.584	0.676	1.26		
	LTE Band 4	1.185	0.676	1.86	0.02	Case31
	LTE Band 2	0.659	0.676	1.34		
LTE Band 25	0.636	0.676	1.31			
Edge1 At 0.7 cm	GSM850	1.343	0.157	1.50		
	GSM1900	1.019	0.157	1.18		
	WCDMA V	0.825	0.157	0.98		
	WCDMA IV	1.287	0.157	1.44		
	WCDMA II	1.267	0.157	1.42		
	CDMA BC10	0.793	0.157	0.95		
	CDMA BC0	0.821	0.157	0.98		
	CDMA BC1	1.020	0.157	1.18		
	LTE Band 17	0.508	0.157	0.67		
	LTE Band 13	0.675	0.157	0.83		
	LTE Band 5	0.704	0.157	0.86		
	LTE Band 4	0.959	0.157	1.12		
	LTE Band 2	1.091	0.157	1.25		
LTE Band 25	1.003	0.157	1.16			



Position	WWAN		WLAN Ant 1	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	SAR (W/kg)			
Bottom Face At 0cm	GSM850	1.484	0.676	2.16	0.02	Case32
	GSM1900	1.411	0.676	2.09	0.02	Case33
	WCDMA V	1.212	0.676	1.89	0.02	Case34
	WCDMA IV	1.131	0.676	1.81	0.02	Case35
	WCDMA II	0.944	0.676	1.62	0.01	Case36
	CDMA BC10	0.921	0.676	1.60	0.01	Case86
	CDMA BC0	0.93	0.676	1.61	0.02	Case85
	CDMA BC1	1.120	0.676	1.80	0.02	Case37
	LTE Band 17	1.211	0.676	1.89	0.02	Case38
	LTE Band 13	1.184	0.676	1.86	0.02	Case39
	LTE Band 5	1.348	0.676	2.02	0.02	Case40
	LTE Band 4	1.261	0.676	1.94	0.02	Case41
	LTE Band 2	1.378	0.676	2.05	0.02	Case42
	LTE Band 25	1.249	0.676	1.93	0.02	Case43
Edge1 At 0cm	GSM850	0.792	0.157	0.95		
	GSM1900	1.240	0.157	1.40		
	WCDMA V	0.420	0.157	0.58		
	WCDMA IV	0.674	0.157	0.83		
	WCDMA II	0.893	0.157	1.05		
	CDMA BC10	0.344	0.157	0.50		
	CDMA BC0	0.393	0.157	0.55		
	CDMA BC1	0.593	0.157	0.75		
	LTE Band 17	0.895	0.157	1.05		
	LTE Band 13	0.708	0.157	0.87		
	LTE Band 5	0.475	0.157	0.63		
	LTE Band 4	0.519	0.157	0.68		
	LTE Band 2	1.396	0.157	1.55		
	LTE Band 25	1.189	0.157	1.35		

<WWAN+WLAN Antenna 0+1>

Position	WWAN		WLAN Ant 0+1	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	SAR (W/kg)			
Bottom Face At 1.1 cm	GSM850	1.323	1.163	2.49	0.03	Case 44
	GSM1900	0.673	1.163	1.84	0.02	Case 45
	WCDMA V	0.707	1.163	1.87	0.02	Case 46
	WCDMA IV	0.799	1.163	1.96	0.02	Case 47
	WCDMA II	0.739	1.163	1.90	0.02	Case 48
	CDMA BC10	0.669	1.163	1.83	0.02	Case 49
	CDMA BC0	0.652	1.163	1.82	0.02	Case 50
	CDMA BC1	0.980	1.163	2.14	0.02	Case 51
	LTE Band 17	0.395	1.163	1.56		
	LTE Band 13	0.624	1.163	1.79	0.02	Case 52
	LTE Band 5	0.584	1.163	1.75	0.02	Case 53
	LTE Band 4	1.185	1.163	2.35	0.03	Case 54
	LTE Band 2	0.659	1.163	1.82	0.02	Case 55
	LTE Band 25	0.636	1.163	1.80	0.02	Case 56



Position	WWAN		WLAN Ant 0+1	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	SAR (W/kg)			
Edge1 At 0.7 cm	GSM850	1.343	0.257	1.60	0.01	Case 57
	GSM1900	1.019	0.257	1.28		
	WCDMA V	0.825	0.257	1.08		
	WCDMA IV	1.287	0.257	1.54		
	WCDMA II	1.267	0.257	1.52		
	CDMA BC10	0.793	0.257	1.05		
	CDMA BC0	0.821	0.257	1.08		
	CDMA BC1	1.020	0.257	1.28		
	LTE Band 17	0.508	0.257	0.77		
	LTE Band 13	0.675	0.257	0.93		
	LTE Band 5	0.704	0.257	0.96		
	LTE Band 4	0.959	0.257	1.22		
	LTE Band 2	1.091	0.257	1.35		
LTE Band 25	1.003	0.257	1.26			
Bottom Face At 0cm	GSM850	1.484	1.163	2.65	0.03	Case 58
	GSM1900	1.411	1.163	2.57	0.03	Case 59
	WCDMA V	1.212	1.163	2.38	0.03	Case 60
	WCDMA IV	1.131	1.163	2.29	0.02	Case 61
	WCDMA II	0.944	1.163	2.11	0.02	Case 62
	CDMA BC10	0.921	1.163	2.08	0.02	Case 63
	CDMA BC0	0.93	1.163	2.09	0.02	Case 64
	CDMA BC1	1.120	1.163	2.28	0.02	Case 65
	LTE Band 17	1.211	1.163	2.37	0.03	Case 66
	LTE Band 13	1.184	1.163	2.35	0.03	Case 67
	LTE Band 5	1.348	1.163	2.51	0.03	Case 68
	LTE Band 4	1.261	1.163	2.42	0.03	Case 69
	LTE Band 2	1.378	1.163	2.54	0.03	Case 70
LTE Band 25	1.249	1.163	2.41	0.03	Case 71	
Edge1 At 0cm	GSM850	0.792	0.257	1.05		
	GSM1900	1.240	0.257	1.50		
	WCDMA V	0.420	0.257	0.68		
	WCDMA IV	0.674	0.257	0.93		
	WCDMA II	0.893	0.257	1.15		
	CDMA BC10	0.344	0.257	0.60		
	CDMA BC0	0.393	0.257	0.65		
	CDMA BC1	0.593	0.257	0.85		
	LTE Band 17	0.895	0.257	1.15		
	LTE Band 13	0.708	0.257	0.97		
	LTE Band 5	0.475	0.257	0.73		
	LTE Band 4	0.519	0.257	0.78		
	LTE Band 2	1.396	0.257	1.65	0.01	Case 72
LTE Band 25	1.189	0.257	1.45			



**<WWAN + Bluetooth>**

Position	WWAN		Bluetooth	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	Estimated SAR (W/kg)			
Bottom Face At 1.1 cm	GSM850	1.323	0.378	<b>1.70</b>	0.02	Case 73
	GSM1900	0.673	0.378	<b>1.05</b>		
	WCDMA V	0.707	0.378	<b>1.09</b>		
	WCDMA IV	0.799	0.378	<b>1.18</b>		
	WCDMA II	0.739	0.378	<b>1.12</b>		
	CDMA BC10	0.669	0.378	<b>1.05</b>		
	CDMA BC0	0.652	0.378	<b>1.03</b>		
	CDMA BC1	0.980	0.378	<b>1.36</b>		
	LTE Band 17	0.395	0.378	<b>0.77</b>		
	LTE Band 13	0.624	0.378	<b>1.00</b>		
	LTE Band 5	0.584	0.378	<b>0.96</b>		
	LTE Band 4	1.185	0.378	<b>1.56</b>		
	LTE Band 2	0.659	0.378	<b>1.04</b>		
LTE Band 25	0.636	0.378	<b>1.01</b>			
Edge1 At 0.7 cm	GSM850	1.343	0.378	<b>1.72</b>	0.02	Case 74
	GSM1900	1.019	0.378	<b>1.40</b>		
	WCDMA V	0.825	0.378	<b>1.20</b>		
	WCDMA IV	1.287	0.378	<b>1.67</b>	0.02	Case 75
	WCDMA II	1.267	0.378	<b>1.65</b>	0.02	Case 76
	CDMA BC10	0.793	0.378	<b>1.17</b>		
	CDMA BC0	0.821	0.378	<b>1.20</b>		
	CDMA BC1	1.020	0.378	<b>1.40</b>		
	LTE Band 17	0.508	0.378	<b>0.89</b>		
	LTE Band 13	0.675	0.378	<b>1.05</b>		
	LTE Band 5	0.704	0.378	<b>1.08</b>		
	LTE Band 4	0.959	0.378	<b>1.34</b>		
	LTE Band 2	1.091	0.378	<b>1.47</b>		
LTE Band 25	1.003	0.378	<b>1.38</b>			
Bottom Face At 0cm	GSM850	1.484	0.378	<b>1.86</b>	0.03	Case 77
	GSM1900	1.411	0.378	<b>1.79</b>	0.02	Case 78
	WCDMA V	1.212	0.378	<b>1.59</b>		
	WCDMA IV	1.131	0.378	<b>1.51</b>		
	WCDMA II	0.944	0.378	<b>1.32</b>		
	CDMA BC10	0.921	0.378	<b>1.30</b>		
	CDMA BC0	0.93	0.378	<b>1.31</b>		
	CDMA BC1	1.120	0.378	<b>1.50</b>		
	LTE Band 17	1.211	0.378	<b>1.59</b>		
	LTE Band 13	1.184	0.378	<b>1.56</b>		
	LTE Band 5	1.348	0.378	<b>1.73</b>	0.02	Case 79
	LTE Band 4	1.261	0.378	<b>1.64</b>	0.02	Case 80
	LTE Band 2	1.378	0.378	<b>1.76</b>	0.02	Case 81
LTE Band 25	1.249	0.378	<b>1.63</b>	0.02	Case 82	

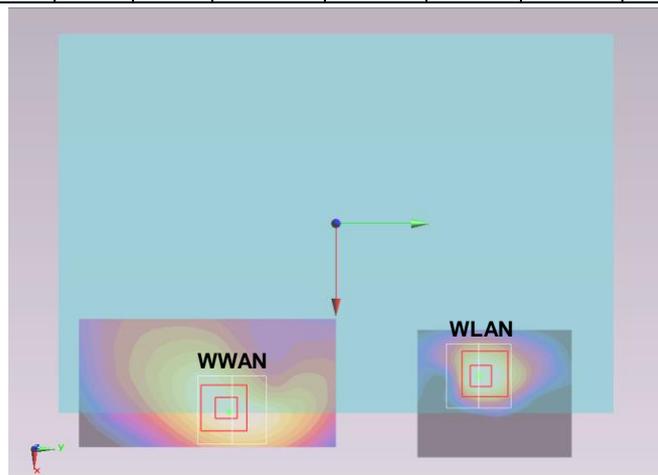
Position	WWAN		Bluetooth	Summed SAR (W/kg)	SPLSR	Case No
	WWAN Band	SAR (W/kg)	Estimated SAR (W/kg)			
Edge1 At 0cm	GSM850	0.792	0.378	1.17		
	GSM1900	1.240	0.378	1.62	0.02	Case 83
	WCDMA V	0.420	0.378	0.80		
	WCDMA IV	0.674	0.378	1.05		
	WCDMA II	0.893	0.378	1.27		
	CDMA BC10	0.344	0.378	0.72		
	CDMA BC0	0.393	0.378	0.77		
	CDMA BC1	0.593	0.378	0.97		
	LTE Band 17	0.895	0.378	1.27		
	LTE Band 13	0.708	0.378	1.09		
	LTE Band 5	0.475	0.378	0.85		
	LTE Band 4	0.519	0.378	0.90		
	LTE Band 2	1.396	0.378	1.77	0.02	Case 84
	LTE Band 25	1.189	0.378	1.57		

**16.2 SPLSR Evaluation and Analysis**

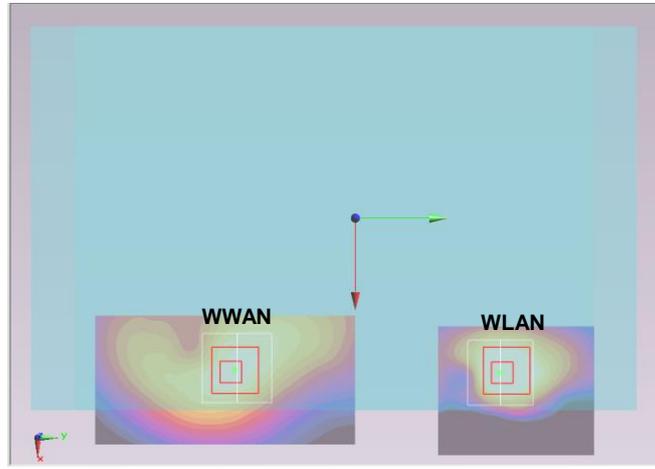
**General Note:**

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

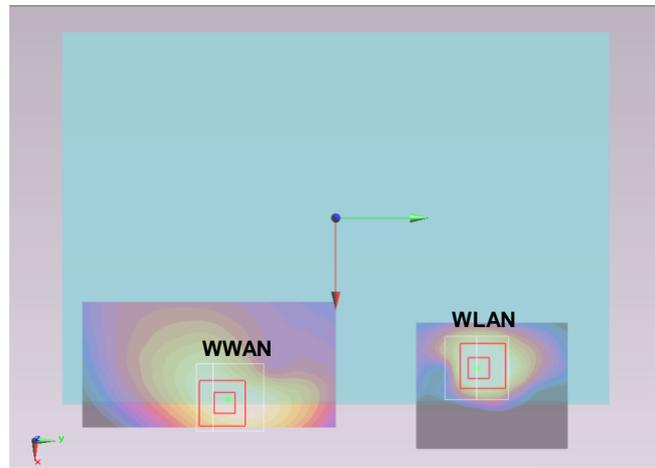
Case 1	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Bottom Face	1.323	1.1	0.0716	0.0668	-0.175	116.5	2.48	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0875	-0.0485	-0.179				



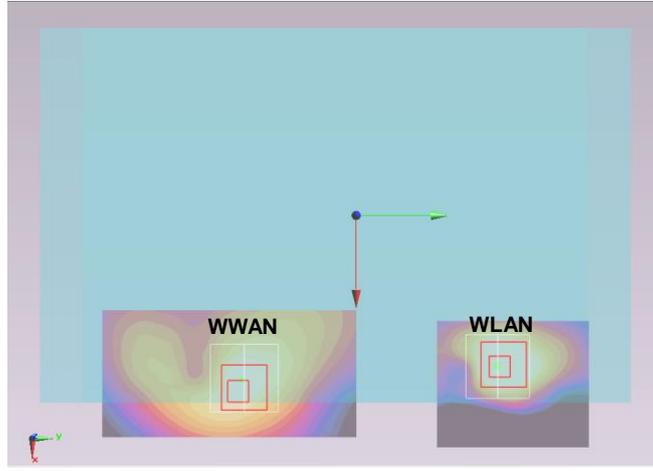
Case 2	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900				X	Y	Z				
	WLAN 2.4GHz	Bottom Face	0.673	1.1	0.0695	-0.0545	-0.179	121.4	1.83	0.02	Not required
			1.161	0	0.0716	0.0668	-0.175				



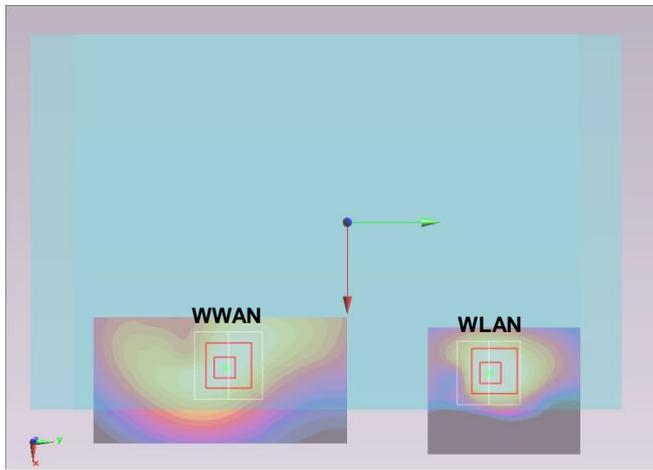
Case 3	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WCDMA V				X	Y	Z				
	WLAN 2.4GHz	Bottom Face	0.707	1.1	0.0855	-0.058	-0.179	125.6	1.87	0.02	Not required
			1.161	0	0.0716	0.0668	-0.175				



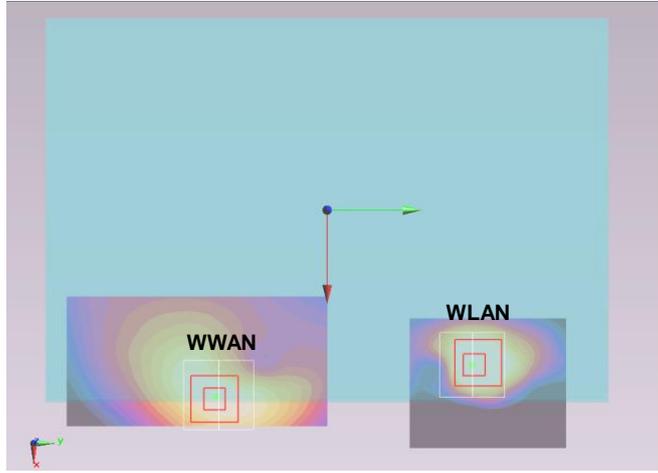
Case 4	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA BC1	Back	1.500	1.5	-0.021	-0.062	-0.203	116.3	1.69	0.02	Not required
	WLAN 2.4GHz		0.186	1.5	-0.0398	0.0528	-0.205				



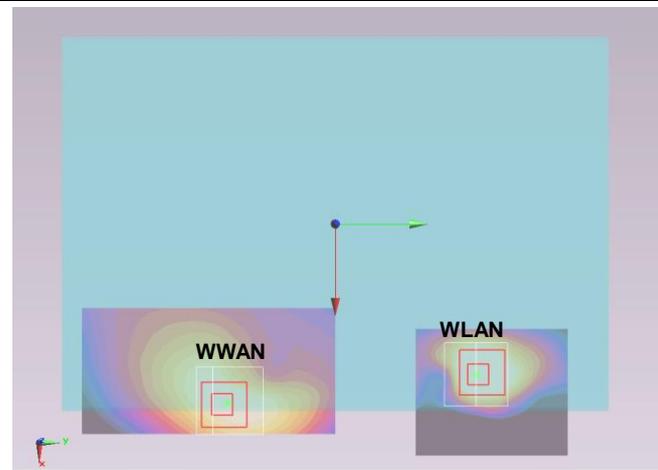
Case 5	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA II	Bottom Face	0.739	1.1	0.068	-0.056	-0.179	122.9	1.90	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



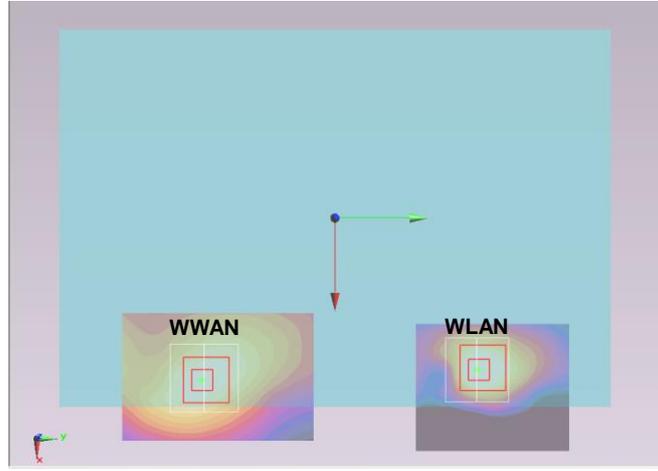
Case 6	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA BC10	Bottom Face	0.669	1.1	0.0855	-0.05	-0.179	117.7	1.83	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



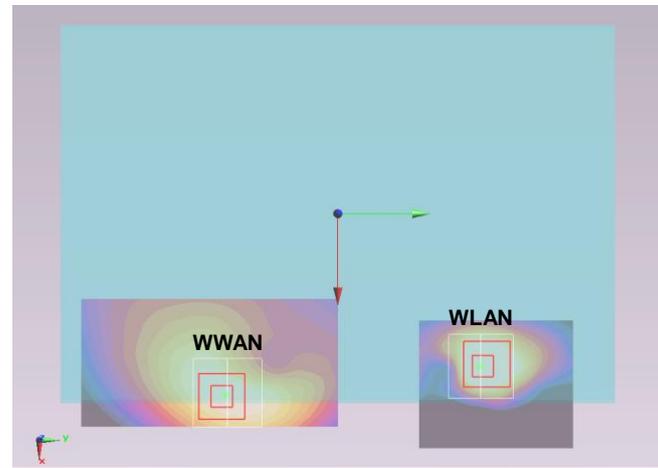
Case 7	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA BC0	Bottom Face	0.652	1.1	0.084	-0.058	-0.179	125.5	1.81	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



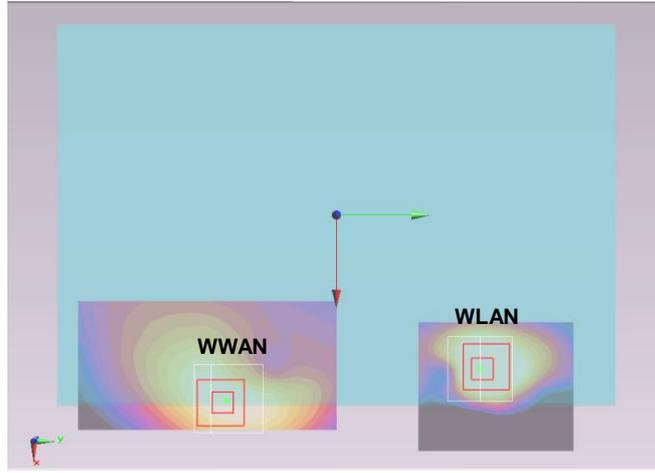
Case 8	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	CDMA BC1				X	Y	Z				
	WLAN 2.4GHz	Bottom Face	0.98	1.1	0.0755	-0.0615	-0.176	128.4	2.14	0.02	Not required
			1.161	0	0.0716	0.0668	-0.175				



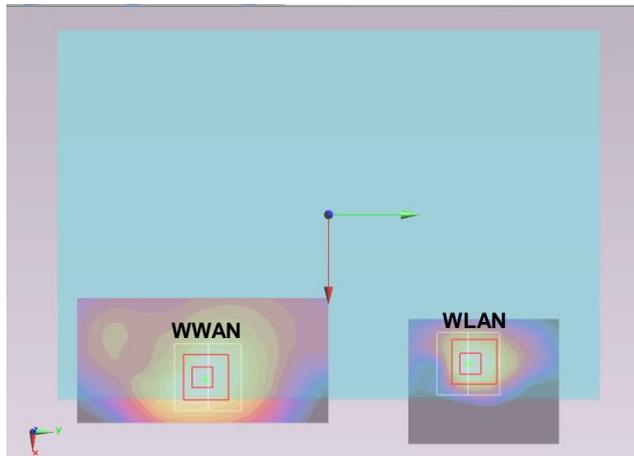
Case 9	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 13				X	Y	Z				
	WLAN 2.4GHz	Bottom Face	0.624	1.1	0.084	-0.0515	-0.179	119.0	1.79	0.02	Not required
			1.161	0	0.0716	0.0668	-0.175				



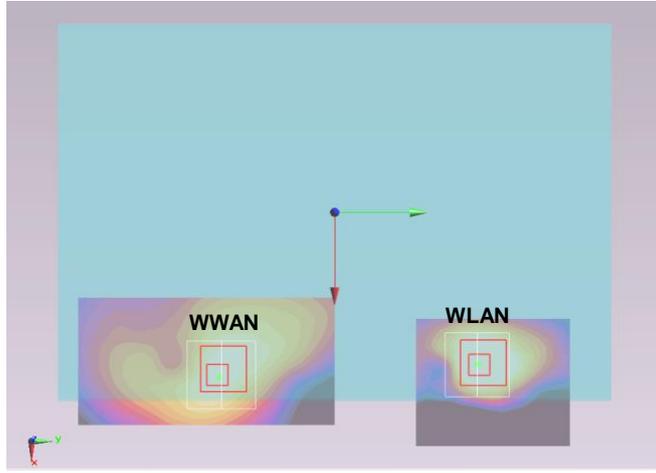
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
10	LTE Band 5	Bottom Face	0.584	1.1	0.0855	-0.058	-0.179	125.6	1.75	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



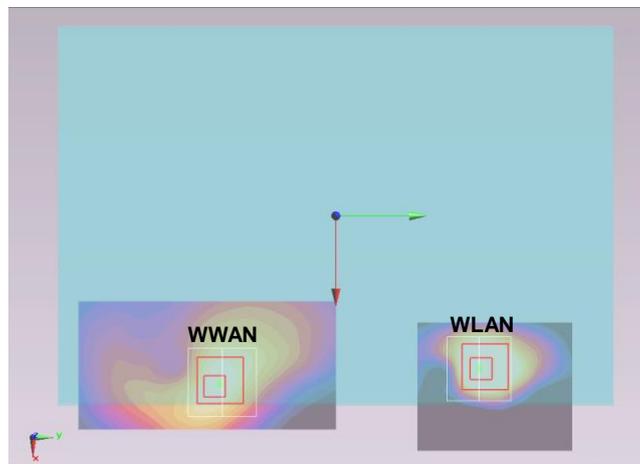
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
11	LTE Band 4	Bottom Face	1.185	1.1	0.078	-0.0575	-0.176	124.5	2.35	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



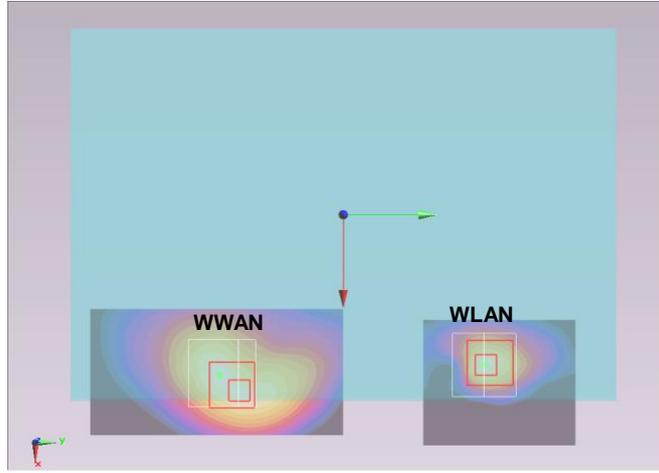
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
12	LTE Band 2	Bottom Face	0.659	1.1	0.0765	-0.053	-0.179	120.0	1.82	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



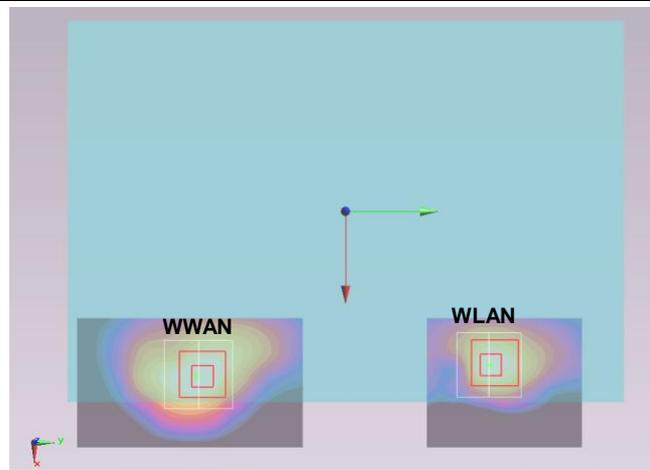
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
13	LTE Band 25	Bottom Face	0.636	1.1	0.078	-0.053	-0.179	120.0	1.80	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



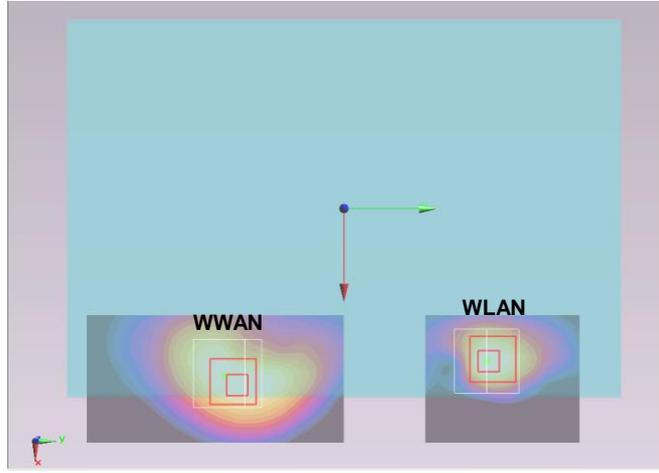
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
14	GSM850	Bottom Face	1.484	0	0.0835	-0.0495	-0.176	116.9	2.65	0.04	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



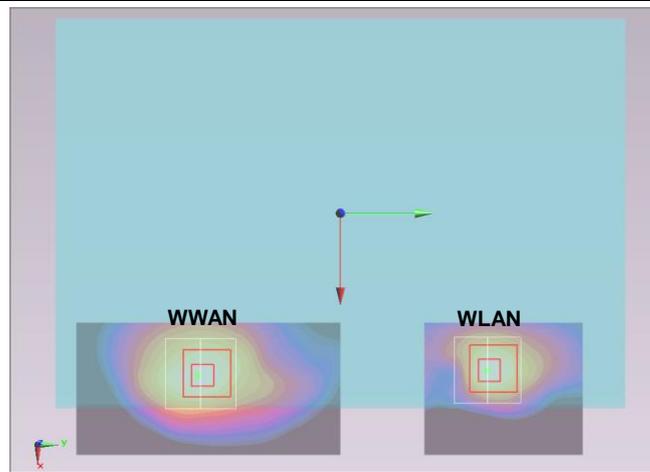
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
15	GSM1900	Bottom Face	1.411	0	0.076	-0.0685	-0.174	135.4	2.57	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



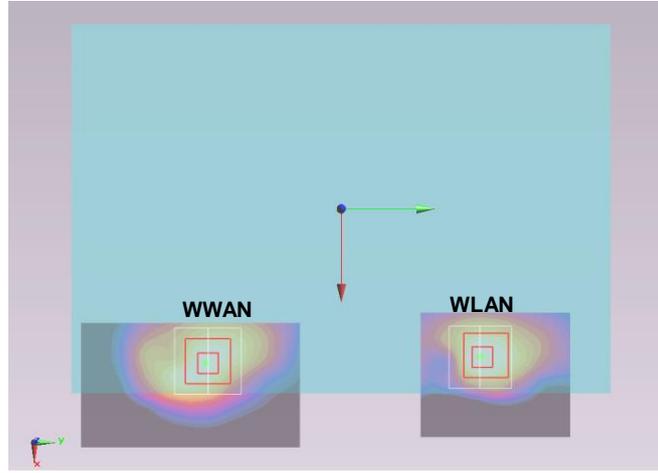
Case 16	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA V	Bottom Face	1.212	0	0.0855	-0.0465	-0.176	114.2	2.37	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



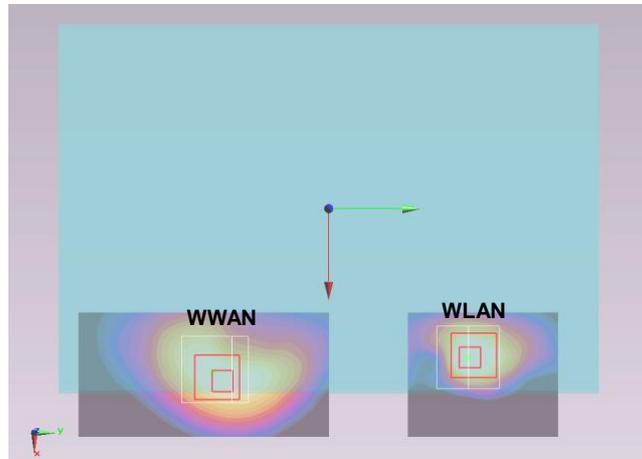
Case 17	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA IV	Bottom Face	1.131	0	0.073	-0.0635	-0.176	130.3	2.29	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



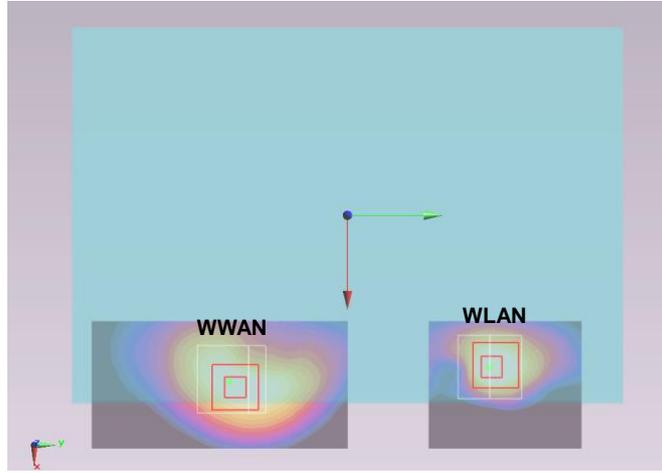
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
18	WCDMA II	Bottom Face	0.944	0	0.0735	-0.064	-0.174	130.8	2.11	0.02	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



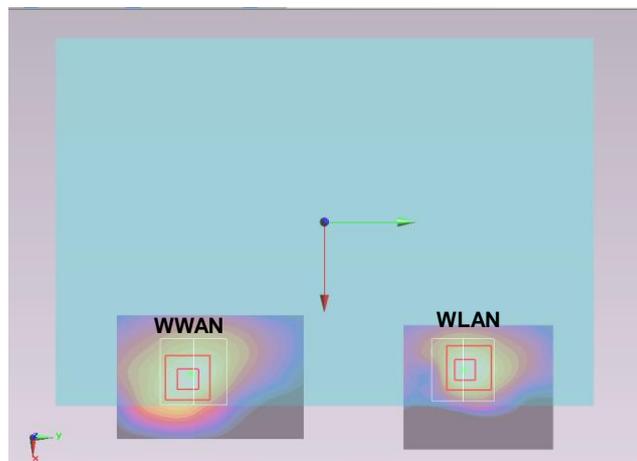
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
19	CDMA BC10	Bottom Face	0.921	0	0.0855	-0.0465	-0.176	114.2	2.08	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



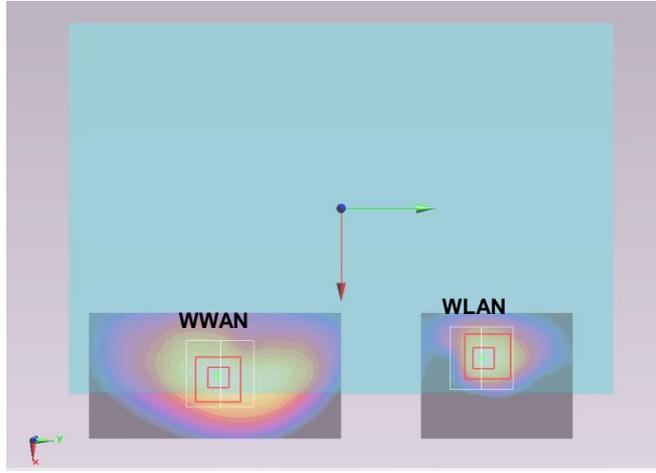
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
20	CDMA BC0	Bottom Face	0.93	0	0.0855	-0.0465	-0.175	114.1	2.09	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



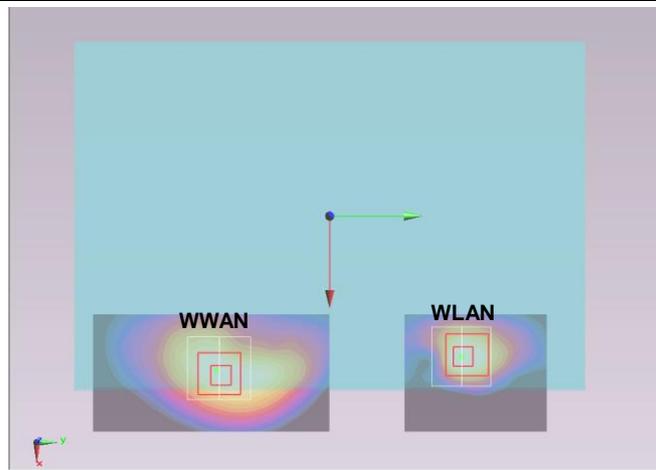
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
21	CDMA BC1	Bottom Face	1.12	0	0.0725	-0.063	-0.175	129.8	2.28	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



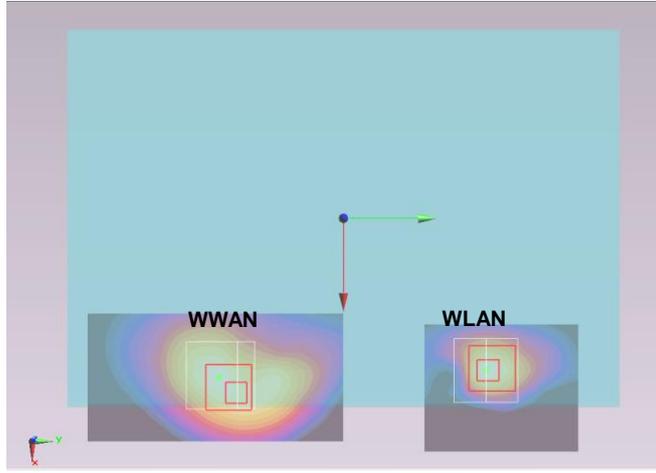
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
22	LTE Band 17	Bottom Face	1.211	0	0.079	-0.0575	-0.177	124.5	2.37	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



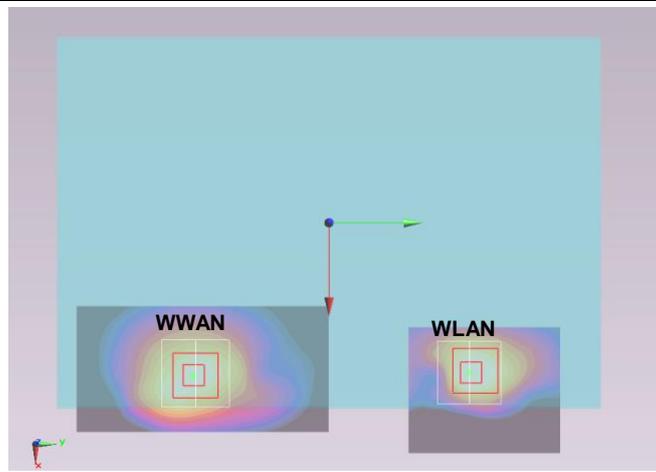
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
23	LTE Band 13	Bottom Face	1.184	0	0.0775	-0.056	-0.175	122.9	2.35	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



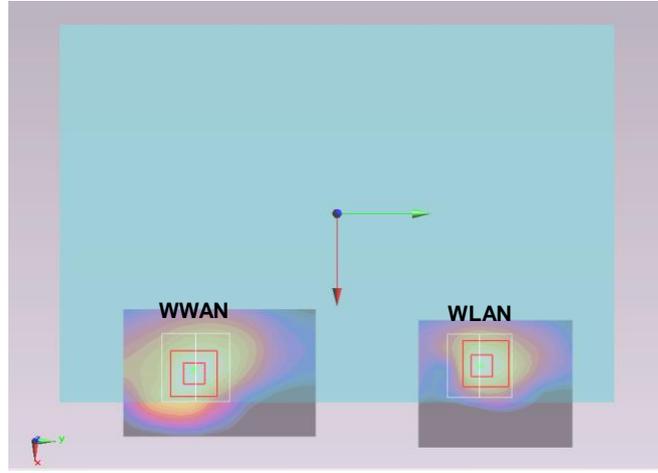
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
24	LTE Band 5	Bottom Face	1.348	0	0.082	-0.0495	-0.175	116.8	2.51	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



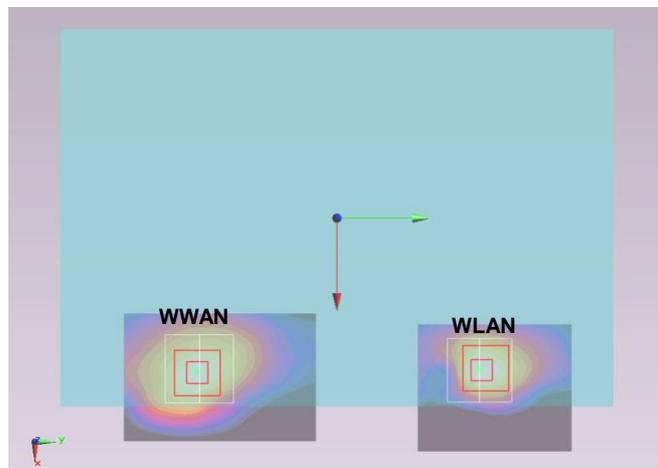
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
25	LTE Band 4	Bottom Face	1.261	0	0.072	-0.0635	-0.175	130.3	2.42	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



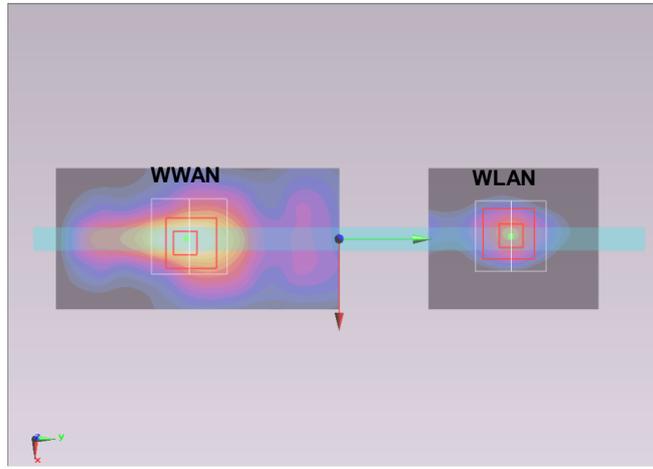
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
26	LTE Band 2	Bottom Face	1.378	0	0.0725	-0.066	-0.175	132.8	2.54	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



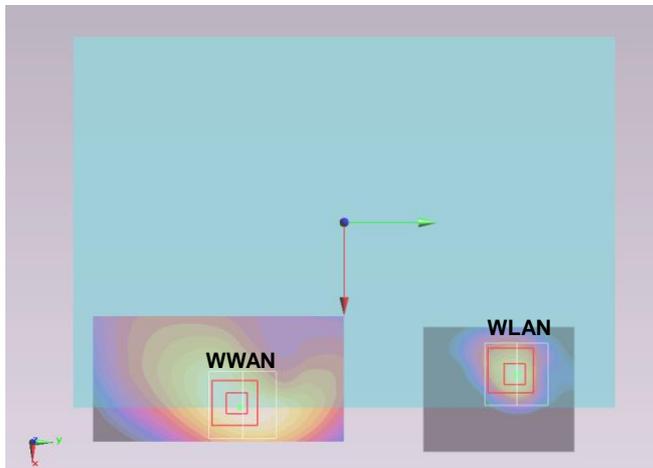
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
27	LTE Band 25	Bottom Face	1.249	0	0.078	-0.0575	-0.176	124.5	2.41	0.03	Not required
	WLAN 2.4GHz		1.161	0	0.0716	0.0668	-0.175				



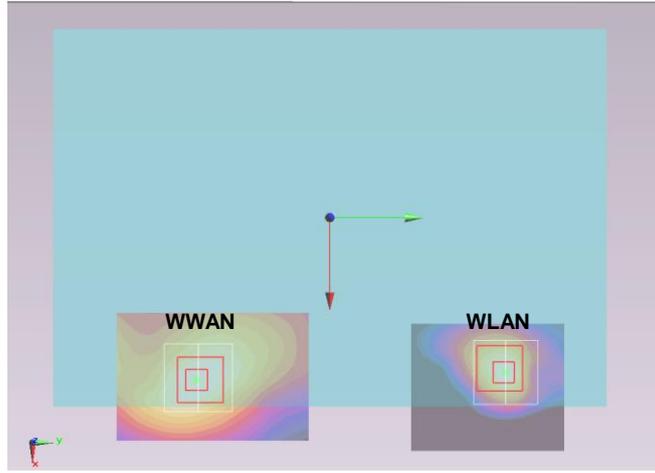
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
28	LTE Band 2	Edge1	1.396	0	-0.001	-0.0635	-0.179	136.3	1.63	0.02	Not required
	WLAN 2.4GHz		0.237	0	-0.0012	0.0728	-0.179				



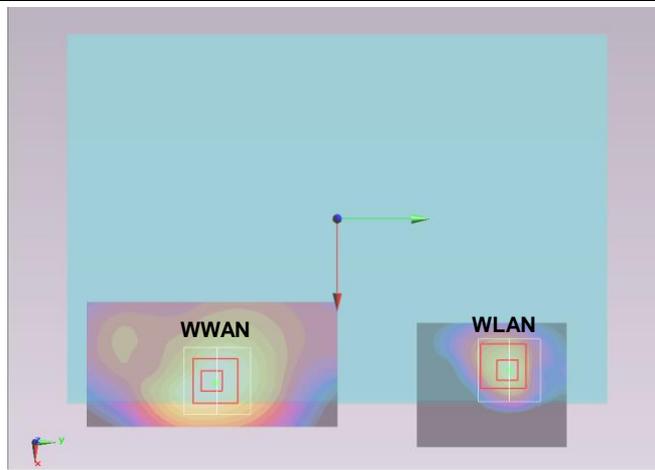
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
29	GSM850	Bottom Face	1.323	1.1	0.0875	-0.0485	-0.179	131.8	2.00	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



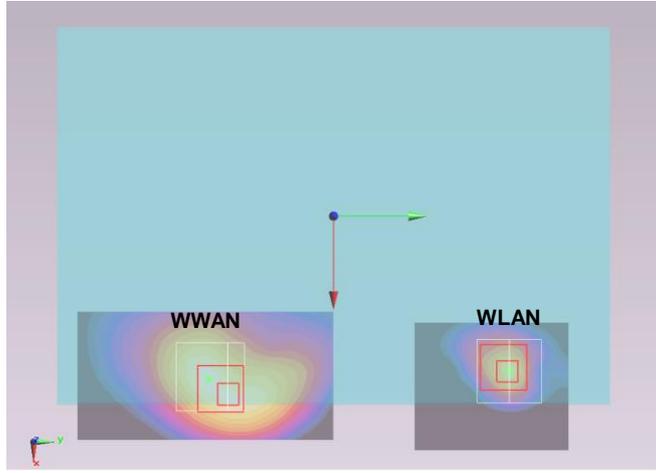
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
30	CDMA BC1	Bottom Face	0.98	1.1	0.0755	-0.0615	-0.176	143.9	1.66	0.01	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



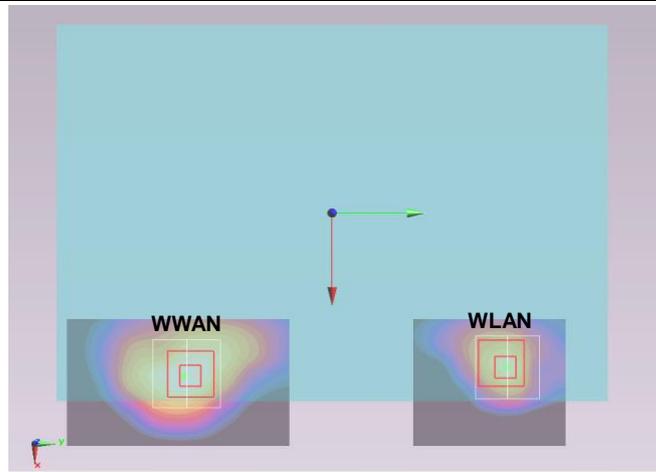
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
31	LTE Band 4	Bottom Face	1.185	1.1	0.078	-0.0575	-0.176	140.0	1.86	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



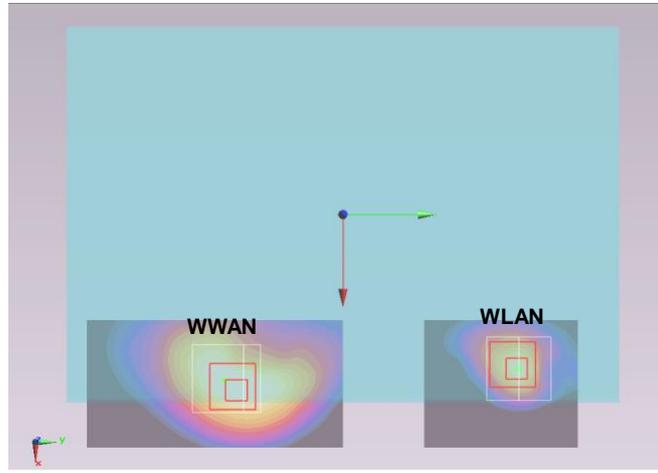
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
32	GSM850	Bottom Face	1.484	0	0.0835	-0.0495	-0.176	132.3	2.16	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



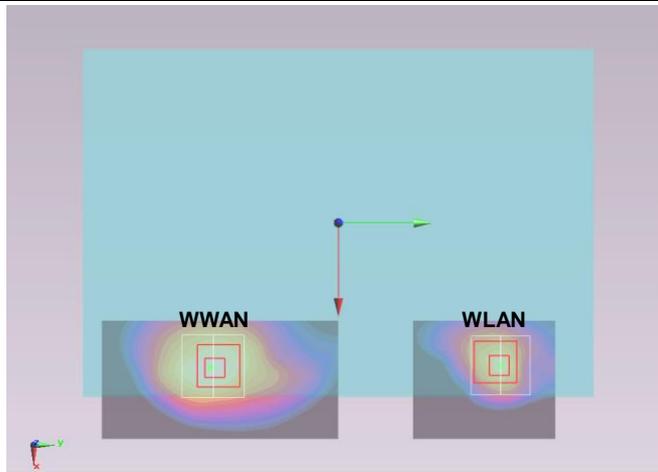
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
33	GSM1900	Bottom Face	1.411	0	0.076	-0.0685	-0.174	150.9	2.09	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



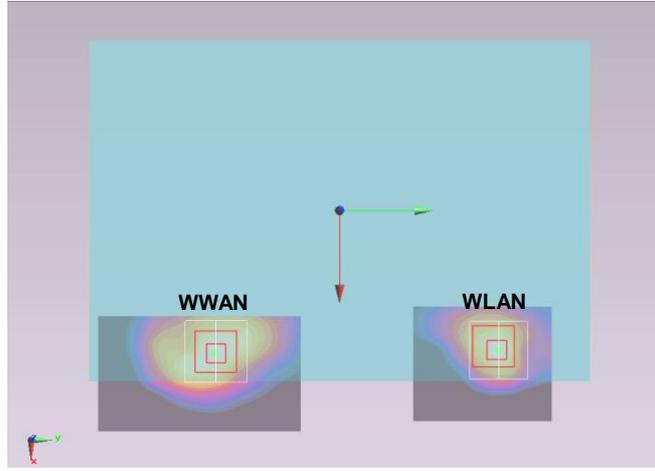
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
34	WCDMA V	Bottom Face	1.212	0	0.0855	-0.0465	-0.176	129.5	1.89	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



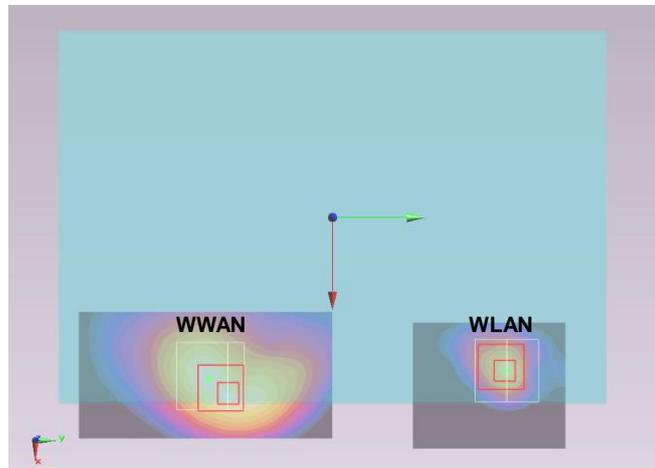
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
35	WCDMA IV	Bottom Face	1.131	0	0.073	-0.0635	-0.176	145.9	1.81	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



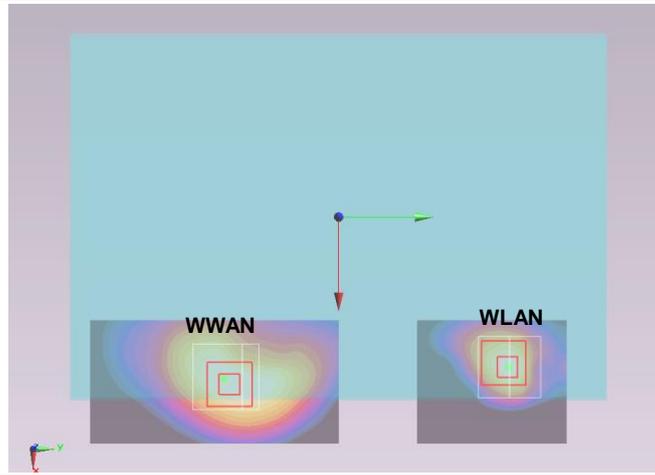
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
36	WCDMA II	Bottom Face	0.944	0	0.0735	-0.064	-0.174	146.4	1.62	0.01	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



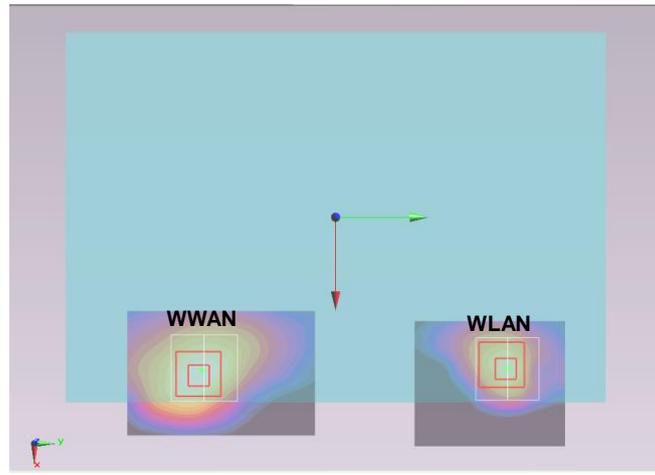
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
86	CDMA BC10	Bottom Face	0.921	0	0.0765	-0.055	-0.175	137.4	1.60	0.01	CDMA BC10 WLAN 2.4G
	WLAN 2.4G		0.676	0	0.0728	0.0824	-0.175				



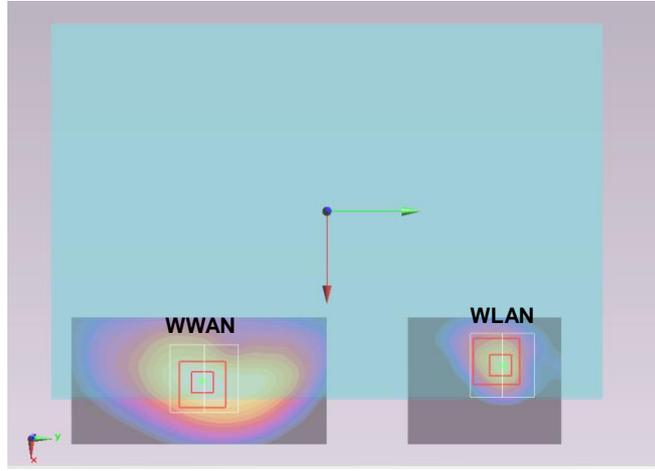
Case 85	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA BC0	Bottom Face	0.93	0	0.0855	-0.0465	-0.175	129.5	1.61	0.02	Not required
	WLAN 2.4G		0.676	0	0.0728	0.0824	-0.175				



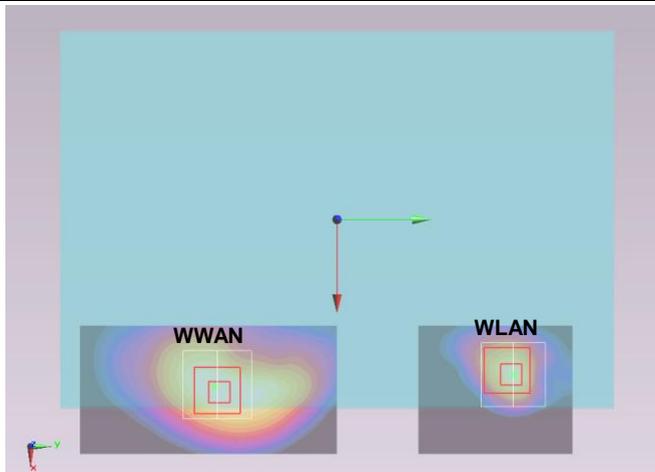
Case 37	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	CDMA BC1	Bottom Face	1.12	0	0.0725	-0.063	-0.175	145.4	1.80	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



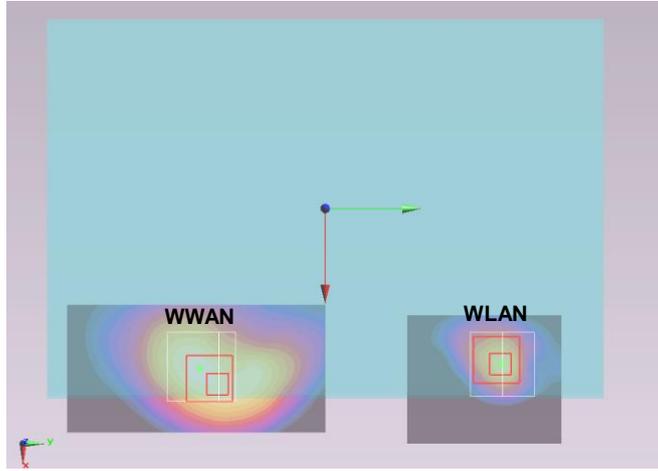
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
38	LTE Band 17	Bottom Face	1.211	0	0.079	-0.0575	-0.177	140.1	1.89	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



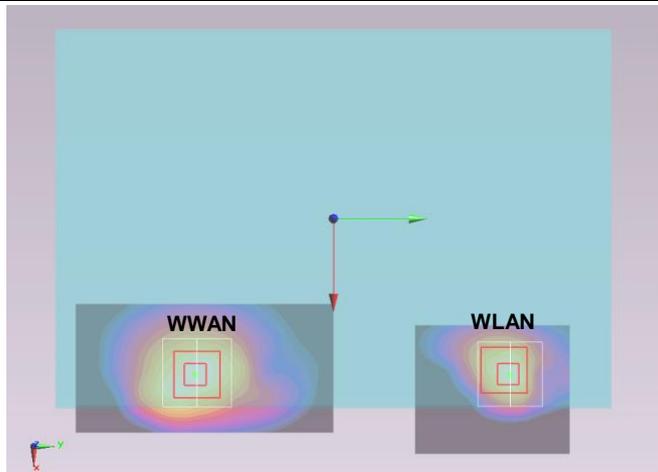
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
39	LTE Band 13	Bottom Face	1.184	0	0.0775	-0.056	-0.175	138.5	1.86	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



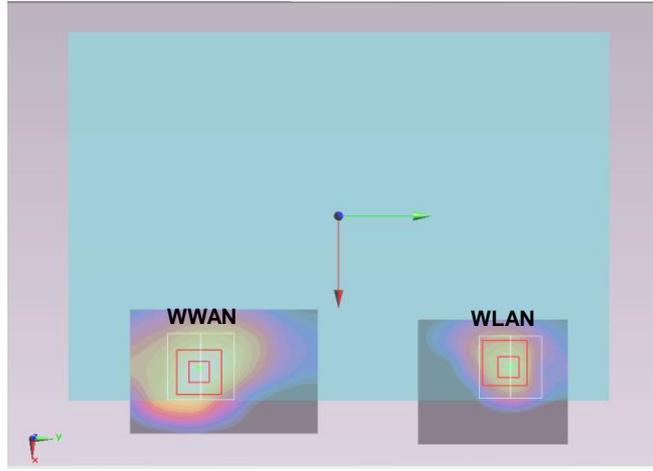
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
40	LTE Band 5	Bottom Face	1.348	0	0.082	-0.0495	-0.175	132.2	2.02	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



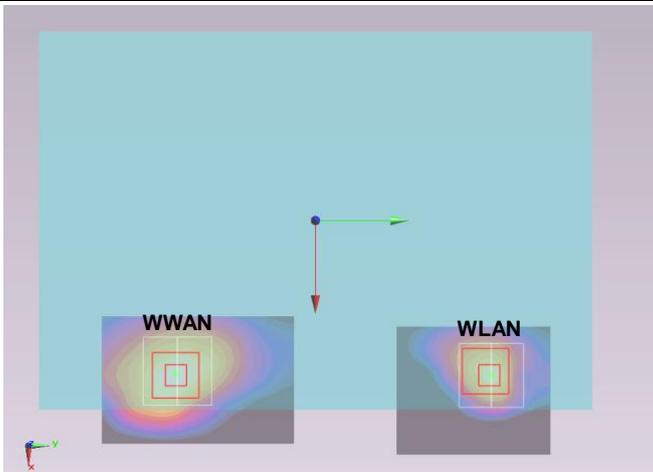
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
41	LTE Band 4	Bottom Face	1.261	0	0.072	-0.0635	-0.175	145.9	1.94	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



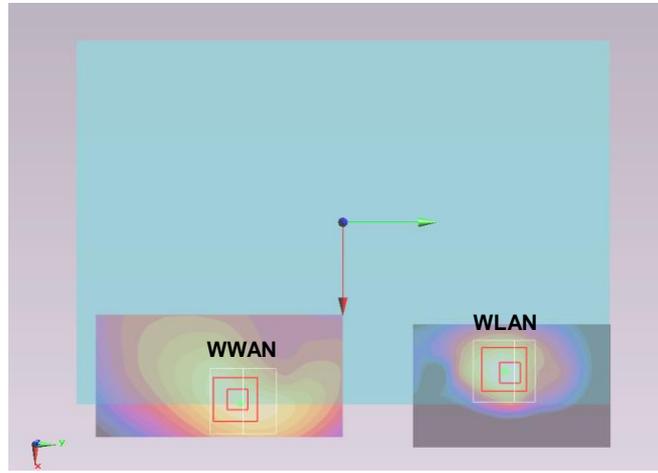
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
42	LTE Band 2	Bottom Face	1.378	0	0.0725	-0.066	-0.175	148.4	2.05	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



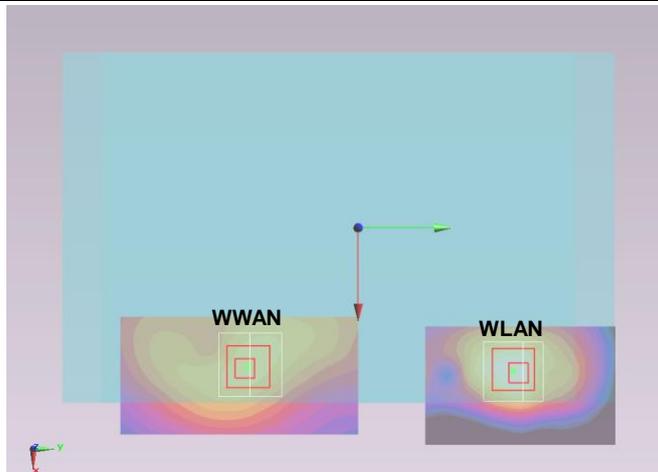
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
43	LTE Band 25	Bottom Face	1.249	0	0.078	-0.0575	-0.176	140.0	1.93	0.02	Not required
	WLAN 2.4GHz		0.676	0	0.0728	0.0824	-0.175				



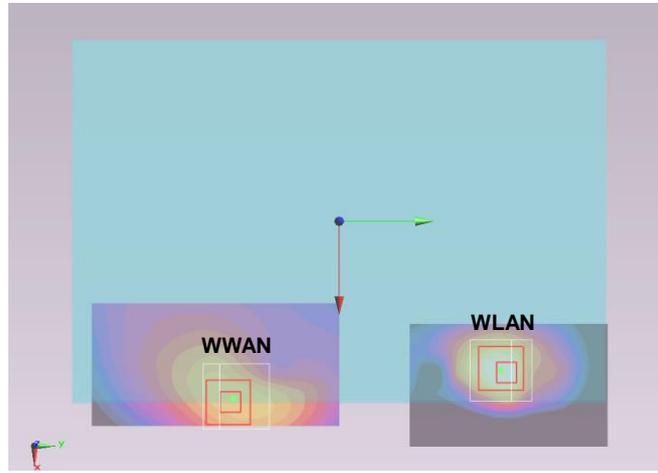
Case 44	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM850				X	Y	Z				
	WLAN2.4GHz	Bottom Face	1.323	1.1	0.0875	-0.0485	-0.179	132.8	2.49	0.03	Not required
			1.163	0	0.0728	0.0834	-0.175				



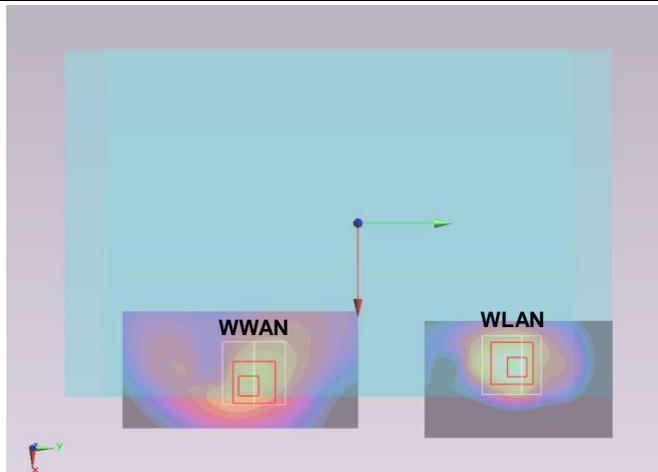
Case 45	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	GSM1900				X	Y	Z				
	WLAN2.4GHz	Bottom Face	0.673	1.1	0.0695	-0.0545	-0.179	138.0	1.84	0.02	Not required
			1.163	0	0.0728	0.0834	-0.175				



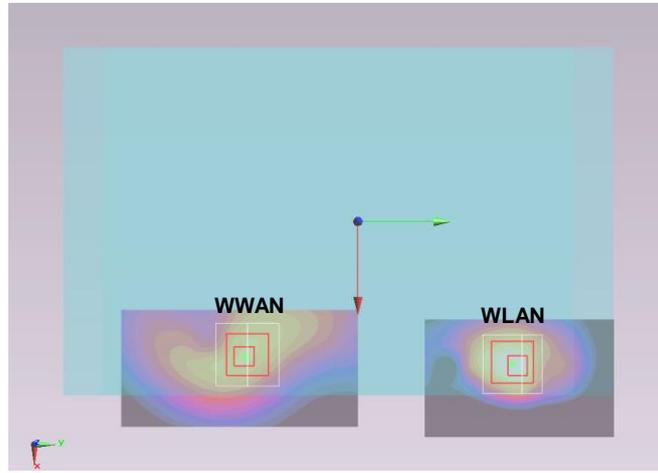
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
46	WCDMA V	Bottom Face	0.707	1.1	0.0855	-0.058	-0.179	142.0	1.87	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



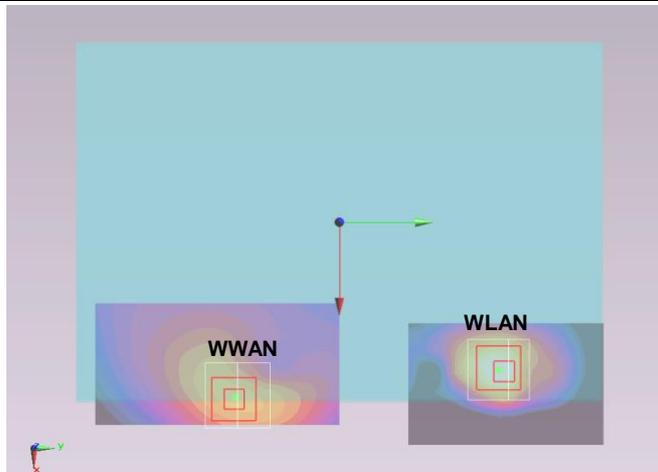
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
47	WCDMA IV	Bottom Face	0.799	1.1	0.085	-0.053	-0.179	137.0	1.96	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



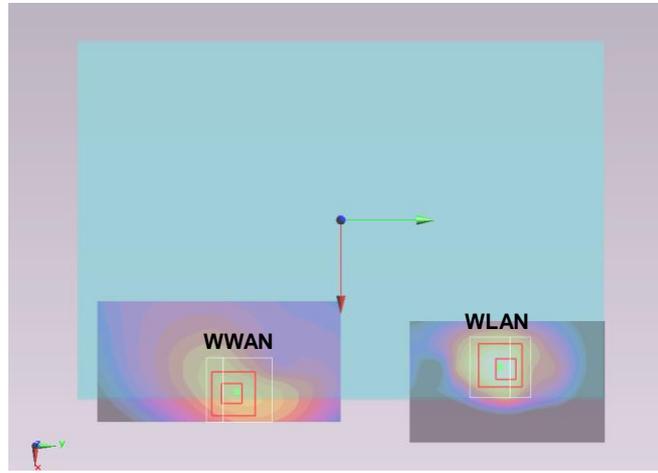
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
48	WCDMA II	Bottom Face	0.739	1.1	0.068	-0.056	-0.179	139.5	1.90	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



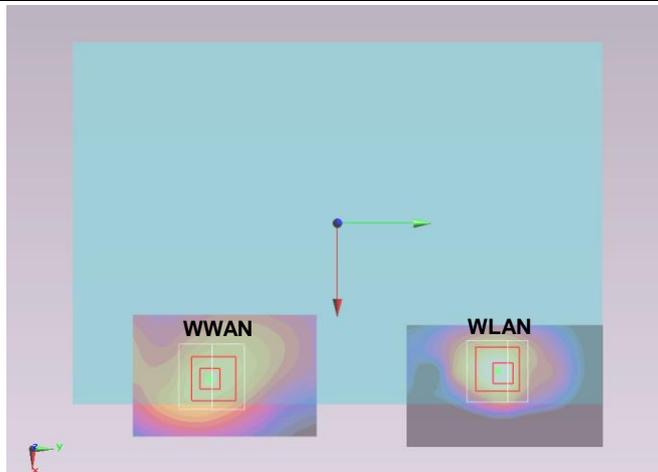
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
49	CDMA BC10	Bottom Face	0.669	1.1	0.0855	-0.05	-0.179	134.1	1.83	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



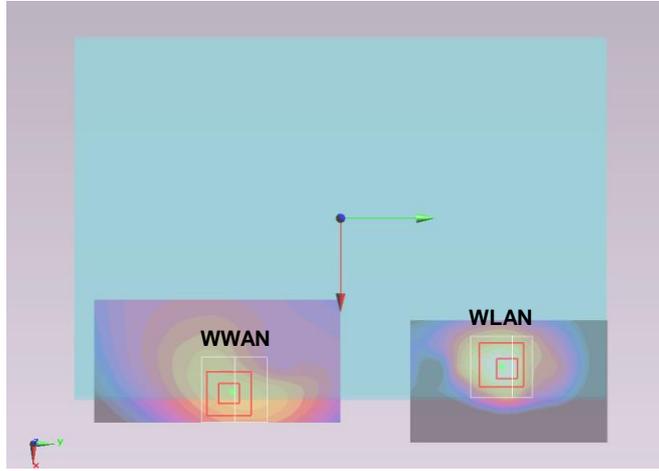
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
50	CDMA BC0	Bottom Face	0.652	1.1	0.084	-0.058	-0.179	141.9	1.82	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



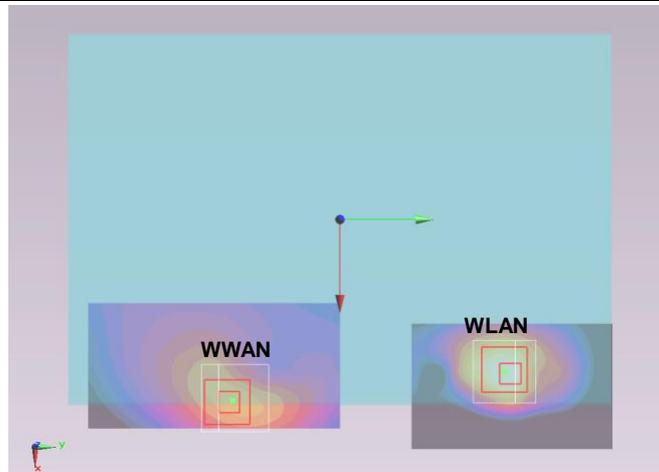
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
51	CDMA BC1	Bottom Face	0.98	1.1	0.0755	-0.0615	-0.176	144.9	2.14	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



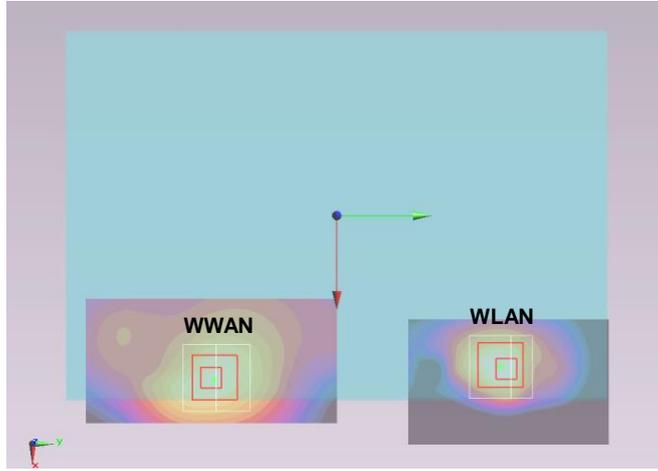
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
52	LTE Band 13	Bottom Face	0.624	1.1	0.084	-0.0515	-0.179	135.4	1.79	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



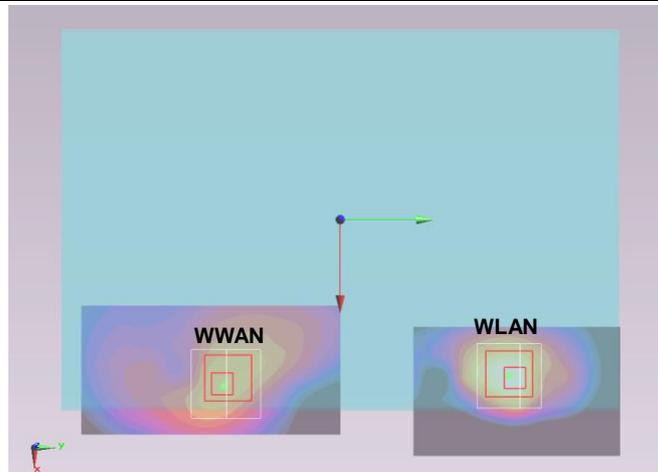
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
53	LTE Band 5	Bottom Face	0.584	1.1	0.0855	-0.058	-0.179	142.0	1.75	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



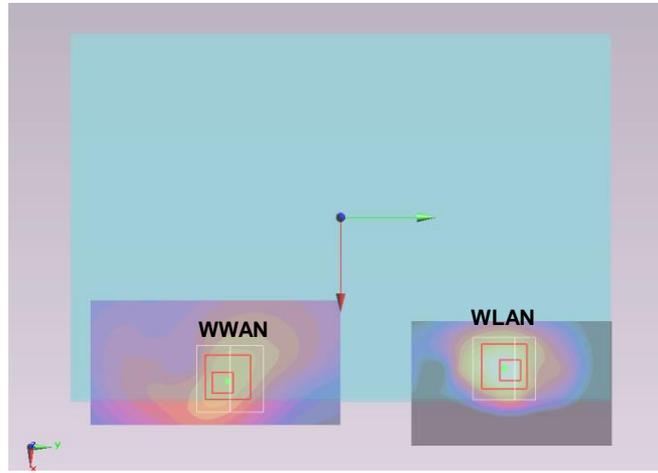
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
54	LTE Band 4	Bottom Face	1.185	1.1	0.078	-0.0575	-0.176	141.0	2.35	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



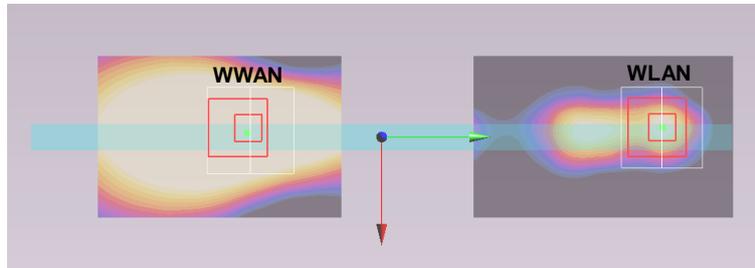
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
55	LTE Band 2	Bottom Face	0.659	1.1	0.0765	-0.053	-0.179	136.5	1.82	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



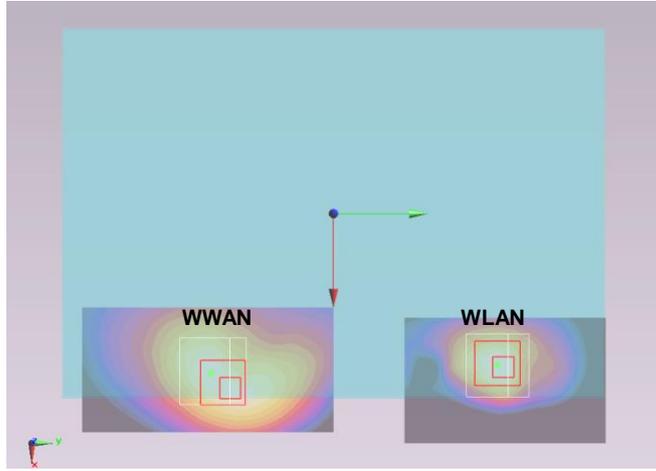
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
56	CDMA BC1	Back	1.500	1.5	-0.021	-0.062	-0.203	116.3	1.69	0.02	Not required
	WLAN2.4GHz		0.186	1.5	-0.0398	0.0528	-0.205				



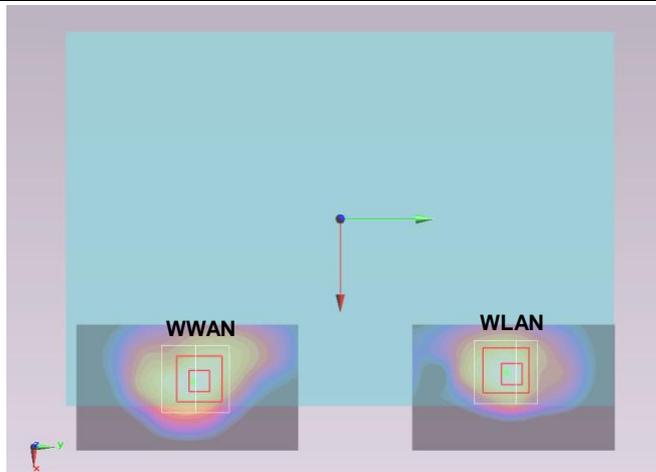
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
57	GSM850	Edge 1	1.343	0.7	-0.0025	-0.0485	-0.178	152.5	1.60	0.01	Not required
	WLAN2.4GHz		0.257	0	-0.0036	0.104	-0.18				



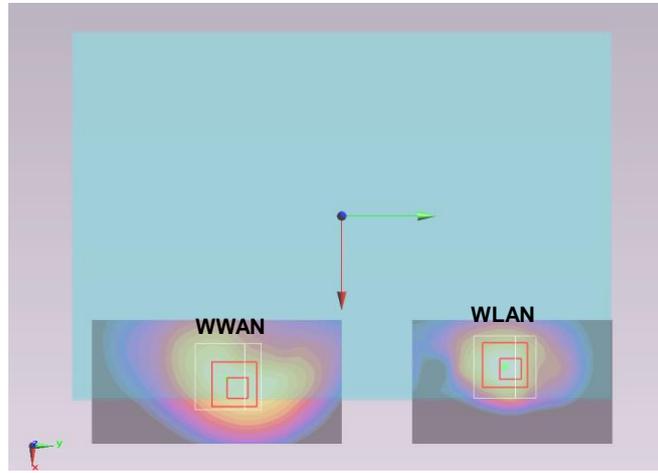
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
58	GSM850	Bottom Face	1.484	0	0.0835	-0.0495	-0.176	133.3	2.65	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



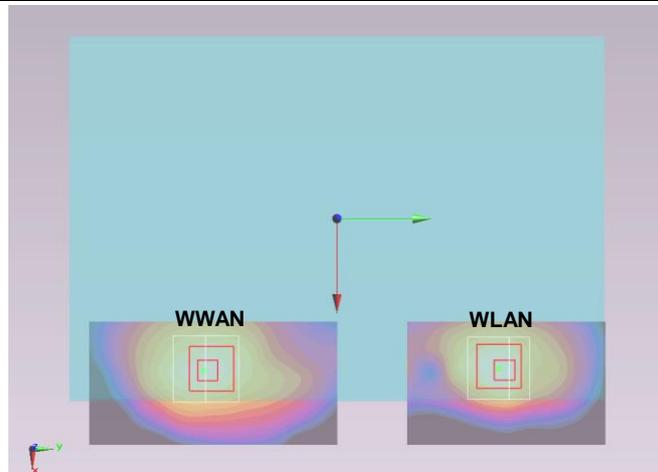
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
59	GSM1900	Bottom Face	1.411	0	0.076	-0.0685	-0.174	151.9	2.57	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



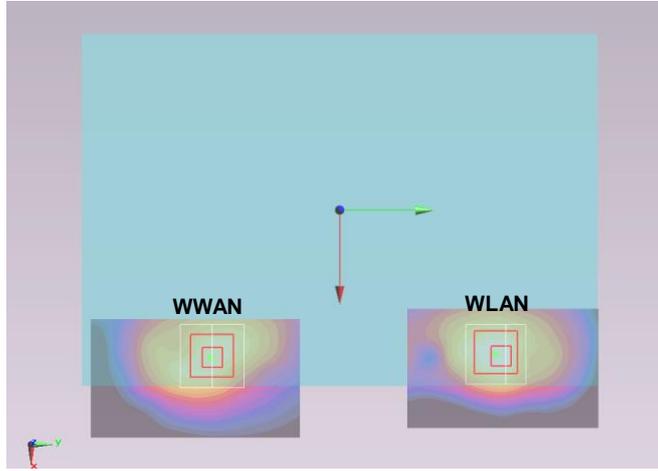
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
60	WCDMA V	Bottom Face	1.212	0	0.0855	-0.0465	-0.176	130.5	2.38	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



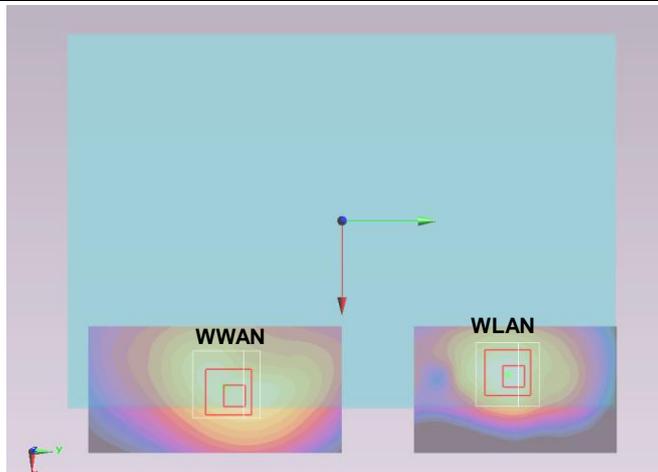
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
61	WCDMA IV	Bottom Face	1.131	0	0.073	-0.0635	-0.176	146.9	2.29	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



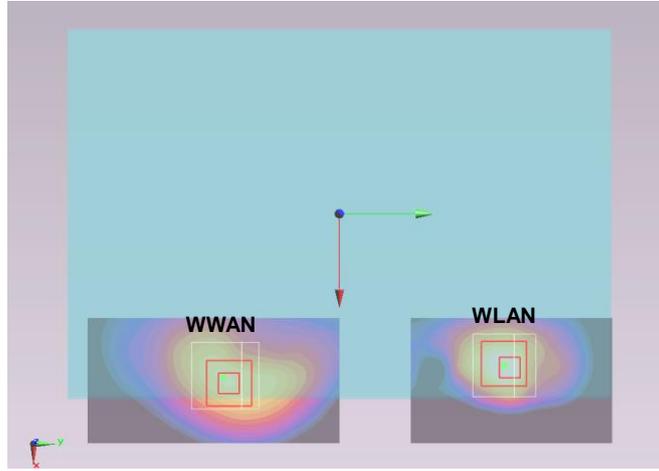
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
62	WCDMA II	Bottom Face	0.944	0	0.0735	-0.064	-0.174	147.4	2.11	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



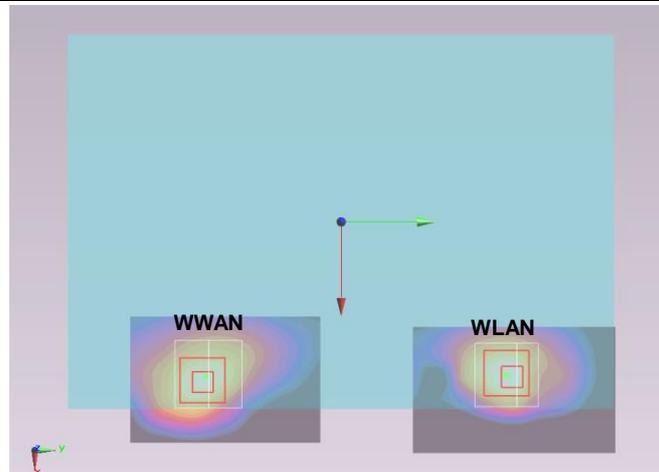
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
63	CDMA BC10	Bottom Face	0.921	0	0.0855	-0.0465	-0.176	130.5	2.08	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



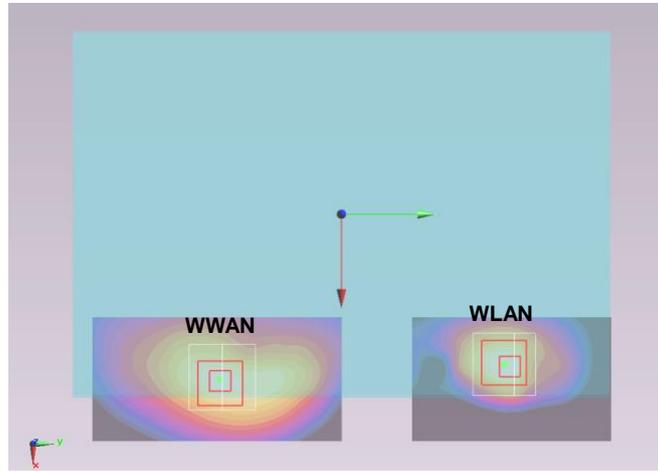
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
64	CDMA BC0	Bottom Face	0.93	0	0.0855	-0.0465	-0.175	130.5	2.09	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



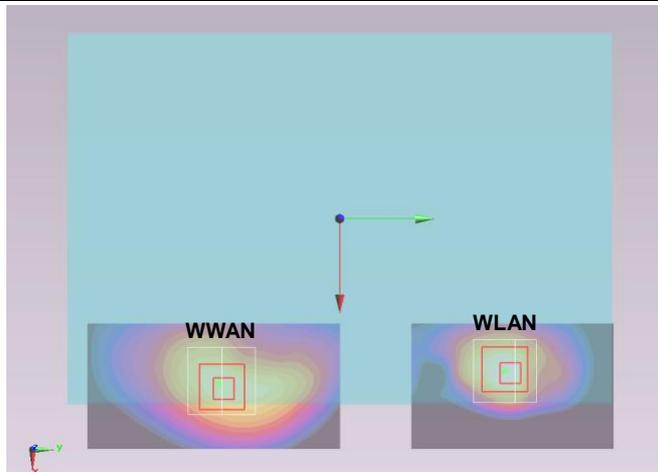
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
65	CDMA BC1	Bottom Face	1.12	0	0.0725	-0.063	-0.175	146.4	2.28	0.02	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



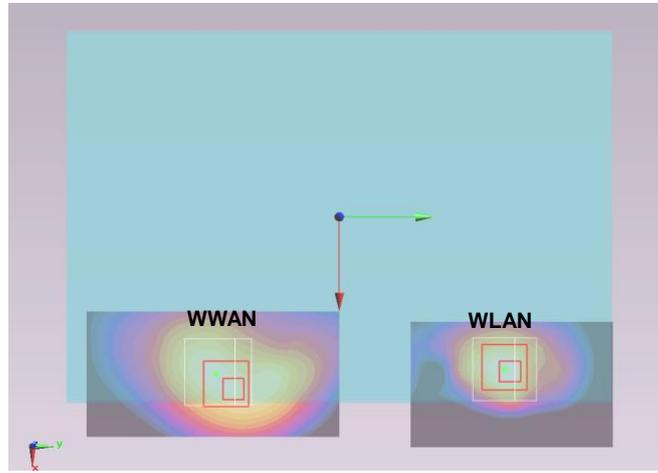
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
66	LTE Band 17	Bottom Face	1.211	0	0.079	-0.0575	-0.177	141.1	2.37	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



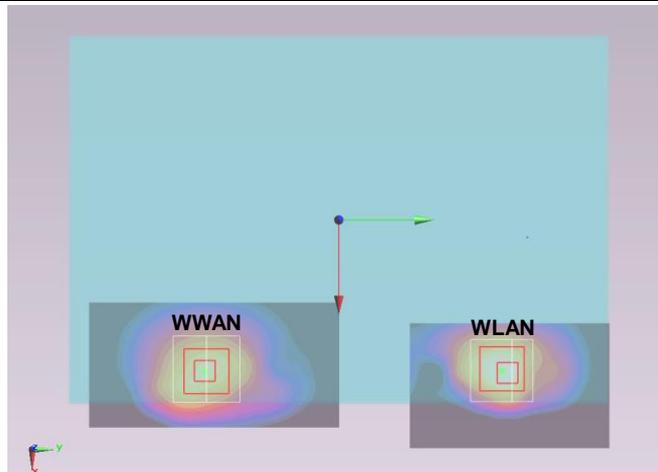
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
67	LTE Band 13	Bottom Face	1.184	0	0.0775	-0.056	-0.175	139.5	2.35	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



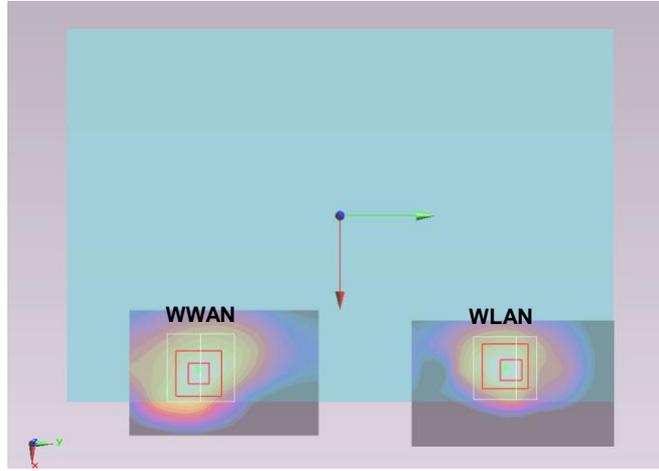
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
68	LTE Band 5	Bottom Face	1.348	0	0.082	-0.0495	-0.175	133.2	2.51	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



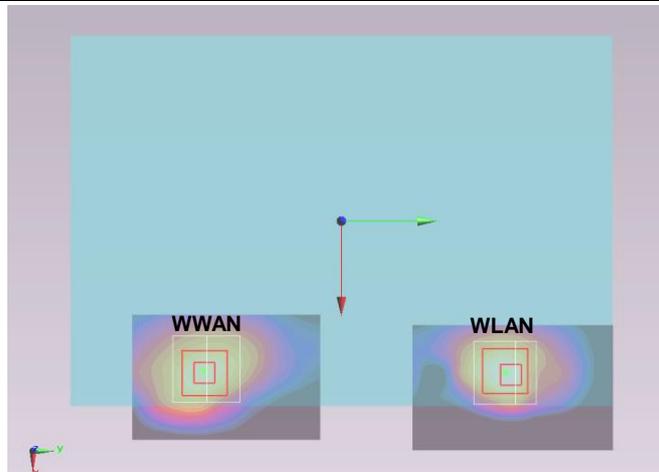
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
69	LTE Band 4	Bottom Face	1.261	0	0.072	-0.0635	-0.175	146.9	2.42	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



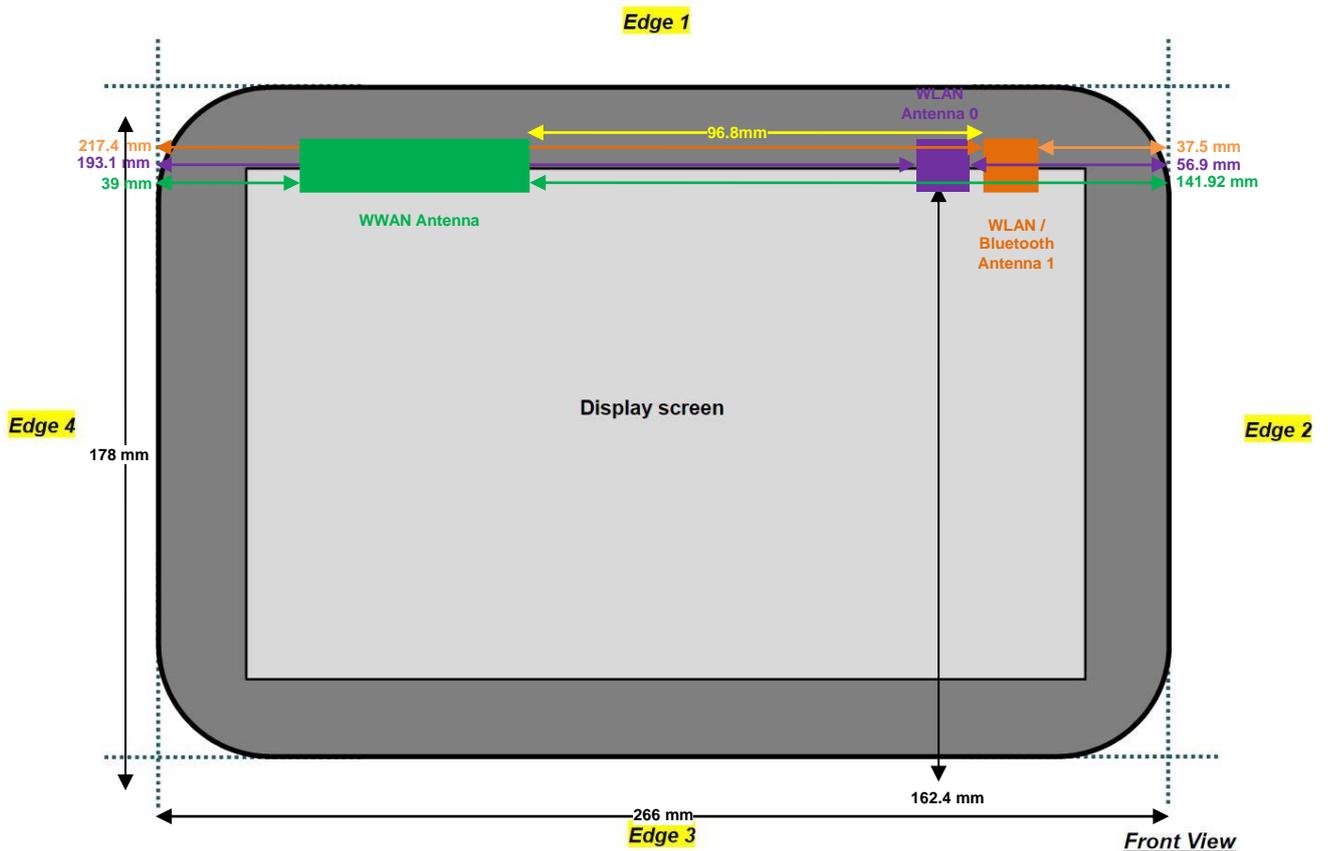
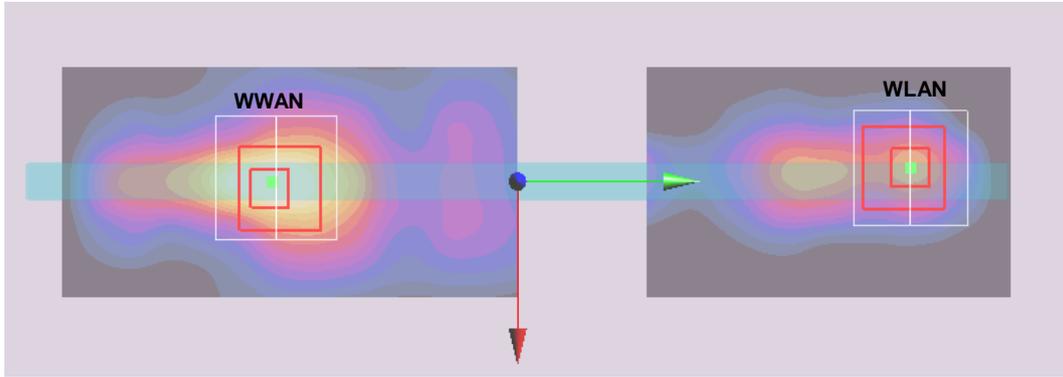
Case 70	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 2	Bottom Face	1.378	0	0.0725	-0.066	-0.175	149.4	2.54	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



Case 71	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Bottom Face	1.249	0	0.078	-0.0575	-0.176	141.0	2.41	0.03	Not required
	WLAN2.4GHz		1.163	0	0.0728	0.0834	-0.175				



Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
72	LTE Band 2	Edge 1	1.396	0	-0.001	-0.0635	-0.179	167.5	1.65	0.01	Not required
	WLAN2.4GHz		0.257	0	-0.0036	0.104	-0.18				



**Note:**

1. For Bluetooth SPLSR analysis, the minimum distance of "WWAN to Bluetooth antenna1" is used for conservative SPLSR calculation.
2.  $SPLSR = (SAR1 + SAR2)1.5 / (\text{min. separation distance, mm})$ . If  $SPLSR \leq 0.04$ , simultaneously transmission SAR measurement is not necessary.

Case 73	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	GSM850	Bottom Face	1.323	1.1	93.8	1.70	0.02	Not required
	BT		0.378	0				

Case 74	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	GSM850	Edge 1	1.343	0.7	96.8	1.72	0.02	Not required
	BT		0.378	0				

Case 75	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	WCDMA IV	Edge 1	1.287	0.7	96.8	1.67	0.02	Not required
	BT		0.378	0				

Case 76	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	WCDMA II	Edge 1	1.267	0.7	96.8	1.65	0.02	Not required
	BT		0.378	0				

Case 77	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	GSM850	Bottom Face	1.484	0	96.8	1.86	0.03	Not required
	BT		0.378	0				

Case 78	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	GSM1900	Bottom Face	1.411	0	96.8	1.79	0.02	Not required
	BT		0.378	0				

Case 79	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	LTE Band 5	Bottom Face	1.348	0	96.8	1.73	0.02	Not required
	BT		0.378	0				

Case 80	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	LTE Band 4	Bottom Face	1.261	0	96.8	1.64	0.02	Not required
	BT		0.378	0				

Case 81	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
				(cm)				
	LTE Band 2	Bottom Face	1.378	0	96.8	1.76	0.02	Not required
	BT		0.378	0				



Case 82	Band	Position	SAR (W/kg)	Gap (cm)	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
	LTE Band 25	Bottom Face	1.249	0				
BT	0.378		0					

Case 83	Band	Position	SAR (W/kg)	Gap (cm)	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
	GSM1900	Edge 1	1.240	0				
BT	0.378		0					

Case 84	Band	Position	SAR (W/kg)	Gap (cm)	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Result	Simultaneous SAR
	LTE Band 2	Edge 1	1.396	0				
BT	0.378		0					

**Test Engineer :** Nick Yu, Jack Wu, Tom Jiang, Galen Zhang, Domo Hsiao, Aaron Chen, Ted Sun, San Lin, Bevis Chang, Vic Yang, and Angelo Chang

## 17. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A 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 <sup>(a)</sup>	1/k <sup>(b)</sup>	1/√3	1/√6	1/√2

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

(b)  $\kappa$  is the coverage factor

**Table 14.1. 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 Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
<b>Measurement System</b>							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
<b>Test Sample Related</b>							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
<b>Phantom and Setup</b>							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
<b>Combined Standard Uncertainty</b>						± 11.0 %	± 10.8 %
<b>Coverage Factor for 95 %</b>						K=2	
<b>Expanded Uncertainty</b>						± 22.0 %	± 21.5 %

Table 14.2. Uncertainty Budget for frequency range 300 MHz to 3 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. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014
- [6] FCC KDB 941225 D01 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007
- [7] FCC KDB 941225 D02 v02r02, “SAR Guidance for HSPA, HSPA+, DC-HSDPA and 1x-Advanced”, May 2013.
- [8] FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008
- [9] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, Dec 2013
- [10] FCC KDB 616217 D04 v01r01, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, May 2013
- [11] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.
- [12] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.