

# FCC SAR Test Report

APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : XT1970-1, XT1970-2  
FCC ID : IHDT56XT1  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013

The product was received on Dec. 20, 2018 and testing was started from Jan. 28, 2019 and completed on Feb. 18, 2019. We, Sporton International (Kunshan) Inc, would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Approved by: Mark Qu / Manager

**Sporton International (Kunshan) Inc.**  
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### Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA8D2002	Rev. 01	Initial issue of report	Mar. 01, 2019



### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT1970-1, XT1970-2**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.33	1.43	1.43	1.59
		GSM1900	0.10	1.34	1.34	
	WCDMA	Band V	0.45	1.27	1.33	
		Band IV	0.17	1.26	1.21	
		Band II	0.18	1.28	1.28	
	LTE	Band 12/Band 17	0.23	1.08	1.08	
		Band 5	0.37	1.37	1.37	
		Band 66/Band 4	0.18	1.41	1.39	
		Band 2	0.21	1.26	1.29	
		Band 7	0.38	<b>1.44</b>	<b>1.44</b>	
DTS	WLAN	2.4GHz WLAN	<b>1.14</b>	0.74	0.74	1.59
NII		5GHz WLAN	0.98	0.62	1.14	1.58
DSS	Bluetooth	2.4GHz Bluetooth	0.10	<0.10	<0.10	1.58
Highest 10g SAR Summary						
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)		Highest Simultaneous Transmission 10g SAR (W/kg)	
Licensed	GSM	GSM850	1.58		3.99	
		GSM1900	2.29			
	WCDMA	Band V	2.37			
		Band IV	2.98			
		Band II	3.04			
	LTE	Band 5	2.00			
		Band 66/Band 4	3.16			
		Band 2	2.88			
		Band 7	<b>3.54</b>			
NII	WLAN	5GHz WLAN	0.99		3.99	
Date of Testing:			2019/1/28~2019/2/18			
<b>Remark:</b> This device supports both LTE B4/17 and B66/12. Since the supported frequency span for LTE B4/17 falls completely within the supports frequency span for LTE B66/12, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66/12.						

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



## **2. Administration Data**

<b>Testing Laboratory</b>	
<b>Test Site</b>	Sporton International (Kunshan) Inc.
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone, Jiangsu Province 215335, China TEL : 86-512-57900158 FAX : 86-512-57900958

<b>Applicant</b>	
<b>Company Name</b>	Motorola Mobility LLC
<b>Address</b>	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

<b>Manufacturer</b>	
<b>Company Name</b>	Motorola Mobility LLC
<b>Address</b>	222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

## **3. Guidance Applied**

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

## 4. Equipment Under Test (EUT) Information

### 4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1970-1, XT1970-2
FCC ID	IHDT56XT1
IMEI Code	SIM1: 352170100036552 SIM2: 352170100036560
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 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 ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC
HW Version	DVT2
SW Version	PSA29.76
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
<b>Remark:</b>	
<ol style="list-style-type: none"> <li>This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.</li> <li>This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.</li> <li>This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).</li> <li>This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.</li> <li>When the phone is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN2.4GHz.</li> <li>The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM850, WCDMA band II/IV/V and LTE band 2/4/5/7/66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)</li> </ol>	



- WCDMA band II/IV/V and LTE band 2/4/5/7/66.
8. This device hotspot reduced power and P-sensor reduced power level are the same for GSM850, WCDMA Band V and LTE Band 5. And for other Bands are different.
  9. For P-sensor reduced power level is higher than hotspot reduced power for WCDMA band II/IV and LTE band 2/4/7/66, so for front/back P-sensor SAR can represent conservatively for front/back hotspot SAR.
  10. For full power level is higher than hotspot reduced power for GSM1900, so for front/back full power SAR can represent conservatively for front/back hotspot SAR.
  11. P-sensor can detect handheld state, WCDMA band II/IV and LTE band 2/4/7/66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.
  12. This device has two WWAN transmitter antennas. WWAN antenna 1 is located at the right of bottom edge of the device and WWAN antenna 2 is located at the left side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V and LTE Band 2/4/5/12/17/66, WWAN antenna 2 frequency bands include LTE Band 7.
  13. There are two different types of EUT. They are single SIM card mobile (Model Name: XT1970-2) and dual SIM card mobile (Model Name: XT1970-1). The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
  14. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.



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

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56XT1																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R12, Cat6																																																														
CA Support	Supported, Downlink only																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</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>64 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> <tr> <td>256 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td></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>≤ 3</td> </tr> <tr> <td></td> <td colspan="6" style="text-align: center;">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						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	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	256 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2		> 5	> 4	> 8	> 12	> 16	> 18	≤ 3		≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						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																																																								
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																								
256 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																								
	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	<p>Yes</p> <ol style="list-style-type: none"> <li>The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, LTE band 2/4/5/7/66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)</li> <li>When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE band 2/4/5/7/66.</li> <li>P-sensor can detect handheld state, for front/back/bottom sides of product specific 10g SAR condition LTE band 2/4/7/66 reduced powers will be active.</li> </ol>																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.																																																														
LTE Carrier Aggregation Additional Information	This device supports maximum of 2 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



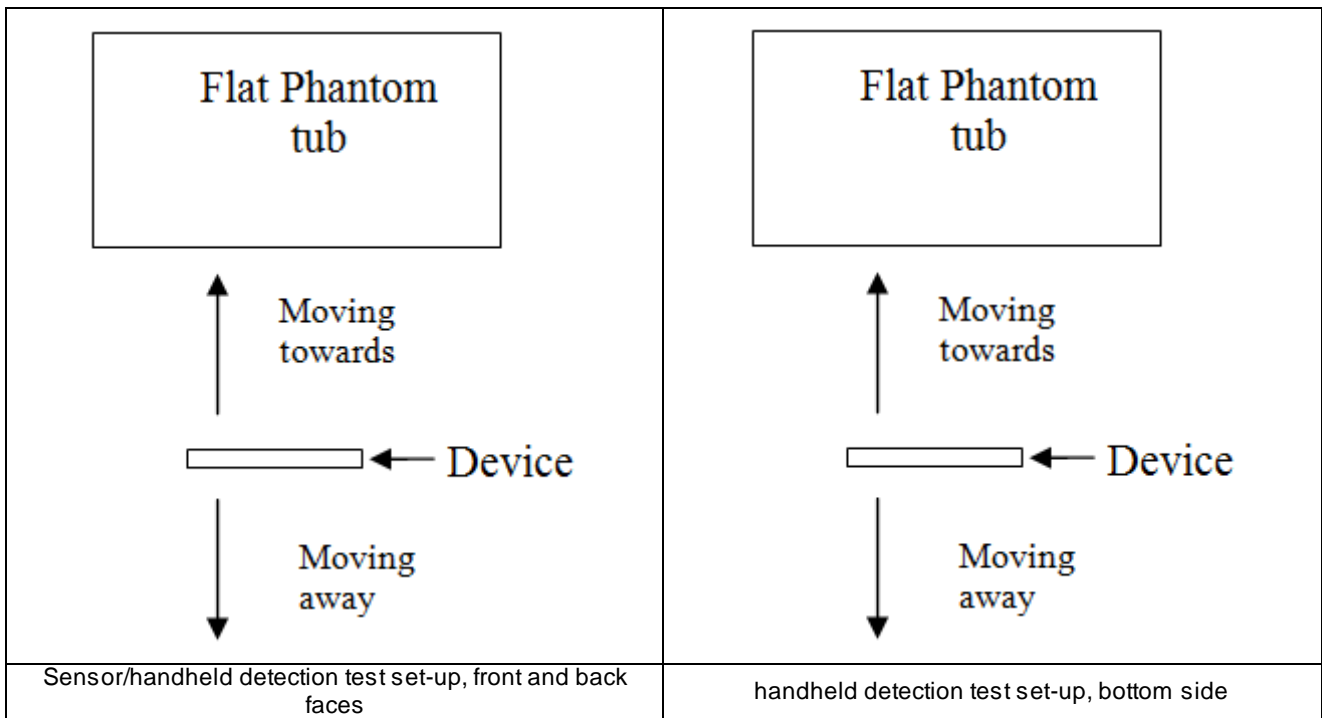


Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

## 5. Proximity Sensor Triggering Test

### 5.1 Proximity sensor triggering distances(Per KDB616217§6.2)

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (850MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensor placed coincident with antenna elements at the bottom end of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back side surface of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
3. When the sensor is active, GSM850, WCDMA band II/IV/V and LTE band 2/4/5/7/66 reduced power will be active.
4. The sensors used to detect the proximity of the user's body at the front or back side surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
5. P-sensor can detect handheld state, WCDMA band II/IV and LTE band 2/4/7/66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.



**<P-Sensor>**

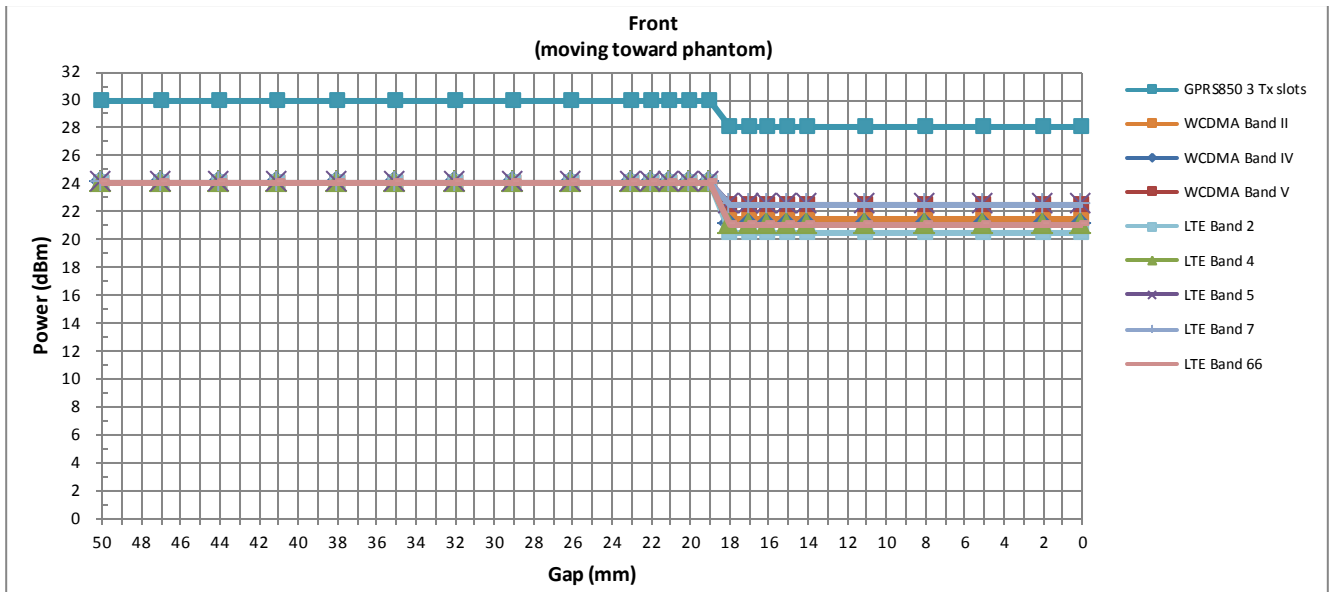
Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	18	21	22	26

TX. Band	Proximity Sensor Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit(dBm)	
GSM850 GPRS 3Tx slots	30	28	2.0
WCDMA Band II	24	21.5	2.5
WCDMA Band IV	24	21	3.0
WCDMA Band V	24	22.5	1.5
LTE Band2	24	20.5	3.5
LTE Band4	24	21	3.0
LTE Band5	24	22.5	1.5
LTE Band7	24	22.5	1.5
LTE Band66	24	21	3.0



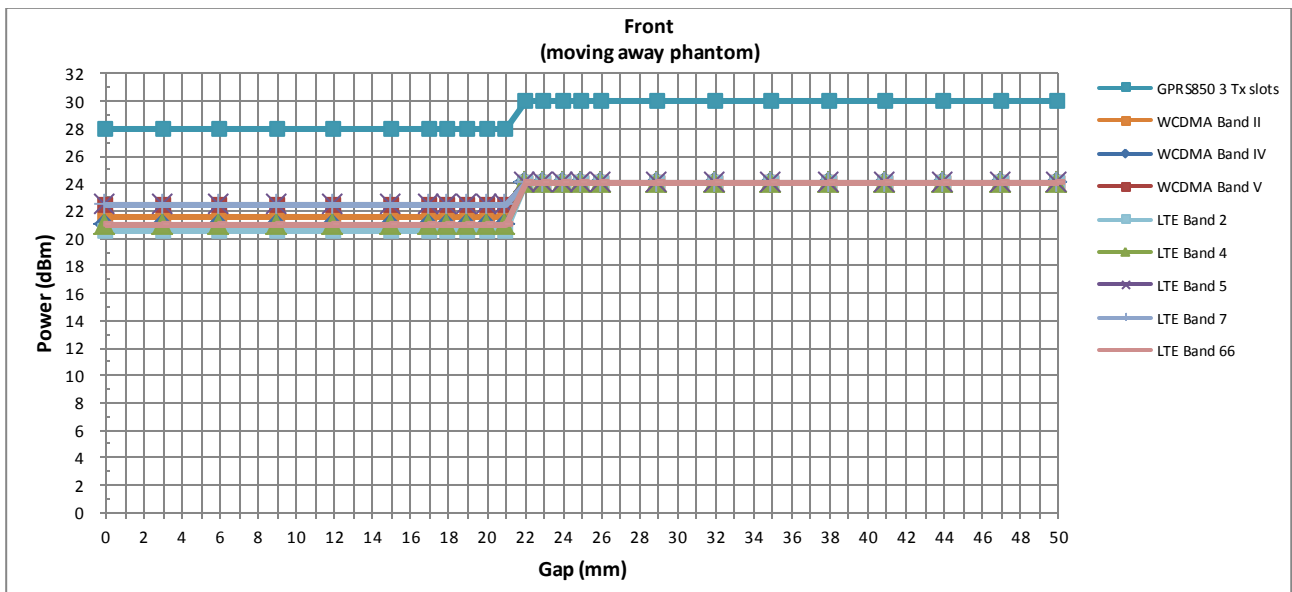
Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)

Front																								
Distance	50	47	44	41	38	35	32	29	26	23	22	21	20	19	18	17	16	15	14	11	8	5	2	0
GSM850 GPRS 3Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21
LTE Band5	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21



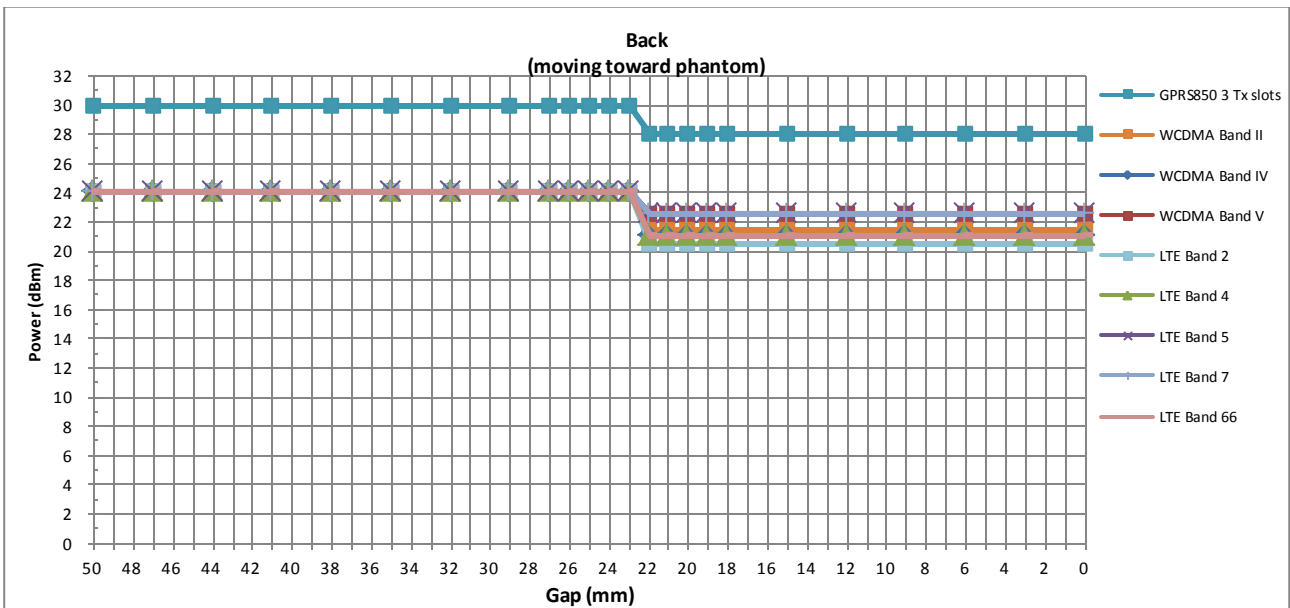


Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Front																								
Distance	50	47	44	41	38	35	32	29	26	25	24	23	22	21	20	19	18	17	15	12	9	6	3	0
GSM850 GPRS 3Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21
LTE Band5	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21





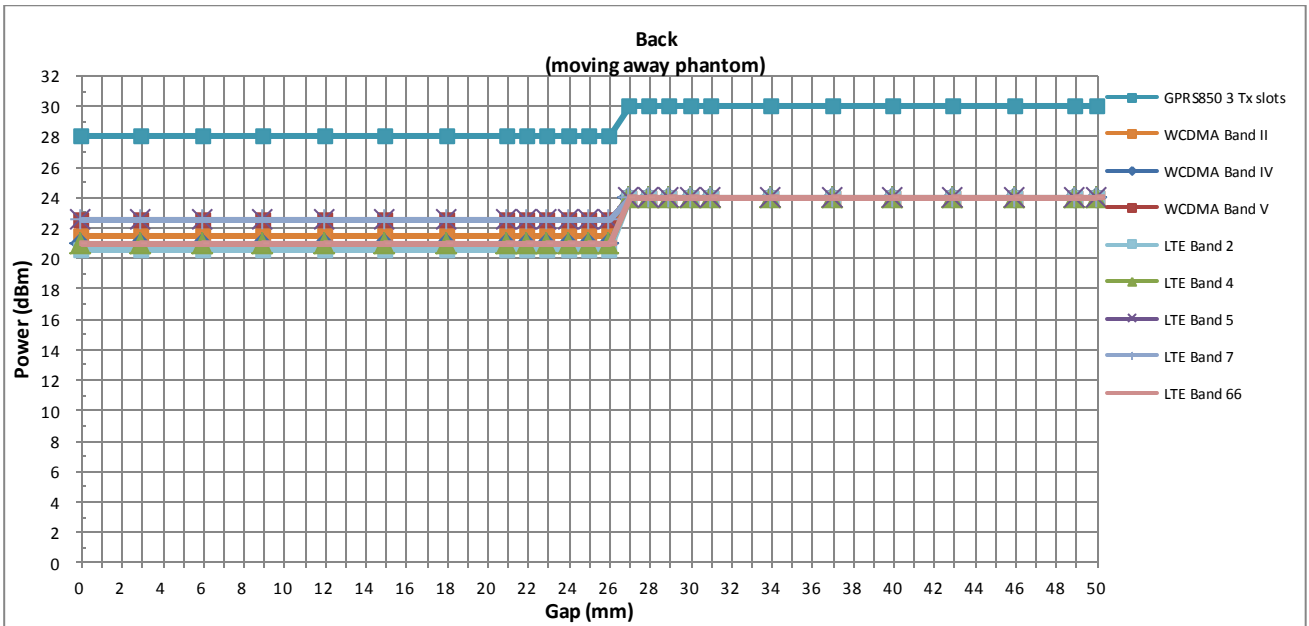
Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)																								
Back																								
Distance	50	47	44	41	38	35	32	29	27	26	25	24	23	22	21	20	19	18	15	12	9	6	3	0
GSM850 GPRS 3Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21
LTE Band5	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21





Proximity Sensor Triggering Distance (mm) and Triggering Power (dBm)

	Back																								
Distance	50	49	46	43	40	37	34	31	30	29	28	27	26	25	24	23	22	21	18	15	12	9	6	3	0
GSM850 GPRS 3Tx slots	30	30	30	30	30	30	30	30	30	30	30	30	28	28	28	28	28	28	28	28	28	28	28	28	28
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21
WCDMA Band V	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21
LTE Band5	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	21	21	21	21	21	21	21	21	21	21	21	21	21



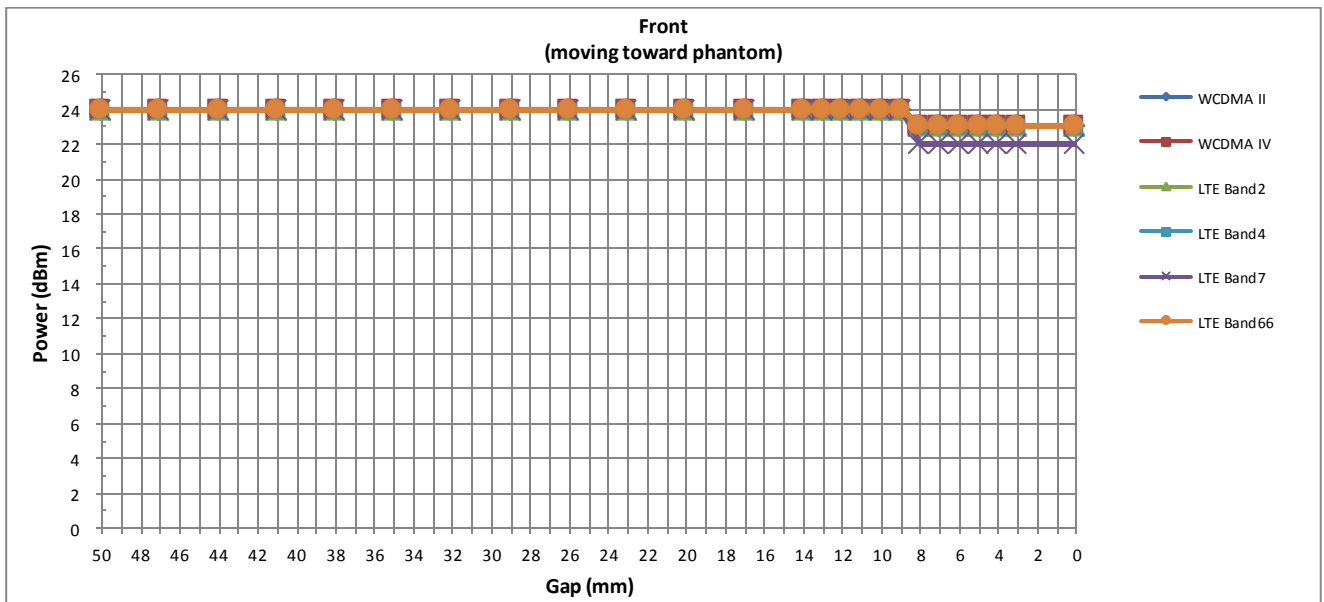


<Handheld>

Handheld Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	8	12	10	13	9	11

TX. Band	Handheld Triggering Power (dBm)		
	Full	Reduced	power reduction (dB)
	max. tune up limit (dBm)	max. tune up limit (dBm)	
WCDMA Band II	24	23	1
WCDMA Band IV	24	23	1
LTE Band2	24	23	1
LTE Band4	24	23	1
LTE Band7	24	22	2
LTE Band66	24	23	1

Handheld Triggering Distance (mm) and Triggering Power (dBm)																									
Front																									
Distance	50	47	44	41	38	35	32	29	26	23	20	17	14	13	12	11	10	9	8	7	6	5	4	3	0
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23

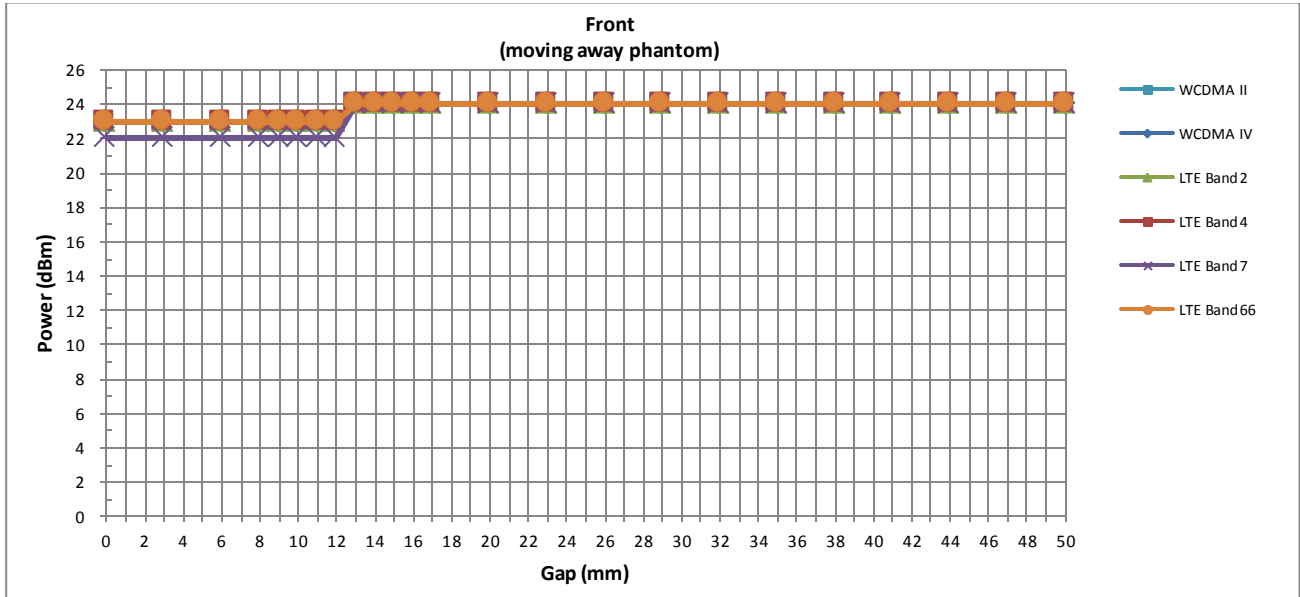






Handheld Triggering Distance (mm) and Triggering Power (dBm)

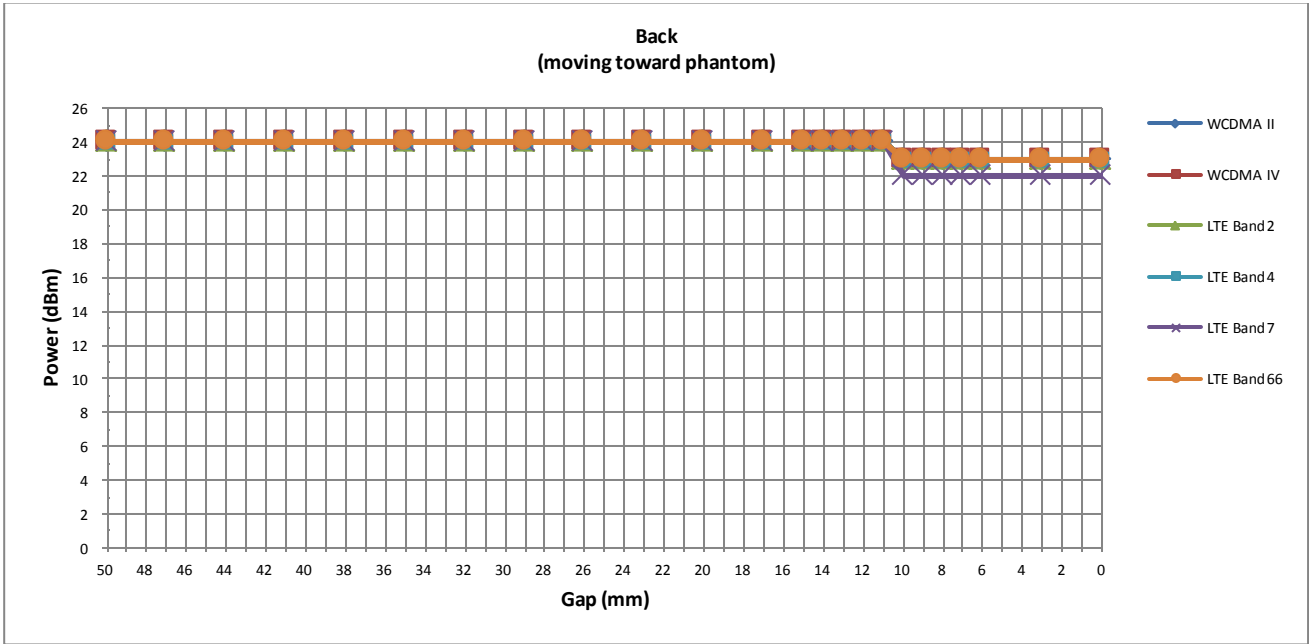
Front																								
Distance	50	47	44	41	38	35	32	29	26	23	20	17	16	15	14	13	12	11	10	9	8	6	3	0
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23





Handheld Triggering Distance (mm) and Triggering Power (dBm)

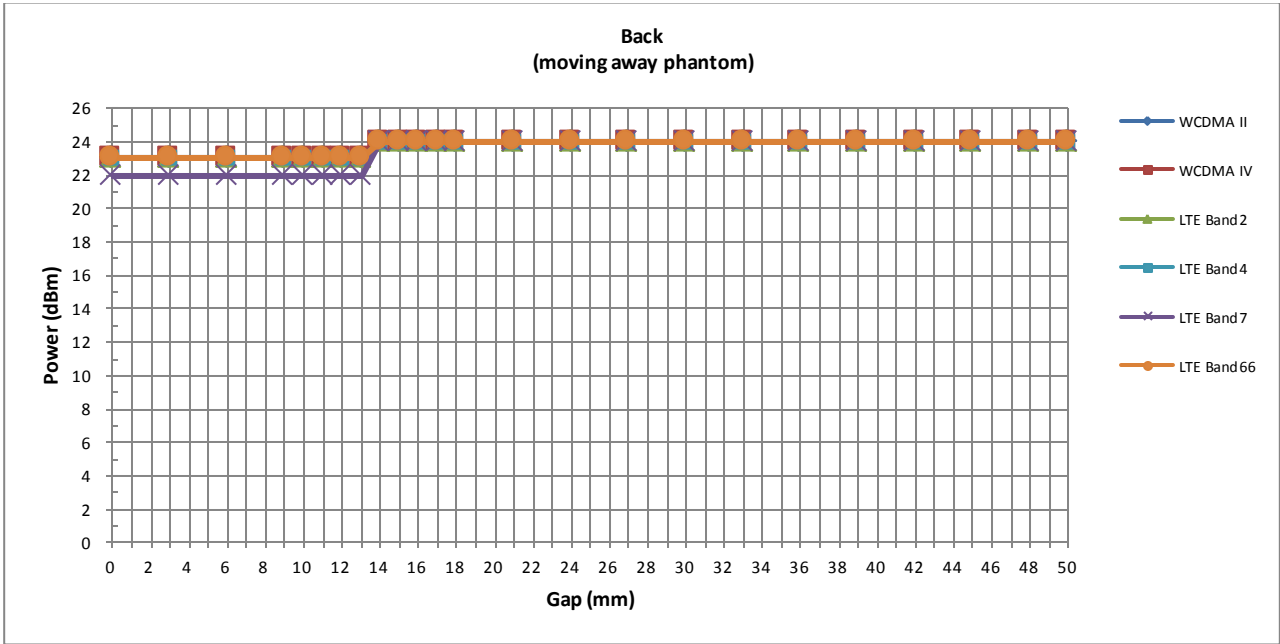
Back																								
Distance	50	47	44	41	38	35	32	29	26	23	20	17	15	14	13	12	11	10	9	8	7	6	3	0
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23





Handheld Triggering Distance (mm) and Triggering Power (dBm)

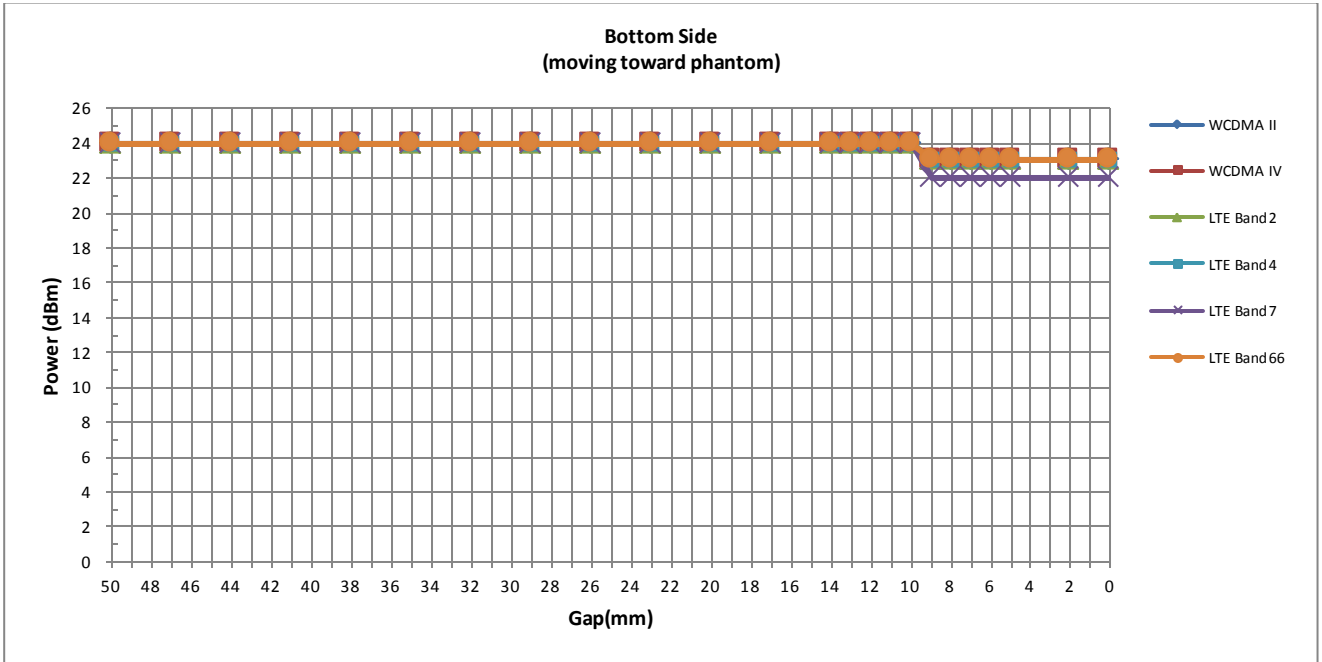
Back																								
Distance	50	48	45	42	39	36	33	30	27	24	21	18	17	16	15	14	13	12	11	10	9	6	3	0
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23





Handheld Triggering Distance (mm) and Triggering Power (dBm)

Bottom Side																								
Distance	50	47	44	41	38	35	32	29	26	23	20	17	14	13	12	11	10	9	8	7	6	5	2	0
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23

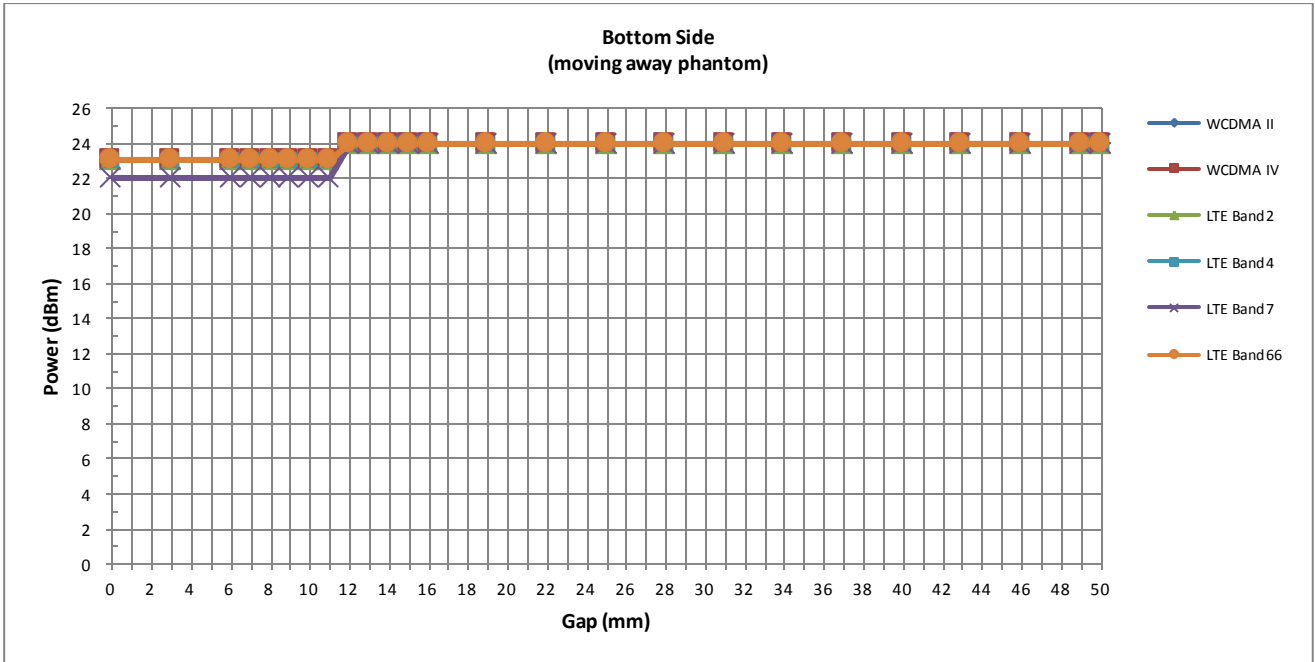




Handheld Triggering Distance (mm) and Triggering Power (dBm)

Bottom Side

Distance	50	49	46	43	40	37	34	31	28	25	22	19	16	15	14	13	12	11	10	9	8	7	6	3	0
WCDMA Band II	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
WCDMA Band IV	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band2	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band4	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23
LTE Band7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22
LTE Band66	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23



## **6. RF Exposure Limits**

### **6.1 Uncontrolled Environment**

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

### **6.2 Controlled Environment**

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

**Limits for Occupational/Controlled Exposure (W/kg)**

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

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

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

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

## **7. Specific Absorption Rate (SAR)**

### **7.1 Introduction**

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

### **7.2 SAR Definition**

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

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

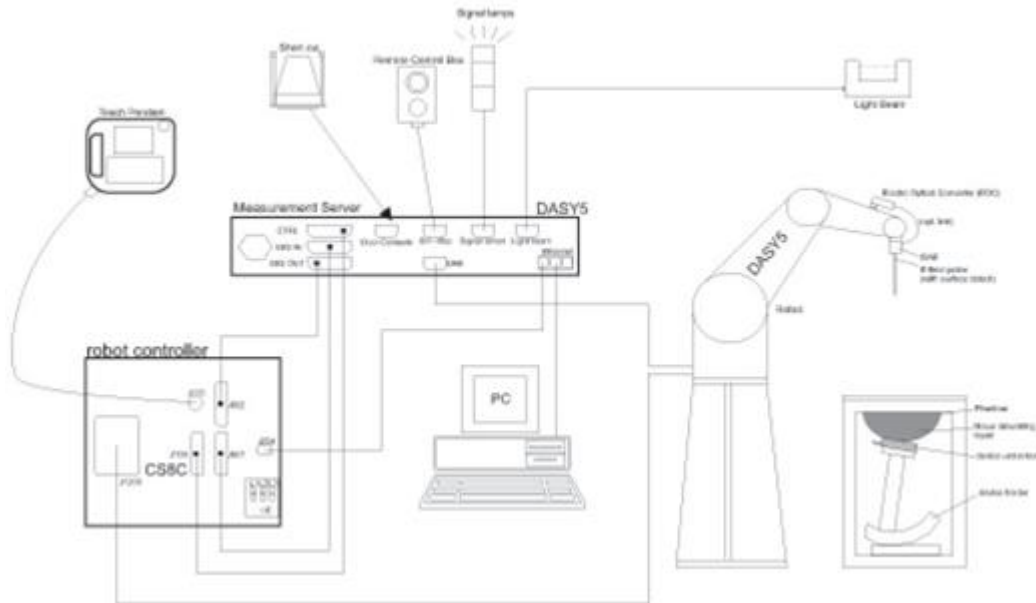
SAR is expressed in units of Watts per kilogram (W/kg)

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

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.



**8.1 E-Field Probe**

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

**<EX3DV4 Probe>**

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

**8.2 Data Acquisition Electronics (DAE)**

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

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



Photo of DAE

**8.3 Phantom**

**<SAM Twin Phantom>**

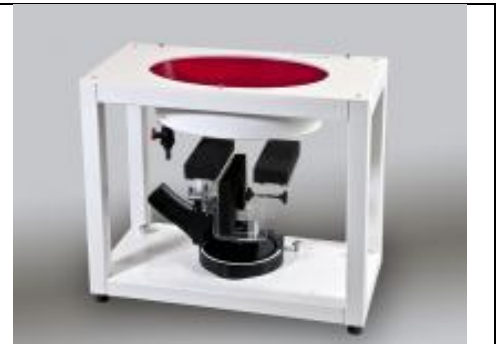
<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
<b>Filling Volume</b>	Approx. 25 liters
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
<b>Measurement Areas</b>	Left Hand, Right Hand, Flat Phantom



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

**<ELI Phantom>**

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



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

## 8.4 Device Holder

### <Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

## 9. Measurement Procedures

The measurement procedures are as follows:

### <Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequencyband.
- (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 frequencyband
- (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 dB) 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 D01 v01r04 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 D01 v01r04 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 DASy measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



### 10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2018/3/21	2019/3/20
SPEAG	835MHz System Validation Kit	D835V2	4d151	2018/3/26	2019/3/25
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2018/3/23	2019/3/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2018/3/25	2019/3/24
SPEAG	2450MHz System Validation Kit	D2450V2	908	2018/3/22	2019/3/21
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2018/12/7	2019/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1006	2018/9/27	2019/9/26
SPEAG	Data Acquisition Electronics	DAE4	1279	2018/10/22	2019/10/21
SPEAG	Data Acquisition Electronics	DAE4	1338	2018/12/3	2019/12/2
SPEAG	Dosimetric E-Field Probe	EX3DV4	3843	2018/9/27	2019/9/26
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2018/5/31	2019/5/30
SPEAG	SAM Tw in Phantom	QD 000 P40 CB	TP-1754	NCR	NCR
SPEAG	SAM Tw in Phantom	QD 000 P40 CB	TP-1839	NCR	NCR
SPEAG	SAM Tw in Phantom	QD 000 P40 CB	TP-1842	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201274349	2018/8/16	2019/8/15
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2018/4/17	2019/4/16
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2018/4/17	2019/4/16
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	2018/11/20	2019/11/19
Anritsu	Vector Signal Generator	MG3710A	6201682672	2019/1/14	2020/1/13
R&S	Power Meter	NRVD	102081	2018/8/20	2019/8/19
R&S	Power Sensor	NRV-Z5	100538	2018/8/20	2019/8/19
R&S	Power Sensor	NRV-Z5	100539	2018/8/20	2019/8/19
R&S	CBT BLUETOOTH TESTER	CBT	101641	2019/1/14	2020/1/13
EXA	Spectrum Analyzer	FSV7	101631	2019/1/14	2020/1/13
Testo	Hygrometer	608-H1	1241332126	2018/8/21	2019/8/20
FLUKE	DIGITAC THERMOMETER	51II	97240029	2018/8/8	2019/8/7
ARRA	Power Divider	A3200-2	N/A		Note
MCL	Attenuation1	BW-S10W5+	N/A		Note
MCL	Attenuation2	BW-S10W5+	N/A		Note
MCL	Attenuation3	BW-S10W5+	N/A		Note
Agilent	Dual Directional Coupler	778D	20500		Note
Agilent	Dual Directional Coupler	11691D	MY48151020		Note
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A		Note
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B		Note

**Note:** 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

## 11. System Verification

### 11.1 Tissue Simulating Liquids

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

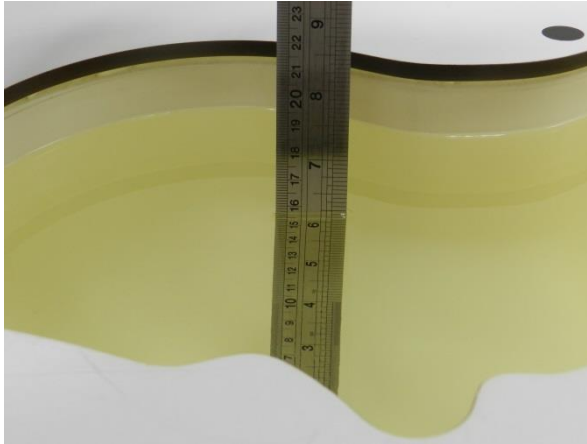


Fig 11.1 Photo of Liquid Height for Head SAR

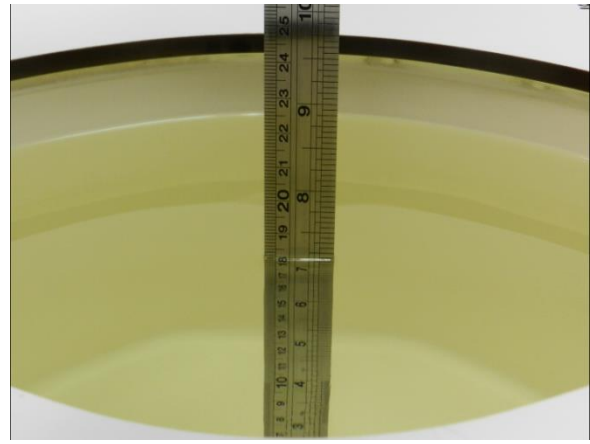


Fig 11.2 Photo of Liquid Height for Body SAR



**11.2 Tissue Verification**

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

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

**Simulating Liquid for 5GHz, Manufactured by SPEAG**

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

**<Tissue Dielectric Parameter Check Results>**

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Conductivity Target ( $\sigma$ )	Permittivity Target ( $\epsilon_r$ )	Delta ( $\sigma$ ) (%)	Delta ( $\epsilon_r$ ) (%)	Lim it (%)	Date
750	Head	22.7	0.887	41.628	0.89	41.90	-0.34	-0.65	±5	2019/2/14
835	Head	22.8	0.944	41.992	0.90	41.50	4.89	1.19	±5	2019/2/14
1750	Head	22.8	1.367	41.375	1.37	40.10	-0.22	3.18	±5	2019/2/14
1900	Head	22.7	1.409	39.618	1.40	40.00	0.64	-0.95	±5	2019/2/15
2450	Head	22.5	1.876	38.357	1.80	39.20	4.22	-2.15	±5	2019/1/30
2600	Head	22.6	2.051	37.789	1.96	39.00	4.64	-3.11	±5	2019/2/15
5250	Head	22.8	4.788	35.795	4.71	35.90	1.66	-0.29	±5	2019/1/30
5600	Head	22.9	5.142	35.264	5.07	35.50	1.42	-0.66	±5	2019/1/30
5750	Head	22.6	5.302	35.036	5.22	35.40	1.57	-1.03	±5	2019/1/31
750	Body	22.5	0.959	55.915	0.96	55.50	-0.10	0.75	±5	2019/2/18
835	Body	22.5	0.995	54.536	0.97	55.20	2.58	-1.20	±5	2019/2/18
1750	Body	22.7	1.475	53.564	1.49	53.40	-1.01	0.31	±5	2019/2/17
1900	Body	22.9	1.538	52.781	1.52	53.30	1.18	-0.97	±5	2019/2/20
2450	Body	22.7	2.007	53.183	1.95	52.70	2.92	0.92	±5	2019/1/30
2600	Body	22.6	2.217	52.615	2.16	52.50	2.64	0.22	±5	2019/2/16
5250	Body	22.7	5.350	47.942	5.36	48.90	-0.19	-1.96	±5	2019/1/28
5600	Body	22.7	5.793	47.327	5.77	48.50	0.40	-2.42	±5	2019/1/28
5750	Body	22.8	5.997	47.119	5.94	48.30	0.96	-2.45	±5	2019/1/28

**11.3 System Performance Check Results**

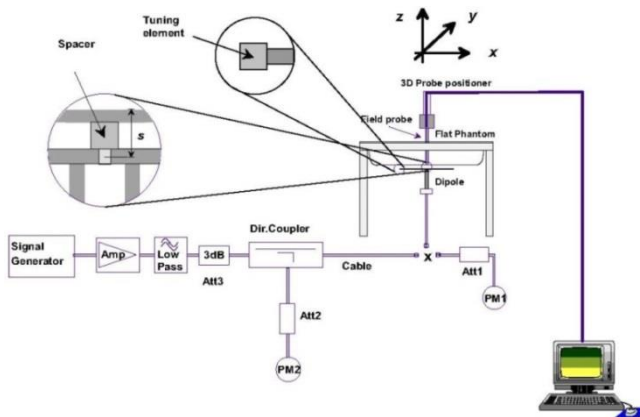
Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the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

**<1g SAR>**

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2019/2/14	750	Head	250	1087	3843	1338	1.93	8.25	7.72	-6.42
2019/2/14	835	Head	250	4d151	3843	1338	2.39	9.66	9.56	-1.04
2019/2/14	1750	Head	250	1090	3843	1338	9.73	37.40	38.92	4.06
2019/2/15	1900	Head	250	5d170	3843	1338	9.44	39.90	37.76	-5.36
2019/1/30	2450	Head	250	908	3843	1338	13.30	51.80	53.20	2.70
2019/2/15	2600	Head	250	1061	3843	1338	13.90	57.70	55.60	-3.64
2019/1/30	5250	Head	100	1006	3857	1279	7.80	80.70	78.00	-3.35
2019/1/30	5600	Head	100	1006	3857	1279	8.66	83.30	86.60	3.96
2019/1/31	5750	Head	100	1006	3857	1279	7.97	80.40	79.70	-0.87
2019/2/18	750	Body	250	1087	3843	1338	2.15	8.57	8.60	0.35
2019/2/18	835	Body	250	4d151	3843	1338	2.47	9.58	9.88	3.13
2019/2/17	1750	Body	250	1090	3843	1338	9.94	37.50	39.76	6.03
2019/2/20	1900	Body	250	5d170	3843	1338	9.49	40.70	37.96	-6.73
2019/1/30	2450	Body	250	908	3857	1279	12.30	50.70	49.20	-2.96
2019/2/16	2600	Body	250	1061	3843	1338	14.40	54.20	57.60	6.27
2019/1/28	5250	Body	100	1006	3857	1279	7.55	78.30	75.50	-3.58
2019/1/28	5600	Body	100	1006	3857	1279	7.83	81.00	78.30	-3.33
2019/1/28	5750	Body	100	1006	3857	1279	7.53	77.40	75.30	-2.71

**<10g SAR>**

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2019/2/18	835	Body	250	4d151	3843	1338	1.59	6.31	6.36	0.79
2019/2/17	1750	Body	250	1090	3843	1338	5.15	19.90	20.6	3.52
2019/2/20	1900	Body	250	5d170	3843	1338	4.73	20.90	18.92	-9.47
2019/2/16	2600	Body	250	1061	3843	1338	6.41	24.30	25.64	5.51
2019/1/28	5250	Body	100	1006	3857	1279	2.17	21.70	21.7	0.00
2019/1/28	5600	Body	100	1006	3857	1279	2.15	22.50	21.5	-4.44



**Fig 11.3.1 System Performance Check Setup**



**Fig 11.3.2 Setup Photo**

## 12. RF Exposure Positions

### 12.1 Ear and handset reference point

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

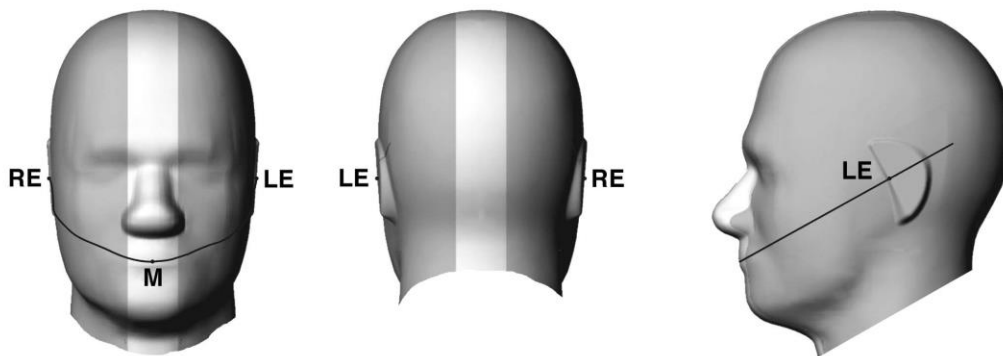


Fig 12.1.1 Front, back, and side views of SAM twin phantom

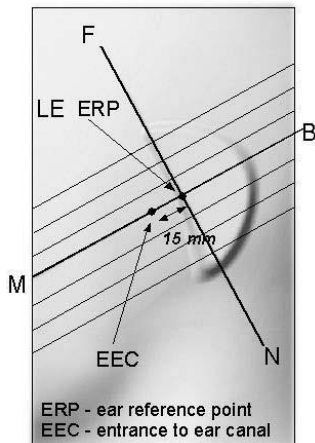


Fig 12.1.2 Close-up side view of phantom showing the ear region.

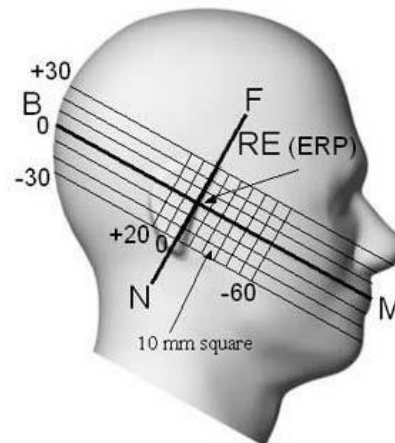
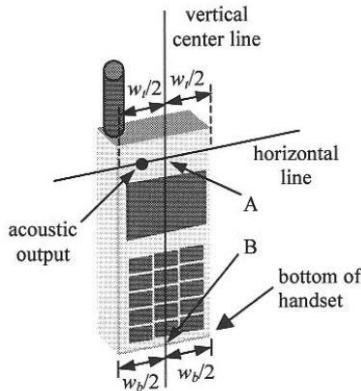


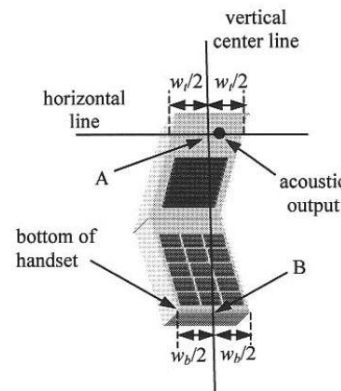
Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

**12.2 Definition of the cheek position**

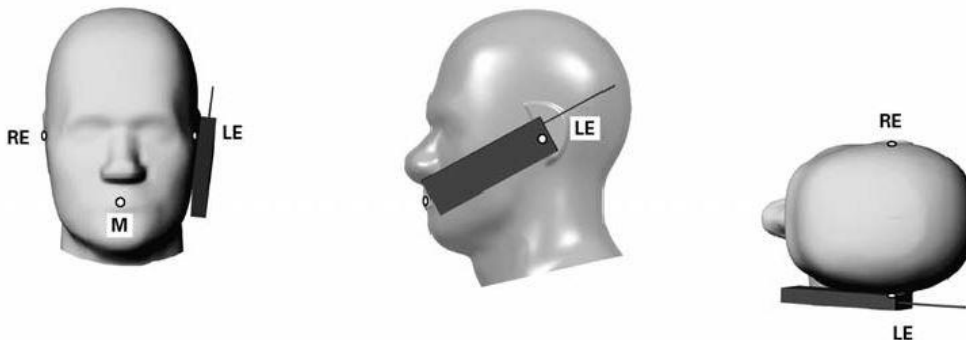
1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal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



**Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”**



**Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”**



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

### 12.3 Definition of the tilt position

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

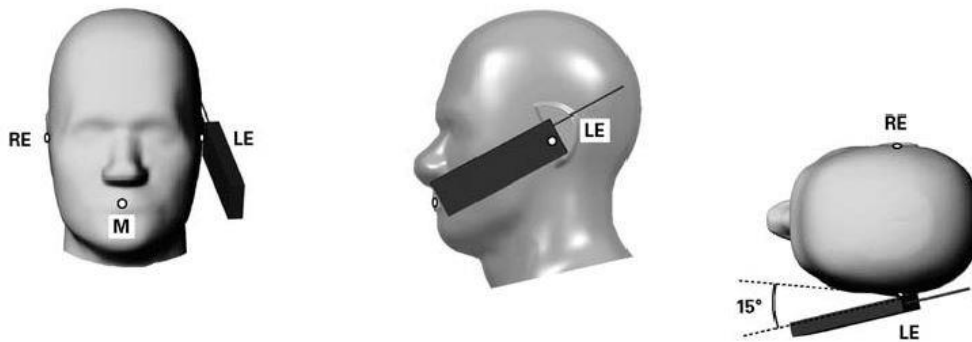


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

### 12.4 Body Worn Accessory

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

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

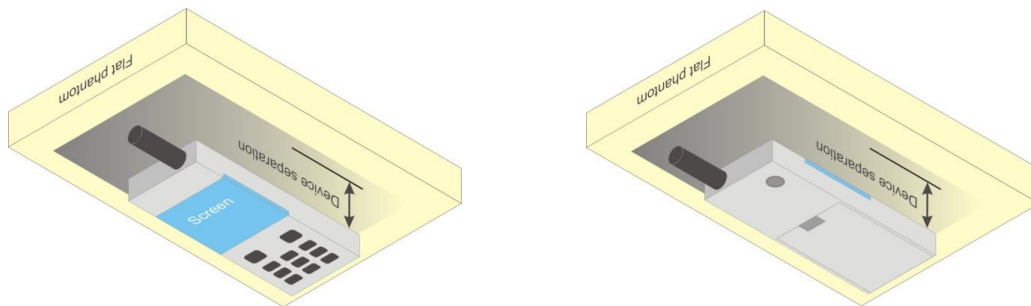


Fig 12.4 Body Worn Position



### **12.5 Product Specific 10g SAR Exposure**

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

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

### **12.6 Wireless Router**

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

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

### 13. Conducted RF Output Power (Unit: dBm)

**<GSM Conducted Power>**

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 are considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode, SAR measurement is not required for the secondary mode.
4. Power reduction which is triggered by hotspot mode are implemented in GSM850/1900 band, for SAR testing EUT was set in reduced power mode and GPRS 3 Tx slots due to its highest frame-average power.
5. Power reduction which is triggered by p-sensor on are implemented in GSM850 band, for SAR testing EUT was set in reduced power mode and GPRS 3 Tx slots due to its highest frame-average power.

**<Full Power Mode>**

GSM850 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.38	32.48	32.26	33.50	23.38	23.48	23.26	24.50
GPRS 1 Tx slot	32.26	32.46	32.24	33.50	23.26	23.46	23.24	24.50
GPRS 2 Tx slots	30.60	30.72	30.88	31.00	24.60	24.72	24.88	25.00
GPRS 3 Tx slots	29.66	29.74	29.87	30.00	25.40	25.48	25.61	25.74
GPRS 4 Tx slots	27.22	27.35	27.53	28.00	24.22	24.35	24.53	25.00
EDGE 1 Tx slot	26.83	26.93	27.06	27.50	17.83	17.93	18.06	18.50
EDGE 2 Tx slots	24.66	24.76	25.09	26.50	18.66	18.76	19.09	20.50
EDGE 3 Tx slots	22.41	22.59	22.70	24.00	18.15	18.33	18.44	19.74
EDGE 4 Tx slots	20.70	20.74	20.90	22.00	17.70	17.74	17.90	19.00
<b>GSM1900</b>								
	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.73	29.79	29.39	30.50	20.73	20.79	20.39	21.50
GPRS 1 Tx slot	29.73	29.75	29.35	30.50	20.73	20.75	20.35	21.50
GPRS 2 Tx slots	27.62	27.89	27.67	28.00	21.62	21.89	21.67	22.00
GPRS 3 Tx slots	26.68	26.67	26.59	27.00	22.42	22.41	22.33	22.74
GPRS 4 Tx slots	24.51	24.46	24.42	25.00	21.51	21.46	21.42	22.00
EDGE 1 Tx slot	25.11	25.11	24.90	26.00	16.11	16.11	15.90	17.00
EDGE 2 Tx slots	23.55	23.67	23.40	25.00	17.55	17.67	17.40	19.00
EDGE 3 Tx slots	22.49	22.61	22.36	24.00	18.23	18.35	18.10	19.74
EDGE 4 Tx slots	21.42	21.43	21.47	22.00	18.42	18.43	18.47	19.00

**Remark:** The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB

Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB

Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB

Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB



**<Reduced Power Mode for P-Sensor On>**

GSM850 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.42	31.40	31.38	31.50	22.42	22.40	22.38	22.50
GPRS 1 Tx slot	31.44	31.42	31.40	31.50	22.44	22.42	22.40	22.50
GPRS 2 Tx slots	29.33	29.28	29.27	29.50	23.33	23.28	23.27	23.50
GPRS 3 Tx slots	27.86	27.90	27.92	28.00	23.60	23.64	23.66	23.74
GPRS 4 Tx slots	25.80	25.88	25.83	26.50	22.80	22.88	22.83	23.50
EDGE 1 Tx slot	26.17	26.13	26.05	26.50	17.17	17.13	17.05	17.50
EDGE 2 Tx slots	24.12	24.03	23.93	24.50	18.12	18.03	17.93	18.50
EDGE 3 Tx slots	21.93	21.90	21.78	22.00	17.67	17.64	17.52	17.74
EDGE 4 Tx slots	19.94	19.82	19.74	20.00	16.94	16.82	16.74	17.00

**Remark:** The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB

Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB

Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB

Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

**<Reduced Power Mode for Hotspot On>**

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	
GSM 1 Tx slot	31.42	31.40	31.38	31.50	22.42	22.40	22.38	22.50
GPRS 1 Tx slot	31.44	31.42	31.40	31.50	22.44	22.42	22.40	22.50
GPRS 2 Tx slots	29.33	29.28	29.27	29.50	23.33	23.28	23.27	23.50
GPRS 3 Tx slots	27.86	27.90	27.92	28.00	23.60	23.64	23.66	23.74
GPRS 4 Tx slots	25.80	25.88	25.83	26.50	22.80	22.88	22.83	23.50
EDGE 1 Tx slot	26.17	26.13	26.05	26.50	17.17	17.13	17.05	17.50
EDGE 2 Tx slots	24.12	24.03	23.93	24.50	18.12	18.03	17.93	18.50
EDGE 3 Tx slots	21.93	21.90	21.78	22.00	17.67	17.64	17.52	17.74
EDGE 4 Tx slots	19.94	19.82	19.74	20.00	16.94	16.82	16.74	17.00
GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	28.02	28.50	28.35	29.00	19.02	19.50	19.35	20.00
GPRS 1 Tx slot	28.04	28.51	28.36	29.00	19.04	19.51	19.36	20.00
GPRS 2 Tx slots	26.17	26.45	26.06	26.50	20.17	20.45	20.06	20.50
GPRS 3 Tx slots	25.12	25.10	25.02	25.50	20.86	20.84	20.76	21.24
GPRS 4 Tx slots	23.01	23.38	23.15	23.50	20.01	20.38	20.15	20.50
EDGE 1 Tx slot	25.11	25.11	24.90	26.00	16.11	16.11	15.90	17.00
EDGE 2 Tx slots	23.55	23.67	23.40	25.00	17.55	17.67	17.40	19.00
EDGE 3 Tx slots	22.49	22.61	22.36	24.00	18.23	18.35	18.10	19.74
EDGE 4 Tx slots	21.42	21.43	21.47	22.00	18.42	18.43	18.47	19.00

**Remark:** The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.

The calculated method are shown as below:

Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB

Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB

Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB

Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

**<WCDMA Conducted Power>**

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 v03r01 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 DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the  $\beta_c/\beta_d$  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-TFCI
  - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

**Table C.11.1.3:  $\beta$  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 4) (Note 5)	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

- Note 1: For sub-test 1 to 4,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 5/15$  with  $\beta_{HS} = 5/15 * \beta_c$ .
- 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: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
- Note 5:  $\beta_{ed}$  can not be set directly; it is set by Absolute Grant Value.
- Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

**Setup Configuration**

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

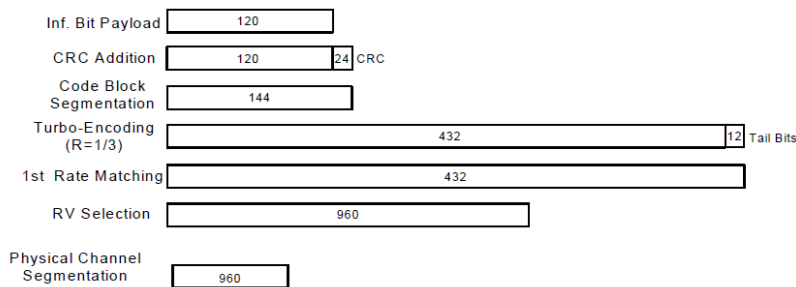
- a. The EUT was connected to Base Station referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm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

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA/ HSUPA / DC-HSDPA is  $\leq \frac{1}{4}$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA/ HSUPA/ DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA/ HSUPA/ DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA/ HSUPA/ DC-HSDPA) are less than  $\frac{1}{4}$  dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA/ HSUPA/ DC-HSDPA

**<Full Power Mode>**

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.68	23.51	23.96	24.00	23.08	23.14	23.15	24.00	23.28	23.41	23.48	24.00
3GPP Rel 99	RMC 12.2Kbps	23.69	23.52	23.97	24.00	23.09	23.21	23.24	24.00	23.30	23.44	23.49	24.00
3GPP Rel 6	HSDPA Subtest-1	23.38	23.37	23.25	24.00	23.03	23.12	23.23	24.00	23.05	23.31	23.25	24.00
3GPP Rel 6	HSDPA Subtest-2	23.44	23.46	23.28	24.00	23.05	23.01	23.05	24.00	23.05	23.25	23.23	24.00
3GPP Rel 6	HSDPA Subtest-3	23.23	23.18	23.09	24.00	23.07	22.95	23.08	24.00	23.40	23.28	23.38	24.00
3GPP Rel 6	HSDPA Subtest-4	23.24	23.22	23.13	24.00	22.95	22.68	23.02	24.00	23.01	22.85	22.87	24.00
3GPP Rel 8	DC-HSDPA Subtest-1	23.25	23.25	23.24	24.00	22.98	23.05	22.63	24.00	23.01	23.21	22.89	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	23.38	23.21	23.18	24.00	23.01	23.02	22.61	24.00	23.08	23.05	22.98	24.00
3GPP Rel 8	DC-HSDPA Subtest-3	23.04	23.05	23.01	24.00	22.92	23.12	22.98	24.00	22.92	23.01	23.05	24.00
3GPP Rel 8	DC-HSDPA Subtest-4	23.04	23.20	23.01	24.00	22.91	22.98	22.85	24.00	23.08	23.12	23.12	24.00
3GPP Rel 6	HSUPA Subtest-1	23.67	23.56	23.25	24.00	22.99	23.18	23.15	24.00	23.20	22.98	22.79	24.00
3GPP Rel 6	HSUPA Subtest-2	20.38	21.21	20.92	22.00	20.59	21.31	20.74	22.00	21.11	20.82	20.67	22.00
3GPP Rel 6	HSUPA Subtest-3	23.76	23.64	23.31	24.00	23.03	23.18	23.21	24.00	23.07	23.00	22.85	24.00
3GPP Rel 6	HSUPA Subtest-4	20.37	21.20	20.98	22.00	20.62	21.32	20.75	22.00	21.15	20.84	20.65	22.00
3GPP Rel 6	HSUPA Subtest-5	23.67	23.55	23.29	24.00	23.02	23.22	23.15	24.00	22.24	21.98	21.79	24.00



**<Reduced Power Mode for P-Sensor On>**

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	21.05	21.10	21.13	21.50	20.33	20.35	20.41	21.00	21.92	21.89	21.96	22.50
3GPP Rel 99	RMC 12.2Kbps	21.06	21.11	21.15	21.50	20.32	20.36	20.42	21.00	21.95	21.90	21.98	22.50
3GPP Rel 6	HSDPA Subtest-1	20.03	20.95	20.80	21.50	20.30	20.05	20.38	21.00	21.54	21.59	21.91	22.50
3GPP Rel 6	HSDPA Subtest-2	20.04	20.92	20.82	21.50	20.31	20.05	20.39	21.00	21.64	21.71	21.88	22.50
3GPP Rel 6	HSDPA Subtest-3	20.08	20.97	20.84	21.00	20.32	20.08	20.39	20.50	21.67	21.68	21.93	22.00
3GPP Rel 6	HSDPA Subtest-4	20.09	20.96	20.87	21.00	20.32	20.06	20.40	20.50	21.19	21.23	21.54	22.00
3GPP Rel 8	DC-HSDPA Subtest-1	20.05	20.98	20.66	21.50	20.25	19.81	20.22	21.00	21.48	21.22	21.35	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	20.10	20.83	20.48	21.50	20.35	19.93	19.99	21.00	21.35	21.15	21.28	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	20.07	20.40	20.58	21.00	20.15	19.28	20.10	20.50	21.12	21.09	21.15	22.00
3GPP Rel 8	DC-HSDPA Subtest-4	20.01	20.35	20.72	21.00	20.28	19.65	20.35	20.50	21.05	21.12	21.12	22.00
3GPP Rel 6	HSUPA Subtest-1	21.00	20.91	20.60	21.50	20.27	20.17	20.04	21.00	21.63	21.38	21.20	22.50
3GPP Rel 6	HSUPA Subtest-2	19.25	19.08	19.13	19.50	18.35	18.12	18.35	19.00	19.58	19.48	19.35	20.50
3GPP Rel 6	HSUPA Subtest-3	20.03	20.97	20.60	21.50	20.33	20.17	20.07	21.00	21.71	21.46	21.28	22.50
3GPP Rel 6	HSUPA Subtest-4	19.32	19.31	19.18	19.50	18.21	17.98	18.05	19.00	19.21	19.28	19.63	20.50
3GPP Rel 6	HSUPA Subtest-5	20.03	20.96	20.61	21.50	20.29	19.99	20.05	21.00	21.49	21.30	21.09	22.50

**<Reduced Power Mode for Hotspot On>**

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	18.40	18.47	18.50	19.00	18.18	18.21	18.25	19.00	21.92	21.89	21.96	22.50
3GPP Rel 99	RMC 12.2Kbps	18.41	18.48	18.51	19.00	18.20	18.25	18.30	19.00	21.95	21.90	21.98	22.50
3GPP Rel 6	HSDPA Subtest-1	18.49	18.30	18.16	19.00	18.19	18.16	18.18	19.00	21.54	21.59	21.91	22.50
3GPP Rel 6	HSDPA Subtest-2	18.42	18.33	18.21	19.00	18.22	18.19	18.21	19.00	21.64	21.71	21.88	22.50
3GPP Rel 6	HSDPA Subtest-3	18.45	18.41	18.26	18.50	18.25	18.11	18.23	18.50	21.67	21.68	21.93	22.00
3GPP Rel 6	HSDPA Subtest-4	18.49	18.46	18.27	18.50	18.13	18.23	18.21	18.50	21.19	21.23	21.54	22.00
3GPP Rel 8	DC-HSDPA Subtest-1	18.31	18.20	18.05	19.00	18.21	18.04	18.21	19.00	21.48	21.22	21.35	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	18.01	18.20	18.04	19.00	18.21	18.01	18.05	19.00	21.35	21.15	21.28	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	18.05	18.05	18.06	18.50	18.21	18.20	18.15	18.50	21.12	21.09	21.15	22.00
3GPP Rel 8	DC-HSDPA Subtest-4	18.07	18.23	18.21	18.50	18.05	18.02	18.05	18.50	21.05	21.12	21.12	22.00
3GPP Rel 6	HSUPA Subtest-1	18.38	18.20	17.92	19.00	18.02	18.18	18.17	19.00	21.63	21.38	21.20	22.50
3GPP Rel 6	HSUPA Subtest-2	16.58	16.32	16.62	17.00	16.25	16.48	16.12	17.00	19.58	19.48	19.35	20.50
3GPP Rel 6	HSUPA Subtest-3	18.38	18.25	17.92	19.00	18.03	18.21	18.17	19.00	21.71	21.46	21.28	22.50
3GPP Rel 6	HSUPA Subtest-4	16.78	16.58	16.35	17.00	16.32	16.25	16.78	17.00	19.21	19.28	19.63	20.50
3GPP Rel 6	HSUPA Subtest-5	18.30	18.18	17.91	19.00	18.02	18.06	18.13	19.00	21.49	21.30	21.09	22.50



**<Reduced Power Mode for Handheld On>**

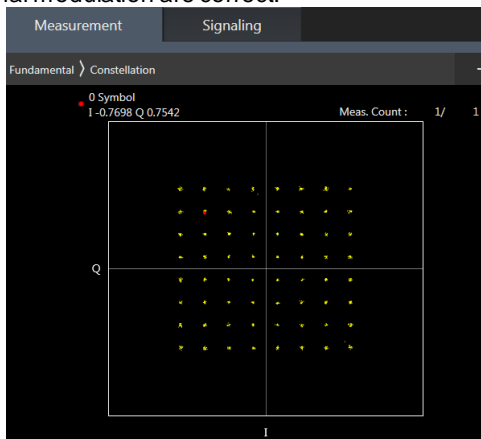
Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513	
Rx Channel		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	22.45	22.37	22.50	23.00	22.21	22.28	22.31	23.00
3GPP Rel 99	RMC 12.2Kbps	22.47	22.39	22.51	23.00	22.25	22.31	22.36	23.00
3GPP Rel 6	HSDPA Subtest-1	22.16	22.31	22.19	23.00	22.07	21.98	22.05	23.00
3GPP Rel 6	HSDPA Subtest-2	22.22	22.30	22.19	23.00	22.10	21.93	22.02	23.00
3GPP Rel 6	HSDPA Subtest-3	22.20	22.24	22.21	22.50	22.11	21.89	22.06	22.50
3GPP Rel 6	HSDPA Subtest-4	22.21	22.18	22.22	22.50	22.12	21.96	22.01	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.05	22.08	22.04	23.00	22.05	22.05	22.01	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.15	22.04	22.18	23.00	22.08	22.03	22.12	23.00
3GPP Rel 8	DC-HSDPA Subtest-3	22.12	22.12	22.15	22.50	22.01	22.05	21.98	22.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.05	22.05	22.03	22.50	22.09	21.98	22.01	22.50
3GPP Rel 6	HSUPA Subtest-1	21.78	22.20	21.95	23.00	22.12	22.01	22.25	23.00
3GPP Rel 6	HSUPA Subtest-2	19.68	19.63	19.61	21.00	20.01	20.35	20.48	21.00
3GPP Rel 6	HSUPA Subtest-3	21.90	22.25	21.74	23.00	22.10	22.03	21.89	23.00
3GPP Rel 6	HSUPA Subtest-4	19.35	19.54	19.48	21.00	20.35	20.41	20.78	21.00
3GPP Rel 6	HSUPA Subtest-5	21.86	22.18	21.97	23.00	22.11	22.10	22.29	23.00



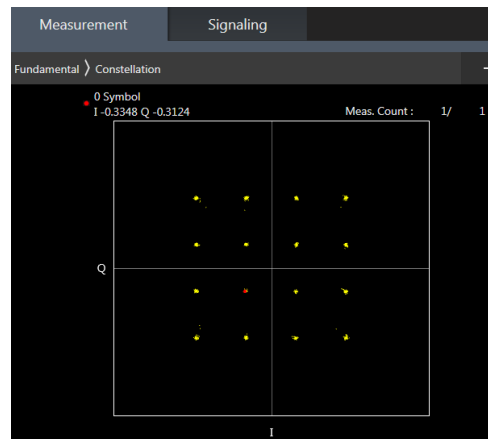
**<LTE Conducted Power>**

**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  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.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM 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 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 4 / 17 SAR test was covered by Band 66 / 12; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
  - a. the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion
  - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



**64QAM**



**16QAM**



<Full Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.45	23.26	23.20	24	0
20	QPSK	1	49	23.22	23.18	23.14		
20	QPSK	1	99	23.13	23.17	23.08		
20	QPSK	50	0	22.39	22.26	22.18	23	1
20	QPSK	50	24	22.19	22.18	22.15		
20	QPSK	50	50	22.26	22.12	22.09		
20	QPSK	100	0	22.22	22.21	22.12	23	1
20	16QAM	1	0	22.04	22.07	21.73		
20	16QAM	1	49	21.77	21.79	21.50		
20	16QAM	1	99	21.99	21.83	21.78	22	2
20	16QAM	50	0	21.38	21.24	21.01		
20	16QAM	50	24	21.35	21.20	21.06		
20	16QAM	50	50	21.18	21.18	21.05	22	2
20	16QAM	100	0	21.26	21.20	21.07		
20	64QAM	1	0	20.88	20.91	21.04		
20	64QAM	1	49	20.89	21.04	20.84	22	2
20	64QAM	1	99	20.63	20.82	20.88		
20	64QAM	50	0	20.40	20.38	20.13		
20	64QAM	50	24	20.32	20.19	20.20	21	3
20	64QAM	50	50	20.25	20.30	20.14		
20	64QAM	100	0	20.36	20.26	20.09		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.31	23.30	23.17	24	0
15	QPSK	1	37	23.23	23.18	23.07		
15	QPSK	1	74	23.16	23.22	23.12		
15	QPSK	36	0	22.30	22.29	22.20	23	1
15	QPSK	36	20	22.21	22.27	22.06		
15	QPSK	36	39	22.22	22.15	22.18		
15	QPSK	75	0	22.23	22.31	22.08	23	1
15	16QAM	1	0	22.30	22.29	22.24		
15	16QAM	1	37	22.33	22.06	21.84		
15	16QAM	1	74	21.99	22.27	21.88	23	1
15	16QAM	36	0	21.35	21.21	21.17		
15	16QAM	36	20	21.18	21.18	21.05		
15	16QAM	36	39	21.16	21.12	21.01	22	2
15	16QAM	75	0	21.31	21.28	21.13		
15	64QAM	1	0	21.06	20.95	20.86		
15	64QAM	1	37	20.96	20.95	21.03	22	2
15	64QAM	1	74	20.88	20.96	20.80		
15	64QAM	36	0	20.06	20.00	19.92		
15	64QAM	36	20	19.99	19.96	19.80	21	3
15	64QAM	36	39	19.88	19.99	19.88		
15	64QAM	75	0	19.91	20.02	19.84		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.44	23.42	23.29	24	0
10	QPSK	1	25	23.21	23.14	23.08		
10	QPSK	1	49	23.21	23.15	23.23		
10	QPSK	25	0	22.27	22.30	22.06	23	1
10	QPSK	25	12	22.24	22.26	22.09		
10	QPSK	25	25	22.21	22.22	22.06		
10	QPSK	50	0	22.26	22.22	22.11		
10	16QAM	1	0	22.05	22.02	21.92	23	1
10	16QAM	1	25	22.37	22.22	22.15		
10	16QAM	1	49	21.98	21.97	22.04		
10	16QAM	25	0	21.27	21.23	21.15	22	2
10	16QAM	25	12	21.22	21.13	21.09		
10	16QAM	25	25	21.32	21.17	21.14		
10	16QAM	50	0	21.35	21.26	21.09		
10	64QAM	1	0	20.96	20.62	20.70	22	2
10	64QAM	1	25	20.66	20.60	20.55		
10	64QAM	1	49	20.70	20.59	20.51		
10	64QAM	25	0	19.77	19.67	19.67	21	3
10	64QAM	25	12	19.87	19.72	19.56		
10	64QAM	25	25	19.72	19.73	19.66		
10	64QAM	50	0	19.89	19.84	19.71		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.42	23.40	23.31	24	0
5	QPSK	1	12	23.37	23.39	23.26		
5	QPSK	1	24	23.37	23.41	23.26		
5	QPSK	12	0	22.34	22.39	22.20	23	1
5	QPSK	12	7	22.34	22.38	22.21		
5	QPSK	12	13	22.31	22.37	22.19		
5	QPSK	25	0	22.32	22.37	22.21		
5	16QAM	1	0	22.21	22.30	22.22	23	1
5	16QAM	1	12	22.21	22.24	22.06		
5	16QAM	1	24	22.08	22.26	22.07		
5	16QAM	12	0	21.30	21.33	21.21	22	2
5	16QAM	12	7	21.28	21.33	21.19		
5	16QAM	12	13	21.27	21.34	21.15		
5	16QAM	25	0	21.34	21.39	21.25		
5	64QAM	1	0	20.95	20.94	20.87	22	2
5	64QAM	1	12	20.88	20.87	20.87		
5	64QAM	1	24	20.81	21.24	20.86		
5	64QAM	12	0	20.14	20.15	20.00	21	3
5	64QAM	12	7	20.11	20.14	19.99		
5	64QAM	12	13	20.10	19.94	19.98		
5	64QAM	25	0	20.13	20.09	20.05		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.43	23.37	23.31	24	0
3	QPSK	1	8	23.40	23.43	23.26		
3	QPSK	1	14	23.40	23.44	23.25		
3	QPSK	8	0	22.34	22.40	22.25	23	1
3	QPSK	8	4	22.31	22.38	22.22		
3	QPSK	8	7	22.33	22.38	22.25		
3	QPSK	15	0	22.30	22.36	22.22		
3	16QAM	1	0	22.17	22.22	22.11	23	1
3	16QAM	1	8	22.19	22.24	21.94		
3	16QAM	1	14	22.26	22.30	21.98		
3	16QAM	8	0	21.37	21.37	21.27	22	2
3	16QAM	8	4	21.34	21.37	21.24		
3	16QAM	8	7	21.30	21.36	21.25		
3	16QAM	15	0	21.29	21.35	21.22		
3	64QAM	1	0	21.00	20.94	21.00	22	2
3	64QAM	1	8	20.94	20.97	20.92		
3	64QAM	1	14	20.99	20.95	20.80		
3	64QAM	8	0	20.16	20.21	20.08	21	3
3	64QAM	8	4	20.15	20.19	20.05		
3	64QAM	8	7	20.13	20.18	20.05		
3	64QAM	15	0	20.14	20.18	20.04		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.43	23.43	23.25	24	0
1.4	QPSK	1	3	23.30	23.39	23.32		
1.4	QPSK	1	5	23.43	23.38	23.26		
1.4	QPSK	3	0	23.33	23.30	23.24		
1.4	QPSK	3	1	23.42	23.43	23.23		
1.4	QPSK	3	3	23.44	23.44	23.21	23	1
1.4	QPSK	6	0	22.34	22.32	22.25		
1.4	16QAM	1	0	22.17	22.15	22.13	23	1
1.4	16QAM	1	3	22.30	22.35	22.25		
1.4	16QAM	1	5	22.27	22.14	22.45		
1.4	16QAM	3	0	22.26	22.36	22.14		
1.4	16QAM	3	1	22.37	22.36	22.44		
1.4	16QAM	3	3	22.32	22.40	22.39	22	2
1.4	16QAM	6	0	21.34	21.31	21.23		
1.4	64QAM	1	0	20.81	21.29	20.81	22	2
1.4	64QAM	1	3	20.83	21.06	21.06		
1.4	64QAM	1	5	20.96	21.02	20.94		
1.4	64QAM	3	0	21.19	21.20	20.99		
1.4	64QAM	3	1	21.37	21.27	20.92		
1.4	64QAM	3	3	21.00	21.30	20.97	21	3
1.4	64QAM	6	0	20.17	20.03	20.01		



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.80	22.85	23.00	24	0
20	QPSK	1	49	22.64	22.74	22.86		
20	QPSK	1	99	22.64	22.85	22.79		
20	QPSK	50	0	21.78	21.77	21.82	23	1
20	QPSK	50	24	21.58	21.81	21.75		
20	QPSK	50	50	21.58	21.78	21.73		
20	QPSK	100	0	21.74	21.73	21.77	23	1
20	16QAM	1	0	21.44	22.00	21.42		
20	16QAM	1	49	21.41	21.58	21.83		
20	16QAM	1	99	21.49	21.75	21.77	22	2
20	16QAM	50	0	20.69	20.86	20.84		
20	16QAM	50	24	20.68	20.84	20.77		
20	16QAM	50	50	20.69	20.75	20.77	22	2
20	16QAM	100	0	20.59	20.74	20.79		
20	64QAM	1	0	20.59	20.25	20.46		
20	64QAM	1	49	20.41	20.69	20.47	22	2
20	64QAM	1	99	20.26	20.47	20.43		
20	64QAM	50	0	19.68	19.85	19.85		
20	64QAM	50	24	19.66	19.73	19.75	21	3
20	64QAM	50	50	19.74	19.76	19.83		
20	64QAM	100	0	19.74	19.73	19.67		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.82	22.82	22.96	24	0
15	QPSK	1	37	22.64	22.86	22.87		
15	QPSK	1	74	22.66	22.79	22.85		
15	QPSK	36	0	21.66	21.73	21.84	23	1
15	QPSK	36	20	21.65	21.78	21.78		
15	QPSK	36	39	21.59	21.78	21.73		
15	QPSK	75	0	21.59	21.79	21.86	23	1
15	16QAM	1	0	21.23	21.64	21.67		
15	16QAM	1	37	21.24	21.68	21.43		
15	16QAM	1	74	21.35	21.66	21.39	22	2
15	16QAM	36	0	20.64	20.90	20.77		
15	16QAM	36	20	20.68	20.66	20.80		
15	16QAM	36	39	20.63	20.64	20.76	22	2
15	16QAM	75	0	20.57	20.77	20.83		
15	64QAM	1	0	20.40	20.49	20.90		
15	64QAM	1	37	20.65	20.80	20.72	22	2
15	64QAM	1	74	20.58	20.87	20.98		
15	64QAM	36	0	19.79	19.83	19.65		
15	64QAM	36	20	19.64	19.76	19.66	21	3
15	64QAM	36	39	19.69	19.78	19.73		
15	64QAM	75	0	19.72	19.76	19.80		



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Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.71	22.82	22.90	24	0
10	QPSK	1	25	22.63	22.82	22.91		
10	QPSK	1	49	22.53	22.74	22.86		
10	QPSK	25	0	21.64	21.84	21.90	23	1
10	QPSK	25	12	21.57	21.73	21.90		
10	QPSK	25	25	21.59	21.70	21.91		
10	QPSK	50	0	21.62	21.78	21.87		
10	16QAM	1	0	21.45	21.77	21.89	23	1
10	16QAM	1	25	21.65	22.00	21.81		
10	16QAM	1	49	21.60	21.60	21.82		
10	16QAM	25	0	20.56	20.73	20.91	22	2
10	16QAM	25	12	20.50	20.71	20.96		
10	16QAM	25	25	20.49	20.66	20.83		
10	16QAM	50	0	20.58	20.83	20.89		
10	64QAM	1	0	20.48	20.46	20.13	22	2
10	64QAM	1	25	20.46	20.75	20.62		
10	64QAM	1	49	20.26	20.65	20.55		
10	64QAM	25	0	19.58	19.75	20.01	21	3
10	64QAM	25	12	19.63	19.84	19.88		
10	64QAM	25	25	19.65	19.82	19.79		
10	64QAM	50	0	19.64	19.76	19.97		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.51	22.50	22.66	24	0
5	QPSK	1	12	22.56	22.34	22.69		
5	QPSK	1	24	22.50	22.60	22.62		
5	QPSK	12	0	21.53	21.43	21.63	23	1
5	QPSK	12	7	21.55	21.60	21.62		
5	QPSK	12	13	21.58	21.40	21.63		
5	QPSK	25	0	21.58	21.55	21.70		
5	16QAM	1	0	21.45	21.50	21.45	23	1
5	16QAM	1	12	22.02	22.00	21.89		
5	16QAM	1	24	21.79	21.61	21.59		
5	16QAM	12	0	20.55	20.44	20.63	22	2
5	16QAM	12	7	20.57	20.62	20.60		
5	16QAM	12	13	20.52	20.50	20.56		
5	16QAM	25	0	20.63	20.64	20.65		
5	64QAM	1	0	20.78	20.55	20.20	22	2
5	64QAM	1	12	20.52	20.51	20.32		
5	64QAM	1	24	20.54	20.78	20.60		
5	64QAM	12	0	19.60	19.60	19.64	21	3
5	64QAM	12	7	19.46	19.44	19.70		
5	64QAM	12	13	19.59	19.58	19.61		
5	64QAM	25	0	19.54	19.65	19.69		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.71	22.64	22.68	24	0
3	QPSK	1	8	22.79	22.74	22.67		
3	QPSK	1	14	22.72	22.71	22.77		
3	QPSK	8	0	22.01	22.04	21.68	23	1
3	QPSK	8	4	22.00	21.45	21.67		
3	QPSK	8	7	21.62	21.64	21.67		
3	QPSK	15	0	21.58	21.80	21.65		
3	16QAM	1	0	21.63	21.64	21.67	23	1
3	16QAM	1	8	21.50	21.50	21.50		
3	16QAM	1	14	21.69	21.05	21.47		
3	16QAM	8	0	20.59	20.58	20.76	22	2
3	16QAM	8	4	20.64	20.64	20.77		
3	16QAM	8	7	20.52	20.55	20.60		
3	16QAM	15	0	20.66	20.65	20.67		
3	64QAM	1	0	20.47	20.55	20.59	22	2
3	64QAM	1	8	20.73	20.55	20.58		
3	64QAM	1	14	20.52	20.51	20.50		
3	64QAM	8	0	19.67	19.65	19.66	21	3
3	64QAM	8	4	19.68	19.69	19.67		
3	64QAM	8	7	19.63	19.60	20.04		
3	64QAM	15	0	19.61	19.50	19.64		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.65	22.61	22.54	24	0
1.4	QPSK	1	3	22.62	22.64	22.69		
1.4	QPSK	1	5	22.70	22.56	22.65		
1.4	QPSK	3	0	22.54	22.66	22.74		
1.4	QPSK	3	1	22.81	22.69	22.57		
1.4	QPSK	3	3	22.10	22.05	22.04	23	1
1.4	QPSK	6	0	21.67	21.65	21.65		
1.4	16QAM	1	0	21.44	21.56	21.67	23	1
1.4	16QAM	1	3	21.22	21.20	21.16		
1.4	16QAM	1	5	21.90	21.89	21.94		
1.4	16QAM	3	0	21.48	21.46	21.48		
1.4	16QAM	3	1	21.48	21.57	21.66		
1.4	16QAM	3	3	21.44	21.46	21.36	22	2
1.4	16QAM	6	0	20.51	20.46	20.47		
1.4	64QAM	1	0	20.31	20.37	20.39	22	2
1.4	64QAM	1	3	20.77	20.86	20.94		
1.4	64QAM	1	5	20.49	20.74	20.84		
1.4	64QAM	3	0	20.63	20.96	20.77		
1.4	64QAM	3	1	20.67	20.64	20.64		
1.4	64QAM	3	3	20.53	20.35	20.35	21	3
1.4	64QAM	6	0	19.81	19.89	19.99		



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.30	23.35	23.39	24	0
10	QPSK	1	25	23.25	23.40	23.34		
10	QPSK	1	49	23.28	23.33	23.43		
10	QPSK	25	0	22.19	22.22	22.26	23	1
10	QPSK	25	12	22.22	22.20	22.16		
10	QPSK	25	25	22.16	22.16	22.14		
10	QPSK	50	0	22.23	22.24	22.25	23	1
10	16QAM	1	0	22.42	22.03	21.94		
10	16QAM	1	25	21.93	21.89	21.92		
10	16QAM	1	49	22.35	22.15	21.82	22	2
10	16QAM	25	0	21.26	21.27	21.19		
10	16QAM	25	12	21.15	21.23	21.19		
10	16QAM	25	25	21.23	21.07	21.18	22	2
10	16QAM	50	0	21.15	21.19	21.33		
10	64QAM	1	0	21.98	21.75	21.26		
10	64QAM	1	25	21.82	21.60	21.27	22	2
10	64QAM	1	49	21.63	21.34	21.09		
10	64QAM	25	0	20.19	20.73	20.77		
10	64QAM	25	12	20.73	20.70	20.79	21	3
10	64QAM	25	25	20.63	20.72	20.77		
10	64QAM	50	0	20.77	20.70	20.70		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.21	23.27	23.27	24	0
5	QPSK	1	12	23.21	23.20	23.28		
5	QPSK	1	24	23.25	23.19	23.17		
5	QPSK	12	0	22.14	22.15	22.14	23	1
5	QPSK	12	7	22.15	22.14	22.18		
5	QPSK	12	13	22.16	22.16	22.16		
5	QPSK	25	0	22.42	22.13	22.14	23	1
5	16QAM	1	0	22.27	21.88	21.79		
5	16QAM	1	12	21.78	21.74	21.77		
5	16QAM	1	24	22.20	22.00	21.67	22	2
5	16QAM	12	0	21.11	21.12	21.04		
5	16QAM	12	7	21.00	21.08	21.04		
5	16QAM	12	13	21.54	21.13	21.03	22	2
5	16QAM	25	0	21.00	21.13	21.18		
5	64QAM	1	0	21.83	21.60	21.11		
5	64QAM	1	12	21.67	21.45	21.12	22	2
5	64QAM	1	24	21.48	21.19	20.94		
5	64QAM	12	0	20.54	20.58	20.62		
5	64QAM	12	7	20.58	20.55	20.64	21	3
5	64QAM	12	13	20.48	20.57	20.62		
5	64QAM	25	0	20.62	20.55	20.55		





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Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.14	23.17	23.17	24	0
3	QPSK	1	8	23.26	23.24	23.24		
3	QPSK	1	14	23.14	23.16	23.18		
3	QPSK	8	0	22.16	22.14	22.16	23	1
3	QPSK	8	4	22.26	22.15	22.19		
3	QPSK	8	7	22.34	22.23	22.26		
3	QPSK	15	0	22.15	22.16	22.10		
3	16QAM	1	0	22.41	22.02	21.93	23	1
3	16QAM	1	8	21.92	21.88	21.91		
3	16QAM	1	14	22.34	22.14	21.81		
3	16QAM	8	0	21.25	21.26	21.18	22	2
3	16QAM	8	4	21.14	21.22	21.18		
3	16QAM	8	7	21.22	21.06	21.17		
3	16QAM	15	0	21.14	21.18	21.32		
3	64QAM	1	0	21.97	21.74	21.25	22	2
3	64QAM	1	8	21.81	21.59	21.26		
3	64QAM	1	14	21.62	21.33	21.08		
3	64QAM	8	0	20.68	20.72	20.76	21	3
3	64QAM	8	4	20.72	20.69	20.78		
3	64QAM	8	7	20.62	20.71	20.76		
3	64QAM	15	0	20.76	20.69	20.69		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.20	23.21	23.17	24	0
1.4	QPSK	1	3	23.21	23.29	23.19		
1.4	QPSK	1	5	23.05	23.00	23.15		
1.4	QPSK	3	0	23.18	23.21	23.16		
1.4	QPSK	3	1	23.35	23.14	23.14		
1.4	QPSK	3	3	23.35	23.30	23.21	23	1
1.4	QPSK	6	0	22.05	22.04	22.04		
1.4	16QAM	1	0	22.41	22.02	21.93	23	1
1.4	16QAM	1	3	21.92	21.88	21.91		
1.4	16QAM	1	5	22.34	22.14	21.81		
1.4	16QAM	3	0	21.25	21.26	21.18		
1.4	16QAM	3	1	21.14	21.22	21.18		
1.4	16QAM	3	3	21.22	21.06	21.17	22	2
1.4	16QAM	6	0	21.14	21.18	21.32		
1.4	64QAM	1	0	21.47	21.24	20.75	22	2
1.4	64QAM	1	3	21.31	21.09	20.76		
1.4	64QAM	1	5	21.12	20.83	20.58		
1.4	64QAM	3	0	21.18	21.22	21.26		
1.4	64QAM	3	1	21.22	21.19	21.28		
1.4	64QAM	3	3	21.12	21.21	21.26	21	3
1.4	64QAM	6	0	20.16	20.17	20.19		



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.41	23.59	23.42	24	0
20	QPSK	1	49	23.41	23.42	23.37		
20	QPSK	1	99	23.38	23.41	23.40		
20	QPSK	50	0	22.34	22.47	22.28	23	1
20	QPSK	50	24	22.37	22.43	22.33		
20	QPSK	50	50	22.39	22.49	22.34		
20	QPSK	100	0	22.40	22.47	22.36	23	1
20	16QAM	1	0	22.36	22.48	22.04		
20	16QAM	1	49	22.31	22.46	22.01		
20	16QAM	1	99	21.93	22.32	22.28	22	2
20	16QAM	50	0	21.38	21.38	21.42		
20	16QAM	50	24	21.41	21.47	21.32		
20	16QAM	50	50	21.46	21.42	21.35	22	2
20	16QAM	100	0	21.44	21.44	21.30		
20	64QAM	1	0	21.67	21.73	21.66		
20	64QAM	1	49	21.76	21.64	21.81	22	2
20	64QAM	1	99	21.69	21.95	21.78		
20	64QAM	50	0	20.93	20.95	20.89		
20	64QAM	50	24	20.89	20.93	20.86	21	3
20	64QAM	50	50	20.84	20.96	20.92		
20	64QAM	100	0	20.90	20.90	20.79		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.27	23.45	23.45	24	0
15	QPSK	1	37	23.43	23.37	23.46		
15	QPSK	1	74	23.37	23.58	23.50		
15	QPSK	36	0	22.34	22.50	22.45	23	1
15	QPSK	36	20	22.26	22.40	22.47		
15	QPSK	36	39	22.27	22.44	22.51		
15	QPSK	75	0	22.27	22.42	22.44	23	1
15	16QAM	1	0	22.11	22.20	22.31		
15	16QAM	1	37	22.04	21.78	22.47		
15	16QAM	1	74	22.40	21.94	22.47	22	2
15	16QAM	36	0	21.29	21.43	21.31		
15	16QAM	36	20	21.26	21.41	21.35		
15	16QAM	36	39	21.26	21.43	21.37	22	2
15	16QAM	75	0	21.38	21.44	21.47		
15	64QAM	1	0	21.35	21.77	21.57		
15	64QAM	1	37	21.84	21.63	21.60	22	2
15	64QAM	1	74	21.64	21.99	21.72		
15	64QAM	36	0	20.84	20.90	20.86		
15	64QAM	36	20	20.79	20.94	20.91	21	3
15	64QAM	36	39	20.78	20.86	20.86		
15	64QAM	75	0	20.84	20.84	20.94		



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Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.04	23.16	23.18	24	0
10	QPSK	1	25	22.90	23.23	23.24		
10	QPSK	1	49	23.07	23.20	23.21		
10	QPSK	25	0	21.91	22.14	22.14	23	1
10	QPSK	25	12	22.00	22.15	22.19		
10	QPSK	25	25	22.03	22.09	22.06		
10	QPSK	50	0	22.05	22.17	22.04		
10	16QAM	1	0	21.58	21.54	21.81	23	1
10	16QAM	1	25	21.90	21.59	21.33		
10	16QAM	1	49	21.66	21.33	21.97		
10	16QAM	25	0	21.01	21.13	21.12	22	2
10	16QAM	25	12	21.03	21.26	21.17		
10	16QAM	25	25	21.02	21.14	21.15		
10	16QAM	50	0	21.12	21.14	21.08		
10	64QAM	1	0	21.10	21.03	20.97	22	2
10	64QAM	1	25	21.24	21.03	20.86		
10	64QAM	1	49	21.26	21.30	20.96		
10	64QAM	25	0	20.54	20.68	20.54	21	3
10	64QAM	25	12	20.56	20.71	20.56		
10	64QAM	25	25	20.55	20.75	20.72		
10	64QAM	50	0	20.58	20.73	20.69		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.97	23.20	23.19	24	0
5	QPSK	1	12	22.88	23.19	23.21		
5	QPSK	1	24	22.91	23.09	23.13		
5	QPSK	12	0	22.17	22.13	22.14	23	1
5	QPSK	12	7	22.04	22.15	22.07		
5	QPSK	12	13	21.98	22.14	22.10		
5	QPSK	25	0	21.93	22.15	22.04		
5	16QAM	1	0	22.27	22.46	22.14	23	1
5	16QAM	1	12	22.29	22.10	22.27		
5	16QAM	1	24	22.28	22.14	22.23		
5	16QAM	12	0	20.98	21.07	21.13	22	2
5	16QAM	12	7	21.02	21.13	20.96		
5	16QAM	12	13	20.91	21.00	20.98		
5	16QAM	25	0	21.05	21.15	21.25		
5	64QAM	1	0	21.65	21.54	21.87	22	2
5	64QAM	1	12	21.67	21.82	21.51		
5	64QAM	1	24	21.50	21.81	21.52		
5	64QAM	12	0	20.37	20.66	20.58	21	3
5	64QAM	12	7	20.44	20.51	20.55		
5	64QAM	12	13	20.31	20.65	20.62		
5	64QAM	25	0	20.58	20.60	20.55		



<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	22.94	22.96	23.02	24	0
10	QPSK	1	25	22.89	22.95	22.98		
10	QPSK	1	49	23.05	22.93	22.91		
10	QPSK	25	0	21.84	21.88	21.83	23	1
10	QPSK	25	12	21.78	21.82	21.91		
10	QPSK	25	25	21.92	21.84	21.85		
10	QPSK	50	0	21.87	21.79	21.86	23	1
10	16QAM	1	0	21.33	21.91	21.57		
10	16QAM	1	25	21.91	21.52	21.70		
10	16QAM	1	49	21.89	21.39	21.78	22	2
10	16QAM	25	0	20.82	20.87	20.95		
10	16QAM	25	12	20.77	20.82	20.91		
10	16QAM	25	25	20.73	20.81	20.86	22	2
10	16QAM	50	0	20.85	20.74	20.88		
10	64QAM	1	0	20.62	20.72	20.54		
10	64QAM	1	25	20.49	20.64	20.59	22	2
10	64QAM	1	49	20.50	20.62	20.60		
10	64QAM	25	0	19.88	19.89	19.82		
10	64QAM	25	12	19.75	19.95	19.93	21	3
10	64QAM	25	25	19.80	19.86	19.93		
10	64QAM	50	0	19.90	19.82	19.91		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	22.40	22.41	22.42	24	0
5	QPSK	1	12	22.46	22.49	22.35		
5	QPSK	1	24	22.42	22.62	22.10		
5	QPSK	12	0	21.47	21.65	21.30	23	1
5	QPSK	12	7	21.40	21.41	21.42		
5	QPSK	12	13	21.41	21.54	21.43		
5	QPSK	25	0	21.46	21.56	21.33	23	1
5	16QAM	1	0	21.37	21.53	21.43		
5	16QAM	1	12	21.80	21.30	21.69		
5	16QAM	1	24	21.73	21.78	21.86	22	2
5	16QAM	12	0	20.68	20.73	20.82		
5	16QAM	12	7	20.64	20.72	20.77		
5	16QAM	12	13	20.76	20.65	20.79	22	2
5	16QAM	25	0	21.43	21.33	21.45		
5	64QAM	1	0	20.40	20.55	20.50		
5	64QAM	1	12	20.41	20.53	20.51	22	2
5	64QAM	1	24	20.07	20.01	20.03		
5	64QAM	12	0	19.66	19.86	19.84		
5	64QAM	12	7	19.71	19.77	19.84	21	3
5	64QAM	12	13	19.81	19.73	19.82		
5	64QAM	25	0	19.90	19.82	19.91		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	22.40	22.41	22.42	24	0
3	QPSK	1	8	22.46	22.49	22.35		
3	QPSK	1	14	22.42	22.62	22.10		
3	QPSK	8	0	21.47	21.66	21.47	23	1
3	QPSK	8	4	21.40	21.41	21.41		
3	QPSK	8	7	21.41	21.66	21.64		
3	QPSK	15	0	21.46	21.34	21.36		
3	16QAM	1	0	21.36	21.52	21.42	23	1
3	16QAM	1	8	21.79	21.29	21.68		
3	16QAM	1	14	21.72	21.77	21.85		
3	16QAM	8	0	20.67	20.72	20.81	22	2
3	16QAM	8	4	20.63	20.71	20.76		
3	16QAM	8	7	20.75	20.64	20.78		
3	16QAM	15	0	21.49	21.45	21.44		
3	64QAM	1	0	20.39	20.54	20.49	22	2
3	64QAM	1	8	20.40	20.52	20.50		
3	64QAM	1	14	20.10	20.01	20.05		
3	64QAM	8	0	19.65	19.85	19.83	21	3
3	64QAM	8	4	19.70	19.76	19.83		
3	64QAM	8	7	19.80	19.72	19.81		
3	64QAM	15	0	19.89	19.81	19.90		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.25	22.25	22.24	24	0
1.4	QPSK	1	3	22.26	22.26	22.25		
1.4	QPSK	1	5	22.47	22.24	22.24		
1.4	QPSK	3	0	22.14	22.30	22.36		
1.4	QPSK	3	1	22.15	22.28	22.24		
1.4	QPSK	3	3	22.16	22.24	22.21	23	1
1.4	QPSK	6	0	21.29	21.45	21.35		
1.4	16QAM	1	0	21.29	21.45	21.35	23	1
1.4	16QAM	1	3	21.72	21.22	21.61		
1.4	16QAM	1	5	21.65	21.70	21.78		
1.4	16QAM	3	0	20.60	20.65	20.74		
1.4	16QAM	3	1	20.56	20.64	20.69		
1.4	16QAM	3	3	20.68	20.57	20.71	22	2
1.4	16QAM	6	0	21.45	21.55	21.37		
1.4	64QAM	1	0	20.32	20.47	20.42	22	2
1.4	64QAM	1	3	20.33	20.45	20.43		
1.4	64QAM	1	5	20.01	20.12	20.10		
1.4	64QAM	3	0	20.08	20.28	20.26		
1.4	64QAM	3	1	20.13	20.19	20.26		
1.4	64QAM	3	3	20.23	20.15	20.24		
1.4	64QAM	6	0	19.82	19.74	19.83	21	3



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.89	22.84	22.90	24	0
10	QPSK	1	25	22.80	22.88	22.87		
10	QPSK	1	49	22.79	22.98	22.90		
10	QPSK	25	0	21.73	21.81	21.82	23	1
10	QPSK	25	12	21.83	21.75	21.81		
10	QPSK	25	25	21.84	21.84	21.84		
10	QPSK	50	0	21.77	21.86	21.85	23	1
10	16QAM	1	0	21.28	21.37	21.37		
10	16QAM	1	25	21.45	21.69	21.34		
10	16QAM	1	49	21.43	21.78	21.53	22	2
10	16QAM	25	0	20.80	20.68	20.84		
10	16QAM	25	12	20.78	20.78	20.84		
10	16QAM	25	25	20.81	20.74	20.75	22	2
10	16QAM	50	0	20.86	20.85	20.81		
10	64QAM	1	0	20.54	20.44	20.68		
10	64QAM	1	25	20.45	20.30	20.69	22	2
10	64QAM	1	49	20.31	20.18	20.57		
10	64QAM	25	0	19.65	19.82	19.68		
10	64QAM	25	12	19.80	19.73	19.77	21	3
10	64QAM	25	25	19.75	19.71	19.72		
10	64QAM	50	0	19.72	19.85	19.88		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.74	22.69	22.75	24	0
5	QPSK	1	12	22.65	22.73	22.72		
5	QPSK	1	24	22.64	22.83	22.75		
5	QPSK	12	0	21.58	21.66	21.67	23	1
5	QPSK	12	7	21.68	21.60	21.66		
5	QPSK	12	13	21.69	21.69	21.69		
5	QPSK	25	0	21.62	21.65	21.70	23	1
5	16QAM	1	0	21.13	21.22	21.22		
5	16QAM	1	12	21.30	21.54	21.19		
5	16QAM	1	24	21.28	21.63	21.38	22	2
5	16QAM	12	0	20.65	20.53	20.69		
5	16QAM	12	7	20.63	20.63	20.69		
5	16QAM	12	13	20.66	20.59	20.60	22	2
5	16QAM	25	0	20.71	20.70	20.66		
5	64QAM	1	0	20.39	20.29	20.53		
5	64QAM	1	12	20.30	20.15	20.54	22	2
5	64QAM	1	24	20.16	20.03	20.42		
5	64QAM	12	0	19.50	19.67	19.53		
5	64QAM	12	7	19.65	19.58	19.62	21	3
5	64QAM	12	13	19.60	19.56	19.57		
5	64QAM	25	0	19.57	19.70	19.73		



<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	22.79	22.91	23.21	24	0
20	QPSK	1	49	22.78	22.93	23.27		
20	QPSK	1	99	22.68	22.91	22.93		
20	QPSK	50	0	21.76	21.99	22.08	23	1
20	QPSK	50	24	21.71	21.94	22.05		
20	QPSK	50	50	21.67	21.83	22.08		
20	QPSK	100	0	21.74	21.89	22.07		
20	16QAM	1	0	21.78	22.03	22.50	23	1
20	16QAM	1	49	21.51	21.78	22.38		
20	16QAM	1	99	21.55	21.84	21.88		
20	16QAM	50	0	20.82	21.01	21.17	22	2
20	16QAM	50	24	20.84	20.95	21.05		
20	16QAM	50	50	20.76	20.96	21.01		
20	16QAM	100	0	20.80	20.89	21.12		
20	64QAM	1	0	20.90	20.62	21.09	22	2
20	64QAM	1	49	20.76	20.59	20.86		
20	64QAM	1	99	20.60	20.52	20.44		
20	64QAM	50	0	19.84	20.00	20.13	21	3
20	64QAM	50	24	19.84	19.92	20.13		
20	64QAM	50	50	19.72	19.94	20.07		
20	64QAM	100	0	19.80	20.02	20.10		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.76	23.04	23.19	24	0
15	QPSK	1	37	22.82	23.00	23.17		
15	QPSK	1	74	22.83	23.03	23.13		
15	QPSK	36	0	21.84	21.96	22.24	23	1
15	QPSK	36	20	21.84	22.00	22.20		
15	QPSK	36	39	21.82	22.02	22.14		
15	QPSK	75	0	21.80	22.03	22.24		
15	16QAM	1	0	21.56	21.26	21.45	23	1
15	16QAM	1	37	21.52	21.49	21.14		
15	16QAM	1	74	21.59	21.17	21.60		
15	16QAM	36	0	20.89	20.88	21.24	22	2
15	16QAM	36	20	20.71	20.94	21.18		
15	16QAM	36	39	20.79	20.84	21.12		
15	16QAM	75	0	20.86	20.93	21.26		
15	64QAM	1	0	20.12	20.37	21.04	22	2
15	64QAM	1	37	20.34	20.35	20.99		
15	64QAM	1	74	20.07	20.47	21.04		
15	64QAM	36	0	19.86	19.99	20.24	21	3
15	64QAM	36	20	19.86	19.92	20.20		
15	64QAM	36	39	19.73	19.92	20.22		
15	64QAM	75	0	19.86	19.80	20.21		



**FCC SAR Test Report**

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Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.75	22.86	23.04	24	0
10	QPSK	1	25	22.72	22.84	22.99		
10	QPSK	1	49	22.60	22.95	23.12		
10	QPSK	25	0	21.72	21.70	22.11	23	1
10	QPSK	25	12	21.74	21.72	22.02		
10	QPSK	25	25	21.72	21.75	22.01		
10	QPSK	50	0	21.75	21.76	22.04		
10	16QAM	1	0	21.62	21.53	21.38	23	1
10	16QAM	1	25	21.47	21.45	21.47		
10	16QAM	1	49	21.23	21.75	21.89		
10	16QAM	25	0	20.79	20.77	20.99	22	2
10	16QAM	25	12	20.78	20.87	21.05		
10	16QAM	25	25	20.69	20.73	21.04		
10	16QAM	50	0	20.77	20.68	21.00		
10	64QAM	1	0	20.10	20.48	20.02	22	2
10	64QAM	1	25	20.14	20.39	20.46		
10	64QAM	1	49	20.15	20.33	20.51		
10	64QAM	25	0	19.73	19.69	20.01	21	3
10	64QAM	25	12	19.68	19.82	19.90		
10	64QAM	25	25	19.67	19.77	20.00		
10	64QAM	50	0	19.80	19.80	20.07		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.74	22.78	23.00	24	0
5	QPSK	1	12	22.79	22.76	23.09		
5	QPSK	1	24	22.69	22.75	22.99		
5	QPSK	12	0	21.60	21.72	21.98	23	1
5	QPSK	12	7	21.65	21.75	22.00		
5	QPSK	12	13	21.67	21.71	22.00		
5	QPSK	25	0	21.64	21.67	21.99		
5	16QAM	1	0	21.73	21.54	22.04	23	1
5	16QAM	1	12	21.68	21.63	21.86		
5	16QAM	1	24	21.82	21.51	21.67		
5	16QAM	12	0	20.59	20.70	20.82	22	2
5	16QAM	12	7	20.60	20.75	20.94		
5	16QAM	12	13	20.64	20.70	20.85		
5	16QAM	25	0	20.67	20.75	20.98		
5	64QAM	1	0	20.64	20.32	20.93	22	2
5	64QAM	1	12	20.68	20.40	20.88		
5	64QAM	1	24	20.62	20.62	20.74		
5	64QAM	12	0	19.66	19.70	19.95	21	3
5	64QAM	12	7	19.57	19.72	19.91		
5	64QAM	12	13	19.73	19.75	19.86		
5	64QAM	25	0	19.66	19.80	19.93		





Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.74	22.82	22.56	24	0
3	QPSK	1	8	22.72	22.72	22.45		
3	QPSK	1	14	22.74	22.69	22.46		
3	QPSK	8	0	21.76	21.66	21.01	23	1
3	QPSK	8	4	21.68	21.74	21.02		
3	QPSK	8	7	21.67	21.75	21.05		
3	QPSK	15	0	21.64	21.72	21.03		
3	16QAM	1	0	21.67	21.68	21.87	23	1
3	16QAM	1	8	21.45	21.27	21.74		
3	16QAM	1	14	21.63	21.54	21.86		
3	16QAM	8	0	20.59	20.78	20.19	22	2
3	16QAM	8	4	20.62	20.77	20.15		
3	16QAM	8	7	20.62	20.79	20.16		
3	16QAM	15	0	20.69	20.68	20.96		
3	64QAM	1	0	20.70	20.66	20.14	22	2
3	64QAM	1	8	20.45	20.54	20.13		
3	64QAM	1	14	20.67	20.52	20.15		
3	64QAM	8	0	19.75	19.69	19.87	21	3
3	64QAM	8	4	19.77	19.82	19.94		
3	64QAM	8	7	19.83	19.63	19.93		
3	64QAM	15	0	19.73	19.87	19.97		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.76	22.80	23.02	24	0
1.4	QPSK	1	3	22.81	22.75	22.98		
1.4	QPSK	1	5	23.01	22.77	23.01		
1.4	QPSK	3	0	22.75	22.76	23.01		
1.4	QPSK	3	1	22.68	22.74	22.98		
1.4	QPSK	3	3	22.76	22.77	23.07	23	1
1.4	QPSK	6	0	21.85	21.77	22.09		
1.4	16QAM	1	0	21.72	21.70	21.96	23	1
1.4	16QAM	1	3	21.54	21.63	22.00		
1.4	16QAM	1	5	21.56	21.50	21.87		
1.4	16QAM	3	0	21.89	21.55	21.98		
1.4	16QAM	3	1	21.72	21.60	22.02		
1.4	16QAM	3	3	21.57	21.55	21.89	22	2
1.4	16QAM	6	0	20.80	20.62	20.91		
1.4	64QAM	1	0	20.65	20.55	20.82	22	2
1.4	64QAM	1	3	20.57	20.54	20.81		
1.4	64QAM	1	5	20.54	20.54	20.80		
1.4	64QAM	3	0	20.65	20.75	21.01		
1.4	64QAM	3	1	20.67	20.81	21.23		
1.4	64QAM	3	3	20.90	20.73	20.99	21	3
1.4	64QAM	6	0	19.90	19.70	20.15		



**<Reduced Power Mode for P-Sensor On>**

**<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	20.05	19.88	19.86	20.5	0
20	QPSK	1	49	19.96	19.69	19.70		
20	QPSK	1	99	19.82	19.66	19.61		
20	QPSK	50	0	20.02	19.72	19.73	20.5	0
20	QPSK	50	24	19.97	19.71	19.71		
20	QPSK	50	50	19.89	19.64	19.65		
20	QPSK	100	0	19.95	19.68	19.72		
20	16QAM	1	0	19.83	19.66	19.73	20.5	0
20	16QAM	1	49	19.69	19.57	19.41		
20	16QAM	1	99	19.55	19.49	19.35		
20	16QAM	50	0	20.03	19.72	19.71	20.5	0
20	16QAM	50	24	19.97	19.67	19.69		
20	16QAM	50	50	19.86	19.65	19.65		
20	16QAM	100	0	19.94	19.68	19.68		
20	64QAM	1	0	19.81	19.49	19.53	20.5	0
20	64QAM	1	49	19.70	19.39	19.60		
20	64QAM	1	99	19.59	19.44	19.48		
20	64QAM	50	0	20.05	19.75	19.77	20.5	0
20	64QAM	50	24	19.95	19.72	19.76		
20	64QAM	50	50	19.89	19.69	19.67		
20	64QAM	100	0	19.93	19.69	19.68		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.99	19.81	19.80	20.5	0
15	QPSK	1	37	19.93	19.74	19.75		
15	QPSK	1	74	19.80	19.66	19.65		
15	QPSK	36	0	19.98	19.75	19.74	20.5	0
15	QPSK	36	20	19.91	19.71	19.69		
15	QPSK	36	39	19.84	19.66	19.65		
15	QPSK	75	0	19.92	19.73	19.68		
15	16QAM	1	0	19.81	19.62	19.62	20.5	0
15	16QAM	1	37	19.66	19.63	19.55		
15	16QAM	1	74	19.57	19.73	19.57		
15	16QAM	36	0	19.89	19.69	19.70	20.5	0
15	16QAM	36	20	19.83	19.66	19.66		
15	16QAM	36	39	19.80	19.63	19.61		
15	16QAM	75	0	19.90	19.71	19.71		
15	64QAM	1	0	19.65	19.50	19.50	20.5	0
15	64QAM	1	37	19.57	19.42	19.40		
15	64QAM	1	74	19.45	19.35	19.38		
15	64QAM	36	0	19.96	19.71	19.70	20.5	0
15	64QAM	36	20	19.90	19.69	19.69		
15	64QAM	36	39	19.84	19.67	19.66		
15	64QAM	75	0	19.91	19.71	19.70		



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Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.78	19.85	19.68	20.5	0
10	QPSK	1	25	19.50	19.60	19.80		
10	QPSK	1	49	19.84	19.86	19.81		
10	QPSK	25	0	19.82	19.57	19.56	20.5	0
10	QPSK	25	12	19.95	19.74	19.71		
10	QPSK	25	25	19.93	19.74	19.67		
10	QPSK	50	0	19.99	19.78	19.70	20.5	0
10	16QAM	1	0	19.79	19.76	19.66		
10	16QAM	1	25	19.69	19.69	19.52		
10	16QAM	1	49	19.78	19.53	19.53	20.5	0
10	16QAM	25	0	20.03	19.74	19.78		
10	16QAM	25	12	20.00	19.73	19.74		
10	16QAM	25	25	19.92	19.74	19.70	20.5	0
10	16QAM	50	0	19.98	19.74	19.72		
10	64QAM	1	0	19.76	19.58	19.52		
10	64QAM	1	25	19.89	19.56	19.43	20.5	0
10	64QAM	1	49	19.80	19.50	19.40		
10	64QAM	25	0	19.64	19.73	19.80		
10	64QAM	25	12	19.70	19.79	19.72	20.5	0
10	64QAM	25	25	19.68	19.75	19.69		
10	64QAM	50	0	19.58	19.62	19.58		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.80	19.60	19.68	20.5	0
5	QPSK	1	12	19.77	19.56	19.44		
5	QPSK	1	24	19.76	19.57	19.47		
5	QPSK	12	0	19.78	19.58	19.65	20.5	0
5	QPSK	12	7	19.76	19.53	19.62		
5	QPSK	12	13	19.73	19.54	19.59		
5	QPSK	25	0	19.78	19.56	19.62	20.5	0
5	16QAM	1	0	19.65	19.44	19.47		
5	16QAM	1	12	19.55	19.36	19.40		
5	16QAM	1	24	19.50	19.41	19.38	20.5	0
5	16QAM	12	0	19.68	19.49	19.55		
5	16QAM	12	7	19.65	19.48	19.55		
5	16QAM	12	13	19.67	19.46	19.52	20.5	0
5	16QAM	25	0	19.74	19.56	19.62		
5	64QAM	1	0	19.54	19.35	19.35		
5	64QAM	1	12	19.50	19.34	19.43	20.5	0
5	64QAM	1	24	19.48	19.37	19.38		
5	64QAM	12	0	19.73	19.55	19.62		
5	64QAM	12	7	19.72	19.52	19.51	20.5	0
5	64QAM	12	13	19.68	19.47	19.33		
5	64QAM	25	0	19.76	19.55	19.45		



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Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.79	19.59	19.69	20.5	0
3	QPSK	1	8	19.75	19.58	19.64		
3	QPSK	1	14	19.76	19.58	19.63		
3	QPSK	8	0	19.77	19.58	19.66	20.5	0
3	QPSK	8	4	19.75	19.56	19.62		
3	QPSK	8	7	19.72	19.59	19.65		
3	QPSK	15	0	19.73	19.55	19.67		
3	16QAM	1	0	19.62	19.39	19.63	20.5	0
3	16QAM	1	8	19.53	19.33	19.55		
3	16QAM	1	14	19.44	19.33	19.56		
3	16QAM	8	0	19.75	19.53	19.66	20.5	0
3	16QAM	8	4	19.71	19.57	19.60		
3	16QAM	8	7	19.70	19.51	19.61		
3	16QAM	15	0	19.76	19.54	19.65		
3	64QAM	1	0	19.45	19.22	19.27	20.5	0
3	64QAM	1	8	19.43	19.20	19.29		
3	64QAM	1	14	19.37	19.19	19.30		
3	64QAM	8	0	19.77	19.55	19.66	20.5	0
3	64QAM	8	4	19.76	19.57	19.65		
3	64QAM	8	7	19.77	19.56	19.62		
3	64QAM	15	0	19.73	19.53	19.65		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.77	19.60	19.62	20.5	0
1.4	QPSK	1	3	19.78	19.61	19.63		
1.4	QPSK	1	5	19.76	19.57	19.61		
1.4	QPSK	3	0	19.75	19.55	19.61		
1.4	QPSK	3	1	19.78	19.53	19.61		
1.4	QPSK	3	3	19.75	19.54	19.58		
1.4	QPSK	6	0	19.74	19.52	19.59	20.5	0
1.4	16QAM	1	0	19.49	19.46	19.40	20.5	0
1.4	16QAM	1	3	19.59	19.39	19.42		
1.4	16QAM	1	5	19.56	19.32	19.38		
1.4	16QAM	3	0	19.70	19.45	19.47		
1.4	16QAM	3	1	19.69	19.48	19.52		
1.4	16QAM	3	3	19.73	19.51	19.38	20.5	0
1.4	16QAM	6	0	19.72	19.54	19.58	20.5	0
1.4	64QAM	1	0	19.52	19.25	19.25	20.5	0
1.4	64QAM	1	3	19.49	19.31	19.26		
1.4	64QAM	1	5	19.50	19.28	19.27		
1.4	64QAM	3	0	19.63	19.48	19.43		
1.4	64QAM	3	1	19.63	19.42	19.46		
1.4	64QAM	3	3	19.65	19.44	19.49		
1.4	64QAM	6	0	19.73	19.50	19.59	20.5	0



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	19.59	19.64	19.66	21	0
20	QPSK	1	49	19.49	19.52	19.41		
20	QPSK	1	99	19.39	19.47	19.33		
20	QPSK	50	0	19.48	19.51	19.53	21	0
20	QPSK	50	24	19.43	19.47	19.45		
20	QPSK	50	50	19.35	19.39	19.36		
20	QPSK	100	0	19.40	19.42	19.38	21	0
20	16QAM	1	0	19.35	19.45	19.33		
20	16QAM	1	49	19.29	19.27	19.31		
20	16QAM	1	99	19.15	19.05	19.14	21	0
20	16QAM	50	0	19.50	19.31	19.42		
20	16QAM	50	24	19.46	19.27	19.37		
20	16QAM	50	50	19.41	19.45	19.33	21	0
20	16QAM	100	0	19.44	19.40	19.40		
20	64QAM	1	0	19.12	19.33	19.19		
20	64QAM	1	49	19.05	19.18	19.05	21	0
20	64QAM	1	99	19.03	19.20	19.00		
20	64QAM	50	0	19.55	19.36	19.48		
20	64QAM	50	24	19.50	19.33	19.45	21	0
20	64QAM	50	50	19.46	19.27	19.41		
20	64QAM	100	0	19.62	19.25	19.42		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.36	19.54	19.47	21	0
15	QPSK	1	37	19.34	19.50	19.46		
15	QPSK	1	74	19.23	19.45	19.41		
15	QPSK	36	0	19.36	19.51	19.42	21	0
15	QPSK	36	20	19.29	19.48	19.39		
15	QPSK	36	39	19.29	19.45	19.37		
15	QPSK	75	0	19.32	19.48	19.43	21	0
15	16QAM	1	0	19.14	19.40	19.32		
15	16QAM	1	37	19.22	19.29	19.20		
15	16QAM	1	74	19.20	19.24	19.12	21	0
15	16QAM	36	0	19.30	19.53	19.42		
15	16QAM	36	20	19.28	19.45	19.38		
15	16QAM	36	39	19.23	19.42	19.35	21	0
15	16QAM	75	0	19.32	19.50	19.38		
15	64QAM	1	0	19.26	19.36	19.24		
15	64QAM	1	37	19.20	19.23	19.07	21	0
15	64QAM	1	74	19.37	19.26	19.10		
15	64QAM	36	0	19.33	19.54	19.43		
15	64QAM	36	20	19.32	19.49	19.41	21	0
15	64QAM	36	39	19.25	19.48	19.38		
15	64QAM	75	0	19.33	19.52	19.43		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.42	19.62	19.48	21	0
10	QPSK	1	25	19.45	19.55	19.40		
10	QPSK	1	49	19.39	19.51	19.39		
10	QPSK	25	0	19.43	19.54	19.44	21	0
10	QPSK	25	12	19.41	19.52	19.41		
10	QPSK	25	25	19.38	19.50	19.39		
10	QPSK	50	0	19.43	19.51	19.41		
10	16QAM	1	0	19.31	19.42	19.35	21	0
10	16QAM	1	25	19.21	19.46	19.40		
10	16QAM	1	49	19.19	19.41	19.32		
10	16QAM	25	0	19.40	19.55	19.42	21	0
10	16QAM	25	12	19.38	19.51	19.37		
10	16QAM	25	25	19.35	19.46	19.39		
10	16QAM	50	0	19.39	19.52	19.41		
10	64QAM	1	0	19.14	19.24	19.05		
10	64QAM	1	25	19.09	19.21	19.10	21	0
10	64QAM	1	49	19.03	19.09	19.43		
10	64QAM	25	0	19.40	19.56	19.40		
10	64QAM	25	12	19.38	19.52	19.37	21	0
10	64QAM	25	25	19.35	19.51	19.35		
10	64QAM	50	0	19.44	19.57	19.43		
10	64QAM	50	0	19.44	19.57	19.43		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.44	19.46	19.40	21	0
5	QPSK	1	12	19.60	19.62	19.34		
5	QPSK	1	24	19.44	19.60	19.35		
5	QPSK	12	0	19.43	19.58	19.50	21	0
5	QPSK	12	7	19.42	19.51	19.35		
5	QPSK	12	13	19.41	19.56	19.30		
5	QPSK	25	0	19.45	19.33	19.35		
5	16QAM	1	0	19.20	19.48	19.07		
5	16QAM	1	12	19.18	19.23	19.14	21	0
5	16QAM	1	24	19.21	19.50	19.23		
5	16QAM	12	0	19.36	19.44	19.29		
5	16QAM	12	7	19.33	19.46	19.27	21	0
5	16QAM	12	13	19.32	19.24	19.28		
5	16QAM	25	0	19.38	19.32	19.39		
5	64QAM	1	0	19.23	19.44	19.12		
5	64QAM	1	12	19.15	19.35	19.13	21	0
5	64QAM	1	24	19.15	19.37	19.09		
5	64QAM	12	0	19.34	19.52	19.31		
5	64QAM	12	7	19.33	19.52	19.28	21	0
5	64QAM	12	13	19.26	19.47	19.25		
5	64QAM	25	0	19.41	19.54	19.35		
5	64QAM	25	0	19.41	19.54	19.35		



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Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.23	19.42	19.42	21	0
3	QPSK	1	8	19.14	19.46	19.20		
3	QPSK	1	14	19.23	19.56	19.24		
3	QPSK	8	0	19.33	19.44	19.43	21	0
3	QPSK	8	4	19.33	19.35	19.38		
3	QPSK	8	7	19.43	19.52	19.33		
3	QPSK	15	0	19.35	19.12	19.31		
3	16QAM	1	0	19.40	19.23	19.25	21	0
3	16QAM	1	8	19.15	19.35	19.65		
3	16QAM	1	14	19.36	19.48	19.28		
3	16QAM	8	0	19.45	19.54	19.51	21	0
3	16QAM	8	4	19.36	19.36	19.63		
3	16QAM	8	7	19.51	19.41	19.38		
3	16QAM	15	0	19.48	19.28	19.24		
3	64QAM	1	0	19.36	19.15	19.38	21	0
3	64QAM	1	8	19.58	19.63	19.21		
3	64QAM	1	14	19.21	19.35	19.56		
3	64QAM	8	0	19.38	19.21	19.52	21	0
3	64QAM	8	4	19.48	19.42	19.25		
3	64QAM	8	7	19.25	19.42	19.23		
3	64QAM	15	0	19.16	19.38	19.23		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.27	19.51	19.54	21	0
1.4	QPSK	1	3	19.35	19.58	19.61		
1.4	QPSK	1	5	19.24	19.52	19.52		
1.4	QPSK	3	0	19.29	19.55	19.59		
1.4	QPSK	3	1	19.33	19.61	19.62		
1.4	QPSK	3	3	19.28	19.54	19.57		
1.4	QPSK	6	0	19.28	19.57	19.59	21	0
1.4	16QAM	1	0	19.53	19.46	19.45	21	0
1.4	16QAM	1	3	19.60	19.48	19.56		
1.4	16QAM	1	5	19.53	19.42	19.43		
1.4	16QAM	3	0	19.30	19.29	19.25		
1.4	16QAM	3	1	19.38	19.34	19.29		
1.4	16QAM	3	3	19.32	19.25	19.22	21	0
1.4	16QAM	6	0	19.42	19.37	19.32		
1.4	64QAM	1	0	19.51	19.42	19.46	21	0
1.4	64QAM	1	3	19.59	19.51	19.55		
1.4	64QAM	1	5	19.50	19.46	19.45		
1.4	64QAM	3	0	19.47	19.45	19.43		
1.4	64QAM	3	1	19.55	19.47	19.45		
1.4	64QAM	3	3	19.47	19.45	19.40		
1.4	64QAM	6	0	19.46	19.44	19.40	21	0



<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	21.74	21.71	21.75	22.5	0
10	QPSK	1	25	21.68	21.65	21.72		
10	QPSK	1	49	21.66	21.62	21.79		
10	QPSK	25	0	21.63	21.66	21.73	22.5	0
10	QPSK	25	12	21.61	21.61	21.70		
10	QPSK	25	25	21.66	21.59	21.71		
10	QPSK	50	0	21.70	21.63	21.76	22.5	0
10	16QAM	1	0	21.43	21.54	21.57		
10	16QAM	1	25	21.55	21.60	21.49		
10	16QAM	1	49	21.55	21.52	21.67	22	0.5
10	16QAM	25	0	21.24	21.18	21.21		
10	16QAM	25	12	21.22	21.18	21.21		
10	16QAM	25	25	21.18	21.15	21.20	22	0.5
10	16QAM	50	0	21.22	21.17	21.25		
10	64QAM	1	0	21.42	21.43	21.49		
10	64QAM	1	25	21.42	21.41	21.54	22	0.5
10	64QAM	1	49	21.36	21.33	21.51		
10	64QAM	25	0	20.55	20.48	20.53		
10	64QAM	25	12	20.48	20.44	20.50	21	1.5
10	64QAM	25	25	20.47	20.42	20.48		
10	64QAM	50	0	20.56	20.50	20.57		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	21.64	21.60	21.60	22.5	0
5	QPSK	1	12	21.57	21.51	21.57		
5	QPSK	1	24	21.58	21.52	21.58		
5	QPSK	12	0	21.58	21.57	21.57	22.5	0
5	QPSK	12	7	21.58	21.57	21.53		
5	QPSK	12	13	21.56	21.56	21.51		
5	QPSK	25	0	21.61	21.56	21.52	22.5	0
5	16QAM	1	0	21.42	21.51	21.61		
5	16QAM	1	12	21.34	21.47	21.52		
5	16QAM	1	24	21.52	21.47	21.52	22	0.5
5	16QAM	12	0	21.06	21.06	21.00		
5	16QAM	12	7	21.06	21.00	21.01		
5	16QAM	12	13	21.05	20.99	21.02	22	0.5
5	16QAM	25	0	21.10	21.12	21.09		
5	64QAM	1	0	21.34	21.25	21.34		
5	64QAM	1	12	21.39	21.15	21.16	22	0.5
5	64QAM	1	24	21.36	21.62	21.24		
5	64QAM	12	0	20.38	20.38	20.36		
5	64QAM	12	7	20.35	20.34	20.32	21	1.5
5	64QAM	12	13	20.33	20.29	20.27		
5	64QAM	25	0	20.42	20.37	20.37		





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Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	21.63	21.65	21.62	22.5	0
3	QPSK	1	8	21.61	21.61	21.60		
3	QPSK	1	14	21.63	21.62	21.62		
3	QPSK	8	0	21.60	21.59	21.59	22.5	0
3	QPSK	8	4	21.61	21.60	21.57		
3	QPSK	8	7	21.60	21.60	21.56		
3	QPSK	15	0	21.59	21.59	21.57		
3	16QAM	1	0	21.64	21.44	21.51	22.5	0
3	16QAM	1	8	21.61	21.47	21.70		
3	16QAM	1	14	21.54	21.51	21.49		
3	16QAM	8	0	21.12	21.14	21.13	22	0.5
3	16QAM	8	4	21.10	21.10	21.12		
3	16QAM	8	7	21.09	21.17	21.13		
3	16QAM	15	0	21.10	21.04	21.04		
3	64QAM	1	0	21.33	21.34	21.27	22	0.5
3	64QAM	1	8	21.20	21.20	21.30		
3	64QAM	1	14	21.20	21.23	21.29		
3	64QAM	8	0	20.44	20.40	20.46	21	1.5
3	64QAM	8	4	20.40	20.44	20.42		
3	64QAM	8	7	20.41	20.42	20.40		
3	64QAM	15	0	20.41	20.42	20.40		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.61	21.58	21.57	22.5	0
1.4	QPSK	1	3	21.60	21.58	21.53		
1.4	QPSK	1	5	21.62	21.60	21.57		
1.4	QPSK	3	0	21.62	21.58	21.55		
1.4	QPSK	3	1	21.63	21.56	21.55		
1.4	QPSK	3	3	21.64	21.54	21.55		
1.4	QPSK	6	0	21.64	21.56	21.55	22.5	0
1.4	16QAM	1	0	21.48	21.55	21.61	22.5	0
1.4	16QAM	1	3	21.55	21.41	21.53		
1.4	16QAM	1	5	21.51	21.37	21.57		
1.4	16QAM	3	0	21.54	21.42	21.46		
1.4	16QAM	3	1	21.50	21.37	21.46		
1.4	16QAM	3	3	21.52	21.48	21.43		
1.4	16QAM	6	0	21.13	21.05	21.05	22	0.5
1.4	64QAM	1	0	21.42	21.46	21.28	22	0.5
1.4	64QAM	1	3	21.44	21.41	21.31		
1.4	64QAM	1	5	21.43	21.41	21.34		
1.4	64QAM	3	0	21.52	21.51	21.47		
1.4	64QAM	3	1	21.58	21.48	21.41		
1.4	64QAM	3	3	21.58	21.50	21.45		
1.4	64QAM	6	0	20.47	20.42	20.36	21	1.5



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	21.99	22.10	22.01	22.5	0
20	QPSK	1	49	21.91	21.99	21.96		
20	QPSK	1	99	22.00	22.03	22.00		
20	QPSK	50	0	21.91	21.91	21.99	22.5	0
20	QPSK	50	24	21.93	21.92	22.00		
20	QPSK	50	50	21.96	22.05	22.02		
20	QPSK	100	0	21.93	22.03	22.00		
20	16QAM	1	0	22.00	21.72	21.87	22.5	0
20	16QAM	1	49	21.77	21.88	21.78		
20	16QAM	1	99	21.79	21.78	21.88		
20	16QAM	50	0	21.18	21.14	21.24	22	0.5
20	16QAM	50	24	21.20	21.16	21.24		
20	16QAM	50	50	21.21	21.20	21.27		
20	16QAM	100	0	21.15	21.16	21.23		
20	64QAM	1	0	21.38	21.49	21.46	22	0.5
20	64QAM	1	49	21.40	21.52	21.52		
20	64QAM	1	99	21.40	21.40	21.57		
20	64QAM	50	0	20.50	20.49	20.55	21	1.5
20	64QAM	50	24	20.49	20.54	20.60		
20	64QAM	50	50	20.54	20.53	20.60		
20	64QAM	100	0	20.48	20.46	20.53		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.02	22.03	22.06	22.5	0
15	QPSK	1	37	22.01	22.05	22.07		
15	QPSK	1	74	22.07	22.10	22.11		
15	QPSK	36	0	22.02	22.02	22.09	22.5	0
15	QPSK	36	20	22.05	22.05	22.09		
15	QPSK	36	39	22.06	22.08	22.07		
15	QPSK	75	0	22.02	22.03	22.08		
15	16QAM	1	0	21.97	22.01	21.86	22.5	0
15	16QAM	1	37	21.93	21.93	22.13		
15	16QAM	1	74	21.99	22.05	22.05		
15	16QAM	36	0	21.15	21.13	21.16	22	0.5
15	16QAM	36	20	21.15	21.16	21.17		
15	16QAM	36	39	21.14	21.21	21.17		
15	16QAM	75	0	21.21	21.18	21.20		
15	64QAM	1	0	21.54	21.34	21.34	22	0.5
15	64QAM	1	37	21.41	21.24	21.53		
15	64QAM	1	74	21.43	21.53	21.36		
15	64QAM	36	0	20.47	20.46	20.52	21	1.5
15	64QAM	36	20	20.49	20.50	20.51		
15	64QAM	36	39	20.47	20.51	20.53		
15	64QAM	75	0	20.49	20.49	20.51		



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Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.99	21.96	21.99	22.5	0
10	QPSK	1	25	21.99	21.96	22.00		
10	QPSK	1	49	22.02	22.01	22.05		
10	QPSK	25	0	21.87	21.91	21.96	22.5	0
10	QPSK	25	12	21.94	21.92	21.95		
10	QPSK	25	25	21.92	21.91	21.96		
10	QPSK	50	0	21.92	21.91	21.95		
10	16QAM	1	0	21.84	21.84	21.91	22.5	0
10	16QAM	1	25	21.88	21.90	21.91		
10	16QAM	1	49	21.79	21.79	22.06		
10	16QAM	25	0	21.11	21.17	21.20	22	0.5
10	16QAM	25	12	21.16	21.17	21.22		
10	16QAM	25	25	21.18	21.13	21.22		
10	16QAM	50	0	21.14	21.14	21.19		
10	64QAM	1	0	21.31	21.29	21.48	22	0.5
10	64QAM	1	25	21.33	21.30	21.51		
10	64QAM	1	49	21.38	21.46	21.50		
10	64QAM	25	0	20.47	20.45	20.48	21	1.5
10	64QAM	25	12	20.49	20.49	20.48		
10	64QAM	25	25	20.49	20.51	20.50		
10	64QAM	50	0	20.53	20.49	20.53		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.87	21.95	21.98	22.5	0
5	QPSK	1	12	21.86	21.95	21.96		
5	QPSK	1	24	21.86	21.96	21.99		
5	QPSK	12	0	21.84	21.91	21.96	22.5	0
5	QPSK	12	7	21.85	21.93	21.97		
5	QPSK	12	13	21.86	21.91	21.96		
5	QPSK	25	0	21.84	21.92	21.95		
5	16QAM	1	0	21.76	21.70	21.85	22.5	0
5	16QAM	1	12	21.72	21.91	21.87		
5	16QAM	1	24	21.77	22.00	21.98		
5	16QAM	12	0	21.04	21.11	21.12	22	0.5
5	16QAM	12	7	21.06	21.11	21.13		
5	16QAM	12	13	21.04	21.09	21.16		
5	16QAM	25	0	21.12	21.15	21.16		
5	64QAM	1	0	21.36	21.33	21.43	22	0.5
5	64QAM	1	12	21.43	21.41	21.40		
5	64QAM	1	24	21.32	21.39	21.51		
5	64QAM	12	0	20.34	20.38	20.45	21	1.5
5	64QAM	12	7	20.32	20.37	20.43		
5	64QAM	12	13	20.36	20.38	20.44		
5	64QAM	25	0	20.40	20.44	20.50		



<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	20.05	20.08	20.08	21	0
20	QPSK	1	49	20.04	20.21	20.23		
20	QPSK	1	99	19.99	20.13	20.13		
20	QPSK	50	0	20.01	20.11	20.12	21	0
20	QPSK	50	24	20.01	20.06	20.08		
20	QPSK	50	50	20.03	20.01	20.04		
20	QPSK	100	0	20.08	20.04	20.10	21	0
20	16QAM	1	0	20.18	20.22	20.07		
20	16QAM	1	49	20.07	20.01	19.90		
20	16QAM	1	99	20.02	20.00	19.89	21	0
20	16QAM	50	0	20.21	20.17	20.14		
20	16QAM	50	24	20.17	20.15	20.09		
20	16QAM	50	50	20.11	20.10	20.03	21	0
20	16QAM	100	0	20.14	20.11	20.08		
20	64QAM	1	0	20.22	20.08	20.06		
20	64QAM	1	49	20.00	20.05	19.98	21	0
20	64QAM	1	99	19.85	20.22	19.82		
20	64QAM	50	0	20.20	20.21	20.15		
20	64QAM	50	24	20.16	20.18	20.11	21	0
20	64QAM	50	50	20.14	20.14	20.07		
20	64QAM	100	0	20.15	20.13	20.08		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.09	20.13	20.15	21	0
15	QPSK	1	37	20.04	20.06	20.09		
15	QPSK	1	74	19.98	20.00	20.08		
15	QPSK	36	0	20.07	20.09	20.16	21	0
15	QPSK	36	20	20.05	20.01	20.12		
15	QPSK	36	39	19.99	20.01	20.08		
15	QPSK	75	0	20.03	20.06	20.10	21	0
15	16QAM	1	0	20.06	20.16	20.22		
15	16QAM	1	37	19.93	20.19	20.21		
15	16QAM	1	74	19.97	20.08	20.10	21	0
15	16QAM	36	0	20.10	20.12	20.16		
15	16QAM	36	20	20.08	20.07	20.14		
15	16QAM	36	39	20.02	20.04	20.08	21	0
15	16QAM	75	0	20.10	20.12	20.15		
15	64QAM	1	0	19.90	19.94	19.95		
15	64QAM	1	37	19.88	19.85	19.87	21	0
15	64QAM	1	74	19.83	19.81	19.82		
15	64QAM	36	0	20.12	20.13	20.17		
15	64QAM	36	20	20.10	20.10	20.15	21	0
15	64QAM	36	39	20.05	20.06	20.11		
15	64QAM	75	0	20.13	20.14	20.15		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.15	20.14	20.16	21	0
10	QPSK	1	25	20.10	20.07	20.18		
10	QPSK	1	49	20.11	20.05	20.11		
10	QPSK	25	0	20.11	20.05	20.16	21	0
10	QPSK	25	12	20.08	20.04	20.12		
10	QPSK	25	25	20.05	20.03	20.09		
10	QPSK	50	0	20.08	20.04	20.12	21	0
10	16QAM	1	0	20.15	20.09	20.17		
10	16QAM	1	25	20.01	20.00	20.18		
10	16QAM	1	49	19.85	19.88	20.20	21	0
10	16QAM	25	0	20.17	20.13	20.21		
10	16QAM	25	12	20.14	20.09	20.20		
10	16QAM	25	25	20.10	20.08	20.16	21	0
10	16QAM	50	0	20.14	20.08	20.18		
10	64QAM	1	0	20.05	19.97	20.02		
10	64QAM	1	25	20.01	19.88	19.98	21	0
10	64QAM	1	49	19.97	19.95	20.03		
10	64QAM	25	0	20.17	20.10	20.21		
10	64QAM	25	12	20.14	20.11	20.17	21	0
10	64QAM	25	25	20.11	20.08	20.12		
10	64QAM	50	0	20.16	20.16	20.13		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	20.13	20.08	20.16	21	0
5	QPSK	1	12	20.08	20.04	20.12		
5	QPSK	1	24	20.05	20.01	20.11		
5	QPSK	12	0	20.07	20.05	20.11	21	0
5	QPSK	12	7	20.06	20.03	20.16		
5	QPSK	12	13	20.06	20.02	20.02		
5	QPSK	25	0	20.12	20.01	20.14	21	0
5	16QAM	1	0	19.98	19.84	20.15		
5	16QAM	1	12	20.04	19.82	20.07		
5	16QAM	1	24	20.04	19.82	19.91	21	0
5	16QAM	12	0	20.13	20.04	20.18		
5	16QAM	12	7	20.09	20.01	20.16		
5	16QAM	12	13	20.08	20.02	20.16	21	0
5	16QAM	25	0	20.12	20.09	20.18		
5	64QAM	1	0	20.14	20.02	20.07		
5	64QAM	1	12	20.09	20.09	20.04	21	0
5	64QAM	1	24	20.08	19.99	20.13		
5	64QAM	12	0	20.11	20.10	20.15		
5	64QAM	12	7	20.08	20.08	20.16	21	0
5	64QAM	12	13	20.00	20.04	20.12		
5	64QAM	25	0	20.10	20.10	20.21		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	20.07	20.05	20.14	21	0
3	QPSK	1	8	20.03	20.00	20.06		
3	QPSK	1	14	20.02	20.01	20.18		
3	QPSK	8	0	20.05	20.04	20.16	21	0
3	QPSK	8	4	20.05	20.01	20.13		
3	QPSK	8	7	20.01	20.01	20.14		
3	QPSK	15	0	20.01	20.00	20.15		
3	16QAM	1	0	19.99	20.12	20.13	21	0
3	16QAM	1	8	19.99	20.02	20.05		
3	16QAM	1	14	20.01	19.96	20.10		
3	16QAM	8	0	20.14	20.08	20.19	21	0
3	16QAM	8	4	20.16	20.08	20.21		
3	16QAM	8	7	20.15	20.06	20.16		
3	16QAM	15	0	20.06	20.06	20.16		
3	64QAM	1	0	20.03	19.99	20.11	21	0
3	64QAM	1	8	19.93	19.96	20.17		
3	64QAM	1	14	20.10	20.15	20.15		
3	64QAM	8	0	20.07	20.04	20.17	21	0
3	64QAM	8	4	20.12	20.07	20.11		
3	64QAM	8	7	20.09	20.09	19.94		
3	64QAM	15	0	20.12	20.09	20.16		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	20.01	20.02	20.20	21	0
1.4	QPSK	1	3	20.04	20.04	20.21		
1.4	QPSK	1	5	20.03	20.04	20.18		
1.4	QPSK	3	0	20.03	20.01	20.21		
1.4	QPSK	3	1	20.03	20.00	20.17		
1.4	QPSK	3	3	20.03	20.00	20.17		
1.4	QPSK	6	0	20.00	19.98	20.17	21	0
1.4	16QAM	1	0	20.09	20.04	20.19	21	0
1.4	16QAM	1	3	20.02	20.03	20.15		
1.4	16QAM	1	5	19.94	20.13	20.17		
1.4	16QAM	3	0	20.01	19.98	20.12		
1.4	16QAM	3	1	20.02	19.99	20.12		
1.4	16QAM	3	3	20.01	19.96	20.11	21	0
1.4	16QAM	6	0	20.04	20.05	20.20		
1.4	64QAM	1	0	19.88	19.83	19.98	21	0
1.4	64QAM	1	3	19.81	19.86	20.03		
1.4	64QAM	1	5	19.81	19.81	20.08		
1.4	64QAM	3	0	20.06	20.01	20.18		
1.4	64QAM	3	1	20.03	19.95	20.11		
1.4	64QAM	3	3	20.04	20.01	20.09		
1.4	64QAM	6	0	20.08	20.04	20.15	21	0



**<Reduced Power Mode for Hotspot On>**

**<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	19.33	19.09	19.09	19.5	0
20	QPSK	1	49	19.21	19.03	19.00		
20	QPSK	1	99	19.29	19.11	19.10		
20	QPSK	50	0	19.25	18.97	19.01	19.5	0
20	QPSK	50	24	19.17	18.96	19.00		
20	QPSK	50	50	19.09	18.91	18.95		
20	QPSK	100	0	19.19	18.94	18.99		
20	16QAM	1	0	19.24	19.04	18.92	19.5	0
20	16QAM	1	49	19.07	18.81	18.95		
20	16QAM	1	99	18.93	18.76	18.95		
20	16QAM	50	0	19.29	19.07	19.06	19.5	0
20	16QAM	50	24	19.25	19.00	19.07		
20	16QAM	50	50	19.14	19.02	19.04		
20	16QAM	100	0	19.23	19.00	19.05		
20	64QAM	1	0	19.20	18.90	18.83	19.5	0
20	64QAM	1	49	18.99	18.82	18.79		
20	64QAM	1	99	18.86	18.72	18.68		
20	64QAM	50	0	19.15	19.13	19.13	19.5	0
20	64QAM	50	24	19.09	19.08	19.15		
20	64QAM	50	50	19.11	19.05	19.09		
20	64QAM	100	0	19.15	19.05	19.07		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.29	19.04	19.04	19.5	0
15	QPSK	1	37	19.15	18.99	19.02		
15	QPSK	1	74	19.09	18.95	18.94		
15	QPSK	36	0	19.21	18.99	19.02	19.5	0
15	QPSK	36	20	19.16	18.96	19.00		
15	QPSK	36	39	19.09	18.92	18.96		
15	QPSK	75	0	19.16	18.97	19.01		
15	16QAM	1	0	19.24	19.03	19.20	19.5	0
15	16QAM	1	37	19.07	18.98	18.98		
15	16QAM	1	74	19.12	18.90	18.92		
15	16QAM	36	0	19.24	19.02	19.05	19.5	0
15	16QAM	36	20	19.17	18.96	19.01		
15	16QAM	36	39	19.12	18.95	18.98		
15	16QAM	75	0	19.23	19.01	19.07		
15	64QAM	1	0	19.15	18.97	18.88	19.5	0
15	64QAM	1	37	19.11	18.76	18.96		
15	64QAM	1	74	18.94	18.70	18.86		
15	64QAM	36	0	19.31	19.07	19.08	19.5	0
15	64QAM	36	20	19.24	19.05	19.05		
15	64QAM	36	39	19.17	18.99	19.04		
15	64QAM	75	0	19.25	19.07	19.07		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.25	19.03	19.05	19.5	0
10	QPSK	1	25	19.22	19.03	19.00		
10	QPSK	1	49	19.09	19.11	19.10		
10	QPSK	25	0	19.21	19.02	19.01	19.5	0
10	QPSK	25	12	19.23	19.04	19.01		
10	QPSK	25	25	19.23	19.02	19.01		
10	QPSK	50	0	19.26	19.05	19.04	19.5	0
10	16QAM	1	0	19.19	19.02	19.08		
10	16QAM	1	25	19.11	18.99	18.91		
10	16QAM	1	49	19.29	19.09	19.04	19.5	0
10	16QAM	25	0	19.24	19.03	19.05		
10	16QAM	25	12	19.23	19.04	19.05		
10	16QAM	25	25	19.24	19.02	19.05	19.5	0
10	16QAM	50	0	19.26	19.06	19.06		
10	64QAM	1	0	19.14	18.93	18.90		
10	64QAM	1	25	18.97	18.93	18.82	19.5	0
10	64QAM	1	49	19.21	18.95	18.86		
10	64QAM	25	0	19.28	19.07	19.08		
10	64QAM	25	12	19.30	19.08	19.06	19.5	0
10	64QAM	25	25	19.28	19.05	19.08		
10	64QAM	50	0	19.26	19.04	19.03		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.29	19.05	19.10	19.5	0
5	QPSK	1	12	19.22	19.02	19.09		
5	QPSK	1	24	19.09	19.00	19.07		
5	QPSK	12	0	19.26	19.01	19.08	19.5	0
5	QPSK	12	7	19.22	19.00	19.08		
5	QPSK	12	13	19.21	18.98	19.05		
5	QPSK	25	0	19.23	18.99	19.07	19.5	0
5	16QAM	1	0	19.28	18.86	19.10		
5	16QAM	1	12	19.27	18.85	19.04		
5	16QAM	1	24	19.29	18.91	18.91	19.5	0
5	16QAM	12	0	19.26	19.01	19.11		
5	16QAM	12	7	19.26	19.00	19.09		
5	16QAM	12	13	19.22	19.01	19.06	19.5	0
5	16QAM	25	0	19.27	19.08	19.14		
5	64QAM	1	0	19.10	18.88	18.95		
5	64QAM	1	12	19.12	18.91	18.84	19.5	0
5	64QAM	1	24	19.08	18.87	18.87		
5	64QAM	12	0	19.20	19.01	19.06		
5	64QAM	12	7	19.19	18.98	19.04	19.5	0
5	64QAM	12	13	19.18	18.99	19.03		
5	64QAM	25	0	19.28	19.05	19.13		





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Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.28	19.06	19.08	19.5	0
3	QPSK	1	8	19.28	19.03	19.08		
3	QPSK	1	14	19.24	19.00	19.07		
3	QPSK	8	0	19.26	19.04	19.10	19.5	0
3	QPSK	8	4	19.24	19.02	19.12		
3	QPSK	8	7	19.23	19.04	19.07		
3	QPSK	15	0	19.23	19.01	19.09		
3	16QAM	1	0	19.27	19.07	19.14	19.5	0
3	16QAM	1	8	19.15	18.99	19.13		
3	16QAM	1	14	19.22	18.99	19.22		
3	16QAM	8	0	19.32	19.04	19.15	19.5	0
3	16QAM	8	4	19.25	19.08	19.06		
3	16QAM	8	7	19.26	19.03	19.13		
3	16QAM	15	0	19.24	19.05	19.10		
3	64QAM	1	0	19.03	18.69	18.89	19.5	0
3	64QAM	1	8	19.06	18.65	18.90		
3	64QAM	1	14	19.06	18.66	18.88		
3	64QAM	8	0	19.27	19.06	19.16	19.5	0
3	64QAM	8	4	19.28	19.08	19.17		
3	64QAM	8	7	19.27	19.03	19.12		
3	64QAM	15	0	19.29	19.05	19.14		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.23	19.01	19.12	19.5	0
1.4	QPSK	1	3	19.22	19.01	19.10		
1.4	QPSK	1	5	19.25	19.03	19.05		
1.4	QPSK	3	0	19.24	19.00	19.08		
1.4	QPSK	3	1	19.24	19.01	19.05		
1.4	QPSK	3	3	19.23	18.98	19.06		
1.4	QPSK	6	0	19.20	18.99	19.06	19.5	0
1.4	16QAM	1	0	19.18	18.97	19.09	19.5	0
1.4	16QAM	1	3	19.21	18.88	18.96		
1.4	16QAM	1	5	19.14	18.88	18.97		
1.4	16QAM	3	0	19.18	18.91	19.02		
1.4	16QAM	3	1	19.17	18.95	19.03		
1.4	16QAM	3	3	19.07	18.97	19.05		
1.4	16QAM	6	0	19.21	19.03	19.12	19.5	0
1.4	64QAM	1	0	18.97	18.75	18.84	19.5	0
1.4	64QAM	1	3	18.88	18.73	18.81		
1.4	64QAM	1	5	18.86	18.58	18.78		
1.4	64QAM	3	0	19.25	19.03	19.11		
1.4	64QAM	3	1	19.24	19.02	19.08		
1.4	64QAM	3	3	19.27	19.02	19.12		
1.4	64QAM	6	0	19.31	19.11	19.16	19.5	0



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	19.38	19.08	19.41	20	0
20	QPSK	1	49	19.28	19.48	19.32		
20	QPSK	1	99	19.22	19.36	19.24		
20	QPSK	50	0	19.36	19.42	19.33	20	0
20	QPSK	50	24	19.26	19.38	19.27		
20	QPSK	50	50	19.27	19.36	19.24		
20	QPSK	100	0	19.32	19.40	19.26	20	0
20	16QAM	1	0	19.39	19.29	19.24		
20	16QAM	1	49	19.30	19.27	19.15		
20	16QAM	1	99	19.11	19.11	19.06	20	0
20	16QAM	50	0	19.38	19.12	19.33		
20	16QAM	50	24	19.34	19.38	19.29		
20	16QAM	50	50	19.27	19.36	19.24	20	0
20	16QAM	100	0	19.31	19.38	19.30		
20	64QAM	1	0	19.14	19.29	19.18		
20	64QAM	1	49	19.04	19.12	19.01	20	0
20	64QAM	1	99	18.97	19.11	18.94		
20	64QAM	50	0	19.41	19.22	19.36		
20	64QAM	50	24	19.35	19.43	19.30	20	0
20	64QAM	50	50	19.31	18.93	19.26		
20	64QAM	100	0	19.36	19.38	19.26		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.25	19.02	19.03	20	0
15	QPSK	1	37	19.18	19.41	19.21		
15	QPSK	1	74	19.14	19.29	19.38		
15	QPSK	36	0	19.22	19.44	19.34	20	0
15	QPSK	36	20	19.14	19.43	19.29		
15	QPSK	36	39	19.14	19.32	19.29		
15	QPSK	75	0	19.19	19.38	19.32	20	0
15	16QAM	1	0	18.96	19.28	19.29		
15	16QAM	1	37	19.00	19.18	19.18		
15	16QAM	1	74	18.88	19.26	19.23	20	0
15	16QAM	36	0	19.18	19.10	19.34		
15	16QAM	36	20	19.17	19.40	19.33		
15	16QAM	36	39	19.10	19.27	19.26	20	0
15	16QAM	75	0	19.18	19.34	19.31		
15	64QAM	1	0	19.13	19.18	19.21		
15	64QAM	1	37	19.12	19.30	19.23	20	0
15	64QAM	1	74	19.21	19.28	19.02		
15	64QAM	36	0	19.21	19.40	19.35		
15	64QAM	36	20	19.16	19.37	19.24	20	0
15	64QAM	36	39	19.15	19.30	19.23		
15	64QAM	75	0	19.18	19.39	19.26		



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Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.21	19.10	19.22	20	0
10	QPSK	1	25	19.22	19.22	19.29		
10	QPSK	1	49	19.31	19.29	19.12		
10	QPSK	25	0	19.33	19.32	19.33	20	0
10	QPSK	25	12	19.29	19.29	19.27		
10	QPSK	25	25	19.22	19.23	19.23		
10	QPSK	50	0	19.19	19.32	19.21		
10	16QAM	1	0	19.23	19.38	19.19	20	0
10	16QAM	1	25	19.29	19.27	19.16		
10	16QAM	1	49	19.21	19.22	19.11		
10	16QAM	25	0	19.33	19.03	19.18	20	0
10	16QAM	25	12	19.21	19.22	19.19		
10	16QAM	25	25	19.29	19.27	19.22		
10	16QAM	50	0	19.29	19.24	19.19		
10	64QAM	1	0	19.22	19.20	19.22	20	0
10	64QAM	1	25	19.13	19.11	19.28		
10	64QAM	1	49	19.03	19.09	19.02		
10	64QAM	25	0	19.33	19.18	19.23	20	0
10	64QAM	25	12	19.32	19.14	19.24		
10	64QAM	25	25	19.29	19.02	19.22		
10	64QAM	50	0	19.21	19.27	19.23		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.11	19.12	19.13	20	0
5	QPSK	1	12	19.19	19.21	19.19		
5	QPSK	1	24	19.21	19.23	19.22		
5	QPSK	12	0	19.22	19.23	19.23	20	0
5	QPSK	12	7	19.23	19.24	19.21		
5	QPSK	12	13	19.15	19.22	19.19		
5	QPSK	25	0	19.22	19.28	19.12		
5	16QAM	1	0	19.08	19.22	19.29	20	0
5	16QAM	1	12	19.09	19.22	19.22		
5	16QAM	1	24	19.11	19.23	19.31		
5	16QAM	12	0	19.23	19.21	19.20	20	0
5	16QAM	12	7	19.32	19.33	19.19		
5	16QAM	12	13	19.12	19.30	19.11		
5	16QAM	25	0	19.28	19.24	19.28		
5	64QAM	1	0	19.08	19.08	19.09	20	0
5	64QAM	1	12	19.23	19.17	19.07		
5	64QAM	1	24	19.21	19.40	19.23		
5	64QAM	12	0	19.22	19.22	19.22	20	0
5	64QAM	12	7	19.10	19.21	19.16		
5	64QAM	12	13	19.01	19.23	19.13		
5	64QAM	25	0	19.09	19.29	19.27		



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Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.10	19.22	19.20	20	0
3	QPSK	1	8	19.23	19.23	19.28		
3	QPSK	1	14	19.30	19.19	19.21		
3	QPSK	8	0	19.29	19.23	19.29	20	0
3	QPSK	8	4	19.22	19.28	19.24		
3	QPSK	8	7	19.18	19.18	19.20		
3	QPSK	15	0	19.28	19.17	19.19		
3	16QAM	1	0	19.22	19.27	19.21	20	0
3	16QAM	1	8	19.19	19.22	19.14		
3	16QAM	1	14	19.09	19.19	19.12		
3	16QAM	8	0	19.23	19.11	19.22	20	0
3	16QAM	8	4	19.26	19.21	19.30		
3	16QAM	8	7	19.30	19.23	19.24		
3	16QAM	15	0	19.27	19.21	19.21		
3	64QAM	1	0	19.14	19.19	19.23	20	0
3	64QAM	1	8	19.24	19.21	19.22		
3	64QAM	1	14	19.19	19.11	19.21		
3	64QAM	8	0	19.23	19.20	19.20	20	0
3	64QAM	8	4	19.22	19.24	19.22		
3	64QAM	8	7	19.20	19.22	19.13		
3	64QAM	15	0	19.09	19.28	19.19		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.23	19.22	19.33	20	0
1.4	QPSK	1	3	19.18	19.24	19.32		
1.4	QPSK	1	5	19.11	19.20	19.29		
1.4	QPSK	3	0	19.23	19.30	19.22		
1.4	QPSK	3	1	19.34	19.24	19.19		
1.4	QPSK	3	3	19.30	19.24	19.14		
1.4	QPSK	6	0	19.34	19.33	19.26	20	0
1.4	16QAM	1	0	19.23	19.32	19.23	20	0
1.4	16QAM	1	3	19.26	19.20	19.19		
1.4	16QAM	1	5	19.25	19.21	19.11		
1.4	16QAM	3	0	19.16	19.09	19.25		
1.4	16QAM	3	1	19.23	19.22	19.22		
1.4	16QAM	3	3	19.23	19.34	19.29	20	0
1.4	16QAM	6	0	19.21	19.23	19.19		
1.4	64QAM	1	0	19.13	19.21	19.17		
1.4	64QAM	1	3	19.09	19.23	19.26		
1.4	64QAM	1	5	19.18	19.21	19.23		
1.4	64QAM	3	0	19.29	19.13	19.21		
1.4	64QAM	3	1	19.26	19.23	19.08	20	0
1.4	64QAM	3	3	19.23	19.08	19.17		
1.4	64QAM	6	0	19.16	19.08	19.15		



<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	21.74	21.71	21.75	22.5	0
10	QPSK	1	25	21.68	21.65	21.72		
10	QPSK	1	49	21.66	21.62	21.79		
10	QPSK	25	0	21.63	21.66	21.73	22.5	0
10	QPSK	25	12	21.61	21.61	21.70		
10	QPSK	25	25	21.66	21.59	21.71		
10	QPSK	50	0	21.70	21.63	21.76	22.5	0
10	16QAM	1	0	21.43	21.54	21.57		
10	16QAM	1	25	21.55	21.60	21.49		
10	16QAM	1	49	21.55	21.52	21.67	22	0.5
10	16QAM	25	0	21.24	21.18	21.21		
10	16QAM	25	12	21.22	21.18	21.21		
10	16QAM	25	25	21.18	21.15	21.20	22	0.5
10	16QAM	50	0	21.22	21.17	21.25		
10	64QAM	1	0	21.42	21.43	21.49		
10	64QAM	1	25	21.42	21.41	21.54	22	0.5
10	64QAM	1	49	21.36	21.33	21.51		
10	64QAM	25	0	20.55	20.48	20.53		
10	64QAM	25	12	20.48	20.44	20.50	21	1.5
10	64QAM	25	25	20.47	20.42	20.48		
10	64QAM	50	0	20.56	20.50	20.57		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	21.64	21.60	21.60	22.5	0
5	QPSK	1	12	21.57	21.51	21.57		
5	QPSK	1	24	21.58	21.52	21.58		
5	QPSK	12	0	21.58	21.57	21.57	22.5	0
5	QPSK	12	7	21.58	21.57	21.53		
5	QPSK	12	13	21.56	21.56	21.51		
5	QPSK	25	0	21.61	21.56	21.52	22.5	0
5	16QAM	1	0	21.42	21.51	21.61		
5	16QAM	1	12	21.34	21.47	21.52		
5	16QAM	1	24	21.52	21.47	21.52	22	0.5
5	16QAM	12	0	21.06	21.06	21.00		
5	16QAM	12	7	21.06	21.00	21.01		
5	16QAM	12	13	21.05	20.99	21.02	22	0.5
5	16QAM	25	0	21.10	21.12	21.09		
5	64QAM	1	0	21.34	21.25	21.34		
5	64QAM	1	12	21.39	21.15	21.16	21	1.5
5	64QAM	1	24	21.36	21.62	21.24		
5	64QAM	12	0	20.38	20.38	20.36		
5	64QAM	12	7	20.35	20.34	20.32	21	1.5
5	64QAM	12	13	20.33	20.29	20.27		
5	64QAM	25	0	20.42	20.37	20.37		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	21.63	21.65	21.62	22.5	0
3	QPSK	1	8	21.61	21.61	21.60		
3	QPSK	1	14	21.63	21.62	21.62		
3	QPSK	8	0	21.60	21.59	21.59	22.5	0
3	QPSK	8	4	21.61	21.60	21.57		
3	QPSK	8	7	21.60	21.60	21.56		
3	QPSK	15	0	21.59	21.59	21.57		
3	16QAM	1	0	21.64	21.44	21.51	22.5	0
3	16QAM	1	8	21.61	21.47	21.70		
3	16QAM	1	14	21.54	21.51	21.49		
3	16QAM	8	0	21.12	21.14	21.13	22	0.5
3	16QAM	8	4	21.10	21.10	21.12		
3	16QAM	8	7	21.09	21.17	21.13		
3	16QAM	15	0	21.10	21.04	21.04		
3	64QAM	1	0	21.33	21.34	21.27	22	0.5
3	64QAM	1	8	21.20	21.20	21.30		
3	64QAM	1	14	21.20	21.23	21.29		
3	64QAM	8	0	20.44	20.40	20.46	21	1.5
3	64QAM	8	4	20.40	20.44	20.42		
3	64QAM	8	7	20.41	20.42	20.40		
3	64QAM	15	0	20.41	20.42	20.40		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.61	21.58	21.57	22.5	0
1.4	QPSK	1	3	21.60	21.58	21.53		
1.4	QPSK	1	5	21.62	21.60	21.57		
1.4	QPSK	3	0	21.62	21.58	21.55		
1.4	QPSK	3	1	21.63	21.56	21.55		
1.4	QPSK	3	3	21.64	21.54	21.55		
1.4	QPSK	6	0	21.64	21.56	21.55	22.5	0
1.4	16QAM	1	0	21.48	21.55	21.61	22.5	0
1.4	16QAM	1	3	21.55	21.41	21.53		
1.4	16QAM	1	5	21.51	21.37	21.57		
1.4	16QAM	3	0	21.54	21.42	21.46		
1.4	16QAM	3	1	21.50	21.37	21.46		
1.4	16QAM	3	3	21.52	21.48	21.43		
1.4	16QAM	6	0	21.13	21.05	21.05	22	0.5
1.4	64QAM	1	0	21.42	21.46	21.28	22	0.5
1.4	64QAM	1	3	21.44	21.41	21.31		
1.4	64QAM	1	5	21.43	21.41	21.34		
1.4	64QAM	3	0	21.52	21.51	21.47		
1.4	64QAM	3	1	21.58	21.48	21.41		
1.4	64QAM	3	3	21.58	21.50	21.45		
1.4	64QAM	6	0	20.47	20.42	20.36	21	1.5



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	17.31	17.57	17.53	18	0
20	QPSK	1	49	17.31	17.55	17.55		
20	QPSK	1	99	17.26	17.40	17.49		
20	QPSK	50	0	17.17	17.32	17.36	18	0
20	QPSK	50	24	17.17	17.33	17.37		
20	QPSK	50	50	17.18	17.42	17.40		
20	QPSK	100	0	17.16	17.40	17.36		
20	16QAM	1	0	17.12	17.24	17.51	18	0
20	16QAM	1	49	17.15	17.27	17.49		
20	16QAM	1	99	17.20	17.26	17.41		
20	16QAM	50	0	17.24	17.39	17.46	18	0
20	16QAM	50	24	17.29	17.41	17.48		
20	16QAM	50	50	17.29	17.41	17.50		
20	16QAM	100	0	17.26	17.39	17.46		
20	64QAM	1	0	17.02	17.16	17.26	18	0
20	64QAM	1	49	17.02	17.15	17.17		
20	64QAM	1	99	17.01	17.19	17.23		
20	64QAM	50	0	17.32	17.32	17.38	18	0
20	64QAM	50	24	17.18	17.33	17.34		
20	64QAM	50	50	17.19	17.37	17.33		
20	64QAM	100	0	17.20	17.40	17.36		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	17.19	17.31	17.37	18	0
15	QPSK	1	37	17.23	17.33	17.40		
15	QPSK	1	74	17.26	17.41	17.39		
15	QPSK	36	0	17.20	17.32	17.35	18	0
15	QPSK	36	20	17.20	17.31	17.36		
15	QPSK	36	39	17.20	17.34	17.39		
15	QPSK	75	0	17.18	17.33	17.35		
15	16QAM	1	0	17.18	17.27	17.30	18	0
15	16QAM	1	37	17.22	17.31	17.38		
15	16QAM	1	74	17.28	17.37	17.48		
15	16QAM	36	0	17.24	17.30	17.35	18	0
15	16QAM	36	20	17.26	17.33	17.38		
15	16QAM	36	39	17.27	17.34	17.39		
15	16QAM	75	0	17.30	17.37	17.41		
15	64QAM	1	0	17.12	17.41	17.41	18	0
15	64QAM	1	37	17.40	17.42	17.42		
15	64QAM	1	74	17.30	17.43	17.43		
15	64QAM	36	0	17.13	17.21	17.21	18	0
15	64QAM	36	20	17.25	17.20	17.20		
15	64QAM	36	39	17.43	17.34	17.34		
15	64QAM	75	0	17.25	17.19	17.19		



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Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	17.28	17.28	17.44	18	0
10	QPSK	1	25	17.22	16.85	17.42		
10	QPSK	1	49	17.26	16.90	17.36		
10	QPSK	25	0	17.17	17.16	17.36	18	0
10	QPSK	25	12	17.19	17.29	17.36		
10	QPSK	25	25	17.19	17.33	17.37		
10	QPSK	50	0	17.17	17.31	17.36		
10	16QAM	1	0	17.07	17.15	17.32	18	0
10	16QAM	1	25	17.04	17.12	17.32		
10	16QAM	1	49	17.07	17.21	17.39		
10	16QAM	25	0	17.25	17.36	17.45	18	0
10	16QAM	25	12	17.27	17.35	17.44		
10	16QAM	25	25	17.27	17.37	17.45		
10	16QAM	50	0	17.28	17.34	17.44		
10	64QAM	1	0	17.06	17.41	17.10	18	0
10	64QAM	1	25	16.90	17.42	17.09		
10	64QAM	1	49	16.90	17.43	17.20		
10	64QAM	25	0	17.20	17.21	17.24	18	0
10	64QAM	25	12	17.17	17.20	17.31		
10	64QAM	25	25	17.29	17.34	17.30		
10	64QAM	50	0	16.95	17.19	17.30		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	17.16	17.33	17.38	18	0
5	QPSK	1	12	17.15	17.31	17.34		
5	QPSK	1	24	17.20	17.37	17.39		
5	QPSK	12	0	17.15	17.32	17.34	18	0
5	QPSK	12	7	17.15	17.31	17.35		
5	QPSK	12	13	17.16	17.33	17.35		
5	QPSK	25	0	17.15	17.31	17.35		
5	16QAM	1	0	17.12	17.24	17.42	18	0
5	16QAM	1	12	17.20	17.33	17.42		
5	16QAM	1	24	17.17	17.38	17.46		
5	16QAM	12	0	17.21	17.35	17.42	18	0
5	16QAM	12	7	17.22	17.38	17.41		
5	16QAM	12	13	17.26	17.35	17.44		
5	16QAM	25	0	17.27	17.37	17.43		
5	64QAM	1	0	16.99	17.41	17.13	18	0
5	64QAM	1	12	17.06	17.42	17.19		
5	64QAM	1	24	17.08	17.43	17.17		
5	64QAM	12	0	17.28	17.21	17.26	18	0
5	64QAM	12	7	17.30	17.20	17.28		
5	64QAM	12	13	17.29	17.34	17.29		
5	64QAM	25	0	17.29	17.19	17.33		





<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	19.37	19.34	19.35	20	0
20	QPSK	1	49	19.34	19.27	19.47		
20	QPSK	1	99	19.26	19.20	19.12		
20	QPSK	50	0	19.38	19.32	19.45	20	0
20	QPSK	50	24	19.34	19.29	19.22		
20	QPSK	50	50	19.27	19.24	19.19		
20	QPSK	100	0	19.32	19.25	19.38	20	0
20	16QAM	1	0	19.30	19.37	19.31		
20	16QAM	1	49	19.19	19.26	19.05		
20	16QAM	1	99	19.28	19.17	19.07	20	0
20	16QAM	50	0	19.42	19.38	19.31		
20	16QAM	50	24	19.39	19.32	19.29		
20	16QAM	50	50	19.31	19.26	19.23	20	0
20	16QAM	100	0	19.34	19.32	19.25		
20	64QAM	1	0	18.90	18.95	19.14		
20	64QAM	1	49	18.92	18.95	19.01	20	0
20	64QAM	1	99	19.08	18.90	18.90		
20	64QAM	50	0	19.40	19.43	19.33		
20	64QAM	50	24	19.30	19.37	19.30	20	0
20	64QAM	50	50	19.29	19.31	19.28		
20	64QAM	100	0	19.23	19.33	19.27		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	19.36	19.29	19.35	20	0
15	QPSK	1	37	19.21	19.23	19.29		
15	QPSK	1	74	19.15	19.15	19.27		
15	QPSK	36	0	19.25	19.27	19.29	20	0
15	QPSK	36	20	19.24	19.22	19.30		
15	QPSK	36	39	19.17	19.20	19.28		
15	QPSK	75	0	19.22	19.27	19.30	20	0
15	16QAM	1	0	19.29	19.33	19.27		
15	16QAM	1	37	19.24	19.23	19.35		
15	16QAM	1	74	19.12	19.28	19.20	20	0
15	16QAM	36	0	19.23	19.27	19.35		
15	16QAM	36	20	19.22	19.24	19.30		
15	16QAM	36	39	19.22	19.22	19.26	20	0
15	16QAM	75	0	19.28	19.28	19.34		
15	64QAM	1	0	19.03	18.96	19.05		
15	64QAM	1	37	19.02	18.90	18.96	20	0
15	64QAM	1	74	19.00	18.94	18.86		
15	64QAM	36	0	19.31	19.30	19.37		
15	64QAM	36	20	19.24	19.27	19.32	20	0
15	64QAM	36	39	19.25	19.25	19.31		
15	64QAM	75	0	19.28	19.29	19.37		



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Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	19.33	19.31	19.43	20	0
10	QPSK	1	25	19.27	19.27	19.34		
10	QPSK	1	49	19.25	19.22	19.34		
10	QPSK	25	0	19.31	19.25	19.33	20	0
10	QPSK	25	12	19.28	19.21	19.32		
10	QPSK	25	25	19.23	19.24	19.33		
10	QPSK	50	0	19.26	19.24	19.34	20	0
10	16QAM	1	0	19.37	19.26	19.39		
10	16QAM	1	25	19.35	19.05	19.38		
10	16QAM	1	49	19.29	19.12	19.30	20	0
10	16QAM	25	0	19.34	19.31	19.44		
10	16QAM	25	12	19.34	19.29	19.37		
10	16QAM	25	25	19.28	19.31	19.35	20	0
10	16QAM	50	0	19.28	19.32	19.38		
10	64QAM	1	0	19.14	19.28	19.35		
10	64QAM	1	25	19.14	19.13	19.26	20	0
10	64QAM	1	49	19.05	19.11	19.17		
10	64QAM	25	0	19.32	19.28	19.41		
10	64QAM	25	12	19.32	19.31	19.42	20	0
10	64QAM	25	25	19.31	19.27	19.37		
10	64QAM	50	0	19.36	19.33	19.43		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	19.30	19.30	19.36	20	0
5	QPSK	1	12	19.28	19.26	19.38		
5	QPSK	1	24	19.31	19.30	19.27		
5	QPSK	12	0	19.30	19.28	19.31	20	0
5	QPSK	12	7	19.27	19.25	19.41		
5	QPSK	12	13	19.27	19.24	19.35		
5	QPSK	25	0	19.28	19.22	19.35	20	0
5	16QAM	1	0	19.24	19.15	19.26		
5	16QAM	1	12	19.24	19.20	19.25		
5	16QAM	1	24	19.28	19.19	19.27	20	0
5	16QAM	12	0	19.31	19.23	19.39		
5	16QAM	12	7	19.30	19.25	19.34		
5	16QAM	12	13	19.28	19.24	19.38	20	0
5	16QAM	25	0	19.31	19.28	19.40		
5	64QAM	1	0	19.08	19.04	19.20		
5	64QAM	1	12	19.05	19.05	19.19	20	0
5	64QAM	1	24	19.11	19.03	19.22		
5	64QAM	12	0	19.28	19.23	19.30		
5	64QAM	12	7	19.31	19.24	19.36	20	0
5	64QAM	12	13	19.26	19.26	19.33		
5	64QAM	25	0	19.36	19.30	19.40		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	19.33	19.30	19.35	20	0
3	QPSK	1	8	19.33	19.32	19.17		
3	QPSK	1	14	19.34	19.27	19.29		
3	QPSK	8	0	19.33	19.29	19.30	20	0
3	QPSK	8	4	19.33	19.27	19.32		
3	QPSK	8	7	19.33	19.27	19.31		
3	QPSK	15	0	19.30	19.26	19.30		
3	16QAM	1	0	19.30	19.20	19.35	20	0
3	16QAM	1	8	19.25	19.11	19.37		
3	16QAM	1	14	19.24	19.08	19.34		
3	16QAM	8	0	19.35	19.25	19.34	20	0
3	16QAM	8	4	19.40	19.34	19.33		
3	16QAM	8	7	19.36	19.31	19.31		
3	16QAM	15	0	19.31	19.29	19.31		
3	64QAM	1	0	19.17	19.09	19.09		
3	64QAM	1	8	19.27	19.06	19.11	20	0
3	64QAM	1	14	19.19	19.08	19.18		
3	64QAM	8	0	19.36	19.30	19.32		
3	64QAM	8	4	19.35	19.33	19.30	20	0
3	64QAM	8	7	19.31	19.32	19.29		
3	64QAM	15	0	19.35	19.34	19.33		
3	64QAM	15	0	19.35	19.34	19.33		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	19.24	19.20	19.34	20	0
1.4	QPSK	1	3	19.27	19.21	19.37		
1.4	QPSK	1	5	19.27	19.27	19.34		
1.4	QPSK	3	0	19.24	19.25	19.35		
1.4	QPSK	3	1	18.79	19.24	19.37		
1.4	QPSK	3	3	19.26	19.24	19.33		
1.4	QPSK	6	0	19.22	19.25	19.32	20	0
1.4	16QAM	1	0	19.28	19.26	19.33	20	0
1.4	16QAM	1	3	19.26	19.27	19.29		
1.4	16QAM	1	5	19.20	19.20	19.23		
1.4	16QAM	3	0	19.25	19.14	19.32		
1.4	16QAM	3	1	19.22	19.17	19.25		
1.4	16QAM	3	3	19.28	19.15	19.36	20	0
1.4	16QAM	6	0	19.26	19.26	19.39		
1.4	64QAM	1	0	19.19	19.14	19.28	20	0
1.4	64QAM	1	3	19.18	19.05	19.27		
1.4	64QAM	1	5	19.05	19.13	19.30		
1.4	64QAM	3	0	19.26	19.25	19.37		
1.4	64QAM	3	1	19.24	19.30	19.37		
1.4	64QAM	3	3	19.28	19.28	19.30		
1.4	64QAM	6	0	19.32	19.32	19.13	20	0



**<Reduced Power Mode for Handheld On>**

**<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	22.72	22.44	22.35	23	0
20	QPSK	1	49	22.50	22.30	22.34		
20	QPSK	1	99	22.39	22.27	22.23		
20	QPSK	50	0	22.61	22.38	22.42	23	0
20	QPSK	50	24	22.54	22.32	22.38		
20	QPSK	50	50	22.45	22.27	22.32		
20	QPSK	100	0	22.53	22.32	22.37	23	0
20	16QAM	1	0	22.53	22.29	22.37		
20	16QAM	1	49	22.38	22.32	22.30		
20	16QAM	1	99	22.21	22.31	22.15	22	1
20	16QAM	50	0	21.61	21.35	21.37		
20	16QAM	50	24	21.56	21.30	21.38		
20	16QAM	50	50	21.50	21.28	21.33	22	1
20	16QAM	100	0	21.55	21.31	21.39		
20	64QAM	1	0	21.44	21.23	21.21		
20	64QAM	1	49	21.24	20.99	21.10	22	1
20	64QAM	1	99	21.26	21.10	21.01		
20	64QAM	50	0	20.68	20.40	20.46		
20	64QAM	50	24	20.60	20.33	20.41	21	2
20	64QAM	50	50	20.51	20.33	20.37		
20	64QAM	100	0	20.57	20.33	20.37		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.62	22.29	22.40	23	0
15	QPSK	1	37	22.51	22.21	22.37		
15	QPSK	1	74	22.37	22.20	22.32		
15	QPSK	36	0	22.54	22.24	22.38	23	0
15	QPSK	36	20	22.51	22.20	22.34		
15	QPSK	36	39	22.43	22.18	22.33		
15	QPSK	75	0	22.53	22.21	22.38	23	0
15	16QAM	1	0	22.51	22.09	22.31		
15	16QAM	1	37	22.32	22.01	22.26		
15	16QAM	1	74	22.16	21.90	22.18	22	1
15	16QAM	36	0	21.54	21.21	21.35		
15	16QAM	36	20	21.42	21.17	21.31		
15	16QAM	36	39	21.43	21.15	21.27	22	1
15	16QAM	75	0	21.51	21.22	21.36		
15	64QAM	1	0	21.48	21.11	21.21		
15	64QAM	1	37	21.25	21.04	21.20	22	1
15	64QAM	1	74	21.20	21.06	21.15		
15	64QAM	36	0	20.55	20.21	20.34		
15	64QAM	36	20	20.30	20.20	20.33	21	2
15	64QAM	36	39	20.09	20.19	20.30		
15	64QAM	75	0	20.14	20.24	20.39		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.64	22.37	22.40	23	0
10	QPSK	1	25	22.54	22.34	22.33		
10	QPSK	1	49	22.50	22.30	22.24		
10	QPSK	25	0	22.55	22.37	22.36	23	0
10	QPSK	25	12	22.53	22.29	22.33		
10	QPSK	25	25	22.47	22.30	22.29		
10	QPSK	50	0	22.52	22.33	22.31		
10	16QAM	1	0	22.58	22.22	22.22	23	0
10	16QAM	1	25	22.51	22.11	22.21		
10	16QAM	1	49	22.43	22.17	22.12		
10	16QAM	25	0	21.55	21.36	21.35	22	1
10	16QAM	25	12	21.51	21.37	21.32		
10	16QAM	25	25	21.47	21.34	21.31		
10	16QAM	50	0	21.52	21.34	21.34		
10	64QAM	1	0	21.42	20.99	21.14	22	1
10	64QAM	1	25	21.15	20.92	20.96		
10	64QAM	1	49	21.04	20.99	21.08		
10	64QAM	25	0	20.58	20.40	20.39	21	2
10	64QAM	25	12	20.52	20.36	20.35		
10	64QAM	25	25	20.47	20.31	20.36		
10	64QAM	50	0	20.52	20.38	20.37		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.61	22.30	22.20	23	0
5	QPSK	1	12	22.55	22.32	22.29		
5	QPSK	1	24	22.34	22.30	22.22		
5	QPSK	12	0	22.34	22.40	22.29	23	0
5	QPSK	12	7	22.32	22.12	22.24		
5	QPSK	12	13	22.33	22.27	22.27		
5	QPSK	25	0	22.48	22.29	22.19		
5	16QAM	1	0	22.51	22.18	22.23	23	0
5	16QAM	1	12	22.39	22.11	22.19		
5	16QAM	1	24	22.13	22.07	22.11		
5	16QAM	12	0	21.50	21.32	21.27	22	1
5	16QAM	12	7	21.42	21.28	21.19		
5	16QAM	12	13	21.20	21.27	21.09		
5	16QAM	25	0	21.61	21.29	21.16		
5	64QAM	1	0	21.39	21.21	21.28	22	1
5	64QAM	1	12	21.33	21.23	21.27		
5	64QAM	1	24	21.42	21.19	21.16		
5	64QAM	12	0	20.33	20.10	20.20	21	2
5	64QAM	12	7	20.30	20.19	20.19		
5	64QAM	12	13	20.19	20.01	20.16		
5	64QAM	25	0	20.22	20.01	20.07		



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Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.35	22.17	22.30	23	0
3	QPSK	1	8	22.14	22.03	22.12		
3	QPSK	1	14	22.13	22.02	22.06		
3	QPSK	8	0	22.24	22.15	22.24	23	0
3	QPSK	8	4	22.31	22.16	22.30		
3	QPSK	8	7	22.28	22.20	22.29		
3	QPSK	15	0	22.42	22.32	22.40		
3	16QAM	1	0	22.00	22.10	22.20	23	0
3	16QAM	1	8	22.21	21.90	22.10		
3	16QAM	1	14	22.03	21.86	21.91		
3	16QAM	8	0	21.55	21.45	21.54	22	1
3	16QAM	8	4	21.31	21.26	21.31		
3	16QAM	8	7	21.47	21.43	21.50		
3	16QAM	15	0	21.32	21.23	21.33		
3	64QAM	1	0	21.33	20.99	21.24	22	1
3	64QAM	1	8	20.85	20.71	20.85		
3	64QAM	1	14	20.90	20.88	20.87		
3	64QAM	8	0	20.17	20.08	20.17	21	2
3	64QAM	8	4	20.11	20.13	20.22		
3	64QAM	8	7	20.10	20.12	20.07		
3	64QAM	15	0	20.02	20.10	20.06		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.00	22.24	22.25	23	0
1.4	QPSK	1	3	22.30	21.99	22.13		
1.4	QPSK	1	5	22.22	21.99	22.05		
1.4	QPSK	3	0	22.50	22.16	22.30		
1.4	QPSK	3	1	22.52	22.19	22.35		
1.4	QPSK	3	3	22.46	22.17	22.32		
1.4	QPSK	6	0	22.63	22.31	22.46	23	0
1.4	16QAM	1	0	22.13	22.17	22.35	23	0
1.4	16QAM	1	3	22.28	22.11	22.19		
1.4	16QAM	1	5	22.01	22.12	22.14		
1.4	16QAM	3	0	22.20	22.19	22.09		
1.4	16QAM	3	1	22.08	22.19	22.13		
1.4	16QAM	3	3	22.07	22.09	22.12		
1.4	16QAM	6	0	21.55	21.20	21.38	22	1
1.4	64QAM	1	0	21.30	21.23	21.31	22	1
1.4	64QAM	1	3	21.14	21.09	20.99		
1.4	64QAM	1	5	21.06	20.99	21.09		
1.4	64QAM	3	0	21.29	20.97	21.10		
1.4	64QAM	3	1	21.38	20.91	21.28		
1.4	64QAM	3	3	21.20	20.94	21.14		
1.4	64QAM	6	0	20.07	20.09	20.07	21	2



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	21.53	21.58	21.46	23	0
20	QPSK	1	49	21.43	21.47	21.39		
20	QPSK	1	99	21.32	21.37	21.30		
20	QPSK	50	0	21.44	21.48	21.43	23	0
20	QPSK	50	24	21.42	21.44	21.35		
20	QPSK	50	50	21.36	21.41	21.34		
20	QPSK	100	0	21.41	21.46	21.41	23	0
20	16QAM	1	0	21.44	21.31	21.36		
20	16QAM	1	49	21.30	21.19	21.36		
20	16QAM	1	99	21.17	21.14	21.17	22	1
20	16QAM	50	0	20.49	20.49	20.45		
20	16QAM	50	24	20.44	20.46	20.43		
20	16QAM	50	50	20.37	20.41	20.36	22	1
20	16QAM	100	0	20.42	20.46	20.39		
20	64QAM	1	0	20.79	20.79	20.71		
20	64QAM	1	49	20.48	20.44	20.39	22	1
20	64QAM	1	99	20.39	20.37	20.33		
20	64QAM	50	0	19.83	19.84	19.79		
20	64QAM	50	24	19.80	19.81	19.75	21	2
20	64QAM	50	50	19.72	19.77	19.72		
20	64QAM	100	0	19.74	19.78	19.74		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.38	21.49	21.43	23	0
15	QPSK	1	37	21.30	21.43	21.34		
15	QPSK	1	74	21.23	21.36	21.32		
15	QPSK	36	0	21.34	21.48	21.38	23	0
15	QPSK	36	20	21.30	21.43	21.34		
15	QPSK	36	39	21.27	21.40	21.32		
15	QPSK	75	0	21.32	21.43	21.37	23	0
15	16QAM	1	0	21.30	21.31	21.20		
15	16QAM	1	37	21.20	21.25	21.12		
15	16QAM	1	74	21.13	21.22	21.20	22	1
15	16QAM	36	0	20.32	20.46	20.39		
15	16QAM	36	20	20.28	20.41	20.35		
15	16QAM	36	39	20.23	20.38	20.30	22	1
15	16QAM	75	0	20.34	20.44	20.38		
15	64QAM	1	0	20.77	20.78	20.81		
15	64QAM	1	37	20.49	20.55	20.47	22	1
15	64QAM	1	74	20.36	20.47	20.45		
15	64QAM	36	0	19.85	19.99	19.93		
15	64QAM	36	20	19.64	19.73	19.70	21	2
15	64QAM	36	39	19.58	19.70	19.64		
15	64QAM	75	0	19.66	19.75	19.69		



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Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.44	21.47	21.38	23	0
10	QPSK	1	25	21.34	21.36	21.31		
10	QPSK	1	49	21.23	21.26	21.22		
10	QPSK	25	0	21.35	21.37	21.35	23	0
10	QPSK	25	12	21.33	21.33	21.27		
10	QPSK	25	25	21.27	21.30	21.26		
10	QPSK	50	0	21.32	21.35	21.33	23	0
10	16QAM	1	0	21.35	21.20	21.28		
10	16QAM	1	25	21.21	21.08	21.28		
10	16QAM	1	49	21.08	21.03	21.09	22	1
10	16QAM	25	0	20.40	20.38	20.37		
10	16QAM	25	12	20.35	20.35	20.35		
10	16QAM	25	25	20.28	20.30	20.28	22	1
10	16QAM	50	0	20.33	20.35	20.31		
10	64QAM	1	0	20.70	20.68	20.63		
10	64QAM	1	25	20.39	20.33	20.31	22	1
10	64QAM	1	49	20.30	20.26	20.25		
10	64QAM	25	0	19.94	19.93	19.91		
10	64QAM	25	12	19.71	19.70	19.67	21	2
10	64QAM	25	25	19.63	19.66	19.64		
10	64QAM	50	0	19.65	19.67	19.66		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.43	21.35	21.34	23	0
5	QPSK	1	12	21.36	21.29	21.25		
5	QPSK	1	24	21.34	21.22	21.23		
5	QPSK	12	0	21.37	21.34	21.29	23	0
5	QPSK	12	7	21.32	21.29	21.25		
5	QPSK	12	13	21.30	21.26	21.23		
5	QPSK	25	0	21.32	21.29	21.28	23	0
5	16QAM	1	0	21.21	21.17	21.11		
5	16QAM	1	12	21.17	21.11	21.03		
5	16QAM	1	24	21.12	21.08	21.11	22	1
5	16QAM	12	0	20.37	20.32	20.30		
5	16QAM	12	7	20.33	20.27	20.26		
5	16QAM	12	13	20.30	20.24	20.21	22	1
5	16QAM	25	0	20.32	20.30	20.29		
5	64QAM	1	0	20.53	20.64	20.72		
5	64QAM	1	12	20.32	20.41	20.38	22	1
5	64QAM	1	24	20.31	20.33	20.36		
5	64QAM	12	0	19.80	19.85	19.84		
5	64QAM	12	7	19.61	19.59	19.61	21	2
5	64QAM	12	13	19.66	19.56	19.55		
5	64QAM	25	0	19.59	19.61	19.60		





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**Report No. : FA8D2002**

Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.40	21.33	21.30	23	0
3	QPSK	1	8	21.32	21.25	21.23		
3	QPSK	1	14	21.22	21.20	21.21		
3	QPSK	8	0	21.21	21.32	21.27	23	0
3	QPSK	8	4	21.31	21.27	21.23		
3	QPSK	8	7	21.25	21.24	21.21		
3	QPSK	15	0	21.30	21.27	21.26		
3	16QAM	1	0	21.33	21.15	21.09	23	0
3	16QAM	1	8	21.19	21.09	21.01		
3	16QAM	1	14	21.06	21.06	21.09		
3	16QAM	8	0	20.38	20.30	20.28	22	1
3	16QAM	8	4	20.33	20.25	20.24		
3	16QAM	8	7	20.26	20.22	20.19		
3	16QAM	15	0	20.31	20.28	20.27		
3	64QAM	1	0	20.68	20.62	20.70	22	1
3	64QAM	1	8	20.37	20.39	20.36		
3	64QAM	1	14	20.28	20.31	20.34		
3	64QAM	8	0	19.92	19.83	19.82	21	2
3	64QAM	8	4	19.69	19.57	19.59		
3	64QAM	8	7	19.61	19.54	19.53		
3	64QAM	15	0	19.63	19.59	19.58		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.39	21.41	21.35	23	0
1.4	QPSK	1	3	21.55	21.57	21.29		
1.4	QPSK	1	5	21.39	21.55	21.30		
1.4	QPSK	3	0	21.38	21.53	21.45		
1.4	QPSK	3	1	21.37	21.46	21.30		
1.4	QPSK	3	3	21.36	21.51	21.25		
1.4	QPSK	6	0	21.40	21.28	21.30	23	0
1.4	16QAM	1	0	21.15	21.43	21.02	23	0
1.4	16QAM	1	3	21.13	21.18	21.09		
1.4	16QAM	1	5	21.16	21.45	21.18		
1.4	16QAM	3	0	21.51	21.29	21.44		
1.4	16QAM	3	1	21.48	21.31	21.42		
1.4	16QAM	3	3	21.47	21.39	21.43		
1.4	16QAM	6	0	20.53	20.47	20.54	22	1
1.4	64QAM	1	0	20.64	20.64	20.68	22	1
1.4	64QAM	1	3	20.55	20.55	20.53		
1.4	64QAM	1	5	20.30	20.52	20.24		
1.4	64QAM	3	0	20.49	20.67	20.46		
1.4	64QAM	3	1	20.48	20.67	20.43		
1.4	64QAM	3	3	20.41	20.62	20.40		
1.4	64QAM	6	0	19.56	19.69	19.50	21	2



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	21.42	21.47	21.39	22	0
20	QPSK	1	49	21.41	21.46	21.44		
20	QPSK	1	99	21.30	21.36	21.42		
20	QPSK	50	0	21.30	21.31	21.36	22	0
20	QPSK	50	24	21.30	21.30	21.38		
20	QPSK	50	50	21.31	21.45	21.39		
20	QPSK	100	0	21.30	21.42	21.35	22	0
20	16QAM	1	0	21.04	21.22	21.14		
20	16QAM	1	49	21.13	21.23	21.26		
20	16QAM	1	99	21.18	21.37	21.32	22	0
20	16QAM	50	0	21.33	21.35	21.43		
20	16QAM	50	24	21.35	21.37	21.38		
20	16QAM	50	50	21.35	21.39	21.34	22	0
20	16QAM	100	0	21.34	21.37	21.36		
20	64QAM	1	0	21.54	21.49	21.63		
20	64QAM	1	49	21.48	21.49	21.63	22	0
20	64QAM	1	99	21.50	21.49	21.72		
20	64QAM	50	0	20.39	20.38	20.44		
20	64QAM	50	24	20.43	20.39	20.37	21	1
20	64QAM	50	50	20.40	20.39	20.38		
20	64QAM	100	0	20.38	20.38	20.35		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	21.40	21.42	21.38	22	0
15	QPSK	1	37	21.36	21.38	21.37		
15	QPSK	1	74	21.39	21.39	21.41		
15	QPSK	36	0	21.29	21.30	21.34	22	0
15	QPSK	36	20	21.34	21.31	21.35		
15	QPSK	36	39	21.33	21.31	21.35		
15	QPSK	75	0	21.36	21.31	21.35	22	0
15	16QAM	1	0	21.12	21.00	21.04		
15	16QAM	1	37	21.09	21.02	21.10		
15	16QAM	1	74	21.16	21.04	21.20	22	0
15	16QAM	36	0	21.31	21.32	21.35		
15	16QAM	36	20	21.35	21.31	21.40		
15	16QAM	36	39	21.34	21.35	21.39	22	0
15	16QAM	75	0	21.38	21.38	21.42		
15	64QAM	1	0	21.53	21.60	21.57		
15	64QAM	1	37	21.46	21.60	21.55	22	0
15	64QAM	1	74	21.53	21.67	21.57		
15	64QAM	36	0	20.38	20.33	20.36		
15	64QAM	36	20	20.37	20.35	20.38	21	1
15	64QAM	36	39	20.36	20.38	20.39		
15	64QAM	75	0	20.31	20.39	20.41		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.36	21.40	21.41	22	0
10	QPSK	1	25	21.35	21.32	21.43		
10	QPSK	1	49	21.34	21.37	21.44		
10	QPSK	25	0	21.29	21.29	21.37	22	0
10	QPSK	25	12	21.29	21.29	21.37		
10	QPSK	25	25	21.32	21.30	21.38		
10	QPSK	50	0	21.32	21.31	21.38	22	0
10	16QAM	1	0	21.21	21.11	21.29		
10	16QAM	1	25	21.16	21.06	21.35		
10	16QAM	1	49	21.23	21.15	21.25	22	0
10	16QAM	25	0	21.34	21.35	21.39		
10	16QAM	25	12	21.36	21.36	21.41		
10	16QAM	25	25	21.37	21.36	21.41	22	0
10	16QAM	50	0	21.35	21.36	21.42		
10	64QAM	1	0	21.37	21.45	21.54		
10	64QAM	1	25	21.49	21.60	21.49	22	0
10	64QAM	1	49	21.66	21.48	21.68		
10	64QAM	25	0	20.34	20.33	20.35		
10	64QAM	25	12	20.32	20.37	20.36	21	1
10	64QAM	25	25	20.37	20.38	20.41		
10	64QAM	50	0	20.40	20.38	20.43		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.30	21.33	21.43	22	0
5	QPSK	1	12	21.25	21.29	21.41		
5	QPSK	1	24	21.28	21.38	21.44		
5	QPSK	12	0	21.28	21.30	21.36	22	0
5	QPSK	12	7	21.26	21.33	21.39		
5	QPSK	12	13	21.29	21.34	21.36		
5	QPSK	25	0	21.26	21.34	21.37	22	0
5	16QAM	1	0	21.18	21.14	21.29		
5	16QAM	1	12	21.15	21.03	21.25		
5	16QAM	1	24	21.30	21.17	21.26	22	0
5	16QAM	12	0	21.22	21.32	21.39		
5	16QAM	12	7	21.26	21.28	21.33		
5	16QAM	12	13	21.23	21.31	21.35	22	0
5	16QAM	25	0	21.26	21.41	21.41		
5	64QAM	1	0	21.51	21.73	21.76		
5	64QAM	1	12	21.62	21.71	21.78	22	0
5	64QAM	1	24	21.60	21.77	21.72		
5	64QAM	12	0	20.28	20.29	20.35		
5	64QAM	12	7	20.27	20.29	20.32	21	1
5	64QAM	12	13	20.21	20.33	20.34		
5	64QAM	25	0	20.32	20.39	20.43		



<LTE Band 66>

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				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	21.95	21.92	21.95	23	0
20	QPSK	1	49	22.07	22.03	22.09		
20	QPSK	1	99	21.89	21.90	21.92		
20	QPSK	50	0	22.07	22.02	22.08	23	0
20	QPSK	50	24	22.03	21.97	21.99		
20	QPSK	50	50	21.98	21.92	21.96		
20	QPSK	100	0	22.04	21.99	22.04		
20	16QAM	1	0	21.79	21.78	21.94	23	0
20	16QAM	1	49	21.69	21.69	21.72		
20	16QAM	1	99	21.69	21.68	21.73		
20	16QAM	50	0	21.12	21.06	21.00	22	1
20	16QAM	50	24	21.07	20.97	20.95		
20	16QAM	50	50	21.06	20.95	20.93		
20	16QAM	100	0	21.07	21.00	20.96		
20	64QAM	1	0	20.86	20.83	20.82	22	1
20	64QAM	1	49	20.67	20.77	20.72		
20	64QAM	1	99	20.74	20.73	20.72		
20	64QAM	50	0	20.15	20.11	20.03	21	2
20	64QAM	50	24	20.07	20.08	19.98		
20	64QAM	50	50	20.04	20.02	19.99		
20	64QAM	100	0	20.08	20.07	19.97		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	22.02	22.01	21.96	23	0
15	QPSK	1	37	22.06	22.04	22.07		
15	QPSK	1	74	21.99	21.95	21.99		
15	QPSK	36	0	22.05	22.02	22.07	23	0
15	QPSK	36	20	22.03	22.02	22.04		
15	QPSK	36	39	21.95	21.95	22.02		
15	QPSK	75	0	22.03	21.98	22.05		
15	16QAM	1	0	21.83	21.98	21.86	23	0
15	16QAM	1	37	21.79	21.95	21.80		
15	16QAM	1	74	21.78	21.86	21.77		
15	16QAM	36	0	21.03	20.95	21.06	22	1
15	16QAM	36	20	21.00	20.97	21.04		
15	16QAM	36	39	20.96	20.92	21.01		
15	16QAM	75	0	20.98	21.03	21.06		
15	64QAM	1	0	20.81	20.84	20.90	22	1
15	64QAM	1	37	20.80	20.74	20.81		
15	64QAM	1	74	20.79	20.84	20.77		
15	64QAM	36	0	20.02	20.05	20.09	21	2
15	64QAM	36	20	19.98	20.01	19.99		
15	64QAM	36	39	19.94	19.97	20.04		
15	64QAM	75	0	20.02	20.03	20.05		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.04	22.02	22.01	23	0
10	QPSK	1	25	22.05	22.03	22.06		
10	QPSK	1	49	22.01	21.97	22.07		
10	QPSK	25	0	22.05	21.99	22.03	23	0
10	QPSK	25	12	22.00	21.99	22.04		
10	QPSK	25	25	21.98	21.97	22.02		
10	QPSK	50	0	22.01	21.99	22.04		
10	16QAM	1	0	21.99	21.90	22.07	23	0
10	16QAM	1	25	22.00	21.82	21.89		
10	16QAM	1	49	21.89	21.81	21.82		
10	16QAM	25	0	21.06	20.99	21.09	22	1
10	16QAM	25	12	21.03	20.96	21.09		
10	16QAM	25	25	20.99	20.96	21.04		
10	16QAM	50	0	21.02	21.02	21.07		
10	64QAM	1	0	20.67	20.79	20.78	22	1
10	64QAM	1	25	20.65	20.52	20.75		
10	64QAM	1	49	20.65	20.57	20.71		
10	64QAM	25	0	20.07	20.03	20.11	21	2
10	64QAM	25	12	20.04	20.02	20.09		
10	64QAM	25	25	20.01	19.97	20.04		
10	64QAM	50	0	20.06	20.08	20.10		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.01	21.95	22.04	23	0
5	QPSK	1	12	22.04	21.99	22.05		
5	QPSK	1	24	21.95	21.93	22.00		
5	QPSK	12	0	22.02	21.95	21.99	23	0
5	QPSK	12	7	22.02	21.95	22.00		
5	QPSK	12	13	21.95	21.93	21.98		
5	QPSK	25	0	21.93	21.95	22.00		
5	16QAM	1	0	21.98	21.86	22.00	23	0
5	16QAM	1	12	21.95	21.78	21.85		
5	16QAM	1	24	21.86	21.77	21.78		
5	16QAM	12	0	20.95	20.95	21.05	22	1
5	16QAM	12	7	20.97	20.92	21.04		
5	16QAM	12	13	20.92	20.95	21.00		
5	16QAM	25	0	21.03	20.98	21.03		
5	64QAM	1	0	20.84	20.75	20.74	22	1
5	64QAM	1	12	20.74	20.48	20.71		
5	64QAM	1	24	20.84	20.53	20.67		
5	64QAM	12	0	20.05	20.00	20.07	21	2
5	64QAM	12	7	20.01	19.98	20.05		
5	64QAM	12	13	19.97	19.93	20.00		
5	64QAM	25	0	20.03	20.04	20.06		



**FCC SAR Test Report**

**Report No. : FA8D2002**

Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.09	22.09	22.09	23	0
3	QPSK	1	8	22.02	22.09	22.00		
3	QPSK	1	14	22.07	21.99	21.90		
3	QPSK	8	0	22.09	21.98	21.98	23	0
3	QPSK	8	4	22.01	21.97	22.02		
3	QPSK	8	7	21.99	21.99	22.02		
3	QPSK	15	0	21.92	21.87	22.01		
3	16QAM	1	0	21.98	21.90	21.91	23	0
3	16QAM	1	8	21.89	22.00	21.97		
3	16QAM	1	14	21.88	21.91	21.86		
3	16QAM	8	0	21.10	20.92	21.01	22	1
3	16QAM	8	4	21.09	20.89	21.09		
3	16QAM	8	7	20.93	20.87	20.99		
3	16QAM	15	0	20.94	21.00	21.02		
3	64QAM	1	0	20.88	20.90	21.00	22	1
3	64QAM	1	8	20.79	20.77	20.89		
3	64QAM	1	14	20.88	20.91	20.85		
3	64QAM	8	0	19.88	19.99	19.88	21	2
3	64QAM	8	4	19.89	19.90	19.92		
3	64QAM	8	7	19.83	19.82	19.88		
3	64QAM	15	0	19.82	19.88	19.94		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.09	22.08	22.10	23	0
1.4	QPSK	1	3	22.10	21.96	21.98		
1.4	QPSK	1	5	22.06	21.98	21.89		
1.4	QPSK	3	0	22.02	21.89	21.87		
1.4	QPSK	3	1	22.01	22.02	21.94		
1.4	QPSK	3	3	22.09	22.09	21.92		
1.4	QPSK	6	0	21.99	21.99	22.02	23	0
1.4	16QAM	1	0	21.98	22.01	21.99	23	0
1.4	16QAM	1	3	21.92	22.00	21.89		
1.4	16QAM	1	5	21.88	21.99	21.77		
1.4	16QAM	3	0	21.99	21.92	21.76		
1.4	16QAM	3	1	21.89	21.97	21.84		
1.4	16QAM	3	3	21.98	21.99	21.83		
1.4	16QAM	6	0	20.99	20.89	20.89	22	1
1.4	64QAM	1	0	20.92	20.90	21.01	22	1
1.4	64QAM	1	3	20.99	20.83	21.09		
1.4	64QAM	1	5	21.00	20.90	21.05		
1.4	64QAM	3	0	21.01	20.79	20.88		
1.4	64QAM	3	1	21.02	20.90	20.92		
1.4	64QAM	3	3	21.02	20.92	20.98		
1.4	64QAM	6	0	19.92	19.98	19.92	21	2



<LTE Carrier Aggregation>

General Note:

- 1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
- 2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.

Index	2CC
2CC #1	CA_2A-4A
2CC #2	CA_2A-7A
2CC #3	CA_4A-4A
2CC #4	CA_4A-5A
2CC #5	CA_4A-7A
2CC #6	CA_4A-12A
2CC #7	CA_4A-17A
2CC #8	CA_5A-7A
2CC #9	CA_7B
2CC #10	CA_7C
2CC #11	CA_7A-7A
2CC #12	CA_12A-66A
2CC #13	CA_66B
2CC #14	CA_66C
2CC #15	CA_66A-66A

**LTE Carrier Aggregation Conducted Power (Downlink)**

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.
- iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.
- vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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





<Full Power Mode>

Configure	CA Configuration (BCS)	PCC							SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Off set	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A	Band 2	20M	1860	18700	QPSK	1	0	Band 4	20M	2132.5	2175	23.32	23.45	
		Band 4	20M	1745	20300	QPSK	1	0	Band 2	20M	1960	900	22.97	23.00	
	CA_2A-7A	Band 2	20M	1860	18700	QPSK	1	0	Band 7	20M	2655	3100	23.39	23.45	
		Band 7	20M	2535	21100	QPSK	1	0	Band 2	20M	1960	900	23.41	23.59	
	CA_4A-5A	Band 4	20M	1745	20300	QPSK	1	0	Band 5	10M	881.5	2525	22.86	23.00	
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	23.26	23.43	
	CA_4A-7A	Band 4	20M	1745	20300	QPSK	1	0	Band 7	20M	2655	3100	22.89	23.00	
		Band 7	20M	2535	21100	QPSK	1	0	Band 4	20M	2132.5	2175	23.46	23.59	
	CA_4A-12A	Band 4	20M	1745	20300	QPSK	1	0	Band 12	10M	737.5	5095	22.91	23.00	
		Band 12	10M	704	23060	QPSK	1	49	Band 4	20M	2132.5	2175	22.96	23.05	
	CA_4A-17A	Band 4	10M	1750	20350	QPSK	1	25	Band 17	10M	740	5790	22.84	22.91	
		Band 17	10M	710	23790	QPSK	1	49	Band 4	10M	2132.5	2175	22.86	22.98	
	CA_5A-7A	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	23.34	23.43	
		Band 7	20M	2535	21100	QPSK	1	0	Band 5	10M	881.5	2525	23.45	23.59	
	CA_12A-66A	Band 12	10M	704	23060	QPSK	1	49	Band 66	20M	2155	66886	22.86	23.05	
		Band 66	20M	1770	132572	QPSK	1	49	Band 12	10M	737.5	5095	23.16	23.27	
Intra-Band	Contiguous	CA_7B	Band 7	15M	2535	21100	QPSK	1	0	Band 7	5M	2664.3	3193	23.39	23.59
		CA_7C	Band 7	20M	2535	21100	QPSK	1	0	Band 7	20M	2674.8	3298	23.45	23.59
		CA_66B	Band 66	15M	1772.5	132597	QPSK	1	49	Band 66	5M	2188.2	67218	23.12	23.27
	Non-Contiguous	CA_66C	Band 66	20M	1770	132572	QPSK	1	49	Band 66	20M	2170.2	67038	23.16	23.27
		CA_7A-7A	Band 7	20M	2535	21100	QPSK	1	0	Band 7	5M	2687.5	3425	23.51	23.59
		CA_4A-4A	Band 4	20M	1745	20300	QPSK	1	0	Band 4	5M	2112.5	1975	22.88	23.00
CA_66A-66A	Band 66	20M	1770	132572	QPSK	1	49	Band 66	5M	2112.5	66461	23.15	23.27		



<Reduced Power Mode for P-Sensor On>

Configure	CA Configuration (BCS)	PCC							SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Off set	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A	Band 2	20M	1860	18700	QPSK	1	0	Band 4	20M	2132.5	2175	19.93	20.05	
		Band 4	20M	1745	20300	QPSK	1	0	Band 2	20M	1960	900	19.52	19.66	
	CA_2A-7A	Band 2	20M	1860	18700	QPSK	1	0	Band 7	20M	2655	3100	19.94	20.05	
		Band 7	20M	2535	21100	QPSK	1	0	Band 2	20M	1960	900	22.01	22.10	
	CA_4A-5A	Band 4	20M	1745	20300	QPSK	1	0	Band 5	10M	881.5	2525	19.48	19.66	
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	21.64	21.79	
	CA_4A-7A	Band 4	20M	1745	20300	QPSK	1	0	Band 7	20M	2655	3100	19.62	19.66	
		Band 7	20M	2535	21100	QPSK	1	0	Band 4	20M	2132.5	2175	22.01	22.10	
	CA_4A-12A	Band 4	20M	1745	20300	QPSK	1	0	Band 12	10M	737.5	5095	19.58	19.66	
		Band 12	10M	704	23060	QPSK	1	49	Band 4	20M	2132.5	2175	22.96	23.05	
	CA_4A-17A	Band 4	10M	1732.5	20175	QPSK	1	0	Band 17	10M	740	5790	19.49	19.62	
		Band 17	10M	710	23790	QPSK	1	49	Band 4	10M	2132.5	2175	22.84	22.98	
	CA_5A-7A	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	21.82	21.79	
		Band 7	20M	2535	21100	QPSK	1	0	Band 5	10M	881.5	2525	22.02	22.10	
	CA_12A-66A	Band 12	10M	704	23060	QPSK	1	49	Band 66	20M	2155	66886	22.96	23.05	
		Band 66	20M	1770	132572	QPSK	1	49	Band 12	10M	737.5	5095	20.12	20.23	
Intra-Band	Contiguous	CA_7B	Band 7	15M	2535	21100	QPSK	1	0	Band 7	5M	2664.3	3193	22.03	22.10
		CA_7C	Band 7	20M	2535	21100	QPSK	1	0	Band 7	20M	2674.8	3298	22.05	22.10
		CA_66B	Band 66	15M	1772.5	132597	QPSK	1	49	Band 66	5M	2188.2	67218	20.14	20.23
		CA_66C	Band 66	20M	1770	132572	QPSK	1	49	Band 66	20M	2170.2	67038	20.16	20.23
	Non-Contiguous	CA_7A-7A	Band 7	20M	2535	21100	QPSK	1	0	Band 7	5M	2687.5	3425	21.95	22.10
		CA_4A-4A	Band 4	20M	1745	20300	QPSK	1	0	Band 4	5M	2112.5	1975	19.53	19.66
		CA_66A-66A	Band 66	20M	1770	132572	QPSK	1	49	Band 66	5M	2112.5	66461	20.16	20.23



<Reduced Power Mode for Hotspot On>

Configure	CA Configuration (BCS)	PCC							SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A	Band 2	20M	1860	18700	QPSK	1	0	Band 4	20M	2132.5	2175	19.24	19.33	
		Band 4	20M	1732.5	20175	QPSK	1	49	Band 2	20M	1960	900	19.32	19.48	
	CA_2A-7A	Band 2	20M	1860	18700	QPSK	1	0	Band 7	20M	2655	3100	19.29	19.33	
		Band 7	20M	2535	21100	QPSK	1	0	Band 2	20M	1960	900	17.43	17.57	
	CA_4A-5A	Band 4	20M	1732.5	20175	QPSK	1	49	Band 5	10M	881.5	2525	19.35	19.48	
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	23.32	23.43	
	CA_4A-7A	Band 4	20M	1732.5	20175	QPSK	1	49	Band 7	20M	2655	3100	19.36	19.48	
		Band 7	20M	2535	21100	QPSK	1	0	Band 4	20M	2132.5	2175	17.46	17.57	
	CA_4A-12A	Band 4	20M	1732.5	20175	QPSK	1	49	Band 12	10M	737.5	5095	19.26	19.48	
		Band 12	10M	704	23060	QPSK	1	49	Band 4	20M	2132.5	2175	22.99	23.05	
	CA_4A-17A	Band 4	10M	1732.5	20175	16QAM	1	0	Band 17	10M	740	5790	19.22	19.38	
		Band 17	10M	710	23790	QPSK	1	49	Band 4	10M	2132.5	2175	22.81	22.98	
	CA_5A-7A	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	23.34	23.43	
		Band 7	20M	2535	21100	QPSK	1	0	Band 5	10M	881.5	2525	17.42	17.57	
CA_12A-66A	Band 12	10M	704	23060	QPSK	1	49	Band 66	20M	2155	66886	22.98	23.05		
	Band 66	20M	1770	132572	QPSK	1	49	Band 12	10M	737.5	5095	19.32	19.47		
Intra-Band	Contiguous	CA_7B	Band 7	15M	2535	21100	QPSK	1	0	Band 7	5M	2664.3	3193	17.54	17.57
		CA_7C	Band 7	20M	2535	21100	QPSK	1	0	Band 7	20M	2674.8	3298	17.48	17.57
		CA_66B	Band 66	15M	1772.5	132597	QPSK	1	49	Band 66	5M	2188.2	67218	19.35	19.47
		CA_66C	Band 66	20M	1770	132572	QPSK	1	49	Band 66	20M	2170.2	67038	19.32	19.47
	Non-Contiguous	CA_7A-7A	Band 7	20M	2535	21100	QPSK	1	0	Band 7	5M	2687.5	3425	17.48	17.57
		CA_4A-4A	Band 4	20M	1732.5	20175	QPSK	1	49	Band 4	5M	2152.5	2375	19.28	19.48
		CA_66A-66A	Band 66	20M	1770	132572	QPSK	1	49	Band 66	5M	2112.5	66461	19.36	19.47



<Reduced Power Mode for Handheld On>

Configure	CA Configuration (BCS)	PCC							SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Off set	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A	Band 2	20M	1860	18700	QPSK	1	0	Band 4	20M	2132.5	2175	22.65	22.72	
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	21.46	21.58	
	CA_2A-7A	Band 2	20M	1860	18700	QPSK	1	0	Band 7	20M	2655	3100	22.63	22.72	
		Band 7	20M	2560	21350	64QAM	1	99	Band 2	20M	1960	900	21.64	21.72	
	CA_4A-5A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	21.47	21.58	
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	23.36	23.43	
	CA_4A-7A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	21.46	21.58	
		Band 7	20M	2560	21350	64QAM	1	99	Band 4	20M	2132.5	2175	21.67	21.72	
	CA_4A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	21.32	21.58	
		Band 12	10M	704	23060	QPSK	1	49	Band 4	20M	2132.5	2175	23.01	23.05	
	CA_4A-17A	Band 4	10M	1732.5	20175	QPSK	1	0	Band 17	10M	740	5790	21.36	21.47	
		Band 17	10M	710	23790	QPSK	1	49	Band 4	10M	2132.5	2175	22.81	22.98	
	CA_5A-7A	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	23.25	23.43	
		Band 7	20M	2560	21350	64QAM	1	99	Band 5	10M	881.5	2525	21.53	21.72	
CA_12A-66A	Band 12	10M	704	23060	QPSK	1	49	Band 66	20M	2155	66886	22.89	23.05		
	Band 66	20M	1770	132572	QPSK	1	49	Band 12	10M	737.5	5095	22.01	22.09		
Intra-Band	Contiguous	CA_7B	Band 7	15M	2507.5	20825	64QAM	1	99	Band 7	5M	2631.8	2868	21.63	21.72
		CA_7C	Band 7	20M	2510	20850	64QAM	1	99	Band 7	20M	2649.8	3048	21.64	21.72
		CA_66B	Band 66	15M	1772.5	132597	QPSK	1	49	Band 66	5M	2188.2	67218	22.02	22.09
		CA_66C	Band 66	20M	1770	132572	QPSK	1	49	Band 66	20M	2170.2	67038	21.99	22.09
	Non-Contiguous	CA_7A-7A	Band 7	20M	2560	21350	64QAM	1	99	Band 7	5M	2622.5	2775	21.70	21.72
		CA_4A-4A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	21.45	21.58
		CA_66A-66A	Band 66	20M	1770	132572	QPSK	1	49	Band 66	5M	2112.5	66461	21.96	22.09



**<WLAN Conducted Power>**

**General Note:**

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11 a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. 18 The initial test position procedure is described in the following:
  - a. When the reported SAR of the initial test position is  $\leq 0.4$  W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
  - b. When the reported SAR of the test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closest/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq 0.8$  W/kg or all required test position are tested.
  - c. For all positions/configurations, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.

**<Full Power Mode>**

**<2.4GHz WLAN>**

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	17.99	18.50	100
		6	2437	17.88	18.50	
		11	2462	17.60	18.50	
	802.11g 6Mbps	1	2412	17.90	18.50	96.10
		6	2437	17.43	18.50	
		11	2462	17.09	18.50	
	802.11n-HT20 MCS0	1	2412	17.99	18.50	95.34
		6	2437	17.36	18.50	
		11	2462	17.11	18.50	



<5GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	18.26	19.00	95.17
		40	5200	17.90	19.00	
		44	5220	18.07	19.00	
		48	5240	18.05	19.00	
	802.11n-HT20 MCS0	36	5180	18.38	19.00	94.87
		40	5200	18.02	19.00	
		44	5220	18.05	19.00	
		48	5240	18.25	19.00	
	802.11n-HT40 MCS0	38	5190	17.03	18.00	88.10
		46	5230	16.93	18.00	
	802.11ac-VHT20 MCS0	36	5180	18.34	19.00	95.65
		40	5200	17.95	19.00	
		44	5220	18.05	19.00	
		48	5240	18.30	19.00	
	802.11ac-VHT40 MCS0	38	5190	17.02	18.00	87.79
		46	5230	16.95	18.00	
802.11ac-VHT80 MCS0	42	5210	11.13	12.00	76.35	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	18.19	19.00	95.17
		56	5280	18.50	19.00	
		60	5300	18.57	19.00	
		64	5320	18.58	19.00	
	802.11n-HT20 MCS0	52	5260	18.30	19.00	94.87
		56	5280	18.68	19.00	
		60	5300	18.57	19.00	
		64	5320	18.65	19.00	
	802.11n-HT40 MCS0	54	5270	17.07	18.00	88.10
		62	5310	17.34	18.00	
	802.11ac-VHT20 MCS0	52	5260	18.40	19.00	95.65
		56	5280	18.57	19.00	
		60	5300	18.60	19.00	
		64	5320	18.62	19.00	
	802.11ac-VHT40 MCS0	54	5270	17.25	18.00	87.79
		62	5310	17.32	18.00	
802.11ac-VHT80 MCS0	58	5290	12.38	13.00	76.35	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.87	19.50	95.17
		116	5580	18.87	19.50	
		124	5620	19.07	19.50	
		132	5660	19.17	19.50	
		140	5700	18.77	19.50	
		144	5720	18.17	19.50	
	802.11n-HT20 MCS0	100	5500	18.06	19.50	94.87
		116	5580	18.99	19.50	
		124	5620	19.19	19.50	
		132	5660	19.44	19.50	
		140	5700	18.97	19.50	
		144	5720	18.60	19.50	
	802.11n-HT40 MCS0	102	5510	16.69	18.00	88.10
		110	5550	17.09	18.00	
		126	5630	17.83	18.00	
		134	5670	17.53	18.00	
		142	5710	17.26	18.00	
	802.11ac-VHT20 MCS0	100	5500	17.93	19.50	95.65
		116	5580	18.82	19.50	
		124	5620	19.35	19.50	
		132	5660	19.40	19.50	
		140	5700	18.91	19.50	
		144	5720	18.78	19.50	
	802.11ac-VHT40 MCS0	102	5510	16.71	18.00	87.79
		110	5550	17.30	18.00	
		126	5630	17.80	18.00	
		134	5670	17.39	18.00	
142		5710	17.28	18.00		
802.11ac-VHT80 MCS0	106	5530	14.34	15.00	76.35	
	122	5610	16.55	17.00		
	138	5690	16.59	17.00		





	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	17.87	19.00	95.17
		157	5785	18.24	19.00	
		165	5825	18.30	19.00	
	802.11n-HT20 MCS0	149	5745	18.30	19.00	94.87
		157	5785	18.32	19.00	
		165	5825	18.29	19.00	
	802.11n-HT40 MCS0	151	5755	16.83	18.00	88.10
		159	5795	17.06	18.00	
	802.11ac-VHT20 MCS0	149	5745	18.10	19.00	95.65
		157	5785	18.41	19.00	
		165	5825	18.30	19.00	
	802.11ac-VHT40 MCS0	151	5755	16.65	18.00	87.79
		159	5795	17.03	18.00	
	802.11ac-VHT80 MCS0	155	5775	15.13	16.00	76.35



<Reduced Power Mode for Receiver On>

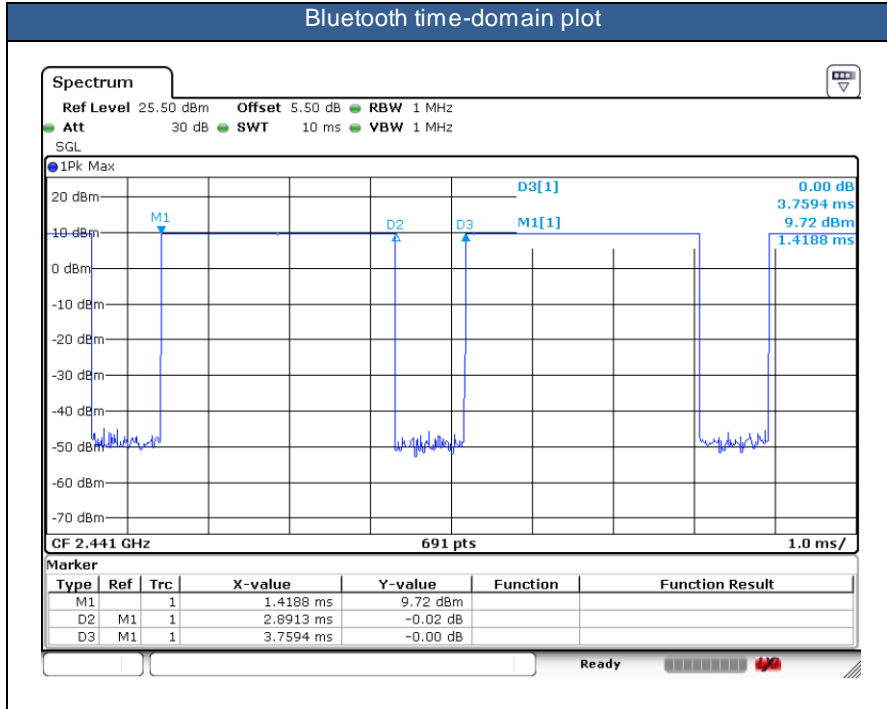
<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.86	17.50	100
		6	2437	15.82	16.50	
		11	2462	15.81	16.50	
	802.11g 6Mbps	1	2412	17.03	17.50	96.10
		6	2437	16.43	17.50	
		11	2462	16.04	17.50	
	802.11n-HT20 MCS0	1	2412	16.95	17.50	95.34
		6	2437	16.35	17.50	
		11	2462	16.10	17.50	

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.91 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation

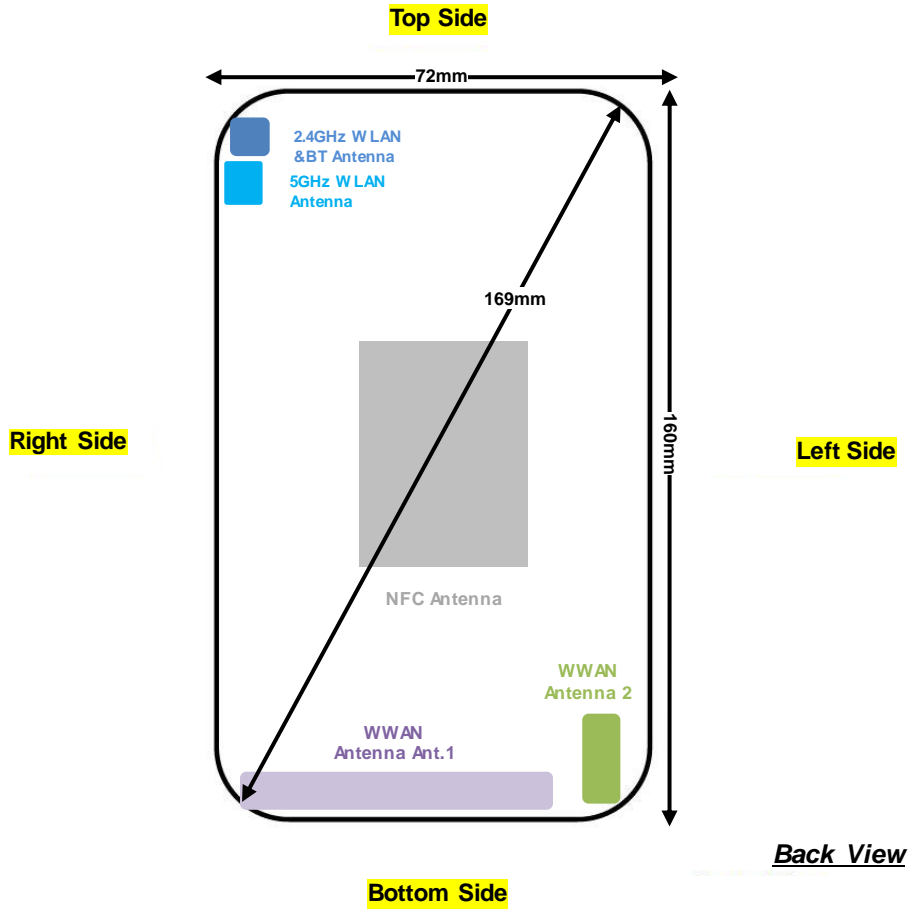


Mode	Channel	Frequency (MHz)	Average power (dBm)
			1Mbps
BR/EDR	CH 00	2402	8.99
	CH 39	2441	9.89
	CH 78	2480	8.49
Tune-up limit (dBm)			10.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.2 LE	CH 00	2402	9.85
	CH 19	2440	9.82
	CH 39	2480	9.83
Tune-up Limit			10.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v5.0 LE	CH 00	2402	9.47
	CH 19	2440	9.41
	CH 39	2480	8.99
Tune-up Limit			10.00

### 14. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWANAntenna 1	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWANAntenna 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm	≤ 25mm
2.4GHz WLAN & BT	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
5GHz WLAN	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWANAntenna 1	Yes	Yes	No	Yes	Yes	Yes
WWANAntenna 2	Yes	Yes	No	Yes	No	Yes
2.4GHz WLAN & BT	Yes	Yes	Yes	No	Yes	No
5GHz WLAN	Yes	Yes	Yes	No	Yes	No

**General Note:**

1. This device has two WWAN transmitter antennas. WWAN antenna 1 is located at the right of bottom edge of the device and WWAN antenna 2 is located at the left side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V and LTE Band 2/4/5/12/17/66, WWAN antenna 2 frequency band only include LTE Band 7.
2. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm\*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.



## **15. SAR Test Results**

### **General Note:**

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
  - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
  - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
  - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)\*Tune-up Scaling Factor
  - d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)\* Duty Cycle scaling factor \* Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
  - $\leq 0.8$  W/kg or  $2.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  W/kg or  $1.5$  W/kg, for 1-g or 10-g respectively, when the transmission band is between  $100$  MHz and  $200$  MHz
  - $\leq 0.4$  W/kg or  $1.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is  $\geq 0.8$ W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is  $\leq 1.2$  W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is  $> 1.2$  W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.
6. The device employs proximity sensors that detect the presence of the user's body at the front or back faces of the device. When front or back body worn condition is detected, GSM850, WCDMA band II/IV/V and LTE band 2/4/5/7/66 reduced power will be active. (P-sensor can't work at detecting presence of the user's body at the four edges of the device.)
7. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM850/1900, WCDMA band II/IV/V and LTE band 2/4/5/7/66.
8. This device hotspot reduced power and P-sensor reduced power level are the same for GSM850, WCDMA Band V and LTE Band 5. And for other Bands are differences.
9. For P-sensor reduced power level is higher than hotspot reduced power for WCDMA band II/IV and LTE band 2/4/7/66, so for front/back P-sensor SAR can represent conservatively for front/back hotspot SAR.
10. For full power level is higher than hotspot reduced power for GSM1900, so for front/back full power SAR can represent conservatively for front/back hotspot SAR.
11. P-sensor can detect handheld state, WCDMA band II/IV and LTE band 2/4/7/66 for front/back/bottom sides of product specific 10g SAR condition reduced powers will be active.
12. This device has two WWAN transmitter antennas. WWAN antenna 1 is located at the right of bottom edge of the device and WWAN antenna 2 is located at the left side of bottom edge of the device which can refer to antenna location chapter. WWAN antenna 1 frequency bands include GSM850/1900, WCDMA Band II/IV/V and LTE Band 2/4/5/12/17/66, WWAN antenna 2 frequency bands include LTE Band 7.
13. Per KDB 648474 D04v01r03, for smart phones with a display diagonal dimension  $> 15.0$  cm or an overall diagonal dimension  $> 16.0$  cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR  $> 1.2$  W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power (for handheld on state, the maximum full power means reduced power), including tolerance, allowed for phablet modes to compare with the  $1.2$  W/kg SAR test reduction threshold.
  - a. For this device SAR for WWAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than  $1.2$ W/kg of GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/66, therefore product specific 10g SAR is necessary.
  - b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
  - c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

**GSM Note:**

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 are considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is  $\leq \frac{1}{4}$  dB higher than the primary mode, SAR measurement is not required for the secondary mode.
3. Power reduction which is triggered by hotspot mode are implemented in GSM850/1900 band, for SAR testing EUT was set in reduced power mode and GPRS 3Tx slots due to its highest frame-average power.
4. Power reduction which is triggered by p-sensor on are implemented in GSM850 band, for SAR testing EUT was set in reduced power mode and GPRS 3Tx slots due to its highest frame-average power.

**WCDMA Note:**

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is  $\leq \frac{1}{4}$  dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is  $\leq 1.2$  W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than  $\frac{1}{4}$  dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  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.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM 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 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, 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 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 4 / 17 SAR test was covered by Band 66 / 12; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
  - a. the maximum output power, including tolerance, for the smaller band is  $\leq$  the larger band to qualify for the SAR test exclusion
  - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band



**WLAN Note:**

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is  $\leq 1.2$  W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq 0.8$  W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



**15.1 Head SAR**

**<GSM SAR>**

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
01	GSM850	GPRS 3 Tx slots	Right Cheek	Full	251	848.8	29.87	30.00	1.030	-0.08	0.317	<b>0.327</b>
	GSM850	GPRS 3 Tx slots	Right Tilted	Full	251	848.8	29.87	30.00	1.030	0.01	0.144	0.148
	GSM850	GPRS 3 Tx slots	Left Cheek	Full	251	848.8	29.87	30.00	1.030	0.02	0.228	0.235
	GSM850	GPRS 3 Tx slots	Left Tilted	Full	251	848.8	29.87	30.00	1.030	0.06	0.127	0.131
	GSM1900	GPRS 3 Tx slots	Right Cheek	Full	512	1850.2	26.68	27.00	1.076	0.17	0.073	0.078
	GSM1900	GPRS 3 Tx slots	Right Tilted	Full	512	1850.2	26.68	27.00	1.076	0.02	0.049	0.052
02	GSM1900	GPRS 3 Tx slots	Left Cheek	Full	512	1850.2	26.68	27.00	1.076	0.09	0.093	<b>0.100</b>
	GSM1900	GPRS 3 Tx slots	Left Tilted	Full	512	1850.2	26.68	27.00	1.076	0.05	0.034	0.036

**<WCDMA SAR>**

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	WCDMA Band V	RMC 12.2Kbps	Right Cheek	Full	4233	846.6	23.49	24.00	1.125	0.14	0.398	<b>0.448</b>
	WCDMA Band V	RMC 12.2Kbps	Right Tilted	Full	4233	846.6	23.49	24.00	1.125	0.02	0.163	0.183
	WCDMA Band V	RMC 12.2Kbps	Left Cheek	Full	4233	846.6	23.49	24.00	1.125	0.06	0.321	0.361
	WCDMA Band V	RMC 12.2Kbps	Left Tilted	Full	4233	846.6	23.49	24.00	1.125	0.02	0.203	0.228
	WCDMA Band IV	RMC 12.2Kbps	Right Cheek	Full	1513	1752.6	23.24	24.00	1.191	0.02	0.100	0.119
	WCDMA Band IV	RMC 12.2Kbps	Right Tilted	Full	1513	1752.6	23.24	24.00	1.191	0.09	0.067	0.080
04	WCDMA Band IV	RMC 12.2Kbps	Left Cheek	Full	1513	1752.6	23.24	24.00	1.191	0.07	0.144	<b>0.172</b>
	WCDMA Band IV	RMC 12.2Kbps	Left Tilted	Full	1513	1752.6	23.24	24.00	1.191	-0.09	0.058	0.069
	WCDMA Band II	RMC 12.2Kbps	Right Cheek	Full	9538	1907.6	23.97	24.00	1.007	0.03	0.128	0.129
	WCDMA Band II	RMC 12.2Kbps	Right Tilted	Full	9538	1907.6	23.97	24.00	1.007	-0.13	0.070	0.070
05	WCDMA Band II	RMC 12.2Kbps	Left Cheek	Full	9538	1907.6	23.97	24.00	1.007	0.06	0.182	<b>0.183</b>
	WCDMA Band II	RMC 12.2Kbps	Left Tilted	Full	9538	1907.6	23.97	24.00	1.007	0.06	0.053	0.054



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 12	10M	QPSK	1	49	Right Cheek	Full	23095	707.5	22.93	24.00	1.279	-0.1	0.176	<b>0.225</b>
	LTE Band 12	10M	QPSK	25	25	Right Cheek	Full	23095	707.5	21.84	23.00	1.306	0.06	0.131	0.171
	LTE Band 12	10M	QPSK	1	49	Right Tilted	Full	23095	707.5	22.93	24.00	1.279	0.03	0.086	0.110
	LTE Band 12	10M	QPSK	25	25	Right Tilted	Full	23095	707.5	21.84	23.00	1.306	0.02	0.069	0.090
	LTE Band 12	10M	QPSK	1	49	Left Cheek	Full	23095	707.5	22.93	24.00	1.279	0.06	0.161	0.206
	LTE Band 12	10M	QPSK	25	25	Left Cheek	Full	23095	707.5	21.84	23.00	1.306	0.09	0.131	0.171
	LTE Band 12	10M	QPSK	1	49	Left Tilted	Full	23095	707.5	22.93	24.00	1.279	-0.04	0.109	0.139
	LTE Band 12	10M	QPSK	25	25	Left Tilted	Full	23095	707.5	21.84	23.00	1.306	0.03	0.089	0.117
07	LTE Band 5	10M	QPSK	1	49	Right Cheek	Full	20525	836.5	23.33	24.00	1.167	0.07	0.316	<b>0.369</b>
	LTE Band 5	10M	QPSK	25	0	Right Cheek	Full	20525	836.5	22.22	23.00	1.197	0.03	0.255	0.305
	LTE Band 5	10M	QPSK	1	49	Right Tilted	Full	20525	836.5	23.33	24.00	1.167	0.06	0.151	0.176
	LTE Band 5	10M	QPSK	25	0	Right Tilted	Full	20525	836.5	22.22	23.00	1.197	0.03	0.111	0.133
	LTE Band 5	10M	QPSK	1	49	Left Cheek	Full	20525	836.5	23.33	24.00	1.167	0.06	0.250	0.292
	LTE Band 5	10M	QPSK	25	0	Left Cheek	Full	20525	836.5	22.22	23.00	1.197	0.06	0.197	0.236
	LTE Band 5	10M	QPSK	1	49	Left Tilted	Full	20525	836.5	23.33	24.00	1.167	0.06	0.150	0.175
	LTE Band 5	10M	QPSK	25	0	Left Tilted	Full	20525	836.5	22.22	23.00	1.197	-0.05	0.122	0.146
	LTE Band 66	20M	QPSK	1	49	Right Cheek	Full	132572	1770	23.27	24.00	1.183	0.04	0.111	0.131
	LTE Band 66	20M	QPSK	50	0	Right Cheek	Full	132572	1770	22.08	23.00	1.236	-0.1	0.082	0.101
	LTE Band 66	20M	QPSK	1	49	Right Tilted	Full	132572	1770	23.27	24.00	1.183	0.06	0.067	0.079
	LTE Band 66	20M	QPSK	50	0	Right Tilted	Full	132572	1770	22.08	23.00	1.236	0.09	0.051	0.063
	08	LTE Band 66	20M	QPSK	1	49	Left Cheek	Full	132572	1770	23.27	24.00	1.183	-0.08	0.149
LTE Band 66		20M	QPSK	50	0	Left Cheek	Full	132572	1770	22.08	23.00	1.236	0.06	0.115	0.142
LTE Band 66		20M	QPSK	1	49	Left Tilted	Full	132572	1770	23.27	24.00	1.183	0	0.061	0.072
LTE Band 66		20M	QPSK	50	0	Left Tilted	Full	132572	1770	22.08	23.00	1.236	0.16	0.046	0.057
	LTE Band 2	20M	QPSK	1	0	Right Cheek	Full	18700	1860	23.45	24.00	1.135	0.09	0.145	0.165
	LTE Band 2	20M	QPSK	50	0	Right Cheek	Full	18700	1860	22.39	23.00	1.151	0.06	0.114	0.131
	LTE Band 2	20M	QPSK	1	0	Right Tilted	Full	18700	1860	23.45	24.00	1.135	-0.09	0.099	0.112
	LTE Band 2	20M	QPSK	50	0	Right Tilted	Full	18700	1860	22.39	23.00	1.151	0.06	0.075	0.087
	09	LTE Band 2	20M	QPSK	1	0	Left Cheek	Full	18700	1860	23.45	24.00	1.135	-0.05	0.181
LTE Band 2		20M	QPSK	50	0	Left Cheek	Full	18700	1860	22.39	23.00	1.151	0.09	0.139	0.160
LTE Band 2		20M	QPSK	1	0	Left Tilted	Full	18700	1860	23.45	24.00	1.135	-0.06	0.061	0.069
LTE Band 2		20M	QPSK	50	0	Left Tilted	Full	18700	1860	22.39	23.00	1.151	-0.03	0.052	0.060
10	LTE Band 7	20M	QPSK	1	0	Right Cheek	Full	21100	2535	23.59	24.00	1.099	-0.1	0.347	<b>0.381</b>
	LTE Band 7	20M	QPSK	50	50	Right Cheek	Full	21100	2535	22.49	23.00	1.125	0.05	0.325	0.365
	LTE Band 7	20M	QPSK	1	0	Right Tilted	Full	21100	2535	23.59	24.00	1.099	-0.02	0.169	0.186
	LTE Band 7	20M	QPSK	50	50	Right Tilted	Full	21100	2535	22.49	23.00	1.125	0.03	0.121	0.136
	LTE Band 7	20M	QPSK	1	0	Left Cheek	Full	21100	2535	23.59	24.00	1.099	0.02	0.286	0.314
	LTE Band 7	20M	QPSK	50	50	Left Cheek	Full	21100	2535	22.49	23.00	1.125	0.09	0.227	0.255
	LTE Band 7	20M	QPSK	1	0	Left Tilted	Full	21100	2535	23.59	24.00	1.099	0.07	0.114	0.125
	LTE Band 7	20M	QPSK	50	50	Left Tilted	Full	21100	2535	22.49	23.00	1.125	0.17	0.076	0.086



<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Receiver on	1	2412	16.86	17.50	1.159	100	1.000		0.483		
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Receiver on	1	2412	16.86	17.50	1.159	100	1.000		0.607		
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Receiver on	1	2412	16.86	17.50	1.159	100	1.000	0.09	1.617	0.878	1.017
11	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Receiver on	6	2437	15.82	16.50	1.169	100	1.000	-0.06		0.977	1.143
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Receiver on	1	2412	16.86	17.50	1.159	100	1.000	-0.1	0.979	0.527	0.611

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Right Cheek	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.01	0.023	0.025
	Bluetooth	1Mbps	Right Tilted	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.05	0.057	0.064
12	Bluetooth	1Mbps	Left Cheek	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.16	0.086	0.096
	Bluetooth	1Mbps	Left Tilted	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.01	0.061	0.067

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	Full	64	5320	18.58	19.00	1.100	95.17	1.051		0.374		
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	Full	64	5320	18.58	19.00	1.100	95.17	1.051		0.314		
13	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	Full	64	5320	18.58	19.00	1.100	95.17	1.051	-0.04	1.220	0.513	0.593
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	Full	64	5320	18.58	19.00	1.100	95.17	1.051	-0.06	0.759	0.325	0.376
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	Full	132	5660	19.17	19.50	1.078	95.17	1.051		0.551		
	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	Full	132	5660	19.17	19.50	1.078	95.17	1.051		0.517		
	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Full	132	5660	19.17	19.50	1.078	95.17	1.051	0.01	1.947	0.832	0.942
14	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	Full	124	5620	19.07	19.50	1.104	95.17	1.051	-0.09		0.844	0.979
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	Full	132	5660	19.17	19.50	1.078	95.17	1.051	0.01	1.088	0.685	0.776
	WLAN 5.8GHz	802.11a 6Mbps	Right Cheek	Full	165	5825	18.30	19.00	1.174	95.17	1.051		0.232		
	WLAN 5.8GHz	802.11a 6Mbps	Right Tilted	Full	165	5825	18.30	19.00	1.174	95.17	1.051		0.207		
15	WLAN 5.8GHz	802.11a 6Mbps	Left Cheek	Full	165	5825	18.30	19.00	1.174	95.17	1.051	0.19	1.201	0.487	0.601
	WLAN 5.8GHz	802.11a 6Mbps	Left Tilted	Full	165	5825	18.30	19.00	1.174	95.17	1.051	0.01	0.373	0.150	0.185



15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 3 Tx slots	Front	5	Hotspot On	251	848.8	27.92	28.00	1.019	-0.02	1.270	1.294
	GSM850	GPRS 3 Tx slots	Front	5	Hotspot On	128	824.2	27.86	28.00	1.033	0.06	0.877	0.906
	GSM850	GPRS 3 Tx slots	Front	5	Hotspot On	189	836.4	27.90	28.00	1.023	0.03	1.170	1.197
16	GSM850	GPRS 3 Tx slots	Back	5	Hotspot On	251	848.8	27.92	28.00	1.019	0.1	1.400	1.426
	GSM850	GPRS 3 Tx slots	Back	5	Hotspot On	128	824.2	27.86	28.00	1.033	-0.13	0.927	0.957
	GSM850	GPRS 3 Tx slots	Back	5	Hotspot On	189	836.4	27.90	28.00	1.023	0.06	1.270	1.300
	GSM850	GPRS 3 Tx slots	Left Side	5	Hotspot On	251	848.8	27.92	28.00	1.019	0.02	0.148	0.151
	GSM850	GPRS 3 Tx slots	Right Side	5	Hotspot On	251	848.8	27.92	28.00	1.019	0.07	0.494	0.503
	GSM850	GPRS 3 Tx slots	Bottom Side	5	Hotspot On	251	848.8	27.92	28.00	1.019	0.05	0.921	0.938
	GSM850	GPRS 3 Tx slots	Bottom Side	5	Hotspot On	128	824.2	27.86	28.00	1.033	-0.05	0.915	0.945
	GSM850	GPRS 3 Tx slots	Bottom Side	5	Hotspot On	189	836.4	27.90	28.00	1.023	0.03	0.869	0.889
	GSM1900	GPRS 3 Tx slots	Front	5	Full	512	1850.2	26.68	27.00	1.076	-0.1	0.840	0.904
	GSM1900	GPRS 3 Tx slots	Front	5	Full	661	1880	26.67	27.00	1.079	0.05	0.905	0.976
	GSM1900	GPRS 3 Tx slots	Front	5	Full	810	1909.8	26.59	27.00	1.099	-0.01	0.775	0.852
	GSM1900	GPRS 3 Tx slots	Back	5	Full	512	1850.2	26.68	27.00	1.076	0.03	1.080	1.163
17	GSM1900	GPRS 3 Tx slots	Back	5	Full	661	1880	26.67	27.00	1.079	-0.17	1.240	1.338
	GSM1900	GPRS 3 Tx slots	Back	5	Full	810	1909.8	26.59	27.00	1.099	0.03	1.170	1.286
	GSM1900	GPRS 3 Tx slots	Left Side	5	Hotspot On	512	1850.2	25.12	25.50	1.091	0.02	0.040	0.044
	GSM1900	GPRS 3 Tx slots	Right Side	5	Hotspot On	512	1850.2	25.12	25.50	1.091	0.09	0.454	0.496
	GSM1900	GPRS 3 Tx slots	Bottom Side	5	Hotspot On	512	1850.2	25.12	25.50	1.091	0.06	1.140	1.244
	GSM1900	GPRS 3 Tx slots	Bottom Side	5	Hotspot On	661	1880	25.10	25.50	1.096	0.03	1.160	1.272
	GSM1900	GPRS 3 Tx slots	Bottom Side	5	Hotspot On	810	1909.8	25.02	25.50	1.117	0.03	0.925	1.033



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
18	WCDMA Band V	RMC 12.2Kbps	Front	5	Hotspot On	4233	846.6	21.98	22.50	1.127	0.01	1.130	1.274
	WCDMA Band V	RMC 12.2Kbps	Front	5	Hotspot On	4132	826.4	21.95	22.50	1.135	-0.06	0.838	0.951
	WCDMA Band V	RMC 12.2Kbps	Front	5	Hotspot On	4182	836.4	21.90	22.50	1.148	-0.01	0.981	1.126
	WCDMA Band V	RMC 12.2Kbps	Back	5	Hotspot On	4233	846.6	21.98	22.50	1.127	0.18	1.100	1.240
	WCDMA Band V	RMC 12.2Kbps	Back	5	Hotspot On	4132	826.4	21.95	22.50	1.135	0.03	0.810	0.919
	WCDMA Band V	RMC 12.2Kbps	Back	5	Hotspot On	4182	836.4	21.90	22.50	1.148	0.11	0.859	0.986
	WCDMA Band V	RMC 12.2Kbps	Left Side	5	Hotspot On	4233	846.6	21.98	22.50	1.127	0.05	0.099	0.112
	WCDMA Band V	RMC 12.2Kbps	Right Side	5	Hotspot On	4233	846.6	21.98	22.50	1.127	0.16	0.336	0.379
	WCDMA Band V	RMC 12.2Kbps	Bottom Side	5	Hotspot On	4233	846.6	21.98	22.50	1.127	0.03	0.564	0.636
	WCDMA Band IV	RMC 12.2Kbps	Front	5	Hotspot On	1513	1752.6	20.42	21.00	1.143	0.08	0.800	0.914
	WCDMA Band IV	RMC 12.2Kbps	Front	5	Hotspot On	1312	1712.4	20.32	21.00	1.169	0.11	0.695	0.813
	WCDMA Band IV	RMC 12.2Kbps	Front	5	Hotspot On	1413	1732.6	20.36	21.00	1.159	-0.02	0.715	0.829
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Hotspot On	1513	1752.6	20.42	21.00	1.143	0.05	1.060	1.211
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Hotspot On	1312	1712.4	20.32	21.00	1.169	-0.07	0.900	1.053
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Hotspot On	1413	1732.6	20.36	21.00	1.159	-0.03	0.972	1.126
	WCDMA Band IV	RMC 12.2Kbps	Left Side	5	Hotspot On	1513	1752.6	18.30	19.00	1.175	0.02	0.037	0.044
	WCDMA Band IV	RMC 12.2Kbps	Right Side	5	Hotspot On	1513	1752.6	18.30	19.00	1.175	0.17	0.392	0.461
19	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	5	Hotspot On	1513	1752.6	18.30	19.00	1.175	0.09	1.070	1.257
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	5	Hotspot On	1312	1712.4	18.20	19.00	1.202	0.05	1.010	1.214
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	5	Hotspot On	1413	1732.6	18.25	19.00	1.189	0.01	1.050	1.248
	WCDMA Band II	RMC 12.2Kbps	Front	5	Hotspot On	9538	1907.6	21.15	21.50	1.084	0.14	0.747	0.810
	WCDMA Band II	RMC 12.2Kbps	Front	5	Hotspot On	9262	1852.4	21.06	21.50	1.107	0.02	0.847	0.937
	WCDMA Band II	RMC 12.2Kbps	Front	5	Hotspot On	9400	1880	21.11	21.50	1.094	0.15	0.811	0.887
	WCDMA Band II	RMC 12.2Kbps	Back	5	Hotspot On	9538	1907.6	21.15	21.50	1.084	-0.01	0.949	1.029
20	WCDMA Band II	RMC 12.2Kbps	Back	5	Hotspot On	9262	1852.4	21.06	21.50	1.107	0.03	1.160	1.284
	WCDMA Band II	RMC 12.2Kbps	Back	5	Hotspot On	9400	1880	21.11	21.50	1.094	0.04	1.040	1.138
	WCDMA Band II	RMC 12.2Kbps	Left Side	5	Hotspot On	9538	1907.6	18.51	19.00	1.119	0.02	0.042	0.047
	WCDMA Band II	RMC 12.2Kbps	Right Side	5	Hotspot On	9538	1907.6	18.51	19.00	1.119	0.09	0.478	0.535
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	5	Hotspot On	9538	1907.6	18.51	19.00	1.119	0.06	1.030	1.153
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	5	Hotspot On	9262	1852.4	18.41	19.00	1.146	0.07	1.120	1.283
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	5	Hotspot On	9400	1880	18.48	19.00	1.127	0.1	1.050	1.184



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	49	Front	5	Full	23095	707.5	22.93	24.00	1.279	-0.01	0.685	0.876
	LTE Band 12	10M	QPSK	25	25	Front	5	Full	23095	707.5	21.84	23.00	1.306	-0.05	0.568	0.742
	LTE Band 12	10M	QPSK	50	0	Front	5	Full	23095	707.5	21.79	23.00	1.321	-0.03	0.562	0.743
21	LTE Band 12	10M	QPSK	1	49	Back	5	Full	23095	707.5	22.93	24.00	1.279	0.11	0.847	1.084
	LTE Band 12	10M	QPSK	25	25	Back	5	Full	23095	707.5	21.84	23.00	1.306	-0.06	0.697	0.910
	LTE Band 12	10M	QPSK	50	0	Back	5	Full	23095	707.5	21.79	23.00	1.321	0.01	0.685	0.905
	LTE Band 12	10M	QPSK	1	49	Left Side	5	Full	23095	707.5	22.93	24.00	1.279	0.04	0.240	0.307
	LTE Band 12	10M	QPSK	25	25	Left Side	5	Full	23095	707.5	21.84	23.00	1.306	0.06	0.196	0.256
	LTE Band 12	10M	QPSK	1	49	Right Side	5	Full	23095	707.5	22.93	24.00	1.279	0.01	0.431	0.551
	LTE Band 12	10M	QPSK	25	25	Right Side	5	Full	23095	707.5	21.84	23.00	1.306	0.09	0.359	0.469
	LTE Band 12	10M	QPSK	1	49	Bottom Side	5	Full	23095	707.5	22.93	24.00	1.279	0.08	0.558	0.714
	LTE Band 12	10M	QPSK	25	25	Bottom Side	5	Full	23095	707.5	21.84	23.00	1.306	-0.09	0.472	0.617
22	LTE Band 5	10M	QPSK	1	49	Front	5	Hotspot On	20525	836.5	21.62	22.50	1.225	0.04	1.120	1.372
	LTE Band 5	10M	QPSK	25	0	Front	5	Hotspot On	20525	836.5	21.66	22.50	1.213	-0.02	0.943	1.144
	LTE Band 5	10M	QPSK	50	0	Front	5	Hotspot On	20525	836.5	21.63	22.50	1.222	-0.06	0.941	1.150
	LTE Band 5	10M	QPSK	1	49	Back	5	Hotspot On	20525	836.5	21.62	22.50	1.225	-0.01	1.050	1.286
	LTE Band 5	10M	QPSK	25	0	Back	5	Hotspot On	20525	836.5	21.66	22.50	1.213	0.01	0.776	0.942
	LTE Band 5	10M	QPSK	50	0	Back	5	Hotspot On	20525	836.5	21.63	22.50	1.222	-0.03	0.768	0.938
	LTE Band 5	10M	QPSK	1	49	Left Side	5	Hotspot On	20525	836.5	21.62	22.50	1.225	0.01	0.181	0.222
	LTE Band 5	10M	QPSK	25	0	Left Side	5	Hotspot On	20525	836.5	21.66	22.50	1.213	0.04	0.184	0.223
	LTE Band 5	10M	QPSK	1	49	Right Side	5	Hotspot On	20525	836.5	21.62	22.50	1.225	0.01	0.592	0.725
	LTE Band 5	10M	QPSK	25	0	Right Side	5	Hotspot On	20525	836.5	21.66	22.50	1.213	0.05	0.500	0.607
	LTE Band 5	10M	QPSK	1	49	Bottom Side	5	Hotspot On	20525	836.5	21.62	22.50	1.225	0.09	0.688	0.843
	LTE Band 5	10M	QPSK	25	0	Bottom Side	5	Hotspot On	20525	836.5	21.66	22.50	1.213	-0.07	0.539	0.654
	LTE Band 5	10M	QPSK	50	0	Bottom Side	5	Hotspot On	20525	836.5	21.63	22.50	1.222	0.03	0.576	0.704
	LTE Band 66	20M	QPSK	1	49	Front	5	Hotspot On	132572	1770	20.23	21.00	1.194	0.01	0.604	0.721
	LTE Band 66	20M	QPSK	50	0	Front	5	Hotspot On	132572	1770	20.12	21.00	1.225	-0.01	0.596	0.730
	LTE Band 66	20M	QPSK	1	49	Back	5	Hotspot On	132572	1770	20.23	21.00	1.194	-0.05	0.924	1.103
	LTE Band 66	20M	QPSK	1	49	Back	5	Hotspot On	132072	1720	20.04	21.00	1.247	-0.1	0.937	1.169
	LTE Band 66	20M	QPSK	1	49	Back	5	Hotspot On	132322	1745	20.21	21.00	1.199	0.01	0.995	1.194
	LTE Band 66	20M	QPSK	50	0	Back	5	Hotspot On	132572	1770	20.12	21.00	1.225	-0.08	0.934	1.144
	LTE Band 66	20M	QPSK	50	0	Back	5	Hotspot On	132072	1720	20.01	21.00	1.256	-0.08	0.993	1.247
	LTE Band 66	20M	QPSK	50	0	Back	5	Hotspot On	132322	1745	20.11	21.00	1.227	0.04	1.130	1.387
	LTE Band 66	20M	QPSK	100	0	Back	5	Hotspot On	132572	1770	20.10	21.00	1.230	0.01	0.917	1.128
	LTE Band 66	20M	QPSK	1	49	Left Side	5	Hotspot On	132572	1770	19.47	20.00	1.130	0.11	0.049	0.055
	LTE Band 66	20M	QPSK	50	0	Left Side	5	Hotspot On	132572	1770	19.45	20.00	1.135	0.05	0.029	0.033
	LTE Band 66	20M	QPSK	1	49	Right Side	5	Hotspot On	132572	1770	19.47	20.00	1.130	0.01	0.214	0.242
	LTE Band 66	20M	QPSK	50	0	Right Side	5	Hotspot On	132572	1770	19.45	20.00	1.135	0.1	0.216	0.245
23	LTE Band 66	20M	QPSK	1	49	Bottom Side	5	Hotspot On	132572	1770	19.47	20.00	1.130	0.19	1.250	1.412
	LTE Band 66	20M	QPSK	1	49	Bottom Side	5	Hotspot On	132072	1720	19.34	20.00	1.164	0.06	0.914	1.064
	LTE Band 66	20M	QPSK	1	49	Bottom Side	5	Hotspot On	132322	1745	19.27	20.00	1.183	0.07	0.896	1.060
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5	Hotspot On	132572	1770	19.45	20.00	1.135	-0.05	0.908	1.031
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5	Hotspot On	132072	1720	19.38	20.00	1.153	0.08	0.890	1.027
	LTE Band 66	20M	QPSK	50	0	Bottom Side	5	Hotspot On	132322	1745	19.32	20.00	1.169	-0.09	0.914	1.069
	LTE Band 66	20M	QPSK	100	0	Bottom Side	5	Hotspot On	132572	1770	19.38	20.00	1.153	0.05	0.863	0.995



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2	20M	QPSK	1	0	Front	5	Hotspot On	18700	1860	20.05	20.50	1.109	-0.03	0.739	0.820
	LTE Band 2	20M	QPSK	1	0	Front	5	Hotspot On	18900	1880	19.88	20.50	1.153	0.03	0.756	0.872
	LTE Band 2	20M	QPSK	1	0	Front	5	Hotspot On	19100	1900	19.86	20.50	1.159	-0.08	0.751	0.870
	LTE Band 2	20M	QPSK	50	0	Front	5	Hotspot On	18700	1860	20.02	20.50	1.117	-0.08	0.789	0.881
	LTE Band 2	20M	QPSK	50	0	Front	5	Hotspot On	18900	1880	19.72	20.50	1.197	0.01	0.826	0.989
	LTE Band 2	20M	QPSK	50	0	Front	5	Hotspot On	19100	1900	19.73	20.50	1.194	0.01	0.821	0.980
	LTE Band 2	20M	QPSK	100	0	Front	5	Hotspot On	18700	1860	19.95	20.50	1.135	-0.05	0.803	0.911
	LTE Band 2	20M	QPSK	1	0	Back	5	Hotspot On	18700	1860	20.05	20.50	1.109	0.02	1.040	1.154
	LTE Band 2	20M	QPSK	1	0	Back	5	Hotspot On	18900	1880	19.88	20.50	1.153	0.12	0.939	1.083
24	LTE Band 2	20M	QPSK	1	0	Back	5	Hotspot On	19100	1900	19.86	20.50	1.159	0.05	1.090	1.263
	LTE Band 2	20M	QPSK	50	0	Back	5	Hotspot On	18700	1860	20.02	20.50	1.117	0.03	0.909	1.015
	LTE Band 2	20M	QPSK	50	0	Back	5	Hotspot On	18900	1880	19.72	20.50	1.197	0.09	0.907	1.085
	LTE Band 2	20M	QPSK	50	0	Back	5	Hotspot On	19100	1900	19.73	20.50	1.194	0.07	0.889	1.061
	LTE Band 2	20M	QPSK	100	0	Back	5	Hotspot On	18700	1860	19.95	20.50	1.135	0.04	0.887	1.007
	LTE Band 2	20M	QPSK	1	0	Left Side	5	Hotspot On	18700	1860	19.33	19.50	1.040	0.02	0.040	0.041
	LTE Band 2	20M	QPSK	50	0	Left Side	5	Hotspot On	18700	1860	19.25	19.50	1.059	0.03	0.039	0.041
	LTE Band 2	20M	QPSK	1	0	Right Side	5	Hotspot On	18700	1860	19.33	19.50	1.040	0.01	0.273	0.284
	LTE Band 2	20M	QPSK	50	0	Right Side	5	Hotspot On	18700	1860	19.25	19.50	1.059	0.01	0.268	0.284
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5	Hotspot On	18700	1860	19.33	19.50	1.040	-0.16	1.150	1.196
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5	Hotspot On	18900	1880	19.09	19.50	1.099	0.11	1.070	1.176
	LTE Band 2	20M	QPSK	1	0	Bottom Side	5	Hotspot On	19100	1900	19.09	19.50	1.099	0.06	1.060	1.165
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	Hotspot On	18700	1860	19.25	19.50	1.059	-0.13	1.120	1.186
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	Hotspot On	18900	1880	18.97	19.50	1.130	-0.15	1.070	1.209
	LTE Band 2	20M	QPSK	50	0	Bottom Side	5	Hotspot On	19100	1900	19.01	19.50	1.119	-0.1	0.979	1.096
	LTE Band 2	20M	QPSK	100	0	Bottom Side	5	Hotspot On	18700	1860	19.19	19.50	1.074	0.09	1.100	1.181



**FCC SAR Test Report**

**Report No. : FA8D2002**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	5	Hotspot On	21100	2535	22.10	22.50	1.096	0.06	0.981	1.076
	LTE Band 7	20M	QPSK	1	0	Front	5	Hotspot On	20850	2510	21.99	22.50	1.125	0.03	0.986	1.109
	LTE Band 7	20M	QPSK	1	0	Front	5	Hotspot On	21350	2560	22.01	22.50	1.119	0.02	1.050	1.175
	LTE Band 7	20M	QPSK	50	50	Front	5	Hotspot On	21100	2535	22.05	22.50	1.109	0.03	0.885	0.982
	LTE Band 7	20M	QPSK	50	50	Front	5	Hotspot On	20850	2510	21.96	22.50	1.132	0.09	1.050	1.189
	LTE Band 7	20M	QPSK	50	50	Front	5	Hotspot On	21350	2560	22.02	22.50	1.117	-0.08	1.110	1.240
	LTE Band 7	20M	QPSK	100	0	Front	5	Hotspot On	21100	2535	22.03	22.50	1.114	0.02	1.000	1.114
	LTE Band 7	20M	QPSK	1	0	Back	5	Hotspot On	21100	2535	22.10	22.50	1.096	0.03	1.060	1.162
	LTE Band 7	20M	QPSK	1	0	Back	5	Hotspot On	20850	2510	21.99	22.50	1.125	-0.03	0.932	1.048
	LTE Band 7	20M	QPSK	1	0	Back	5	Hotspot On	21350	2560	22.01	22.50	1.119	-0.01	1.040	1.164
	LTE Band 7	20M	QPSK	50	50	Back	5	Hotspot On	21100	2535	22.05	22.50	1.109	0.03	0.998	1.107
	LTE Band 7	20M	QPSK	50	50	Back	5	Hotspot On	20850	2510	21.96	22.50	1.132	0.03	0.911	1.032
25	LTE Band 7	20M	QPSK	50	50	Back	5	Hotspot On	21350	2560	22.02	22.50	1.117	0.09	1.290	<b>1.441</b>
	LTE Band 7	20M	QPSK	100	0	Back	5	Hotspot On	21100	2535	22.03	22.50	1.114	0.06	1.060	1.181
	LTE Band 7	20M	QPSK	1	0	Left Side	5	Hotspot On	21100	2535	17.57	18.00	1.104	0.05	0.612	0.676
	LTE Band 7	20M	QPSK	50	50	Left Side	5	Hotspot On	21100	2535	17.42	18.00	1.143	0.03	0.560	0.640
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5	Hotspot On	21100	2535	17.57	18.00	1.104	0.06	1.000	1.104
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5	Hotspot On	20850	2510	17.31	18.00	1.172	0.05	0.829	0.972
	LTE Band 7	20M	QPSK	1	0	Bottom Side	5	Hotspot On	21350	2560	17.53	18.00	1.114	0.08	1.150	1.281
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5	Hotspot On	21100	2535	17.42	18.00	1.143	0.01	1.080	1.234
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5	Hotspot On	20850	2510	17.18	18.00	1.208	0.06	0.876	1.058
	LTE Band 7	20M	QPSK	50	50	Bottom Side	5	Hotspot On	21350	2560	17.40	18.00	1.148	-0.05	1.240	1.424
	LTE Band 7	20M	QPSK	100	0	Bottom Side	5	Hotspot On	21100	2535	17.40	18.00	1.148	0.06	1.050	1.206





<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5	Full	1	2412	17.99	18.50	1.125	100	1.000	0.01	0.516	0.326	0.367
26	WLAN2.4GHz	802.11b 1Mbps	Back	5	Full	1	2412	17.99	18.50	1.125	100	1.000	-0.16	1.101	0.658	<b>0.740</b>
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5	Full	1	2412	17.99	18.50	1.125	100	1.000		0.360		
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5	Full	1	2412	17.99	18.50	1.125	100	1.000	0.01	0.608	0.368	0.414

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	5	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.01	0.025	0.028	
27	Bluetooth	1Mbps	Back	5	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.03	0.052	<b>0.058</b>	
	Bluetooth	1Mbps	Right Side	5	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.02	0.022	0.025	
	Bluetooth	1Mbps	Top Side	5	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.01	0.031	0.034	

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.2GHz	802.11a 6Mbps	Front	5	Full	36	5180	18.26	19.00	1.184	95.17	1.051		0.445		
28	WLAN5.2GHz	802.11a 6Mbps	Back	5	Full	36	5180	18.26	19.00	1.184	95.17	1.051	-0.03	0.754	0.313	<b>0.390</b>
	WLAN5.2GHz	802.11a 6Mbps	Right Side	5	Full	36	5180	18.26	19.00	1.184	95.17	1.051		0.355		
	WLAN5.2GHz	802.11a 6Mbps	Top Side	5	Full	36	5180	18.26	19.00	1.184	95.17	1.051		0.229		
	WLAN 5.8GHz	802.11a 6Mbps	Front	5	Full	165	5825	18.30	19.00	1.174	95.17	1.051	-0.02	0.275	0.104	0.128
29	WLAN 5.8GHz	802.11a 6Mbps	Back	5	Full	165	5825	18.30	19.00	1.174	95.17	1.051	-0.01	1.207	0.505	<b>0.623</b>
	WLAN 5.8GHz	802.11a 6Mbps	Right Side	5	Full	165	5825	18.30	19.00	1.174	95.17	1.051	0.01	0.573	0.220	0.271
	WLAN 5.8GHz	802.11a 6Mbps	Top Side	5	Full	165	5825	18.30	19.00	1.174	95.17	1.051		0.221		



**15.3 Body Worn Accessory SAR**

**<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS 3 Tx slots	Front	5	-	P-Sensor On	251	848.8	27.92	28.00	1.019	-0.02	1.270	1.294
	GSM850	GPRS 3 Tx slots	Front	5	-	P-Sensor On	128	824.2	27.86	28.00	1.033	0.06	0.877	0.906
	GSM850	GPRS 3 Tx slots	Front	5	-	P-Sensor On	189	836.4	27.90	28.00	1.023	0.03	1.170	1.197
30	GSM850	GPRS 3 Tx slots	Back	5	-	P-Sensor On	251	848.8	27.92	28.00	1.019	0.1	1.400	<b>1.426</b>
	GSM850	GPRS 3 Tx slots	Back	5	-	P-Sensor On	128	824.2	27.86	28.00	1.033	-0.13	0.927	0.957
	GSM850	GPRS 3 Tx slots	Back	5	-	P-Sensor On	189	836.4	27.90	28.00	1.023	0.06	1.270	1.300
	GSM850	GPRS 3 Tx slots	Front	5	Headset	P-Sensor On	251	848.8	27.92	28.00	1.019	-0.06	1.290	1.314
	GSM850	GPRS 3 Tx slots	Front	5	Headset	P-Sensor On	128	824.2	27.86	28.00	1.033	-0.02	0.909	0.939
	GSM850	GPRS 3 Tx slots	Front	5	Headset	P-Sensor On	189	836.4	27.90	28.00	1.023	-0.08	1.130	1.156
	GSM850	GPRS 3 Tx slots	Back	5	Headset	P-Sensor On	251	848.8	27.92	28.00	1.019	-0.12	1.240	1.263
	GSM850	GPRS 3 Tx slots	Back	5	Headset	P-Sensor On	128	824.2	27.86	28.00	1.033	0.03	0.865	0.893
	GSM850	GPRS 3 Tx slots	Back	5	Headset	P-Sensor On	189	836.4	27.90	28.00	1.023	-0.08	1.100	1.126
	GSM1900	GPRS 3 Tx slots	Front	5	-	Full	512	1850.2	26.68	27.00	1.076	-0.1	0.840	0.904
	GSM1900	GPRS 3 Tx slots	Front	5	-	Full	661	1880	26.67	27.00	1.079	0.05	0.905	0.976
	GSM1900	GPRS 3 Tx slots	Front	5	-	Full	810	1909.8	26.59	27.00	1.099	-0.01	0.775	0.852
	GSM1900	GPRS 3 Tx slots	Back	5	-	Full	512	1850.2	26.68	27.00	1.076	0.03	1.080	1.163
31	GSM1900	GPRS 3 Tx slots	Back	5	-	Full	661	1880	26.67	27.00	1.079	-0.17	1.240	<b>1.338</b>
	GSM1900	GPRS 3 Tx slots	Back	5	-	Full	810	1909.8	26.59	27.00	1.099	0.03	1.170	1.286
	GSM1900	GPRS 3 Tx slots	Back	5	Headset	Full	512	1850.2	26.68	27.00	1.076	0.03	1.220	1.313
	GSM1900	GPRS 3 Tx slots	Back	5	Headset	Full	661	1880	26.67	27.00	1.079	-0.06	1.160	1.252
	GSM1900	GPRS 3 Tx slots	Back	5	Headset	Full	810	1909.8	26.59	27.00	1.099	0.03	0.939	1.032



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC 12.2Kbps	Front	5	-	P-Sensor On	4233	846.6	21.98	22.50	1.127	0.01	1.130	1.274
	WCDMA Band V	RMC 12.2Kbps	Front	5	-	P-Sensor On	4132	826.4	21.95	22.50	1.135	-0.06	0.838	0.951
	WCDMA Band V	RMC 12.2Kbps	Front	5	-	P-Sensor On	4182	836.4	21.90	22.50	1.148	-0.01	0.981	1.126
	WCDMA Band V	RMC 12.2Kbps	Back	5	-	P-Sensor On	4233	846.6	21.98	22.50	1.127	0.18	1.100	1.240
	WCDMA Band V	RMC 12.2Kbps	Back	5	-	P-Sensor On	4132	826.4	21.95	22.50	1.135	0.03	0.810	0.919
	WCDMA Band V	RMC 12.2Kbps	Back	5	-	P-Sensor On	4182	836.4	21.90	22.50	1.148	0.11	0.859	0.986
	WCDMA Band V	RMC 12.2Kbps	Front	5	Headset	P-Sensor On	4233	846.6	21.98	22.50	1.127	0.15	1.070	1.206
	WCDMA Band V	RMC 12.2Kbps	Front	5	Headset	P-Sensor On	4132	826.4	21.95	22.50	1.135	0.06	0.975	1.107
	WCDMA Band V	RMC 12.2Kbps	Front	5	Headset	P-Sensor On	4182	836.4	21.90	22.50	1.148	-0.09	1.080	1.240
	WCDMA Band V	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	4233	846.6	21.98	22.50	1.127	0.02	1.110	1.251
	WCDMA Band V	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	4132	826.4	21.95	22.50	1.135	0.14	1.030	1.169
32	WCDMA Band V	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	4182	836.4	21.90	22.50	1.148	0.15	1.160	1.332
	WCDMA Band IV	RMC 12.2Kbps	Front	5	-	P-Sensor On	1513	1752.6	20.42	21.00	1.143	0.08	0.800	0.914
	WCDMA Band IV	RMC 12.2Kbps	Front	5	-	P-Sensor On	1312	1712.4	20.32	21.00	1.169	0.11	0.695	0.813
	WCDMA Band IV	RMC 12.2Kbps	Front	5	-	P-Sensor On	1413	1732.6	20.36	21.00	1.159	-0.02	0.715	0.829
33	WCDMA Band IV	RMC 12.2Kbps	Back	5	-	P-Sensor On	1513	1752.6	20.42	21.00	1.143	0.05	1.060	1.211
	WCDMA Band IV	RMC 12.2Kbps	Back	5	-	P-Sensor On	1312	1712.4	20.32	21.00	1.169	-0.07	0.900	1.053
	WCDMA Band IV	RMC 12.2Kbps	Back	5	-	P-Sensor On	1413	1732.6	20.36	21.00	1.159	-0.03	0.972	1.126
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	1513	1752.6	20.42	21.00	1.143	-0.01	0.994	1.136
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	1312	1712.4	20.32	21.00	1.169	-0.14	0.925	1.082
	WCDMA Band IV	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	1413	1732.6	20.36	21.00	1.159	0.1	1.000	1.159
	WCDMA Band II	RMC 12.2Kbps	Front	5	-	P-Sensor On	9538	1907.6	21.15	21.50	1.084	0.14	0.747	0.810
	WCDMA Band II	RMC 12.2Kbps	Front	5	-	P-Sensor On	9262	1852.4	21.06	21.50	1.107	0.02	0.847	0.937
	WCDMA Band II	RMC 12.2Kbps	Front	5	-	P-Sensor On	9400	1880	21.11	21.50	1.094	0.15	0.811	0.887
	WCDMA Band II	RMC 12.2Kbps	Back	5	-	P-Sensor On	9538	1907.6	21.15	21.50	1.084	-0.01	0.949	1.029
34	WCDMA Band II	RMC 12.2Kbps	Back	5	-	P-Sensor On	9262	1852.4	21.06	21.50	1.107	0.03	1.160	1.284
	WCDMA Band II	RMC 12.2Kbps	Back	5	-	P-Sensor On	9400	1880	21.11	21.50	1.094	0.04	1.040	1.138
	WCDMA Band II	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	9262	1852.4	21.06	21.50	1.107	0.03	1.080	1.195
	WCDMA Band II	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	9400	1880	21.11	21.50	1.094	-0.05	1.060	1.160
	WCDMA Band II	RMC 12.2Kbps	Back	5	Headset	P-Sensor On	9538	1907.6	21.15	21.50	1.084	-0.05	0.936	1.015



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 12	10M	QPSK	1	49	Front	5	-	Full	23095	707.5	22.93	24.00	1.279	-0.01	0.685	0.876
	LTE Band 12	10M	QPSK	25	25	Front	5	-	Full	23095	707.5	21.84	23.00	1.306	-0.05	0.568	0.742
	LTE Band 12	10M	QPSK	50	0	Front	5	-	Full	23095	707.5	21.79	23.00	1.321	-0.03	0.562	0.743
35	LTE Band 12	10M	QPSK	1	49	Back	5	-	Full	23095	707.5	22.93	24.00	1.279	0.11	0.847	1.084
	LTE Band 12	10M	QPSK	25	25	Back	5	-	Full	23095	707.5	21.84	23.00	1.306	-0.06	0.697	0.910
	LTE Band 12	10M	QPSK	50	0	Back	5	-	Full	23095	707.5	21.79	23.00	1.321	0.01	0.685	0.905
36	LTE Band 5	10M	QPSK	1	49	Front	5	-	P-Sensor On	20525	836.5	21.62	22.50	1.225	0.04	1.120	1.372
	LTE Band 5	10M	QPSK	25	0	Front	5	-	P-Sensor On	20525	836.5	21.66	22.50	1.213	-0.02	0.943	1.144
	LTE Band 5	10M	QPSK	50	0	Front	5	-	P-Sensor On	20525	836.5	21.63	22.50	1.222	-0.06	0.941	1.150
	LTE Band 5	10M	QPSK	1	49	Back	5	-	P-Sensor On	20525	836.5	21.62	22.50	1.225	-0.01	1.050	1.286
	LTE Band 5	10M	QPSK	25	0	Back	5	-	P-Sensor On	20525	836.5	21.66	22.50	1.213	0.01	0.776	0.942
	LTE Band 5	10M	QPSK	50	0	Back	5	-	P-Sensor On	20525	836.5	21.63	22.50	1.222	-0.03	0.768	0.938
	LTE Band 5	10M	QPSK	1	49	Front	5	Headset	P-Sensor On	20525	836.5	21.62	22.50	1.225	-0.01	0.951	1.165
	LTE Band 5	10M	QPSK	1	49	Back	5	Headset	P-Sensor On	20525	836.5	21.62	22.50	1.225	-0.08	1.090	1.335
	LTE Band 66	20M	QPSK	1	49	Front	5	-	P-Sensor On	132572	1770	20.23	21.00	1.194	0.01	0.604	0.721
	LTE Band 66	20M	QPSK	50	0	Front	5	-	P-Sensor On	132572	1770	20.12	21.00	1.225	-0.01	0.596	0.730
	LTE Band 66	20M	QPSK	1	49	Back	5	-	P-Sensor On	132572	1770	20.23	21.00	1.194	-0.05	0.924	1.103
	LTE Band 66	20M	QPSK	1	49	Back	5	-	P-Sensor On	132072	1720	20.04	21.00	1.247	-0.1	0.937	1.169
	LTE Band 66	20M	QPSK	1	49	Back	5	-	P-Sensor On	132322	1745	20.21	21.00	1.199	0.01	0.995	1.194
	LTE Band 66	20M	QPSK	50	0	Back	5	-	P-Sensor On	132572	1770	20.12	21.00	1.225	-0.08	0.934	1.144
	LTE Band 66	20M	QPSK	50	0	Back	5	-	P-Sensor On	132072	1720	20.01	21.00	1.256	-0.08	0.993	1.247
37	LTE Band 66	20M	QPSK	50	0	Back	5	-	P-Sensor On	132322	1745	20.11	21.00	1.227	0.04	1.130	1.387
	LTE Band 66	20M	QPSK	100	0	Back	5	-	P-Sensor On	132572	1770	20.10	21.00	1.230	0.01	0.917	1.128
	LTE Band 66	20M	QPSK	50	0	Back	5	Headset	P-Sensor On	132322	1745	20.11	21.00	1.227	0.07	0.988	1.213
	LTE Band 66	20M	QPSK	50	0	Back	5	Headset	P-Sensor On	132572	1770	20.12	21.00	1.225	0.09	0.990	1.212
	LTE Band 66	20M	QPSK	50	0	Back	5	Headset	P-Sensor On	132072	1720	20.01	21.00	1.256	0.02	1.080	1.357
	LTE Band 2	20M	QPSK	1	0	Front	5	-	P-Sensor On	18700	1860	20.05	20.50	1.109	-0.03	0.739	0.820
	LTE Band 2	20M	QPSK	1	0	Front	5	-	P-Sensor On	18900	1880	19.88	20.50	1.153	0.03	0.756	0.872
	LTE Band 2	20M	QPSK	1	0	Front	5	-	P-Sensor On	19100	1900	19.86	20.50	1.159	-0.08	0.751	0.870
	LTE Band 2	20M	QPSK	50	0	Front	5	-	P-Sensor On	18700	1860	20.02	20.50	1.117	-0.08	0.789	0.881
	LTE Band 2	20M	QPSK	50	0	Front	5	-	P-Sensor On	18900	1880	19.72	20.50	1.197	0.01	0.826	0.989
	LTE Band 2	20M	QPSK	50	0	Front	5	-	P-Sensor On	19100	1900	19.73	20.50	1.194	0.01	0.821	0.980
	LTE Band 2	20M	QPSK	100	0	Front	5	-	P-Sensor On	18700	1860	19.95	20.50	1.135	-0.05	0.803	0.911
	LTE Band 2	20M	QPSK	1	0	Back	5	-	P-Sensor On	18700	1860	20.05	20.50	1.109	0.02	1.040	1.154
	LTE Band 2	20M	QPSK	1	0	Back	5	-	P-Sensor On	18900	1880	19.88	20.50	1.153	0.12	0.939	1.083
	LTE Band 2	20M	QPSK	1	0	Back	5	-	P-Sensor On	19100	1900	19.86	20.50	1.159	0.05	1.090	1.263
	LTE Band 2	20M	QPSK	50	0	Back	5	-	P-Sensor On	18700	1860	20.02	20.50	1.117	0.03	0.909	1.015
	LTE Band 2	20M	QPSK	50	0	Back	5	-	P-Sensor On	18900	1880	19.72	20.50	1.197	0.09	0.907	1.085
	LTE Band 2	20M	QPSK	50	0	Back	5	-	P-Sensor On	19100	1900	19.73	20.50	1.194	0.07	0.889	1.061
	LTE Band 2	20M	QPSK	100	0	Back	5	-	P-Sensor On	18700	1860	19.95	20.50	1.135	0.04	0.887	1.007
	LTE Band 2	20M	QPSK	1	0	Back	5	Headset	P-Sensor On	18700	1860	20.05	20.50	1.109	0.09	1.150	1.276
38	LTE Band 2	20M	QPSK	1	0	Back	5	Headset	P-Sensor On	18900	1880	19.88	20.50	1.153	0.01	1.120	1.292
	LTE Band 2	20M	QPSK	1	0	Back	5	Headset	P-Sensor On	19100	1900	19.86	20.50	1.159	0.02	1.110	1.286



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Headset	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	5	-	P-Sensor On	21100	2535	22.10	22.50	1.096	0.06	0.981	1.076
	LTE Band 7	20M	QPSK	1	0	Front	5	-	P-Sensor On	20850	2510	21.99	22.50	1.125	0.03	0.986	1.109
	LTE Band 7	20M	QPSK	1	0	Front	5	-	P-Sensor On	21350	2560	22.01	22.50	1.119	0.02	1.050	1.175
	LTE Band 7	20M	QPSK	50	50	Front	5	-	P-Sensor On	21100	2535	22.05	22.50	1.109	0.03	0.885	0.982
	LTE Band 7	20M	QPSK	50	50	Front	5	-	P-Sensor On	20850	2510	21.96	22.50	1.132	0.09	1.050	1.189
	LTE Band 7	20M	QPSK	50	50	Front	5	-	P-Sensor On	21350	2560	22.02	22.50	1.117	-0.08	1.110	1.240
	LTE Band 7	20M	QPSK	100	0	Front	5	-	P-Sensor On	21100	2535	22.03	22.50	1.114	0.02	1.000	1.114
	LTE Band 7	20M	QPSK	1	0	Back	5	-	P-Sensor On	21100	2535	22.10	22.50	1.096	0.03	1.060	1.162
	LTE Band 7	20M	QPSK	1	0	Back	5	-	P-Sensor On	20850	2510	21.99	22.50	1.125	-0.03	0.932	1.048
	LTE Band 7	20M	QPSK	1	0	Back	5	-	P-Sensor On	21350	2560	22.01	22.50	1.119	-0.01	1.040	1.164
	LTE Band 7	20M	QPSK	50	50	Back	5	-	P-Sensor On	21100	2535	22.05	22.50	1.109	0.03	0.998	1.107
	LTE Band 7	20M	QPSK	50	50	Back	5	-	P-Sensor On	20850	2510	21.96	22.50	1.132	0.03	0.911	1.032
39	LTE Band 7	20M	QPSK	50	50	Back	5	-	P-Sensor On	21350	2560	22.02	22.50	1.117	0.09	1.290	1.441
	LTE Band 7	20M	QPSK	100	0	Back	5	-	P-Sensor On	21100	2535	22.03	22.50	1.114	0.06	1.060	1.181
	LTE Band 7	20M	QPSK	50	50	Front	5	Headset	P-Sensor On	21100	2535	22.05	22.50	1.109	-0.06	1.040	1.154
	LTE Band 7	20M	QPSK	50	50	Front	5	Headset	P-Sensor On	20850	2510	21.96	22.50	1.132	0.07	0.913	1.034
	LTE Band 7	20M	QPSK	50	50	Front	5	Headset	P-Sensor On	21350	2560	22.02	22.50	1.117	0.06	1.150	1.284
	LTE Band 7	20M	QPSK	50	50	Back	5	Headset	P-Sensor On	21100	2535	22.05	22.50	1.109	-0.09	1.040	1.154
	LTE Band 7	20M	QPSK	50	50	Back	5	Headset	P-Sensor On	20850	2510	21.96	22.50	1.132	0.08	0.967	1.095
	LTE Band 7	20M	QPSK	50	50	Back	5	Headset	P-Sensor On	21350	2560	22.02	22.50	1.117	-0.06	1.140	1.273



<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	5	Full	1	2412	17.99	18.50	1.125	100	1.000	0.01	0.516	0.326	0.367
40	WLAN2.4GHz	802.11b 1Mbps	Back	5	Full	1	2412	17.99	18.50	1.125	100	1.000	-0.16	1.101	0.658	<b>0.740</b>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	5	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.01	0.025	0.028
41	Bluetooth	1Mbps	Back	5	Full	39	2441	9.89	10.00	1.026	76.91	1.083	0.03	0.052	<b>0.058</b>

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Front	5	Full	64	5320	18.58	19.00	1.100	95.17	1.051		0.358		
42	WLAN5.3GHz	802.11a 6Mbps	Back	5	Full	64	5320	18.58	19.00	1.100	95.17	1.051	-0.09	0.653	0.265	<b>0.306</b>
	WLAN5.5GHz	802.11a 6Mbps	Front	5	Full	132	5660	19.17	19.50	1.078	95.17	1.051	-0.12	0.477	0.247	0.280
	WLAN5.5GHz	802.11a 6Mbps	Back	5	Full	132	5660	19.17	19.50	1.078	95.17	1.051	0.02	2.630	0.831	0.941
43	WLAN5.5GHz	802.11a 6Mbps	Back	5	Full	124	5620	19.07	19.50	1.104	95.17	1.051	-0.04		0.982	<b>1.139</b>
	WLAN5.8GHz	802.11a 6Mbps	Front	5	Full	165	5825	18.30	19.00	1.174	95.17	1.051	-0.02	0.275	0.104	0.128
44	WLAN5.8GHz	802.11a 6Mbps	Back	5	Full	165	5825	18.30	19.00	1.174	95.17	1.051	-0.01	1.207	0.505	<b>0.623</b>



**15.4 Product specific 10g SAR**

**<GSM SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
45	GSM850	GPRS 3 Tx slots	Front	0	Full	251	848.8	29.87	30.00	1.030	0.07	1.530	<b>1.576</b>
	GSM850	GPRS 3 Tx slots	Back	0	Full	251	848.8	29.87	30.00	1.030	0.06	1.400	1.443
	GSM850	GPRS 3 Tx slots	Bottom Side	0	Full	251	848.8	29.87	30.00	1.030	-0.07	0.773	0.796
	GSM1900	GPRS 3 Tx slots	Back	0	Full	512	1850.2	26.68	27.00	1.076	-0.03	1.940	2.088
	GSM1900	GPRS 3 Tx slots	Back	0	Full	661	1880	26.67	27.00	1.079	0.09	1.810	1.953
	GSM1900	GPRS 3 Tx slots	Back	0	Full	810	1909.8	26.59	27.00	1.099	-0.06	1.630	1.791
	GSM1900	GPRS 3 Tx slots	Bottom Side	0	Full	512	1850.2	26.68	27.00	1.076	0.05	2.030	2.185
46	GSM1900	GPRS 3 Tx slots	Bottom Side	0	Full	661	1880	26.67	27.00	1.079	0.09	2.120	<b>2.287</b>
	GSM1900	GPRS 3 Tx slots	Bottom Side	0	Full	810	1909.8	26.59	27.00	1.099	0.07	2.010	2.209

**<WCDMA SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
47	WCDMA Band V	RMC 12.2Kbps	Front	0	Full	4233	846.6	23.49	24.00	1.125	-0.09	2.110	<b>2.373</b>
	WCDMA Band V	RMC 12.2Kbps	Back	0	Full	4233	846.6	23.49	24.00	1.125	0.03	1.760	1.979
	WCDMA Band V	RMC 12.2Kbps	Front	0	Full	4132	826.4	23.30	24.00	1.175	0.09	1.990	2.338
	WCDMA Band V	RMC 12.2Kbps	Front	0	Full	4182	836.4	23.44	24.00	1.138	-0.01	2.020	2.298
	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1513	1752.6	22.36	23.00	1.159	0.04	1.760	2.039
	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1312	1712.4	22.25	23.00	1.189	-0.02	1.740	2.068
	WCDMA Band IV	RMC 12.2Kbps	Front	0	Handheld On	1413	1732.6	22.31	23.00	1.172	0.09	1.740	2.040
	WCDMA Band IV	RMC 12.2Kbps	Back	0	Handheld On	1513	1752.6	22.36	23.00	1.159	0.05	2.180	2.526
	WCDMA Band IV	RMC 12.2Kbps	Back	0	Handheld On	1312	1712.4	22.25	23.00	1.189	0.07	2.120	2.520
	WCDMA Band IV	RMC 12.2Kbps	Back	0	Handheld On	1413	1732.6	22.31	23.00	1.172	-0.01	2.170	2.544
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	0	Handheld On	1513	1752.6	22.36	23.00	1.159	0.05	2.340	2.712
	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	0	Handheld On	1312	1712.4	22.25	23.00	1.189	0.01	2.510	<b>2.983</b>
48	WCDMA Band IV	RMC 12.2Kbps	Bottom Side	0	Handheld On	1413	1732.6	22.31	23.00	1.172	0.05	2.440	2.860
	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9538	1907.6	22.51	23.00	1.119	-0.03	1.800	2.015
	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9262	1852.4	22.47	23.00	1.130	0.08	2.220	2.508
	WCDMA Band II	RMC 12.2Kbps	Front	0	Handheld On	9400	1880	22.39	23.00	1.151	-0.01	2.050	2.359
	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9538	1907.6	22.51	23.00	1.119	0.04	2.450	2.743
	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9262	1852.4	22.47	23.00	1.130	0.03	2.650	2.994
	WCDMA Band II	RMC 12.2Kbps	Back	0	Handheld On	9400	1880	22.39	23.00	1.151	0.03	2.640	<b>3.038</b>
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	0	Handheld On	9538	1907.6	22.51	23.00	1.119	0.11	2.160	2.418
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	0	Handheld On	9262	1852.4	22.47	23.00	1.130	0.04	2.620	2.960
	WCDMA Band II	RMC 12.2Kbps	Bottom Side	0	Handheld On	9400	1880	22.39	23.00	1.151	-0.018	2.370	2.727



<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
50	LTE Band 5	10M	QPSK	1	49	Front	0	Full	20525	836.5	23.33	24.00	1.167	-0.02	1.710	<b>1.995</b>
	LTE Band 5	10M	QPSK	25	0	Front	0	Full	20525	836.5	22.22	23.00	1.197	-0.06	1.510	1.807
	LTE Band 5	10M	QPSK	1	49	Back	0	Full	20525	836.5	23.33	24.00	1.167	-0.06	1.520	1.774
	LTE Band 5	10M	QPSK	25	0	Back	0	Full	20525	836.5	22.22	23.00	1.197	0.06	1.150	1.376
	LTE Band 66	20M	QPSK	1	49	Back	0	Handheld On	132572	1770	22.09	23.00	1.233	0.07	1.940	2.392
	LTE Band 66	20M	QPSK	1	49	Back	0	Handheld On	132072	1720	22.07	23.00	1.239	0.06	2.100	2.601
	LTE Band 66	20M	QPSK	1	49	Back	0	Handheld On	132322	1745	22.03	23.00	1.250	0.08	2.400	3.001
	LTE Band 66	20M	QPSK	50	0	Back	0	Handheld On	132572	1770	22.08	23.00	1.236	0.03	1.480	1.829
	LTE Band 66	20M	QPSK	100	0	Back	0	Handheld On	132572	1770	22.04	23.00	1.247	0.03	1.530	1.908
	LTE Band 66	20M	QPSK	1	49	Bottom Side	0	Handheld On	132572	1770	22.09	23.00	1.233	0.09	2.520	3.107
51	LTE Band 66	20M	QPSK	1	49	Bottom Side	0	Handheld On	132072	1720	22.07	23.00	1.239	-0.07	2.550	<b>3.159</b>
	LTE Band 66	20M	QPSK	1	49	Bottom Side	0	Handheld On	132322	1745	22.03	23.00	1.250	0.04	2.510	3.138
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0	Handheld On	132572	1770	22.08	23.00	1.236	0.07	2.030	2.509
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0	Handheld On	132072	1720	22.07	23.00	1.239	0.01	2.040	2.527
	LTE Band 66	20M	QPSK	50	0	Bottom Side	0	Handheld On	132322	1745	22.02	23.00	1.253	0.08	2.010	2.519
	LTE Band 66	20M	QPSK	100	0	Bottom Side	0	Handheld On	132572	1770	22.04	23.00	1.247	-0.11	2.060	2.570
	LTE Band 2	20M	QPSK	1	0	Front	0	Handheld On	18700	1860	22.72	23.00	1.067	0.09	1.680	1.792
	LTE Band 2	20M	QPSK	50	0	Front	0	Handheld On	18700	1860	22.61	23.00	1.094	-0.02	1.310	1.433
	LTE Band 2	20M	QPSK	1	0	Back	0	Handheld On	18700	1860	22.72	23.00	1.067	0.06	2.450	2.613
	LTE Band 2	20M	QPSK	1	0	Back	0	Handheld On	18900	1880	22.44	23.00	1.138	-0.02	2.360	2.685
	LTE Band 2	20M	QPSK	1	0	Back	0	Handheld On	19100	1900	22.35	23.00	1.161	-0.16	2.410	2.799
	LTE Band 2	20M	QPSK	50	0	Back	0	Handheld On	18700	1860	22.61	23.00	1.094	0.02	1.940	2.122
	LTE Band 2	20M	QPSK	50	0	Back	0	Handheld On	18900	1880	22.38	23.00	1.153	-0.01	1.850	2.134
	LTE Band 2	20M	QPSK	50	0	Back	0	Handheld On	19100	1900	22.42	23.00	1.143	-0.15	1.900	2.171
	LTE Band 2	20M	QPSK	100	0	Back	0	Handheld On	18700	1860	22.53	23.00	1.114	-0.05	1.900	2.117
52	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	Handheld On	18700	1860	22.72	23.00	1.067	0.11	2.700	<b>2.880</b>
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	Handheld On	18900	1880	22.44	23.00	1.138	0.02	2.260	2.571
	LTE Band 2	20M	QPSK	1	0	Bottom Side	0	Handheld On	19100	1900	22.35	23.00	1.161	0.1	2.300	2.671
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	Handheld On	18700	1860	22.61	23.00	1.094	-0.03	2.090	2.286
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	Handheld On	18900	1880	22.38	23.00	1.153	0.11	2.000	2.307
	LTE Band 2	20M	QPSK	50	0	Bottom Side	0	Handheld On	19100	1900	22.42	23.00	1.143	0.14	1.800	2.057
	LTE Band 2	20M	QPSK	100	0	Bottom Side	0	Handheld On	18700	1860	22.53	23.00	1.114	-0.04	2.020	2.251





**FCC SAR Test Report**

**Report No. : FA8D2002**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	0	Handheld On	21100	2535	21.47	22.00	1.130	0.07	1.950	2.203
	LTE Band 7	20M	QPSK	1	0	Front	0	Handheld On	20850	2510	21.42	22.00	1.143	-0.16	1.910	2.183
	LTE Band 7	20M	QPSK	1	0	Front	0	Handheld On	21350	2560	21.39	22.00	1.151	0.01	2.000	2.302
	LTE Band 7	20M	QPSK	50	50	Front	0	Handheld On	21100	2535	21.45	22.00	1.135	0.03	1.970	2.236
	LTE Band 7	20M	QPSK	50	50	Front	0	Handheld On	20850	2510	21.31	22.00	1.172	0.03	1.890	2.215
	LTE Band 7	20M	QPSK	50	50	Front	0	Handheld On	21350	2560	21.39	22.00	1.151	0.06	1.980	2.279
	LTE Band 7	20M	QPSK	100	0	Front	0	Handheld On	21100	2535	21.42	22.00	1.143	-0.11	1.960	2.240
	LTE Band 7	20M	QPSK	1	0	Back	0	Handheld On	21100	2535	21.47	22.00	1.130	0.09	3.020	3.412
	LTE Band 7	20M	QPSK	1	0	Back	0	Handheld On	20850	2510	21.42	22.00	1.143	0.12	3.030	3.463
53	LTE Band 7	20M	QPSK	1	0	Back	0	Handheld On	21350	2560	21.39	22.00	1.151	-0.01	3.080	<b>3.544</b>
	LTE Band 7	20M	QPSK	50	50	Back	0	Handheld On	21100	2535	21.45	22.00	1.135	-0.01	3.030	3.439
	LTE Band 7	20M	QPSK	50	50	Back	0	Handheld On	20850	2510	21.31	22.00	1.172	-0.07	2.920	3.423
	LTE Band 7	20M	QPSK	50	50	Back	0	Handheld On	21350	2560	21.39	22.00	1.151	-0.05	3.010	3.464
	LTE Band 7	20M	QPSK	100	0	Back	0	Handheld On	21100	2535	21.42	22.00	1.143	0.02	3.040	3.474
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0	Handheld On	21100	2535	21.47	22.00	1.130	-0.03	2.190	2.474
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0	Handheld On	20850	2510	21.42	22.00	1.143	0.04	2.460	2.811
	LTE Band 7	20M	QPSK	1	0	Bottom Side	0	Handheld On	21350	2560	21.39	22.00	1.151	0.03	2.160	2.486
	LTE Band 7	20M	QPSK	50	50	Bottom Side	0	Handheld On	21100	2535	21.45	22.00	1.135	-0.18	2.250	2.554
	LTE Band 7	20M	QPSK	50	50	Bottom Side	0	Handheld On	20850	2510	21.31	22.00	1.172	-0.03	2.980	3.493
	LTE Band 7	20M	QPSK	50	50	Bottom Side	0	Handheld On	21350	2560	21.39	22.00	1.151	0.12	2.530	2.912
	LTE Band 7	20M	QPSK	100	0	Bottom Side	0	Handheld On	21100	2535	21.42	22.00	1.143	0.03	2.960	3.383

**<WLAN 5GHz SAR>**

Plot No.	Band	Mode	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Max Area Scan SAR	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5.3GHz	802.11a 6Mbps	Front	0	Full	64	5320	18.58	19.00	1.100	95.17	1.051		1.478		
54	WLAN5.3GHz	802.11a 6Mbps	Back	0	Full	64	5320	18.58	19.00	1.100	95.17	1.051	-0.02	2.689	0.354	<b>0.409</b>
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0	Full	64	5320	18.58	19.00	1.100	95.17	1.051		1.071		
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0	Full	64	5320	18.58	19.00	1.100	95.17	1.051		0.536		
	WLAN 5.5GHz	802.11a 6Mbps	Front	0	Full	132	5660	19.17	19.50	1.078	95.17	1.051		1.627		
55	WLAN 5.5GHz	802.11a 6Mbps	Back	0	Full	132	5660	19.17	19.50	1.078	95.17	1.051	0.04	7.631	0.870	<b>0.985</b>
	WLAN 5.5GHz	802.11a 6Mbps	Right Side	0	Full	132	5660	19.17	19.50	1.078	95.17	1.051		2.942		
	WLAN 5.5GHz	802.11a 6Mbps	Top Side	0	Full	132	5660	19.17	19.50	1.078	95.17	1.051		1.235		



**15.5 Repeated SAR Measurement**

**<1g SAR>**

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Headset	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM850	GPRS 3 Tx slots	-	-	-	-	Back	-	5	Hotspot On	251	848.8	27.92	28.00	1.019	-	-	0.1	1.400	1	1.426
2nd	GSM850	GPRS 3 Tx slots	-	-	-	-	Back	-	5	Hotspot On	251	848.8	27.92	28.00	1.019	-	-	-0.01	1.330	1.053	1.355
1st	GSM1900	GPRS 3 Tx slots	-	-	-	-	Back	-	5	Full	661	1880	26.67	27.00	1.079	-	-	-0.17	1.240	1	1.338
2nd	GSM1900	GPRS 3 Tx slots	-	-	-	-	Back	-	5	Full	661	1880	26.67	27.00	1.079	-	-	0.04	1.220	1.016	1.316
1st	LTE Band 12	-	10M	QPSK	1	49	Back	-	5	Full	23095	707.5	22.93	24.00	1.279	-	-	0.11	0.847	1	1.084
2nd	LTE Band 12	-	10M	QPSK	1	49	Back	-	5	Full	23095	707.5	22.93	24.00	1.279	-	-	0.09	0.809	1.047	1.035
1st	LTE Band 66	-	20M	QPSK	1	49	Bottom Side	-	5	Hotspot On	132572	1770	19.47	20.00	1.130	-	-	0.19	1.250	1	1.412
2nd	LTE Band 66	-	20M	QPSK	1	49	Bottom Side	-	5	Hotspot On	132572	1770	19.47	20.00	1.130	-	-	-0.02	1.220	1.025	1.378
1st	WLAN2.4GHz	802.11b 1Mbps	-	-	-	-	Left Cheek	-	0	Receiver on	6	2437	15.82	16.50	1.169	100	1.000	-0.06	0.977	1	1.143
2nd	WLAN2.4GHz	802.11b 1Mbps	-	-	-	-	Left Cheek	-	0	Receiver on	6	2437	15.82	16.50	1.169	100	1.000	0.09	0.925	1.056	1.082
1st	WLAN5.5GHz	802.11a 6Mbps	-	-	-	-	Back	-	5	Full	124	5620	19.07	19.50	1.104	95.17	1.051	-0.04	0.982	1	1.139
2nd	WLAN5.5GHz	802.11a 6Mbps	-	-	-	-	Back	-	5	Full	124	5620	19.07	19.50	1.104	95.17	1.051	0.01	0.971	1.011	1.127

**<10g SAR>**

No.	Band	Mode	BW (MHz)	Modulation	RB Size	RB Offset	Test Position	Gap (mm)	Power Mode	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA Band V	RMC 12.2Kbps	-	-	-	-	Front	0	Full	4233	846.6	23.49	24.00	1.125	-	-	-0.09	2.110	1	2.373
2nd	WCDMA Band V	RMC 12.2Kbps	-	-	-	-	Front	0	Full	4233	846.6	23.49	24.00	1.125	-	-	0.06	2.080	1.014	2.339
1st	LTE Band 66	-	20M	QPSK	1	49	Bottom Side	0	Handheld On	132072	1720	22.07	23.00	1.239	-	-	-0.07	2.550	1	3.159
2nd	LTE Band 66	-	20M	QPSK	1	49	Bottom Side	0	Handheld On	132072	1720	22.07	23.00	1.239	-	-	-0.01	2.490	1.024	3.085
1st	LTE Band 2	-	20M	QPSK	1	0	Bottom Side	0	Handheld On	18700	1860	22.72	23.00	1.067	-	-	0.11	2.700	1	2.880
2nd	LTE Band 2	-	20M	QPSK	1	0	Bottom Side	0	Handheld On	18700	1860	22.72	23.00	1.067	-	-	-0.05	2.610	1.034	2.784
1st	LTE Band 7	-	20M	QPSK	1	0	Back	0	Handheld On	21350	2535	21.39	22.00	1.151	-	-	-0.01	3.080	1	3.544
2nd	LTE Band 7	-	20M	QPSK	1	0	Back	0	Handheld On	21350	2535	21.39	22.00	1.151	-	-	0.04	3.010	1.023	3.464

**General Note:**

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

## 16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	GSM Voice + WLAN2.4GHz	Yes	Yes		
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
5.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes		
6.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		Yes
7.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes
8.	LTE + WLAN5.3/5.5GHz	Yes	Yes		Yes
9.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes		
10.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
11.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
12.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
13.	GSM Voice + Bluetooth	Yes	Yes		
14.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
15.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
16.	LTE + Bluetooth	Yes	Yes	Yes	Yes
17.	Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
18.	Bluetooth + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
19.	GSM Voice + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		
20.	GPRS/EDGE + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
21.	WCDMA + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
22.	LTE + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
23.	GSM Voice + Bluetooth + WLAN5.2/5.8GHz	Yes	Yes		
24.	GPRS/EDGE + Bluetooth + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
25.	WCDMA + Bluetooth + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
26.	LTE + Bluetooth + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes

**General Note:**

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
5. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
6. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
7. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
8. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
9. The reported SAR summation is calculated based on the same configuration and test position.
10. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
  - i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
  - ii)  $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$ , and the peak separation distance is determined from the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
  - iii) If  $SPLSR \leq 0.04$  for 1g SAR and  $SPLSR \leq 0.10$  for 10g SAR, simultaneously transmission SAR measurement is not necessary.
  - iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
  - v) The SPLSR calculated results please refer to section 16.5.



16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM	GSM850	Right Cheek	0.327	1.143	0.979	0.025	1.47	1.33
		Right Tilted	0.148	1.143	0.979	0.064	1.29	1.19
		Left Cheek	0.235	1.143	0.979	0.096	1.38	1.31
		Left Tilted	0.131	0.611	0.776	0.067	0.74	0.97
	GSM1900	Right Cheek	0.078	1.143	0.979	0.025	1.22	1.08
		Right Tilted	0.052	1.143	0.979	0.064	1.20	1.10
		Left Cheek	0.100	1.143	0.979	0.096	1.24	1.18
		Left Tilted	0.036	0.611	0.776	0.067	0.65	0.88
WCDMA	Band V	Right Cheek	0.448	1.143	0.979	0.025	1.59	1.45
		Right Tilted	0.183	1.143	0.979	0.064	1.33	1.23
		Left Cheek	0.361	1.143	0.979	0.096	1.50	1.44
		Left Tilted	0.228	0.611	0.776	0.067	0.84	1.07
	Band IV	Right Cheek	0.119	1.143	0.979	0.025	1.26	1.12
		Right Tilted	0.080	1.143	0.979	0.064	1.22	1.12
		Left Cheek	0.172	1.143	0.979	0.096	1.32	1.25
		Left Tilted	0.069	0.611	0.776	0.067	0.68	0.91
	Band II	Right Cheek	0.129	1.143	0.979	0.025	1.27	1.13
		Right Tilted	0.070	1.143	0.979	0.064	1.21	1.11
		Left Cheek	0.183	1.143	0.979	0.096	1.33	1.26
		Left Tilted	0.054	0.611	0.776	0.067	0.67	0.90
LTE	Band 12	Right Cheek	0.225	1.143	0.979	0.025	1.37	1.23
		Right Tilted	0.110	1.143	0.979	0.064	1.25	1.15
		Left Cheek	0.206	1.143	0.979	0.096	1.35	1.28
		Left Tilted	0.139	0.611	0.776	0.067	0.75	0.98
	Band 5	Right Cheek	0.369	1.143	0.979	0.025	1.51	1.37
		Right Tilted	0.176	1.143	0.979	0.064	1.32	1.22
		Left Cheek	0.292	1.143	0.979	0.096	1.44	1.37
		Left Tilted	0.175	0.611	0.776	0.067	0.79	1.02
	Band 66	Right Cheek	0.131	1.143	0.979	0.025	1.27	1.14
		Right Tilted	0.079	1.143	0.979	0.064	1.22	1.12
		Left Cheek	0.176	1.143	0.979	0.096	1.32	1.25
		Left Tilted	0.072	0.611	0.776	0.067	0.68	0.92
	Band 2	Right Cheek	0.165	1.143	0.979	0.025	1.31	1.17
		Right Tilted	0.112	1.143	0.979	0.064	1.26	1.16
		Left Cheek	0.205	1.143	0.979	0.096	1.35	1.28
		Left Tilted	0.069	0.611	0.776	0.067	0.68	0.91
	Band 7	Right Cheek	0.381	1.143	0.979	0.025	1.52	1.39
		Right Tilted	0.186	1.143	0.979	0.064	1.33	1.23
		Left Cheek	0.314	1.143	0.979	0.096	1.46	1.39
		Left Tilted	0.125	0.611	0.776	0.067	0.74	0.97

**16.2 Hotspot Exposure Conditions**

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	Case No	SPLSR	Summed 1g SAR (W/kg)	Case No	SPLSR
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Front	1.294	0.367	0.128	0.028	1.66	#01	0.01	1.45		
		Back	1.426	0.740	0.623	0.058	2.17	#02	0.02	2.11	#03	0.02
		Left Side	0.151				0.15			0.15		
		Right Side	0.503	0.740	0.271	0.025	1.24			0.80		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	0.945				0.95			0.95		
	GSM1900	Front	0.976	0.367	0.128	0.028	1.34			1.13		
		Back	1.338	0.740	0.623	0.058	2.08	#04	0.02	2.02	#05	0.02
		Left Side	0.044				0.04			0.04		
		Right Side	0.496	0.740	0.271	0.025	1.24			0.79		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	1.272				1.27			1.27		
WCDMA	Band V	Front	1.274	0.367	0.128	0.028	1.64	#06	0.01	1.43		
		Back	1.240	0.740	0.623	0.058	1.98	#07	0.02	1.92	#08	0.02
		Left Side	0.112				0.11			0.11		
		Right Side	0.379	0.740	0.271	0.025	1.12			0.68		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	0.636				0.64			0.64		
	Band IV	Front	0.914	0.367	0.128	0.028	1.28			1.07		
		Back	1.211	0.740	0.623	0.058	1.95	#09	0.02	1.89	#10	0.02
		Left Side	0.044				0.04			0.04		
		Right Side	0.461	0.740	0.271	0.025	1.20			0.76		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	1.257				1.26			1.26		
	Band II	Front	0.937	0.367	0.128	0.028	1.30			1.09		
		Back	1.284	0.740	0.623	0.058	2.02	#11	0.02	1.97	#12	0.02
		Left Side	0.047				0.05			0.05		
		Right Side	0.535	0.740	0.271	0.025	1.28			0.83		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	1.283				1.28			1.28		



WWAN Band		Exposure Position	1	2	3	4	1+2			1+3+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	Case No	SPLSR	Summed 1g SAR (W/kg)	Case No	SPLSR
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
LTE	Band 12	Front	0.876	0.367	0.128	0.028	1.24			1.03		
		Back	1.084	0.740	0.623	0.058	1.82	#13	0.02	1.77	#14	0.02
		Left Side	0.307				0.31			0.31		
		Right Side	0.551	0.740	0.271	0.025	1.29			0.85		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	0.714				0.71			0.71		
	Band 5	Front	1.372	0.367	0.128	0.028	1.74	#15	0.01	1.53		
		Back	1.286	0.740	0.623	0.058	2.03	#16	0.02	1.97	#17	0.02
		Left Side	0.223				0.22			0.22		
		Right Side	0.725	0.740	0.271	0.025	1.47			1.02		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	0.843				0.84			0.84		
	Band 66	Front	0.730	0.367	0.128	0.028	1.10			0.89		
		Back	1.387	0.740	0.623	0.058	2.13	#18	0.02	2.07	#19	0.02
		Left Side	0.055				0.06			0.06		
		Right Side	0.245	0.740	0.271	0.025	0.99			0.54		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	1.412				1.41			1.41		
	Band 2	Front	0.989	0.367	0.128	0.028	1.36			1.15		
		Back	1.263	0.740	0.623	0.058	2.00	#20	0.02	1.94	#21	0.02
		Left Side	0.041				0.04			0.04		
		Right Side	0.284	0.740	0.271	0.025	1.02			0.58		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	1.209				1.21			1.21		
	Band 7	Front	1.240	0.367	0.128	0.028	1.61	#22	0.01	1.40		
		Back	1.441	0.740	0.623	0.058	2.18	#23	0.02	2.12	#24	0.02
		Left Side	0.676				0.68			0.68		
		Right Side		0.740	0.271	0.025	0.74			0.30		
		Top Side		0.414	0.623	0.034	0.41			0.66		
		Bottom Side	1.424				1.42			1.42		



**16.3 Body-Worn Accessory Exposure Conditions**

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	Case No	SPLSR	Summed 1g SAR (W/kg)	Case No	SPLSR
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Front	1.294	0.367	0.280	0.028	1.66	#01	0.01	1.60	#25	0.01
		Back	1.426	0.740	1.139	0.058	2.17	#02	0.02	2.62	#26	0.03
		Front at 5mm Headset	1.314				1.31			1.31		
		Back at 5mm Headset	1.263				1.26			1.26		
	GSM1900	Front	0.976	0.367	0.280	0.028	1.34			1.28		
		Back	1.338	0.740	1.139	0.058	2.08	#04	0.02	2.54	#27	0.03
		Back at 5mm Headset	1.313				1.31		1.31			
WCDMA	Band V	Front	1.274	0.367	0.280	0.028	1.64	#06	0.01	1.58		
		Back	1.240	0.740	1.139	0.058	1.98	#07	0.02	2.44	#28	0.03
		Front at 5mm Headset	1.240				1.24			1.24		
		Back at 5mm Headset	1.332				1.33			1.33		
	Band IV	Front	0.914	0.367	0.280	0.028	1.28			1.22		
		Back	1.211	0.740	1.139	0.058	1.95	#09	0.02	2.41	#29	0.03
		Back at 5mm Headset	1.159				1.16			1.16		
	Band II	Front	0.937	0.367	0.280	0.028	1.30			1.25		
		Back	1.284	0.740	1.139	0.058	2.02	#11	0.02	2.48	#30	0.03
		Back at 5mm Headset	1.195				1.20			1.20		
LTE	Band 12	Front	0.876	0.367	0.280	0.028	1.24			1.18		
		Back	1.084	0.740	1.139	0.058	1.82	#13	0.02	2.28	#31	0.02
	Band 5	Front	1.372	0.367	0.280	0.028	1.74	#15	0.01	1.68	#32	0.01
		Back	1.286	0.740	1.139	0.058	2.03	#16	0.02	2.48	#33	0.03
		Front at 5mm Headset	1.165				1.17			1.17		
		Back at 5mm Headset	1.335				1.34			1.34		
	Band 66	Front	0.730	0.367	0.280	0.028	1.10			1.04		
		Back	1.387	0.740	1.139	0.058	2.13	#18	0.02	2.58	#34	0.03
		Back at 5mm Headset	1.357				1.36			1.36		
	Band 2	Front	0.989	0.367	0.280	0.028	1.36			1.30		
		Back	1.263	0.740	1.139	0.058	2.00	#20	0.02	2.46	#35	0.03
		Back at 5mm Headset	1.292				1.29			1.29		
	Band 7	Front	1.240	0.367	0.280	0.028	1.61	#22	0.01	1.55		
		Back	1.441	0.740	1.139	0.058	2.18	#23	0.02	2.64	#36	0.03
Front at 5mm Headset		1.284				1.28			1.28			
Back at 5mm Headset		1.273				1.27			1.27			

**16.4 Product specific 10g SAR Exposure Conditions**

WWAN Band		Exposure Position	1	2	1+2		
			WWAN	5GHz WLAN	Summed 10g SAR (W/kg)	Case No	SPLSR
			10g SAR (W/kg)	10g SAR (W/kg)			
GSM	GSM850	Front	1.576	0.985	2.56		
		Back	1.443	0.985	2.43		
		Bottom side	0.796		0.80		
	GSM1900	Back	2.088	0.985	3.07		
		Bottom side	2.287		2.29		
WCDMA	Band V	Front	2.373	0.985	3.36		
		Back	1.979	0.985	2.96		
	Band IV	Front	2.068	0.985	3.05		
		Back	2.544	0.985	3.53		
		Bottom side	2.983		2.98		
	Band II	Front	2.508	0.985	3.49		
		Back	3.038	0.985	<b>4.02</b>	<b>#37</b>	<b>0.06</b>
		Bottom side	2.960		2.96		
	LTE	Band 5	Front	1.995	0.985	2.98	
Back			1.774	0.985	2.76		
Band 66		Back	3.001	0.985	<b>3.99</b>		
		Bottom side	3.159		3.16		
Band 2		Front	1.792	0.985	2.78		
		Back	2.799	0.985	3.78		
		Bottom side	2.880		2.88		
Band 7		Front	2.302	0.985	3.29		
		Back	3.544	0.985	<b>4.53</b>	<b>#38</b>	<b>0.07</b>
		Bottom side	3.493		3.49		

**Remark:**

1. For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.
2. If SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary

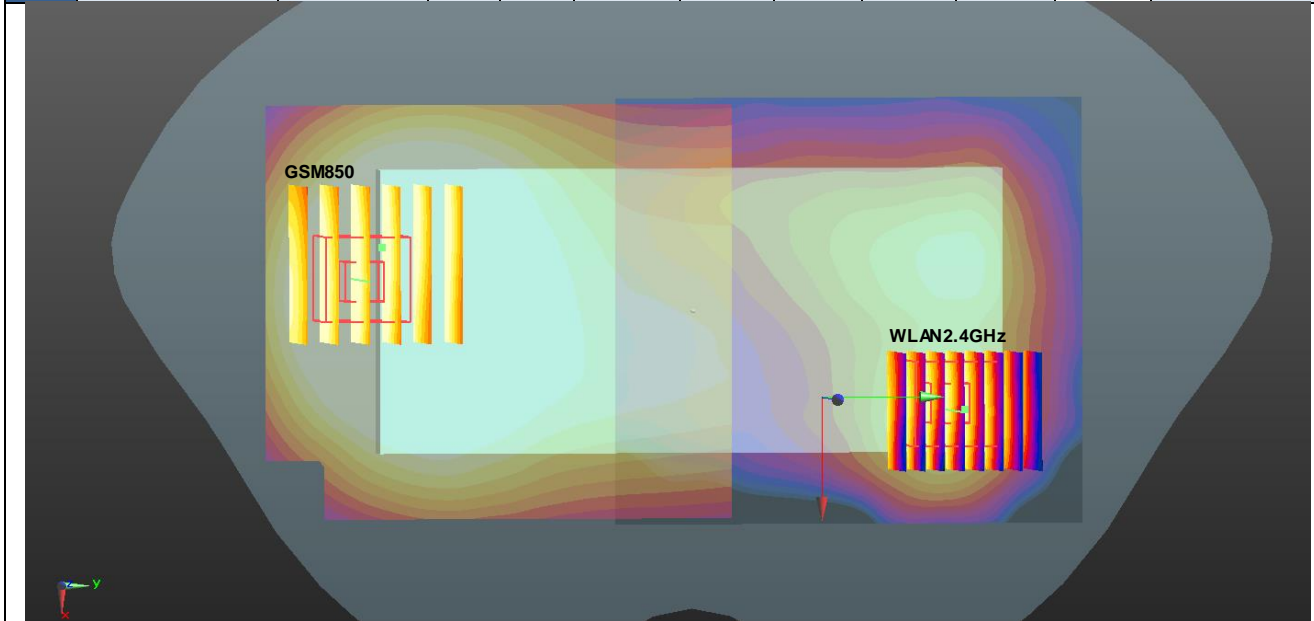


**16.5 SPLSR Evaluation and Analysis**

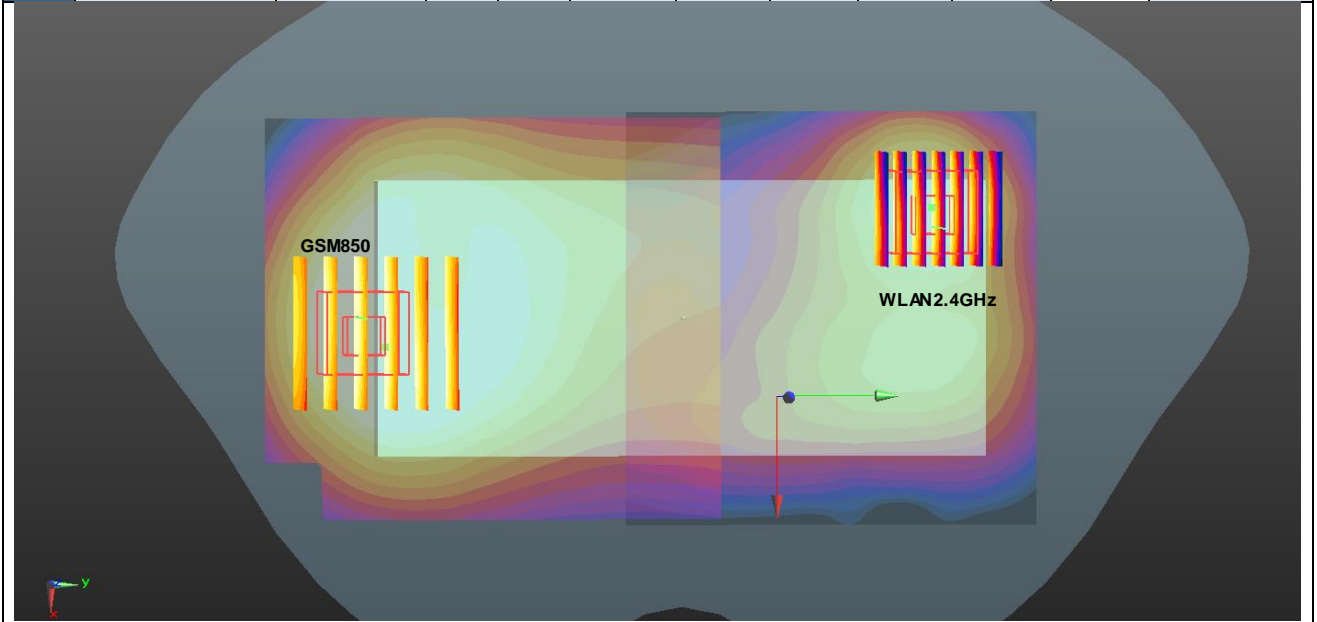
**General Note:**

1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where  $(x1, y1, z1)$  and  $(x2, y2, z2)$  are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2.  $SPLSR = (SAR1 + SAR2)1.5 / (\text{min. separation distance, mm})$ . If  $SPLSR \leq 0.04$  for 1g SAR and  $SPLSR \leq 0.10$  for 10g SAR, simultaneously transmission SAR measurement is not necessary.

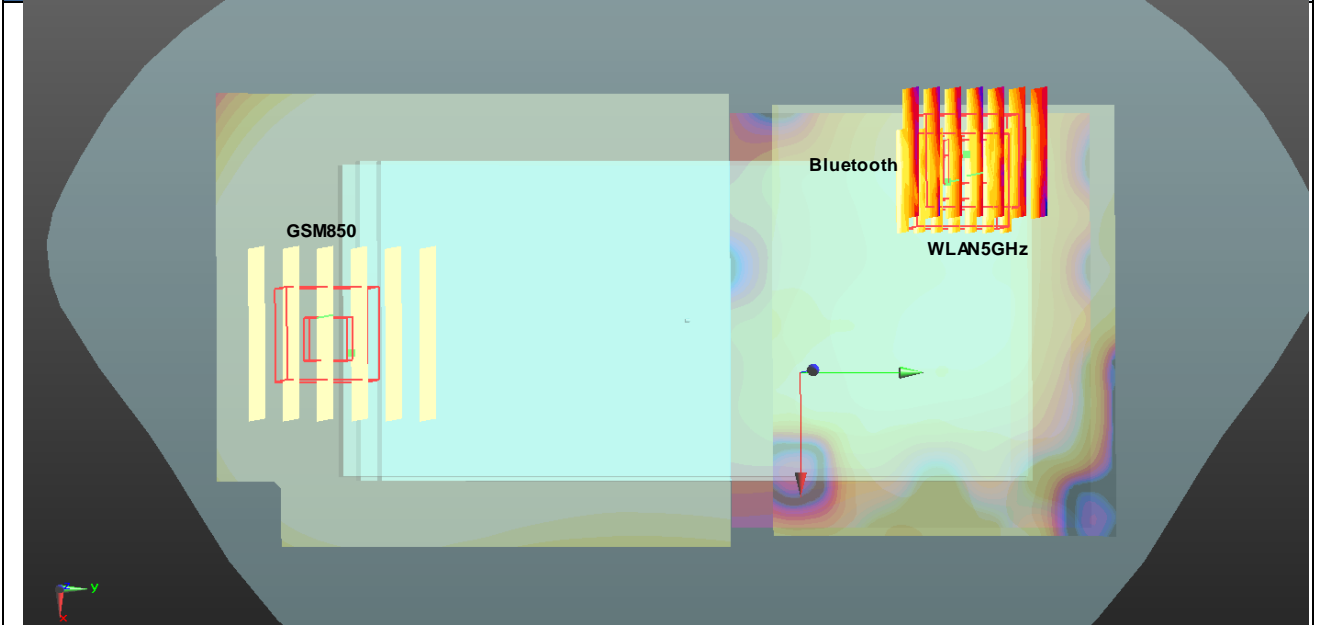
Case #1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Front	1.294	5mm	-6.9	-84.8	-1.9	152.0	1.66	0.01	Not required
	WLAN2.4GHz		0.367	5mm	24.2	64	-1.74				



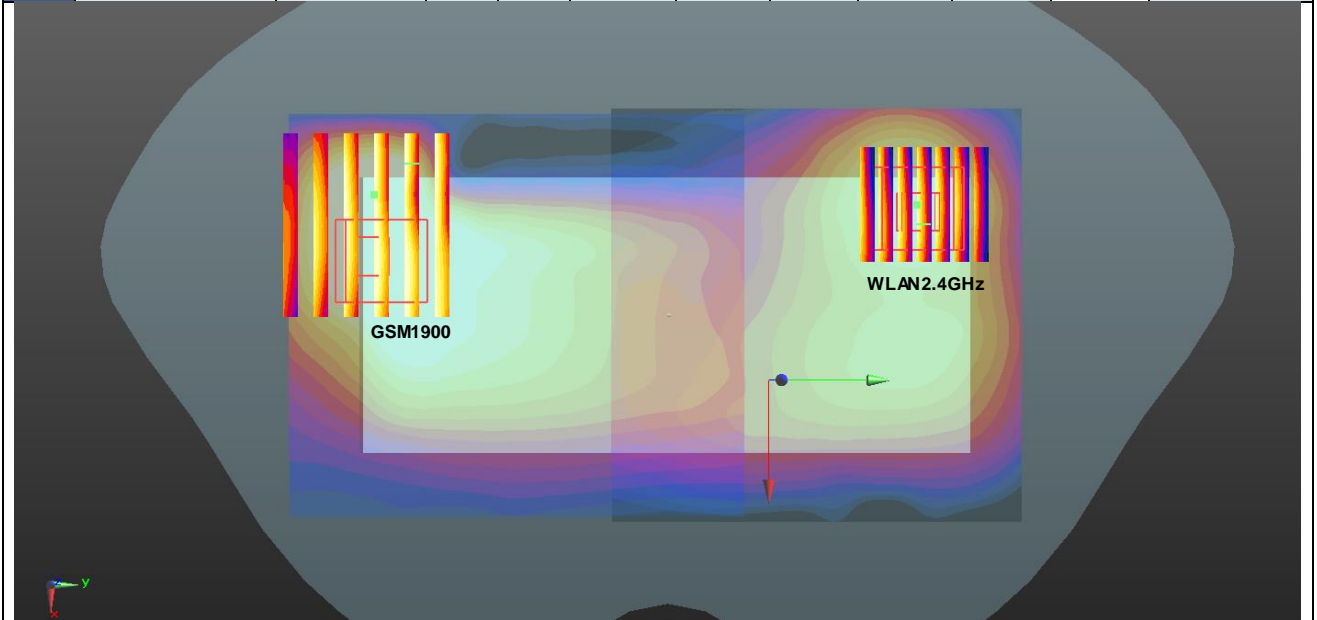
Case #2	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.426	5mm	5.9	-83.3	-1.79	153.0	2.17	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



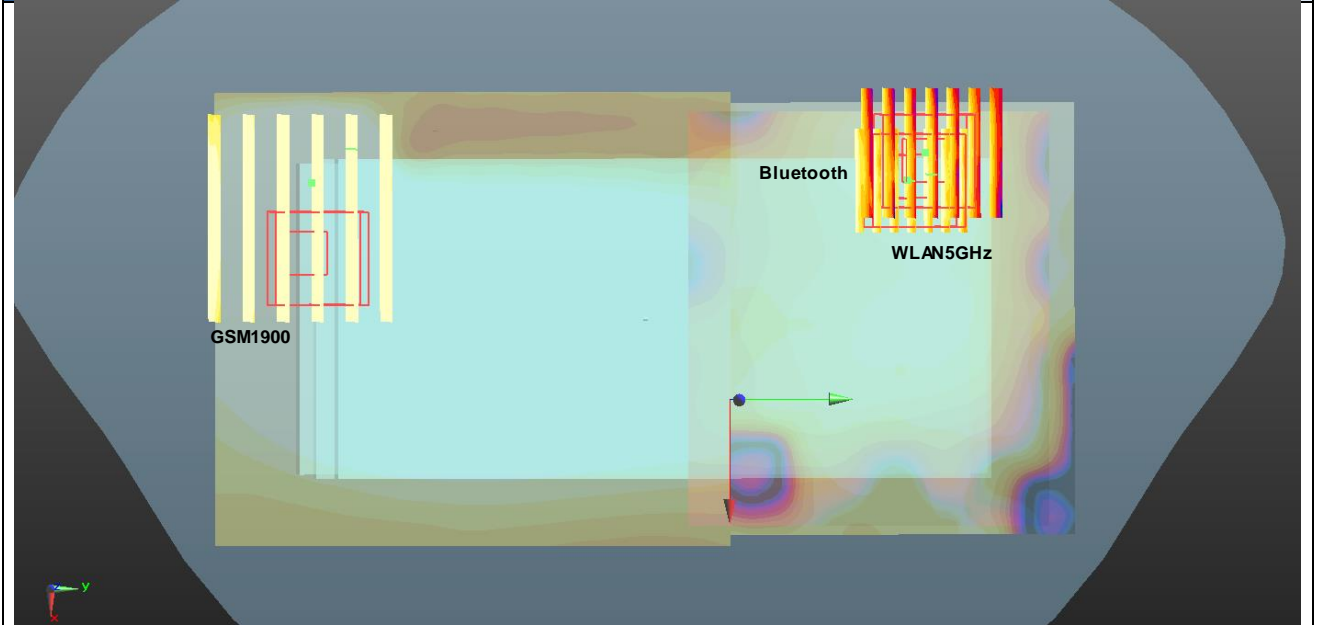
Case #03	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.426	5mm	5.9	-83.3	-1.79	149.4	2.11	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	GSM850	Back	1.426	5mm	5.9	-83.3	-1.79	154.1	2.11	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



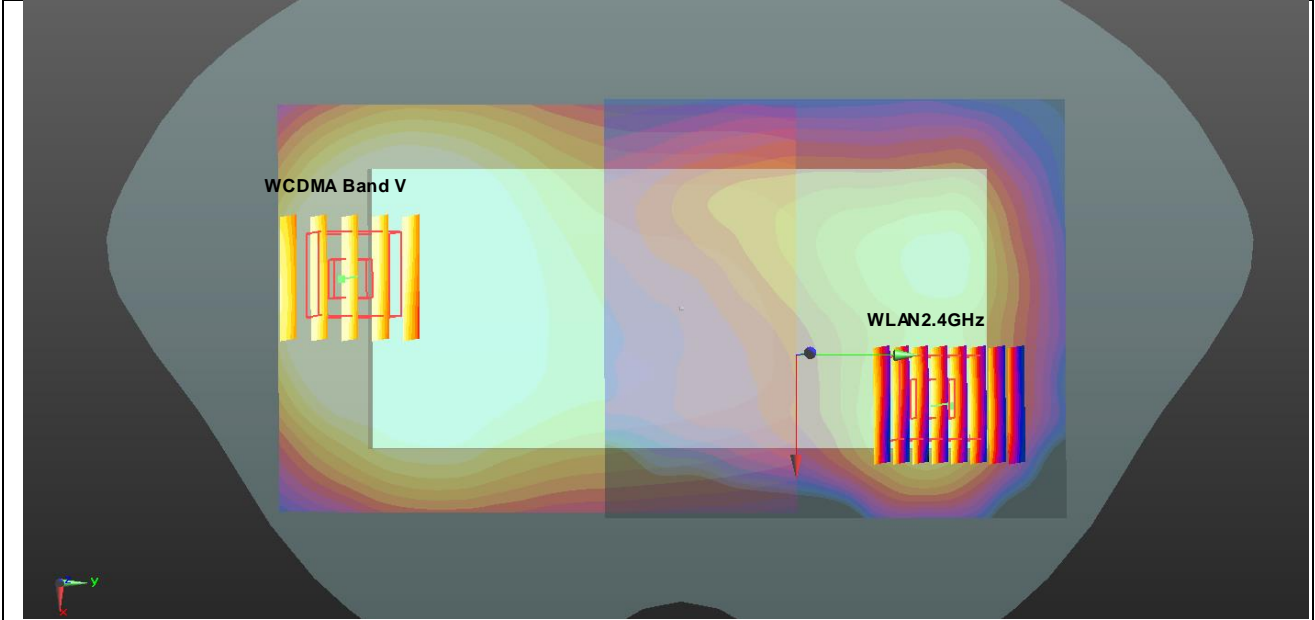
Case #4	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.338	5mm	-39.5	-69.5	-1.65	136.6	2.08	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



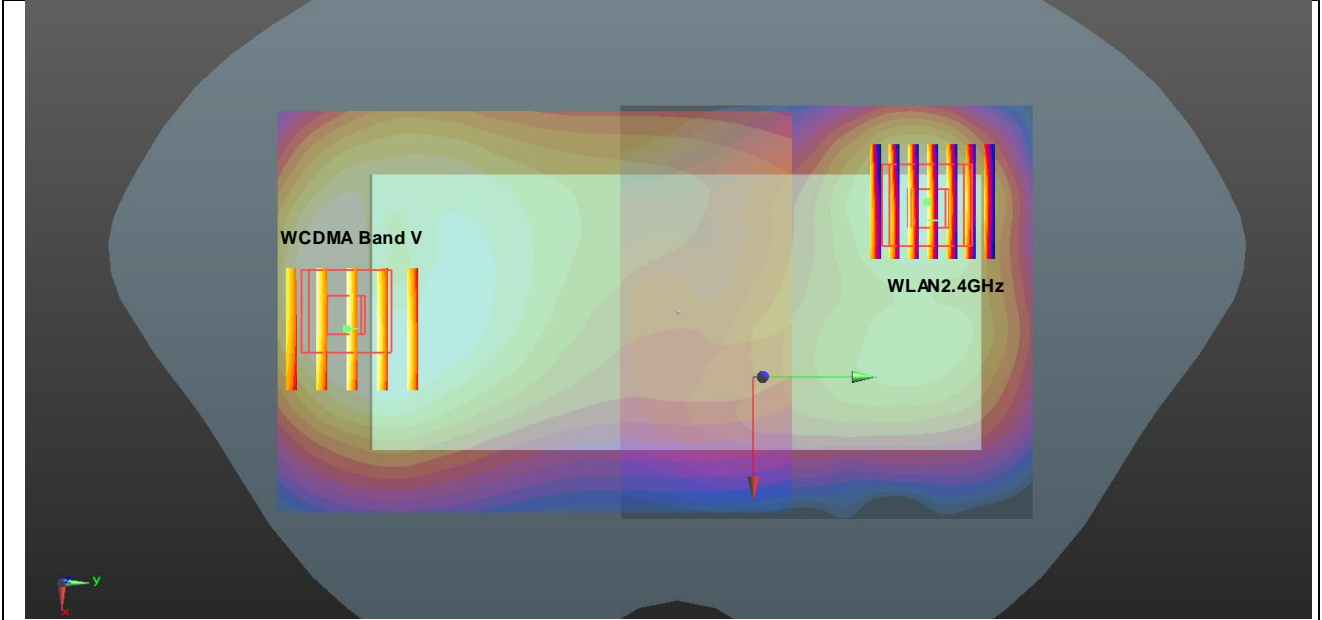
Case #05	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.338	5mm	-39.5	-69.5	-1.65	130.7	2.02	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	GSM1900	Back	1.338	5mm	-39.5	-69.5	-1.65	134.8	2.02	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



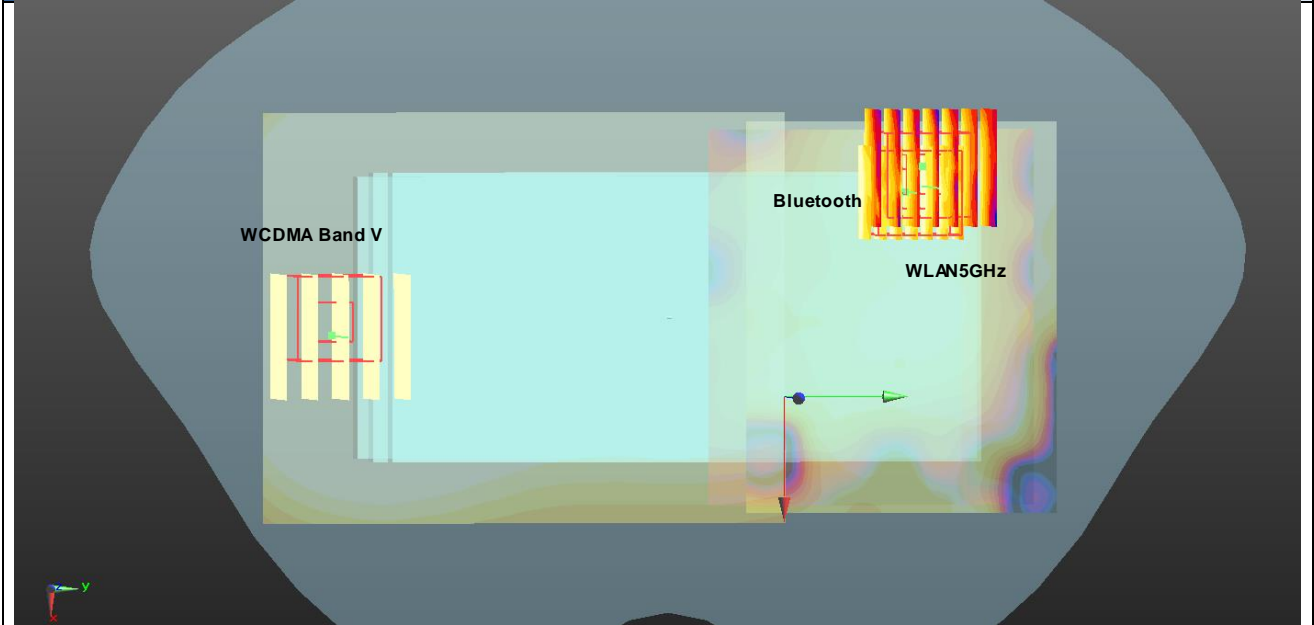
Case #06	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Front	1.274	5mm	-7.5	-85.3	-1.86	152.6	1.64	0.01	Not required
	WLAN2.4GHz		0.367	5mm	24.2	64	-1.74				



Case #07	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	1.24	5mm	2.9	-87	-1.56	156.1	1.98	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				

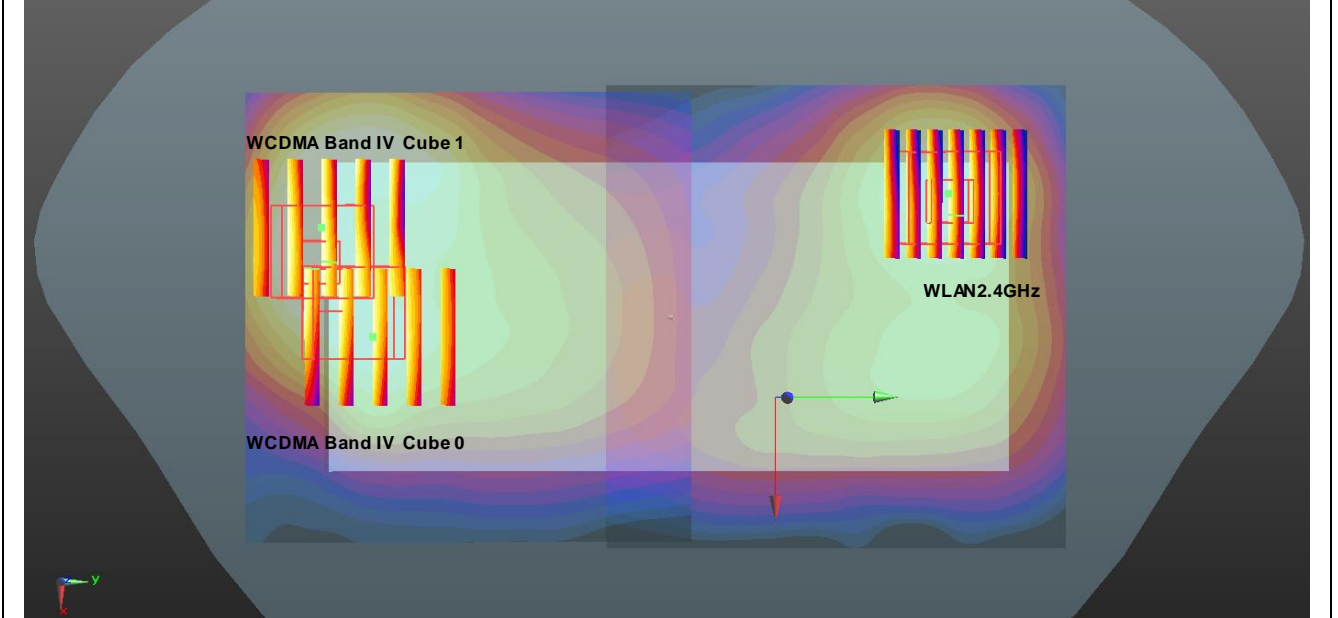


Case #08	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	1.24	5mm	2.9	-87	-1.56	152.2	1.92	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	WCDMA Band V	Back	1.24	5mm	2.9	-87	-1.56	156.9	1.92	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				

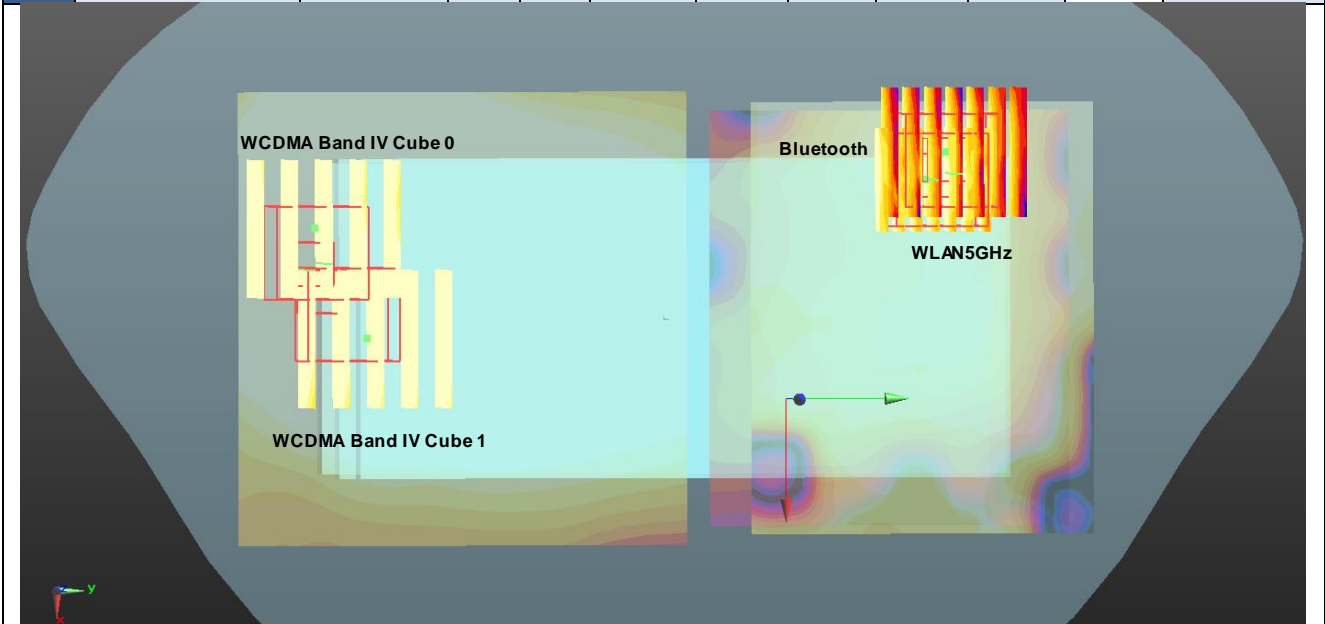




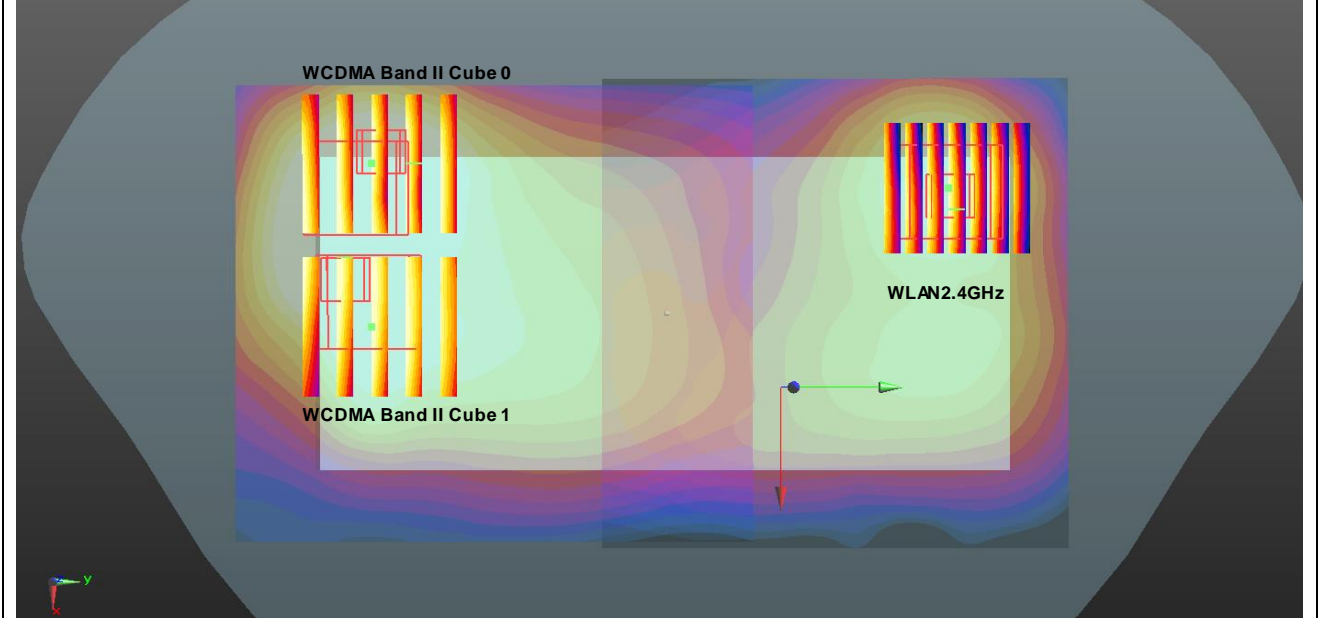
Case #09	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #09	WCDMA Band IV Cube 0	Back	1.211	5mm	-13	-83.6	-1.5	150.5	1.95	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				
	WCDMA Band IV Cube 1	Back	1.143	5mm	-11.5	-86	-1.5	153.1	1.88	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



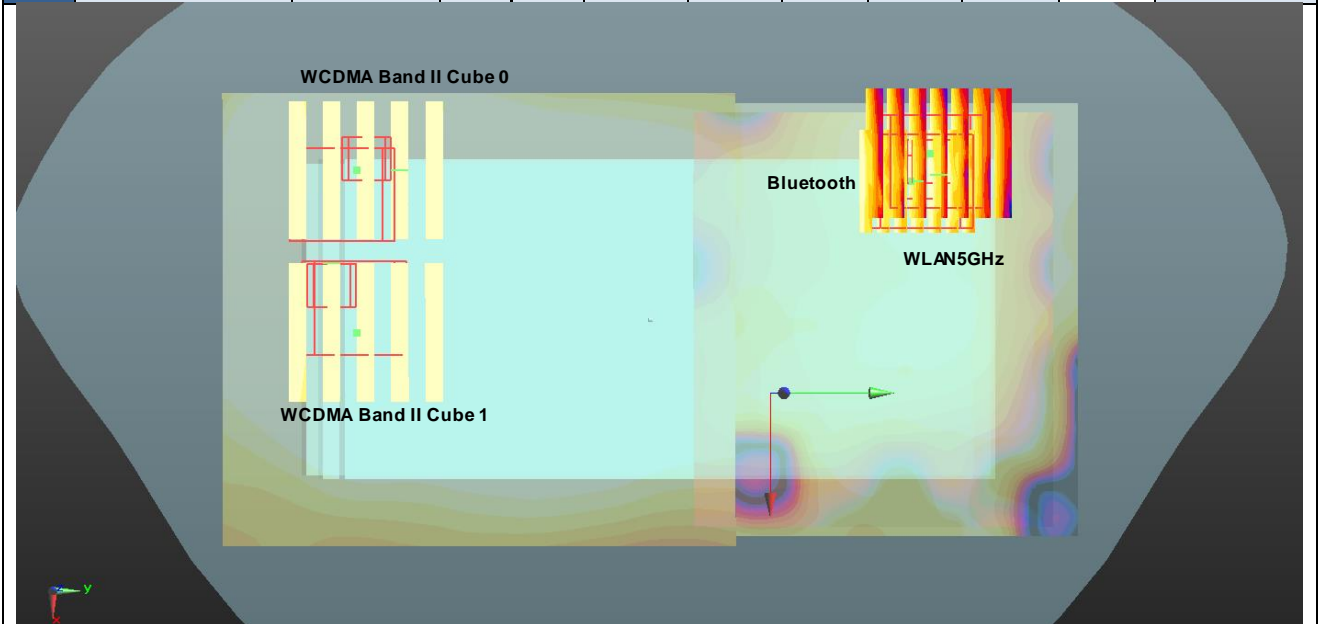
Case #10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #10	WCDMA Band IV(Cube 0)	Back	1.211	5mm	-13	-83.6	-1.5	146.0	1.89	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	WCDMA Band IV(Cube 0)	Back	1.211	5mm	-13	-83.6	-1.5	150.5	1.89	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WCDMA Band IV(Cube 1)	Back	1.143	5mm	-11.5	-86	-1.5	148.5	1.82	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	WCDMA Band IV(Cube 1)	Back	1.143	5mm	-11.5	-86	-1.5	153.1	1.82	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



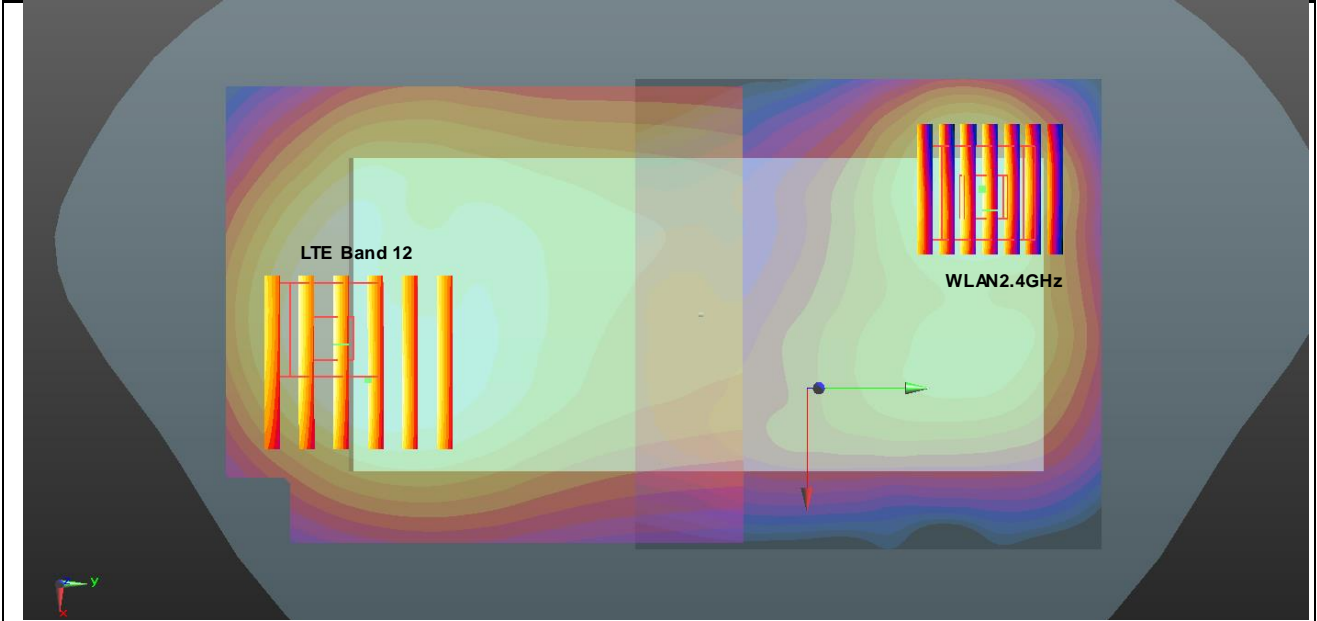
Case #11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #11	WCDMA Band II Cube 0	Back	1.284	5mm	-36.1	-63.7	-1.95	130.5	2.02	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				
	WCDMA Band II Cube 1	Back	1.262	5mm	-8.2	-76.5	-1.84	144.0	2.00	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



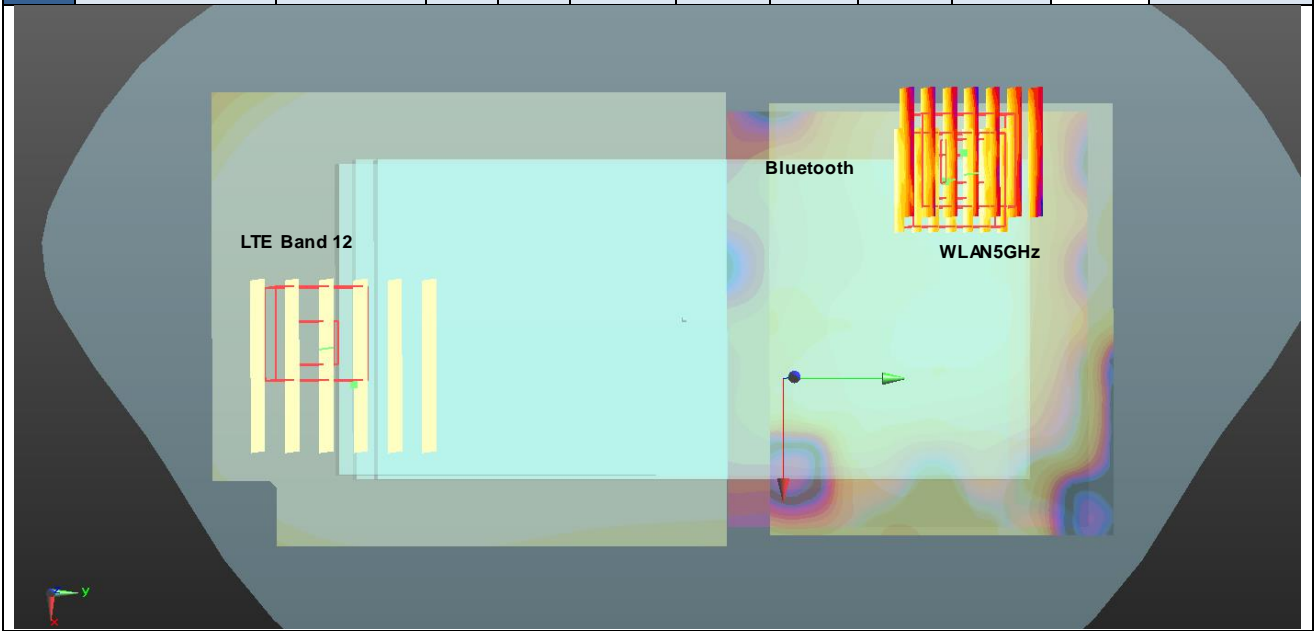
Case #12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #12	WCDMA Band II Cube 0	Back	1.284	5mm	-36.1	-63.7	-1.95	124.7	1.97	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	WCDMA Band II Cube 0	Back	1.284	5mm	-36.1	-63.7	-1.95	128.9	1.97	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WCDMA Band II Cube 1	Back	1.262	5mm	-8.2	-76.5	-1.84	139.7	1.94	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	WCDMA Band II Cube 1	Back	1.262	5mm	-8.2	-76.5	-1.84	144.3	1.94	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



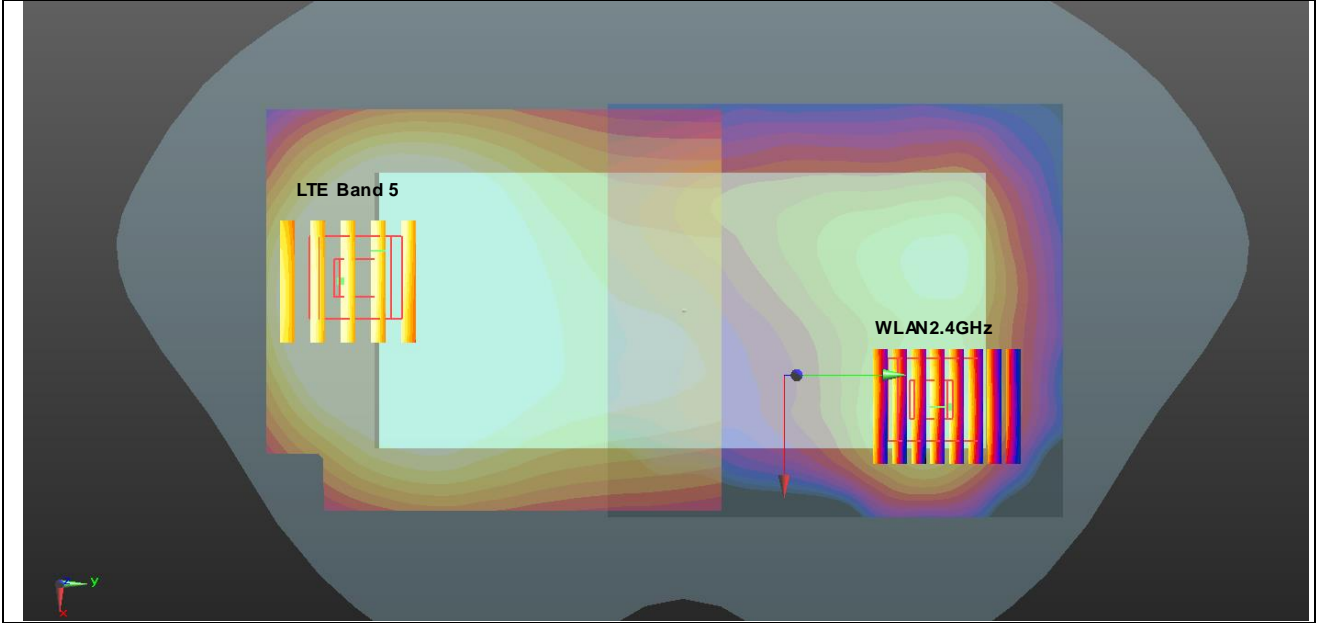
Case #13	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 12	Back	1.084	5mm	7	-85	-1.76	154.9	1.82	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



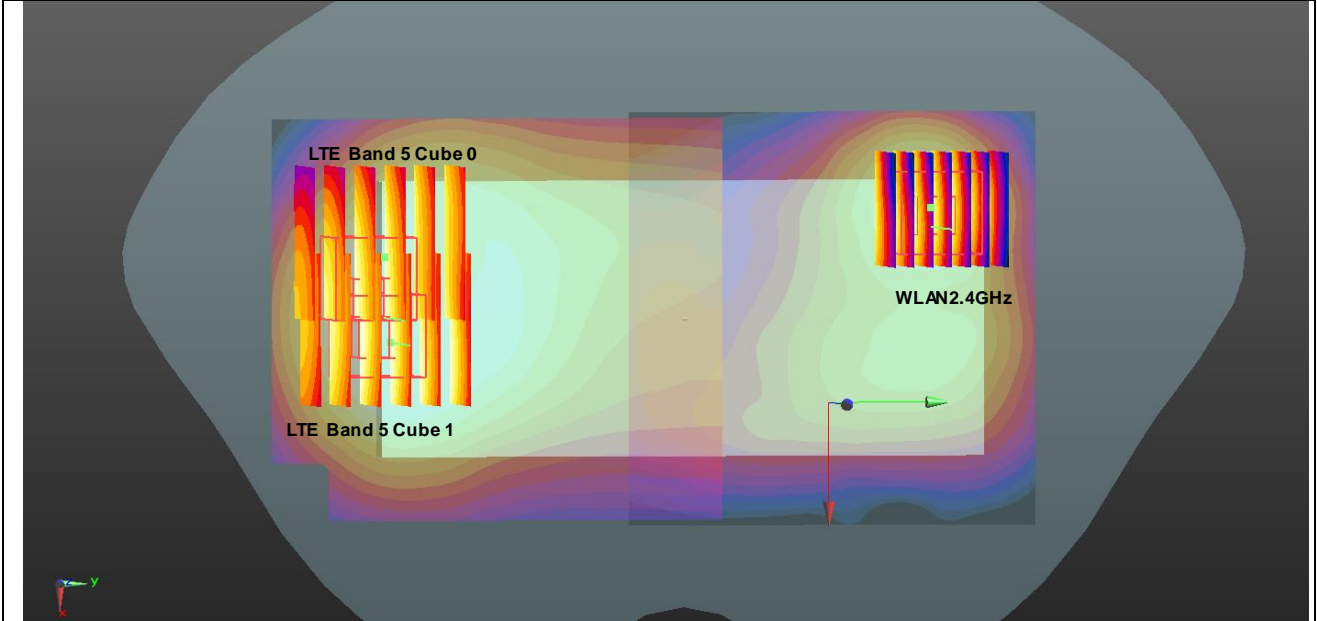
Case #14	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #14	LTE Band 12	Back	1.084	5mm	7	-85	-1.76	151.3	1.77	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 12	Back	1.084	5mm	7	-85	-1.76	156.1	1.77	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



Case #15	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 5	Front	1.372	5mm	-7.5	-85.7	-1.87	153.0	1.74	0.01	Not required
	WLAN2.4GHz		0.367	5mm	24.2	64	-1.74				

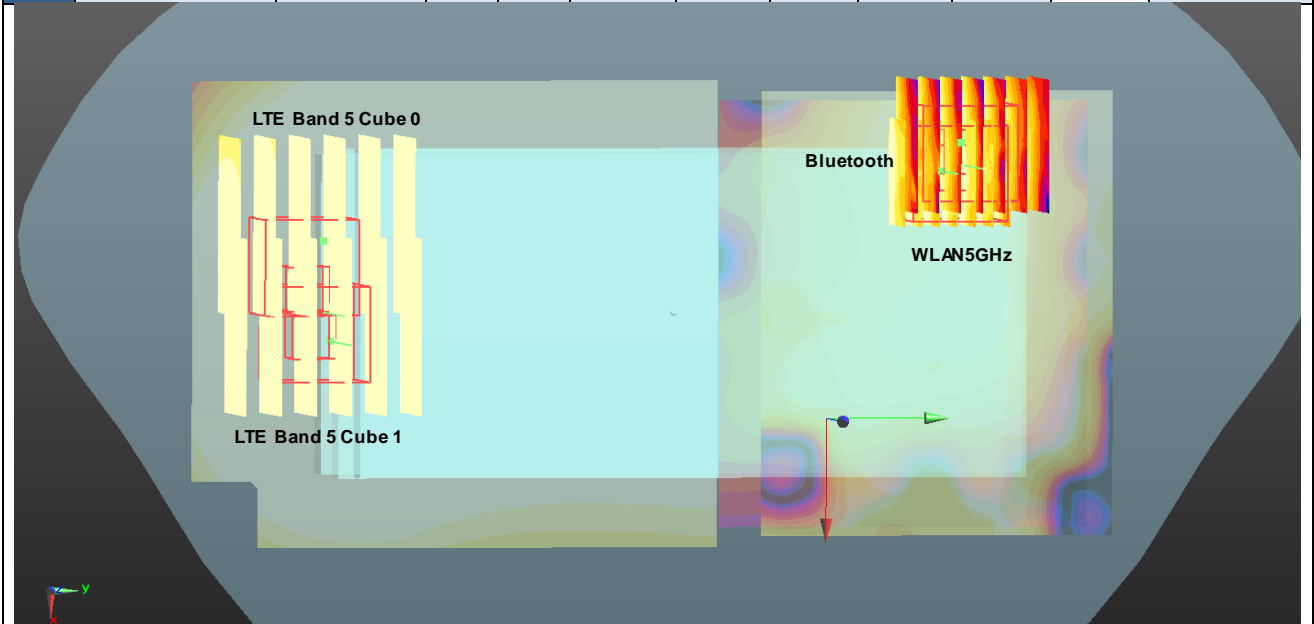


Case #16	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #16	LTE Band 5 Cube 0	Back	1.286	5mm	7.6	-81.7	-1.82	151.8	2.03	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				
	LTE Band 5 Cube 1	Back	1.146	5mm	-0.5	-83.2	-1.85	151.7	1.89	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				

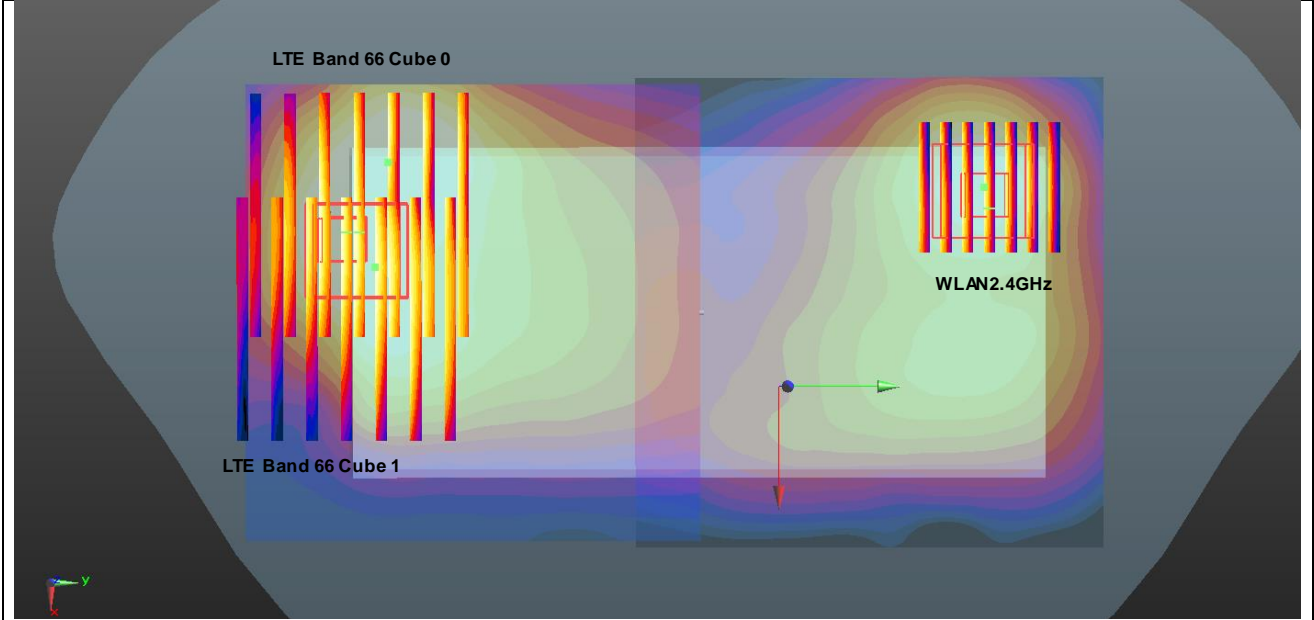




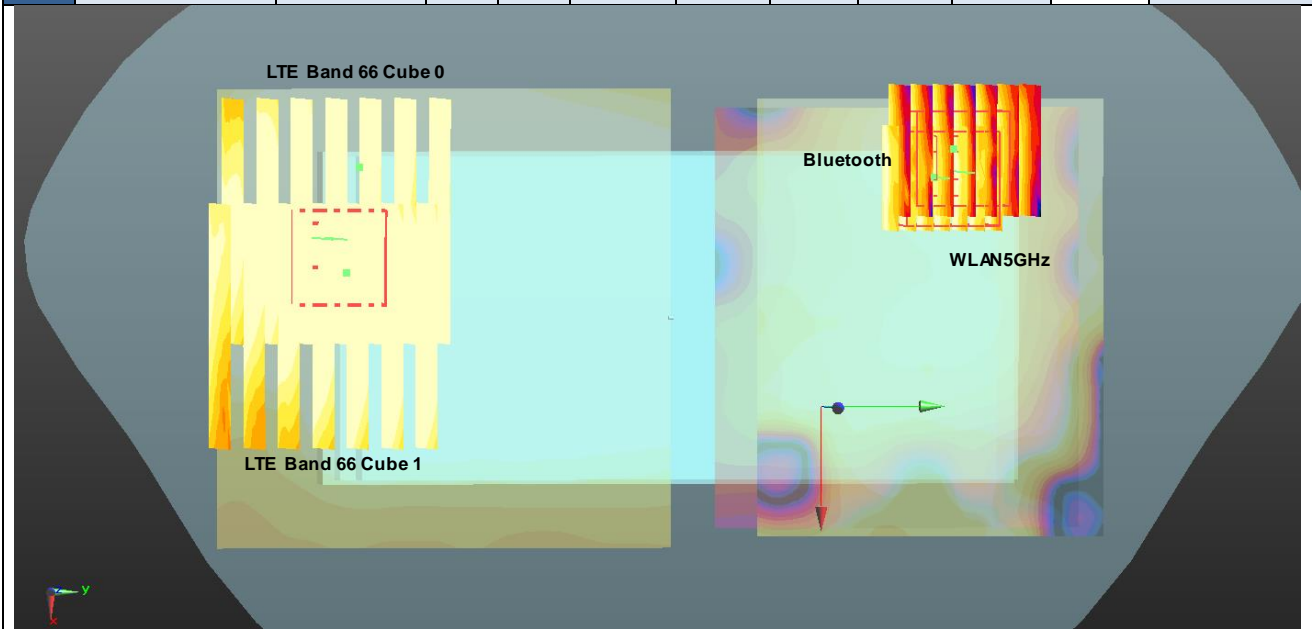
Case #17	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #17	LTE Band 5 Cube 0	Back	1.286	5mm	7.6	-81.7	-1.82	148.3	1.97	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 5 Cube 0	Back	1.286	5mm	7.6	-81.7	-1.82	153.1	1.97	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	LTE Band 5 Cube 1	Back	1.146	5mm	-0.5	-83.2	-1.85	147.8	1.83	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 5 Cube 1	Back	1.146	5mm	-0.5	-83.2	-1.85	152.5	1.83	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



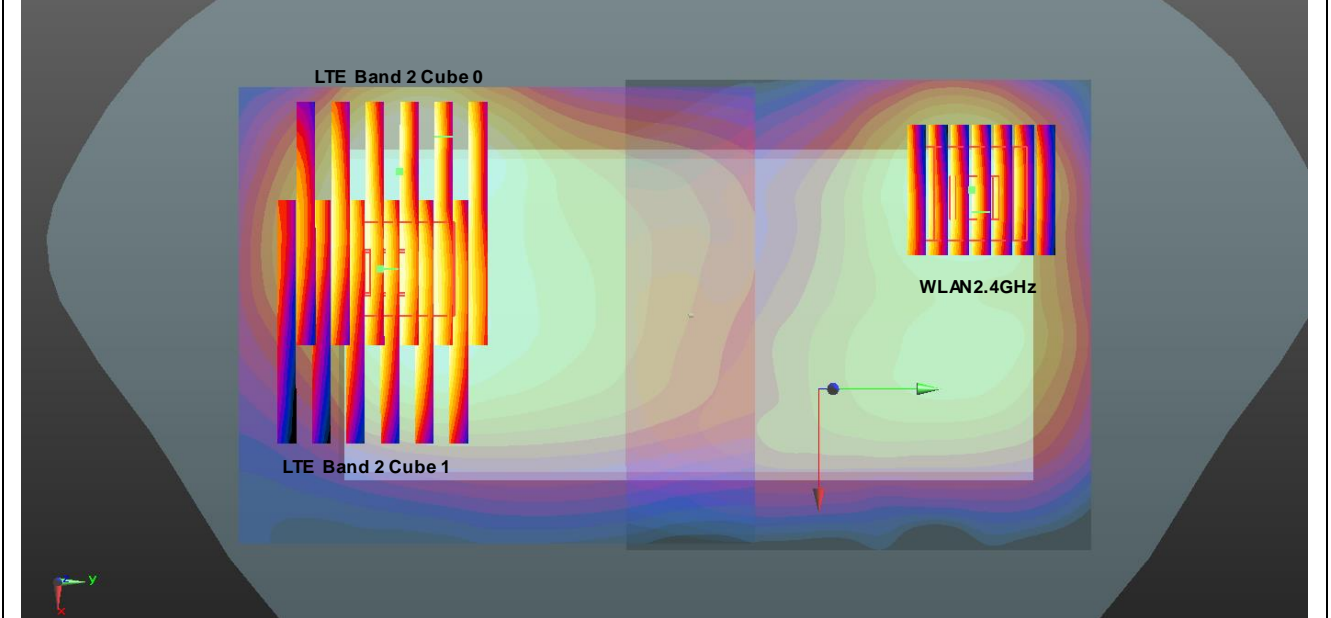
Case #18	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #18	LTE Band 66 Cube 0	Back	1.387	5mm	-18.5	-83.2	-1.59	149.8	2.13	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				
	LTE Band 66 Cube 1	Back	1.375	5mm	-16.9	-83	-1.58	149.7	2.12	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



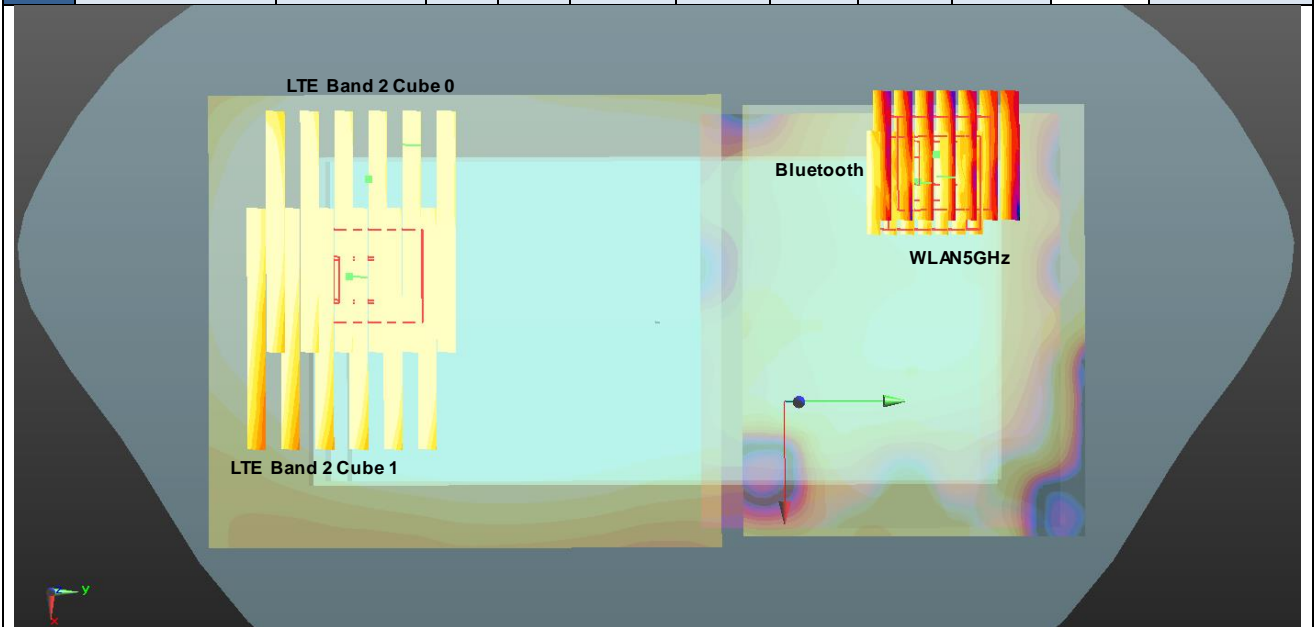
Case #19	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #19	LTE Band 66 Cube 0	Back	1.387	5mm	-18.5	-83.2	-1.59	144.9	2.07	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 66 Cube 0	Back	1.387	5mm	-18.5	-83.2	-1.59	149.4	2.07	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	LTE Band 66 Cube 1	Back	1.375	5mm	-16.9	-83	-1.58	144.9	2.06	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 66 Cube 1	Back	1.375	5mm	-16.9	-83	-1.58	149.4	2.06	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



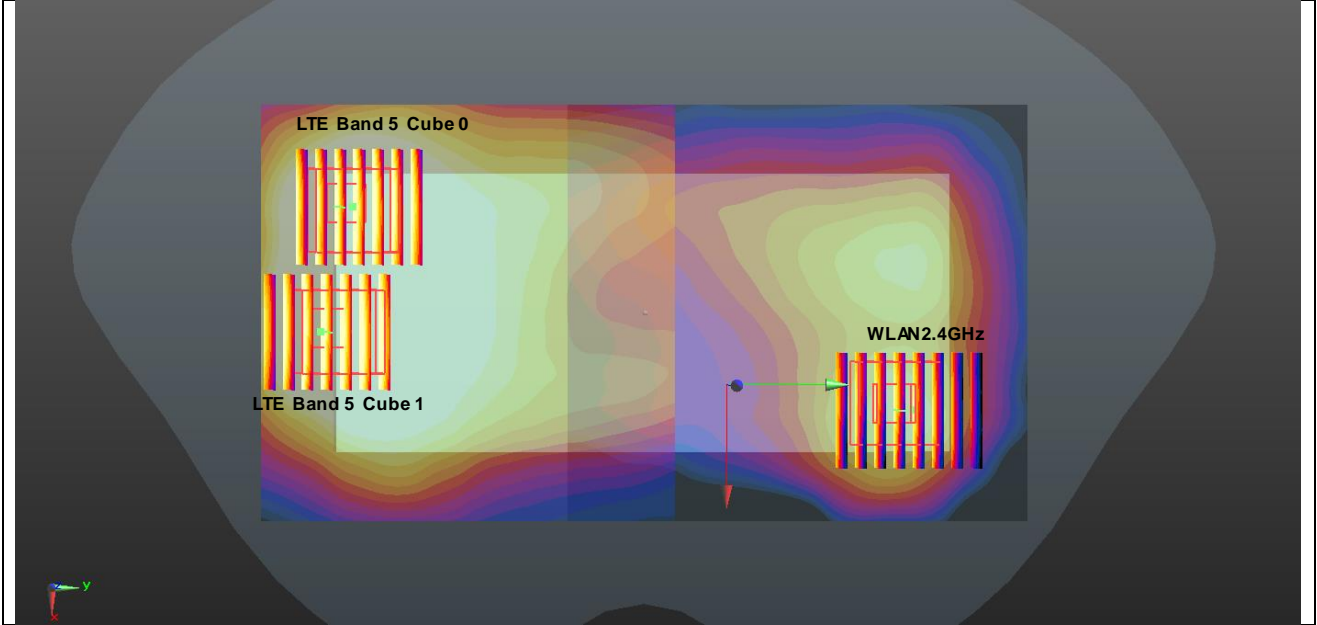
Case #20	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #20	LTE Band 2 Cube 0	Back	1.251	5mm	-39.4	-61.1	-2.84	128.2	1.99	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				
	LTE Band 2 Cube 1	Back	1.263	5mm	-5.7	-70.4	-2.73	138.3	2.00	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



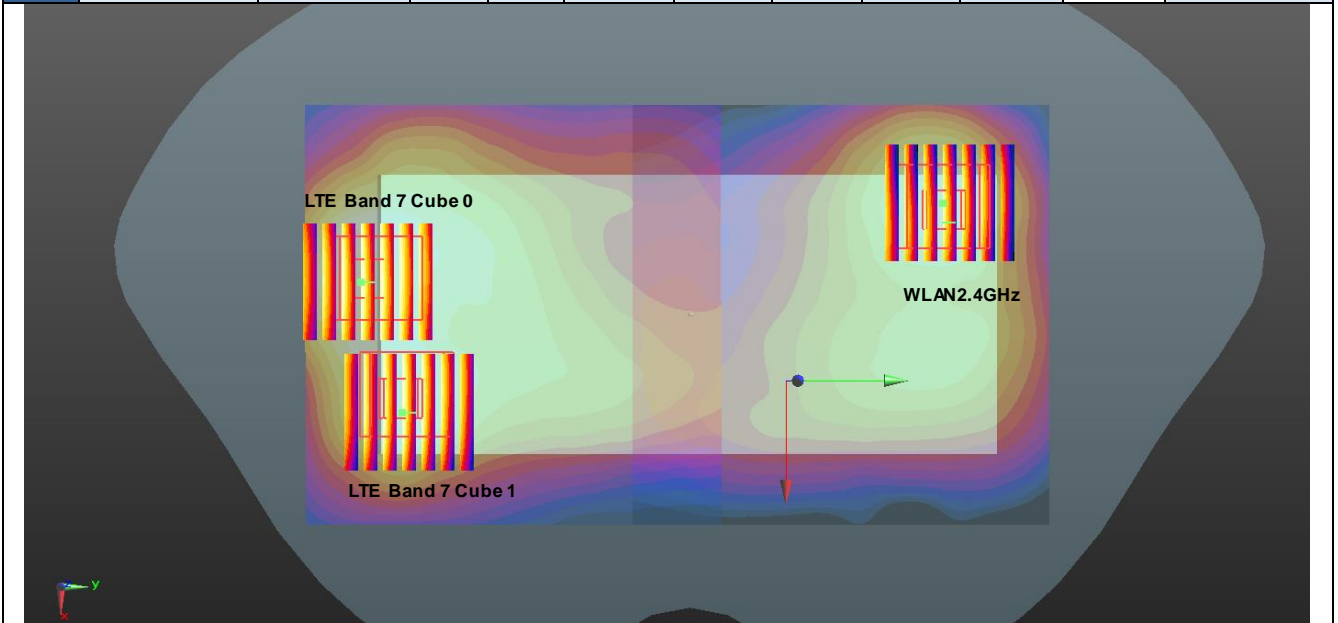
Case #21	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #21	LTE Band 2 Cube 0	Back	1.251	5mm	-39.4	-61.1	-2.84	122.3	1.87	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 2 Cube 0	Back	1.251	5mm	-39.4	-61.1	-2.84	126.4	1.31	0.01	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	LTE Band 2 Cube 1	Back	1.263	5mm	-5.7	-70.4	-2.73	134.2	1.94	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 2 Cube 1	Back	1.263	5mm	-5.7	-70.4	-2.73	138.8	1.94	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				



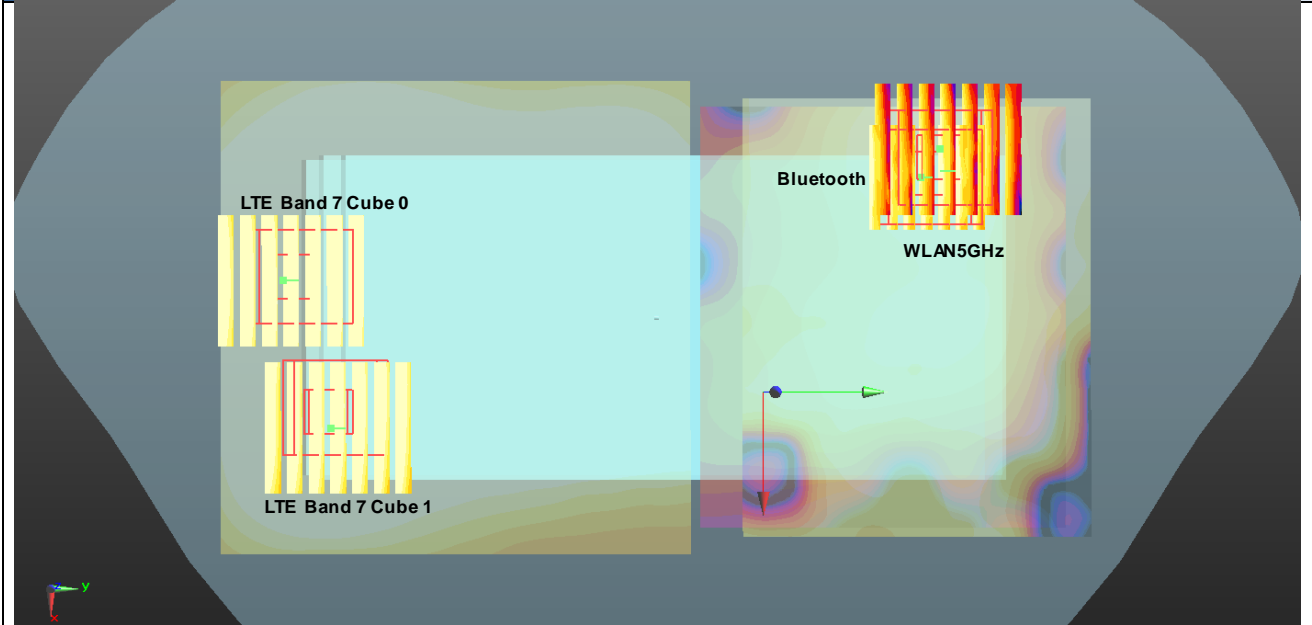
Case #22	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7 Cube 0	Front	1.24	5mm	3.8	-84.4	-1.4	149.8	1.61	0.01	Not required
	WLAN2.4GHz		0.367	5mm	24.2	64	-1.74				
	LTE Band 7 Cube 1	Front	1.217	5mm	-27.6	-80	-1.64	153.0	1.58	0.01	Not required
	WLAN2.4GHz		0.367	5mm	24.2	64	-1.74				



Case #23	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7 Cube 0	Back	1.441	5mm	-10.4	-84.6	-1.48	151.8	2.18	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				
	LTE Band 7 Cube 1	Back	1.24	5mm	24.2	-75.8	-1.22	150.7	1.98	0.02	Not required
	WLAN2.4GHz		0.74	5mm	-25.8	66.4	-1.72				



Case #24	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #24	LTE Band 7 Cube 0	Back	1.441	5mm	-10.4	-84.6	-1.48	147.3	2.12	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 7 Cube 0	Back	1.441	5mm	-10.4	-84.6	-1.48	151.9	2.12	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	LTE Band 7 Cube 1	Back	1.24	5mm	24.2	-75.8	-1.22	148.2	1.92	0.02	Not required
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	LTE Band 7 Cube 1	Back	1.24	5mm	24.2	-75.8	-1.22	153.1	1.92	0.02	Not required
	WLAN5GHz		0.623	5mm	-32.8	61	-2.53				
	Bluetooth		0.058	5mm	-35.4	65.2	-2.57				





Case #25	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #25	GSM850	Front	1.294	5mm	-6.9	-84.8	-1.9	160.4	1.60	0.01	Not required
	Bluetooth		0.028	5mm	15.2	62.4	-2.47				
	WLAN5GHz		0.28	5mm	16.8	73.8	-2.23				
	GSM850	Front	1.294	5mm	-6.9	-84.8	-1.9	148.9	1.60	0.01	Not required
	WLAN5GHz		0.28	5mm	16.8	73.8	-2.23				
	Bluetooth		0.028	5mm	15.2	62.4	-2.47				

