FCC SAR Test Report

APPLICANT	:	Lenovo (Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	:	Portable Tablet Computer
BRAND NAME	:	Lenovo
MODEL NAME	:	TB305XU
FCC ID	:	O57TB305XU
STANDARD	:	FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in compliance with the applicable technical standards.

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

Approved by: Si Zhang

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA4O2920	Rev. 01	Initial issue of report	Dec. 23, 2024

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Lenovo (Shanghai) Electronics Technology Co., Ltd., Portable Tablet Computer, TB305XU,** are as follows.

Highest 1g SAR Summary					
Equipment Class	Frequency Band		Head (Separation 0mm) 1g SAR (W/kg)	Body (Separation 0mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
Licensed	GSM	GSM850	1.09	1.14	1.59
		GSM1900	1.05	1.08	
	WCDMA	WCDMA II	1.08	1.12	
		WCDMA IV	1.15	**1.17**	
		WCDMA V	1.14	1.10	
	LTE	LTE Band 2	1.13	1.04	
		LTE Band 66/4	**1.19**	1.01	
		LTE Band 26/5	1.09	1.00	
		LTE Band 7	1.13	1.15	
		LTE Band 12/17	1.15	1.08	
		LTE Band 13	**1.19**	1.11	
		LTE Band 41/38	1.18	1.01	
DTS	WLAN	2.4GHz WLAN	1.13	1.07	1.59
NII		5GHz WLAN	0.43	1.13	1.52
DSS	Bluetooth	2.4GHz Bluetooth	0.13	0.37	1.54
Date of Testing:		2024/11/5 ~ 2024/12/23			

Remark:
1. This device supports LTE B4 / B5 / B17 / B38 and B66 / B26 / B12 / B41. Since the supported frequency span for LTE B4 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B66 / B26 / B12 / B41, 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 / B26 / B12 / B41.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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) 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

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	SAR03-KS SAR04-KS	CN1257	314309

Applicant	
Company Name	Lenovo (Shanghai) Electronics Technology Co., Ltd.
Address	Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone

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

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 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Portable Tablet Computer
Brand Name	Lenovo
Model Name	TB305XU
FCC ID	O57TB305XU
IMEI Code	Sample 1: 868538070001110 Sample 2: 868538070006077
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz 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
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is 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
HW Version	TB305XU
SW Version	TB305XU_RF01_241207
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

Remark:

1. This device has voice function.
2. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12.
3. The device implements Proximity sensors/receiver detect mechanism for the power management for SAR compliance at different exposure conditions (head, body). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table.
4. There are five samples. The difference between them could be referred to the TB305XU_Operational Description of Product Equality Declaration which is exhibited separately. According to the differences, sample 1 was chosen to perform full test, and the sample 2 are verified the worst case of sample 1. For sample 3/4/5, the differences do not affect the test, so sample 3/4/5 are not tested.

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>O57TB305XU</td></tr>
<tr><td>Equipment Name</td><td>Portable Tablet Computer</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 7: 2500 MHz ~ 2570 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 13: 777 MHz ~ 787 MHz
LTE Band 17: 704 MHz ~ 716 MHz
LTE Band 26: 814 MHz ~ 849 MHz
LTE Band 66: 1710 MHz ~ 1780 MHz
LTE Band 38: 2570 MHz ~ 2620 MHz
LTE Band 41: 2496 MHz ~ 2690 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>Uplink Modulations used</td><td>QPSK / 16QAM / 64QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE Release Version</td><td>R15</td></tr>
<tr><td>CA Support</td><td>Yes, Uplink and Downlink only</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 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>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
</td></tr>
<tr><td>LTE A-MPR</td><td>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)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>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.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, when operating in Proximity sensors/receiver detect mechanism; head/body will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 13.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Intra-Band and Inter-Band possible combinations and the detail power verification please referred to section 13.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>(1) This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.
(2) This device supports maximum of 2 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		
LTE Band 17				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711
LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5
LTE Band 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

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

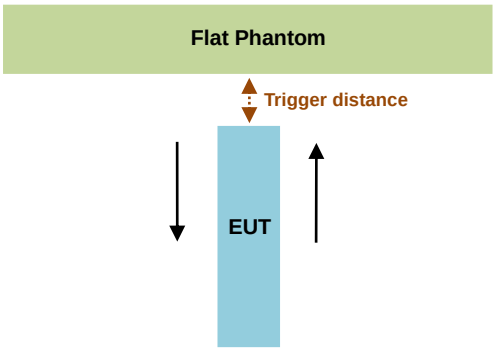
2) LTE Bands tune up:

Band	Antenna	Head Receiver on Tune-up Limit	Body-worn Sensor on Tune-up Limit	Default Tune-up Limit
LTE Band 66(4)	Ant 0	16.50	14	24
LTE Band 26(5)	Ant 0	24	19.5	24
LTE Band 12(17)	Ant 0	24	20.0	24
LTE Band 41(38)	Ant 0	19	16.0	24.5

5. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 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 5825MHz and lowest 750MHz frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensor placed coincident with antenna elements at the Bottom Face, Edge 1, Edge 2 and Edge 4 of the device are utilized to determine when the device comes in proximity of the user's body at the Bottom Face or Edge 1 or Edge 2 or Edge 4 side 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, all WWAN/WLAN bands reduced power will be active.
4. The sensors used to detect the proximity of the user's body at the Bottom Face or Edge 1 or Edge 4 for WWAN of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
5. The sensors used to detect the proximity of the user's body at the Bottom Face or Edge 1 or Edge 2 for WLAN of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).



<WWAN Frequency Bands>

Proximity Sensor Triggering Distance (mm)						
Position	Bottom Face		Edge 1		Edge 4	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	20	22	20	21	13	15

<WLAN Frequency Bands>

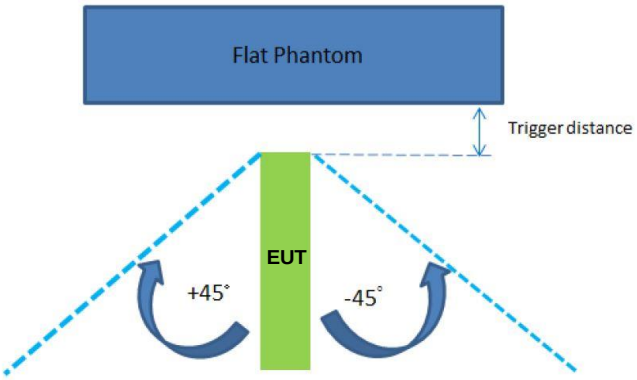
Proximity Sensor Triggering Distance (mm)						
Position	Bottom Face		Edge 1		Edge 2	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	16	19	12	15	5	8

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

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

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

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



<WWAN Frequency Bands>

The Sensor Trigger Distance (mm)		
Position	Edge 1	Edge 4
Minimum	20	13

<WLAN Frequency Bands>

The Sensor Trigger Distance (mm)		
Position	Edge 1	Edge 2
Minimum	12	5

Proximity sensor power reduction

Exposure Position / wireless mode	Bottom Face(1)	Edge 1(1)	Edge 2	Edge 3	Edge 4(1)
GSM850 GPRS 3 Tx slots	6.5 dB	6.5 dB	0 dB	0 dB	6.5 dB
GSM1900 GPRS 4 Tx slots	9.5 dB	9.5 dB	0 dB	0 dB	9.5 dB
WCDMA Band II	11.0 dB	11.0 dB	0 dB	0 dB	11.0 dB
WCDMA Band IV	11.0 dB	11.0 dB	0 dB	0 dB	11.0 dB
WCDMA Band V	5.0 dB	5.0 dB	0 dB	0 dB	5.0 dB
LTE Band 2	10.0 dB	10.0 dB	0 dB	0 dB	10.0 dB
LTE Band 4	10.0 dB	10.0 dB	0 dB	0 dB	10.0 dB
LTE Band 5	4.5 dB	4.5 dB	0 dB	0 dB	4.5 dB
LTE Band 7	8.0 dB	8.0 dB	0 dB	0 dB	8.0 dB
LTE Band 12	4.0 dB	4.0 dB	0 dB	0 dB	4.0 dB
LTE Band 13	4.5 dB	4.5 dB	0 dB	0 dB	4.5 dB
LTE Band 17	4.0 dB	4.0 dB	0 dB	0 dB	4.0 dB
LTE Band 26	4.5 dB	4.5 dB	0 dB	0 dB	4.5 dB
LTE Band 66	10.0 dB	10.0 dB	0 dB	0 dB	10.0 dB
LTE Band 38	8.5 dB	8.5 dB	0 dB	0 dB	8.5 dB
LTE Band 41	8.5 dB	8.5 dB	0 dB	0 dB	8.5 dB

Exposure Position / wireless mode	Bottom Face(1)	Edge 1(1)	Edge 2(1)	Edge 3	Edge 4
WLAN 2.4GHz	6.0 dB	6.0 dB	6.0 dB	0 dB	0 dB
WLAN 5.2GHz	7.0 dB	7.0 dB	7.0 dB	0 dB	0 dB
WLAN 5.3GHz	7.0 dB	7.0 dB	7.0 dB	0 dB	0 dB
WLAN 5.5GHz	6.0 dB	6.0 dB	6.0 dB	0 dB	0 dB
WLAN 5.8GHz	5.5 dB	5.5 dB	5.5 dB	0 dB	0 dB

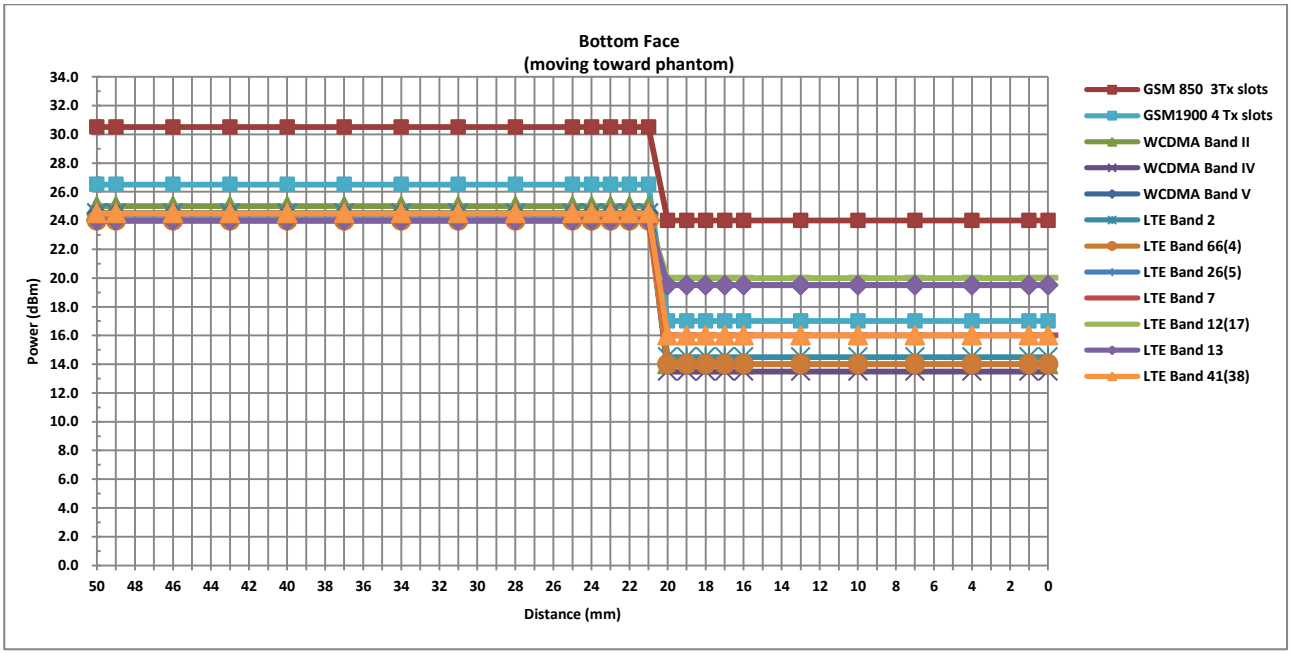
Remark:

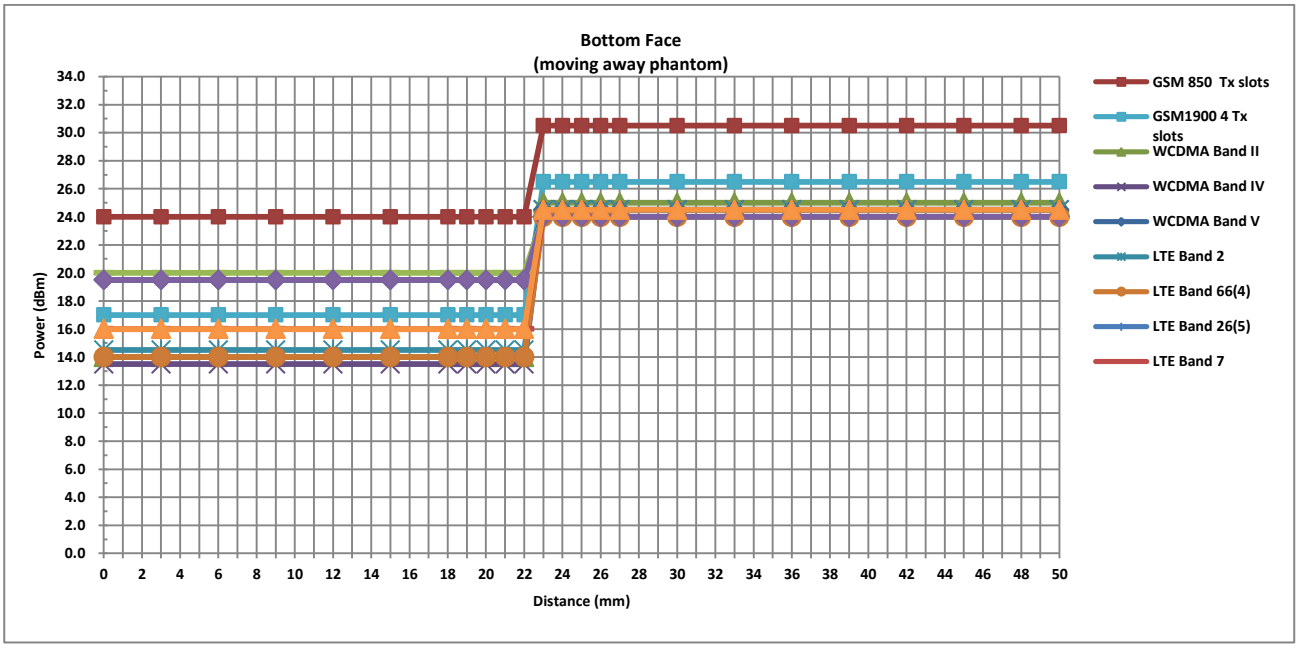
1. (1): Reduced maximum limit applied by activation of proximity sensor.
2. Power reduction is not applicable for Bluetooth.
3. Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown and described in exhibit “P-Sensor operational description
4. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
   For WWAN:
   - Bottom Face: 19 mm
   - Edge 1: 19 mm
   - Edge 4: 12 mm

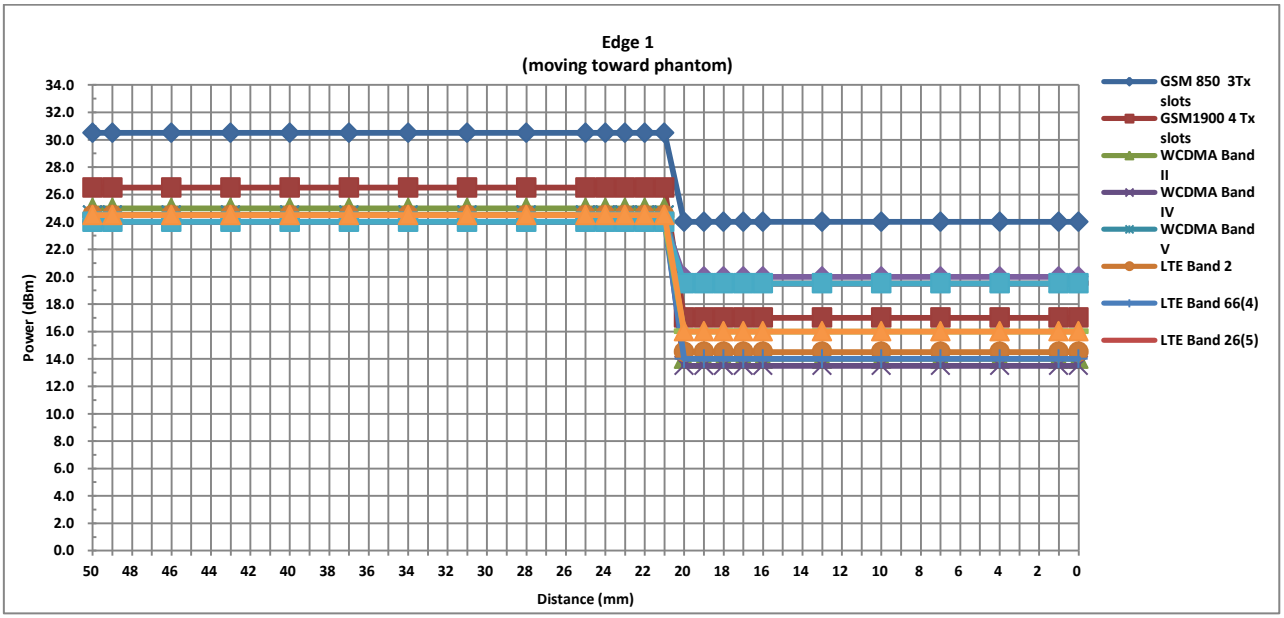
   For WLAN:
   - Bottom Face: 15 mm
   - Edge 1: 11 mm
   - Edge 2: 4 mm

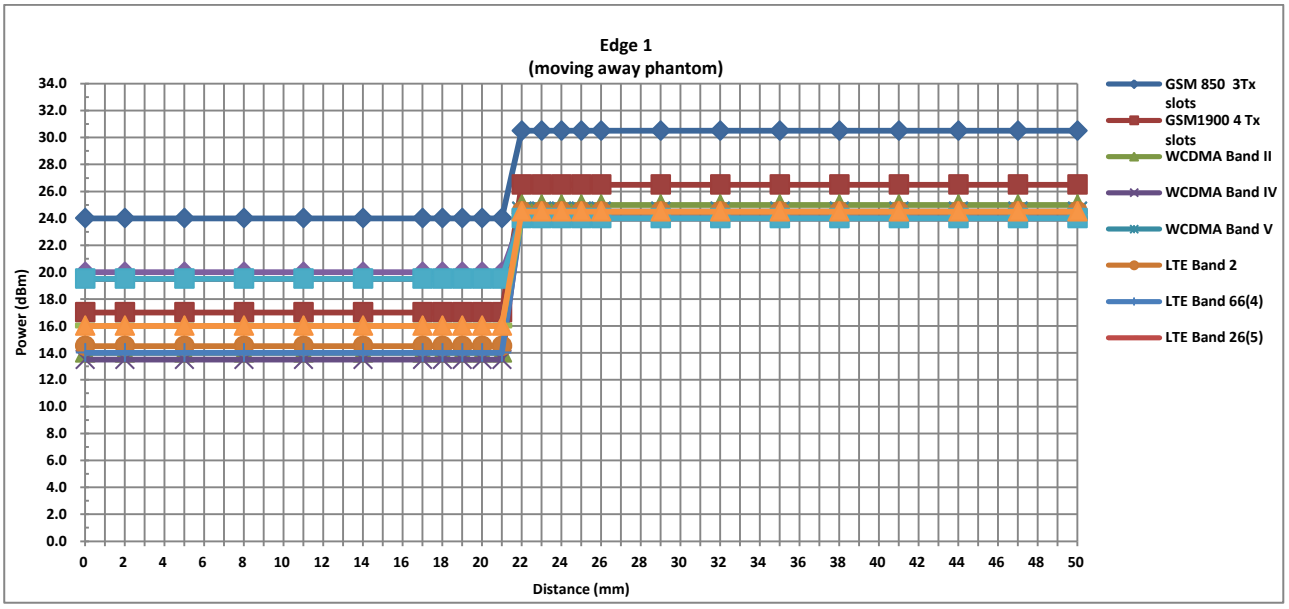
Power Measurement during Sensor Trigger distance testing

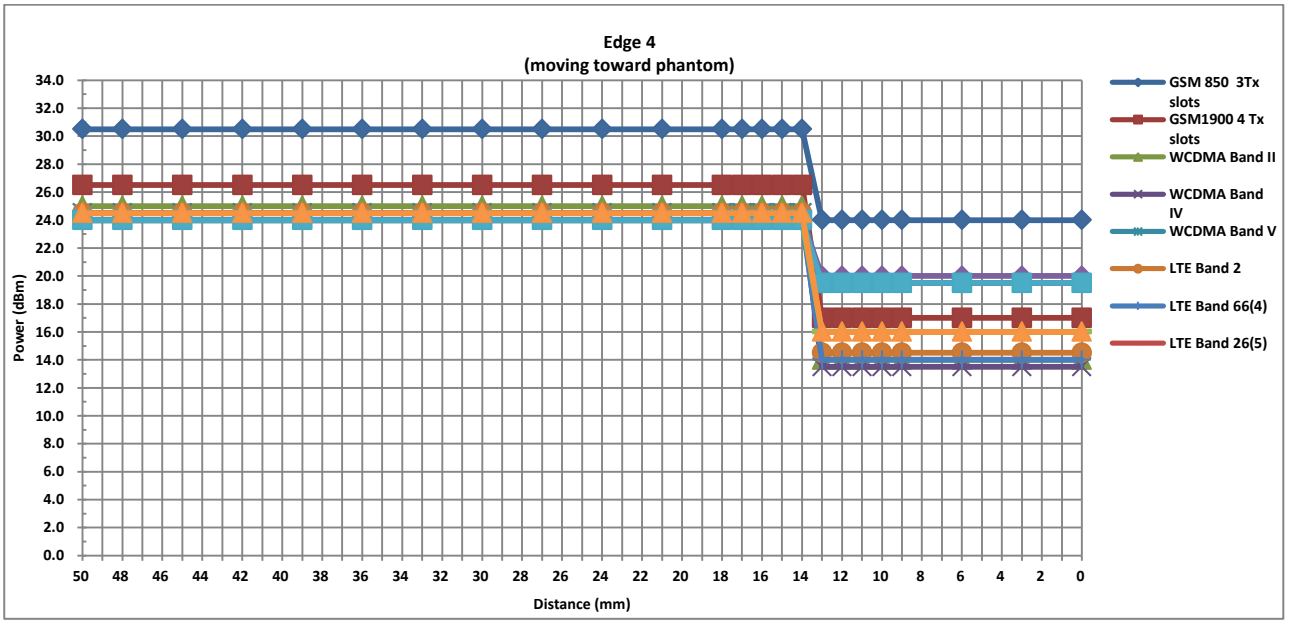
Band/Mode	Measured power reduction (dBm)		Reduction Levels
	w/o power back-off	w/ power back-off	(dB)
GSM850 GPRS 3 Tx slots	30.5	24.0	6.5
GSM1900 GPRS 4 Tx slots	26.5	17.0	9.5
WCDMA Band II	25.0	14.0	11.0
WCDMA Band IV	24.5	13.5	11.0
WCDMA Band V	24.5	19.5	5.0
LTE Band 2	24.5	14.5	10.0
LTE Band 4	24.0	14.0	10.0
LTE Band 5	24.0	19.5	4.5
LTE Band 7	24.0	16.0	8.0
LTE Band 12	24.0	20.0	4.0
LTE Band 13	24.0	19.5	4.5
LTE Band 17	24.0	20.0	4.0
LTE Band 26	24.0	19.5	4.5
LTE Band 66	24.0	14.0	10.0
LTE Band 38	24.5	16.0	8.5
LTE Band 41	24.5	16.0	8.5

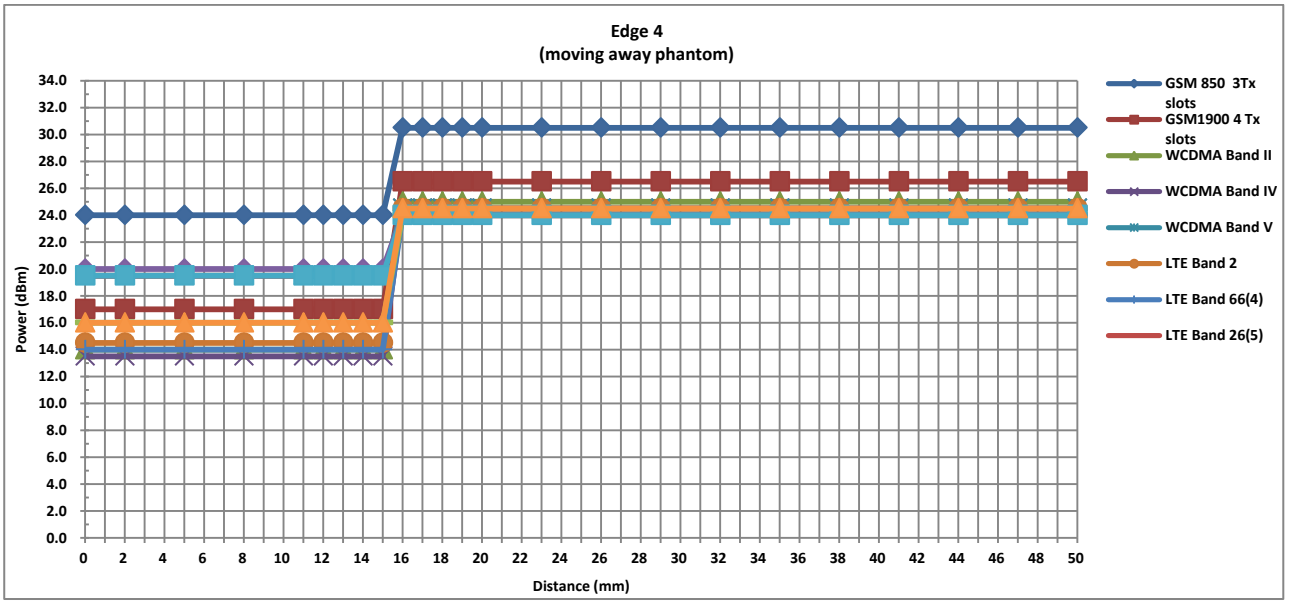



Bottom Face
(moving away phantom)
Power (dBm)
Distance (mm)
GSM 850 Tx slots
GSM1900 4 Tx slots
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 66(4)
LTE Band 26(5)
LTE Band 7


Edge 1
(moving toward phantom)
Power (dBm)
Distance (mm)
GSM 850 3Tx slots
GSM1900 4 Tx slots
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 66(4)
LTE Band 26(5)

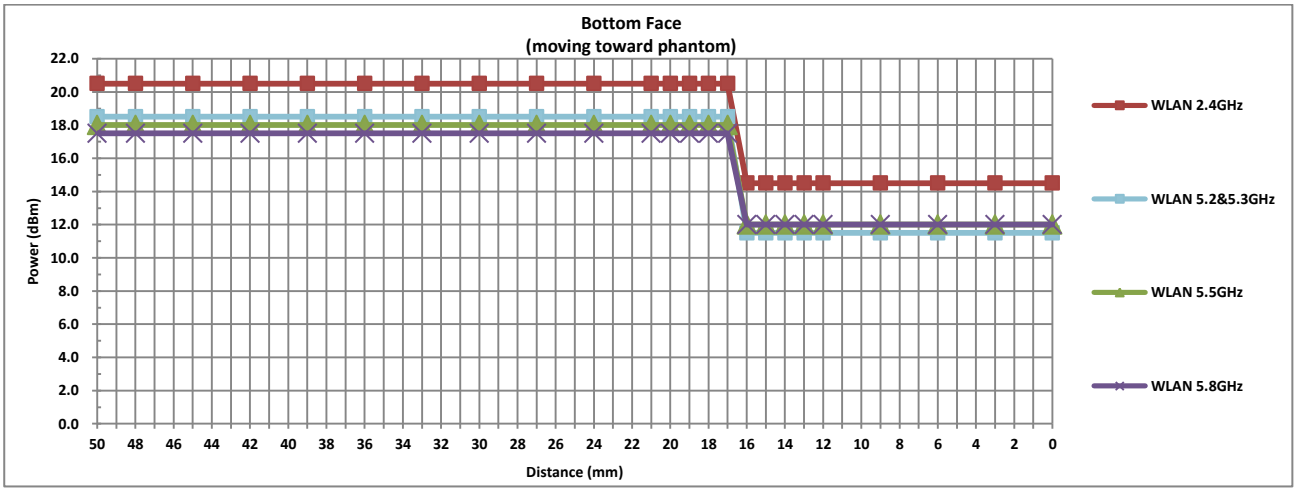

Edge 1
(moving away phantom)
Power (dBm)
Distance (mm)
GSM 850 3Tx slots
GSM1900 4 Tx slots
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 66(4)
LTE Band 26(5)

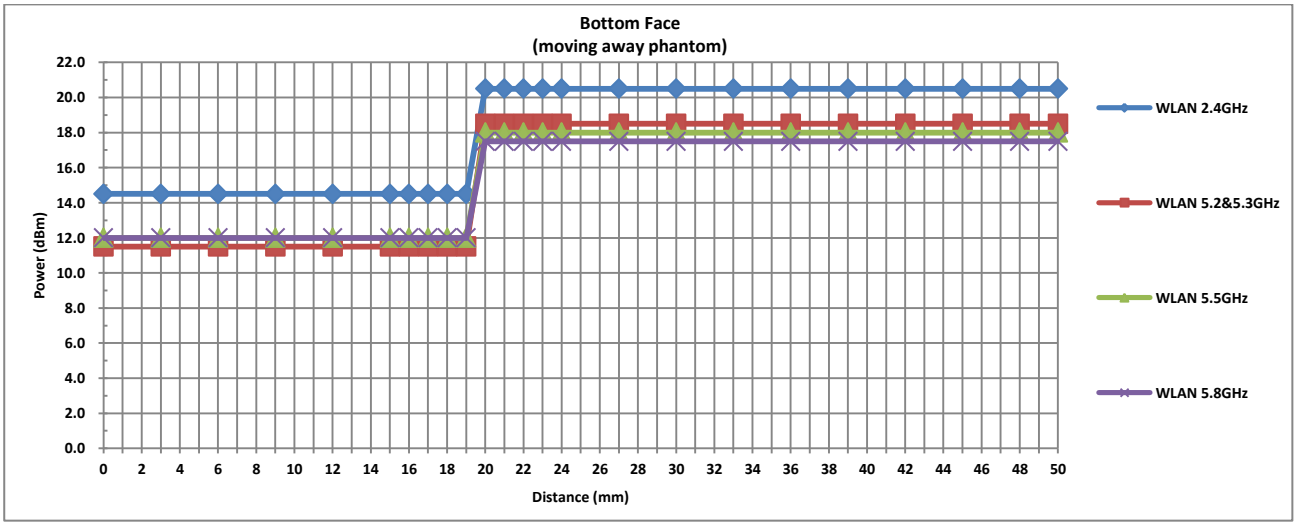

Edge 4
(moving toward phantom)
Power (dBm)
Distance (mm)
GSM 850 3Tx slots
GSM1900 4 Tx slots
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 66(4)
LTE Band 26(5)

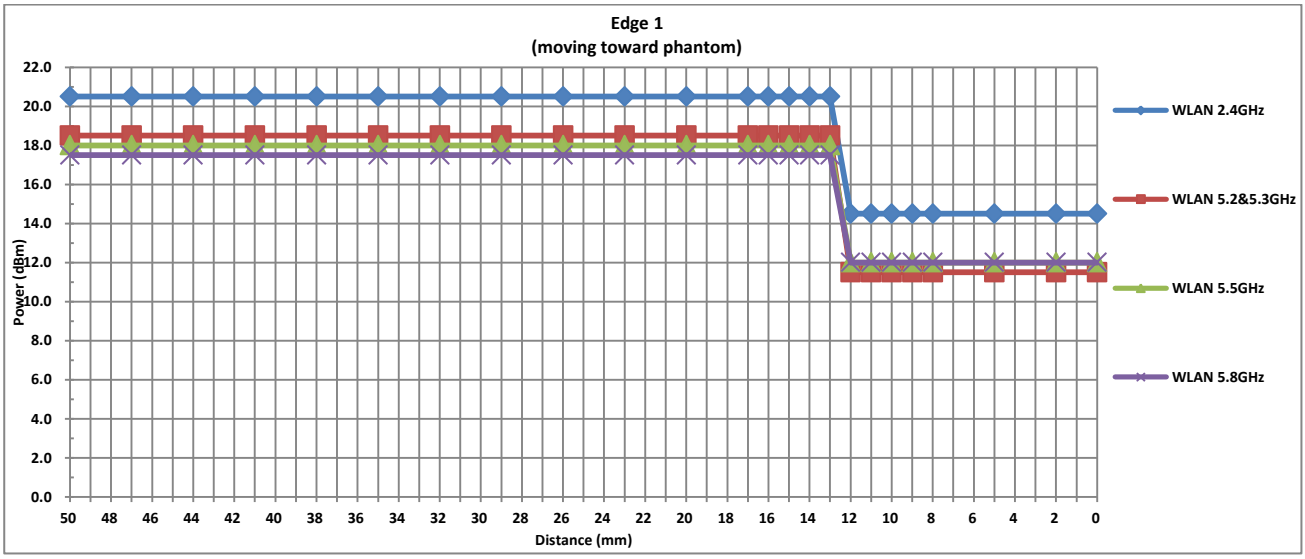

Edge 4
(moving away phantom)
Power (dBm)
Distance (mm)
GSM 850 3Tx slots
GSM1900 4 Tx slots
WCDMA Band II
WCDMA Band IV
WCDMA Band V
LTE Band 2
LTE Band 66(4)
LTE Band 26(5)

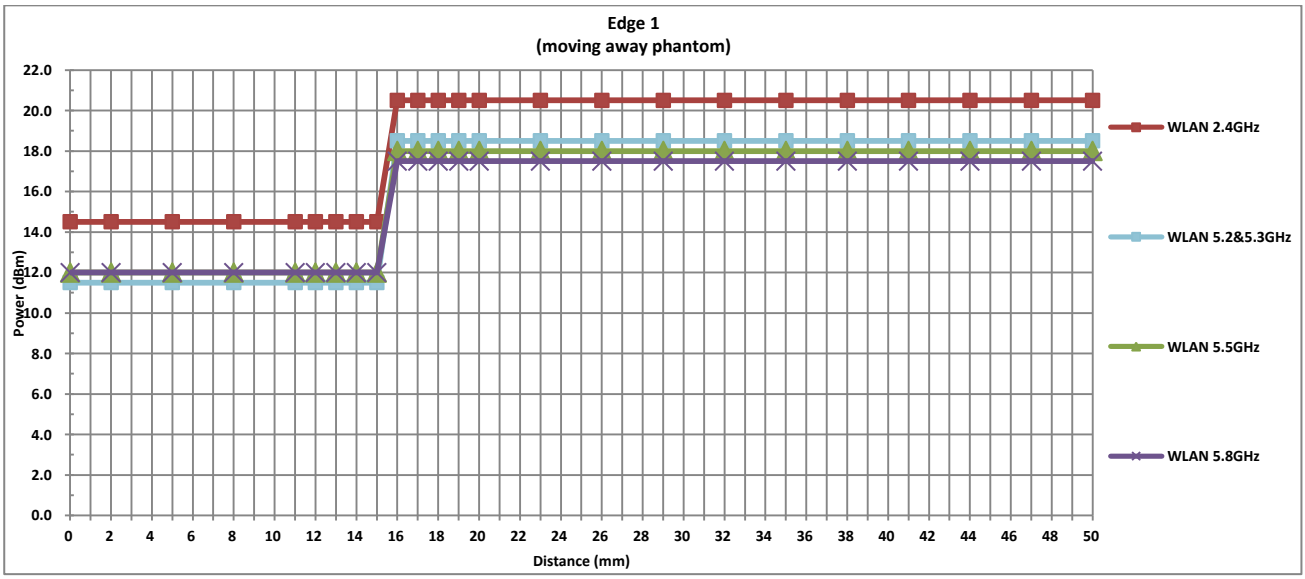
Power Measurement during Sensor Trigger distance testing

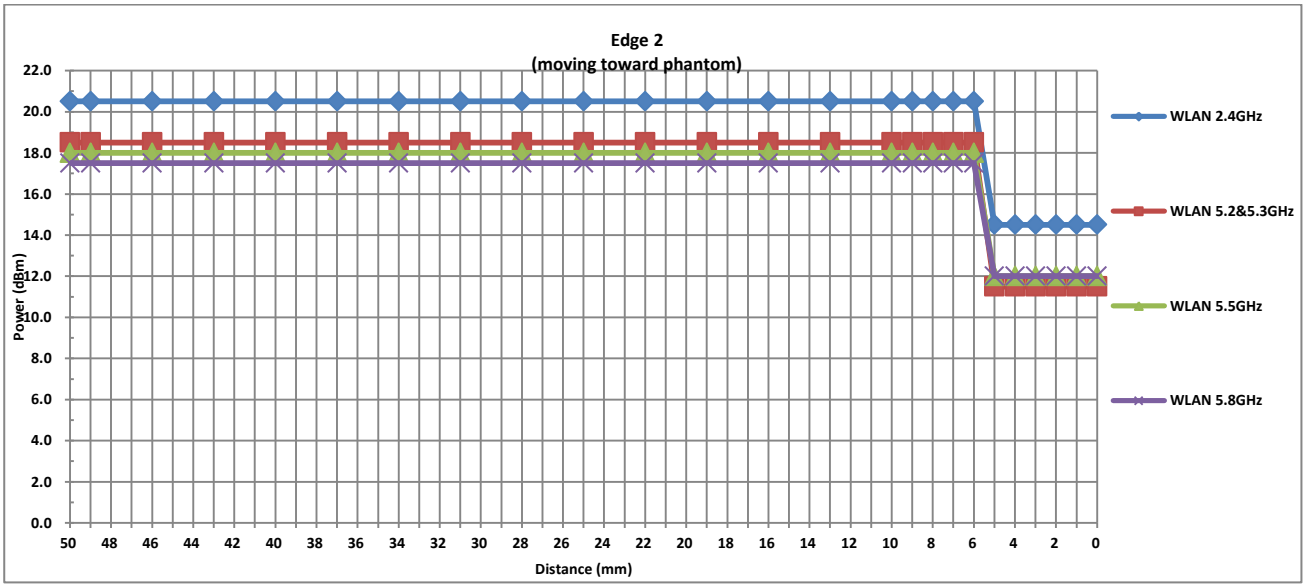
Band/Mode	Measured power reduction (dBm)		Reduction Levels
	w/o power back-off	w/ power back-off	(dB)
WLAN 2.4GHz	20.50	14.50	6.0
WLAN 5.2GHz	18.50	11.50	7.0
WLAN 5.3GHz	18.50	11.50	7.0
WLAN 5.5GHz	18.00	12.00	6.0
WLAN 5.8GHz	17.50	12.00	5.5

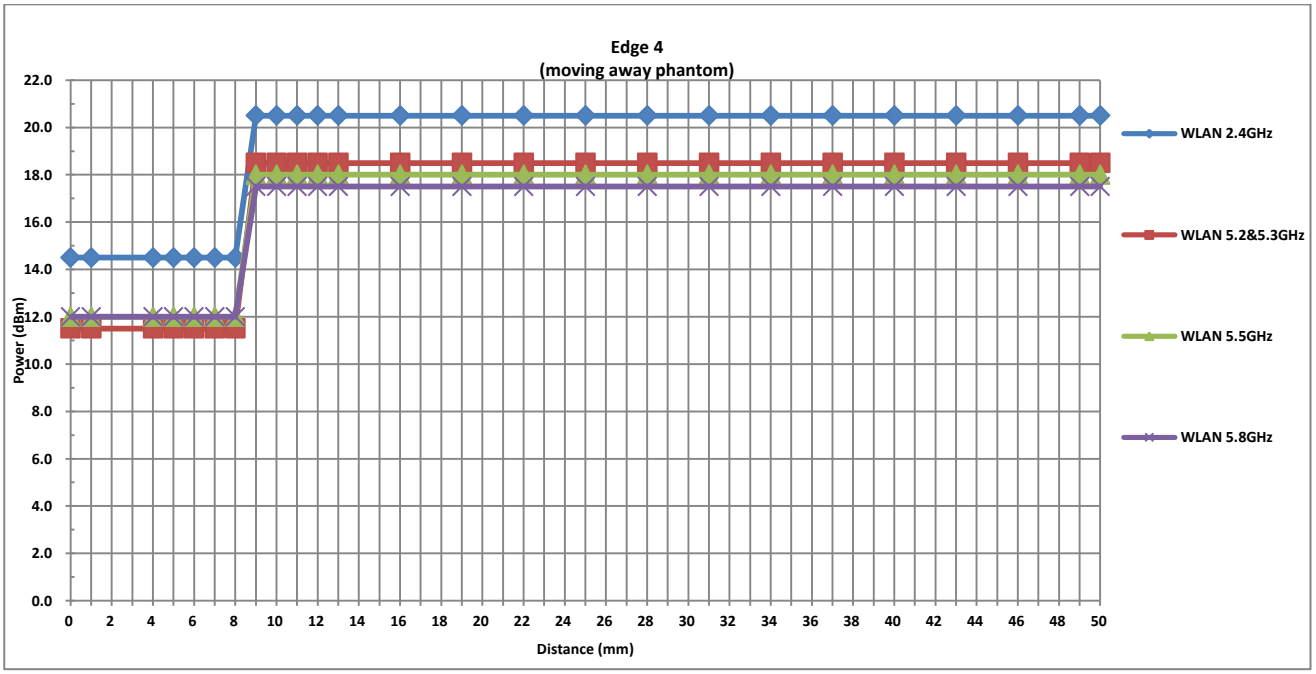





Edge 1
(moving toward phantom)
Power (dBm)
Distance (mm)
WLAN 2.4GHz
WLAN 5.2&5.3GHz
WLAN 5.5GHz
WLAN 5.8GHz


Edge 1
(moving away phantom)
Power (dBm)
Distance (mm)
WLAN 2.4GHz
WLAN 5.2&5.3GHz
WLAN 5.5GHz
WLAN 5.8GHz


Edge 2
(moving toward phantom)
Power (dBm)
Distance (mm)
WLAN 2.4GHz
WLAN 5.2&5.3GHz
WLAN 5.5GHz
WLAN 5.8GHz


Edge 4
(moving away phantom)
Power (dBm)
Distance (mm)
WLAN 2.4GHz
WLAN 5.2&5.3GHz
WLAN 5.5GHz
WLAN 5.8GHz

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 (ρ). The equation description is as below:

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

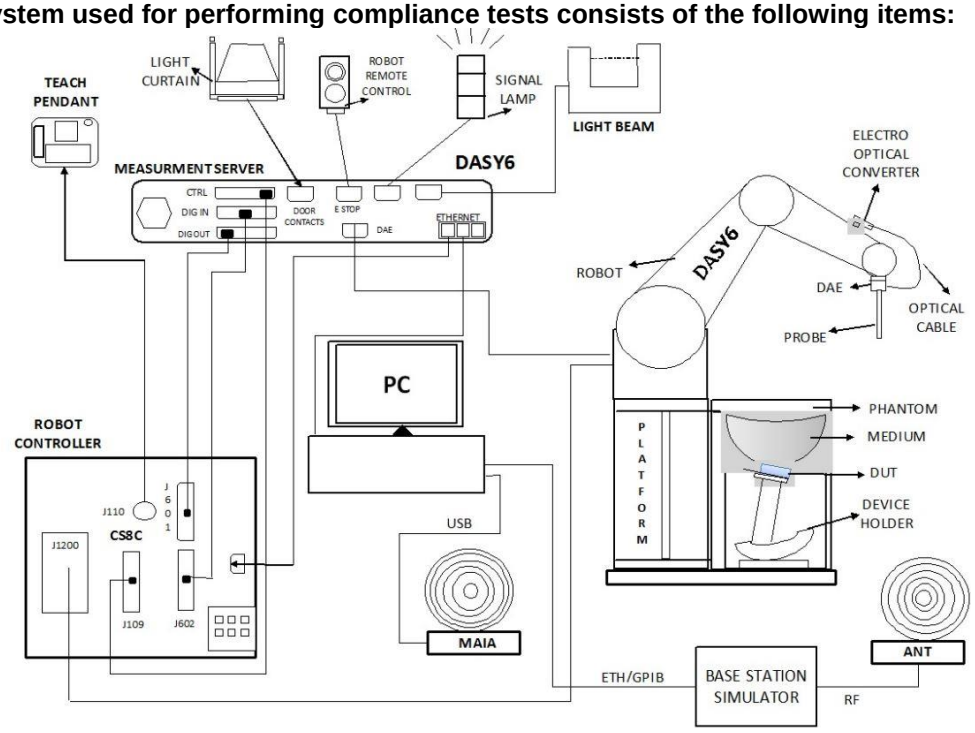
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 or Win10 and the DASY5 or DASY6 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>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz – 10 GHz Linearity: ±0.2 dB (30 MHz – 10 GHz)
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

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.

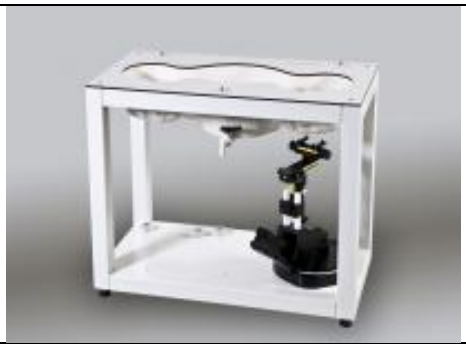
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

8.3 Phantom

<SAM Twin Phantom>

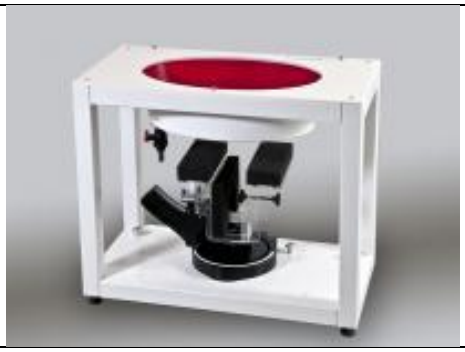
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



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

<ELI Phantom>

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



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices or for evaluating transmitters operating at low frequencies. ELI 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 frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

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

9.4 Zoom Scan

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

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

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2022/2/24	2025/2/22
SPEAG	835MHz System Validation Kit	D835V2	4d298	2024/1/26	2025/1/25
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2025/2/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	2022/3/30	2025/3/28
SPEAG	2450MHz System Validation Kit	D2450V2	1095	2024/2/8	2025/2/7
SPEAG	2600MHz System Validation Kit	D2600V2	1112	2023/12/18	2024/12/17
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2022/9/23	2025/9/21
SPEAG	Data Acquisition Electronics	DAE4	1338	2024/3/18	2025/3/17
SPEAG	Data Acquisition Electronics	DAE4	1358	2024/5/23	2025/5/22
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2024/1/22	2025/1/21
SPEAG	Dosimetric E-Field Probe	EX3DV4	7764	2024/9/2	2025/9/1
SPEAG	SAM Twin Phantom	SAM Twin	TP-1697	NCR	NCR
SPEAG	ELI Phantom	ELI4	TP-2134	NCR	NCR
Testo	Thermo-Hygrometer	HTC-1	55011	2024/1/4	2025/1/3
CHIGO	Thermo-Hygrometer	HTC-1	55009	2024/1/4	2025/1/3
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2024/7/4	2025/7/3
Agilent	ENA Series Network Analyzer	E5071C	MY46112129	2024/7/4	2025/7/3
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2024/2/19	2025/2/18
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2024/8/20	2025/8/19
Anritsu	Vector Signal Generator	MG3710A	6201682672	2024/1/2	2025/1/1
Rohde & Schwarz	Power Meter	NRVD	102081	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2024/7/4	2025/7/3
R&S	BLUETOOTH TESTER	CBT	101246	2024/7/4	2025/7/3
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2024/10/11	2025/10/10
TES	DIGITAC THERMOMETER	TYPE-K	220305411	2024/1/4	2025/1/3
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

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. 10.1. 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. 10.2.

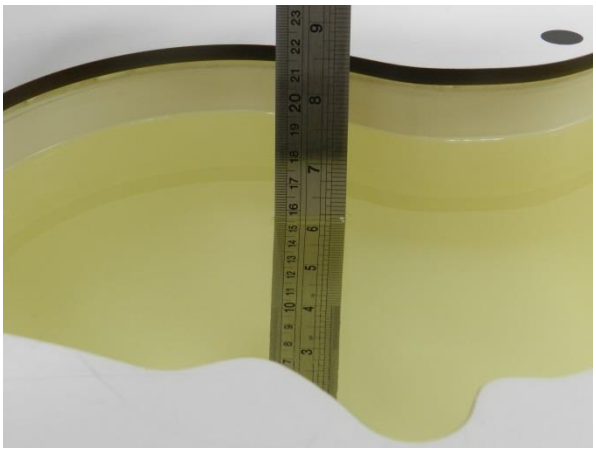


Fig 10.1Photo of Liquid Height for Head SAR

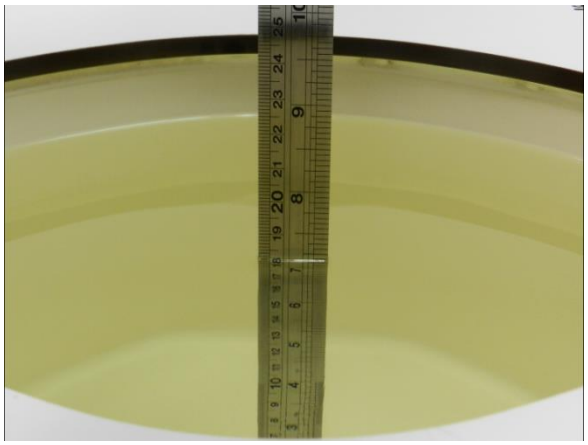


Fig 10.2 Photo of Liquid Height for Body SAR

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 (σ)	Permittivity (εr)
For Head								
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

Simulating Liquid for 5GHz, Manufactured by SPEAG

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

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.8	0.898	42.323	0.89	41.90	0.90	1.01	±5	2024/11/17
835	Head	22.9	0.928	42.060	0.90	41.50	3.11	1.35	±5	2024/11/18
1750	Head	22.6	1.401	40.508	1.37	40.10	2.26	1.02	±5	2024/11/19
1900	Head	22.8	1.422	38.963	1.40	40.00	1.57	-2.59	±5	2024/11/20
2600	Head	22.7	2.008	40.561	1.96	39.00	2.45	4.00	±5	2024/11/23
2450	Head	22.7	1.767	39.366	1.80	39.20	-1.83	0.42	±5	2024/11/24
5250	Head	22.8	4.557	36.100	4.71	35.90	-3.25	0.56	±5	2024/11/25
5600	Head	22.6	4.932	35.572	5.07	35.50	-2.72	0.20	±5	2024/11/26
5750	Head	22.6	5.113	35.387	5.22	35.40	-2.05	-0.04	±5	2024/11/27
750	Head	22.6	0.914	43.500	0.89	41.90	2.70	3.82	±5	2024/11/5
835	Head	22.8	0.938	43.200	0.90	41.50	4.22	4.10	±5	2024/11/6
1750	Head	22.7	1.350	39.050	1.37	40.10	-1.46	-2.62	±5	2024/11/7
1900	Head	22.9	1.440	41.700	1.40	40.00	2.86	4.25	±5	2024/11/8
2450	Head	22.7	1.850	39.100	1.80	39.20	2.78	-0.26	±5	2024/11/9
2600	Head	22.8	1.930	38.300	1.96	39.00	-1.53	-1.79	±5	2024/11/10
5250	Head	22.7	4.560	35.000	4.71	35.90	-3.18	-2.51	±5	2024/11/11
5600	Head	22.7	4.950	34.400	5.07	35.50	-2.37	-3.10	±5	2024/11/12
5750	Head	22.8	5.120	34.100	5.22	35.40	-1.92	-3.67	±5	2024/11/13
2450	Head	22.8	1.858	39.120	1.80	39.20	3.22	-0.20	±5	2024/12/23
5750	Head	22.7	5.105	34.867	5.22	35.40	-2.20	-1.51	±5	2024/12/23

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.

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 (%)
2024/11/17	750	Head	50	1087	3857	1338	0.436	8.58	8.72	1.63
2024/11/18	835	Head	50	4d298	3857	1338	0.524	9.89	10.48	5.97
2024/11/19	1750	Head	50	1090	3857	1338	1.990	37.00	39.8	7.57
2024/11/20	1900	Head	50	5d118	3857	1338	1.810	39.30	36.2	-7.89
2024/11/23	2600	Head	50	1112	3857	1338	2.750	55.10	55	-0.18
2024/11/24	2450	Head	50	1095	3857	1338	2.500	52.60	50	-4.94
2024/11/25	5250	Head	50	1113	3857	1338	3.900	81.50	78	-4.29
2024/11/26	5600	Head	50	1113	3857	1338	4.030	82.60	80.6	-2.42
2024/11/27	5750	Head	50	1113	3857	1338	3.720	80.80	74.4	-7.92
2024/11/5	750	Head	50	1087	7764	1358	0.450	8.58	9	4.90
2024/11/6	835	Head	50	4d298	7764	1358	0.510	9.89	10.2	3.13
2024/11/7	1750	Head	50	1090	7764	1358	1.930	37.00	38.6	4.32
2024/11/8	1900	Head	50	5d118	7764	1358	1.850	39.30	37	-5.85
2024/11/9	2450	Head	50	1095	7764	1358	2.670	52.60	53.4	1.52
2024/11/10	2600	Head	50	1112	7764	1358	2.820	55.10	56.4	2.36
2024/11/11	5250	Head	50	1113	7764	1358	4.350	81.50	87	6.75
2024/11/12	5600	Head	50	1113	7764	1358	4.430	82.60	88.6	7.26
2024/11/13	5750	Head	50	1113	7764	1358	4.280	80.80	85.6	5.94
2024/12/23	2450	Head	50	1095	3857	1338	2.500	52.60	50	-4.94
2024/12/23	5750	Head	50	1113	3857	1338	3.810	80.80	76.2	-5.69

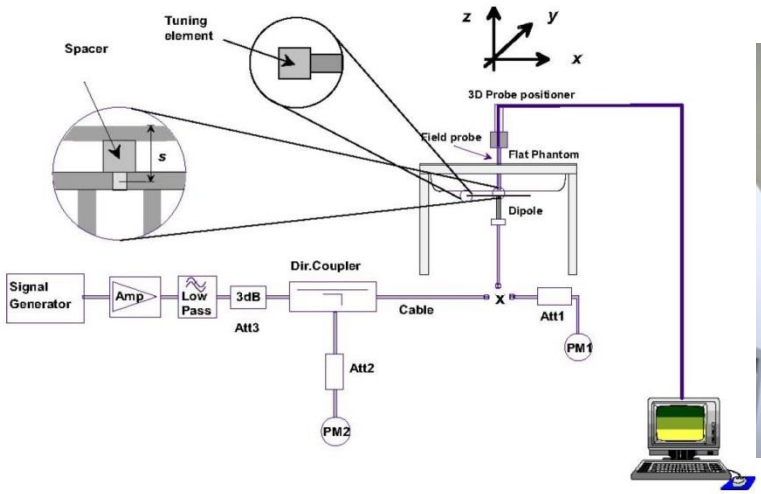


Fig 10.3.1 System Performance Check Setup

Fig 10.3.2 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.

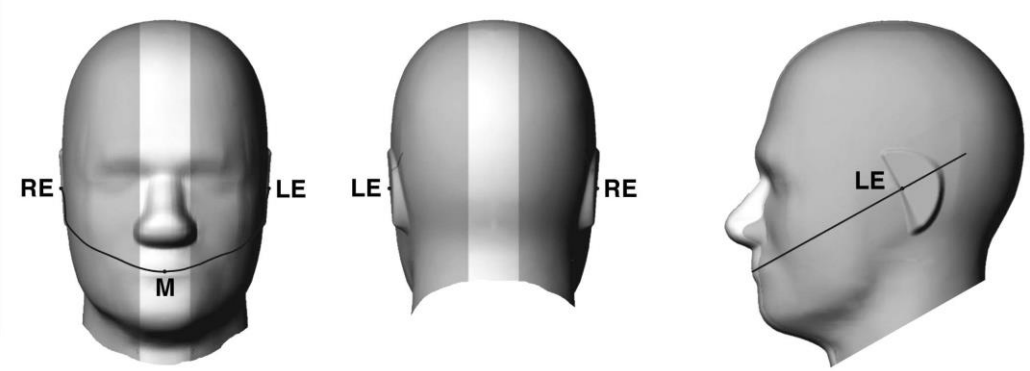


Fig 12.1.1 Front, back, and side views of SAM twin phantom

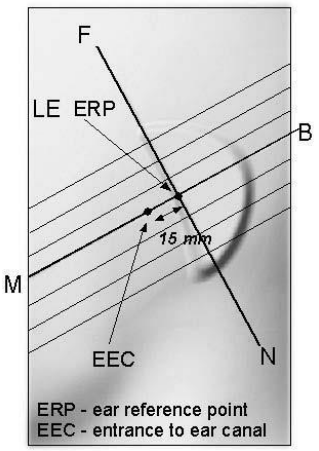


Fig 12.1.2 Close-up side view of phantom showing the ear region.

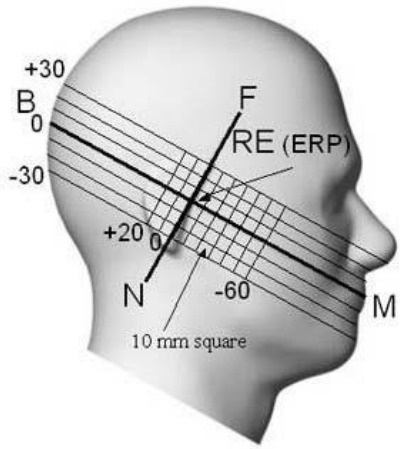


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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 wt 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 wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 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.

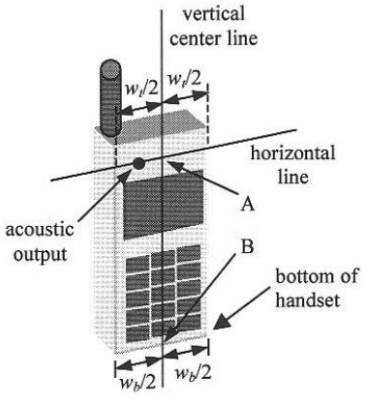


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

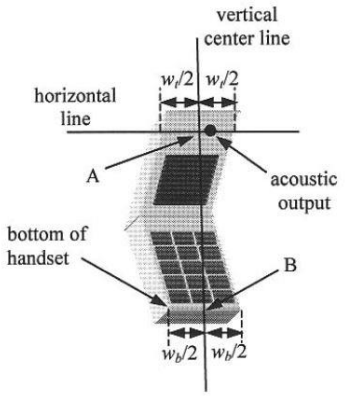


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

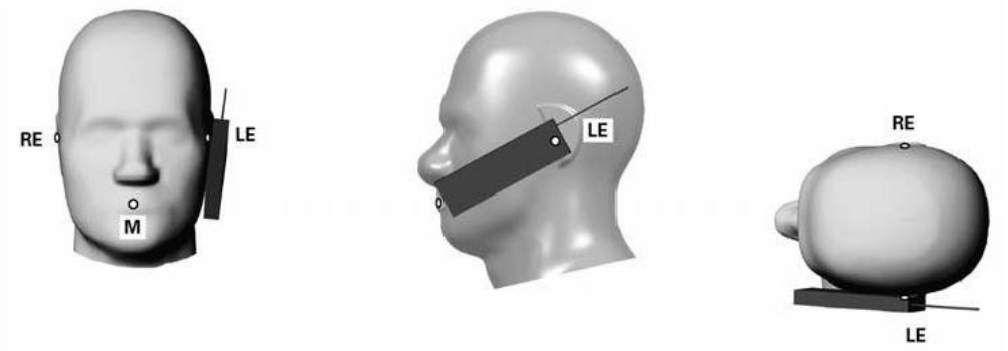


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

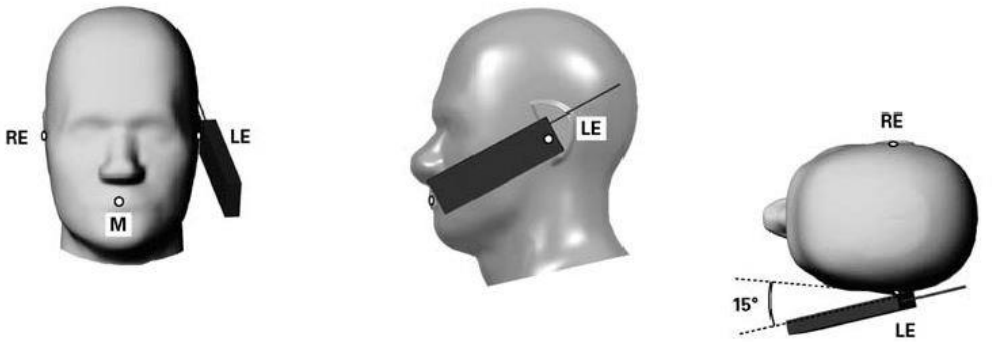


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

<EUT Setup Photos>

Please refer to Appendix D for the test setup photos.

13. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

General Note:

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.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{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	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: 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: β_{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 Agilent E5515C referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	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.		

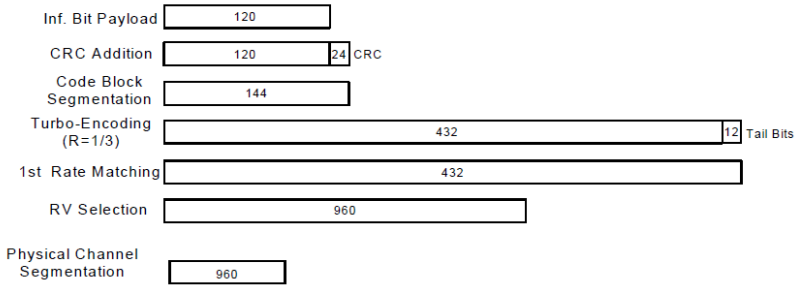


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, 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 = 5.2E:HSPA+:UL with 16QAM
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
   iii. Set Channel Parms
   iv. Set Cell Power = -86 dBm
   v. Set Channel Type = HSPA
   vi. Set UE Target Power =21 dBm
   vii. Power Ctrl Mode= All Up Bits
   viii. Set Manual Uplink DPCH Bc/Bd = Manual
   ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
   x. Set HSPA Conn DL Channel Levels
   xi. Set HS-SCCH Configs
   xii. Set RB Test Mode Setup
   xiii. Set Common HSUPA Parameters
   xiv. Set Serving Grant
   xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration

<WCDMA Conducted Power>

General Note:

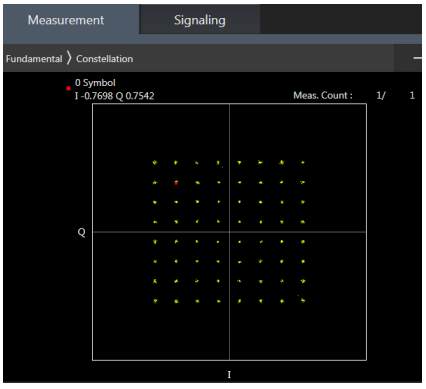
1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

<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 ≤ 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 ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 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 / 5 / 17 / 38 SAR test was covered by Band 66 / 26 / 12 / 41; 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 ≤ 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 May 2017 TCB workshop, for 16QAM and 64QAM 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.

16QAM



64QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations

b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS

c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

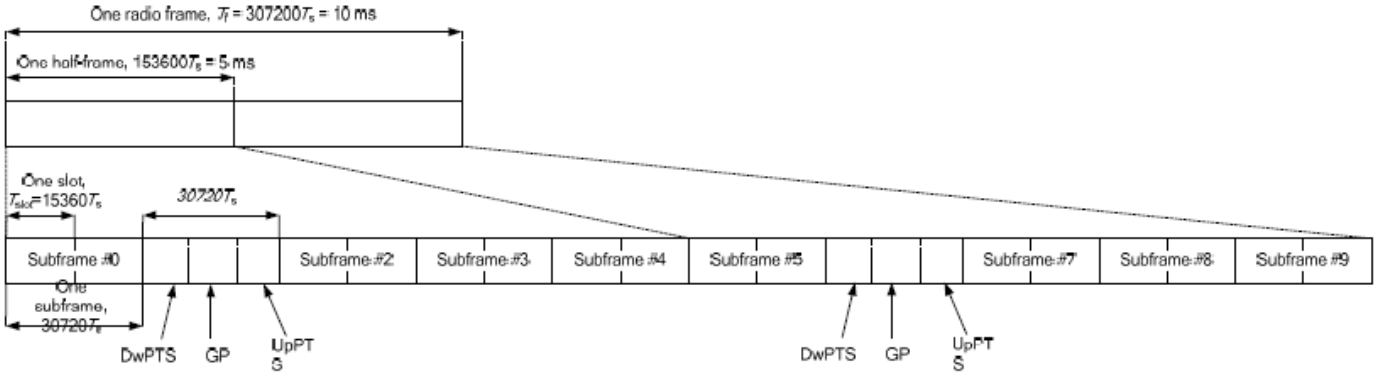


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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

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

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

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

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

<LTE Carrier Aggregation>

The detailed LTE Carrier Aggregation conducted power table can refer to Appendix F.

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.
3. Per Oct. 2024 TCB workshop, Manufacturer declares that TX power measurement for multiple DL CA configurations is deemed not required as the DL CA has no impact on the TX power according to preliminary scan. TX power measured in LTE standalone operation represents the worst case.

2CC Downlink Carrier Aggregation	
Number	Combination
1	CA_2A-2A
2	CA_2A-4A
3	CA_2A-5A
4	CA_2A-7A
5	CA_2A-66A
6	CA_2C
7	CA_4A-4A
8	CA_4A-5A
9	CA_4A-7A
10	CA_5A-7A
11	CA_5A-66A
12	CA_7A-7A
13	CA_7A-66A
14	CA_7B
15	CA_7C
16	CA_38A-38A
17	CA_38C
18	CA_41A-41A
19	CA_41C
20	CA_66A-66A
21	CA_66B
22	CA_66C

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.

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

LTE Carrier Aggregation Conducted Power (Uplink)

LTE Uplink CA	2CC Uplink Carrier Aggregation
Intra-band	Antenna Tx
CA_7C	Ant 0
CA_38C	Ant 0
CA_41C	Ant 0

<Intra-band>

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B7/B41/B38 with a maximum of two component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.

ii. According Nov. 2017 TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

iii. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

<WLAN Conducted Power>

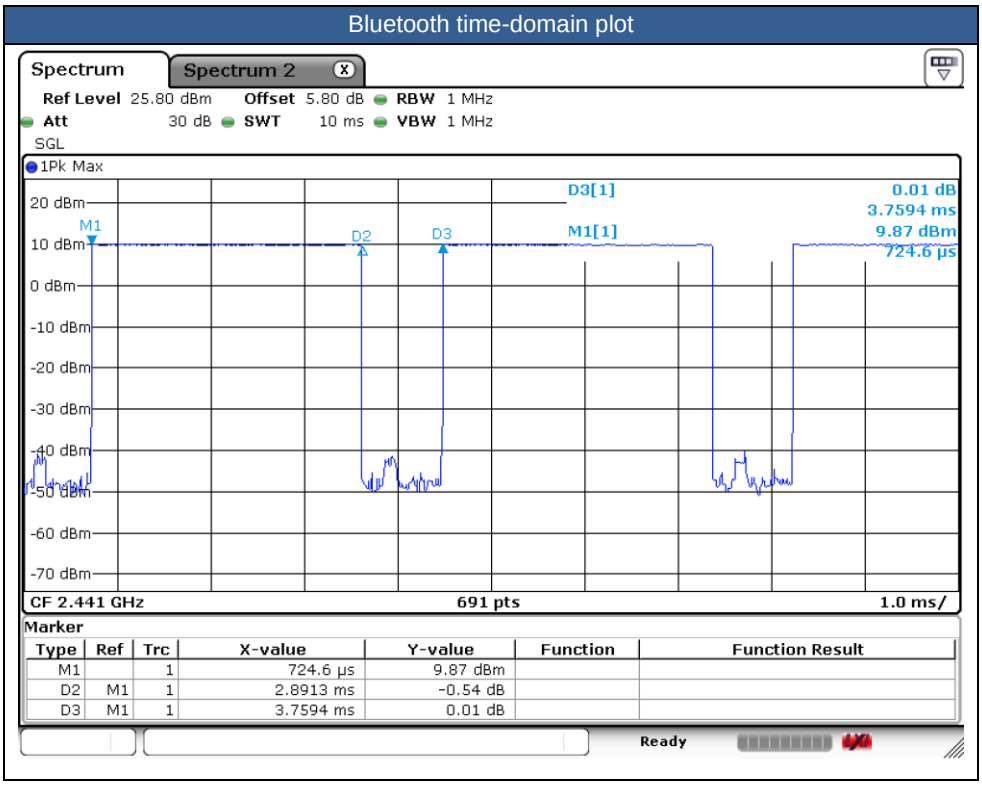
General Note:

1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration. Additional output power measurements were not necessary.
2. 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.
3. 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).
4. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
5. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle are 76.91% as following figure, 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.



14. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v06, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v06, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v06, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

Exposure Position	Wireless Interface	GPRS 850	GPRS 1900	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 12	LTE Band 13	LTE Band 17	LTE Band 5	LTE Band 26	LTE Band 4	LTE Band 66	LTE Band 2	LTE Band 7	LTE Band 38	LTE Band 41	BT	2.4GHz WLAN	5GHz WLAN
	Calculated Frequency (MHz)	848	1909	846	1750	1907	715	784	713	848	848	1754	1779	1909	2567	2617	2690	2480	2462	5825
	Maximum power (dBm)	30.5	26.5	24.5	24.5	25.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.5	24.0	24.5	24.5	11.5	20.5	18.5
	Maximum rated power(mW)	1122.02	446.68	281.84	281.84	316.23	251.19	251.19	251.19	251.19	251.19	251.19	251.19	281.84	251.19	281.84	281.84	14.13	112.20	70.79
Bottom Face	Separation distance(mm)	5.0																5.0	5.0	5.0
	exclusion threshold	206.7	123.4	51.9	74.6	87.3	42.5	44.5	42.4	46.3	46.3	66.5	67.0	77.9	80.5	91.2	92.5	4.5	35.2	34.2
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 1	Separation distance(mm)	5.0																5.0	5.0	5.0
	exclusion threshold	206.7	123.4	51.9	74.6	87.3	42.5	44.5	42.4	46.3	46.3	66.5	67.0	77.9	80.5	91.2	92.5	4.5	35.2	34.2
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 2	Separation distance(mm)	77.4																5.0	5.0	5.0
	exclusion threshold	318.0	383.0	318.0	387.0	383.0	308.0	313.0	308.0	318.0	318.0	387.0	386.0	383.0	368.0	367.0	365.0	4.5	35.2	34.2
	Testing required?	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Edge 3	Separation distance(mm)	186.5																185.8	185.8	185.8
	exclusion threshold	935.0	1474.0	933.0	1478.0	1474.0	828.0	883.0	826.0	935.0	935.0	1478.0	1477.0	1474.0	1459.0	1458.0	1456.0	1453.0	1454.0	1420.0
	Testing required?	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
Edge 4	Separation distance(mm)	5.0																103.6	103.6	103.6
	exclusion threshold	206.7	123.4	51.9	74.6	87.3	42.5	44.5	42.4	46.3	46.3	66.5	67.0	77.9	80.5	91.2	92.5	631.0	632.0	598.0
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

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 SAR testing of Bluetooth signal with 83.3% theoretical duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle) *83.3%".
   d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   e. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   f. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR (W/kg) = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   · ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   · ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   · ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. The device implements Proximity sensors/receiver detect mechanism for the power management for SAR compliance at different exposure conditions (head, body). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table.
5. According to Nov. 2017 TCB workshop, when the reported 1gSAR for UL CA configuration is <1.2 W/kg, UL CA 1gSAR is not required for all required test channels (PCC based).
6. Chose Bluetooth Bottom Face/ Edge 1/2 at 0mm as Bottom Face at 15 mm, Edge 1 at 11 mm and Edge 2 at 4 mm SAR to do co-located with WWAN analysis.

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.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

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 / HSPA+ is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

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 ≤ 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 ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B26/B12 / B17 / B38 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 / 5 / 17 / 38 SAR test was covered by Band 66 / 26 / 12 / 41; 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 ≤ 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/Bluetooth Note:

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

15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	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)
750MHz																					
01	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	23095	707.5	1	23.20	24.00	1.202	-	-	-0.05	0.953	**1.146**
	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	Receiver on	23095	707.5	1	22.25	23.00	1.189	-	-	0.04	0.774	0.920
	LTE Band 12	10M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	23095	707.5	1	22.24	23.00	1.191	-	-	0.05	0.731	0.871
	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	23095	707.5	1	23.20	24.00	1.202	-	-	0.13	0.811	0.975
	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	Receiver on	23095	707.5	1	22.25	23.00	1.189	-	-	-0.18	0.633	0.752
	LTE Band 12	10M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	23095	707.5	1	22.24	23.00	1.191	-	-	0.05	0.618	0.736
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	23095	707.5	1	23.20	24.00	1.202	-	-	-0.11	0.323	0.388
	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	Receiver on	23095	707.5	1	22.25	23.00	1.189	-	-	-0.16	0.239	0.284
	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	23095	707.5	1	23.20	24.00	1.202	-	-	-0.15	0.367	0.441
	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	Receiver on	23095	707.5	1	22.25	23.00	1.189	-	-	-0.06	0.299	0.355
02	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	23230	782	1	22.83	24.00	1.309	-	-	-0.19	0.907	**1.187**
	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	23230	782	2	22.83	24.00	1.309	-	-	0.05	0.881	1.153
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	Receiver on	23230	782	1	21.82	23.00	1.312	-	-	0.16	0.733	0.962
	LTE Band 13	10M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	23230	782	1	21.78	23.00	1.324	-	-	0.04	0.712	0.943
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	23230	782	1	22.83	24.00	1.309	-	-	0.01	0.797	1.043
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	Receiver on	23230	782	1	21.82	23.00	1.312	-	-	-0.16	0.586	0.769
	LTE Band 13	10M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	23230	782	1	21.78	23.00	1.324	-	-	-0.05	0.555	0.735
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	23230	782	1	22.83	24.00	1.309	-	-	0.1	0.284	0.372
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	Receiver on	23230	782	1	21.82	23.00	1.312	-	-	-0.04	0.256	0.336
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	23230	782	1	22.83	24.00	1.309	-	-	-0.01	0.334	0.437
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	Receiver on	23230	782	1	21.82	23.00	1.312	-	-	0	0.276	0.362
835MHz																					
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	Receiver on	189	836.4	1	26.38	28.00	1.452	-	-	-0.16	0.715	1.038
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	Receiver on	128	824.2	1	26.29	28.00	1.483	-	-	-0.12	0.722	1.070
03	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	Receiver on	251	848.8	1	26.33	28.00	1.469	-	-	0.16	0.745	**1.094**
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 0	Receiver on	189	836.4	1	26.38	28.00	1.452	-	-	0.07	0.556	0.807
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 0	Receiver on	128	824.2	1	26.29	28.00	1.483	-	-	-0.02	0.563	0.835
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 0	Receiver on	251	848.8	1	26.33	28.00	1.469	-	-	-0.05	0.589	0.865
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Left Cheek	0mm	Ant 0	Receiver on	189	836.4	1	26.38	28.00	1.452	-	-	-0.13	0.284	0.412
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Left Tilted	0mm	Ant 0	Receiver on	189	836.4	1	26.38	28.00	1.452	-	-	0.08	0.208	0.302
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	4182	836.4	1	21.44	22.00	1.138	-	-	0.08	0.848	0.965
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	4132	826.4	1	21.41	22.00	1.146	-	-	-0.02	0.998	**1.143**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	4132	826.4	2	21.41	22.00	1.146	-	-	0.05	0.891	1.021
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	4233	846.6	1	21.38	22.00	1.153	-	-	0.03	0.872	1.006
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	Receiver on	4182	836.4	1	21.44	22.00	1.138	-	-	-0.08	0.679	0.772
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	Receiver on	4182	836.4	1	21.44	22.00	1.138	-	-	-0.18	0.404	0.460
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	Receiver on	4182	836.4	1	21.44	22.00	1.138	-	-	0.1	0.370	0.421
05	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	26865	831.5	1	23.17	24.00	1.211	-	-	-0.02	0.902	**1.092**
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 0	Receiver on	26865	831.5	1	22.11	23.00	1.227	-	-	0.08	0.811	0.995
	LTE Band 26	15M	QPSK	75	0	-	Right Cheek	0mm	Ant 0	Receiver on	26865	831.5	1	22.02	23.00	1.253	-	-	0.06	0.836	1.048
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	26865	831.5	1	23.17	24.00	1.211	-	-	0.02	0.678	0.821
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 0	Receiver on	26865	831.5	1	22.11	23.00	1.227	-	-	-0.12	0.646	0.793
	LTE Band 26	15M	QPSK	75	0	-	Right Tilted	0mm	Ant 0	Receiver on	26865	831.5	1	22.02	23.00	1.253	-	-	0.07	0.626	0.784
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	26865	831.5	1	23.17	24.00	1.211	-	-	-0.02	0.346	0.419
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 0	Receiver on	26865	831.5	1	22.11	23.00	1.227	-	-	-0.05	0.339	0.416
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	26865	831.5	1	23.17	24.00	1.211	-	-	-0.13	0.286	0.346
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	0mm	Ant 0	Receiver on	26865	831.5	1	22.11	23.00	1.227	-	-	0.08	0.282	0.346
1750MHz																					
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	1413	1732.6	1	14.78	15.50	1.180	-	-	-0.15	0.914	1.079
06	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	1312	1712.4	1	14.76	15.50	1.186	-	-	0.09	0.967	**1.147**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	1513	1752.6	1	14.73	15.50	1.194	-	-	-0.14	0.777	0.928

	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	Receiver on	1413	1732.6	1	14.78	15.50	1.180	-	-	-0.19	0.782	0.923
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	Receiver on	1312	1712.4	1	14.76	15.50	1.186	-	-	0.01	0.846	1.003
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	Receiver on	1513	1752.6	1	14.73	15.50	1.194	-	-	0.06	0.666	0.795
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	Receiver on	1413	1732.6	1	14.78	15.50	1.180	-	-	0.02	0.274	0.323
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	Receiver on	1413	1732.6	1	14.78	15.50	1.180	-	-	0.12	0.284	0.335
07	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	132322	1745	1	15.80	16.50	1.175	-	-	0.02	1.010	**1.187**
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	132322	1745	2	15.80	16.50	1.175	-	-	0.11	0.910	1.069
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	132072	1720	1	15.76	16.50	1.186	-	-	-0.04	0.991	1.175
	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	132572	1770	1	15.78	16.50	1.180	-	-	-0.05	0.984	1.161
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	132322	1745	1	15.77	16.50	1.183	-	-	0	0.989	1.170
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	132072	1720	1	15.73	16.50	1.194	-	-	-0.13	0.956	1.141
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	132572	1770	1	15.75	16.50	1.189	-	-	-0.01	0.935	1.111
	LTE Band 66	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 0	Receiver on	132322	1745	1	15.75	16.50	1.189	-	-	-0.09	0.970	1.153
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	132322	1745	1	15.80	16.50	1.175	-	-	0.05	1.000	1.175
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	132072	1720	1	15.76	16.50	1.186	-	-	0.02	0.953	1.130
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	132572	1770	1	15.78	16.50	1.180	-	-	-0.13	0.968	1.143
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	132322	1745	1	15.77	16.50	1.183	-	-	0.17	0.916	1.084
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	132072	1720	1	15.73	16.50	1.194	-	-	0.06	0.883	1.054
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	132572	1770	1	15.75	16.50	1.189	-	-	0	0.930	1.105
	LTE Band 66	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 0	Receiver on	132322	1745	1	15.75	16.50	1.189	-	-	-0.04	0.904	1.074
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	132322	1745	1	15.80	16.50	1.175	-	-	-0.15	0.212	0.249
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	Receiver on	132322	1745	1	15.77	16.50	1.183	-	-	0.11	0.207	0.245
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	132322	1745	1	15.80	16.50	1.175	-	-	-0.02	0.252	0.296
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	Receiver on	132322	1745	1	15.77	16.50	1.183	-	-	0.1	0.247	0.292
1900MHz																					
08	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 0	Receiver on	661	1880	1	24.34	25.00	1.164	-	-	0.03	0.900	**1.048**
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 0	Receiver on	512	1850.2	1	24.28	25.00	1.180	-	-	0.04	0.840	0.991
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 0	Receiver on	810	1909.8	1	24.28	25.00	1.180	-	-	0.13	0.807	0.953
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 0	Receiver on	661	1880	1	24.34	25.00	1.164	-	-	-0.18	0.840	0.978
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 0	Receiver on	512	1850.2	1	24.28	25.00	1.180	-	-	0.03	0.822	0.970
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant 0	Receiver on	810	1909.8	1	24.28	25.00	1.180	-	-	-0.08	0.830	0.980
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 0	Receiver on	661	1880	1	24.34	25.00	1.164	-	-	-0.11	0.254	0.296
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant 0	Receiver on	661	1880	1	24.34	25.00	1.164	-	-	-0.16	0.238	0.277
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	9400	1880	1	19.28	20.00	1.180	-	-	-0.17	0.767	0.905
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	9262	1852.4	1	19.22	20.00	1.197	-	-	-0.1	0.759	0.908
09	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	9538	1907.6	1	19.24	20.00	1.191	-	-	0.01	0.903	**1.076**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 0	Receiver on	9400	1880	1	19.28	20.00	1.180	-	-	-0.17	0.635	0.750
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	Receiver on	9400	1880	1	19.28	20.00	1.180	-	-	-0.04	0.228	0.269
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant 0	Receiver on	9400	1880	1	19.28	20.00	1.180	-	-	-0.05	0.214	0.253
10	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	18900	1880	1	20.49	21.50	1.262	-	-	0.09	0.898	**1.133**
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	18900	1880	2	20.49	21.50	1.262	-	-	0.11	0.756	0.954
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	18700	1860	1	20.41	21.50	1.285	-	-	0	0.844	1.085
	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	19100	1900	1	20.42	21.50	1.282	-	-	0.01	0.874	1.121
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	18900	1880	1	20.46	21.50	1.271	-	-	-0.01	0.844	1.072
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	18700	1860	1	20.43	21.50	1.279	-	-	-0.08	0.803	1.027
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	19100	1900	1	20.34	21.50	1.306	-	-	0.1	0.811	1.059
	LTE Band 2	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 0	Receiver on	18900	1880	1	20.41	21.50	1.285	-	-	-0.06	0.814	1.046
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	18900	1880	1	20.49	21.50	1.262	-	-	-0.04	0.754	0.951
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	18700	1860	1	20.41	21.50	1.285	-	-	-0.18	0.733	0.942
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	19100	1900	1	20.42	21.50	1.282	-	-	0.1	0.751	0.963
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	18900	1880	1	20.46	21.50	1.271	-	-	-0.09	0.724	0.920
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	18700	1860	1	20.43	21.50	1.279	-	-	0.12	0.704	0.901
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	19100	1900	1	20.34	21.50	1.306	-	-	0.08	0.711	0.929
	LTE Band 2	20M	QPSK	100	0	-	Right Tilted	0mm	Ant 0	Receiver on	18900	1880	1	20.41	21.50	1.285	-	-	-0.17	0.734	0.943
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	18900	1880	1	20.49	21.50	1.262	-	-	-0.17	0.229	0.289
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	Receiver on	18900	1880	1	20.46	21.50	1.271	-	-	-0.1	0.226	0.287

	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	18900	1880	1	20.49	21.50	1.262	-	-	0.18	0.242	0.305
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	Receiver on	18900	1880	1	20.46	21.50	1.271	-	-	-0.17	0.238	0.302
2600MHz																					
11	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	21100	2535	1	16.64	17.50	1.219	-	-	0.09	0.927	**1.130**
	LTE Band 7C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	21100+ 21298	2535+ 2554.8	1	16.60	17.50	1.230	-	-	-0.05	0.881	1.084
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	20850	2510	1	16.61	17.50	1.227	-	-	0.15	0.888	1.090
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	21350	2560	1	16.59	17.50	1.233	-	-	-0.09	0.854	1.053
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	21100	2535	1	16.62	17.50	1.225	-	-	-0.08	0.674	0.825
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	20850	2510	1	16.59	17.50	1.233	-	-	0.16	0.651	0.803
	LTE Band 7	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	21350	2560	1	16.56	17.50	1.242	-	-	0.05	0.733	0.910
	LTE Band 7	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 0	Receiver on	21100	2535	1	16.58	17.50	1.236	-	-	0.05	0.719	0.889
	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	21100	2535	1	16.64	17.50	1.219	-	-	-0.03	0.527	0.642
	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	21100	2535	1	16.62	17.50	1.225	-	-	-0.15	0.402	0.492
	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	21100	2535	1	16.64	17.50	1.219	-	-	0.02	0.237	0.289
	LTE Band 7	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	Receiver on	21100	2535	1	16.62	17.50	1.225	-	-	0.07	0.202	0.247
	LTE Band 7	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	21100	2535	1	16.64	17.50	1.219	-	-	0.16	0.194	0.236
	LTE Band 7	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	Receiver on	21100	2535	1	16.62	17.50	1.225	-	-	0.13	0.168	0.206
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	40620	2593	1	17.77	19.00	1.327	62.9	1.006	-0.11	0.752	1.004
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	39750	2506	1	17.69	19.00	1.352	62.9	1.006	-0.06	0.610	0.830
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	40185	2549.5	1	17.73	19.00	1.340	62.9	1.006	-0.15	0.632	0.852
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	41055	2636.5	1	17.75	19.00	1.334	62.9	1.006	0.03	0.799	1.072
12	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	41490	2680	1	17.71	19.00	1.346	62.9	1.006	0.02	0.871	**1.179**
	LTE Band 41C	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	41490+ 41292	2680+ 2660.2	1	17.53	19.00	1.403	62.9	1.006	0.16	0.811	1.145
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	41490	2680	2	17.71	19.00	1.346	62.9	1.006	0.05	0.805	1.090
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	40620	2593	1	17.75	19.00	1.334	62.9	1.006	-0.15	0.591	0.793
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	39750	2506	1	17.69	19.00	1.352	62.9	1.006	-0.02	0.497	0.676
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	40185	2549.5	1	17.71	19.00	1.346	62.9	1.006	-0.09	0.525	0.711
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	41055	2636.5	1	17.74	19.00	1.337	62.9	1.006	0.14	0.673	0.905
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 0	Receiver on	41490	2680	1	17.71	19.00	1.346	62.9	1.006	0.1	0.726	0.983
	LTE Band 41	20M	QPSK	100	0	-	Right Cheek	0mm	Ant 0	Receiver on	40620	2593	1	17.71	19.00	1.346	62.9	1.006	0.07	0.604	0.818
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	Receiver on	40620	2593	1	17.77	19.00	1.327	62.9	1.006	-0.09	0.409	0.546
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 0	Receiver on	40620	2593	1	17.75	19.00	1.334	62.9	1.006	-0.16	0.390	0.523
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	Receiver on	40620	2593	1	17.77	19.00	1.327	62.9	1.006	-0.18	0.236	0.315
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 0	Receiver on	40620	2593	1	17.75	19.00	1.334	62.9	1.006	-0.07	0.188	0.252
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	Receiver on	40620	2593	1	17.77	19.00	1.327	62.9	1.006	0.11	0.189	0.252
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 0	Receiver on	40620	2593	1	17.75	19.00	1.334	62.9	1.006	-0.08	0.155	0.208

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	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)
WIFI/BT																	
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	-0.15	0.187	0.270
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	-0.15	0.151	0.218
13	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	-0.02	0.781	**1.129**
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Full Power	1	2412	2	18.90	20.50	1.445	100	1.000	0.09	0.671	0.970
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	0.11	0.491	0.710
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Full Power	2	2417	1	18.71	20.50	1.510	100	1.000	0.08	0.740	1.117
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Full Power	6	2437	1	15.12	17.00	1.542	100	1.000	0.01	0.369	0.569
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	Full Power	11	2462	1	16.74	18.50	1.500	100	1.000	0.03	0.495	0.742
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	-0.08	0.001	0.002
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	0.16	0.001	0.002
14	Bluetooth	1Mbps	Left Cheek	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	-0.01	0.083	**0.126**
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	0.05	0.047	0.072
	WLAN5.3GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	-0.08	0.064	0.104
	WLAN5.3GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	-0.04	0.061	0.099
15	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	-0.04	0.266	**0.432**
	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	-0.08	0.177	0.288
	WLAN5.3GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Full Power	60	5300	1	16.48	18.00	1.420	96.48	1.036	0.18	0.134	0.197
	WLAN5.5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.08	0.072	0.106
	WLAN5.5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.01	0.083	0.122
16	WLAN5.5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.11	0.149	**0.220**
	WLAN5.5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.03	0.108	0.159
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	0.05	0.079	0.122
	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	-0.11	0.130	0.201
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	-0.12	0.104	0.161
17	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	0.03	0.141	**0.218**

15.2 Body SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	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)
750MHz																					
18	LTE Band 12	10M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	23095	707.5	1	18.86	20.00	1.300	-	-	-0.03	0.834	**1.084**
	LTE Band 12	10M	QPSK	25	0	-	Bottom Face	0mm	Ant 0	Sensor on	23095	707.5	1	18.83	20.00	1.309	-	-	0.08	0.628	0.822
	LTE Band 12	10M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	23095	707.5	1	18.79	20.00	1.321	-	-	0.01	0.609	0.805
	LTE Band 12	10M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	23095	707.5	1	18.86	20.00	1.300	-	-	0.03	0.518	0.673
	LTE Band 12	10M	QPSK	25	0	-	Edge 1	0mm	Ant 0	Sensor on	23095	707.5	1	18.83	20.00	1.309	-	-	-0.08	0.411	0.538
	LTE Band 12	10M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	23095	707.5	1	18.86	20.00	1.300	-	-	0.1	0.345	0.449
	LTE Band 12	10M	QPSK	25	0	-	Edge 4	0mm	Ant 0	Sensor on	23095	707.5	1	18.83	20.00	1.309	-	-	-0.18	0.332	0.435
	LTE Band 12	10M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	23095	707.5	1	23.20	24.00	1.202	-	-	0.14	0.228	0.274
	LTE Band 12	10M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	23095	707.5	1	23.20	24.00	1.202	-	-	0.11	0.168	0.202
	LTE Band 12	10M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	23095	707.5	1	23.20	24.00	1.202	-	-	-0.05	0.010	0.012
19	LTE Band 13	10M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	23230	782	1	18.54	19.50	1.247	-	-	-0.02	0.890	**1.110**
	LTE Band 13	10M	QPSK	25	0	-	Bottom Face	0mm	Ant 0	Sensor on	23230	782	1	18.51	19.50	1.256	-	-	0.1	0.710	0.892
	LTE Band 13	10M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	23230	782	1	18.41	19.50	1.285	-	-	0.12	0.710	0.913
	LTE Band 13	10M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	23230	782	1	18.54	19.50	1.247	-	-	0.08	0.611	0.762
	LTE Band 13	10M	QPSK	25	0	-	Edge 1	0mm	Ant 0	Sensor on	23230	782	1	18.51	19.50	1.256	-	-	-0.17	0.496	0.623
	LTE Band 13	10M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	23230	782	1	18.54	19.50	1.247	-	-	0.14	0.530	0.661
	LTE Band 13	10M	QPSK	25	0	-	Edge 4	0mm	Ant 0	Sensor on	23230	782	1	18.51	19.50	1.256	-	-	0.11	0.444	0.558
	LTE Band 13	10M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	23230	782	1	22.83	24.00	1.309	-	-	0.13	0.341	0.446
	LTE Band 13	10M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	23230	782	1	22.83	24.00	1.309	-	-	0.12	0.246	0.322
	LTE Band 13	10M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	23230	782	1	22.83	24.00	1.309	-	-	0.03	0.101	0.132
835MHz																					
20	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Face	0mm	Ant 0	Sensor on	189	836.4	1	22.85	24.00	1.303	-	-	-0.09	0.873	**1.138**
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Face	0mm	Ant 0	Sensor on	128	824.2	1	22.67	24.00	1.358	-	-	-0.09	0.738	1.002
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Face	0mm	Ant 0	Sensor on	251	848.8	1	22.77	24.00	1.327	-	-	-0.16	0.800	1.062
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Edge 1	0mm	Ant 0	Sensor on	189	836.4	1	22.85	24.00	1.303	-	-	0.14	0.514	0.670
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Edge 2	0mm	Ant 0	Full Power	189	836.4	1	29.02	30.50	1.406	-	-	0	0.001	0.001
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Edge 3	0mm	Ant 0	Full Power	189	836.4	1	29.02	30.50	1.406	-	-	0	0.001	0.001
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Edge 4	0mm	Ant 0	Sensor on	189	836.4	1	22.85	24.00	1.303	-	-	0.07	0.227	0.296
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Face	19mm	Ant 0	Full Power	189	836.4	1	29.02	30.50	1.406	-	-	-0.18	0.446	0.627
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Edge 1	19mm	Ant 0	Full Power	189	836.4	1	29.02	30.50	1.406	-	-	0.1	0.356	0.501
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Edge 4	12mm	Ant 0	Full Power	189	836.4	1	29.02	30.50	1.406	-	-	0.12	0.284	0.399
21	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	4182	836.4	1	18.51	19.50	1.256	-	-	-0.05	0.874	**1.098**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	4132	826.4	1	18.41	19.50	1.285	-	-	0.17	0.847	1.089
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	4233	846.6	1	18.45	19.50	1.274	-	-	-0.05	0.795	1.012
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Edge 1	0mm	Ant 0	Sensor on	4182	836.4	1	18.51	19.50	1.256	-	-	-0.05	0.440	0.553
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Edge 4	0mm	Ant 0	Sensor on	4182	836.4	1	18.51	19.50	1.256	-	-	-0.17	0.302	0.379
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Face	19mm	Ant 0	Full Power	4182	836.4	1	23.85	24.50	1.161	-	-	0.06	0.458	0.532
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Edge 1	19mm	Ant 0	Full Power	4182	836.4	1	23.85	24.50	1.161	-	-	-0.09	0.277	0.322
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Edge 4	12mm	Ant 0	Full Power	4182	836.4	1	23.85	24.50	1.161	-	-	-0.08	0.176	0.204
22	LTE Band 26	15M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	26865	831.5	1	18.45	19.50	1.274	-	-	-0.05	0.781	**0.995**
	LTE Band 26	15M	QPSK	36	0	-	Bottom Face	0mm	Ant 0	Sensor on	26865	831.5	1	18.34	19.50	1.306	-	-	0.01	0.623	0.814
	LTE Band 26	15M	QPSK	75	0	-	Bottom Face	0mm	Ant 0	Sensor on	26865	831.5	1	18.25	19.50	1.334	-	-	0.1	0.639	0.852
	LTE Band 26	15M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	26865	831.5	1	18.45	19.50	1.274	-	-	-0.17	0.469	0.597
	LTE Band 26	15M	QPSK	36	0	-	Edge 1	0mm	Ant 0	Sensor on	26865	831.5	1	18.34	19.50	1.306	-	-	0.04	0.360	0.470
	LTE Band 26	15M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	26865	831.5	1	18.45	19.50	1.274	-	-	-0.08	0.257	0.327
	LTE Band 26	15M	QPSK	36	0	-	Edge 4	0mm	Ant 0	Sensor on	26865	831.5	1	18.34	19.50	1.306	-	-	0.05	0.232	0.303
	LTE Band 26	15M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	26865	831.5	1	23.17	24.00	1.211	-	-	0.18	0.351	0.425
	LTE Band 26	15M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	26865	831.5	1	23.17	24.00	1.211	-	-	0.14	0.212	0.257
	LTE Band 26	15M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	26865	831.5	1	23.17	24.00	1.211	-	-	-0.17	0.135	0.163
1750MHz																					
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	1413	1732.6	1	12.42	13.50	1.282	-	-	0.06	0.827	1.060

23	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	1312	1712.4	1	12.35	13.50	1.303	-	-	0.06	0.899	**1.172**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	1312	1712.4	2	12.35	13.50	1.303	-	-	0.09	0.811	1.057
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	1513	1752.6	1	12.29	13.50	1.321	-	-	-0.09	0.736	0.972
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Edge 1	0mm	Ant 0	Sensor on	1413	1732.6	1	12.42	13.50	1.282	-	-	-0.08	0.670	0.859
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Edge 1	0mm	Ant 0	Sensor on	1312	1712.4	1	12.35	13.50	1.303	-	-	0.13	0.683	0.890
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Edge 1	0mm	Ant 0	Sensor on	1513	1752.6	1	12.29	13.50	1.321	-	-	0.12	0.579	0.765
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Edge 4	0mm	Ant 0	Sensor on	1413	1732.6	1	12.42	13.50	1.282	-	-	0.03	0.084	0.108
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Face	19mm	Ant 0	Full Power	1413	1732.6	1	23.82	24.50	1.169	-	-	0.08	0.837	0.979
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Edge 1	19mm	Ant 0	Full Power	1413	1732.6	1	23.82	24.50	1.169	-	-	-0.17	0.819	0.958
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Edge 4	12mm	Ant 0	Full Power	1413	1732.6	1	23.82	24.50	1.169	-	-	-0.03	0.283	0.331
	LTE Band 66	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	132322	1745	1	13.52	14.00	1.117	-	-	-0.1	0.742	0.829
	LTE Band 66	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	132072	1720	1	13.47	14.00	1.130	-	-	0.07	0.861	0.973
24	LTE Band 66	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	132572	1770	1	13.38	14.00	1.153	-	-	0.03	0.879	**1.014**
	LTE Band 66	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	132322	1745	1	13.31	14.00	1.172	-	-	0.18	0.768	0.900
	LTE Band 66	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	132072	1720	1	13.17	14.00	1.211	-	-	-0.1	0.655	0.793
	LTE Band 66	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	132572	1770	1	13.22	14.00	1.197	-	-	0.01	0.671	0.803
	LTE Band 66	20M	QPSK	100	0	-	Bottom Face	0mm	Ant 0	Sensor on	132322	1745	1	13.20	14.00	1.202	-	-	-0.15	0.566	0.680
	LTE Band 66	20M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	132322	1745	1	13.52	14.00	1.117	-	-	0.19	0.596	0.666
	LTE Band 66	20M	QPSK	50	0	-	Edge 1	0mm	Ant 0	Sensor on	132322	1745	1	13.31	14.00	1.172	-	-	0.03	0.458	0.537
	LTE Band 66	20M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	132322	1745	1	13.52	14.00	1.117	-	-	-0.08	0.621	0.694
	LTE Band 66	20M	QPSK	50	0	-	Edge 4	0mm	Ant 0	Sensor on	132322	1745	1	13.31	14.00	1.172	-	-	-0.04	0.520	0.610
	LTE Band 66	20M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	132322	1745	1	23.26	24.00	1.186	-	-	0.14	0.647	0.767
	LTE Band 66	20M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	132322	1745	1	23.26	24.00	1.186	-	-	0.11	0.637	0.755
	LTE Band 66	20M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	132322	1745	1	23.26	24.00	1.186	-	-	-0.05	0.206	0.244
1900MHz																					
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Face	0mm	Ant 0	Sensor on	661	1880	1	15.58	17.00	1.387	-	-	-0.06	0.653	0.906
25	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Face	0mm	Ant 0	Sensor on	512	1850.2	1	15.43	17.00	1.435	-	-	0.05	0.750	**1.077**
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Face	0mm	Ant 0	Sensor on	810	1909.8	1	15.55	17.00	1.396	-	-	-0.09	0.481	0.672
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Edge 1	0mm	Ant 0	Sensor on	661	1880	1	15.58	17.00	1.387	-	-	-0.15	0.373	0.517
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Edge 2	0mm	Ant 0	Full Power	661	1880	1	25.77	26.50	1.183	-	-	0	0.001	0.001
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Edge 3	0mm	Ant 0	Full Power	661	1880	1	25.77	26.50	1.183	-	-	0	0.001	0.001
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Edge 4	0mm	Ant 0	Sensor on	661	1880	1	15.58	17.00	1.387	-	-	0.16	0.132	0.183
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Face	19mm	Ant 0	Full Power	661	1880	1	25.77	26.50	1.183	-	-	0.18	0.222	0.263
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Edge 1	19mm	Ant 0	Full Power	661	1880	1	25.77	26.50	1.183	-	-	0.14	0.170	0.201
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Edge 4	12mm	Ant 0	Full Power	661	1880	1	25.77	26.50	1.183	-	-	-0.17	0.329	0.389
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	9400	1880	1	12.84	14.00	1.306	-	-	-0.04	0.736	0.961
26	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	9262	1852.4	1	12.76	14.00	1.330	-	-	0.03	0.845	**1.124**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Face	0mm	Ant 0	Sensor on	9538	1907.6	1	12.64	14.00	1.368	-	-	-0.08	0.709	0.970
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Edge 1	0mm	Ant 0	Sensor on	9400	1880	1	12.84	14.00	1.306	-	-	-0.13	0.492	0.643
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Edge 4	0mm	Ant 0	Sensor on	9400	1880	1	12.84	14.00	1.306	-	-	-0.03	0.205	0.268
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Face	19mm	Ant 0	Full Power	9400	1880	1	24.31	25.00	1.172	-	-	0.18	0.329	0.386
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Edge 1	19mm	Ant 0	Full Power	9400	1880	1	24.31	25.00	1.172	-	-	0.16	0.278	0.326
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Edge 4	12mm	Ant 0	Full Power	9400	1880	1	24.31	25.00	1.172	-	-	-0.1	0.213	0.250
	LTE Band 2	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	18900	1880	1	13.75	14.50	1.189	-	-	-0.07	0.783	0.931
27	LTE Band 2	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	18700	1860	1	13.67	14.50	1.211	-	-	-0.05	0.855	**1.035**
	LTE Band 2	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	19100	1900	1	13.65	14.50	1.216	-	-	0.05	0.720	0.876
	LTE Band 2	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	18900	1880	1	13.71	14.50	1.199	-	-	-0.11	0.724	0.868
	LTE Band 2	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	18700	1860	1	13.69	14.50	1.205	-	-	-0.12	0.718	0.865
	LTE Band 2	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	19100	1900	1	13.45	14.50	1.274	-	-	0.03	0.612	0.779
	LTE Band 2	20M	QPSK	100	0	-	Bottom Face	0mm	Ant 0	Sensor on	18900	1880	1	13.65	14.50	1.216	-	-	-0.16	0.629	0.765
	LTE Band 2	20M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	18900	1880	1	13.75	14.50	1.189	-	-	-0.02	0.497	0.591
	LTE Band 2	20M	QPSK	50	0	-	Edge 1	0mm	Ant 0	Sensor on	18900	1880	1	13.71	14.50	1.199	-	-	0.11	0.423	0.507
	LTE Band 2	20M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	18900	1880	1	13.75	14.50	1.189	-	-	0.05	0.181	0.215
	LTE Band 2	20M	QPSK	50	0	-	Edge 4	0mm	Ant 0	Sensor on	18900	1880	1	13.71	14.50	1.199	-	-	-0.15	0.160	0.192
	LTE Band 2	20M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	18900	1880	1	23.58	24.50	1.236	-	-	0.17	0.423	0.523
	LTE Band 2	20M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	18900	1880	1	23.58	24.50	1.236	-	-	-0.05	0.357	0.441

	LTE Band 2	20M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	18900	1880	1	23.58	24.50	1.236	-	-	0.01	0.274	0.339
2600MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	21100	2535	1	15.26	16.00	1.186	-	-	0.13	0.867	1.028
	LTE Band 7	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	20850	2510	1	15.16	16.00	1.213	-	-	-0.18	0.867	1.052
28	LTE Band 7	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	21350	2560	1	14.82	16.00	1.312	-	-	0.08	0.875	**1.148**
	LTE Band 7C	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	21350+ 21152	2560+ 2540.2	1	14.67	16.00	1.358	-	-	0.03	0.843	1.145
	LTE Band 7	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	21100	2535	1	15.15	16.00	1.216	-	-	0.02	0.798	0.971
	LTE Band 7	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	20850	2510	1	15.09	16.00	1.233	-	-	0.16	0.711	0.877
	LTE Band 7	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	21350	2560	1	14.82	16.00	1.312	-	-	-0.03	0.732	0.961
	LTE Band 7	20M	QPSK	100	0	-	Bottom Face	0mm	Ant 0	Sensor on	21100	2535	1	15.09	16.00	1.233	-	-	0.07	0.694	0.856
	LTE Band 7	20M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	21100	2535	1	15.26	16.00	1.186	-	-	0	0.741	0.879
	LTE Band 7	20M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	20850	2510	1	15.16	16.00	1.213	-	-	0.01	0.593	0.720
	LTE Band 7	20M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	21350	2560	1	14.82	16.00	1.312	-	-	-0.01	0.672	0.882
	LTE Band 7	20M	QPSK	50	0	-	Edge 1	0mm	Ant 0	Sensor on	21100	2535	1	15.15	16.00	1.216	-	-	-0.06	0.698	0.849
	LTE Band 7	20M	QPSK	50	0	-	Edge 1	0mm	Ant 0	Sensor on	20850	2510	1	15.09	16.00	1.233	-	-	-0.04	0.635	0.783
	LTE Band 7	20M	QPSK	50	0	-	Edge 1	0mm	Ant 0	Sensor on	21350	2560	1	14.82	16.00	1.312	-	-	-0.09	0.703	0.922
	LTE Band 7	20M	QPSK	100	0	-	Edge 1	0mm	Ant 0	Sensor on	21100	2535	1	15.09	16.00	1.233	-	-	-0.17	0.694	0.856
	LTE Band 7	20M	QPSK	1	0	-	Edge 2	0mm	Ant 0	Full Power	21100	2535	1	23.15	24.00	1.216	-	-	0	0.001	0.001
	LTE Band 7	20M	QPSK	50	0	-	Edge 2	0mm	Ant 0	Full Power	21100	2535	1	22.21	23.00	1.199	-	-	0	0.001	0.001
	LTE Band 7	20M	QPSK	1	0	-	Edge 3	0mm	Ant 0	Full Power	21100	2535	1	23.15	24.00	1.216	-	-	0	0.001	0.001
	LTE Band 7	20M	QPSK	50	0	-	Edge 3	0mm	Ant 0	Full Power	21100	2535	1	22.21	23.00	1.199	-	-	0	0.001	0.001
	LTE Band 7	20M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	21100	2535	1	15.26	16.00	1.186	-	-	-0.1	0.606	0.719
	LTE Band 7	20M	QPSK	50	0	-	Edge 4	0mm	Ant 0	Sensor on	21100	2535	1	15.15	16.00	1.216	-	-	-0.04	0.585	0.711
	LTE Band 7	20M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	21100	2535	1	23.15	24.00	1.216	-	-	0.1	0.497	0.604
	LTE Band 7	20M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	21100	2535	1	23.15	24.00	1.216	-	-	-0.17	0.334	0.406
	LTE Band 7	20M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	21100	2535	1	23.15	24.00	1.216	-	-	0.04	0.478	0.581
	LTE Band 41	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	40620	2593	1	15.34	16.00	1.164	62.9	1.006	-0.01	0.534	0.625
	LTE Band 41	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	39750	2506	1	15.30	16.00	1.175	62.9	1.006	0.05	0.466	0.551
	LTE Band 41	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	40185	2549.5	1	15.28	16.00	1.180	62.9	1.006	0.02	0.473	0.562
	LTE Band 41	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	41055	2636.5	1	15.28	16.00	1.180	62.9	1.006	-0.13	0.663	0.787
29	LTE Band 41	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	41490	2680	1	15.17	16.00	1.211	62.9	1.006	0.06	0.826	**1.006**
	LTE Band 41C	20M	QPSK	1	0	-	Bottom Face	0mm	Ant 0	Sensor on	41490+ 41292	2680+ 2699.8	1	15.00	16.00	1.259	62.9	1.006	0.08	0.792	1.003
	LTE Band 41	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	40620	2593	1	15.31	16.00	1.172	62.9	1.006	0.17	0.551	0.650
	LTE Band 41	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	39750	2506	1	15.22	16.00	1.197	62.9	1.006	0	0.483	0.581
	LTE Band 41	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	40185	2549.5	1	15.13	16.00	1.222	62.9	1.006	-0.04	0.497	0.611
	LTE Band 41	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	41055	2636.5	1	15.09	16.00	1.233	62.9	1.006	-0.15	0.565	0.701
	LTE Band 41	20M	QPSK	50	0	-	Bottom Face	0mm	Ant 0	Sensor on	41490	2680	1	15.09	16.00	1.233	62.9	1.006	0.11	0.690	0.856
	LTE Band 41	20M	QPSK	100	0	-	Bottom Face	0mm	Ant 0	Sensor on	40620	2593	1	15.29	16.00	1.178	62.9	1.006	-0.02	0.470	0.557
	LTE Band 41	20M	QPSK	1	0	-	Edge 1	0mm	Ant 0	Sensor on	40620	2593	1	15.34	16.00	1.164	62.9	1.006	0.1	0.421	0.493
	LTE Band 41	20M	QPSK	50	0	-	Edge 1	0mm	Ant 0	Sensor on	40620	2593	1	15.31	16.00	1.172	62.9	1.006	-0.15	0.359	0.423
	LTE Band 41	20M	QPSK	1	0	-	Edge 2	0mm	Ant 0	Full Power	40620	2593	1	23.73	24.50	1.194	62.9	1.006	0	0.001	0.001
	LTE Band 41	20M	QPSK	50	0	-	Edge 2	0mm	Ant 0	Full Power	40620	2593	1	22.76	23.50	1.186	62.9	1.006	0	0.001	0.001
	LTE Band 41	20M	QPSK	1	0	-	Edge 3	0mm	Ant 0	Full Power	40620	2593	1	23.73	24.50	1.194	62.9	1.006	0	0.001	0.001
	LTE Band 41	20M	QPSK	50	0	-	Edge 3	0mm	Ant 0	Full Power	40620	2593	1	22.76	23.50	1.186	62.9	1.006	0	0.001	0.001
	LTE Band 41	20M	QPSK	1	0	-	Edge 4	0mm	Ant 0	Sensor on	40620	2593	1	15.34	16.00	1.164	62.9	1.006	0.12	0.366	0.429
	LTE Band 41	20M	QPSK	50	0	-	Edge 4	0mm	Ant 0	Sensor on	40620	2593	1	15.31	16.00	1.172	62.9	1.006	-0.13	0.301	0.355
	LTE Band 41	20M	QPSK	1	0	-	Bottom Face	19mm	Ant 0	Full Power	40620	2593	1	23.73	24.50	1.194	62.9	1.006	-0.01	0.351	0.422
	LTE Band 41	20M	QPSK	1	0	-	Edge 1	19mm	Ant 0	Full Power	40620	2593	1	23.73	24.50	1.194	62.9	1.006	-0.08	0.214	0.257
	LTE Band 41	20M	QPSK	1	0	-	Edge 4	12mm	Ant 0	Full Power	40620	2593	1	23.73	24.50	1.194	62.9	1.006	0.05	0.367	0.441

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	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)
WIFI/BT																	
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 1	Sensor on	1	2412	1	12.90	14.50	1.445	100	1.000	0.08	0.630	0.911
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 1	Sensor on	6	2437	1	12.56	14.50	1.563	100	1.000	0.01	0.681	1.065
30	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0mm	Ant 1	Sensor on	11	2462	1	12.77	14.50	1.489	100	1.000	0.17	0.717	**1.068**
	WLAN2.4GHz	802.11b 1Mbps	Edge 1	0mm	Ant 1	Sensor on	1	2412	1	12.90	14.50	1.445	100	1.000	0.03	0.263	0.380
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	0mm	Ant 1	Sensor on	1	2412	1	12.90	14.50	1.445	100	1.000	0.1	0.258	0.373
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	15mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	-0.08	0.159	0.230
	WLAN2.4GHz	802.11b 1Mbps	Edge 1	11mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	-0.08	0.174	0.252
	WLAN2.4GHz	802.11b 1Mbps	Edge 2	4mm	Ant 1	Full Power	1	2412	1	18.90	20.50	1.445	100	1.000	0.1	0.251	0.363
	Bluetooth	1Mbps	Bottom Face	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	-0.1	0.195	0.297
	Bluetooth	1Mbps	Bottom Face	0mm	Ant 1	Full Power	39	2441	1	9.82	11.50	1.472	76.91	1.083	0.01	0.199	0.317
31	Bluetooth	1Mbps	Bottom Face	0mm	Ant 1	Full Power	78	2480	1	9.75	11.50	1.496	76.91	1.083	-0.08	0.226	**0.366**
	Bluetooth	1Mbps	Edge 1	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	-0.15	0.065	0.099
	Bluetooth	1Mbps	Edge 2	0mm	Ant 1	Full Power	0	2402	1	10.02	11.50	1.406	76.91	1.083	0.19	0.059	0.090
32	WLAN5.3GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	58	5290	1	10.29	11.50	1.321	87.5	1.143	0.03	0.723	**1.092**
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	58	5290	2	10.29	11.50	1.321	87.5	1.143	0.04	0.658	0.994
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Edge 1	0mm	Ant 1	Sensor on	58	5290	1	10.29	11.50	1.321	87.5	1.143	-0.05	0.322	0.486
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	Sensor on	58	5290	1	10.29	11.50	1.321	87.5	1.143	0.17	0.177	0.267
	WLAN5.3GHz	802.11a 6Mbps	Bottom Face	15mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	0.08	0.212	0.344
	WLAN5.3GHz	802.11a 6Mbps	Edge 1	11mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	0.01	0.248	0.403
	WLAN5.3GHz	802.11a 6Mbps	Edge 2	4mm	Ant 1	Full Power	56	5280	1	16.55	18.50	1.568	96.48	1.036	0.03	0.154	0.250
33	WLAN5.5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	138	5690	1	10.71	12.00	1.346	87.5	1.143	-0.05	0.731	**1.125**
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	138	5690	2	10.71	12.00	1.346	87.5	1.143	-0.11	0.688	1.058
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	106	5530	1	10.24	12.00	1.500	87.5	1.143	0.01	0.640	1.097
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	122	5610	1	10.65	12.00	1.365	87.5	1.143	0.1	0.676	1.054
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Edge 1	0mm	Ant 1	Sensor on	138	5690	1	10.71	12.00	1.346	87.5	1.143	0.04	0.327	0.503
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	Sensor on	138	5690	1	10.71	12.00	1.346	87.5	1.143	0.06	0.265	0.408
	WLAN5.5GHz	802.11a 6Mbps	Bottom Face	15mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.08	0.368	0.543
	WLAN5.5GHz	802.11a 6Mbps	Edge 1	11mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.01	0.203	0.299
	WLAN5.5GHz	802.11a 6Mbps	Edge 2	4mm	Ant 1	Full Power	144	5720	1	16.47	18.00	1.424	96.48	1.036	0.03	0.211	0.311
34	WLAN5.8GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	155	5775	1	10.96	12.00	1.271	87.5	1.143	0.02	0.767	**1.114**
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Bottom Face	0mm	Ant 1	Sensor on	155	5775	2	10.96	12.00	1.271	87.5	1.143	0.11	0.681	0.989
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Edge 1	0mm	Ant 1	Sensor on	155	5775	1	10.96	12.00	1.271	87.5	1.143	0.03	0.272	0.395
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Edge 2	0mm	Ant 1	Sensor on	155	5775	1	10.96	12.00	1.271	87.5	1.143	-0.1	0.204	0.296
	WLAN5.8GHz	802.11a 6Mbps	Bottom Face	15mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	0.08	0.338	0.522
	WLAN5.8GHz	802.11a 6Mbps	Edge 1	11mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	-0.17	0.229	0.354
	WLAN5.8GHz	802.11a 6Mbps	Edge 2	4mm	Ant 1	Full Power	165	5825	1	15.77	17.50	1.491	96.48	1.036	-0.03	0.504	0.778

15.3 Repeated SAR Measurement

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	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	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	23095	707.5	23.20	24.00	1.202	-	-	-0.05	0.953	1	1.146
2nd	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	23095	707.5	23.20	24.00	1.202	-	-	0.08	0.922	1.034	1.108
1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	4132	826.4	21.41	22.00	1.146	-	-	-0.02	0.998	1	1.143
2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	4132	826.4	21.41	22.00	1.146	-	-	0.05	0.971	1.028	1.112
1st	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	132322	1745	15.80	16.50	1.175	-	-	0.02	1.010	1	1.187
2nd	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	132322	1745	15.80	16.50	1.175	-	-	0.05	0.983	1.027	1.155
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	9538	1907.6	19.24	20.00	1.191	-	-	0.01	0.903	1	1.076
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	Receiver on	9538	1907.6	19.24	20.00	1.191	-	-	0.18	0.881	1.025	1.049
1st	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	21100	2535	16.64	17.50	1.219	-	-	0.09	0.927	1	1.130
2nd	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	Receiver on	21100	2535	16.64	17.50	1.219	-	-	0.11	0.911	1.018	1.110

General Note:

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

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Tablet	
		Head	Body
1.	WWAN + 2.4GHz WLAN	Yes	Yes
2.	WWAN + 5GHz WLAN	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes

General Note:

1. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
2. 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.
3. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
4. According to the EUT characteristic, WLAN 5GHz and Bluetooth can't transmit simultaneously.
5. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
6. When stand-alone SAR is not required for a transmitter or antenna, its SAR is considered zero in the SAR summing process to assess Multi-band transmission SAR compliance.
7. All licensed modes share the same antenna part and cannot transmit simultaneously.
8. The reported SAR summation is calculated based on the same configuration and test position
9. 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 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04 for 1g SAR, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg.
   v) The SPLSR calculated results please refer to section 16.3.

16.1 Head Exposure Conditions

WWAN Band	Exposure Position	1 WWAN 1g SAR (W/kg)	2 WLAN2.4GHz Ant 1 1g SAR (W/kg)	3 WLAN5GHz Ant 1 1g SAR (W/kg)	4 Bluetooth Ant 1 1g SAR (W/kg)	1+2 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+4 Summed 1g SAR (W/kg)
LTE Band 12	Right Cheek	1.146	0.270	0.122	0.002	1.42	1.27	1.15
	Right Tilted	0.975	0.218	0.201	0.002	1.19	1.18	0.98
	Left Cheek	0.388	1.129	0.432	0.126	1.52	0.82	0.51
	Left Tilted	0.441	0.710	0.288	0.072	1.15	0.73	0.51
LTE Band 13	Right Cheek	1.187	0.270	0.122	0.002	1.46	1.31	1.19
	Right Tilted	1.043	0.218	0.201	0.002	1.26	1.24	1.05
	Left Cheek	0.372	1.129	0.432	0.126	1.50	0.80	0.50
	Left Tilted	0.437	0.710	0.288	0.072	1.15	0.73	0.51
GSM850	Right Cheek	1.094	0.270	0.122	0.002	1.36	1.22	1.10
	Right Tilted	0.865	0.218	0.201	0.002	1.08	1.07	0.87
	Left Cheek	0.412	1.129	0.432	0.126	1.54	0.84	0.54
	Left Tilted	0.302	0.710	0.288	0.072	1.01	0.59	0.37
WCDMA V	Right Cheek	1.143	0.270	0.122	0.002	1.41	1.27	1.15
	Right Tilted	0.772	0.218	0.201	0.002	0.99	0.97	0.77
	Left Cheek	0.460	1.129	0.432	0.126	**1.59**	0.89	0.59
	Left Tilted	0.421	0.710	0.288	0.072	1.13	0.71	0.49
LTE Band 26	Right Cheek	1.092	0.270	0.122	0.002	1.36	1.21	1.09
	Right Tilted	0.835	0.218	0.201	0.002	1.05	1.04	0.84
	Left Cheek	0.419	1.129	0.432	0.126	1.55	0.85	0.55
	Left Tilted	0.346	0.710	0.288	0.072	1.06	0.63	0.42
WCDMA IV	Right Cheek	1.147	0.270	0.122	0.002	1.42	1.27	1.15
	Right Tilted	1.003	0.218	0.201	0.002	1.22	1.20	1.01
	Left Cheek	0.323	1.129	0.432	0.126	1.45	0.76	0.45
	Left Tilted	0.335	0.710	0.288	0.072	1.05	0.62	0.41
LTE Band 66	Right Cheek	1.187	0.270	0.122	0.002	1.46	1.31	1.19
	Right Tilted	1.175	0.218	0.201	0.002	1.39	1.38	1.18
	Left Cheek	0.249	1.129	0.432	0.126	1.38	0.68	0.38
	Left Tilted	0.296	0.710	0.288	0.072	1.01	0.58	0.37
GSM1900	Right Cheek	1.048	0.270	0.122	0.002	1.32	1.17	1.05
	Right Tilted	0.980	0.218	0.201	0.002	1.20	1.18	0.98
	Left Cheek	0.296	1.129	0.432	0.126	1.43	0.73	0.42
	Left Tilted	0.277	0.710	0.288	0.072	0.99	0.57	0.35
WCDMA II	Right Cheek	1.076	0.270	0.122	0.002	1.35	1.20	1.08
	Right Tilted	0.750	0.218	0.201	0.002	0.97	0.95	0.75
	Left Cheek	0.269	1.129	0.432	0.126	1.40	0.70	0.40
	Left Tilted	0.253	0.710	0.288	0.072	0.96	0.54	0.33
LTE Band 2	Right Cheek	1.133	0.270	0.122	0.002	1.40	1.26	1.14
	Right Tilted	0.963	0.218	0.201	0.002	1.18	1.16	0.97
	Left Cheek	0.289	1.129	0.432	0.126	1.42	0.72	0.42
	Left Tilted	0.305	0.710	0.288	0.072	1.02	0.59	0.38
LTE Band 7	Right Cheek	1.130	0.270	0.122	0.002	1.40	1.25	1.13
	Right Tilted	0.642	0.218	0.201	0.002	0.86	0.84	0.64
	Left Cheek	0.289	1.129	0.432	0.126	1.42	0.72	0.42
	Left Tilted	0.236	0.710	0.288	0.072	0.95	0.52	0.31
LTE Band 41	Right Cheek	1.179	0.270	0.122	0.002	1.45	1.30	1.18
	Right Tilted	0.546	0.218	0.201	0.002	0.76	0.75	0.55
	Left Cheek	0.315	1.129	0.432	0.126	1.44	0.75	0.44
	Left Tilted	0.252	0.710	0.288	0.072	0.96	0.54	0.32

16.2 Body Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4	Case No
		WWAN	WLAN2.4GHz Ant 1	WLAN5GHz Ant 1	Bluetooth Ant 1	Summed	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850	Bottom Face	1.138	1.068	1.125	0.366	**2.21**	**2.26**	1.50	**1,2**
	Edge 1	0.670	0.380	0.503	0.099	1.05	1.17	0.77	
	Edge 2	0.001	0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 3	0.001				0.00	0.00	0.00	
	Edge 4	0.296				0.30	0.30	0.30	
GSM1900	Bottom Face	1.077	1.068	1.125	0.366	**2.15**	**2.20**	1.44	**3,4**
	Edge 1	0.517	0.380	0.503	0.099	0.90	1.02	0.62	
	Edge 2	0.001	0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 3	0.001				0.00	0.00	0.00	
	Edge 4	0.183				0.18	0.18	0.18	
WCDMA II	Bottom Face	1.124	1.068	1.125	0.366	**2.19**	**2.25**	1.49	**5,6**
	Edge 1	0.643	0.380	0.503	0.099	1.02	1.15	0.74	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.268				0.27	0.27	0.27	
WCDMA IV	Bottom Face	1.172	1.068	1.125	0.366	**2.24**	**2.30**	**1.54**	**7,8**
	Edge 1	0.890	0.380	0.503	0.099	1.27	1.39	0.99	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.112				0.11	0.11	0.11	
WCDMA V	Bottom Face	1.098	1.068	1.125	0.366	**2.17**	**2.22**	1.46	**9,10**
	Edge 1	0.553	0.380	0.503	0.099	0.93	1.06	0.65	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.379				0.38	0.38	0.38	
LTE Band 2	Bottom Face	1.035	1.068	1.125	0.366	**2.10**	**2.16**	1.40	**11,12**
	Edge 1	0.591	0.380	0.503	0.099	0.97	1.09	0.69	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.215				0.22	0.22	0.22	
LTE Band 66	Bottom Face	1.014	1.068	1.125	0.366	**2.08**	**2.14**	1.38	**13,14**
	Edge 1	0.666	0.380	0.503	0.099	1.05	1.17	0.77	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.694				0.69	0.69	0.69	
LTE Band 26	Bottom Face	0.995	1.068	1.125	0.366	**2.06**	**2.12**	1.36	**15,16**
	Edge 1	0.597	0.380	0.503	0.099	0.98	1.10	0.70	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.327				0.33	0.33	0.33	
LTE Band 7	Bottom Face	1.148	1.068	1.125	0.366	**2.22**	**2.27**	1.51	**17,18**
	Edge 1	0.922	0.380	0.503	0.099	1.30	1.43	1.02	
	Edge 2	0.001	0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.001				0.00	0.00	0.00	
	Top side	0.719				0.72	0.72	0.72	
LTE Band 12	Bottom Face	1.084	1.068	1.125	0.366	**2.15**	**2.21**	1.45	**19,20**
	Edge 1	0.673	0.380	0.503	0.099	1.05	1.18	0.77	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.449				0.45	0.45	0.45	
LTE Band 13	Bottom Face	1.110	1.068	1.125	0.366	**2.18**	**2.24**	1.48	**21,22**
	Edge 1	0.762	0.380	0.503	0.099	1.14	1.27	0.86	
	Edge 2		0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.661				0.66	0.66	0.66	
LTE Band 41	Bottom Face	1.006	1.068	1.125	0.366	**2.07**	**2.13**	1.37	**23,24**
	Edge 1	0.493	0.380	0.503	0.099	0.87	1.00	0.59	
	Edge 2	0.001	0.373	0.408	0.090	0.37	0.41	0.09	
	Edge 4	0.001				0.00	0.00	0.00	

	Top side	0.429				0.43	0.43	0.43	

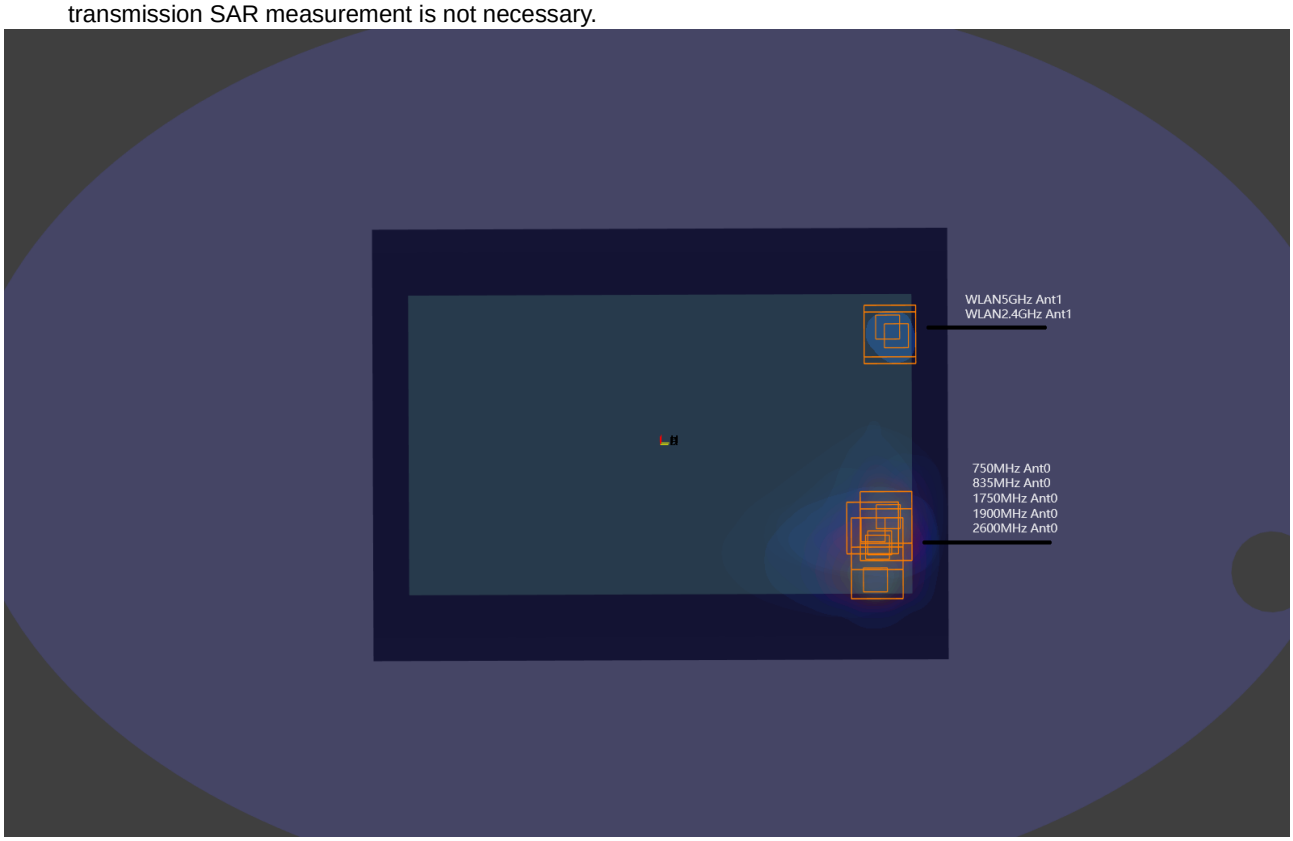
Sensor Off

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 1	WLAN5GHz Ant 1	Bluetooth Ant 1	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM850	Bottom Face	0.627	0.230	0.543	0.366	0.86	1.17	0.99
	Edge 1	0.501	0.252	0.403	0.099	0.75	0.90	0.60
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.399				0.40	0.40	0.40
GSM1900	Bottom Face	0.263	0.230	0.543	0.366	0.49	0.81	0.63
	Edge 1	0.201	0.252	0.403	0.099	0.45	0.60	0.30
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.389				0.39	0.39	0.39
WCDMA II	Bottom Face	0.386	0.230	0.543	0.366	0.62	0.93	0.75
	Edge 1	0.326	0.252	0.403	0.099	0.58	0.73	0.43
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.250				0.25	0.25	0.25
WCDMA IV	Bottom Face	0.979	0.230	0.543	0.366	1.21	1.52	1.35
	Edge 1	0.958	0.252	0.403	0.099	1.21	1.36	1.06
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.331				0.33	0.33	0.33
WCDMA V	Bottom Face	0.532	0.230	0.543	0.366	0.76	1.08	0.90
	Edge 1	0.322	0.252	0.403	0.099	0.57	0.73	0.42
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.204				0.20	0.20	0.20
LTE Band 2	Bottom Face	0.523	0.230	0.543	0.366	0.75	1.07	0.89
	Edge 1	0.441	0.252	0.403	0.099	0.69	0.84	0.54
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.339				0.34	0.34	0.34
LTE Band 66	Bottom Face	0.767	0.230	0.543	0.366	1.00	1.31	1.13
	Edge 1	0.755	0.252	0.403	0.099	1.01	1.16	0.85
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.244				0.24	0.24	0.24
LTE Band 26	Bottom Face	0.425	0.230	0.543	0.366	0.66	0.97	0.79
	Edge 1	0.257	0.252	0.403	0.099	0.51	0.66	0.36
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.163				0.16	0.16	0.16
LTE Band 7	Bottom Face	0.604	0.230	0.543	0.366	0.83	1.15	0.97
	Edge 1	0.406	0.252	0.403	0.099	0.66	0.81	0.51
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.581				0.58	0.58	0.58
LTE Band 12	Bottom Face	0.274	0.230	0.543	0.366	0.50	0.82	0.64
	Edge 1	0.202	0.252	0.403	0.099	0.45	0.61	0.30
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.012				0.01	0.01	0.01
LTE Band 13	Bottom Face	0.446	0.230	0.543	0.366	0.68	0.99	0.81
	Edge 1	0.322	0.252	0.403	0.099	0.57	0.73	0.42
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.132				0.13	0.13	0.13
LTE Band 41	Bottom Face	0.422	0.230	0.543	0.366	0.65	0.97	0.79
	Edge 1	0.257	0.252	0.403	0.099	0.51	0.66	0.36
	Edge 2		0.363	0.778	0.090	0.36	0.78	0.09
	Edge 4	0.441				0.44	0.44	0.44

16.3 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 / (min. separation distance, mm). If SPLSR ≤ 0.04 for 1g SAR, simultaneously transmission SAR measurement is not necessary.



Bottom Face 0mm

Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 1	GSM 850	Bottom Face	1.138	0mm	44.6	99.9	-177	91.1	2.21	0.04	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case 2	GSM 850	Bottom Face	1.138	0mm	44.6	99.9	-177	91.5	2.26	0.04	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case 3	GSM 1900	Bottom Face	1.077	0mm	55.7	97.3	-177	102.2	2.15	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case 4	GSM 1900	Bottom Face	1.077	0mm	55.7	97.3	-177	102.5	2.20	0.03	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case 5	WCDMA II	Bottom Face	1.124	0mm	57.3	97.7	-177	103.8	2.19	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				

Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 6	WCDMA II	Bottom Face	1.124	0mm	57.3	97.7	-177	104.1	2.25	0.03	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 7	WCDMA IV	Bottom Face	1.172	0mm	50.5	100.3	-177	97.0	2.24	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 8	WCDMA IV	Bottom Face	1.172	0mm	50.5	100.3	-177	97.4	2.30	0.04	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 9	WCDMA V	Bottom Face	1.098	0mm	45.1	99.4	-177	91.6	2.17	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 10	WCDMA V	Bottom Face	1.098	0mm	45.1	99.4	-177	92.0	2.22	0.04	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 11	LTE Band 2	Bottom Face	1.035	0mm	57.5	96.9	-177	104.0	2.10	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 12	LTE Band 2	Bottom Face	1.035	0mm	57.5	96.9	-177	104.3	2.16	0.03	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 13	LTE Band 66	Bottom Face	1.014	0mm	54.9	97.9	-177	101.4	2.08	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 14	LTE Band 66	Bottom Face	1.014	0mm	54.9	97.9	-177	101.7	2.14	0.03	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 15	LTE Band 26	Bottom Face	0.995	0mm	44.6	97.9	-177	91.1	2.06	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 16	LTE Band 26	Bottom Face	0.995	0mm	44.6	97.9	-177	91.4	2.12	0.03	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 17	LTE Band 7	Bottom Face	1.148	0mm	46	98	-177	92.5	2.22	0.04	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 18	LTE Band 7	Bottom Face	1.148	0mm	46	98	-177	92.8	2.27	0.04	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap (mm)	SAR peak location (mm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 19	LTE Band 12	Bottom	1.084	0mm	46.5	98.5	-177	93.0	2.15	0.03	Not required

	WLAN2.4GHz	Face	1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 20	LTE Band 12	Bottom Face	1.084	0mm	46.5	98.5	-177	93.4	2.21	0.04	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 21	LTE Band 13	Bottom Face	1.11	0mm	45	98.5	-177	91.5	2.18	0.04	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 22	LTE Band 13	Bottom Face	1.11	0mm	45	98.5	-177	91.9	2.24	0.04	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 23	LTE Band 41	Bottom Face	1.006	0mm	43	97	-177	89.5	2.07	0.03	Not required
	WLAN2.4GHz		1.068	0mm	-46.5	98.5	-177				
Case No	Band	Position	SAR 1g SAR (W/kg)	Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 24	LTE Band 41	Bottom Face	1.006	0mm	43	97	-177	89.8	2.13	0.03	Not required
	WLAN5GHz		1.125	0mm	-46.8	95	-177				

Test Engineer : Martin Li, Varus Wang, Light Wang, Ricky Gu

17. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

18. References

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

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

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

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

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

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

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

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

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

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

[12] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

------THE END------