



FCC SAR TEST REPORT

FCC ID : UZ7TC77HL
Equipment : Touch computer
Brand Name : Zebra
Model Name : TC77HL
Applicant : Zebra Technologies Corporation
1 Zebra Plaza Holtsville, NY 11742
Manufacturer : Zebra Technologies Corporation
1 Zebra Plaza Holtsville, NY 11742
Standard : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

The product was received on Jul. 25, 2018 and testing was started from Jul. 27, 2018 and completed on Aug. 26, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

1. Statement of Compliance 4
2. Guidance Applied..... 4
3. Equipment Under Test (EUT) Information 5
3.1 General Information 5
3.2 General LTE SAR Test and Reporting Considerations 7
4. RF Exposure Limits.....10
4.1 Uncontrolled Environment.....10
4.2 Controlled Environment.....10
5. Specific Absorption Rate (SAR).....11
5.1 Introduction11
5.2 SAR Definition.....11
6. System Description and Setup12
6.1 E-Field Probe13
6.2 Data Acquisition Electronics (DAE)13
6.3 Phantom.....14
6.4 Device Holder.....15
7. Measurement Procedures16
7.1 Spatial Peak SAR Evaluation16
7.2 Power Reference Measurement.....17
7.3 Area Scan17
7.4 Zoom Scan.....18
7.5 Volume Scan Procedures.....18
7.6 Power Drift Monitoring.....18
8. Test Equipment List19
9. System Verification20
9.1 Tissue Simulating Liquids.....20
9.2 Tissue Verification21
9.3 System Performance Check Results.....23
10. RF Exposure Positions24
10.1 Ear and handset reference point24
10.2 Definition of the cheek position25
10.3 Definition of the tilt position26
10.4 Body Worn Accessory27
10.5 Wireless Router.....27
11. Conducted RF Output Power (Unit: dBm).....28
12. Bluetooth Exclusions Applied91
13. Antenna Location92
14. SAR Test Results93
14.1 Head SAR95
14.2 Hotspot SAR100
14.3 Body Worn Accessory SAR.....106
14.4 Repeated SAR Measurement111
15. Simultaneous Transmission Analysis112
15.1 Head Exposure Conditions113
15.2 Hotspot Exposure Conditions.....115
15.3 Body-Worn Accessory Exposure Conditions117
15.4 SPLSR Evaluation and Analysis.....119
16. Uncertainty Assessment138
17. References.....138
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASYS Calibration Certificate
Appendix D. Test Setup Photos



History of this test report

Report No.	Version	Description	Issued Date
FA872506	01	Initial issue of report	Sep. 19, 2018



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Zebra Technologies Corporation, Touch computer, TC77HL, are as follows.

Table with columns: Equipment Class, Frequency Band, Highest SAR Summary (Head, Body-worn, Hotspot), Highest Simultaneous Transmission 1g SAR (W/kg). Rows include Licensed (GSM850, GSM1900, WCDMA II, etc.), DTS (2.4GHz WLAN), and NII (5GHz WLAN).

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. (FCC) This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

Reviewed by: Jason Wang
Report Producer: Wan Liu

2. Guidance Applied

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

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



3. Equipment Under Test (EUT) Information

3.1 General Information

Product Feature & Specification	
Equipment Name	Touch computer
Brand Name	Zebra
Model Name	TC77HL
FCC ID	UZ7TC77HL
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS/DTM RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz : 802.11b/g/n/ac HT20/HT40/VHT20/VHT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DV
SW Version	Android version 8.1.0
FW Version	91-09-14.00-OG-U00-STD
MFD	06JUL18
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Engineering sample
Remark:	<ol style="list-style-type: none"> 1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications. 2. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66. 3. Three battery options for this product, the RF exposure is choose battery 1 as the main tested, other battery 2/3 found worst case from battery 1 perform. 4. For the both holsters is performed on body-worn worst configuration to be tested and when EUT is placed into the holster, only front face of EUT will toward to the human body.



Specification of Accessories				
AC Adapter	Brand Name	Zebra	Part Number	PWR-BUA5V16W0WW
4 PIN DC power cable	Brand Name	Zebra	Part Number	CBL-DC-383A1-01
AC Power cable	Brand Name	Zebra	Part Number	50-16000-182R
Snap-On USB/Charge Cable	Brand Name	Zebra	Part Number	CBL-TC7X-USB1-01
Snap-On Charging Cable Cup	Brand Name	Zebra	Part Number	CHG-TC7X-CBL1-01
Battery 1	Brand Name	Zebra	Part Number	BT-000318-01
Battery 2 (Falcon 1S3P Battery Pack)	Brand Name	Zebra	Part Number	BT-000318-51
Battery 3	Brand Name	Symbol	Part Number	82-171249-02
Earphone 1	Brand Name	Zebra	Part Number	HDST-35MM-PTVP-01
Earphone 2	Brand Name	Zebra	Part Number	HS2100-OTH
Snap-on 3.5MM Audio Jack Adapter	Brand Name	Symbol	Part Number	ADP-TC7X-AUD35-01
3.5mm Jack 43"(1.1m) Standard Cable	Brand Name	Zebra	Part Number	CBL-HS2100-3MS1-01
Soft Holster	Brand Name	Zebra	Part Number	SG-TC7X-HLSTR1-02
Rigid Holster	Brand Name	Zebra	Part Number	SG-TC7X-RHLSTR1-01



3.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	UZ7TC77HL																																																														
Equipment Name	Touch computer																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz																																																														
Channel Bandwidth	LTE Band 02: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 04: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 05: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 07: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE MPR permanently built-in by design	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, when operating in hotspot mode that LTE B2 / B4 / B25 / B66 power reduction applied to satisfy SAR compliance.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 11.																																																														
LTE Carrier Aggregation Additional Information	Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
LTE Band 2																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860				
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880				
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900				
LTE Band 4																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720				
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5				
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745				
LTE Band 5																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		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	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	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	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 13																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23255		784.5		23280		787	
M	23230		782		23255		784.5		23280		787		23305		789.5	
H	23255		784.5		23280		787		23305		789.5		23330		792	
LTE Band 14																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23305		790.5		23330		793		23355		795.5		23380		798	
M	23330		793		23355		795.5		23380		798		23405		800.5	
H	23355		795.5		23380		798		23405		800.5		23430		803	
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23755		706.5		23780		709		23805		711.5		23830		714	
M	23790		710		23815		713		23840		715.5		23865		718	
H	23825		713.5		23850		716		23875		718.5		23900		721	



LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 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)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26740	819	26765	821.5
M	26865	831.5	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	26990	844	26965	841.5
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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580	37850	2580	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506	39750	2506	39750	2506
L	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5	40185	2549.5	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593	40620	2593
H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5	41055	2636.5	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680	41490	2680	41490	2680
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



4. RF Exposure Limits

4.1 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.

4.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

5. Specific Absorption Rate (SAR)

5.1 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.

5.2 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:

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

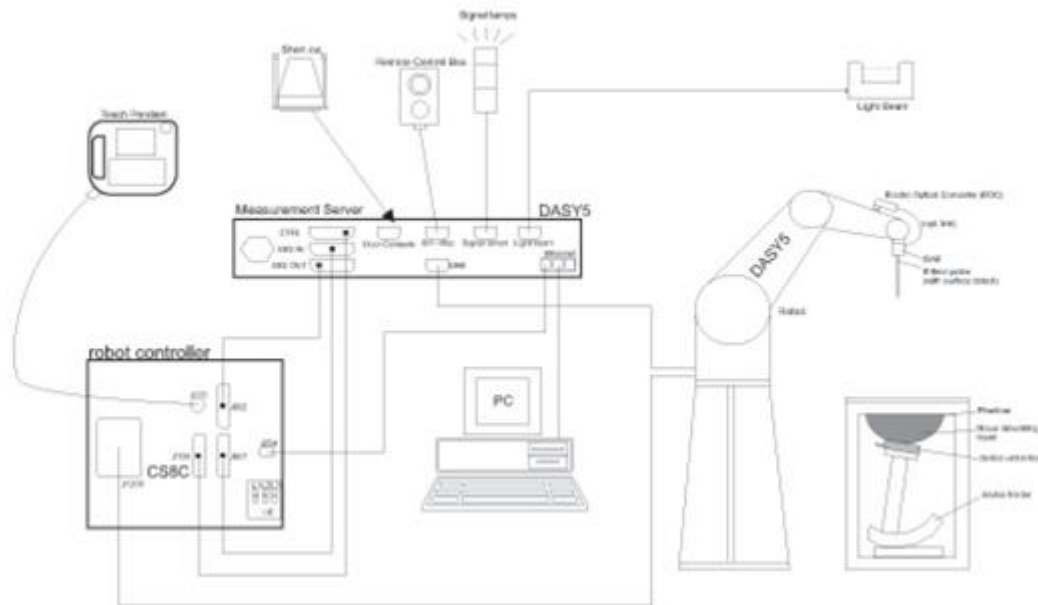
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

6. System Description and Setup

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




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


6.1 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.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<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	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/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	

6.2 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.



Fig 5.1 Photo of DAE

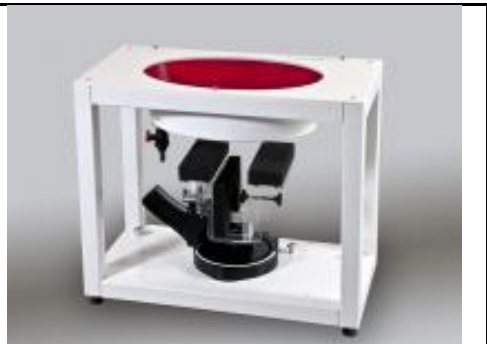
6.3 Phantom

<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 in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

6.4 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



7. 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

7.1 Spatial Peak SAR Evaluation

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

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

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

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

7.2 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.

7.3 Area Scan

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

Area scan parameters extracted from FCC KDB 865664 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	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

7.4 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: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> 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.				

7.5 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.

7.6 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.



8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1107	Feb. 27, 2018	Feb. 26, 2019
SPEAG	835MHz System Validation Kit	D835V2	4d167	Feb. 27, 2018	Feb. 26, 2019
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 15, 2017	Nov. 14, 2018
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 28, 2017	Sep. 27, 2018
SPEAG	2450MHz System Validation Kit	D2450V2	736	Sep. 18, 2017	Sep. 17, 2018
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Sep. 18, 2017	Sep. 17, 2018
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 26, 2017	Sep. 25, 2018
SPEAG	Data Acquisition Electronics	DAE4	1424	Jan. 18, 2018	Jan. 17, 2019
SPEAG	Data Acquisition Electronics	DAE3	495	May. 24, 2018	May. 23, 2019
SPEAG	Data Acquisition Electronics	DAE4	1399	Nov. 16, 2017	Nov. 15, 2018
SPEAG	Data Acquisition Electronics	DAE4	778	May. 25, 2018	May. 24, 2019
SPEAG	Data Acquisition Electronics	DAE4	854	Jun. 14, 2018	Jun. 13, 2019
SPEAG	Data Acquisition Electronics	DAE4	853	Jul. 24, 2018	Jul. 23, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Jan. 23, 2018	Jan. 22, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 31, 2018	May. 30, 2019
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 25, 2017	Sep. 24, 2018
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 29, 2017	Sep. 28, 2018
SPEAG	Dosimetric E-Field Probe	ES3DV3	3169	May. 28, 2018	May. 27, 2019
SPEAG	Dosimetric E-Field Probe	EX3DV4	7306	Jul. 26, 2018	Jul. 25, 2019
RCPTWN	Thermometer	HTC-1	TM685-1	Mar. 16, 2018	Mar. 15, 2019
RCPTWN	Thermometer	HTC-1	TM281-1	Mar. 16, 2018	Mar. 15, 2019
RCPTWN	Thermometer	HTC-1	TM560-1	Mar. 16, 2018	Mar. 15, 2019
Gencom	Thermometer	TE1	TM225-1	Mar. 16, 2018	Mar. 15, 2019
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Apr. 17, 2018	Apr. 16, 2019
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 21, 2018	May. 20, 2019
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 07, 2017	Dec. 06, 2018
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 17, 2018	Jan. 16, 2019
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 26, 2017	Sep. 25, 2018
LINE SEIKI	Digital Thermometer	DTM3000-spezial	3169	Sep. 06, 2017	Sep. 05, 2018
Anritsu	Power Meter	ML2495A	1419002	May. 18, 2018	May. 17, 2019
Anritsu	Power Sensor	MA2411B	1339124	May. 18, 2018	May. 17, 2019
Anritsu	Power Meter	ML2495A	1218006	Oct. 06, 2017	Oct. 05, 2018
Anritsu	Power Sensor	MA2411B	1207363	Oct. 06, 2017	Oct. 05, 2018
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 23, 2018	Jun. 22, 2019
R&S	Spectrum Analyzer	FSL	100863	Jul. 05, 2018	Jul. 04, 2019
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Mar. 12, 2018	Mar. 11, 2019
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Mar. 12, 2018	Mar. 11, 2019
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

9. System Verification

9.1 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.

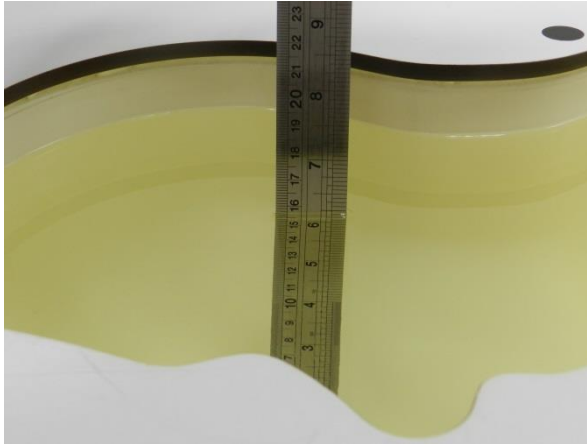


Fig 10.1 Photo of Liquid Height for Head SAR



Fig 10.2 Photo of Liquid Height for Body SAR



9.2 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								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

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



<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	HSL	22.3	0.894	40.627	0.89	41.90	0.45	-3.04	±5	2018/8/1
835	HSL	22.4	0.880	42.777	0.90	41.50	-2.22	3.08	±5	2018/7/31
1750	HSL	22.2	1.389	40.516	1.37	40.10	1.39	1.04	±5	2018/7/30
1900	HSL	22.5	1.391	40.049	1.40	40.00	-0.64	0.12	±5	2018/7/30
2450	HSL	22.4	1.821	40.460	1.80	39.20	1.17	3.21	±5	2018/8/11
2600	HSL	22.1	1.951	39.497	1.96	39.00	-0.46	1.27	±5	2018/7/27
2600	HSL	22.1	1.951	39.497	1.96	39.00	-0.46	1.27	±5	2018/7/27
5250	HSL	22.7	4.591	36.703	4.71	35.95	-2.53	2.09	±5	2018/8/9
5600	HSL	22.7	4.935	36.261	5.07	35.50	-2.66	2.14	±5	2018/8/9
5750	HSL	22.7	5.096	36.060	5.22	35.35	-2.38	2.01	±5	2018/8/9
5750	HSL	22.5	5.046	36.590	5.22	35.35	-3.33	3.51	±5	2018/8/26
750	MSL	22.3	0.973	54.283	0.96	55.50	1.35	-2.19	±5	2018/8/5
750	MSL	22.4	0.965	54.383	0.96	55.50	0.52	-2.01	±5	2018/8/6
835	MSL	22.3	1.004	56.128	0.97	55.20	3.51	1.68	±5	2018/8/4
835	MSL	22.6	0.985	57.211	0.97	55.20	1.55	3.64	±5	2018/8/6
835	MSL	22.6	0.947	54.941	0.97	55.20	-2.37	-0.47	±5	2018/8/7
1750	MSL	22.3	1.437	53.286	1.49	53.40	-3.56	-0.21	±5	2018/8/4
1750	MSL	22.6	1.463	55.130	1.49	53.40	-1.81	3.24	±5	2018/8/9
1750	MSL	22.6	1.463	55.130	1.49	53.40	-1.81	3.24	±5	2018/8/9
1900	MSL	22.3	1.546	53.585	1.52	53.30	1.71	0.53	±5	2018/8/3
1900	MSL	22.3	1.546	53.585	1.52	53.30	1.71	0.53	±5	2018/8/3
1900	MSL	22.6	1.550	51.600	1.52	53.30	1.97	-3.19	±5	2018/8/9
2450	MSL	22.5	1.983	51.409	1.95	52.70	1.69	-2.45	±5	2018/8/8
2600	MSL	22.2	2.159	52.987	2.16	52.50	-0.05	0.93	±5	2018/8/4
5250	MSL	22.3	5.204	49.131	5.36	48.95	-2.91	0.37	±5	2018/8/21
5250	MSL	22.4	5.334	47.421	5.36	48.95	-0.49	-3.12	±5	2018/8/22
5600	MSL	22.3	5.661	48.543	5.77	48.50	-1.89	0.09	±5	2018/8/21
5750	MSL	22.3	5.870	48.325	5.94	48.28	-1.18	0.09	±5	2018/8/21
5750	MSL	22.4	6.002	46.584	5.94	48.28	1.04	-3.51	±5	2018/8/22
5750	MSL	22.5	6.090	46.581	5.94	48.28	2.53	-3.52	±5	2018/8/25

9.3 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 (%)
2018/8/1	750	HSL	250	D750V3-1107	EX3DV4 - SN3976	DAE4 Sn1424	2.05	8.18	8.2	0.24
2018/7/31	835	HSL	250	D835V2-4d167	EX3DV4 - SN3976	DAE4 Sn1424	2.31	9.26	9.24	-0.22
2018/7/30	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3976	DAE4 Sn1424	8.63	36.70	34.52	-5.94
2018/7/30	1900	HSL	250	D1900V2-5d041	EX3DV4 - SN3976	DAE4 Sn1424	9.52	40.50	38.08	-5.98
2018/8/11	2450	HSL	250	D2450V2-736	EX3DV4 - SN7306	DAE4 Sn853	12.90	52.40	51.6	-1.53
2018/7/27	2600	HSL	250	D2600V2-1008	EX3DV4 - SN3976	DAE4 Sn1424	14.60	56.80	58.4	2.82
2018/7/27	2600	HSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	14.30	56.80	57.2	0.70
2018/8/9	5250	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	8.10	78.30	81	3.45
2018/8/9	5600	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	8.28	85.00	82.8	-2.59
2018/8/9	5750	HSL	100	D5GHzV2-1006	EX3DV4 - SN3925	DAE3 Sn495	7.73	78.50	77.3	-1.53
2018/8/26	5750	HSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE4 Sn1399	7.65	78.50	76.5	-2.55
2018/8/5	750	MSL	250	D750V3-1107	EX3DV4 - SN3976	DAE4 Sn1424	2.26	8.52	9.04	6.10
2018/8/6	750	MSL	250	D750V3-1107	ES3DV3 - SN3169	DAE4 Sn854	2.21	8.52	8.84	3.76
2018/8/4	835	MSL	250	D835V2-4d167	ES3DV3 - SN3270	DAE4 Sn778	2.59	9.62	10.36	7.69
2018/8/6	835	MSL	250	D835V2-4d167	ES3DV3 - SN3169	DAE4 Sn854	2.47	9.62	9.88	2.70
2018/8/7	835	MSL	250	D835V2-4d167	ES3DV3 - SN3169	DAE4 Sn854	2.35	9.62	9.4	-2.29
2018/8/4	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE4 Sn778	8.93	37.20	35.72	-3.98
2018/8/9	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3169	DAE4 Sn854	9.30	37.20	37.2	0.00
2018/8/9	1750	MSL	250	D1750V2-1068	EX3DV4 - SN7306	DAE4 Sn853	9.28	37.20	37.12	-0.22
2018/8/3	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3976	DAE4 Sn1424	10.50	40.70	42	3.19
2018/8/3	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn778	9.92	40.70	39.68	-2.51
2018/8/9	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3169	DAE4 Sn854	10.10	40.70	40.4	-0.74
2018/8/8	2450	MSL	250	D2450V2-736	ES3DV3 - SN3169	DAE4 Sn854	12.90	50.80	51.6	1.57
2018/8/4	2600	MSL	250	D2600V2-1008	EX3DV4 - SN3976	DAE4 Sn1424	13.50	55.00	54	-1.82
2018/8/21	5250	MSL	100	D5GHzV2-1006	EX3DV4 - SN7306	DAE4 Sn853	7.28	77.00	72.8	-5.45
2018/8/22	5250	MSL	100	D5GHzV2-1006	EX3DV4 - SN7306	DAE4 Sn853	7.46	77.00	74.6	-3.12
2018/8/21	5600	MSL	100	D5GHzV2-1006	EX3DV4 - SN7306	DAE4 Sn853	7.50	80.10	75	-6.37
2018/8/21	5750	MSL	100	D5GHzV2-1006	EX3DV4 - SN7306	DAE4 Sn853	6.93	75.10	69.3	-7.72
2018/8/22	5750	MSL	100	D5GHzV2-1006	EX3DV4 - SN7306	DAE4 Sn853	6.84	75.10	68.4	-8.92
2018/8/25	5750	MSL	100	D5GHzV2-1006	EX3DV4 - SN3931	DAE4 Sn1399	7.45	75.10	74.5	-0.80

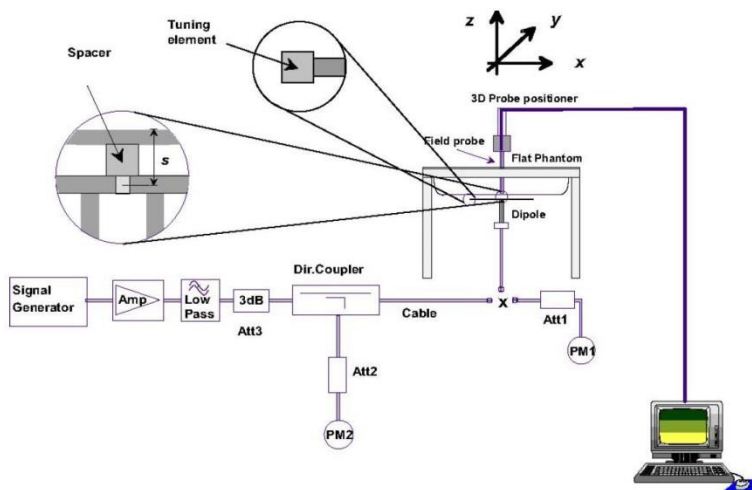


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

10. RF Exposure Positions

10.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

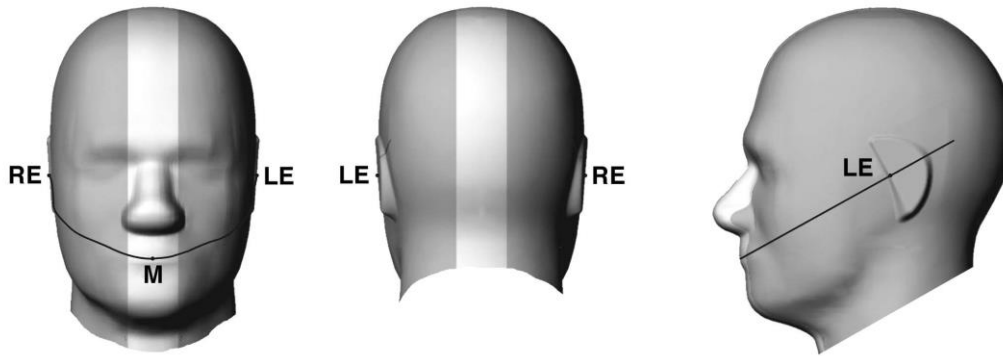


Fig 9.1.1 Front, back, and side views of SAM twin phantom

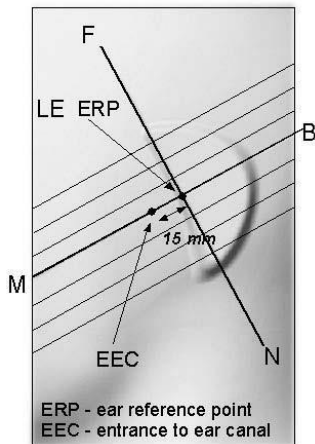


Fig 9.1.2 Close-up side view of phantom showing the ear region.

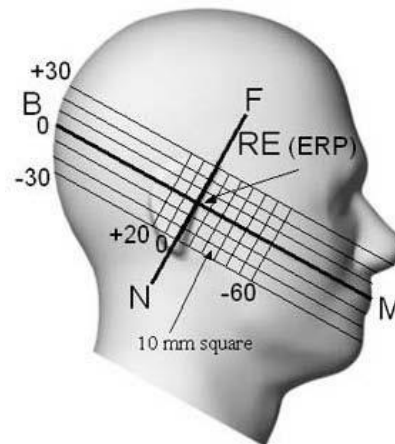


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

10.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

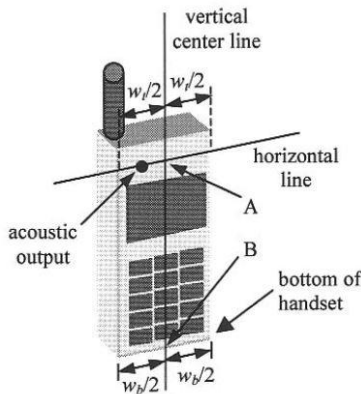


Fig 9.2.1 Handset vertical and horizontal reference lines—“fixed case”

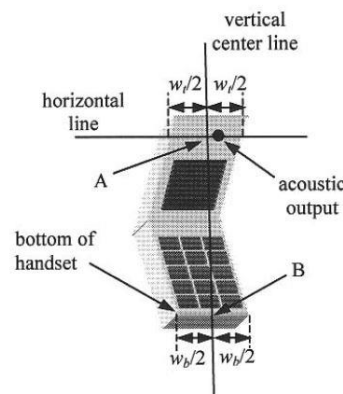


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

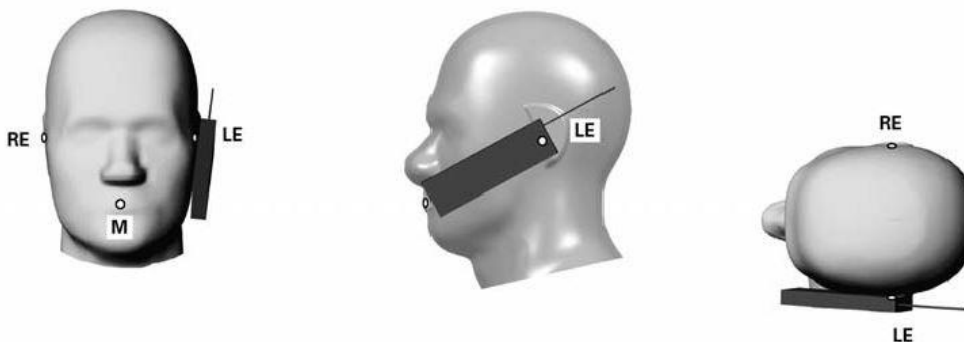


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

10.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

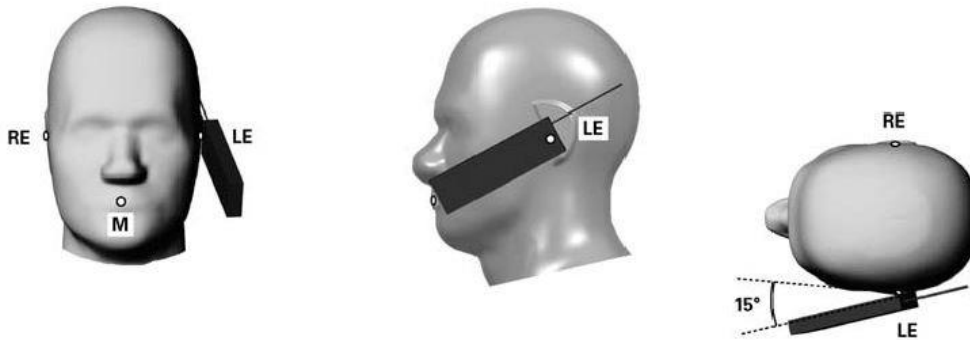


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

10.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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

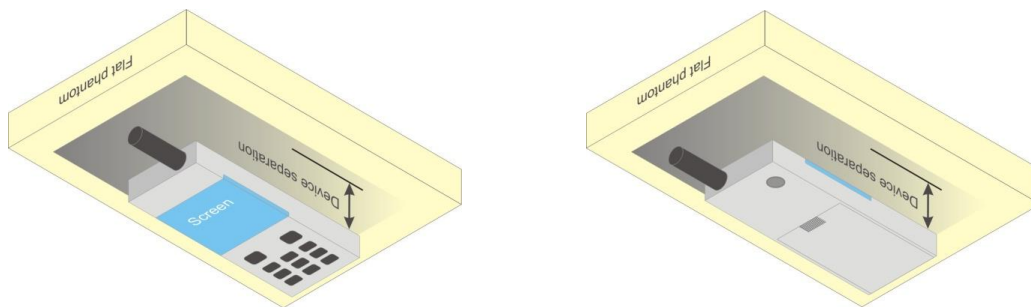


Fig 9.4 Body Worn Position

10.5 Wireless Router

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

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



11. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

- For DTM multi-slot class mode, the device was linked with base station simulator (Agilent E5515C) and transmit maximum power on maximum number of TX slots, i.e. one CS timeslot, and additional PS timeslots (1 for DTM class 5 and 9, 2 for DTM class 11) in one TDMA frame.
- Agilent E5515C was used to setup the device operated under DTM mode for power measurement and SAR testing. For conducted power, the power of the burst for voice and the power of the bursts for data was reported separately in the table above, and the frame-average power is derived below to determine SAR testing.

$$DTM \text{ frame average power (dBm)} = 10 * \log [\sum(\text{power of each slot, in mW})/8]$$

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

<Default Power Mode>

GSM850		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		128	189	251		128	189	251	
Frequency (MHz)		824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot		32.18	32.21	32.39	33.50	23.18	23.21	23.39	24.50
GPRS 1 Tx slot		32.21	32.22	32.42	33.50	23.21	23.22	23.42	24.50
GPRS 2 Tx slots		31.18	31.12	31.17	32.50	25.18	25.12	25.17	26.50
GPRS 3 Tx slots		29.91	29.73	29.66	31.50	25.65	25.47	25.40	27.24
GPRS 4 Tx slots		29.00	29.00	29.08	30.50	26.00	26.00	26.08	27.50
EDGE 1 Tx slot		26.19	26.29	26.33	28.00	17.19	17.29	17.33	19.00
EDGE 2 Tx slots		26.24	25.80	25.71	27.00	20.24	19.80	19.71	21.00
EDGE 3 Tx slots		25.26	24.60	24.50	26.00	21.00	20.34	20.24	21.74
EDGE 4 Tx slots		24.55	23.97	23.81	25.50	21.55	20.97	20.81	22.50
DTM Multi-slot class 5	GSM 1 Tx slot	31.09	31.02	31.06	32.50	25.08	25.00	25.05	26.48
	GPRS 1 Tx slot	31.12	31.03	31.08	32.50				
DTM Multi-slot class 9	GSM 1 Tx slot	31.08	31.02	31.09	32.50	25.07	24.99	25.08	26.48
	GPRS 1 Tx slot	31.11	31.00	31.12	32.50				
DTM Multi-slot class 11	GSM 1 Tx slot	29.73	29.58	29.63	31.50	25.48	25.34	25.38	27.24
	GPRS 2 Tx slots	29.75	29.61	29.65	31.50				
DTM Multi-slot class 5	GSM 1 Tx slot	31.11	31.08	31.13	32.50	23.27	23.14	23.17	24.55
	EDGE 1 Tx slot	26.11	25.64	25.60	27.00				
DTM Multi-slot class 9	GSM 1 Tx slot	31.18	31.11	31.15	32.50	23.34	23.17	23.19	24.55
	EDGE 1 Tx slot	26.15	25.68	25.63	27.00				
DTM Multi-slot class 11	GSM 1 Tx slot	29.79	29.71	29.61	31.50	23.04	22.74	22.60	24.41
	EDGE 2 Tx slots	25.18	24.53	24.33	26.00				



GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		512	661	810		512	661	810	
Frequency (MHz)		1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot		29.32	28.91	29.33	30.50	20.32	19.91	20.33	21.50
GPRS 1 Tx slot		29.37	28.92	29.37	30.50	20.37	19.92	20.37	21.50
GPRS 2 Tx slots		28.31	28.21	28.30	29.50	22.31	22.21	22.30	23.50
GPRS 3 Tx slots		27.25	27.03	27.02	28.50	22.99	22.77	22.76	24.24
GPRS 4 Tx slots		26.20	26.13	26.25	27.50	23.20	23.13	23.25	24.50
EDGE 1 Tx slot		25.28	25.26	25.32	27.00	16.28	16.26	16.32	18.00
EDGE 2 Tx slots		24.80	24.74	24.84	26.00	18.80	18.74	18.84	20.00
EDGE 3 Tx slots		23.74	23.67	23.76	25.00	19.48	19.41	19.50	20.74
EDGE 4 Tx slots		23.12	23.06	23.17	24.50	20.12	20.06	20.17	21.50
DTM Multi-slot class 5	GSM 1 Tx slot	28.14	28.09	28.16	29.50	22.13	22.08	22.15	23.48
	GPRS 1 Tx slot	28.16	28.12	28.18	29.50				
DTM Multi-slot class 9	GSM 1 Tx slot	28.17	28.11	28.16	29.50	22.16	22.10	22.15	23.48
	GPRS 1 Tx slot	28.19	28.14	28.19	29.50				
DTM Multi-slot class 11	GSM 1 Tx slot	27.11	26.98	26.93	28.50	22.87	22.73	22.68	24.24
	GPRS 2 Tx slots	27.14	27.00	26.95	28.50				
DTM Multi-slot class 5	GSM 1 Tx slot	28.15	28.11	28.14	29.50	20.73	20.67	20.73	22.07
	EDGE 1 Tx slot	24.66	24.58	24.71	26.00				
DTM Multi-slot class 9	GSM 1 Tx slot	28.12	28.15	28.16	29.50	20.71	20.71	20.75	22.07
	EDGE 1 Tx slot	24.68	24.62	24.72	26.00				
DTM Multi-slot class 11	GSM 1 Tx slot	27.11	26.91	26.95	28.50	20.88	20.74	20.80	22.24
	EDGE 2 Tx slots	23.67	23.59	23.68	25.00				

<Reduced Power Mode>

GSM1900		Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel		512	661	810		512	661	810	
Frequency (MHz)		1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot		29.37	29.45	29.42	30.50	20.37	20.45	20.42	21.50
GPRS 1 Tx slot		29.48	29.38	29.31	30.50	20.48	20.38	20.31	21.50
GPRS 2 Tx slots		26.81	26.77	26.87	28.00	20.81	20.77	20.87	22.00
GPRS 3 Tx slots		25.82	25.66	25.49	26.00	21.56	21.40	21.23	21.74
GPRS 4 Tx slots		23.83	23.74	23.85	25.00	20.83	20.74	20.85	22.00
EDGE 1 Tx slot		25.29	25.36	25.49	27.00	16.29	16.36	16.49	18.00
EDGE 2 Tx slots		24.86	24.89	24.84	26.00	18.86	18.89	18.84	20.00
EDGE 3 Tx slots		23.79	23.86	23.80	25.00	19.53	19.60	19.54	20.74
EDGE 4 Tx slots		23.21	23.32	23.18	24.50	20.21	20.32	20.18	21.50
DTM Multi-slot class 5	GSM 1 Tx slot	26.92	26.77	26.73	28.00	20.87	20.71	20.66	21.98
	GPRS 1 Tx slot	26.87	26.70	26.64	28.00				
DTM Multi-slot class 9	GSM 1 Tx slot	26.96	26.74	26.70	28.00	20.90	20.68	20.64	21.98
	GPRS 1 Tx slot	26.89	26.67	26.62	28.00				
DTM Multi-slot class 11	GSM 1 Tx slot	25.82	25.53	25.47	26.00	21.52	21.22	21.16	21.74
	GPRS 2 Tx slots	25.76	25.46	25.39	26.00				
DTM Multi-slot class 5	GSM 1 Tx slot	26.96	26.74	26.76	28.00	19.92	19.83	19.80	21.09
	EDGE 1 Tx slot	24.60	24.73	24.62	26.00				
DTM Multi-slot class 9	GSM 1 Tx slot	26.94	26.69	26.63	28.00	19.95	19.83	19.72	21.09
	EDGE 1 Tx slot	24.73	24.82	24.62	26.00				
DTM Multi-slot class 11	GSM 1 Tx slot	25.79	25.53	25.44	26.00	20.17	20.14	19.97	21.10
	EDGE 2 Tx slots	23.55	23.70	23.46	25.00				

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 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 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} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

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

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15, \beta_{HS}/\beta_c = 24/15$. For all other combinations of DPCCH, DPDCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the 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 $\beta_c = 11/15$ and $\beta_d = 15/15$.

Setup Configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (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-TFCl
 - viii. Confirm that E-TFCl is equal to the target E-TFCl of 75 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

Table C.11.1.3: 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-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	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 $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{hs} = 5/15 * \beta_c$.

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

Note 3: For subtest 1 the 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 $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: 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: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
 - vii. Set Ack-Nack Repetition Factor to 3
 - viii. Set CQI Feedback Cycle (k) to 4 ms
 - ix. Set CQI Repetition Factor to 2
 - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

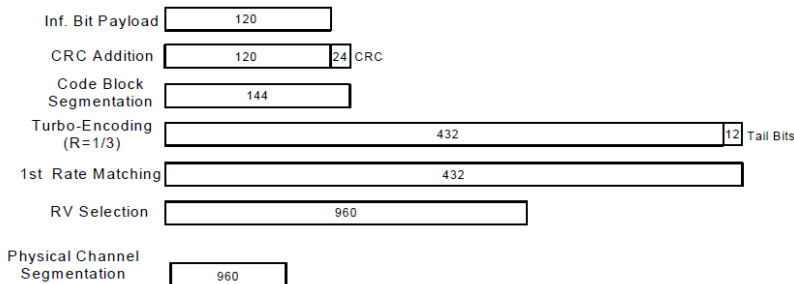


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

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

<Default Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel	Rx Channel	9262	9400	9538		1312	1413	1513		4132	4182	4233	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	23.76	23.85	23.80	25.00	23.58	23.72	23.65	25.00	23.82	23.92	23.95	25.00
3GPP Rel 99	RMC 12.2Kbps	23.78	23.99	23.98	25.00	23.60	23.76	23.67	25.00	23.85	23.95	23.99	25.00
3GPP Rel 6	HSDPA Subtest-1	22.70	22.77	22.67	24.00	22.48	22.65	22.56	24.00	22.81	22.92	22.99	24.00
3GPP Rel 6	HSDPA Subtest-2	22.69	22.75	22.65	24.00	22.47	22.63	22.54	24.00	22.78	22.95	22.96	24.00
3GPP Rel 6	HSDPA Subtest-3	22.19	22.30	22.16	23.50	21.97	22.19	22.03	23.50	22.23	22.46	22.44	23.50
3GPP Rel 6	HSDPA Subtest-4	22.17	22.28	22.14	23.50	21.93	22.16	22.01	23.50	22.20	22.45	22.40	23.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.53	22.69	22.63	24.00	22.43	22.49	22.52	24.00	22.77	22.86	22.87	24.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.60	22.74	22.52	24.00	22.29	22.51	22.54	24.00	22.59	22.94	22.83	24.00
3GPP Rel 8	DC-HSDPA Subtest-3	22.10	22.27	21.96	23.50	21.81	22.08	21.98	23.50	22.11	22.37	22.32	23.50
3GPP Rel 8	DC-HSDPA Subtest-4	22.13	22.09	21.98	23.50	21.84	22.05	21.87	23.50	22.11	22.40	22.26	23.50
3GPP Rel 6	HSUPA Subtest-1	22.64	22.68	22.60	24.00	22.45	22.63	22.53	24.00	22.79	22.90	22.94	24.00
3GPP Rel 6	HSUPA Subtest-2	20.63	20.66	20.58	22.00	20.42	20.68	20.52	22.00	20.73	20.87	20.94	22.00
3GPP Rel 6	HSUPA Subtest-3	21.60	21.63	21.55	23.00	21.43	21.68	21.52	23.00	21.76	21.88	21.93	23.00
3GPP Rel 6	HSUPA Subtest-4	20.60	20.63	20.56	22.00	20.40	20.67	20.51	22.00	20.77	20.83	20.90	22.00
3GPP Rel 6	HSUPA Subtest-5	22.74	22.78	22.56	24.00	22.49	22.66	22.56	24.00	22.82	22.89	22.95	24.00

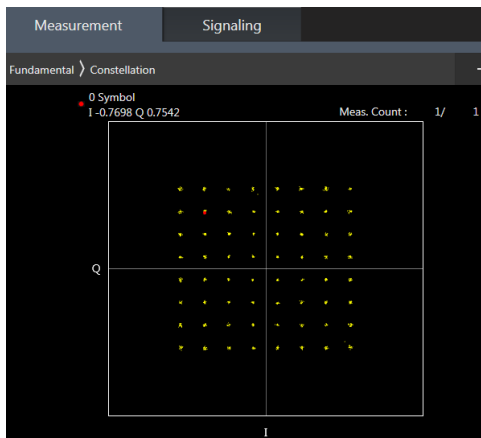
<Reduced Power Mode>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel	Rx Channel	9262	9400	9538		1312	1413	1513	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6		
3GPP Rel 99	AMR 12.2Kbps	20.58	20.61	20.57	21.00	21.11	21.33	21.20	22.00
3GPP Rel 99	RMC 12.2Kbps	20.60	20.64	20.62	21.00	21.16	21.36	21.24	22.00
3GPP Rel 6	HSDPA Subtest-1	19.71	19.70	19.71	20.00	20.53	20.59	20.51	21.00
3GPP Rel 6	HSDPA Subtest-2	19.76	19.75	19.75	20.00	20.54	20.63	20.51	21.00
3GPP Rel 6	HSDPA Subtest-3	19.28	19.23	19.25	19.50	20.02	20.12	20.00	20.50
3GPP Rel 6	HSDPA Subtest-4	19.24	19.27	19.20	19.50	20.01	20.09	19.99	20.50
3GPP Rel 8	DC-HSDPA Subtest-1	19.61	19.65	19.69	20.00	20.52	20.50	20.46	21.00
3GPP Rel 8	DC-HSDPA Subtest-2	19.69	19.70	19.68	20.00	20.47	20.61	20.49	21.00
3GPP Rel 8	DC-HSDPA Subtest-3	19.18	19.19	19.16	19.50	19.98	20.12	19.99	20.50
3GPP Rel 8	DC-HSDPA Subtest-4	19.23	19.26	19.17	19.50	20.00	20.05	19.98	20.50
3GPP Rel 6	HSUPA Subtest-1	19.69	19.73	19.72	20.00	20.52	20.59	20.46	21.00
3GPP Rel 6	HSUPA Subtest-2	17.73	17.74	17.69	18.00	18.52	18.58	18.45	19.00
3GPP Rel 6	HSUPA Subtest-3	18.73	18.70	18.65	19.00	19.49	19.62	19.45	20.00
3GPP Rel 6	HSUPA Subtest-4	17.73	17.70	17.73	18.00	18.51	18.61	18.48	19.00
3GPP Rel 6	HSUPA Subtest-5	19.80	19.70	19.70	20.00	20.40	20.60	20.50	21.00

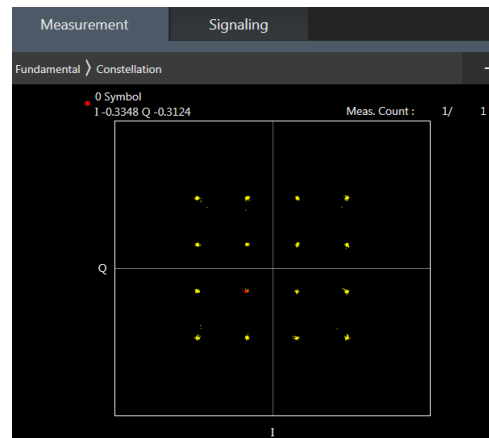
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 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 output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B12 / B26 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 2 / 4 / 5 / 17 / 38 SAR test was covered by Band 25 / 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 \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM



16QAM



<Default Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	24.30	24.43	24.26	25.5	0
20	QPSK	1	49	24.19	24.25	24.10		
20	QPSK	1	99	24.19	24.23	24.13		
20	QPSK	50	0	23.25	23.27	23.21	24.5	1
20	QPSK	50	24	23.24	23.26	23.16		
20	QPSK	50	50	23.21	23.19	23.19		
20	QPSK	100	0	23.20	23.25	23.22	24.5	1
20	16QAM	1	0	23.51	23.62	23.45		
20	16QAM	1	49	23.51	23.61	23.48		
20	16QAM	1	99	23.55	23.57	23.40	23.5	2
20	16QAM	50	0	22.33	22.36	22.34		
20	16QAM	50	24	22.37	22.43	22.30		
20	16QAM	50	50	22.32	22.36	22.27	23.5	2
20	16QAM	100	0	22.32	22.37	22.36		
20	64QAM	1	0	22.47	22.55	22.46		
20	64QAM	1	49	22.50	22.58	22.46	23.5	2
20	64QAM	1	99	22.55	22.52	22.40		
20	64QAM	50	0	21.34	21.38	21.35		
20	64QAM	50	24	21.40	21.44	21.30	22.5	3
20	64QAM	50	50	21.36	21.39	21.29		
20	64QAM	100	0	21.36	21.38	21.36		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	24.10	24.19	24.10	25.5	0
15	QPSK	1	37	24.11	24.24	24.02		
15	QPSK	1	74	24.11	24.19	23.93		
15	QPSK	36	0	23.19	23.10	23.11	24.5	1
15	QPSK	36	20	23.09	23.16	23.10		
15	QPSK	36	39	23.09	23.05	23.04		
15	QPSK	75	0	23.15	23.19	23.10	24.5	1
15	16QAM	1	0	23.47	23.60	23.28		
15	16QAM	1	37	23.34	23.51	23.42		
15	16QAM	1	74	23.55	23.43	23.36	23.5	2
15	16QAM	36	0	22.16	22.23	22.22		
15	16QAM	36	20	22.36	22.32	22.24		
15	16QAM	36	39	22.32	22.30	22.27	23.5	2
15	16QAM	75	0	22.14	22.34	22.26		
15	64QAM	1	0	22.36	22.36	22.34		
15	64QAM	1	37	22.35	22.50	22.37	23.5	2
15	64QAM	1	74	22.53	22.43	22.24		
15	64QAM	36	0	21.23	21.36	21.17		
15	64QAM	36	20	21.36	21.44	21.24	22.5	3
15	64QAM	36	39	21.29	21.38	21.23		
15	64QAM	75	0	21.24	21.24	21.27		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	24.27	24.30	24.26	25.5	0
10	QPSK	1	25	24.18	24.21	24.08		
10	QPSK	1	49	24.19	24.23	23.95		
10	QPSK	25	0	23.03	23.19	23.21	24.5	1
10	QPSK	25	12	23.18	23.09	22.97		
10	QPSK	25	25	23.19	23.15	23.07		
10	QPSK	50	0	23.06	23.14	23.22		
10	16QAM	1	0	23.31	23.48	23.30	24.5	1
10	16QAM	1	25	23.41	23.48	23.37		
10	16QAM	1	49	23.45	23.53	23.39		
10	16QAM	25	0	22.26	22.23	22.25	23.5	2
10	16QAM	25	12	22.17	22.30	22.25		
10	16QAM	25	25	22.18	22.33	22.27		
10	16QAM	50	0	22.19	22.19	22.23		
10	64QAM	1	0	22.47	22.40	22.34	23.5	2
10	64QAM	1	25	22.37	22.54	22.27		
10	64QAM	1	49	22.49	22.34	22.24		
10	64QAM	25	0	21.30	21.22	21.34	22.5	3
10	64QAM	25	12	21.38	21.35	21.12		
10	64QAM	25	25	21.18	21.23	21.22		
10	64QAM	50	0	21.17	21.24	21.29		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	24.26	24.29	24.21	25.5	0
5	QPSK	1	12	24.10	24.05	24.10		
5	QPSK	1	24	24.14	24.13	23.94		
5	QPSK	12	0	23.04	23.15	23.07	24.5	1
5	QPSK	12	7	23.13	23.21	23.02		
5	QPSK	12	13	23.06	23.07	23.15		
5	QPSK	25	0	23.06	23.08	23.02		
5	16QAM	1	0	23.38	23.44	23.44	24.5	1
5	16QAM	1	12	23.48	23.50	23.37		
5	16QAM	1	24	23.40	23.52	23.34		
5	16QAM	12	0	22.26	22.25	22.29	23.5	2
5	16QAM	12	7	22.22	22.41	22.23		
5	16QAM	12	13	22.32	22.35	22.20		
5	16QAM	25	0	22.22	22.20	22.30		
5	64QAM	1	0	22.44	22.55	22.38	23.5	2
5	64QAM	1	12	22.36	22.57	22.34		
5	64QAM	1	24	22.47	22.45	22.39		
5	64QAM	12	0	21.33	21.36	21.27	22.5	3
5	64QAM	12	7	21.30	21.28	21.21		
5	64QAM	12	13	21.19	21.37	21.28		
5	64QAM	25	0	21.36	21.19	21.16		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	24.15	24.24	24.17	25.5	0
3	QPSK	1	8	24.18	24.13	24.10		
3	QPSK	1	14	24.12	24.16	23.94		
3	QPSK	8	0	23.10	23.02	23.18	24.5	1
3	QPSK	8	4	23.16	23.14	22.98		
3	QPSK	8	7	23.03	23.15	23.01		
3	QPSK	15	0	23.20	23.07	23.14		
3	16QAM	1	0	23.50	23.52	23.27	24.5	1
3	16QAM	1	8	23.50	23.57	23.29		
3	16QAM	1	14	23.48	23.43	23.37		
3	16QAM	8	0	22.32	22.18	22.23	23.5	2
3	16QAM	8	4	22.32	22.31	22.24		
3	16QAM	8	7	22.20	22.22	22.21		
3	16QAM	15	0	22.22	22.30	22.16		
3	64QAM	1	0	22.32	22.46	22.35	23.5	2
3	64QAM	1	8	22.37	22.40	22.30		
3	64QAM	1	14	22.44	22.38	22.25		
3	64QAM	8	0	21.18	21.26	21.28	22.5	3
3	64QAM	8	4	21.37	21.43	21.28		
3	64QAM	8	7	21.24	21.21	21.27		
3	64QAM	8	7	21.24	21.21	21.27		
3	64QAM	15	0	21.31	21.20	21.27		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	24.18	24.22	24.23	25.5	0
1.4	QPSK	1	3	23.99	24.10	24.08		
1.4	QPSK	1	5	24.03	24.11	24.04		
1.4	QPSK	3	0	24.23	24.18	24.22		
1.4	QPSK	3	1	24.16	24.10	24.01		
1.4	QPSK	3	3	24.17	24.08	24.02		
1.4	QPSK	6	0	23.00	23.22	23.06	24.5	1
1.4	16QAM	1	0	23.47	23.57	23.25	24.5	1
1.4	16QAM	1	3	23.38	23.58	23.42		
1.4	16QAM	1	5	23.46	23.52	23.20		
1.4	16QAM	3	0	23.49	23.55	23.36		
1.4	16QAM	3	1	23.50	23.61	23.28		
1.4	16QAM	3	3	23.39	23.37	23.33		
1.4	16QAM	6	0	22.14	22.22	22.22	23.5	2
1.4	64QAM	1	0	22.39	22.39	22.43	23.5	2
1.4	64QAM	1	3	22.32	22.50	22.27		
1.4	64QAM	1	5	22.37	22.47	22.23		
1.4	64QAM	3	0	22.47	22.36	22.46		
1.4	64QAM	3	1	22.47	22.49	22.36		
1.4	64QAM	3	3	22.43	22.42	22.22		
1.4	64QAM	3	3	22.43	22.42	22.22		
1.4	64QAM	6	0	21.25	21.18	21.16		



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	24.45	24.51	24.57	25.5	0
20	QPSK	1	49	24.24	24.36	24.32		
20	QPSK	1	99	24.22	24.33	24.31		
20	QPSK	50	0	23.20	23.43	23.42	24.5	1
20	QPSK	50	24	23.42	23.42	23.49		
20	QPSK	50	50	23.29	23.37	23.35		
20	QPSK	100	0	23.38	23.39	23.42		
20	16QAM	1	0	23.63	23.65	23.71	24.5	1
20	16QAM	1	49	23.46	23.65	23.65		
20	16QAM	1	99	23.56	23.67	23.62		
20	16QAM	50	0	22.45	22.48	22.56	23.5	2
20	16QAM	50	24	22.43	22.53	22.58		
20	16QAM	50	50	22.46	22.51	22.46		
20	16QAM	100	0	22.36	22.47	22.55		
20	64QAM	1	0	22.45	22.60	22.66	23.5	2
20	64QAM	1	49	22.47	22.65	22.59		
20	64QAM	1	99	22.58	22.62	22.55		
20	64QAM	50	0	21.28	21.51	21.57	22.5	3
20	64QAM	50	24	21.50	21.55	21.60		
20	64QAM	50	50	21.47	21.52	21.48		
20	64QAM	100	0	21.47	21.49	21.58		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	24.41	24.47	24.53	25.5	0
15	QPSK	1	37	24.08	24.32	24.19		
15	QPSK	1	74	24.12	24.29	24.27		
15	QPSK	36	0	23.11	23.23	23.25	24.5	1
15	QPSK	36	20	23.29	23.26	23.47		
15	QPSK	36	39	23.27	23.36	23.18		
15	QPSK	75	0	23.32	23.33	23.41		
15	16QAM	1	0	23.43	23.56	23.61	24.5	1
15	16QAM	1	37	23.30	23.53	23.47		
15	16QAM	1	74	23.36	23.59	23.54		
15	16QAM	36	0	22.43	22.28	22.53	23.5	2
15	16QAM	36	20	22.33	22.34	22.55		
15	16QAM	36	39	22.35	22.41	22.31		
15	16QAM	75	0	22.35	22.28	22.38		
15	64QAM	1	0	22.32	22.43	22.63	23.5	2
15	64QAM	1	37	22.28	22.47	22.42		
15	64QAM	1	74	22.43	22.46	22.44		
15	64QAM	36	0	21.25	21.42	21.45	22.5	3
15	64QAM	36	20	21.49	21.53	21.44		
15	64QAM	36	39	21.36	21.32	21.36		
15	64QAM	75	0	21.35	21.33	21.40		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	24.41	24.31	24.37	25.5	0
10	QPSK	1	25	24.15	24.25	24.13		
10	QPSK	1	49	24.13	24.19	24.12		
10	QPSK	25	0	23.15	23.29	23.42	24.5	1
10	QPSK	25	12	23.24	23.37	23.47		
10	QPSK	25	25	23.28	23.28	23.35		
10	QPSK	50	0	23.33	23.25	23.37	24.5	1
10	16QAM	1	0	23.46	23.53	23.52		
10	16QAM	1	25	23.36	23.55	23.58		
10	16QAM	1	49	23.48	23.58	23.44	23.5	2
10	16QAM	25	0	22.32	22.41	22.54		
10	16QAM	25	12	22.33	22.38	22.57		
10	16QAM	25	25	22.34	22.42	22.33	23.5	2
10	16QAM	50	0	22.24	22.31	22.48		
10	64QAM	1	0	22.26	22.54	22.61		
10	64QAM	1	25	22.33	22.57	22.53	23.5	2
10	64QAM	1	49	22.40	22.43	22.55		
10	64QAM	25	0	21.19	21.39	21.45		
10	64QAM	25	12	21.43	21.39	21.43	22.5	3
10	64QAM	25	25	21.29	21.41	21.39		
10	64QAM	50	0	21.27	21.48	21.50		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	24.28	24.38	24.51	25.5	0
5	QPSK	1	12	24.18	24.29	24.15		
5	QPSK	1	24	24.18	24.21	24.14		
5	QPSK	12	0	23.14	23.34	23.31	24.5	1
5	QPSK	12	7	23.37	23.36	23.44		
5	QPSK	12	13	23.27	23.18	23.22		
5	QPSK	25	0	23.38	23.21	23.33	24.5	1
5	16QAM	1	0	23.48	23.51	23.71		
5	16QAM	1	12	23.30	23.59	23.47		
5	16QAM	1	24	23.41	23.61	23.61	23.5	2
5	16QAM	12	0	22.34	22.42	22.46		
5	16QAM	12	7	22.30	22.51	22.56		
5	16QAM	12	13	22.31	22.38	22.41	23.5	2
5	16QAM	25	0	22.29	22.27	22.49		
5	64QAM	1	0	22.26	22.53	22.52		
5	64QAM	1	12	22.29	22.48	22.55	23.5	2
5	64QAM	1	24	22.44	22.42	22.52		
5	64QAM	12	0	21.19	21.32	21.46		
5	64QAM	12	7	21.33	21.45	21.52	22.5	3
5	64QAM	12	13	21.45	21.32	21.37		
5	64QAM	25	0	21.32	21.40	21.44		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	24.40	24.33	24.55	25.5	0
3	QPSK	1	8	24.16	24.18	24.32		
3	QPSK	1	14	24.15	24.13	24.20		
3	QPSK	8	0	23.11	23.30	23.42	24.5	1
3	QPSK	8	4	23.23	23.35	23.37		
3	QPSK	8	7	23.10	23.31	23.35		
3	QPSK	15	0	23.25	23.19	23.28		
3	16QAM	1	0	23.50	23.55	23.51	24.5	1
3	16QAM	1	8	23.46	23.60	23.54		
3	16QAM	1	14	23.37	23.64	23.60		
3	16QAM	8	0	22.28	22.35	22.41	23.5	2
3	16QAM	8	4	22.27	22.43	22.50		
3	16QAM	8	7	22.34	22.31	22.31		
3	16QAM	15	0	22.30	22.34	22.39		
3	64QAM	1	0	22.45	22.49	22.49	23.5	2
3	64QAM	1	8	22.46	22.61	22.44		
3	64QAM	1	14	22.56	22.62	22.50		
3	64QAM	8	0	21.09	21.33	21.38	22.5	3
3	64QAM	8	4	21.46	21.42	21.41		
3	64QAM	8	7	21.30	21.50	21.36		
3	64QAM	8	7	21.30	21.50	21.36		
3	64QAM	15	0	21.30	21.41	21.50		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	24.44	24.41	24.39	25.5	0
1.4	QPSK	1	3	24.20	24.36	24.13		
1.4	QPSK	1	5	24.16	24.19	24.13		
1.4	QPSK	3	0	24.27	24.35	24.57		
1.4	QPSK	3	1	24.20	24.29	24.27		
1.4	QPSK	3	3	24.18	24.24	24.17		
1.4	QPSK	6	0	23.28	23.31	23.29	24.5	1
1.4	16QAM	1	0	23.56	23.61	23.55	24.5	1
1.4	16QAM	1	3	23.41	23.45	23.50		
1.4	16QAM	1	5	23.51	23.59	23.43		
1.4	16QAM	3	0	23.24	23.27	23.33		
1.4	16QAM	3	1	23.44	23.65	23.56		
1.4	16QAM	3	3	23.35	23.65	23.53		
1.4	16QAM	6	0	22.20	22.36	22.47	23.5	2
1.4	64QAM	1	0	22.45	22.51	22.46	23.5	2
1.4	64QAM	1	3	22.31	22.59	22.39		
1.4	64QAM	1	5	22.52	22.46	22.41		
1.4	64QAM	3	0	22.30	22.59	22.58		
1.4	64QAM	3	1	22.40	22.64	22.56		
1.4	64QAM	3	3	22.51	22.43	22.37		
1.4	64QAM	6	0	21.46	21.30	21.48	22.5	3



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.61	23.63	23.62	24.5	0
10	QPSK	1	25	23.51	23.53	23.55		
10	QPSK	1	49	23.43	23.47	23.46		
10	QPSK	25	0	22.63	22.59	22.48	23.5	1
10	QPSK	25	12	22.58	22.57	22.61		
10	QPSK	25	25	22.62	22.53	22.55		
10	QPSK	50	0	22.55	22.46	22.48		
10	16QAM	1	0	22.84	22.81	22.84	23.5	1
10	16QAM	1	25	22.87	22.89	22.74		
10	16QAM	1	49	22.93	22.80	22.80		
10	16QAM	25	0	21.74	21.62	21.57	22.5	2
10	16QAM	25	12	21.73	21.65	21.63		
10	16QAM	25	25	21.73	21.62	21.58		
10	16QAM	50	0	21.68	21.58	21.56		
10	64QAM	1	0	21.74	21.74	21.74	22.5	2
10	64QAM	1	25	21.81	21.84	21.81		
10	64QAM	1	49	21.88	20.91	21.69		
10	64QAM	25	0	20.73	20.51	20.59	21.5	3
10	64QAM	25	12	20.74	20.63	20.69		
10	64QAM	25	25	20.77	20.68	20.60		
10	64QAM	50	0	20.70	20.70	20.58		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.56	23.49	23.42	24.5	0
5	QPSK	1	12	23.46	23.53	23.35		
5	QPSK	1	24	23.32	23.29	23.43		
5	QPSK	12	0	22.55	22.44	22.31	23.5	1
5	QPSK	12	7	22.51	22.57	22.49		
5	QPSK	12	13	22.61	22.42	22.39		
5	QPSK	25	0	22.37	22.33	22.29		
5	16QAM	1	0	22.67	22.78	22.81	23.5	1
5	16QAM	1	12	22.74	22.76	22.62		
5	16QAM	1	24	22.82	22.74	22.63		
5	16QAM	12	0	21.69	21.57	21.52	22.5	2
5	16QAM	12	7	21.61	21.64	21.43		
5	16QAM	12	13	21.72	21.44	21.43		
5	16QAM	25	0	21.60	21.49	21.56		
5	64QAM	1	0	21.63	21.65	21.74	22.5	2
5	64QAM	1	12	21.61	21.80	21.74		
5	64QAM	1	24	21.77	20.91	21.50		
5	64QAM	12	0	20.60	20.31	20.50	21.5	3
5	64QAM	12	7	20.73	20.62	20.67		
5	64QAM	12	13	20.61	20.57	20.49		
5	64QAM	25	0	20.60	20.58	20.49		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.52	23.53	23.58	24.5	0
3	QPSK	1	8	23.39	23.46	23.36		
3	QPSK	1	14	23.28	23.45	23.35		
3	QPSK	8	0	22.61	22.58	22.32	23.5	1
3	QPSK	8	4	22.54	22.49	22.60		
3	QPSK	8	7	22.46	22.53	22.52		
3	QPSK	15	0	22.54	22.31	22.44	23.5	1
3	16QAM	1	0	22.84	22.73	22.71		
3	16QAM	1	8	22.68	22.88	22.64		
3	16QAM	1	14	22.76	22.62	22.60	22.5	2
3	16QAM	8	0	21.62	21.54	21.42		
3	16QAM	8	4	21.56	21.48	21.47		
3	16QAM	8	7	21.73	21.43	21.38	21.5	3
3	16QAM	15	0	21.58	21.52	21.39		
3	64QAM	1	0	21.69	21.54	21.58		
3	64QAM	1	8	21.77	21.83	21.64	22.5	2
3	64QAM	1	14	21.85	20.76	21.67		
3	64QAM	8	0	20.53	20.51	20.57		
3	64QAM	8	4	20.64	20.44	20.68	21.5	3
3	64QAM	8	7	20.71	20.63	20.44		
3	64QAM	15	0	20.59	20.54	20.39		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.47	23.55	23.51	24.5	0
1.4	QPSK	1	3	23.42	23.34	23.42		
1.4	QPSK	1	5	23.42	23.31	23.27		
1.4	QPSK	3	0	23.43	23.60	23.60		
1.4	QPSK	3	1	23.47	23.44	23.42		
1.4	QPSK	3	3	23.37	23.39	23.29		
1.4	QPSK	6	0	22.41	22.36	22.34	23.5	1
1.4	16QAM	1	0	22.65	22.76	22.72	23.5	1
1.4	16QAM	1	3	22.70	22.82	22.61		
1.4	16QAM	1	5	22.86	22.75	22.70		
1.4	16QAM	3	0	22.51	22.29	22.29		
1.4	16QAM	3	1	22.81	22.72	22.70		
1.4	16QAM	3	3	22.75	22.76	22.72		
1.4	16QAM	6	0	21.58	21.40	21.44	22.5	2
1.4	64QAM	1	0	21.56	21.66	21.56	22.5	2
1.4	64QAM	1	3	21.70	21.82	21.79		
1.4	64QAM	1	5	21.73	20.85	21.53		
1.4	64QAM	3	0	21.65	21.66	21.57		
1.4	64QAM	3	1	21.68	21.66	21.65		
1.4	64QAM	3	3	21.82	20.89	21.49		
1.4	64QAM	6	0	20.57	20.69	20.41	21.5	3



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	23.63	23.61	23.48	24.5	0
20	QPSK	1	49	23.61	23.60	23.29		
20	QPSK	1	99	23.60	23.50	23.45		
20	QPSK	50	0	22.91	22.75	22.50	23.5	1
20	QPSK	50	24	22.76	22.74	22.49		
20	QPSK	50	50	22.89	22.67	22.44		
20	QPSK	100	0	22.74	22.73	22.50		
20	16QAM	1	0	22.69	22.88	22.61	23.5	1
20	16QAM	1	49	22.94	22.87	22.58		
20	16QAM	1	99	23.18	22.77	22.82		
20	16QAM	50	0	21.77	21.84	21.45	22.5	2
20	16QAM	50	24	21.81	21.79	21.55		
20	16QAM	50	50	21.95	21.76	21.54		
20	16QAM	100	0	21.80	21.79	21.57		
20	64QAM	1	0	21.67	21.82	21.53	22.5	2
20	64QAM	1	49	21.86	21.87	21.56		
20	64QAM	1	99	22.10	21.76	21.81		
20	64QAM	50	0	20.78	20.83	20.52	21.5	3
20	64QAM	50	24	20.83	20.83	20.58		
20	64QAM	50	50	20.98	20.81	20.54		
20	64QAM	100	0	20.83	20.81	20.57		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.49	23.59	23.31	24.5	0
15	QPSK	1	37	23.60	23.60	23.30		
15	QPSK	1	74	23.58	23.62	23.60		
15	QPSK	36	0	22.65	22.70	22.39	23.5	1
15	QPSK	36	20	22.73	22.71	22.37		
15	QPSK	36	39	22.75	22.65	22.49		
15	QPSK	75	0	22.71	22.68	22.51		
15	16QAM	1	0	22.73	22.93	22.67	23.5	1
15	16QAM	1	37	22.92	22.90	22.65		
15	16QAM	1	74	23.15	22.94	22.89		
15	16QAM	36	0	21.72	21.78	21.47	22.5	2
15	16QAM	36	20	21.81	21.76	21.45		
15	16QAM	36	39	21.83	21.73	21.54		
15	16QAM	75	0	21.78	21.77	21.58		
15	64QAM	1	0	21.63	21.82	21.56	22.5	2
15	64QAM	1	37	21.83	21.83	21.54		
15	64QAM	1	74	22.00	21.85	21.78		
15	64QAM	36	0	20.75	20.83	20.57	21.5	3
15	64QAM	36	20	20.85	20.85	20.55		
15	64QAM	36	39	20.86	20.81	20.59		
15	64QAM	75	0	20.79	20.83	20.59		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.46	23.58	23.22	24.5	0
10	QPSK	1	25	23.53	23.57	23.31		
10	QPSK	1	49	23.54	23.61	23.51		
10	QPSK	25	0	22.55	22.65	22.33	23.5	1
10	QPSK	25	12	22.68	22.67	22.34		
10	QPSK	25	25	22.72	22.68	22.47		
10	QPSK	50	0	22.68	22.67	22.37	23.5	1
10	16QAM	1	0	22.68	22.93	22.53		
10	16QAM	1	25	22.74	22.87	22.62		
10	16QAM	1	49	22.95	22.85	22.79	22.5	2
10	16QAM	25	0	21.59	21.73	21.42		
10	16QAM	25	12	21.74	21.73	21.44		
10	16QAM	25	25	21.75	21.74	21.49	22.5	2
10	16QAM	50	0	21.73	21.76	21.47		
10	64QAM	1	0	21.61	21.86	21.45		
10	64QAM	1	25	21.70	21.81	21.54	22.5	2
10	64QAM	1	49	21.92	21.78	21.68		
10	64QAM	25	0	20.59	20.79	20.40		
10	64QAM	25	12	20.75	20.77	20.49	21.5	3
10	64QAM	25	25	20.78	20.73	20.54		
10	64QAM	50	0	20.75	20.77	20.47		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.46	23.60	23.29	24.5	0
5	QPSK	1	12	23.50	23.59	23.37		
5	QPSK	1	24	23.55	23.58	23.47		
5	QPSK	12	0	22.50	22.66	22.35	23.5	1
5	QPSK	12	7	22.57	22.70	22.42		
5	QPSK	12	13	22.57	22.63	22.48		
5	QPSK	25	0	22.55	22.65	22.40	23.5	1
5	16QAM	1	0	22.67	22.88	22.60		
5	16QAM	1	12	22.71	22.85	22.65		
5	16QAM	1	24	22.79	22.86	22.76	22.5	2
5	16QAM	12	0	21.55	21.74	21.43		
5	16QAM	12	7	21.61	21.77	21.52		
5	16QAM	12	13	21.64	21.72	21.51	22.5	2
5	16QAM	25	0	21.60	21.72	21.47		
5	64QAM	1	0	21.64	21.84	21.57		
5	64QAM	1	12	21.71	21.82	21.59	22.5	2
5	64QAM	1	24	21.73	21.81	21.65		
5	64QAM	12	0	20.62	20.77	20.48		
5	64QAM	12	7	20.66	20.80	20.55	21.5	3
5	64QAM	12	13	20.68	20.81	20.56		
5	64QAM	25	0	20.60	20.72	20.51		



<LTE Band 12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23060	23095	23130		
Frequency (MHz)				704	707.5	711		
10	QPSK	1	0	24.51	24.47	24.54	25	0
10	QPSK	1	25	24.38	24.31	24.51		
10	QPSK	1	49	24.33	24.26	24.48		
10	QPSK	25	0	23.44	23.37	23.49	24	1
10	QPSK	25	12	23.43	23.35	23.32		
10	QPSK	25	25	23.39	23.34	23.29		
10	QPSK	50	0	23.42	23.36	23.31		
10	16QAM	1	0	23.48	23.53	23.59	24	1
10	16QAM	1	25	23.72	23.58	23.57		
10	16QAM	1	49	23.64	23.58	23.62		
10	16QAM	25	0	22.53	22.48	22.43	23	2
10	16QAM	25	12	22.55	22.46	22.45		
10	16QAM	25	25	22.52	22.44	22.41		
10	16QAM	50	0	22.54	22.46	22.43		
10	64QAM	1	0	22.48	22.52	22.53	23	2
10	64QAM	1	25	22.68	22.54	22.50		
10	64QAM	1	49	22.61	22.50	22.59		
10	64QAM	25	0	21.57	21.35	21.38	22	3
10	64QAM	25	12	21.57	21.32	21.44		
10	64QAM	25	25	21.52	21.37	21.50		
10	64QAM	50	0	21.53	21.40	21.47		
Channel				23035	23095	23155		
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	24.40	24.35	24.53	25	0
5	QPSK	1	12	24.21	24.26	24.47		
5	QPSK	1	24	24.14	24.14	24.32		
5	QPSK	12	0	23.32	23.23	23.43	24	1
5	QPSK	12	7	23.27	23.18	23.28		
5	QPSK	12	13	23.35	23.21	23.25		
5	QPSK	25	0	23.39	23.18	23.18		
5	16QAM	1	0	23.37	23.39	23.56	24	1
5	16QAM	1	12	23.57	23.41	23.57		
5	16QAM	1	24	23.50	23.49	23.51		
5	16QAM	12	0	22.42	22.28	22.36	23	2
5	16QAM	12	7	22.48	22.31	22.25		
5	16QAM	12	13	22.36	22.25	22.37		
5	16QAM	25	0	22.42	22.46	22.32		
5	64QAM	1	0	22.32	22.40	22.38	23	2
5	64QAM	1	12	22.50	22.40	22.41		
5	64QAM	1	24	22.45	22.33	22.57		
5	64QAM	12	0	21.51	21.19	21.21	22	3
5	64QAM	12	7	21.44	21.18	21.34		
5	64QAM	12	13	21.47	21.22	21.47		
5	64QAM	25	0	21.45	21.34	21.43		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	24.51	24.36	24.39	25	0
3	QPSK	1	8	24.23	24.11	24.35		
3	QPSK	1	14	24.20	24.22	24.43		
3	QPSK	8	0	23.42	23.22	23.30	24	1
3	QPSK	8	4	23.24	23.35	23.27		
3	QPSK	8	7	23.37	23.19	23.09		
3	QPSK	15	0	23.35	23.16	23.28		
3	16QAM	1	0	23.36	23.36	23.39	24	1
3	16QAM	1	8	23.60	23.39	23.57		
3	16QAM	1	14	23.47	23.56	23.50		
3	16QAM	8	0	22.44	22.28	22.25	23	2
3	16QAM	8	4	22.43	22.37	22.43		
3	16QAM	8	7	22.49	22.24	22.23		
3	16QAM	15	0	22.51	22.42	22.32		
3	64QAM	1	0	22.34	22.43	22.48	23	2
3	64QAM	1	8	22.51	22.52	22.40		
3	64QAM	1	14	22.44	22.34	22.44		
3	64QAM	8	0	21.48	21.25	21.33	22	3
3	64QAM	8	4	21.51	21.32	21.25		
3	64QAM	8	7	21.34	21.18	21.46		
3	64QAM	15	0	21.47	21.33	21.39		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	24.31	24.27	24.42	25	0
1.4	QPSK	1	3	24.36	24.22	24.48		
1.4	QPSK	1	5	24.16	24.13	24.33		
1.4	QPSK	3	0	24.44	24.27	24.53		
1.4	QPSK	3	1	24.20	24.15	24.42		
1.4	QPSK	3	3	24.31	24.12	24.46		
1.4	QPSK	6	0	23.42	23.36	23.15	24	1
1.4	16QAM	1	0	23.32	23.41	23.45	24	1
1.4	16QAM	1	3	23.61	23.53	23.50		
1.4	16QAM	1	5	23.51	23.58	23.42		
1.4	16QAM	3	0	23.38	23.31	23.17		
1.4	16QAM	3	1	23.39	23.33	23.41		
1.4	16QAM	3	3	23.56	23.38	23.45		
1.4	16QAM	6	0	22.51	22.43	22.42	23	2
1.4	64QAM	1	0	22.46	22.34	22.51	23	2
1.4	64QAM	1	3	22.51	22.37	22.36		
1.4	64QAM	1	5	22.42	22.30	22.52		
1.4	64QAM	3	0	22.46	22.36	22.35		
1.4	64QAM	3	1	22.54	22.36	22.42		
1.4	64QAM	3	3	22.43	22.31	22.55		
1.4	64QAM	6	0	21.39	21.36	21.34	22	3



<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23230				
Frequency (MHz)				782				
10	QPSK	1	0	24.05			24.5	0
10	QPSK	1	25	23.80				
10	QPSK	1	49	23.74				
10	QPSK	25	0	22.86			23.5	1
10	QPSK	25	12	22.86				
10	QPSK	25	25	22.80				
10	QPSK	50	0	22.86				
10	16QAM	1	0	23.10			23.5	1
10	16QAM	1	25	23.08				
10	16QAM	1	49	23.08				
10	16QAM	25	0	21.96			22.5	2
10	16QAM	25	12	21.97				
10	16QAM	25	25	21.87				
10	16QAM	50	0	21.93				
10	64QAM	1	0	22.06			22.5	2
10	64QAM	1	25	22.08				
10	64QAM	1	49	22.01				
10	64QAM	25	0	21.00			21.5	3
10	64QAM	25	12	20.97				
10	64QAM	25	25	20.94				
10	64QAM	50	0	20.95				
Channel				23205	23230	23255	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				779.5	782	784.5		
5	QPSK	1	0	23.87	23.87	23.99	24.5	0
5	QPSK	1	12	23.68	23.72	23.61		
5	QPSK	1	24	23.68	23.74	23.65		
5	QPSK	12	0	22.82	22.71	22.77	23.5	1
5	QPSK	12	7	22.72	22.77	22.79		
5	QPSK	12	13	22.74	22.78	22.66		
5	QPSK	25	0	22.83	22.81	22.74		
5	16QAM	1	0	22.96	23.09	23.09	23.5	1
5	16QAM	1	12	22.96	23.02	23.06		
5	16QAM	1	24	22.90	23.03	23.08		
5	16QAM	12	0	21.85	21.81	21.82	22.5	2
5	16QAM	12	7	21.89	21.78	21.96		
5	16QAM	12	13	21.73	21.69	21.76		
5	16QAM	25	0	21.80	21.81	21.93		
5	64QAM	1	0	21.91	22.04	22.01	22.5	2
5	64QAM	1	12	21.99	21.90	22.04		
5	64QAM	1	24	21.89	21.89	21.89		
5	64QAM	12	0	20.89	20.90	20.82	21.5	3
5	64QAM	12	7	20.88	20.94	20.90		
5	64QAM	12	13	20.81	20.83	20.86		
5	64QAM	25	0	20.94	20.86	20.77		



<LTE Band 14>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23330				
Frequency (MHz)				793				
10	QPSK	1	0	24.01			24.5	0
10	QPSK	1	25	23.91				
10	QPSK	1	49	23.73				
10	QPSK	25	0	22.98			23.5	1
10	QPSK	25	12	22.94				
10	QPSK	25	25	22.90				
10	QPSK	50	0	22.93				
10	16QAM	1	0	23.17			23.5	1
10	16QAM	1	25	23.25				
10	16QAM	1	49	23.05				
10	16QAM	25	0	22.06			22.5	2
10	16QAM	25	12	22.04				
10	16QAM	25	25	22.00				
10	16QAM	50	0	22.05				
10	64QAM	1	0	22.13			22.5	2
10	64QAM	1	25	22.19				
10	64QAM	1	49	21.99				
10	64QAM	25	0	21.09			21.5	3
10	64QAM	25	12	21.05				
10	64QAM	25	25	21.00				
10	64QAM	50	0	21.05				
Channel				23305	23330	23355	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				790.5	793	795.5		
5	QPSK	1	0	23.97	23.98	23.90	24.5	0
5	QPSK	1	12	23.74	23.63	23.79		
5	QPSK	1	24	23.66	23.61	23.57		
5	QPSK	12	0	22.80	22.73	22.81	23.5	1
5	QPSK	12	7	22.73	22.77	22.77		
5	QPSK	12	13	22.78	22.63	22.69		
5	QPSK	25	0	22.85	22.66	22.71		
5	16QAM	1	0	23.09	22.92	23.01	23.5	1
5	16QAM	1	12	22.97	22.94	22.99		
5	16QAM	1	24	23.03	23.02	22.97		
5	16QAM	12	0	21.77	21.89	21.82	22.5	2
5	16QAM	12	7	21.77	21.85	21.78		
5	16QAM	12	13	21.80	21.85	21.69		
5	16QAM	25	0	21.85	21.90	21.76		
5	64QAM	1	0	21.97	21.93	21.95	22.5	2
5	64QAM	1	12	21.91	22.06	22.02		
5	64QAM	1	24	21.85	21.89	21.90		
5	64QAM	12	0	20.95	20.90	20.96	21.5	3
5	64QAM	12	7	20.79	20.82	20.96		
5	64QAM	12	13	20.76	20.93	20.89		
5	64QAM	25	0	20.84	20.94	20.76		



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	24.42	24.50	24.51		
10	QPSK	1	25	24.43	24.39	24.39	25	0
10	QPSK	1	49	24.41	24.39	24.36		
10	QPSK	25	0	23.49	23.49	23.45		
10	QPSK	25	12	23.53	23.49	23.48	24	1
10	QPSK	25	25	23.46	23.42	23.46		
10	QPSK	50	0	23.51	23.47	23.48		
10	16QAM	1	0	22.64	23.69	23.71	24	1
10	16QAM	1	25	23.54	23.53	23.73		
10	16QAM	1	49	23.78	23.60	23.72		
10	16QAM	25	0	22.63	22.58	22.59	23	2
10	16QAM	25	12	22.64	22.40	22.60		
10	16QAM	25	25	22.57	22.51	22.58		
10	16QAM	50	0	22.62	22.48	22.60	23	2
10	64QAM	1	0	22.60	22.56	22.65		
10	64QAM	1	25	22.73	22.70	22.72		
10	64QAM	1	49	22.73	22.71	22.70	22	3
10	64QAM	25	0	21.64	21.64	21.61		
10	64QAM	25	12	21.63	21.63	21.64		
10	64QAM	25	25	21.61	21.60	21.59	22	3
10	64QAM	50	0	21.63	21.61	21.64		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	24.36	24.47	24.46	25	0
5	QPSK	1	12	24.29	24.37	24.32		
5	QPSK	1	24	24.25	24.23	24.32		
5	QPSK	12	0	23.36	23.34	23.36	24	1
5	QPSK	12	7	23.42	23.41	23.34		
5	QPSK	12	13	23.27	23.26	23.32		
5	QPSK	25	0	23.46	23.37	23.28	24	1
5	16QAM	1	0	22.61	23.69	23.70		
5	16QAM	1	12	23.44	23.49	23.59		
5	16QAM	1	24	23.77	23.52	23.63	23	2
5	16QAM	12	0	22.50	22.49	22.43		
5	16QAM	12	7	22.63	22.20	22.42		
5	16QAM	12	13	22.54	22.44	22.40	23	2
5	16QAM	25	0	22.52	22.34	22.48		
5	64QAM	1	0	22.52	22.41	22.45		
5	64QAM	1	12	22.67	22.53	22.70	23	2
5	64QAM	1	24	22.68	22.67	22.52		
5	64QAM	12	0	21.52	21.64	21.57		
5	64QAM	12	7	21.61	21.50	21.49	22	3
5	64QAM	12	13	21.47	21.51	21.58		
5	64QAM	25	0	21.56	21.57	21.64		



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	24.56	24.59	24.46	25.5	0
20	QPSK	1	49	24.49	24.54	24.45		
20	QPSK	1	99	24.55	24.54	24.43		
20	QPSK	50	0	23.53	23.58	23.51	24.5	1
20	QPSK	50	24	23.52	23.57	23.48		
20	QPSK	50	50	23.51	23.55	23.50		
20	QPSK	100	0	23.51	23.52	23.44		
20	16QAM	1	0	23.81	23.93	23.74	24.5	1
20	16QAM	1	49	23.80	23.95	23.78		
20	16QAM	1	99	23.87	23.87	23.73		
20	16QAM	50	0	22.66	22.68	22.57	23.5	2
20	16QAM	50	24	22.66	22.69	22.60		
20	16QAM	50	50	22.63	22.70	22.59		
20	16QAM	100	0	22.62	22.67	22.58		
20	64QAM	1	0	22.79	22.87	22.65	23.5	2
20	64QAM	1	49	22.87	22.84	22.70		
20	64QAM	1	99	22.83	22.81	22.67		
20	64QAM	50	0	21.64	21.72	21.58	22.5	3
20	64QAM	50	24	21.68	21.72	21.61		
20	64QAM	50	50	21.65	21.69	21.62		
20	64QAM	100	0	21.65	21.67	21.62		
Channel				26115	26340	26615		
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	24.36	24.44	24.25	25.5	0
15	QPSK	1	37	24.38	24.41	24.35		
15	QPSK	1	74	24.49	24.35	24.27		
15	QPSK	36	0	23.44	23.42	23.36	24.5	1
15	QPSK	36	20	23.39	23.45	23.38		
15	QPSK	36	39	23.48	23.54	23.46		
15	QPSK	75	0	23.32	23.34	23.25		
15	16QAM	1	0	23.62	23.84	23.74	24.5	1
15	16QAM	1	37	23.72	23.85	23.58		
15	16QAM	1	74	23.74	23.85	23.68		
15	16QAM	36	0	22.57	22.58	22.45	23.5	2
15	16QAM	36	20	22.55	22.67	22.46		
15	16QAM	36	39	22.50	22.58	22.51		
15	16QAM	75	0	22.44	22.59	22.47		
15	64QAM	1	0	22.76	22.83	22.47	23.5	2
15	64QAM	1	37	22.87	22.69	22.56		
15	64QAM	1	74	22.73	22.79	22.67		
15	64QAM	36	0	21.48	21.72	21.53	22.5	3
15	64QAM	36	20	21.52	21.71	21.58		
15	64QAM	36	39	21.52	21.50	21.50		
15	64QAM	75	0	21.53	21.50	21.56		



Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	24.37	24.41	24.29	25.5	0
10	QPSK	1	25	24.37	24.49	24.27		
10	QPSK	1	49	24.38	24.48	24.41		
10	QPSK	25	0	23.42	23.51	23.29	24.5	1
10	QPSK	25	12	23.50	23.41	23.47		
10	QPSK	25	25	23.34	23.45	23.39		
10	QPSK	50	0	23.47	23.33	23.44	24.5	1
10	16QAM	1	0	23.69	23.91	23.72		
10	16QAM	1	25	23.60	23.86	23.71		
10	16QAM	1	49	23.69	23.72	23.67	23.5	2
10	16QAM	25	0	22.49	22.60	22.48		
10	16QAM	25	12	22.66	22.69	22.55		
10	16QAM	25	25	22.43	22.67	22.42	23.5	2
10	16QAM	50	0	22.56	22.67	22.39		
10	64QAM	1	0	22.74	22.81	22.57		
10	64QAM	1	25	22.79	22.72	22.60	23.5	2
10	64QAM	1	49	22.81	22.70	22.65		
10	64QAM	25	0	21.52	21.71	21.48		
10	64QAM	25	12	21.64	21.71	21.44	22.5	3
10	64QAM	25	25	21.60	21.55	21.55		
10	64QAM	50	0	21.54	21.59	21.60		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	24.41	24.58	24.36	25.5	0
5	QPSK	1	12	24.36	24.42	24.33		
5	QPSK	1	24	24.36	24.48	24.36		
5	QPSK	12	0	23.37	23.36	23.27	24.5	1
5	QPSK	12	7	23.39	23.41	23.39		
5	QPSK	12	13	23.39	23.44	23.47		
5	QPSK	25	0	23.40	23.35	23.31	24.5	1
5	16QAM	1	0	23.65	23.83	23.56		
5	16QAM	1	12	23.62	23.92	23.64		
5	16QAM	1	24	23.74	23.76	23.68	23.5	2
5	16QAM	12	0	22.55	22.57	22.38		
5	16QAM	12	7	22.47	22.58	22.56		
5	16QAM	12	13	22.43	22.57	22.46	23.5	2
5	16QAM	25	0	22.42	22.65	22.42		
5	64QAM	1	0	22.64	22.69	22.57		
5	64QAM	1	12	22.73	22.84	22.69	23.5	2
5	64QAM	1	24	22.74	22.63	22.55		
5	64QAM	12	0	21.47	21.66	21.42		
5	64QAM	12	7	21.60	21.60	21.52	22.5	3
5	64QAM	12	13	21.47	21.67	21.46		
5	64QAM	25	0	21.60	21.60	21.58		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	24.54	24.50	24.37	25.5	0
3	QPSK	1	8	24.30	24.46	24.30		
3	QPSK	1	14	24.48	24.54	24.43		
3	QPSK	8	0	23.43	23.45	23.26	24.5	1
3	QPSK	8	4	23.37	23.47	23.42		
3	QPSK	8	7	23.38	23.38	23.49		
3	QPSK	15	0	23.39	23.44	23.32		
3	16QAM	1	0	23.63	23.93	23.61	24.5	1
3	16QAM	1	8	23.71	23.93	23.74		
3	16QAM	1	14	23.87	23.84	23.62		
3	16QAM	8	0	22.57	22.67	22.41	23.5	2
3	16QAM	8	4	22.49	22.51	22.59		
3	16QAM	8	7	22.50	22.57	22.43		
3	16QAM	15	0	22.53	22.50	22.48		
3	64QAM	1	0	22.76	22.76	22.49	23.5	2
3	64QAM	1	8	22.76	22.78	22.50		
3	64QAM	1	14	22.78	22.65	22.64		
3	64QAM	8	0	21.62	21.71	21.40	22.5	3
3	64QAM	8	4	21.64	21.72	21.44		
3	64QAM	8	7	21.65	21.64	21.52		
3	64QAM	8	7	21.65	21.64	21.52		
3	64QAM	15	0	21.65	21.61	21.60		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	24.46	24.44	24.36	25.5	0
1.4	QPSK	1	3	24.29	24.53	24.41		
1.4	QPSK	1	5	24.39	24.35	24.26		
1.4	QPSK	3	0	24.55	24.39	24.22		
1.4	QPSK	3	1	24.30	24.39	24.43		
1.4	QPSK	3	3	24.53	24.39	24.35		
1.4	QPSK	6	0	23.47	23.47	23.41	24.5	1
1.4	16QAM	1	0	23.66	23.75	23.62	24.5	1
1.4	16QAM	1	3	23.66	23.75	23.69		
1.4	16QAM	1	5	23.81	23.78	23.54		
1.4	16QAM	3	0	23.46	23.48	23.32		
1.4	16QAM	3	1	23.75	23.84	23.69		
1.4	16QAM	3	3	23.76	23.91	23.58		
1.4	16QAM	6	0	22.44	22.47	22.48	23.5	2
1.4	64QAM	1	0	22.73	22.74	22.46	23.5	2
1.4	64QAM	1	3	22.79	22.78	22.50		
1.4	64QAM	1	5	22.63	22.66	22.62		
1.4	64QAM	3	0	22.71	22.82	22.65		
1.4	64QAM	3	1	22.82	22.81	22.67		
1.4	64QAM	3	3	22.72	22.69	22.50		
1.4	64QAM	6	0	21.65	21.65	21.43	22.5	3



<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.58	23.70	23.65		
15	QPSK	1	37	23.43	23.52	23.48	24.5	0
15	QPSK	1	74	23.51	23.59	23.57		
15	QPSK	36	0	22.57	22.60	22.54		
15	QPSK	36	20	22.52	22.59	22.43	23.5	1
15	QPSK	36	39	22.54	22.52	22.49		
15	QPSK	75	0	22.56	22.57	22.55		
15	16QAM	1	0	22.75	22.89	22.86	23.5	1
15	16QAM	1	37	22.82	22.89	22.88		
15	16QAM	1	74	22.88	22.95	22.96		
15	16QAM	36	0	21.63	21.71	21.60	22.5	2
15	16QAM	36	20	21.70	21.70	21.68		
15	16QAM	36	39	21.63	21.66	21.64		
15	16QAM	75	0	21.67	21.66	21.69	22.5	2
15	64QAM	1	0	21.69	21.79	21.86		
15	64QAM	1	37	21.74	21.83	21.80		
15	64QAM	1	74	21.81	21.90	21.89	21.5	3
15	64QAM	36	0	20.64	20.72	20.60		
15	64QAM	36	20	20.75	20.70	20.74		
15	64QAM	36	39	20.69	20.66	20.67	21.5	3
15	64QAM	75	0	20.33	20.70	20.68		
Channel				26740	26865	26990		
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.53	23.64	23.57		
10	QPSK	1	25	23.26	23.51	23.37	24.5	0
10	QPSK	1	49	23.32	23.54	23.57		
10	QPSK	25	0	22.37	22.37	22.33		
10	QPSK	25	12	22.52	22.46	22.47	23.5	1
10	QPSK	25	25	22.44	22.37	22.37		
10	QPSK	50	0	22.56	22.43	22.55		
10	16QAM	1	0	22.70	22.88	22.66	23.5	1
10	16QAM	1	25	22.77	22.71	22.78		
10	16QAM	1	49	22.80	22.80	22.78		
10	16QAM	25	0	21.53	21.68	21.45	22.5	2
10	16QAM	25	12	21.53	21.50	21.53		
10	16QAM	25	25	21.63	21.58	21.47		
10	16QAM	50	0	21.65	21.66	21.60	22.5	2
10	64QAM	1	0	21.64	21.59	21.86		
10	64QAM	1	25	21.65	21.75	21.74		
10	64QAM	1	49	21.63	21.75	21.76	21.5	3
10	64QAM	25	0	20.62	20.52	20.42		
10	64QAM	25	12	20.66	20.70	20.73		
10	64QAM	25	25	20.64	20.57	20.49	21.5	3
10	64QAM	50	0	20.27	20.57	20.49		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.53	23.64	23.59	24.5	0
5	QPSK	1	12	23.23	23.47	23.46		
5	QPSK	1	24	23.45	23.39	23.55		
5	QPSK	12	0	22.30	22.42	22.38	23.5	1
5	QPSK	12	7	22.55	22.50	22.46		
5	QPSK	12	13	22.52	22.39	22.31		
5	QPSK	25	0	22.42	22.52	22.36	23.5	1
5	16QAM	1	0	22.57	22.85	22.73		
5	16QAM	1	12	22.69	22.75	22.76		
5	16QAM	1	24	22.71	22.89	22.87	22.5	2
5	16QAM	12	0	21.48	21.63	21.53		
5	16QAM	12	7	21.50	21.50	21.63		
5	16QAM	12	13	21.44	21.61	21.55	22.5	2
5	16QAM	25	0	21.67	21.49	21.67		
5	64QAM	1	0	21.54	21.77	21.73		
5	64QAM	1	12	21.66	21.63	21.76	22.5	2
5	64QAM	1	24	21.78	21.84	21.77		
5	64QAM	12	0	20.47	20.67	20.45		
5	64QAM	12	7	20.61	20.57	20.69	21.5	3
5	64QAM	12	13	20.68	20.60	20.55		
5	64QAM	25	0	20.25	20.65	20.57		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.57	23.51	23.55	24.5	0
3	QPSK	1	8	23.38	23.32	23.48		
3	QPSK	1	14	23.43	23.59	23.39		
3	QPSK	8	0	22.47	22.41	22.40	23.5	1
3	QPSK	8	4	22.49	22.46	22.45		
3	QPSK	8	7	22.36	22.48	22.46		
3	QPSK	15	0	22.38	22.57	22.41	23.5	1
3	16QAM	1	0	22.63	22.73	22.73		
3	16QAM	1	8	22.81	22.86	22.75		
3	16QAM	1	14	22.88	22.92	22.96	22.5	2
3	16QAM	8	0	21.53	21.63	21.60		
3	16QAM	8	4	21.65	21.65	21.52		
3	16QAM	8	7	21.51	21.49	21.48	22.5	2
3	16QAM	15	0	21.53	21.59	21.49		
3	64QAM	1	0	21.49	21.65	21.68		
3	64QAM	1	8	21.59	21.72	21.72	22.5	2
3	64QAM	1	14	21.72	21.78	21.86		
3	64QAM	8	0	20.52	20.57	20.40		
3	64QAM	8	4	20.57	20.63	20.73	21.5	3
3	64QAM	8	7	20.52	20.63	20.54		
3	64QAM	15	0	20.22	20.68	20.62		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.49	23.67	23.47	24.5	0
1.4	QPSK	1	3	23.37	23.48	23.29		
1.4	QPSK	1	5	23.32	23.57	23.51		
1.4	QPSK	3	0	23.39	23.50	23.56		
1.4	QPSK	3	1	23.32	23.42	23.33		
1.4	QPSK	3	3	23.49	23.58	23.48		
1.4	QPSK	6	0	22.44	22.38	22.48	23.5	1
1.4	16QAM	1	0	22.70	22.84	22.82	23.5	1
1.4	16QAM	1	3	22.67	22.88	22.80		
1.4	16QAM	1	5	22.71	22.75	22.86		
1.4	16QAM	3	0	22.49	22.39	22.41		
1.4	16QAM	3	1	22.71	22.89	22.80		
1.4	16QAM	3	3	22.68	22.75	22.72		
1.4	16QAM	6	0	21.63	21.55	21.58	22.5	2
1.4	64QAM	1	0	21.65	21.66	21.67	22.5	2
1.4	64QAM	1	3	21.59	21.80	21.79		
1.4	64QAM	1	5	21.77	21.87	21.88		
1.4	64QAM	3	0	21.59	21.68	21.71		
1.4	64QAM	3	1	21.74	21.63	21.69		
1.4	64QAM	3	3	21.69	21.73	21.81		
1.4	64QAM	6	0	20.20	20.54	20.50	21.5	3



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	24.21	24.35	24.34	25.5	0
20	QPSK	1	49	24.21	24.29	24.30		
20	QPSK	1	99	24.11	24.29	24.23		
20	QPSK	50	0	23.11	23.38	23.29	24.5	1
20	QPSK	50	24	23.08	23.25	23.26		
20	QPSK	50	50	23.07	23.25	23.27		
20	QPSK	100	0	23.11	23.27	23.24		
20	16QAM	1	0	23.37	23.61	23.60	24.5	1
20	16QAM	1	49	23.51	23.69	23.61		
20	16QAM	1	99	23.41	23.63	23.46		
20	16QAM	50	0	22.20	22.37	22.36	23.5	2
20	16QAM	50	24	22.16	22.37	22.21		
20	16QAM	50	50	22.17	22.37	22.24		
20	16QAM	100	0	22.17	22.35	22.31		
20	64QAM	1	0	22.33	22.54	22.55	23.5	2
20	64QAM	1	49	22.46	22.65	22.61		
20	64QAM	1	99	22.38	22.54	22.45		
20	64QAM	50	0	21.21	21.38	21.35	22.5	3
20	64QAM	50	24	21.17	21.38	21.35		
20	64QAM	50	50	21.23	21.39	21.34		
20	64QAM	100	0	21.18	21.39	21.35		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	24.19	24.15	24.15	25.5	0
15	QPSK	1	37	24.01	24.09	24.21		
15	QPSK	1	74	24.04	24.16	24.10		
15	QPSK	36	0	23.01	23.11	23.27	24.5	1
15	QPSK	36	20	23.03	23.17	23.06		
15	QPSK	36	39	22.89	23.24	23.14		
15	QPSK	75	0	23.00	23.14	23.11		
15	16QAM	1	0	23.35	23.51	23.54	24.5	1
15	16QAM	1	37	23.45	23.53	23.61		
15	16QAM	1	74	23.28	23.50	23.36		
15	16QAM	36	0	22.18	22.28	22.30	23.5	2
15	16QAM	36	20	22.03	22.33	22.04		
15	16QAM	36	39	22.04	22.20	22.18		
15	16QAM	75	0	22.11	22.32	22.13		
15	64QAM	1	0	22.19	22.35	22.50	23.5	2
15	64QAM	1	37	22.27	22.65	22.45		
15	64QAM	1	74	22.35	22.46	22.37		
15	64QAM	36	0	21.17	21.36	21.26	22.5	3
15	64QAM	36	20	21.14	21.25	21.31		
15	64QAM	36	39	21.23	21.35	21.27		
15	64QAM	75	0	21.15	21.23	21.18		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	24.17	24.14	24.17	25.5	0
10	QPSK	1	25	24.06	24.19	24.12		
10	QPSK	1	49	23.99	24.10	24.09		
10	QPSK	25	0	23.01	23.17	23.17	24.5	1
10	QPSK	25	12	22.93	23.06	23.07		
10	QPSK	25	25	23.06	23.13	23.26		
10	QPSK	50	0	22.95	23.17	23.08	24.5	1
10	16QAM	1	0	23.18	23.48	23.50		
10	16QAM	1	25	23.40	23.49	23.46		
10	16QAM	1	49	23.27	23.48	23.41	23.5	2
10	16QAM	25	0	22.10	22.21	22.34		
10	16QAM	25	12	22.12	22.22	22.03		
10	16QAM	25	25	22.09	22.37	22.11	23.5	2
10	16QAM	50	0	22.04	22.16	22.29		
10	64QAM	1	0	22.22	22.53	22.43		
10	64QAM	1	25	22.31	22.65	22.54	23.5	2
10	64QAM	1	49	22.36	22.45	22.41		
10	64QAM	25	0	21.03	21.34	21.34		
10	64QAM	25	12	21.10	21.29	21.15	22.5	3
10	64QAM	25	25	21.15	21.20	21.21		
10	64QAM	25	25	21.15	21.20	21.21		
10	64QAM	50	0	21.07	21.33	21.28	22.5	3
Channel				131997	132322	132647		
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	24.06	24.16	24.30	25.5	0
5	QPSK	1	12	24.13	24.10	24.26		
5	QPSK	1	24	23.93	24.29	24.20		
5	QPSK	12	0	22.93	23.19	23.21	24.5	1
5	QPSK	12	7	23.07	23.23	23.12		
5	QPSK	12	13	22.96	23.21	23.16		
5	QPSK	25	0	23.00	23.10	23.15	24.5	1
5	16QAM	1	0	23.23	23.57	23.56		
5	16QAM	1	12	23.48	23.57	23.57		
5	16QAM	1	24	23.33	23.51	23.39	23.5	2
5	16QAM	12	0	22.20	22.26	22.32		
5	16QAM	12	7	22.13	22.30	22.04		
5	16QAM	12	13	22.17	22.19	22.09	23.5	2
5	16QAM	25	0	22.04	22.24	22.31		
5	64QAM	1	0	22.14	22.54	22.48		
5	64QAM	1	12	22.28	22.63	22.55	23.5	2
5	64QAM	1	24	22.29	22.53	22.33		
5	64QAM	12	0	21.01	21.31	21.29		
5	64QAM	12	7	21.15	21.20	21.33	22.5	3
5	64QAM	12	13	21.04	21.31	21.16		
5	64QAM	25	0	21.02	21.38	21.19		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	24.01	24.22	24.29	25.5	0
3	QPSK	1	8	24.16	24.10	24.26		
3	QPSK	1	14	24.04	24.25	24.13		
3	QPSK	8	0	22.95	23.15	23.13	24.5	1
3	QPSK	8	4	23.02	23.12	23.16		
3	QPSK	8	7	23.05	23.23	23.12		
3	QPSK	15	0	23.02	23.19	23.20	24.5	1
3	16QAM	1	0	23.28	23.46	23.43		
3	16QAM	1	8	23.39	23.64	23.47		
3	16QAM	1	14	23.37	23.52	23.40	23.5	2
3	16QAM	8	0	22.16	22.21	22.32		
3	16QAM	8	4	21.97	22.29	22.13		
3	16QAM	8	7	22.00	22.18	22.04	22.5	3
3	16QAM	15	0	22.02	22.18	22.12		
3	64QAM	1	0	22.31	22.35	22.35		
3	64QAM	1	8	22.42	22.56	22.61	23.5	2
3	64QAM	1	14	22.18	22.36	22.38		
3	64QAM	8	0	21.20	21.31	21.25		
3	64QAM	8	4	21.11	21.24	21.34	22.5	3
3	64QAM	8	7	21.14	21.39	21.32		
3	64QAM	15	0	21.06	21.30	21.22		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	24.12	24.30	24.31	25.5	0
1.4	QPSK	1	3	24.11	24.29	24.11		
1.4	QPSK	1	5	23.96	24.20	24.12		
1.4	QPSK	3	0	24.04	24.14	24.23		
1.4	QPSK	3	1	24.05	24.10	24.15		
1.4	QPSK	3	3	24.04	24.15	24.03		
1.4	QPSK	6	0	23.10	23.20	23.17	24.5	1
1.4	16QAM	1	0	23.20	23.46	23.49	24.5	1
1.4	16QAM	1	3	23.34	23.69	23.51		
1.4	16QAM	1	5	23.27	23.56	23.41		
1.4	16QAM	3	0	23.05	23.17	23.21		
1.4	16QAM	3	1	23.26	23.54	23.48		
1.4	16QAM	3	3	23.37	23.69	23.49		
1.4	16QAM	6	0	22.02	22.30	22.24	23.5	2
1.4	64QAM	1	0	22.21	22.47	22.46	23.5	2
1.4	64QAM	1	3	22.37	22.57	22.45		
1.4	64QAM	1	5	22.38	22.54	22.44		
1.4	64QAM	3	0	22.13	22.49	22.51		
1.4	64QAM	3	1	22.29	22.58	22.58		
1.4	64QAM	3	3	22.18	22.52	22.26		
1.4	64QAM	6	0	21.04	21.23	21.32	22.5	3



<Reduced Power Mode>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	20.80	20.91	20.74	21.5	0
20	QPSK	1	49	20.72	20.81	20.73		
20	QPSK	1	99	20.72	20.84	20.73		
20	QPSK	50	0	20.42	20.56	20.45	21.5	0
20	QPSK	50	24	20.48	20.57	20.48		
20	QPSK	50	50	20.43	20.54	20.47		
20	QPSK	100	0	20.44	20.55	20.48	21.5	0
20	16QAM	1	0	20.53	20.54	20.43		
20	16QAM	1	49	20.49	20.55	20.43		
20	16QAM	1	99	20.47	20.47	20.42	21.5	0
20	16QAM	50	0	20.22	20.23	20.20		
20	16QAM	50	24	20.24	20.25	20.17		
20	16QAM	50	50	20.21	20.22	20.15	21.5	0
20	16QAM	100	0	20.17	20.20	20.20		
20	64QAM	1	0	20.41	20.43	20.36		
20	64QAM	1	49	20.33	20.38	20.31	21.5	0
20	64QAM	1	99	20.43	20.40	20.29		
20	64QAM	50	0	20.20	20.22	20.21		
20	64QAM	50	24	20.27	20.24	20.15	21.5	0
20	64QAM	50	50	20.20	20.22	20.13		
20	64QAM	100	0	20.17	20.22	20.21		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.13	20.28	20.15	21.5	0
15	QPSK	1	37	20.16	20.29	20.15		
15	QPSK	1	74	20.13	20.26	20.19		
15	QPSK	36	0	20.18	20.30	20.17	21.5	0
15	QPSK	36	20	20.21	20.35	20.23		
15	QPSK	36	39	20.19	20.32	20.20		
15	QPSK	75	0	20.19	20.34	20.22	21.5	0
15	16QAM	1	0	20.66	20.76	20.62		
15	16QAM	1	37	20.57	20.76	20.65		
15	16QAM	1	74	20.58	20.66	20.63	21.5	0
15	16QAM	36	0	20.39	20.48	20.38		
15	16QAM	36	20	20.41	20.55	20.43		
15	16QAM	36	39	20.38	20.42	20.39	21.5	0
15	16QAM	75	0	20.36	20.49	20.40		
15	64QAM	1	0	20.48	20.64	20.54		
15	64QAM	1	37	20.53	20.67	20.54	21.5	0
15	64QAM	1	74	20.51	20.61	20.51		
15	64QAM	36	0	20.38	20.50	20.36		
15	64QAM	36	20	20.43	20.55	20.43	21.5	0
15	64QAM	36	39	20.38	20.50	20.38		
15	64QAM	75	0	20.33	20.47	20.36		



FCC SAR TEST REPORT

Report No. : FA872506

Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.32	20.46	20.25	21.5	0
10	QPSK	1	25	20.24	20.40	20.28		
10	QPSK	1	49	20.28	20.44	20.25		
10	QPSK	25	0	20.25	20.42	20.27	21.5	0
10	QPSK	25	12	20.27	20.43	20.30		
10	QPSK	25	25	20.24	20.39	20.28		
10	QPSK	50	0	20.24	20.41	20.31	21.5	0
10	16QAM	1	0	20.27	20.43	20.24		
10	16QAM	1	25	20.25	20.27	20.14		
10	16QAM	1	49	20.26	20.28	20.14	21.5	0
10	16QAM	25	0	20.32	20.30	20.29		
10	16QAM	25	12	20.31	20.29	20.18		
10	16QAM	25	25	20.27	20.27	20.18	21.5	0
10	16QAM	50	0	20.25	20.29	20.28		
10	64QAM	1	0	20.70	20.85	20.65		
10	64QAM	1	25	20.66	20.77	20.66	21.5	0
10	64QAM	1	49	20.63	20.81	20.63		
10	64QAM	25	0	20.39	20.56	20.44		
10	64QAM	25	12	20.43	20.59	20.46	21.5	0
10	64QAM	25	25	20.41	20.52	20.44		
10	64QAM	50	0	20.44	20.55	20.43		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	20.19	20.36	20.24	21.5	0
5	QPSK	1	12	20.22	20.36	20.26		
5	QPSK	1	24	20.17	20.33	20.22		
5	QPSK	12	0	20.24	20.41	20.31	21.5	0
5	QPSK	12	7	20.29	20.44	20.32		
5	QPSK	12	13	20.22	20.41	20.28		
5	QPSK	25	0	20.20	20.39	20.29	21.5	0
5	16QAM	1	0	20.68	20.81	20.66		
5	16QAM	1	12	20.70	20.84	20.70		
5	16QAM	1	24	20.65	20.74	20.63	21.5	0
5	16QAM	12	0	20.45	20.57	20.45		
5	16QAM	12	7	20.46	20.57	20.51		
5	16QAM	12	13	20.43	20.55	20.48	21.5	0
5	16QAM	25	0	20.39	20.52	20.45		
5	64QAM	1	0	20.57	20.74	20.57		
5	64QAM	1	12	20.61	20.75	20.59	21.5	0
5	64QAM	1	24	20.54	20.68	20.57		
5	64QAM	12	0	20.48	20.59	20.51		
5	64QAM	12	7	20.48	20.62	20.55	21.5	0
5	64QAM	12	13	20.45	20.56	20.47		
5	64QAM	25	0	20.35	20.52	20.41		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	20.14	20.33	20.20	21.5	0
3	QPSK	1	8	20.17	20.34	20.24		
3	QPSK	1	14	20.14	20.34	20.20		
3	QPSK	8	0	20.19	20.42	20.27	21.5	0
3	QPSK	8	4	20.24	20.40	20.31		
3	QPSK	8	7	20.21	20.41	20.29		
3	QPSK	15	0	20.18	20.37	20.24	21.5	0
3	16QAM	1	0	20.65	20.74	20.64		
3	16QAM	1	8	20.66	20.79	20.66		
3	16QAM	1	14	20.63	20.72	20.60	21.5	0
3	16QAM	8	0	20.47	20.59	20.46		
3	16QAM	8	4	20.50	20.63	20.49		
3	16QAM	8	7	20.46	20.58	20.45	21.5	0
3	16QAM	15	0	20.39	20.54	20.45		
3	64QAM	1	0	20.50	20.65	20.41		
3	64QAM	1	8	20.55	20.68	20.59	21.5	0
3	64QAM	1	14	20.53	20.67	20.54		
3	64QAM	8	0	20.41	20.56	20.45		
3	64QAM	8	4	20.44	20.58	20.47	21.5	0
3	64QAM	8	7	20.42	20.56	20.43		
3	64QAM	15	0	20.35	20.52	20.41		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.11	20.27	20.15	21.5	0
1.4	QPSK	1	3	20.18	20.35	20.24		
1.4	QPSK	1	5	20.06	20.25	20.13		
1.4	QPSK	3	0	20.13	20.32	20.18		
1.4	QPSK	3	1	20.17	20.34	20.22		
1.4	QPSK	3	3	20.15	20.29	20.21		
1.4	QPSK	6	0	20.12	20.31	20.16	21.5	0
1.4	16QAM	1	0	20.59	20.68	20.56	21.5	0
1.4	16QAM	1	3	20.70	20.79	20.69		
1.4	16QAM	1	5	20.58	20.71	20.62		
1.4	16QAM	3	0	20.33	20.49	20.35		
1.4	16QAM	3	1	20.42	20.53	20.39		
1.4	16QAM	3	3	20.34	20.46	20.37		
1.4	16QAM	6	0	20.38	20.51	20.41	21.5	0
1.4	64QAM	1	0	20.48	20.64	20.49	21.5	0
1.4	64QAM	1	3	20.54	20.68	20.57		
1.4	64QAM	1	5	20.43	20.60	20.48		
1.4	64QAM	3	0	20.45	20.59	20.47		
1.4	64QAM	3	1	20.51	20.64	20.49		
1.4	64QAM	3	3	20.44	20.58	20.47		
1.4	64QAM	6	0	20.26	20.41	20.31	21.5	0



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	21.36	21.43	21.52	22.5	0
20	QPSK	1	49	21.35	21.40	21.49		
20	QPSK	1	99	21.30	21.36	21.48		
20	QPSK	50	0	21.10	21.15	21.20	22.5	0
20	QPSK	50	24	21.08	21.16	21.27		
20	QPSK	50	50	21.09	21.13	21.22		
20	QPSK	100	0	21.05	21.15	21.23		
20	16QAM	1	0	21.24	21.25	21.32	22.5	0
20	16QAM	1	49	21.25	21.28	21.33		
20	16QAM	1	99	21.21	21.24	21.34		
20	16QAM	50	0	20.97	21.03	21.07	22.5	0
20	16QAM	50	24	21.00	21.04	21.13		
20	16QAM	50	50	20.98	21.01	21.08		
20	16QAM	100	0	20.99	21.02	21.06		
20	64QAM	1	0	21.14	21.19	21.23	22.5	0
20	64QAM	1	49	21.18	21.17	21.28		
20	64QAM	1	99	21.17	21.18	21.20		
20	64QAM	50	0	21.01	21.02	21.10	22.5	0
20	64QAM	50	24	21.02	21.03	21.12		
20	64QAM	50	50	21.00	21.05	21.10		
20	64QAM	100	0	20.99	21.04	21.10		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.90	20.94	21.03	22.5	0
15	QPSK	1	37	20.90	20.95	21.02		
15	QPSK	1	74	20.87	20.96	21.01		
15	QPSK	36	0	20.92	20.97	21.04	22.5	0
15	QPSK	36	20	20.96	21.00	21.11		
15	QPSK	36	39	20.92	20.99	21.05		
15	QPSK	75	0	20.94	20.99	21.06		
15	16QAM	1	0	21.28	21.29	21.38	22.5	0
15	16QAM	1	37	21.22	21.33	21.39		
15	16QAM	1	74	21.23	21.29	21.37		
15	16QAM	36	0	20.98	21.04	21.14	22.5	0
15	16QAM	36	20	21.02	21.09	21.19		
15	16QAM	36	39	20.99	21.04	21.14		
15	16QAM	75	0	21.02	21.06	21.12		
15	64QAM	1	0	21.17	21.23	21.31	22.5	0
15	64QAM	1	37	21.18	21.21	21.31		
15	64QAM	1	74	21.17	21.20	21.27		
15	64QAM	36	0	21.06	21.07	21.19	22.5	0
15	64QAM	36	20	21.10	21.11	21.22		
15	64QAM	36	39	21.07	21.12	21.20		
15	64QAM	75	0	21.02	21.05	21.15		



FCC SAR TEST REPORT

Report No. : FA872506

Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.98	21.04	21.11	22.5	0
10	QPSK	1	25	20.98	21.04	21.14		
10	QPSK	1	49	20.95	21.01	21.09		
10	QPSK	25	0	21.02	21.07	21.12	22.5	0
10	QPSK	25	12	21.00	21.07	21.18		
10	QPSK	25	25	21.02	21.06	21.13		
10	QPSK	50	0	20.99	21.07	21.17	22.5	0
10	16QAM	1	0	20.86	20.89	20.96		
10	16QAM	1	25	20.87	20.90	20.96		
10	16QAM	1	49	20.87	20.90	20.94	22.5	0
10	16QAM	25	0	20.90	20.93	20.99		
10	16QAM	25	12	20.92	20.95	21.05		
10	16QAM	25	25	20.89	20.94	21.03	22.5	0
10	16QAM	50	0	20.93	20.97	21.00		
10	64QAM	1	0	21.28	21.29	21.37		
10	64QAM	1	25	21.26	21.32	21.38	22.5	0
10	64QAM	1	49	21.21	21.26	21.36		
10	64QAM	25	0	21.10	21.14	21.26		
10	64QAM	25	12	21.12	21.15	21.27	22.5	0
10	64QAM	25	25	21.09	21.14	21.22		
10	64QAM	25	25	21.09	21.14	21.22		
10	64QAM	50	0	21.10	21.15	21.23	22.5	0
Channel				19975	20175	20375		
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.94	21.02	21.12	22.5	0
5	QPSK	1	12	20.95	21.03	21.11		
5	QPSK	1	24	20.91	20.97	21.08		
5	QPSK	12	0	21.00	21.04	21.17	22.5	0
5	QPSK	12	7	21.03	21.09	21.17		
5	QPSK	12	13	20.96	21.07	21.16		
5	QPSK	25	0	21.00	21.05	21.12	22.5	0
5	16QAM	1	0	21.27	21.32	21.43		
5	16QAM	1	12	21.31	21.35	21.49		
5	16QAM	1	24	21.27	21.33	21.42	22.5	0
5	16QAM	12	0	21.06	21.13	21.22		
5	16QAM	12	7	21.10	21.18	21.27		
5	16QAM	12	13	21.08	21.12	21.21	22.5	0
5	16QAM	25	0	21.04	21.13	21.21		
5	64QAM	1	0	21.22	21.27	21.41		
5	64QAM	1	12	21.26	21.30	21.41	22.5	0
5	64QAM	1	24	21.20	21.23	21.35		
5	64QAM	12	0	21.14	21.16	21.29		
5	64QAM	12	7	21.17	21.23	21.32	22.5	0
5	64QAM	12	13	21.13	21.17	21.29		
5	64QAM	25	0	21.08	21.13	21.21		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.93	20.98	21.09	22.5	0
3	QPSK	1	8	20.94	20.99	21.08		
3	QPSK	1	14	20.92	20.98	21.07		
3	QPSK	8	0	20.98	21.04	21.13	22.5	0
3	QPSK	8	4	20.98	21.08	21.00		
3	QPSK	8	7	21.00	21.04	21.13		
3	QPSK	15	0	20.97	21.02	21.15	22.5	0
3	16QAM	1	0	21.23	21.34	21.40		
3	16QAM	1	8	21.28	21.37	21.34		
3	16QAM	1	14	21.25	21.34	21.38	22.5	0
3	16QAM	8	0	21.08	21.18	21.23		
3	16QAM	8	4	21.11	21.19	21.30		
3	16QAM	8	7	21.11	21.14	21.12	22.5	0
3	16QAM	15	0	21.05	21.12	21.21		
3	64QAM	1	0	21.24	21.11	21.36		
3	64QAM	1	8	21.29	21.28	21.39	22.5	0
3	64QAM	1	14	21.22	21.25	21.34		
3	64QAM	8	0	21.10	21.17	21.29		
3	64QAM	8	4	21.15	21.06	21.29	22.5	0
3	64QAM	8	7	21.10	21.15	21.24		
3	64QAM	15	0	21.06	21.10	21.23		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.86	20.93	21.03	22.5	0
1.4	QPSK	1	3	20.95	20.99	21.07		
1.4	QPSK	1	5	20.83	20.92	21.00		
1.4	QPSK	3	0	20.89	20.99	21.05		
1.4	QPSK	3	1	20.93	20.99	21.10		
1.4	QPSK	3	3	20.90	20.97	21.07		
1.4	QPSK	6	0	20.89	20.99	21.06	22.5	0
1.4	16QAM	1	0	21.20	21.26	21.35	22.5	0
1.4	16QAM	1	3	21.28	21.39	21.51		
1.4	16QAM	1	5	21.19	21.29	21.38		
1.4	16QAM	3	0	20.98	21.07	21.17		
1.4	16QAM	3	1	21.03	21.08	21.20		
1.4	16QAM	3	3	20.99	21.05	21.14		
1.4	16QAM	6	0	21.04	21.10	21.21	22.5	0
1.4	64QAM	1	0	21.13	21.16	21.27	22.5	0
1.4	64QAM	1	3	21.17	21.27	21.37		
1.4	64QAM	1	5	21.10	21.15	21.28		
1.4	64QAM	3	0	21.12	21.17	21.27		
1.4	64QAM	3	1	21.16	21.21	21.32		
1.4	64QAM	3	3	21.11	21.17	21.29		
1.4	64QAM	6	0	20.95	21.05	21.12	22.5	0



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	20.79	20.92	20.52	21.5	0
20	QPSK	1	49	20.73	20.82	20.55		
20	QPSK	1	99	20.72	20.87	20.51		
20	QPSK	50	0	20.43	20.58	20.20	21.5	0
20	QPSK	50	24	20.43	20.58	20.25		
20	QPSK	50	50	20.42	20.54	20.23		
20	QPSK	100	0	20.43	20.54	20.23		
20	16QAM	1	0	20.73	20.77	20.55	21.5	0
20	16QAM	1	49	20.72	20.75	20.61		
20	16QAM	1	99	20.74	20.70	20.52		
20	16QAM	50	0	20.50	20.54	20.34	21.5	0
20	16QAM	50	24	20.56	20.60	20.35		
20	16QAM	50	50	20.51	20.53	20.33		
20	16QAM	100	0	20.52	20.53	20.31		
20	64QAM	1	0	20.75	20.75	20.48	21.5	0
20	64QAM	1	49	20.75	20.76	20.55		
20	64QAM	1	99	20.73	20.62	20.43		
20	64QAM	50	0	20.52	20.57	20.33	21.5	0
20	64QAM	50	24	20.58	20.58	20.41		
20	64QAM	50	50	20.52	20.57	20.38		
20	64QAM	100	0	20.50	20.54	20.39		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	20.25	20.28	20.12	21.5	0
15	QPSK	1	37	20.27	20.29	20.03		
15	QPSK	1	74	20.26	20.17	20.03		
15	QPSK	36	0	20.29	20.34	20.14	21.5	0
15	QPSK	36	20	20.37	20.37	20.17		
15	QPSK	36	39	20.30	20.32	20.04		
15	QPSK	75	0	20.31	20.34	20.17		
15	16QAM	1	0	20.75	20.75	20.52	21.5	0
15	16QAM	1	37	20.77	20.79	20.41		
15	16QAM	1	74	20.67	20.61	20.46		
15	16QAM	36	0	20.49	20.51	20.29	21.5	0
15	16QAM	36	20	20.51	20.55	20.29		
15	16QAM	36	39	20.47	20.48	20.20		
15	16QAM	75	0	20.47	20.49	20.30		
15	64QAM	1	0	20.63	20.65	20.45	21.5	0
15	64QAM	1	37	20.63	20.67	20.35		
15	64QAM	1	74	20.62	20.56	20.37		
15	64QAM	36	0	20.50	20.54	20.34	21.5	0
15	64QAM	36	20	20.55	20.58	20.38		
15	64QAM	36	39	20.50	20.53	20.23		
15	64QAM	75	0	20.46	20.51	20.32		



Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	20.29	20.47	20.08	21.5	0
10	QPSK	1	25	20.25	20.40	20.08		
10	QPSK	1	49	20.27	20.44	20.07		
10	QPSK	25	0	20.26	20.42	20.11	21.5	0
10	QPSK	25	12	20.29	20.43	20.13		
10	QPSK	25	25	20.24	20.40	20.12		
10	QPSK	50	0	20.26	20.42	20.12	21.5	0
10	16QAM	1	0	20.36	20.37	20.20		
10	16QAM	1	25	20.35	20.37	20.16		
10	16QAM	1	49	20.35	20.26	20.08	21.5	0
10	16QAM	25	0	20.48	20.45	20.29		
10	16QAM	25	12	20.43	20.43	20.24		
10	16QAM	25	25	20.38	20.41	20.23	21.5	0
10	16QAM	50	0	20.38	20.40	20.20		
10	64QAM	1	0	20.67	20.81	20.43		
10	64QAM	1	25	20.61	20.72	20.41	21.5	0
10	64QAM	1	49	20.63	20.78	20.39		
10	64QAM	25	0	20.44	20.57	20.28		
10	64QAM	25	12	20.47	20.61	20.30	21.5	0
10	64QAM	25	25	20.42	20.56	20.27		
10	64QAM	50	0	20.44	20.58	20.29		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	20.18	20.35	20.04	21.5	0
5	QPSK	1	12	20.24	20.38	20.11		
5	QPSK	1	24	20.20	20.33	20.03		
5	QPSK	12	0	20.24	20.44	20.13	21.5	0
5	QPSK	12	7	20.28	20.45	20.14		
5	QPSK	12	13	20.25	20.43	20.12		
5	QPSK	25	0	20.21	20.40	20.09	21.5	0
5	16QAM	1	0	20.64	20.79	20.40		
5	16QAM	1	12	20.69	20.85	20.49		
5	16QAM	1	24	20.61	20.77	20.42	21.5	0
5	16QAM	12	0	20.45	20.60	20.23		
5	16QAM	12	7	20.44	20.59	20.29		
5	16QAM	12	13	20.42	20.55	20.24	21.5	0
5	16QAM	25	0	20.36	20.52	20.20		
5	64QAM	1	0	20.60	20.75	20.41		
5	64QAM	1	12	20.61	20.77	20.44	21.5	0
5	64QAM	1	24	20.57	20.70	20.38		
5	64QAM	12	0	20.49	20.66	20.33		
5	64QAM	12	7	20.54	20.68	20.35	21.5	0
5	64QAM	12	13	20.49	20.64	20.33		
5	64QAM	25	0	20.41	20.53	20.26		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	20.15	20.17	19.90	21.5	0
3	QPSK	1	8	20.17	20.36	20.06		
3	QPSK	1	14	20.15	20.32	20.04		
3	QPSK	8	0	20.22	20.40	20.09	21.5	0
3	QPSK	8	4	20.09	20.44	20.16		
3	QPSK	8	7	20.22	20.40	20.12		
3	QPSK	15	0	20.21	20.37	19.94	21.5	0
3	16QAM	1	0	20.58	20.76	20.45		
3	16QAM	1	8	20.64	20.79	20.48		
3	16QAM	1	14	20.59	20.75	20.40	21.5	0
3	16QAM	8	0	20.45	20.46	20.26		
3	16QAM	8	4	20.31	20.62	20.30		
3	16QAM	8	7	20.43	20.59	20.27	21.5	0
3	16QAM	15	0	20.36	20.51	20.23		
3	64QAM	1	0	20.58	20.67	20.40		
3	64QAM	1	8	20.56	20.73	20.43	21.5	0
3	64QAM	1	14	20.55	20.68	20.40		
3	64QAM	8	0	20.48	20.61	20.29		
3	64QAM	8	4	20.50	20.65	20.33	21.5	0
3	64QAM	8	7	20.47	20.60	20.29		
3	64QAM	15	0	20.40	20.38	20.24		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	20.10	20.28	19.99	21.5	0
1.4	QPSK	1	3	20.17	20.36	20.06		
1.4	QPSK	1	5	20.11	20.26	19.94		
1.4	QPSK	3	0	20.15	20.31	20.03		
1.4	QPSK	3	1	20.17	20.37	20.06		
1.4	QPSK	3	3	20.15	20.31	20.03		
1.4	QPSK	6	0	20.14	20.32	20.03	21.5	0
1.4	16QAM	1	0	20.56	20.73	20.42	21.5	0
1.4	16QAM	1	3	20.68	20.81	20.47		
1.4	16QAM	1	5	20.55	20.73	20.40		
1.4	16QAM	3	0	20.31	20.47	20.15		
1.4	16QAM	3	1	20.38	20.54	20.19		
1.4	16QAM	3	3	20.30	20.47	20.12		
1.4	16QAM	6	0	20.36	20.52	20.20	21.5	0
1.4	64QAM	1	0	20.50	20.63	20.32	21.5	0
1.4	64QAM	1	3	20.55	20.69	20.41		
1.4	64QAM	1	5	20.48	20.61	20.30		
1.4	64QAM	3	0	20.47	20.62	20.33		
1.4	64QAM	3	1	20.52	20.67	20.36		
1.4	64QAM	3	3	20.46	20.60	20.31		
1.4	64QAM	6	0	20.28	20.46	20.17	21.5	0



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	21.39	21.65	21.36	22.5	0
20	QPSK	1	49	21.47	21.62	21.40		
20	QPSK	1	99	21.37	21.52	21.29		
20	QPSK	50	0	21.12	21.22	21.06	22.5	0
20	QPSK	50	24	21.07	21.19	21.03		
20	QPSK	50	50	21.11	21.20	21.04		
20	QPSK	100	0	21.07	21.22	21.05		
20	16QAM	1	0	21.01	21.11	20.99	22.5	0
20	16QAM	1	49	21.10	21.18	21.08		
20	16QAM	1	99	21.00	21.10	20.97		
20	16QAM	50	0	21.06	21.15	21.05	22.5	0
20	16QAM	50	24	20.99	21.06	20.95		
20	16QAM	50	50	20.97	21.07	20.96		
20	16QAM	100	0	20.99	21.07	20.96		
20	64QAM	1	0	21.30	21.39	21.30	22.5	0
20	64QAM	1	49	21.41	21.52	21.35		
20	64QAM	1	99	21.29	21.41	21.21		
20	64QAM	50	0	21.12	21.21	21.11	22.5	0
20	64QAM	50	24	21.14	21.20	21.06		
20	64QAM	50	50	21.11	21.26	21.09		
20	64QAM	100	0	21.13	21.22	21.06		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	20.93	21.05	20.96	22.5	0
15	QPSK	1	37	21.02	21.13	21.02		
15	QPSK	1	74	20.95	21.03	20.94		
15	QPSK	36	0	20.85	20.94	20.84	22.5	0
15	QPSK	36	20	20.98	21.09	20.96		
15	QPSK	36	39	20.85	20.98	20.83		
15	QPSK	75	0	20.90	21.01	20.85		
15	16QAM	1	0	21.31	21.40	21.27	22.5	0
15	16QAM	1	37	21.42	21.52	21.38		
15	16QAM	1	74	21.30	21.41	21.25		
15	16QAM	36	0	20.99	21.10	20.95	22.5	0
15	16QAM	36	20	21.06	21.16	21.03		
15	16QAM	36	39	20.99	21.06	20.97		
15	16QAM	75	0	20.95	21.08	20.98		
15	64QAM	1	0	21.27	21.38	21.27	22.5	0
15	64QAM	1	37	21.37	21.46	21.30		
15	64QAM	1	74	21.26	21.37	21.18		
15	64QAM	36	0	21.05	21.11	20.96	22.5	0
15	64QAM	36	20	21.12	21.25	21.12		
15	64QAM	36	39	21.04	21.13	20.95		
15	64QAM	75	0	21.01	21.13	20.98		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	20.98	21.09	20.98	22.5	0
10	QPSK	1	25	21.01	21.13	20.98		
10	QPSK	1	49	20.95	21.07	20.95		
10	QPSK	25	0	20.97	21.09	20.97	22.5	0
10	QPSK	25	12	20.96	21.08	20.95		
10	QPSK	25	25	20.97	21.07	20.97		
10	QPSK	50	0	20.96	21.10	20.97	22.5	0
10	16QAM	1	0	21.37	21.46	21.35		
10	16QAM	1	25	21.41	21.48	21.38		
10	16QAM	1	49	21.36	21.42	21.30	22.5	0
10	16QAM	25	0	21.11	21.19	21.06		
10	16QAM	25	12	21.10	21.19	21.03		
10	16QAM	25	25	21.03	21.13	21.02	22.5	0
10	16QAM	50	0	21.07	21.17	21.03		
10	64QAM	1	0	21.27	21.36	21.26		
10	64QAM	1	25	21.31	21.43	21.24	22.5	0
10	64QAM	1	49	21.24	21.37	21.18		
10	64QAM	25	0	21.09	21.23	21.08		
10	64QAM	25	12	21.11	21.24	21.07	22.5	0
10	64QAM	25	25	21.10	21.21	21.08		
10	64QAM	50	0	21.13	21.24	21.09		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	20.84	20.94	20.83	22.5	0
5	QPSK	1	12	21.01	21.09	21.01		
5	QPSK	1	24	20.83	20.95	20.85		
5	QPSK	12	0	20.92	21.07	20.94	22.5	0
5	QPSK	12	7	21.03	21.17	21.06		
5	QPSK	12	13	20.95	21.03	20.96		
5	QPSK	25	0	20.92	21.03	20.94	22.5	0
5	16QAM	1	0	21.19	21.34	21.19		
5	16QAM	1	12	21.35	21.50	21.37		
5	16QAM	1	24	21.18	21.27	21.13	22.5	0
5	16QAM	12	0	21.04	21.14	21.04		
5	16QAM	12	7	21.12	21.23	21.12		
5	16QAM	12	13	21.02	21.18	21.02	22.5	0
5	16QAM	25	0	21.06	21.17	21.00		
5	64QAM	1	0	21.14	21.24	21.11		
5	64QAM	1	12	21.34	21.45	21.25	22.5	0
5	64QAM	1	24	21.10	21.25	21.08		
5	64QAM	12	0	21.13	21.22	21.07		
5	64QAM	12	7	21.21	21.35	21.19	22.5	0
5	64QAM	12	13	21.12	21.23	21.09		
5	64QAM	25	0	21.05	21.18	21.04		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	20.86	20.97	20.90	22.5	0
3	QPSK	1	8	20.96	21.07	21.01		
3	QPSK	1	14	20.83	20.97	20.88		
3	QPSK	8	0	21.00	21.07	20.97	22.5	0
3	QPSK	8	4	21.01	21.15	21.03		
3	QPSK	8	7	20.97	21.10	20.98		
3	QPSK	15	0	20.99	21.06	20.99		
3	16QAM	1	0	21.19	21.33	21.17	22.5	0
3	16QAM	1	8	21.34	21.49	21.31		
3	16QAM	1	14	21.18	21.12	21.16		
3	16QAM	8	0	21.11	21.25	21.11	22.5	0
3	16QAM	8	4	21.19	21.27	21.18		
3	16QAM	8	7	21.11	21.20	21.12		
3	16QAM	15	0	21.06	21.21	21.08		
3	64QAM	1	0	21.20	21.26	21.14	22.5	0
3	64QAM	1	8	21.30	21.41	21.24		
3	64QAM	1	14	21.18	21.28	21.12		
3	64QAM	8	0	21.15	21.26	20.94	22.5	0
3	64QAM	8	4	21.20	21.32	21.14		
3	64QAM	8	7	21.16	21.27	21.08		
3	64QAM	15	0	21.13	21.21	21.09		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	20.88	20.99	20.88	22.5	0
1.4	QPSK	1	3	20.97	21.06	21.03		
1.4	QPSK	1	5	20.85	20.97	20.91		
1.4	QPSK	3	0	20.91	21.06	20.95		
1.4	QPSK	3	1	20.95	21.08	21.02		
1.4	QPSK	3	3	20.92	21.02	20.95		
1.4	QPSK	6	0	20.91	21.04	20.97	22.5	0
1.4	16QAM	1	0	21.23	21.38	21.26	22.5	0
1.4	16QAM	1	3	21.37	21.49	21.35		
1.4	16QAM	1	5	21.22	21.39	21.22		
1.4	16QAM	3	0	21.04	21.13	21.01		
1.4	16QAM	3	1	21.09	21.21	21.10		
1.4	16QAM	3	3	21.04	21.16	21.00		
1.4	16QAM	6	0	21.11	21.21	21.11	22.5	0
1.4	64QAM	1	0	21.19	21.31	21.17	22.5	0
1.4	64QAM	1	3	21.24	21.40	21.24		
1.4	64QAM	1	5	21.17	21.27	21.14		
1.4	64QAM	3	0	21.19	21.32	21.15		
1.4	64QAM	3	1	21.26	21.37	21.22		
1.4	64QAM	3	3	21.19	21.31	21.16		
1.4	64QAM	6	0	21.03	21.17	21.06	22.5	0

<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.

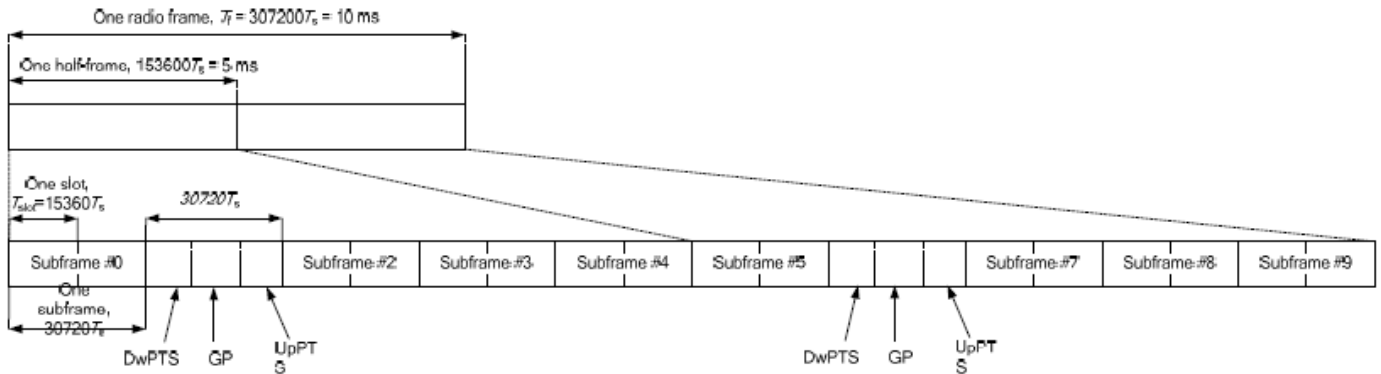


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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	$26336 \cdot T_s$			$7680 \cdot T_s$				
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$		
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 subframes, 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.



<Default Power Mode>

<LTE Band 38>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				37850	38000	38150		
Frequency (MHz)				2580	2595	2610		
20	QPSK	1	0	23.85	23.93	23.90	25	0
20	QPSK	1	49	23.64	23.83	23.79		
20	QPSK	1	99	23.83	23.84	23.89		
20	QPSK	50	0	22.74	22.86	22.84	24	1
20	QPSK	50	24	22.85	22.86	22.84		
20	QPSK	50	50	22.84	22.84	22.88		
20	QPSK	100	0	22.85	22.87	22.89	24	1
20	16QAM	1	0	22.80	22.94	23.01		
20	16QAM	1	49	22.81	22.94	23.00		
20	16QAM	1	99	22.99	23.01	23.04	23	2
20	16QAM	50	0	21.80	21.99	21.99		
20	16QAM	50	24	21.96	22.00	21.98		
20	16QAM	50	50	21.99	21.99	21.98	23	2
20	16QAM	100	0	21.92	21.97	22.00		
20	64QAM	1	0	21.56	21.73	21.74		
20	64QAM	1	49	21.58	21.73	21.72	23	2
20	64QAM	1	99	21.69	21.78	21.80		
20	64QAM	50	0	20.83	20.98	21.00		
20	64QAM	50	24	20.94	20.93	20.98	22	3
20	64QAM	50	50	20.95	20.96	20.99		
20	64QAM	100	0	20.97	20.98	21.02		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	23.71	23.87	23.87	25	0
15	QPSK	1	37	23.69	23.82	23.81		
15	QPSK	1	74	23.86	23.92	23.87		
15	QPSK	36	0	22.73	22.86	22.88	24	1
15	QPSK	36	20	22.76	22.90	22.87		
15	QPSK	36	39	22.81	22.86	22.88		
15	QPSK	75	0	22.84	22.89	22.88	24	1
15	16QAM	1	0	22.85	22.98	23.02		
15	16QAM	1	37	22.80	22.98	22.98		
15	16QAM	1	74	23.05	23.09	23.10	23	2
15	16QAM	36	0	21.75	21.90	21.97		
15	16QAM	36	20	21.79	21.93	21.97		
15	16QAM	36	39	21.92	21.96	21.91	23	2
15	16QAM	75	0	21.95	21.98	22.00		
15	16QAM	36	39	21.92	21.96	21.91		
15	64QAM	1	0	21.60	21.77	21.79	23	2
15	64QAM	1	37	21.59	21.72	21.79		
15	64QAM	1	74	21.80	21.83	21.81		
15	64QAM	36	0	20.84	20.94	20.94	22	3
15	64QAM	36	20	20.85	20.99	21.02		
15	64QAM	36	39	20.93	20.97	20.99		
15	64QAM	75	0	20.95	20.99	21.01	22	3
15	64QAM	36	20	20.85	20.99	21.02		
15	64QAM	36	39	20.93	20.97	20.99		



Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	23.65	23.82	23.82	25	0
10	QPSK	1	25	23.66	23.78	23.85		
10	QPSK	1	49	23.74	23.89	23.86		
10	QPSK	25	0	22.64	22.78	22.76	24	1
10	QPSK	25	12	22.67	22.82	22.82		
10	QPSK	25	25	22.69	22.89	22.78		
10	QPSK	50	0	22.69	22.86	22.85	24	1
10	16QAM	1	0	22.80	22.95	22.95		
10	16QAM	1	25	22.77	22.99	22.98		
10	16QAM	1	49	22.84	22.95	23.02	23	2
10	16QAM	25	0	21.75	21.96	21.97		
10	16QAM	25	12	21.80	21.98	22.00		
10	16QAM	25	25	21.80	21.94	21.99	23	2
10	16QAM	50	0	21.80	21.93	21.93		
10	64QAM	1	0	21.53	21.72	21.77		
10	64QAM	1	25	21.52	21.69	21.76	23	2
10	64QAM	1	49	21.54	21.73	21.77		
10	64QAM	25	0	20.81	20.94	21.01		
10	64QAM	25	12	20.86	20.99	20.98	22	3
10	64QAM	25	25	20.82	21.02	21.08		
10	64QAM	50	0	20.73	20.96	20.95		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	23.65	23.79	23.83	25	0
5	QPSK	1	12	23.69	23.78	23.85		
5	QPSK	1	24	23.64	23.78	23.80		
5	QPSK	12	0	22.69	22.81	22.86	24	1
5	QPSK	12	7	22.69	22.82	22.79		
5	QPSK	12	13	22.70	22.79	22.84		
5	QPSK	25	0	22.67	22.83	22.76	24	1
5	16QAM	1	0	22.73	22.96	22.98		
5	16QAM	1	12	22.80	22.95	22.95		
5	16QAM	1	24	22.74	22.97	22.98	23	2
5	16QAM	12	0	21.71	21.86	21.89		
5	16QAM	12	7	21.76	21.89	21.92		
5	16QAM	12	13	21.76	21.90	21.89	23	2
5	16QAM	25	0	21.77	21.92	21.95		
5	64QAM	1	0	21.50	21.59	21.69		
5	64QAM	1	12	21.47	21.55	21.71	23	2
5	64QAM	1	24	21.54	21.68	21.61		
5	64QAM	12	0	20.71	20.77	20.81		
5	64QAM	12	7	20.85	20.94	20.90	22	3
5	64QAM	12	13	20.78	20.93	21.06		
5	64QAM	25	0	20.66	20.80	20.90		



<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.56	23.57	23.56	23.56	24.99	25	0
20	QPSK	1	49	23.52	23.53	23.53	23.48	23.45		
20	QPSK	1	99	23.54	23.55	23.52	23.53	24.87		
20	QPSK	50	0	22.66	22.63	22.65	22.53	22.67	24	1
20	QPSK	50	24	22.65	22.60	22.64	22.53	22.53		
20	QPSK	50	50	22.64	22.62	22.60	22.50	22.60		
20	QPSK	100	0	22.62	22.61	22.64	22.54	22.65	24	1
20	16QAM	1	0	22.62	22.68	22.70	22.69	23.97		
20	16QAM	1	49	22.60	22.64	22.67	22.62	22.62		
20	16QAM	1	99	22.62	22.68	22.71	22.65	23.92	23	2
20	16QAM	50	0	21.69	21.69	21.69	21.66	21.73		
20	16QAM	50	24	21.70	21.69	21.73	21.68	21.68		
20	16QAM	50	50	21.70	21.70	21.70	21.69	21.71	23	2
20	16QAM	100	0	21.65	21.69	21.72	21.62	21.73		
20	64QAM	1	0	21.40	21.43	21.41	21.45	22.93		
20	64QAM	1	49	21.39	21.39	21.42	21.44	21.32	23	2
20	64QAM	1	99	21.42	21.43	21.47	21.42	22.17		
20	64QAM	50	0	20.71	20.64	20.68	20.64	20.72		
20	64QAM	50	24	20.68	20.68	20.71	20.63	20.65	22	3
20	64QAM	50	50	20.71	20.70	20.68	20.68	20.72		
20	64QAM	100	0	20.68	20.69	20.68	20.66	20.73		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	23.58	23.58	23.61	23.56	23.37	25	0
15	QPSK	1	37	23.54	23.55	23.51	23.46	23.39		
15	QPSK	1	74	23.62	23.60	23.59	23.55	23.48		
15	QPSK	36	0	22.62	22.57	22.56	22.58	22.56	24	1
15	QPSK	36	20	22.57	22.59	22.58	22.50	22.50		
15	QPSK	36	39	22.60	22.58	22.54	22.49	22.50		
15	QPSK	75	0	22.59	22.63	22.58	22.56	22.47	24	1
15	16QAM	1	0	22.61	22.63	22.70	22.66	22.57		
15	16QAM	1	37	22.61	22.63	22.61	22.62	22.52		
15	16QAM	1	74	22.68	22.68	22.76	22.68	22.62	23	2
15	16QAM	36	0	21.58	21.59	21.63	21.58	21.56		
15	16QAM	36	20	21.62	21.62	21.65	21.62	21.59		
15	16QAM	36	39	21.60	21.59	21.64	21.59	21.62	23	2
15	16QAM	75	0	21.68	21.66	21.69	21.67	21.57		
15	64QAM	1	0	21.40	21.39	21.46	21.45	21.35		
15	64QAM	1	37	21.39	21.41	21.41	21.38	21.37	23	2
15	64QAM	1	74	21.47	21.48	21.47	21.45	21.43		
15	64QAM	36	0	20.66	20.67	20.67	20.66	20.65		
15	64QAM	36	20	20.67	20.68	20.68	20.65	20.61	22	3
15	64QAM	36	39	20.65	20.67	20.68	20.63	20.65		
15	64QAM	75	0	20.67	20.66	20.67	20.61	20.64		



FCC SAR TEST REPORT

Report No. : FA872506

Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	23.56	23.41	23.55	23.45	24.04	25	0
10	QPSK	1	25	23.52	23.42	23.52	23.54	23.48		
10	QPSK	1	49	23.55	23.49	23.56	23.57	24.03		
10	QPSK	25	0	22.59	22.46	22.52	22.45	22.65	24	1
10	QPSK	25	12	22.56	22.49	22.59	22.52	22.47		
10	QPSK	25	25	22.58	22.46	22.57	22.50	22.60		
10	QPSK	50	0	22.54	22.45	22.53	22.51	22.66	24	1
10	16QAM	1	0	22.58	22.54	22.63	22.65	23.23		
10	16QAM	1	25	22.59	22.54	22.66	22.60	22.62		
10	16QAM	1	49	22.59	22.53	22.67	22.64	23.15	23	2
10	16QAM	25	0	21.60	21.54	21.62	21.64	21.83		
10	16QAM	25	12	21.63	21.59	21.67	21.66	21.67		
10	16QAM	25	25	21.61	21.57	21.63	21.62	21.81	23	2
10	16QAM	50	0	21.61	21.59	21.62	21.62	21.79		
10	64QAM	1	0	21.36	21.33	21.40	21.42	21.96		
10	64QAM	1	25	21.33	21.27	21.41	21.43	21.36	23	2
10	64QAM	1	49	21.38	21.31	21.43	21.44	21.94		
10	64QAM	25	0	20.64	20.57	20.69	20.67	20.82		
10	64QAM	25	12	20.69	20.62	20.71	20.68	20.75	22	3
10	64QAM	25	25	20.62	20.59	20.71	20.66	20.83		
10	64QAM	50	0	20.63	20.54	20.65	20.63	20.81		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	23.52	23.42	23.50	23.46	23.41	25	0
5	QPSK	1	12	23.55	23.42	23.48	23.49	23.43		
5	QPSK	1	24	23.51	23.41	23.48	23.40	23.41		
5	QPSK	12	0	22.57	22.43	22.56	22.49	22.39	24	1
5	QPSK	12	7	22.59	22.48	22.56	22.50	22.47		
5	QPSK	12	13	22.56	22.44	22.59	22.50	22.44		
5	QPSK	25	0	22.57	22.43	22.56	22.47	22.44	24	1
5	16QAM	1	0	22.55	22.48	22.62	22.60	22.56		
5	16QAM	1	12	22.60	22.54	22.59	22.63	22.55		
5	16QAM	1	24	22.58	22.53	22.64	22.62	22.62	23	2
5	16QAM	12	0	21.55	21.48	21.59	21.53	21.55		
5	16QAM	12	7	21.58	21.50	21.64	21.58	21.55		
5	16QAM	12	13	21.58	21.49	21.62	21.57	21.58	23	2
5	16QAM	25	0	21.62	21.53	21.69	21.61	21.62		
5	64QAM	1	0	21.31	21.23	21.36	21.36	21.32		
5	64QAM	1	12	21.36	21.29	21.36	21.40	21.35	23	2
5	64QAM	1	24	21.37	21.30	21.39	21.38	21.35		
5	64QAM	12	0	20.60	20.54	20.64	20.58	20.56		
5	64QAM	12	7	20.62	20.57	20.67	20.64	20.62	22	3
5	64QAM	12	13	20.63	20.55	20.69	20.64	20.55		
5	64QAM	25	0	20.62	20.56	20.66	20.62	20.60		



<LTE Carrier Aggregation combinations>

General Note:

- 1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
- 2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

2CC			3CC		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	CA_2A-5A	3CC-1	1	CA_2A-2A-5A	
2	CA_2A-13A	3CC-2	2	CA_2A-2A-13A	
3	CA_2A-12A		3	CA_4A-4A-5A	
4	CA_4A-5A	3CC-3	4	CA_4A-4A-12A	
5	CA_4A-12A	3CC-4	5	CA_4A-12B	
6	CA_4A-13A	3CC-6	6	CA_4A-4A-13A	
7	CA_4A-17A		7	CA_41A-41C	
8	CA_26A-41A				
9	CA_2C				
10	CA_5B				
11	CA_7B				
12	CA_12B				
13	CA_41C				
14	CA_2A-2A				
15	CA_4A-4A				
16	CA_5A-5A				
17	CA_7A-7A				
18	CA_25A-25A				
19	CA_41A-41A				
20	CA_66A-66A				



<Power verification when LTE Carrier Aggregation Active>

General Note:

- 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 non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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

<Two Carrier power verification>

Configure		PCC						SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		2	20	1880	18900	QPSK	1	0	12	10	737.5	5095	24.38	24.43
		12	10	711	23130	QPSK	1	0	2	20	1960	900	24.44	24.54
		4	20	1745	20300	QPSK	1	0	17	10	740	5790	24.50	24.57
		17	10	711	23800	QPSK	1	0	4	20	2132.5	2175	24.47	24.51
		26	15	831.5	26865	QPSK	1	0	41	20	2593	40620	23.68	23.70
		41	20	2680	41490	QPSK	1	0	26	15	876.5	8865	24.98	24.99
Intra-Band	Non-Contiguous	2	20	1880	18900	QPSK	1	0	2	5	1987.5	1175	24.38	24.43
		4	20	1745	20300	QPSK	1	0	4	5	2112.5	1975	24.57	24.57
		5	10	836.5	20525	QPSK	1	0	5	5	891.5	2625	23.56	23.63
		66	20	1745	132322	QPSK	1	0	66	20	2190	67236	24.33	24.35
		7	20	2510	20850	QPSK	1	0	7	20	2680	3350	23.57	23.63
		25	20	1880	26340	QPSK	1	0	25	20	1985	8590	24.51	24.59
	Contiguous	41	20	2680	41490	QPSK	1	0	41	20	2549.5	40185	24.95	24.99
		2	20	1880	18900	QPSK	1	0	2	20	1979.80	1098	24.35	24.43
		41	20	2680	41490	QPSK	1	0	41	20	2660.20	41292	24.90	24.99
		5	10	836.5	20525	QPSK	1	0	5	5	888.70	2597	23.61	23.63
		7	20	2510	20850	QPSK	1	0	7	20	2649.80	3048	23.59	23.63
		12	10	711	23130	QPSK	1	0	12	5	733.8	5058	24.47	24.54



<Three Carrier power verification>

Configure	PCC							SCC1				SCC2				Power		
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)	
Inter-Band	2	20	1880	18900	QPSK	1	0	2	5	1932.5	625	5	10	881.5	2525	24.36	24.43	
	2	20	1880	18900	QPSK	1	0	5	10	881.5	2525	2	5	1932.5	625	24.35	24.43	
	5	10	836.5	20525	QPSK	1	0	2	20	1960	900	2	5	1932.5	625	23.62	23.63	
	2	20	1880	18900	QPSK	1	0	2	5	1932.5	625	13	10	751	5230	24.42	24.43	
	2	20	1880	18900	QPSK	1	0	13	10	751	5230	2	5	1932.5	625	24.41	24.43	
	13	10	782	23230	QPSK	1	0	2	20	1960	900	2	5	1932.5	625	24.01	24.05	
	4	20	1745	20300	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	24.57	24.57	
	4	20	1745	20300	QPSK	1	0	5	10	881.5	2525	4	5	2152.5	2375	24.57	24.57	
	5	10	836.5	20525	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.58	23.63	
	4	20	1745	20300	QPSK	1	0	4	5	2152.5	2375	12	10	737.5	5095	24.55	24.57	
	4	20	1745	20300	QPSK	1	0	12	10	737.5	5095	4	5	2152.5	2375	24.52	24.57	
	12	10	711	23130	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	24.49	24.54	
	4	20	1745	20300	QPSK	1	0	4	5	2152.5	2375	13	10	751	5230	24.47	24.57	
	4	20	1745	20300	QPSK	1	0	13	10	751	5230	4	5	2152.5	2375	24.57	24.57	
	13	10	782	23230	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.96	24.05	
	4	20	1745	20300	QPSK	1	0	12	10	737.5	5095	12	5	730.3	5025	24.55	24.57	
12	10	711	23130	QPSK	1	0	12	5	733.8	5058	4	20	2132.5	2175	24.49	24.54		
Intra-Band	Contiguous	41	20	2680	41490	QPSK	1	0	41	20	2660.2	41292	41	20	2593	40620	24.97	24.99
		41	20	2680	41490	QPSK	1	0	41	20	2593	40620	41	20	2612.8	40818	24.93	24.99

**<WLAN Conducted Power>****General Note:**

1. For each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode.
2. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is $< 1.6\text{W/kg}$ and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
3. Additional 5.8GHz WLAN MIMO transmit ant 2 SAR testing is used for MIMO simultaneous transmission analysis, due to the output power level for that band is higher than SISO transmit antenna 2.
4. 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.
5. 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).
6. 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.
7. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is $\leq 0.4\text{ W/kg}$, 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 $> 0.4\text{ W/kg}$, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is $\leq 0.8\text{ W/kg}$ or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is $> 0.8\text{ W/kg}$, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.



<Non-beamforming Power Mode>

<2.4GHz WLAN ANT 1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	21.81	22.00	98.59
		2	2417	21.05	21.50	
		6	2437	22.63	23.00	
		10	2457	21.63	22.00	
		11	2462	21.88	22.00	
	802.11g 6Mbps	1	2412	16.37	16.50	92.72
		2	2417	20.01	20.50	
		6	2437	20.45	20.50	
		10	2457	19.49	19.50	
		11	2462	17.93	18.00	
	802.11n-HT20 MCS0	1	2412	15.71	16.00	92.25
		2	2417	19.86	20.00	
		6	2437	20.33	20.50	
		10	2457	19.27	19.50	
		11	2462	17.78	18.00	
	802.11n-HT40 MCS0	3	2422	16.31	16.50	86.40
		4	2427	17.45	17.50	
		6	2437	16.91	17.00	
		8	2447	16.26	16.50	
		9	2452	15.75	16.00	
802.11ac-VHT20 MCS0	1	2412	15.75	16.00	92.31	
	2	2417	19.94	20.00		
	6	2437	20.35	20.50		
	10	2457	19.33	19.50		
	11	2462	17.83	18.00		
802.11ac-VHT40 MCS0	3	2422	16.36	16.50	85.83	
	4	2427	17.52	18.00		
	6	2437	16.97	17.00		
	8	2447	16.34	16.50		
	9	2452	15.81	16.00		



<2.4GHz WLAN ANT 2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	14.81	15.00	98.59
		2	2417	22.34	22.50	
		6	2437	22.85	23.00	
		10	2457	22.72	23.00	
		11	2462	21.71	22.00	
	802.11g 6Mbps	1	2412	16.26	16.50	92.11
		2	2417	19.19	19.50	
		6	2437	20.87	21.00	
		10	2457	19.47	19.50	
		11	2462	15.37	15.50	
	802.11n-HT20 MCS0	1	2412	15.00	15.50	92.25
		2	2417	19.05	19.50	
		6	2437	20.71	21.00	
		10	2457	19.30	19.50	
		11	2462	19.43	19.50	
	802.11n-HT40 MCS0	3	2422	14.44	14.50	86.29
		4	2427	15.19	15.50	
		6	2437	17.02	17.50	
		8	2447	16.04	16.50	
		9	2452	16.15	16.50	
802.11ac-VHT20 MCS0	1	2412	15.04	15.50	92.31	
	2	2417	19.07	19.50		
	6	2437	20.75	21.00		
	10	2457	19.35	19.50		
	11	2462	19.47	19.50		
802.11ac-VHT40 MCS0	3	2422	14.49	15.00	85.83	
	4	2427	15.26	15.50		
	6	2437	17.06	17.50		
	8	2447	16.11	16.50		
	9	2452	16.22	16.50		



<2.4GHz WLAN ANT 1+2>

2.4GHz WLAN	Mode	Channel	Frequency (MHz)	MIMO Ant 1 Average power (dBm)	MIMO Ant 2 Average power (dBm)	MIMO Per Chain Tune-Up Limit	MIMO Combined Average power (dBm)	MIMO Combined Tune-Up Limit	Duty Cycle %
	802.11b 1Mbps		1	2412	14.74	14.90	15.00	17.83	18.00
2			2417	21.02	21.05	21.50	24.05	24.50	
6			2437	22.20	22.74	23.00	25.49	26.00	
10			2457	21.52	21.21	22.00	24.38	25.00	
11			2462	17.51	17.75	18.00	20.64	21.00	
802.11g 6Mbps		1	2412	15.45	15.47	15.50	18.47	18.50	94.00
		2	2417	18.67	18.71	19.00	21.70	22.00	
		6	2437	20.74	21.06	21.50	23.91	24.50	
		10	2457	18.82	18.56	19.00	21.70	22.00	
		11	2462	18.09	18.13	18.50	21.12	21.50	
802.11n-HT 20 MCS0		1	2412	13.48	13.35	13.50	16.43	16.50	92.25
		2	2417	19.20	19.20	19.50	22.21	22.50	
		6	2437	20.73	21.00	21.00	23.88	24.00	
		10	2457	19.08	19.00	19.50	22.05	22.50	
		11	2462	17.09	16.79	17.50	19.95	20.50	
802.11n-HT 40 MCS0		3	2422	12.19	12.68	13.00	15.45	16.00	87.10
		4	2427	13.17	13.52	14.00	16.36	17.00	
		6	2437	16.14	16.06	16.50	19.11	19.50	
		8	2447	15.60	15.25	16.00	18.44	19.00	
		9	2452	15.18	14.84	15.50	18.02	18.50	
802.11ac-V HT20 MCS0		1	2412	13.61	13.44	14.00	16.54	17.00	92.96
		2	2417	19.24	19.23	19.50	22.25	22.50	
		6	2437	20.76	20.99	21.00	23.89	24.00	
		10	2457	19.24	19.01	19.50	22.14	22.50	
		11	2462	17.08	16.83	17.50	19.97	20.50	
802.11ac-V HT40 MCS0		3	2422	12.18	12.74	13.00	15.48	16.00	86.51
		4	2427	13.16	13.64	14.00	16.42	17.00	
		6	2437	16.11	16.24	16.50	19.19	19.50	
		8	2447	15.57	15.36	16.00	18.48	19.00	
		9	2452	15.17	14.89	15.50	18.04	18.50	



<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	20.48	20.50	92.72
		40	5200	20.41	20.50	
		44	5220	20.45	20.50	
		48	5240	20.36	20.50	
	802.11n-HT20 MCS0	36	5180	20.34	20.50	92.91
		40	5200	20.18	20.50	
		44	5220	20.24	20.50	
		48	5240	20.08	20.50	
	802.11n-HT40 MCS0	38	5190	17.14	17.50	86.99
		46	5230	20.14	20.50	
	802.11ac-VHT20 MCS0	36	5180	20.44	20.50	92.93
		40	5200	20.32	20.50	
		44	5220	20.27	20.50	
		48	5240	20.15	20.50	
	802.11ac-VHT40 MCS0	38	5190	17.18	17.50	85.77
		46	5230	20.16	20.50	
802.11ac-VHT80 MCS0	42	5210	17.50	18.00	85.71	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	20.43	20.50	92.72
		56	5280	20.22	20.50	
		60	5300	20.28	20.50	
		64	5320	20.41	20.50	
	802.11n-HT20 MCS0	52	5260	20.18	20.50	92.91
		56	5280	20.10	20.50	
		60	5300	20.07	20.50	
		64	5320	20.19	20.50	
	802.11n-HT40 MCS0	54	5270	20.12	20.50	86.99
		62	5310	16.81	17.00	
	802.11ac-VHT20 MCS0	52	5260	20.18	20.50	92.93
		56	5280	20.11	20.50	
		60	5300	20.17	20.50	
		64	5320	20.26	20.50	
	802.11ac-VHT40 MCS0	54	5270	20.14	20.50	85.77
		62	5310	16.94	17.00	
802.11ac-VHT80 MCS0	58	5290	15.70	16.00	85.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	20.49	20.50	92.72
		116	5580	20.42	20.50	
		124	5620	20.29	20.50	
		132	5660	20.30	20.50	
		144	5720	20.31	20.50	
	802.11n-HT20 MCS0	100	5500	20.33	20.50	92.91
		116	5580	20.27	20.50	
		124	5620	20.10	20.50	
		132	5660	20.12	20.50	
	802.11n-HT40 MCS0	102	5510	17.43	17.50	86.99
		110	5550	20.08	20.50	
		126	5630	20.05	20.50	
		134	5670	19.99	20.00	
	802.11ac-VHT20 MCS0	100	5500	20.41	20.50	92.93
		116	5580	20.28	20.50	
		124	5620	20.18	20.50	
		132	5660	20.20	20.50	
	802.11ac-VHT40 MCS0	102	5510	17.52	18.00	85.77
		110	5550	20.11	20.50	
		126	5630	20.07	20.50	
134		5670	20.03	20.50		
802.11ac-VHT80 MCS0	106	5530	15.62	16.00	85.71	
	122	5610	19.81	20.00		
	138	5690	20.14	20.50		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	20.28	20.50	92.72
		157	5785	20.37	20.50	
		165	5825	20.41	20.50	
	802.11n-HT20 MCS0	149	5745	20.07	20.50	92.91
		157	5785	20.17	20.50	
		165	5825	20.12	20.50	
	802.11n-HT40 MCS0	151	5755	20.06	20.50	86.99
		159	5795	20.11	20.50	
	802.11ac-VHT20 MCS0	149	5745	20.12	20.50	92.93
		157	5785	20.23	20.50	
	802.11ac-VHT40 MCS0	151	5755	20.15	20.50	85.77
		159	5795	20.22	20.50	
	802.11ac-VHT80 MCS0	155	5775	20.11	20.50	85.71



<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	20.32	20.50	93.36
		40	5200	20.11	20.50	
		44	5220	20.15	20.50	
		48	5240	20.10	20.50	
	802.11n-HT20 MCS0	36	5180	19.77	20.00	92.25
		40	5200	20.22	20.50	
		44	5220	20.40	20.50	
		48	5240	20.26	20.50	
	802.11n-HT40 MCS0	38	5190	15.19	15.50	85.60
		46	5230	20.21	20.50	
	802.11ac-VHT20 MCS0	36	5180	19.81	20.00	92.31
		40	5200	20.24	20.50	
		44	5220	20.42	20.50	
		48	5240	20.30	20.50	
	802.11ac-VHT40 MCS0	38	5190	15.22	15.50	87.20
		46	5230	20.23	20.50	
802.11ac-VHT80 MCS0	42	5210	15.53	16.00	85.71	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	20.13	20.50	93.36
		56	5280	20.08	20.50	
		60	5300	20.11	20.50	
		64	5320	19.99	20.00	
	802.11n-HT20 MCS0	52	5260	20.34	20.50	92.25
		56	5280	20.24	20.50	
		60	5300	20.29	20.50	
		64	5320	19.85	20.00	
	802.11n-HT40 MCS0	54	5270	20.16	20.50	85.60
		62	5310	14.82	15.00	
	802.11ac-VHT20 MCS0	52	5260	20.36	20.50	92.31
		56	5280	20.26	20.50	
		60	5300	20.30	20.50	
		64	5320	19.91	20.00	
	802.11ac-VHT40 MCS0	54	5270	20.19	20.50	87.20
		62	5310	14.83	15.00	
802.11ac-VHT80 MCS0	58	5290	14.15	14.50	85.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	20.12	20.50	93.36
		116	5580	20.05	20.50	
		124	5620	20.03	20.50	
		132	5660	20.06	20.50	
		144	5720	20.02	20.50	
	802.11n-HT20 MCS0	100	5500	20.26	20.50	92.25
		116	5580	20.44	20.50	
		124	5620	20.47	20.50	
		132	5660	20.45	20.50	
		144	5720	20.47	20.50	
	802.11n-HT40 MCS0	102	5510	16.43	16.50	85.60
		110	5550	20.10	20.50	
		126	5630	20.06	20.50	
		134	5670	20.25	20.50	
		142	5710	20.06	20.50	
	802.11ac-VHT20 MCS0	100	5500	20.29	20.50	92.31
		116	5580	20.46	20.50	
		124	5620	20.49	20.50	
		132	5660	20.47	20.50	
		144	5720	20.49	20.50	
802.11ac-VHT40 MCS0	102	5510	16.44	16.50	87.20	
	110	5550	20.31	20.50		
	126	5630	20.22	20.50		
	134	5670	20.27	20.50		
	142	5710	20.38	20.50		
802.11ac-VHT80 MCS0	106	5530	14.92	15.00	85.71	
	122	5610	20.09	20.50		
	138	5690	20.11	20.50		

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	17.27	17.50	93.36
		157	5785	17.39	17.50	
		165	5825	17.33	17.50	
	802.11n-HT20 MCS0	149	5745	17.16	17.50	92.91
		157	5785	17.27	17.50	
		165	5825	17.25	17.50	
	802.11n-HT40 MCS0	151	5755	17.04	17.50	86.99
		159	5795	17.09	17.50	
	802.11ac-VHT20 MCS0	149	5745	17.17	17.50	92.93
		157	5785	17.30	17.50	
	802.11ac-VHT40 MCS0	151	5755	17.07	17.50	85.77
		159	5795	17.12	17.50	
	802.11ac-VHT80 MCS0	155	5775	17.11	17.50	85.71



<5GHz WLAN ANT1+2>

5.2GHz WLAN	Mode	Channel	Frequency (MHz)	MIMO Ant 1 Average power (dBm)	MIMO Ant 2 Average power (dBm)	MIMO Per Chain Tune-Up Limit	MIMO Combined Average power (dBm)	MIMO Combined Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps		36	5180	17.68	17.79	18.00	20.75	21.00
40			5200	17.58	17.82	18.00	20.71	21.00	
44			5220	17.66	17.76	18.00	20.72	21.00	
48			5240	17.99	18.19	18.50	21.10	21.50	
802.11n-HT 20 MCS0		36	5180	18.18	18.13	18.50	21.16	21.50	92.25
		40	5200	18.05	18.04	18.50	21.06	21.50	
		44	5220	18.05	18.07	18.50	21.07	21.50	
802.11n-HT 40 MCS0		38	5190	15.64	15.60	16.00	18.63	19.00	86.29
		46	5230	20.26	19.99	20.50	23.14	23.50	
802.11ac-V HT20 MCS0		36	5180	18.22	18.12	18.50	21.18	21.50	92.91
		40	5200	18.05	18.06	18.50	21.07	21.50	
		44	5220	18.11	18.03	18.50	21.08	21.50	
		48	5240	18.47	18.61	19.00	21.55	22.00	
802.11ac-V HT40 MCS0		38	5190	15.68	15.64	16.00	18.67	19.00	85.71
		46	5230	20.31	20.17	20.50	23.25	23.50	
802.11ac-V HT80 MCS0		42	5210	13.17	13.48	13.50	16.34	16.50	85.71

5.3GHz WLAN	Mode	Channel	Frequency (MHz)	MIMO Ant 1 Average power (dBm)	MIMO Ant 2 Average power (dBm)	MIMO Per Chain Tune-Up Limit	MIMO Combined Average power (dBm)	MIMO Combined Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps		52	5260	17.93	18.25	18.50	21.10	21.50
56			5280	18.38	18.60	19.00	21.05	22.00	
60			5300	17.41	17.76	18.00	20.60	21.00	
64			5320	17.43	17.86	18.00	20.66	21.00	
802.11n-HT 20 MCS0		52	5260	17.88	18.16	18.50	21.03	21.50	92.25
		56	5280	17.89	17.93	18.00	20.92	21.00	
		60	5300	17.72	18.11	18.50	20.93	21.50	
802.11n-HT 40 MCS0		54	5270	20.06	19.98	20.50	23.03	23.50	86.29
		62	5310	14.44	14.69	15.00	17.57	18.00	
802.11ac-V HT20 MCS0		52	5260	17.92	18.17	18.50	21.05	21.50	92.91
		56	5280	17.89	17.99	18.00	20.95	21.00	
		60	5300	17.80	18.11	18.50	20.97	21.50	
		64	5320	17.87	18.27	18.50	21.08	21.50	
802.11ac-V HT40 MCS0		54	5270	20.12	20.14	20.50	23.14	23.50	85.71
		62	5310	14.49	14.74	15.00	17.63	18.00	
802.11ac-V HT80 MCS0		58	5290	10.06	10.17	10.50	13.12	13.50	85.71



5.5GHz WLAN	Mode	Channel	Frequency (MHz)	MIMO Ant 1 Average power (dBm)	MIMO Ant 2 Average power (dBm)	MIMO Per Chain Tune-Up Limit	MIMO Combined Average power (dBm)	MIMO Combined Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	100	5500	17.12	17.18	17.50	20.16	20.50	92.67
		116	5580	17.40	17.47	17.50	20.45	20.50	
		124	5620	17.32	17.42	17.50	20.38	20.50	
		132	5660	17.23	17.04	17.50	20.15	20.50	
		144	5720	17.46	17.82	18.00	20.65	21.00	
	802.11n-HT 20 MCS0	100	5500	17.42	17.48	17.50	20.46	20.50	92.25
		116	5580	17.77	17.80	18.00	20.79	21.00	
		124	5620	17.45	17.41	17.50	20.44	20.50	
		132	5660	17.45	17.43	17.50	20.45	20.50	
144		5720	17.50	17.60	18.00	20.56	21.00		
802.11n-HT 40 MCS0	102	5510	16.64	16.57	17.00	19.61	20.00	86.29	
	110	5550	20.25	20.17	20.50	23.22	23.50		
	126	5630	20.11	20.09	20.50	23.11	23.50		
	134	5670	20.20	20.27	20.50	23.24	23.50		
	142	5710	20.15	20.31	20.50	23.24	23.50		
802.11ac-V HT20 MCS0	100	5500	17.45	17.61	18.00	20.54	21.00	92.91	
	116	5580	17.83	17.76	18.00	20.80	21.00		
	124	5620	17.48	17.49	17.50	20.50	20.50		
	132	5660	17.51	17.53	18.00	20.53	21.00		
	144	5720	17.51	17.63	18.00	20.58	21.00		
802.11ac-V HT40 MCS0	102	5510	16.73	16.66	17.00	19.71	20.00	85.71	
	110	5550	20.30	20.24	20.50	23.28	23.50		
	126	5630	20.01	20.32	20.50	23.18	23.50		
	134	5670	20.28	20.31	20.50	23.31	23.50		
	142	5710	20.22	20.37	20.50	23.31	23.50		
802.11ac-V HT80 MCS0	106	5530	13.59	13.65	14.00	16.63	17.00	85.71	
	122	5610	20.02	20.07	20.50	23.05	23.50		
	138	5690	20.19	20.27	20.50	23.24	23.50		

5.8GHz WLAN	Mode	Channel	Frequency (MHz)	MIMO Ant 1 Average power (dBm)	MIMO Ant 2 Average power (dBm)	MIMO Per Chain Tune-Up Limit	MIMO Combined Average power (dBm)	MIMO Combined Tune-Up Limit	Duty Cycle %
	802.11a MCS0	149	5745	18.67	18.76	19.00	21.73	22.00	92.67
		157	5785	18.58	18.84	19.00	21.72	22.00	
		165	5825	18.52	18.79	19.00	21.67	22.00	
	802.11n-HT 20 MCS0	149	5745	18.51	18.8	19.00	21.67	22.00	92.25
		157	5785	18.57	18.71	19.00	21.65	22.00	
		165	5825	18.54	18.7	19.00	21.63	22.00	
	802.11n-HT 40 MCS0	151	5755	18.72	18.89	19.00	21.81	22.00	86.29
		159	5795	18.56	18.88	19.00	21.73	22.00	
	802.11ac-V HT20 MCS0	149	5745	18.77	18.77	19.00	21.75	22.00	92.91
157		5785	18.63	18.71	19.00	21.68	22.00		
165		5825	18.62	18.66	19.00	21.65	22.00		
802.11ac-V HT40 MCS0	151	5755	18.77	18.99	19.00	21.89	22.00	85.71	
	159	5795	18.67	18.91	19.00	21.80	22.00		
802.11ac-V HT80 MCS0	155	5775	18.55	18.73	19.00	21.65	22.00	85.71	



<Beamforming Power Mode>

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11ac-VHT20 MCS0	CH 1	2412	16.36	16.5	100.00
		CH 6	2437	22.19	22.5	
		CH 11	2462	19.56	20.0	
	802.11ac-VHT40 MCS0	CH 3	2422	15.27	15.5	100.00
		CH 6	2437	19.01	19.5	
		CH 9	2452	17.91	18.0	

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11ac-VHT20 MCS0	36	5180	20.06	20.50	100.00
		40	5200	23.13	23.50	
		44	5220	20.26	20.50	
		48	5240	20.16	20.50	
	802.11ac-VHT40 MCS0	38	5190	18.56	19.00	100.00
		46	5230	23.21	23.50	
	802.11ac-VHT80 MCS0	42	5210	15.96	16.00	100.00

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11ac-VHT20 MCS0	52	5260	19.96	20.00	100.00
		56	5280	23.06	23.50	
		60	5300	19.97	20.00	
		64	5320	20.02	20.50	
	802.11ac-VHT40 MCS0	54	5270	23.01	23.50	100.00
		62	5310	16.92	17.00	
	802.11ac-VHT80 MCS0	58	5290	14.58	15.00	100.00



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11ac-VHT20 MCS0	100	5500	20.01	20.50	100.00
		116	5580	19.71	20.00	
		124	5620	23.21	23.50	
		132	5660	23.36	23.50	
		144	5720	20.21	20.50	
	802.11ac-VHT40 MCS0	102	5510	18.61	19.00	100.00
		110	5550	22.87	23.00	
		126	5630	22.77	23.00	
		134	5670	22.93	23.00	
		142	5710	22.56	23.00	
	802.11ac-VHT80 MCS0	106	5530	16.11	16.50	100.00
		122	5610	22.78	23.00	
		138	5690	22.37	22.50	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11ac-VHT20 MCS0	149	5745	21.40	21.50	100.00
		157	5785	21.44	21.50	
		165	5825	21.21	21.50	
	802.11ac-VHT40 MCS0	151	5755	21.53	22.00	100.00
		159	5795	21.41	21.50	
	802.11ac-VHT80 MCS0	155	5775	21.25	21.50	100.00

12. Bluetooth Exclusions Applied

Mode Band	Max Average power(dBm)	
	BR/EDR	LE
2.4GHz Bluetooth	2.0	2.0

Note:

- 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:

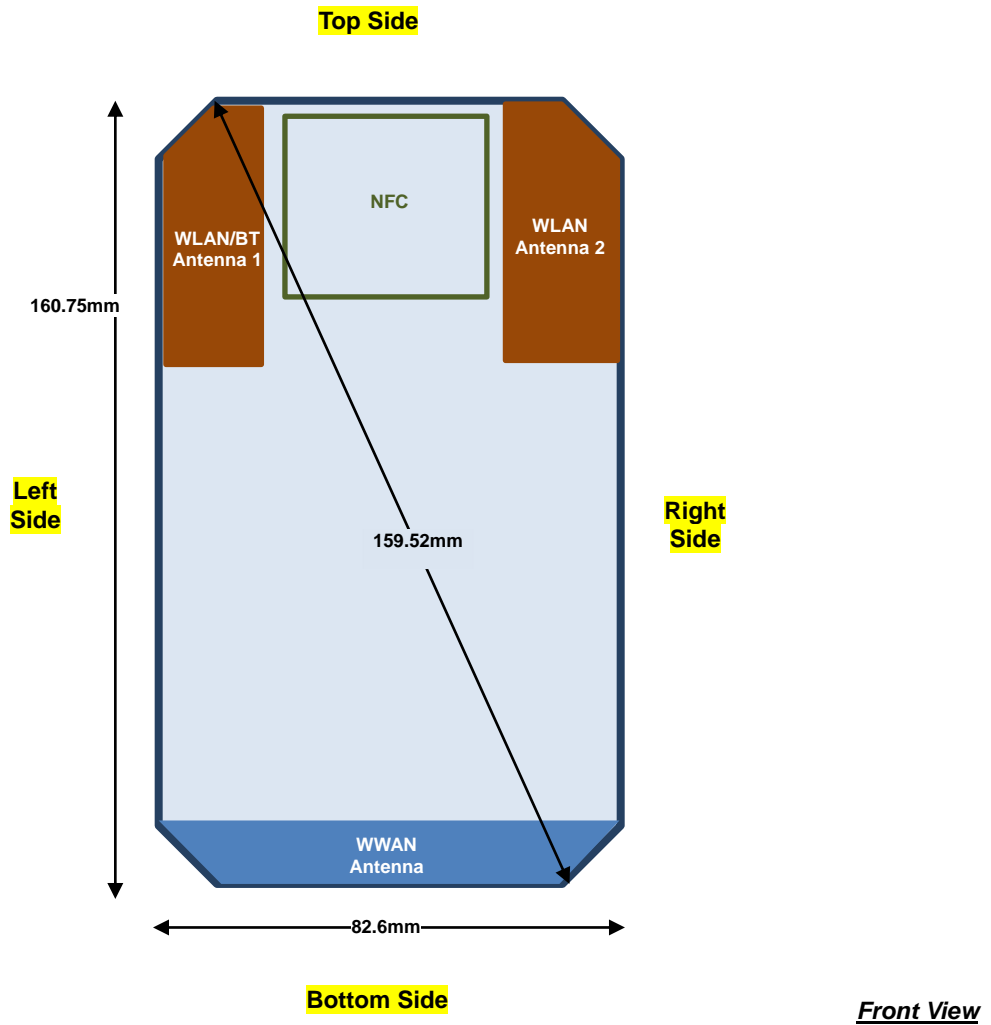
$$[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] \cdot [\sqrt{f(GHz)}] \leq 3.0$$
 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
2	< 5	2.48	0.5

Note:

Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 0.5 which is ≤ 3, SAR testing is not required.

13. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WLAN/BT ANT1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
WLAN ANT2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN	Yes	Yes	No	Yes	Yes	Yes
WLAN/BT ANT1	Yes	Yes	Yes	No	No	Yes
WLAN ANT2	Yes	Yes	Yes	No	Yes	No

General Note:

- Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge



14. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result.
The Reported TDD LTE SAR = measured SAR (W/kg) * Tune-up Scaling Factor * scaling factor for extended cyclic prefix.
2. Per KDB 447498 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 ≥ 0.8 W/kg.
4. When hotspot mode is enabled, power reduction will be activated to limit the maximum power of GSM1900, WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66.
5. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
6. When EUT is placed into the holster, only front face of EUT will toward to the human body.

GSM Note:

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

UMTS Note:

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

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 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 output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B12 / B26 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 2 / 4 / 5 / 17 / 38 SAR test was covered by Band 25 / 66 / 26 / 12 / 41; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. The maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion.
 - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 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. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 D01v02r02, the simultaneous SAR provisions in KDB publication 447498 should be applied to determine simultaneous transmission SAR test exclusion for WiFi MIMO. If the sum of 1g single transmission chain SAR measurements is < 1.6 W/kg and SAR peak to location ratio ≤ 0.04 , no additional SAR measurements for MIMO.
7. Additional 5.8GHz WLAN MIMO transmit ant 2 SAR testing is used for MIMO simultaneous transmission analysis, due to the output power level for that band is higher than SISO transmit antenna 2.
8. During SAR testing the WLAN transmission was verified using a spectrum analyzer.



14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	251	848.8	29.08	30.50	1.387	-0.14	0.322	0.447
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	128	824.2	29.00	30.50	1.413	0	0.325	0.459
01	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	189	836.4	29.00	30.50	1.413	-0.11	0.375	0.530
	GSM850	GPRS (4 Tx slots)	Right Tilted	0mm	Battery 1	251	848.8	29.08	30.50	1.387	-0.13	0.134	0.186
	GSM850	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	251	848.8	29.08	30.50	1.387	-0.03	0.162	0.225
	GSM850	GPRS (4 Tx slots)	Left Tilted	0mm	Battery 1	251	848.8	29.08	30.50	1.387	-0.03	0.119	0.165
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 2	189	836.4	29.00	30.50	1.413	-0.11	0.333	0.470
	GSM850	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 3	189	836.4	29.00	30.50	1.413	0	0.327	0.462
	GSM1900	GPRS (4 Tx slots)	Right Cheek	0mm	Battery 1	810	1909.8	26.25	27.50	1.334	0.04	0.166	0.221
	GSM1900	GPRS (4 Tx slots)	Right Tilted	0mm	Battery 1	810	1909.8	26.25	27.50	1.334	-0.01	0.100	0.133
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	810	1909.8	26.25	27.50	1.334	0.11	0.320	0.427
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	512	1850.2	26.20	27.50	1.349	0.16	0.382	0.515
02	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 1	661	1880	26.13	27.50	1.371	0.15	0.392	0.537
	GSM1900	GPRS (4 Tx slots)	Left Tilted	0mm	Battery 1	810	1909.8	26.25	27.50	1.334	-0.01	0.075	0.100
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 2	661	1880	26.13	27.50	1.371	0.16	0.388	0.532
	GSM1900	GPRS (4 Tx slots)	Left Cheek	0mm	Battery 3	661	1880	26.13	27.50	1.371	0.14	0.389	0.533

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	9400	1880	23.99	25.00	1.262	0.02	0.218	0.275
	WCDMA II	RMC 12.2Kbps	Right Tilted	0mm	Battery 1	9400	1880	23.99	25.00	1.262	0.17	0.157	0.198
03	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	9400	1880	23.99	25.00	1.262	0.19	0.470	0.593
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	9262	1852.4	23.78	25.00	1.324	0.02	0.407	0.539
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	9538	1907.6	23.98	25.00	1.265	0.03	0.425	0.538
	WCDMA II	RMC 12.2Kbps	Left Tilted	0mm	Battery 1	9400	1880	23.99	25.00	1.262	-0.04	0.138	0.174
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 2	9400	1880	23.99	25.00	1.262	0.01	0.414	0.522
	WCDMA II	RMC 12.2Kbps	Left Cheek	0mm	Battery 3	9400	1880	23.99	25.00	1.262	0.05	0.392	0.495
	WCDMA IV	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	1413	1732.6	23.76	25.00	1.330	-0.15	0.195	0.259
	WCDMA IV	RMC 12.2Kbps	Right Tilted	0mm	Battery 1	1413	1732.6	23.76	25.00	1.330	0	0.164	0.218
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	1413	1732.6	23.76	25.00	1.330	0.06	0.336	0.447
04	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	1312	1712.4	23.60	25.00	1.380	0.12	0.336	0.464
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	1513	1752.6	23.67	25.00	1.358	0.09	0.326	0.443
	WCDMA IV	RMC 12.2Kbps	Left Tilted	0mm	Battery 1	1413	1732.6	23.76	25.00	1.330	0.01	0.114	0.152
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Battery 2	1312	1712.4	23.60	25.00	1.380	0.06	0.306	0.422
	WCDMA IV	RMC 12.2Kbps	Left Cheek	0mm	Battery 3	1312	1712.4	23.60	25.00	1.380	0.1	0.331	0.457
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	4233	846.6	23.99	25.00	1.262	-0.11	0.271	0.342
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	4132	826.4	23.85	25.00	1.303	-0.19	0.238	0.310
05	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 1	4182	836.4	23.95	25.00	1.274	0.04	0.294	0.374
	WCDMA V	RMC 12.2Kbps	Right Tilted	0mm	Battery 1	4233	846.6	23.99	25.00	1.262	-0.05	0.117	0.148
	WCDMA V	RMC 12.2Kbps	Left Cheek	0mm	Battery 1	4233	846.6	23.99	25.00	1.262	-0.05	0.132	0.167
	WCDMA V	RMC 12.2Kbps	Left Tilted	0mm	Battery 1	4233	846.6	23.99	25.00	1.262	-0.04	0.113	0.143
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 2	4182	836.4	23.95	25.00	1.274	0.04	0.282	0.359
	WCDMA V	RMC 12.2Kbps	Right Cheek	0mm	Battery 3	4182	836.4	23.95	25.00	1.274	0.03	0.265	0.337



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	20850	2510	23.63	24.50	1.222	0.1	0.462	0.564
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	21100	2535	23.61	24.50	1.227	0.06	0.472	0.579
06	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	21350	2560	23.48	24.50	1.265	0.07	0.463	0.586
	LTE Band 7	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	20850	2510	22.91	23.50	1.146	0.12	0.378	0.433
	LTE Band 7	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	20850	2510	23.63	24.50	1.222	0.14	0.108	0.132
	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	20850	2510	22.91	23.50	1.146	0.02	0.089	0.102
	LTE Band 7	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	20850	2510	23.63	24.50	1.222	0.05	0.127	0.155
	LTE Band 7	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	20850	2510	22.91	23.50	1.146	0.01	0.102	0.117
	LTE Band 7	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	20850	2510	23.63	24.50	1.222	0.1	0.135	0.165
	LTE Band 7	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	20850	2510	22.91	23.50	1.146	0.09	0.108	0.124
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Battery 2	21350	2560	23.48	24.50	1.265	0.11	0.459	0.581
	LTE Band 7	20M	QPSK	1	0	Right Cheek	0mm	Battery 3	21350	2560	23.48	24.50	1.265	0.1	0.461	0.583
07	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Battery 1	23095	707.5	24.47	25.00	1.130	-0.09	0.276	0.312
	LTE Band 12	10M	QPSK	25	0	Right Cheek	0mm	Battery 1	23095	707.5	23.37	24.00	1.156	0.03	0.220	0.254
	LTE Band 12	10M	QPSK	1	0	Right Tilted	0mm	Battery 1	23095	707.5	24.47	25.00	1.130	0.03	0.157	0.177
	LTE Band 12	10M	QPSK	25	0	Right Tilted	0mm	Battery 1	23095	707.5	23.37	24.00	1.156	0	0.133	0.154
	LTE Band 12	10M	QPSK	1	0	Left Cheek	0mm	Battery 1	23095	707.5	24.47	25.00	1.130	-0.02	0.199	0.225
	LTE Band 12	10M	QPSK	25	0	Left Cheek	0mm	Battery 1	23095	707.5	23.37	24.00	1.156	-0.01	0.165	0.191
	LTE Band 12	10M	QPSK	1	0	Left Tilted	0mm	Battery 1	23095	707.5	24.47	25.00	1.130	-0.05	0.135	0.153
	LTE Band 12	10M	QPSK	25	0	Left Tilted	0mm	Battery 1	23095	707.5	23.37	24.00	1.156	0.01	0.115	0.133
	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Battery 2	23095	707.5	24.47	25.00	1.130	-0.05	0.259	0.293
	LTE Band 12	10M	QPSK	1	0	Right Cheek	0mm	Battery 3	23095	707.5	24.47	25.00	1.130	0.04	0.274	0.310
08	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Battery 1	23230	782	24.05	24.50	1.109	0.01	0.278	0.308
	LTE Band 13	10M	QPSK	25	0	Right Cheek	0mm	Battery 1	23230	782	22.86	23.50	1.159	0.05	0.208	0.241
	LTE Band 13	10M	QPSK	1	0	Right Tilted	0mm	Battery 1	23230	782	24.05	24.50	1.109	0.04	0.159	0.176
	LTE Band 13	10M	QPSK	25	0	Right Tilted	0mm	Battery 1	23230	782	22.86	23.50	1.159	0.03	0.122	0.141
	LTE Band 13	10M	QPSK	1	0	Left Cheek	0mm	Battery 1	23230	782	24.05	24.50	1.109	-0.16	0.169	0.187
	LTE Band 13	10M	QPSK	25	0	Left Cheek	0mm	Battery 1	23230	782	22.86	23.50	1.159	0.07	0.133	0.154
	LTE Band 13	10M	QPSK	1	0	Left Tilted	0mm	Battery 1	23230	782	24.05	24.50	1.109	-0.06	0.131	0.145
	LTE Band 13	10M	QPSK	25	0	Left Tilted	0mm	Battery 1	23230	782	22.86	23.50	1.159	0.05	0.105	0.122
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Battery 2	23230	782	24.05	24.50	1.109	-0.01	0.268	0.297
	LTE Band 13	10M	QPSK	1	0	Right Cheek	0mm	Battery 3	23230	782	24.05	24.50	1.109	-0.06	0.274	0.304
09	LTE Band 14	10M	QPSK	1	0	Right Cheek	0mm	Battery 1	23330	793	24.01	24.50	1.119	0.03	0.293	0.328
	LTE Band 14	10M	QPSK	25	0	Right Cheek	0mm	Battery 1	23330	793	22.98	23.50	1.127	-0.01	0.226	0.255
	LTE Band 14	10M	QPSK	1	0	Right Tilted	0mm	Battery 1	23330	793	24.01	24.50	1.119	0.01	0.161	0.180
	LTE Band 14	10M	QPSK	25	0	Right Tilted	0mm	Battery 1	23330	793	22.98	23.50	1.127	0	0.130	0.147
	LTE Band 14	10M	QPSK	1	0	Left Cheek	0mm	Battery 1	23330	793	24.01	24.50	1.119	0.02	0.166	0.186
	LTE Band 14	10M	QPSK	25	0	Left Cheek	0mm	Battery 1	23330	793	22.98	23.50	1.127	0.01	0.170	0.192
	LTE Band 14	10M	QPSK	1	0	Left Tilted	0mm	Battery 1	23330	793	24.01	24.50	1.119	0	0.135	0.151
	LTE Band 14	10M	QPSK	25	0	Left Tilted	0mm	Battery 1	23330	793	22.98	23.50	1.127	0	0.110	0.124
	LTE Band 14	10M	QPSK	1	0	Right Cheek	0mm	Battery 2	23330	793	24.01	24.50	1.119	0.01	0.279	0.312
	LTE Band 14	10M	QPSK	1	0	Right Cheek	0mm	Battery 3	23330	793	24.01	24.50	1.119	-0.07	0.287	0.321



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 25	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	26340	1880	24.59	25.50	1.233	0.12	0.292	0.360
	LTE Band 25	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	26340	1880	23.58	24.50	1.236	0.02	0.260	0.321
	LTE Band 25	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	26340	1880	24.59	25.50	1.233	0.03	0.179	0.221
	LTE Band 25	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	26340	1880	23.58	24.50	1.236	-0.11	0.150	0.185
10	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	26340	1880	24.59	25.50	1.233	0.17	0.451	0.556
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	26140	1860	24.56	25.50	1.242	0.19	0.412	0.512
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	26590	1905	24.46	25.50	1.271	0.13	0.414	0.526
	LTE Band 25	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	26340	1880	23.58	24.50	1.236	0.14	0.399	0.493
	LTE Band 25	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	26340	1880	24.59	25.50	1.233	0.07	0.112	0.138
	LTE Band 25	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	26340	1880	23.58	24.50	1.236	0	0.102	0.126
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 2	26340	1880	24.59	25.50	1.233	0.03	0.442	0.545
	LTE Band 25	20M	QPSK	1	0	Left Cheek	0mm	Battery 3	26340	1880	24.59	25.50	1.233	-0.05	0.427	0.527
11	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	Battery 1	26865	831.5	23.70	24.50	1.202	0.03	0.199	0.239
	LTE Band 26	15M	QPSK	36	0	Right Cheek	0mm	Battery 1	26865	831.5	22.60	23.50	1.230	0.04	0.128	0.157
	LTE Band 26	15M	QPSK	1	0	Right Tilted	0mm	Battery 1	26865	831.5	23.70	24.50	1.202	-0.01	0.099	0.119
	LTE Band 26	15M	QPSK	36	0	Right Tilted	0mm	Battery 1	26865	831.5	22.60	23.50	1.230	0.02	0.074	0.091
	LTE Band 26	15M	QPSK	1	0	Left Cheek	0mm	Battery 1	26865	831.5	23.70	24.50	1.202	-0.03	0.111	0.133
	LTE Band 26	15M	QPSK	36	0	Left Cheek	0mm	Battery 1	26865	831.5	22.60	23.50	1.230	-0.06	0.080	0.098
	LTE Band 26	15M	QPSK	1	0	Left Tilted	0mm	Battery 1	26865	831.5	23.70	24.50	1.202	-0.01	0.098	0.118
	LTE Band 26	15M	QPSK	36	0	Left Tilted	0mm	Battery 1	26865	831.5	22.60	23.50	1.230	-0.07	0.071	0.087
	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	Battery 2	26865	831.5	23.70	24.50	1.202	0	0.189	0.227
	LTE Band 26	15M	QPSK	1	0	Right Cheek	0mm	Battery 3	26865	831.5	23.70	24.50	1.202	0.03	0.187	0.225
	LTE Band 66	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	132322	1745	24.35	25.50	1.303	-0.09	0.143	0.186
	LTE Band 66	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	132322	1745	23.38	24.50	1.294	0.06	0.136	0.176
	LTE Band 66	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	132322	1745	24.35	25.50	1.303	0.01	0.133	0.173
	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	132322	1745	23.38	24.50	1.294	0.12	0.126	0.163
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	132322	1745	24.35	25.50	1.303	0.01	0.286	0.373
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	132072	1720	24.21	25.50	1.346	0.07	0.276	0.371
12	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	132572	1770	24.34	25.50	1.306	0.18	0.320	0.418
	LTE Band 66	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	132322	1745	23.38	24.50	1.294	0.09	0.268	0.347
	LTE Band 66	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	132322	1745	24.35	25.50	1.303	0.05	0.087	0.113
	LTE Band 66	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	132322	1745	23.38	24.50	1.294	0.15	0.080	0.104
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Battery 2	132572	1770	24.34	25.50	1.306	0.06	0.292	0.381
	LTE Band 66	20M	QPSK	1	0	Left Cheek	0mm	Battery 3	132572	1770	24.34	25.50	1.306	0.17	0.264	0.345

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	0.12	0.387	0.390
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	39790	2510	23.56	25.00	1.393	62.90	1.006	0.11	0.292	0.409
13	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	40185	2549.5	23.57	25.00	1.390	62.90	1.006	0.04	0.341	0.477
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	40620	2593	23.56	25.00	1.393	62.90	1.006	0.16	0.276	0.387
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 1	41055	2636.5	23.56	25.00	1.393	62.90	1.006	0.07	0.272	0.381
	LTE Band 41	20M	QPSK	50	0	Right Cheek	0mm	Battery 1	41490	2680	22.67	24.00	1.358	62.90	1.006	0.11	0.204	0.279
	LTE Band 41	20M	QPSK	1	0	Right Tilted	0mm	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.590	-0.08	0.080	0.127
	LTE Band 41	20M	QPSK	50	0	Right Tilted	0mm	Battery 1	41490	2680	22.67	24.00	1.358	62.90	1.006	0.03	0.039	0.053
	LTE Band 41	20M	QPSK	1	0	Left Cheek	0mm	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.13	0.093	0.094
	LTE Band 41	20M	QPSK	50	0	Left Cheek	0mm	Battery 1	41490	2680	22.67	24.00	1.358	62.90	1.006	0.05	0.046	0.063
	LTE Band 41	20M	QPSK	1	0	Left Tilted	0mm	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	0.04	0.082	0.083
	LTE Band 41	20M	QPSK	50	0	Left Tilted	0mm	Battery 1	41490	2680	22.67	24.00	1.358	62.90	1.006	0.04	0.042	0.057
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 2	40185	2549.5	23.57	25.00	1.390	62.90	1.006	0.11	0.304	0.425
	LTE Band 41	20M	QPSK	1	0	Right Cheek	0mm	Battery 3	40185	2549.5	23.57	25.00	1.390	62.90	1.006	0.09	0.310	0.433



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.12	0.190	0.210
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.15	0.102	0.113
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.03	0.130	0.144
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.08	0.094	0.104
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.09	0.352	0.369
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.07	0.335	0.352
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.03	0.542	0.569
14	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	0.02	0.579	0.608
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 1	1	2412	14.81	15.00	1.045	98.59	1.014	0.07	0.092	0.097
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 1	2	2417	22.34	22.50	1.038	98.59	1.014	-0.09	0.481	0.506
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 1	10	2457	22.72	23.00	1.067	98.59	1.014	0.14	0.534	0.578
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 1	11	2462	21.71	22.00	1.069	98.59	1.014	-0.03	0.404	0.438
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 2	6	2437	22.85	23.00	1.035	98.59	1.014	0.17	0.561	0.589
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	SISO Ant 2	Battery 3	6	2437	22.85	23.00	1.035	98.59	1.014	-0.09	0.559	0.587
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	-0.02	0.043	0.054
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	SISO Ant 1	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	0	0.042	0.053
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	SISO Ant 1	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	-0.1	0.010	0.012
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	SISO Ant 1	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	-0.06	0.037	0.046
	WLAN5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	SISO Ant 2	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	-0.18	0.142	0.180
15	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	SISO Ant 2	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	0.04	0.188	0.238
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	SISO Ant 2	Battery 1	62	5310	14.82	15.00	1.043	85.60	1.168	0.06	0.077	0.094
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	SISO Ant 2	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	-0.14	0.124	0.157
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	SISO Ant 2	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	0.01	0.116	0.147
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	SISO Ant 2	Battery 2	54	5270	20.16	20.50	1.083	85.60	1.168	-0.02	0.157	0.199
	WLAN5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	SISO Ant 2	Battery 3	54	5270	20.16	20.50	1.083	85.60	1.168	-0.06	0.176	0.223
16	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.04	0.251	0.318
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 1	106	5530	15.62	16.00	1.092	85.71	1.167	-0.09	0.096	0.122
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 1	122	5610	19.81	20.00	1.045	85.71	1.167	-0.09	0.096	0.117
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	SISO Ant 1	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.13	0.197	0.250
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	SISO Ant 1	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	0.02	0.205	0.260
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	SISO Ant 1	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	0.05	0.185	0.235
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 2	138	5690	20.14	20.50	1.087	85.71	1.167	0.08	0.241	0.306
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 3	138	5690	20.14	20.50	1.087	85.71	1.167	0.15	0.250	0.317
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 2	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	-0.08	0.155	0.198
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	SISO Ant 2	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	0.09	0.067	0.086
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	SISO Ant 2	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	0.08	0.118	0.151
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	SISO Ant 2	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	0.02	0.101	0.129



Plot No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
17	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.1	0.269	0.343
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	0.02	0.110	0.140
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	0.02	0.085	0.109
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	0.03	0.075	0.096
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 2	155	5775	20.11	20.50	1.094	85.71	1.167	0.02	0.257	0.328
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 1	Battery 3	155	5775	20.11	20.50	1.094	85.71	1.167	0.18	0.261	0.333
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0	0.049	0.063
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0.05	0.032	0.041
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0.15	0.047	0.060
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0.11	0.024	0.031
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	0.19	0.044	0.055
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	-0.12	0.032	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	0.13	0.055	0.068
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	0.1	0.056	0.070



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	10mm	Battery 1	OFF	251	848.8	29.08	30.50	1.387	-0.13	0.253	0.351
	GSM850	GPRS (4 Tx slots)	Back	10mm	Battery 1	OFF	251	848.8	29.08	30.50	1.387	-0.09	0.415	0.576
	GSM850	GPRS (4 Tx slots)	Left Side	10mm	Battery 1	OFF	251	848.8	29.08	30.50	1.387	-0.03	0.123	0.171
	GSM850	GPRS (4 Tx slots)	Right Side	10mm	Battery 1	OFF	251	848.8	29.08	30.50	1.387	0	0.372	0.516
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	OFF	251	848.8	29.08	30.50	1.387	-0.08	0.428	0.594
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	OFF	128	824.2	29.00	30.50	1.413	-0.01	0.460	0.650
18	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	OFF	189	836.4	29.00	30.50	1.413	-0.1	0.602	0.850
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 2	OFF	189	836.4	29.00	30.50	1.413	-0.01	0.545	0.770
	GSM850	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 3	OFF	189	836.4	29.00	30.50	1.413	-0.1	0.527	0.744
	GSM1900	GPRS (4 Tx slots)	Front	10mm	Battery 1	ON	810	1909.8	23.85	25.00	1.303	0.03	0.215	0.280
	GSM1900	GPRS (4 Tx slots)	Back	10mm	Battery 1	ON	810	1909.8	23.85	25.00	1.303	-0.01	0.537	0.700
	GSM1900	GPRS (4 Tx slots)	Left Side	10mm	Battery 1	ON	810	1909.8	23.85	25.00	1.303	0.13	0.095	0.124
	GSM1900	GPRS (4 Tx slots)	Right Side	10mm	Battery 1	ON	810	1909.8	23.85	25.00	1.303	-0.06	0.061	0.079
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	ON	810	1909.8	23.85	25.00	1.303	0.05	0.926	1.207
19	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	ON	512	1850.2	23.83	25.00	1.309	0.13	0.944	1.236
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 1	ON	661	1880	23.74	25.00	1.337	0.18	0.785	1.049
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 2	ON	512	1850.2	23.83	25.00	1.309	0.14	0.852	1.115
	GSM1900	GPRS (4 Tx slots)	Bottom Side	10mm	Battery 3	ON	512	1850.2	23.83	25.00	1.309	0.02	0.898	1.176

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	10mm	Battery 1	ON	9400	1880	20.64	21.00	1.086	0.02	0.249	0.271
	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 1	ON	9400	1880	20.64	21.00	1.086	-0.09	0.753	0.818
	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 1	ON	9262	1852.4	20.60	21.00	1.096	-0.11	0.720	0.789
	WCDMA II	RMC 12.2Kbps	Back	10mm	Battery 1	ON	9538	1907.6	20.62	21.00	1.091	-0.08	0.794	0.867
	WCDMA II	RMC 12.2Kbps	Left Side	10mm	Battery 1	ON	9400	1880	20.64	21.00	1.086	0.06	0.119	0.129
	WCDMA II	RMC 12.2Kbps	Right Side	10mm	Battery 1	ON	9400	1880	20.64	21.00	1.086	-0.07	0.057	0.062
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	9400	1880	20.64	21.00	1.086	-0.19	1.110	1.206
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	9262	1852.4	20.60	21.00	1.096	-0.09	0.994	1.090
20	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	9538	1907.6	20.62	21.00	1.091	0.12	1.250	1.364
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Battery 2	ON	9538	1907.6	20.62	21.00	1.091	-0.04	1.210	1.321
	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	Battery 3	ON	9538	1907.6	20.62	21.00	1.091	-0.01	1.120	1.222
	WCDMA IV	RMC 12.2Kbps	Front	10mm	Battery 1	ON	1413	1732.6	21.36	22.00	1.159	0.03	0.196	0.227
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 1	ON	1413	1732.6	21.36	22.00	1.159	-0.13	0.799	0.926
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 1	ON	1312	1712.4	21.16	22.00	1.213	-0.16	0.755	0.916
	WCDMA IV	RMC 12.2Kbps	Back	10mm	Battery 1	ON	1513	1752.6	21.24	22.00	1.191	-0.17	0.806	0.960
	WCDMA IV	RMC 12.2Kbps	Left Side	10mm	Battery 1	ON	1413	1732.6	21.36	22.00	1.159	0.02	0.130	0.151
	WCDMA IV	RMC 12.2Kbps	Right Side	10mm	Battery 1	ON	1413	1732.6	21.36	22.00	1.159	-0.04	0.055	0.064
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	1413	1732.6	21.36	22.00	1.159	-0.11	1.020	1.182
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	1312	1712.4	21.16	22.00	1.213	-0.1	0.962	1.167
21	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	ON	1513	1752.6	21.24	22.00	1.191	-0.11	1.070	1.275
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Battery 2	ON	1513	1752.6	21.24	22.00	1.191	-0.11	1.020	1.215
	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	Battery 3	ON	1513	1752.6	21.24	22.00	1.191	-0.16	0.977	1.164



Plot No.	Band	Mode	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Front	10mm	Battery 1	OFF	4233	846.6	23.99	25.00	1.262	0.09	0.298	0.376
	WCDMA V	RMC 12.2Kbps	Back	10mm	Battery 1	OFF	4233	846.6	23.99	25.00	1.262	0.01	0.447	0.564
	WCDMA V	RMC 12.2Kbps	Back	10mm	Battery 1	OFF	4132	826.4	23.85	25.00	1.303	0	0.366	0.477
22	WCDMA V	RMC 12.2Kbps	Back	10mm	Battery 1	OFF	4182	836.4	23.95	25.00	1.274	0.02	0.448	0.571
	WCDMA V	RMC 12.2Kbps	Left Side	10mm	Battery 1	OFF	4233	846.6	23.99	25.00	1.262	-0.01	0.144	0.182
	WCDMA V	RMC 12.2Kbps	Right Side	10mm	Battery 1	OFF	4233	846.6	23.99	25.00	1.262	0	0.409	0.516
	WCDMA V	RMC 12.2Kbps	Bottom Side	10mm	Battery 1	OFF	4233	846.6	23.99	25.00	1.262	-0.14	0.431	0.544
	WCDMA V	RMC 12.2Kbps	Back	10mm	Battery 2	OFF	4182	836.4	23.95	25.00	1.274	0.01	0.430	0.548
	WCDMA V	RMC 12.2Kbps	Back	10mm	Battery 3	OFF	4182	836.4	23.95	25.00	1.274	-0.01	0.414	0.527

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	20850	2510	23.63	24.50	1.222	-0.05	0.339	0.414
	LTE Band 7	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	20850	2510	22.91	23.50	1.146	0	0.276	0.316
	LTE Band 7	20M	QPSK	1	0	Back	10mm	Battery 1	OFF	20850	2510	23.63	24.50	1.222	-0.04	0.427	0.522
	LTE Band 7	20M	QPSK	50	0	Back	10mm	Battery 1	OFF	20850	2510	22.91	23.50	1.146	0.02	0.354	0.406
	LTE Band 7	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	20850	2510	23.63	24.50	1.222	-0.1	0.101	0.123
	LTE Band 7	20M	QPSK	50	0	Left Side	10mm	Battery 1	OFF	20850	2510	22.91	23.50	1.146	-0.13	0.089	0.102
	LTE Band 7	20M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	20850	2510	23.63	24.50	1.222	0.12	0.458	0.560
	LTE Band 7	20M	QPSK	50	0	Right Side	10mm	Battery 1	OFF	20850	2510	22.91	23.50	1.146	-0.02	0.370	0.424
23	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	20850	2510	23.63	24.50	1.222	-0.03	1.080	1.320
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	21100	2535	23.61	24.50	1.227	0.08	0.941	1.155
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	21350	2560	23.48	24.50	1.265	0.1	0.870	1.100
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	20850	2510	22.91	23.50	1.146	0.08	0.873	1.000
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	21100	2535	22.75	23.50	1.189	0.08	0.785	0.933
	LTE Band 7	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	21350	2560	22.50	23.50	1.259	0.11	0.703	0.885
	LTE Band 7	20M	QPSK	100	0	Bottom Side	10mm	Battery 1	OFF	20850	2510	22.74	23.50	1.191	0.04	0.864	1.029
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Battery 2	OFF	20850	2510	23.63	24.50	1.222	0.14	1.010	1.234
	LTE Band 7	20M	QPSK	1	0	Bottom Side	10mm	Battery 3	OFF	20850	2510	23.63	24.50	1.222	-0.06	0.994	1.214
	LTE Band 12	10M	QPSK	1	0	Front	10mm	Battery 1	OFF	23095	707.5	24.47	25.00	1.130	-0.06	0.251	0.284
	LTE Band 12	10M	QPSK	25	0	Front	10mm	Battery 1	OFF	23095	707.5	23.37	24.00	1.156	0.1	0.215	0.249
24	LTE Band 12	10M	QPSK	1	0	Back	10mm	Battery 1	OFF	23095	707.5	24.47	25.00	1.130	-0.03	0.521	0.589
	LTE Band 12	10M	QPSK	25	0	Back	10mm	Battery 1	OFF	23095	707.5	23.37	24.00	1.156	0.08	0.415	0.480
	LTE Band 12	10M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	23095	707.5	24.47	25.00	1.130	0	0.254	0.287
	LTE Band 12	10M	QPSK	25	0	Left Side	10mm	Battery 1	OFF	23095	707.5	23.37	24.00	1.156	0.03	0.212	0.245
	LTE Band 12	10M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	23095	707.5	24.47	25.00	1.130	-0.08	0.407	0.460
	LTE Band 12	10M	QPSK	25	0	Right Side	10mm	Battery 1	OFF	23095	707.5	23.37	24.00	1.156	0.03	0.350	0.405
	LTE Band 12	10M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	23095	707.5	24.47	25.00	1.130	-0.07	0.247	0.279
	LTE Band 12	10M	QPSK	25	0	Bottom Side	10mm	Battery 1	OFF	23095	707.5	23.37	24.00	1.156	-0.06	0.206	0.238
	LTE Band 12	10M	QPSK	1	0	Back	10mm	Battery 2	OFF	23095	707.5	24.47	25.00	1.130	-0.03	0.520	0.587
	LTE Band 12	10M	QPSK	1	0	Back	10mm	Battery 3	OFF	23095	707.5	24.47	25.00	1.130	0	0.493	0.557



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 13	10M	QPSK	1	0	Front	10mm	Battery 1	OFF	23230	782	24.05	24.50	1.109	-0.05	0.298	0.331
	LTE Band 13	10M	QPSK	25	0	Front	10mm	Battery 1	OFF	23230	782	22.86	23.50	1.159	-0.01	0.245	0.284
	LTE Band 13	10M	QPSK	1	0	Back	10mm	Battery 1	OFF	23230	782	24.05	24.50	1.109	-0.01	0.488	0.541
	LTE Band 13	10M	QPSK	25	0	Back	10mm	Battery 1	OFF	23230	782	22.86	23.50	1.159	0	0.405	0.469
	LTE Band 13	10M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	23230	782	24.05	24.50	1.109	0	0.227	0.252
	LTE Band 13	10M	QPSK	25	0	Left Side	10mm	Battery 1	OFF	23230	782	22.86	23.50	1.159	-0.01	0.186	0.216
25	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	23230	782	24.05	24.50	1.109	-0.01	0.496	0.550
	LTE Band 13	10M	QPSK	25	0	Right Side	10mm	Battery 1	OFF	23230	782	22.86	23.50	1.159	-0.02	0.413	0.479
	LTE Band 13	10M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	23230	782	24.05	24.50	1.109	-0.1	0.383	0.425
	LTE Band 13	10M	QPSK	25	0	Bottom Side	10mm	Battery 1	OFF	23230	782	22.86	23.50	1.159	-0.11	0.319	0.370
	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Battery 2	OFF	23230	782	24.05	24.50	1.109	-0.05	0.461	0.511
	LTE Band 13	10M	QPSK	1	0	Right Side	10mm	Battery 3	OFF	23230	782	24.05	24.50	1.109	-0.04	0.469	0.520
	LTE Band 14	10M	QPSK	1	0	Front	10mm	Battery 1	OFF	23330	793	24.01	24.50	1.119	-0.04	0.298	0.334
	LTE Band 14	10M	QPSK	25	0	Front	10mm	Battery 1	OFF	23330	793	22.98	23.50	1.127	0.01	0.245	0.276
	LTE Band 14	10M	QPSK	1	0	Back	10mm	Battery 1	OFF	23330	793	24.01	24.50	1.119	0	0.482	0.540
	LTE Band 14	10M	QPSK	25	0	Back	10mm	Battery 1	OFF	23330	793	22.98	23.50	1.127	0.03	0.400	0.451
	LTE Band 14	10M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	23330	793	24.01	24.50	1.119	0.01	0.220	0.246
	LTE Band 14	10M	QPSK	25	0	Left Side	10mm	Battery 1	OFF	23330	793	22.98	23.50	1.127	0.04	0.185	0.209
26	LTE Band 14	10M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	23330	793	24.01	24.50	1.119	0.01	0.507	0.568
	LTE Band 14	10M	QPSK	25	0	Right Side	10mm	Battery 1	OFF	23330	793	22.98	23.50	1.127	-0.03	0.428	0.482
	LTE Band 14	10M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	23330	793	24.01	24.50	1.119	-0.15	0.394	0.441
	LTE Band 14	10M	QPSK	25	0	Bottom Side	10mm	Battery 1	OFF	23330	793	22.98	23.50	1.127	-0.07	0.329	0.371
	LTE Band 14	10M	QPSK	1	0	Right Side	10mm	Battery 2	OFF	23330	793	24.01	24.50	1.119	0	0.454	0.508
	LTE Band 14	10M	QPSK	1	0	Right Side	10mm	Battery 3	OFF	23330	793	24.01	24.50	1.119	0.01	0.478	0.535
	LTE Band 25	20M	QPSK	1	0	Front	10mm	Battery 1	ON	26340	1880	20.92	21.50	1.143	0.1	0.222	0.254
	LTE Band 25	20M	QPSK	50	0	Front	10mm	Battery 1	ON	26340	1880	20.58	21.50	1.236	0.09	0.218	0.269
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Battery 1	ON	26340	1880	20.92	21.50	1.143	-0.02	0.701	0.801
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Battery 1	ON	26140	1860	20.79	21.50	1.178	-0.11	0.657	0.774
	LTE Band 25	20M	QPSK	1	0	Back	10mm	Battery 1	ON	26590	1905	20.52	21.50	1.253	-0.04	0.671	0.841
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 1	ON	26340	1880	20.58	21.50	1.236	-0.09	0.717	0.886
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 1	ON	26140	1860	20.43	21.50	1.279	-0.06	0.669	0.856
	LTE Band 25	20M	QPSK	50	0	Back	10mm	Battery 1	ON	26590	1905	20.20	21.50	1.349	-0.03	0.674	0.909
	LTE Band 25	20M	QPSK	100	0	Back	10mm	Battery 1	ON	26340	1880	20.54	21.50	1.247	-0.05	0.719	0.897
	LTE Band 25	20M	QPSK	1	0	Left Side	10mm	Battery 1	ON	26340	1880	20.92	21.50	1.143	-0.05	0.102	0.117
	LTE Band 25	20M	QPSK	50	0	Left Side	10mm	Battery 1	ON	26340	1880	20.58	21.50	1.236	-0.13	0.099	0.122
	LTE Band 25	20M	QPSK	1	0	Right Side	10mm	Battery 1	ON	26340	1880	20.92	21.50	1.143	-0.03	0.055	0.063
	LTE Band 25	20M	QPSK	50	0	Right Side	10mm	Battery 1	ON	26340	1880	20.58	21.50	1.236	-0.1	0.056	0.069
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	26340	1880	20.92	21.50	1.143	-0.19	1.030	1.177
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	26140	1860	20.79	21.50	1.178	-0.02	0.894	1.053
	LTE Band 25	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	26590	1905	20.52	21.50	1.253	-0.03	1.000	1.253
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	26340	1880	20.58	21.50	1.236	0.06	1.050	1.298
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	26140	1860	20.43	21.50	1.279	-0.11	0.931	1.191
27	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	26590	1905	20.20	21.50	1.349	0.07	1.030	1.389
	LTE Band 25	20M	QPSK	100	0	Bottom Side	10mm	Battery 1	ON	26340	1880	20.54	21.50	1.247	-0.01	1.020	1.272
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Battery 2	ON	26590	1905	20.20	21.50	1.349	0.13	1.010	1.362
	LTE Band 25	20M	QPSK	50	0	Bottom Side	10mm	Battery 3	ON	26590	1905	20.20	21.50	1.349	-0.02	0.994	1.341



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 26	15M	QPSK	1	0	Front	10mm	Battery 1	OFF	26865	831.5	23.70	24.50	1.202	-0.02	0.235	0.283
	LTE Band 26	15M	QPSK	36	0	Front	10mm	Battery 1	OFF	26865	831.5	22.60	23.50	1.230	0.03	0.182	0.224
	LTE Band 26	15M	QPSK	1	0	Back	10mm	Battery 1	OFF	26865	831.5	23.70	24.50	1.202	-0.02	0.379	0.456
	LTE Band 26	15M	QPSK	36	0	Back	10mm	Battery 1	OFF	26865	831.5	22.60	23.50	1.230	0.02	0.289	0.356
	LTE Band 26	15M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	26865	831.5	23.70	24.50	1.202	-0.02	0.178	0.214
	LTE Band 26	15M	QPSK	36	0	Left Side	10mm	Battery 1	OFF	26865	831.5	22.60	23.50	1.230	0.01	0.131	0.161
28	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	26865	831.5	23.70	24.50	1.202	0	0.401	0.482
	LTE Band 26	15M	QPSK	36	0	Right Side	10mm	Battery 1	OFF	26865	831.5	22.60	23.50	1.230	-0.04	0.309	0.380
	LTE Band 26	15M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	26865	831.5	23.70	24.50	1.202	-0.04	0.333	0.400
	LTE Band 26	15M	QPSK	36	0	Bottom Side	10mm	Battery 1	OFF	26865	831.5	22.60	23.50	1.230	0.06	0.263	0.324
	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	Battery 2	OFF	26865	831.5	23.70	24.50	1.202	0.06	0.350	0.421
	LTE Band 26	15M	QPSK	1	0	Right Side	10mm	Battery 3	OFF	26865	831.5	23.70	24.50	1.202	-0.05	0.361	0.434
	LTE Band 66	20M	QPSK	1	0	Front	10mm	Battery 1	ON	132322	1745	21.65	22.50	1.216	-0.08	0.169	0.206
	LTE Band 66	20M	QPSK	50	0	Front	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	0	0.171	0.230
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Battery 1	ON	132322	1745	21.65	22.50	1.216	-0.01	0.723	0.879
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Battery 1	ON	132072	1720	21.39	22.50	1.291	0.01	0.668	0.863
	LTE Band 66	20M	QPSK	1	0	Back	10mm	Battery 1	ON	132572	1770	21.36	22.50	1.300	0.07	0.714	0.928
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	0.04	0.726	0.975
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 1	ON	132072	1720	21.12	22.50	1.374	-0.08	0.665	0.914
	LTE Band 66	20M	QPSK	50	0	Back	10mm	Battery 1	ON	132572	1770	21.06	22.50	1.393	-0.03	0.724	1.009
	LTE Band 66	20M	QPSK	100	0	Back	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	-0.05	0.733	0.984
	LTE Band 66	20M	QPSK	1	0	Left Side	10mm	Battery 1	ON	132322	1745	21.65	22.50	1.216	-0.18	0.139	0.169
	LTE Band 66	20M	QPSK	50	0	Left Side	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	-0.16	0.137	0.184
	LTE Band 66	20M	QPSK	1	0	Right Side	10mm	Battery 1	ON	132322	1745	21.65	22.50	1.216	-0.09	0.052	0.063
	LTE Band 66	20M	QPSK	50	0	Right Side	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	-0.16	0.051	0.068
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	132322	1745	21.65	22.50	1.216	0.06	0.929	1.130
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	132072	1720	21.39	22.50	1.291	0.04	0.847	1.094
	LTE Band 66	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	ON	132572	1770	21.36	22.50	1.300	-0.14	0.887	1.153
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	-0.16	0.927	1.245
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	132072	1720	21.12	22.50	1.374	-0.05	0.850	1.168
29	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	ON	132572	1770	21.06	22.50	1.393	-0.02	0.900	1.254
	LTE Band 66	20M	QPSK	100	0	Bottom Side	10mm	Battery 1	ON	132322	1745	21.22	22.50	1.343	-0.16	0.929	1.247
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Battery 2	ON	132572	1770	21.06	22.50	1.393	-0.11	0.886	1.234
	LTE Band 66	20M	QPSK	50	0	Bottom Side	10mm	Battery 3	ON	132572	1770	21.06	22.50	1.393	0.14	0.879	1.225



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Battery	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Front	10mm	Battery 1	OFF	41490	2680	24.99	25.00	1.002	62.90	1.006	0.02	0.305	0.308
	LTE Band 41	20M	QPSK	50	0	Front	10mm	Battery 1	OFF	41490	2680	22.67	24.00	1.358	62.90	1.006	-0.01	0.163	0.223
	LTE Band 41	20M	QPSK	1	0	Back	10mm	Battery 1	OFF	41490	2680	24.99	25.00	1.002	62.90	1.006	0.17	0.447	0.451
	LTE Band 41	20M	QPSK	50	0	Back	10mm	Battery 1	OFF	41490	2680	22.67	24.00	1.358	62.90	1.006	-0.12	0.239	0.327
	LTE Band 41	20M	QPSK	1	0	Left Side	10mm	Battery 1	OFF	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.03	0.087	0.088
	LTE Band 41	20M	QPSK	50	0	Left Side	10mm	Battery 1	OFF	41490	2680	22.67	24.00	1.358	62.90	1.006	-0.01	0.046	0.063
	LTE Band 41	20M	QPSK	1	0	Right Side	10mm	Battery 1	OFF	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.08	0.386	0.389
	LTE Band 41	20M	QPSK	50	0	Right Side	10mm	Battery 1	OFF	41490	2680	22.67	24.00	1.358	62.90	1.006	0.11	0.207	0.283
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	41490	2680	24.99	25.00	1.002	62.90	1.006	0.03	0.539	0.543
30	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	39750	2506	23.56	25.00	1.393	62.90	1.006	0.05	0.766	1.074
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	40185	2549.5	23.57	25.00	1.390	62.90	1.006	0.12	0.577	0.807
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	40620	2593	23.56	25.00	1.393	62.90	1.006	0.04	0.602	0.844
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 1	OFF	41055	2636.5	23.56	25.00	1.393	62.90	1.006	0.03	0.517	0.725
	LTE Band 41	20M	QPSK	50	0	Bottom Side	10mm	Battery 1	OFF	41490	2680	22.67	24.00	1.358	62.90	1.006	0.09	0.288	0.394
	LTE Band 41	20M	QPSK	100	0	Bottom Side	10mm	Battery 1	OFF	41490	2680	22.65	24.00	1.365	62.90	1.006	-0.11	0.277	0.380
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 2	OFF	39750	2506	23.56	25.00	1.393	62.90	1.006	-0.06	0.749	1.050
	LTE Band 41	20M	QPSK	1	0	Bottom Side	10mm	Battery 3	OFF	39750	2506	23.56	25.00	1.393	62.90	1.006	-0.03	0.744	1.043

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.07	0.051	0.056
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.06	0.576	0.636
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.11	0.591	0.653
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	SISO Ant 1	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.06	0.083	0.092
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.01	0.194	0.204
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.08	0.464	0.487
31	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	0.05	0.823	0.864
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	1	2412	14.81	15.00	1.045	98.59	1.014	0.07	0.092	0.097
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	2	2417	22.34	22.50	1.038	98.59	1.014	0.16	0.583	0.613
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	10	2457	22.72	23.00	1.067	98.59	1.014	-0.05	0.622	0.673
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	11	2462	21.71	22.00	1.069	98.59	1.014	-0.13	0.486	0.527
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	SISO Ant 2	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	0.05	0.511	0.536
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 2	6	2437	22.85	23.00	1.035	98.59	1.014	0.11	0.821	0.862
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 3	6	2437	22.85	23.00	1.035	98.59	1.014	0.07	0.815	0.855



Plot No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	SISO Ant 1	Battery 1	46	5230	20.14	20.50	1.088	86.99	1.150	0.17	0.062	0.078
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	SISO Ant 1	Battery 1	46	5230	20.14	20.50	1.088	86.99	1.150	-0.11	0.457	0.572
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	SISO Ant 1	Battery 1	46	5230	20.14	20.50	1.088	86.99	1.150	0.03	0.281	0.351
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	SISO Ant 1	Battery 1	46	5230	20.14	20.50	1.088	86.99	1.150	-0.01	0.018	0.023
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	SISO Ant 2	Battery 1	46	5230	20.21	20.50	1.070	85.60	1.168	-0.06	0.016	0.020
32	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	SISO Ant 2	Battery 1	46	5230	20.21	20.50	1.070	85.60	1.168	-0.01	0.609	0.761
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	SISO Ant 2	Battery 1	38	5190	15.19	15.50	1.075	85.60	1.168	0.03	0.193	0.242
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	SISO Ant 2	Battery 1	46	5230	20.21	20.50	1.070	85.60	1.168	-0.15	0.541	0.676
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	SISO Ant 2	Battery 1	46	5230	20.21	20.50	1.070	85.60	1.168	-0.1	0.380	0.475
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	SISO Ant 2	Battery 2	46	5230	20.21	20.50	1.070	85.60	1.168	0.12	0.584	0.730
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	SISO Ant 2	Battery 3	46	5230	20.21	20.50	1.070	85.60	1.168	0.05	0.585	0.731
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	0.17	0.079	0.101
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.01	0.345	0.440
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Side	10mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	0	0.557	0.711
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	SISO Ant 1	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.04	0.119	0.152
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0.07	0.040	0.051
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	-0.14	0.818	1.044
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	SISO Ant 2	Battery 1	159	5795	17.09	17.50	1.100	86.99	1.150	-0.16	0.839	1.062
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	-0.02	0.514	0.656
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	SISO Ant 2	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	-0.09	0.540	0.689
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	SISO Ant 2	Battery 2	155	5775	17.11	17.50	1.094	85.71	1.167	0.03	0.801	1.023
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	SISO Ant 2	Battery 3	155	5775	17.11	17.50	1.094	85.71	1.167	-0.04	0.790	1.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	10mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	0.08	0.039	0.049
33	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	-0.02	1.010	1.254
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	MIMO Ant 2	Battery 1	151	5755	18.89	19.00	1.026	86.29	1.159	-0.02	0.987	1.173
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Side	10mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	-0.02	0.669	0.830
	WLAN5GHz	802.11ac-VHT80 MCS0	Top Side	10mm	MIMO Ant 2	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	-0.11	0.731	0.908
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	MIMO Ant 2	Battery 2	155	5775	18.73	19.00	1.064	85.71	1.167	-0.02	0.985	1.223
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	MIMO Ant 2	Battery 3	155	5775	18.73	19.00	1.064	85.71	1.167	-0.02	0.962	1.195



14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (4 Tx slots)	Front	15mm	-	Battery 1	251	848.8	29.08	30.50	1.387	0.09	0.223	0.309
	GSM850	GPRS (4 Tx slots)	Back	15mm	-	Battery 1	251	848.8	29.08	30.50	1.387	0.11	0.471	0.653
	GSM850	GPRS (4 Tx slots)	Front	0mm	Rigid Holster	Battery 1	251	848.8	29.08	30.50	1.387	0	0.248	0.344
	GSM850	GPRS (4 Tx slots)	Front	0mm	Soft Holster	Battery 1	251	848.8	29.08	30.50	1.387	0	0.647	0.897
	GSM850	GPRS (4 Tx slots)	Front	0mm	Soft Holster	Battery 1	128	824.2	29.00	30.50	1.413	0.03	0.611	0.863
34	GSM850	GPRS (4 Tx slots)	Front	0mm	Soft Holster	Battery 1	189	836.4	29.00	30.50	1.413	-0.13	0.684	0.966
	GSM850	GPRS (4 Tx slots)	Front	0mm	Soft Holster	Battery 2	189	836.4	29.00	30.50	1.413	0.02	0.671	0.948
	GSM850	GPRS (4 Tx slots)	Front	0mm	Soft Holster	Battery 3	189	836.4	29.00	30.50	1.413	-0.06	0.659	0.931
	GSM1900	GPRS (4 Tx slots)	Front	15mm	-	Battery 1	810	1909.8	26.25	27.50	1.334	0.08	0.244	0.325
	GSM1900	GPRS (4 Tx slots)	Back	15mm	-	Battery 1	810	1909.8	26.25	27.50	1.334	-0.05	0.618	0.824
	GSM1900	GPRS (4 Tx slots)	Back	15mm	-	Battery 1	512	1850.2	26.20	27.50	1.349	0.01	0.647	0.873
35	GSM1900	GPRS (4 Tx slots)	Back	15mm	-	Battery 1	661	1880	26.13	27.50	1.371	0	0.655	0.898
	GSM1900	GPRS (4 Tx slots)	Front	0mm	Rigid Holster	Battery 1	810	1909.8	26.25	27.50	1.334	-0.08	0.307	0.409
	GSM1900	GPRS (4 Tx slots)	Front	0mm	Soft Holster	Battery 1	810	1909.8	26.25	27.50	1.334	-0.03	0.574	0.765
	GSM1900	GPRS (4 Tx slots)	Back	15mm	-	Battery 2	661	1880	26.13	27.50	1.371	-0.03	0.624	0.855
	GSM1900	GPRS (4 Tx slots)	Back	15mm	-	Battery 3	661	1880	26.13	27.50	1.371	-0.07	0.623	0.854

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II	RMC 12.2Kbps	Front	15mm	-	Battery 1	9400	1880	23.99	25.00	1.262	-0.02	0.316	0.399
	WCDMA II	RMC 12.2Kbps	Back	15mm	-	Battery 1	9400	1880	23.99	25.00	1.262	0.02	0.932	1.176
	WCDMA II	RMC 12.2Kbps	Back	15mm	-	Battery 1	9262	1852.4	23.78	25.00	1.324	0	0.898	1.189
36	WCDMA II	RMC 12.2Kbps	Back	15mm	-	Battery 1	9538	1907.6	23.98	25.00	1.265	-0.07	0.946	1.196
	WCDMA II	RMC 12.2Kbps	Front	0mm	Rigid Holster	Battery 1	9400	1880	23.99	25.00	1.262	0.01	0.744	0.939
	WCDMA II	RMC 12.2Kbps	Front	0mm	Rigid Holster	Battery 1	9262	1852.4	23.78	25.00	1.324	-0.04	0.689	0.912
	WCDMA II	RMC 12.2Kbps	Front	0mm	Rigid Holster	Battery 1	9538	1907.6	23.98	25.00	1.265	-0.06	0.761	0.962
	WCDMA II	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	9400	1880	23.99	25.00	1.262	-0.11	0.899	1.134
	WCDMA II	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	9262	1852.4	23.78	25.00	1.324	0.12	0.862	1.142
	WCDMA II	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	9538	1907.6	23.98	25.00	1.265	-0.02	0.916	1.158
	WCDMA II	RMC 12.2Kbps	Back	15mm	-	Battery 2	9538	1907.6	23.98	25.00	1.265	0.02	0.940	1.189
	WCDMA II	RMC 12.2Kbps	Back	15mm	-	Battery 3	9538	1907.6	23.98	25.00	1.265	-0.06	0.918	1.161
	WCDMA IV	RMC 12.2Kbps	Front	15mm	-	Battery 1	1413	1732.6	23.76	25.00	1.330	-0.02	0.182	0.242
	WCDMA IV	RMC 12.2Kbps	Back	15mm	-	Battery 1	1413	1732.6	23.76	25.00	1.330	0	0.769	1.023
	WCDMA IV	RMC 12.2Kbps	Back	15mm	-	Battery 1	1312	1712.4	23.60	25.00	1.380	0.01	0.727	1.004
37	WCDMA IV	RMC 12.2Kbps	Back	15mm	-	Battery 1	1513	1752.6	23.67	25.00	1.358	0.03	0.771	1.047
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Rigid Holster	Battery 1	1413	1732.6	23.76	25.00	1.330	-0.04	0.435	0.579
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	1413	1732.6	23.76	25.00	1.330	-0.04	0.605	0.805
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	1312	1712.4	23.60	25.00	1.380	0.03	0.584	0.806
	WCDMA IV	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	1513	1752.6	23.67	25.00	1.358	0.05	0.622	0.845
	WCDMA IV	RMC 12.2Kbps	Back	15mm	-	Battery 2	1513	1752.6	23.67	25.00	1.358	0.02	0.763	1.036
	WCDMA IV	RMC 12.2Kbps	Back	15mm	-	Battery 3	1513	1752.6	23.67	25.00	1.358	0.01	0.750	1.019
	WCDMA V	RMC 12.2Kbps	Front	15mm	-	Battery 1	4233	846.6	23.99	25.00	1.262	0.11	0.181	0.228
	WCDMA V	RMC 12.2Kbps	Back	15mm	-	Battery 1	4233	846.6	23.99	25.00	1.262	-0.13	0.359	0.453
	WCDMA V	RMC 12.2Kbps	Front	0mm	Rigid Holster	Battery 1	4233	846.6	23.99	25.00	1.262	0.04	0.223	0.281
	WCDMA V	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	4233	846.6	23.99	25.00	1.262	0.01	0.478	0.603
	WCDMA V	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	4132	826.4	23.85	25.00	1.303	0.06	0.431	0.562
38	WCDMA V	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 1	4182	836.4	23.95	25.00	1.274	-0.12	0.493	0.628
	WCDMA V	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 2	4182	836.4	23.95	25.00	1.274	0.17	0.481	0.613
	WCDMA V	RMC 12.2Kbps	Front	0mm	Soft Holster	Battery 3	4182	836.4	23.95	25.00	1.274	0.05	0.478	0.609



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7	20M	QPSK	1	0	Front	15mm	-	Battery 1	20850	2510	23.63	24.50	1.222	-0.07	0.179	0.219
	LTE Band 7	20M	QPSK	50	0	Front	15mm	-	Battery 1	20850	2510	22.91	23.50	1.146	-0.02	0.144	0.165
	LTE Band 7	20M	QPSK	1	0	Back	15mm	-	Battery 1	20850	2510	23.63	24.50	1.222	0	0.340	0.415
	LTE Band 7	20M	QPSK	50	0	Back	15mm	-	Battery 1	20850	2510	22.91	23.50	1.146	0.05	0.291	0.333
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	20850	2510	23.63	24.50	1.222	-0.06	0.332	0.406
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	20850	2510	23.63	24.50	1.222	-0.1	0.500	0.611
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	21100	2535	23.61	24.50	1.227	-0.1	0.517	0.635
39	LTE Band 7	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	21350	2560	23.48	24.50	1.265	0	0.503	0.636
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 2	21350	2560	23.48	24.50	1.265	-0.01	0.427	0.540
	LTE Band 7	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 3	21350	2560	23.48	24.50	1.265	-0.04	0.433	0.548
	LTE Band 12	10M	QPSK	1	0	Front	15mm	-	Battery 1	23095	707.5	24.47	25.00	1.130	-0.01	0.230	0.260
	LTE Band 12	10M	QPSK	25	0	Front	15mm	-	Battery 1	23095	707.5	23.37	24.00	1.156	0.03	0.194	0.224
40	LTE Band 12	10M	QPSK	1	0	Back	15mm	-	Battery 1	23095	707.5	24.47	25.00	1.130	-0.07	0.393	0.444
	LTE Band 12	10M	QPSK	25	0	Back	15mm	-	Battery 1	23095	707.5	23.37	24.00	1.156	-0.03	0.354	0.409
	LTE Band 12	10M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	23095	707.5	24.47	25.00	1.130	0	0.230	0.260
	LTE Band 12	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	23095	707.5	24.47	25.00	1.130	-0.17	0.289	0.327
	LTE Band 12	10M	QPSK	1	0	Back	15mm		Battery 2	23095	707.5	24.47	25.00	1.130	-0.03	0.371	0.419
	LTE Band 12	10M	QPSK	1	0	Back	15mm		Battery 3	23095	707.5	24.47	25.00	1.130	-0.14	0.351	0.397
	LTE Band 13	10M	QPSK	1	0	Front	15mm	-	Battery 1	23230	782	24.05	24.50	1.109	-0.04	0.238	0.264
	LTE Band 13	10M	QPSK	25	0	Front	15mm	-	Battery 1	23230	782	22.86	23.50	1.159	0	0.198	0.229
	LTE Band 13	10M	QPSK	1	0	Back	15mm	-	Battery 1	23230	782	24.05	24.50	1.109	0.03	0.377	0.418
	LTE Band 13	10M	QPSK	25	0	Back	15mm	-	Battery 1	23230	782	22.86	23.50	1.159	0.04	0.315	0.365
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	23230	782	24.05	24.50	1.109	-0.01	0.264	0.293
41	LTE Band 13	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	23230	782	24.05	24.50	1.109	-0.06	0.395	0.438
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 2	23230	782	24.05	24.50	1.109	-0.04	0.394	0.437
	LTE Band 13	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 3	23230	782	24.05	24.50	1.109	-0.07	0.377	0.418
	LTE Band 14	10M	QPSK	1	0	Front	15mm	-	Battery 1	23330	793	24.01	24.50	1.119	-0.05	0.238	0.266
	LTE Band 14	10M	QPSK	25	0	Front	15mm	-	Battery 1	23330	793	22.98	23.50	1.127	-0.03	0.198	0.223
	LTE Band 14	10M	QPSK	1	0	Back	15mm	-	Battery 1	23330	793	24.01	24.50	1.119	0.04	0.369	0.413
	LTE Band 14	10M	QPSK	25	0	Back	15mm	-	Battery 1	23330	793	22.98	23.50	1.127	0.04	0.308	0.347
	LTE Band 14	10M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	23330	793	24.01	24.50	1.119	-0.04	0.262	0.293
42	LTE Band 14	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	23330	793	24.01	24.50	1.119	-0.16	0.500	0.560
	LTE Band 14	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 2	23330	793	24.01	24.50	1.119	-0.05	0.432	0.484
	LTE Band 14	10M	QPSK	1	0	Front	0mm	Soft Holster	Battery 3	23330	793	24.01	24.50	1.119	-0.08	0.421	0.471



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 25	20M	QPSK	1	0	Front	15mm	-	Battery 1	26340	1880	24.59	25.50	1.233	-0.08	0.351	0.433
	LTE Band 25	20M	QPSK	50	0	Front	15mm	-	Battery 1	26340	1880	23.58	24.50	1.236	-0.16	0.276	0.341
43	LTE Band 25	20M	QPSK	1	0	Back	15mm	-	Battery 1	26340	1880	24.59	25.50	1.233	-0.04	0.965	1.190
	LTE Band 25	20M	QPSK	1	0	Back	15mm	-	Battery 1	26140	1860	24.56	25.50	1.242	-0.02	0.867	1.077
	LTE Band 25	20M	QPSK	1	0	Back	15mm	-	Battery 1	26590	1905	24.46	25.50	1.271	0.02	0.870	1.105
	LTE Band 25	20M	QPSK	50	0	Back	15mm	-	Battery 1	26340	1880	23.58	24.50	1.236	-0.04	0.837	1.034
	LTE Band 25	20M	QPSK	50	0	Back	15mm	-	Battery 1	26140	1860	23.53	24.50	1.250	0.01	0.720	0.900
	LTE Band 25	20M	QPSK	50	0	Back	15mm	-	Battery 1	26590	1905	23.51	24.50	1.256	0.04	0.716	0.899
	LTE Band 25	20M	QPSK	100	0	Back	15mm	-	Battery 1	26340	1880	23.52	24.50	1.253	0.02	0.773	0.969
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	26340	1880	24.59	25.50	1.233	0.06	0.702	0.866
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	26140	1860	24.56	25.50	1.242	0	0.642	0.797
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	26590	1905	24.46	25.50	1.271	-0.05	0.639	0.812
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	26340	1880	24.59	25.50	1.233	0.02	0.902	1.112
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	26140	1860	24.56	25.50	1.242	0.11	0.851	1.057
	LTE Band 25	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	26590	1905	24.46	25.50	1.271	0.07	0.844	1.072
	LTE Band 25	20M	QPSK	1	0	Back	15mm	-	Battery 2	26340	1880	24.59	25.50	1.233	0.07	0.951	1.173
	LTE Band 25	20M	QPSK	1	0	Back	15mm	-	Battery 3	26340	1880	24.59	25.50	1.233	-0.06	0.929	1.146
	LTE Band 26	15M	QPSK	1	0	Front	15mm	-	Battery 1	26865	831.5	23.70	24.50	1.202	0.02	0.176	0.212
	LTE Band 26	15M	QPSK	36	0	Front	15mm	-	Battery 1	26865	831.5	22.60	23.50	1.230	0.04	0.133	0.164
	LTE Band 26	15M	QPSK	1	0	Back	15mm	-	Battery 1	26865	831.5	23.70	24.50	1.202	0.01	0.313	0.376
	LTE Band 26	15M	QPSK	36	0	Back	15mm	-	Battery 1	26865	831.5	22.60	23.50	1.230	-0.01	0.238	0.293
	LTE Band 26	15M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	26865	831.5	23.70	24.50	1.202	-0.05	0.171	0.206
44	LTE Band 26	15M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	26865	831.5	23.70	24.50	1.202	-0.02	0.418	0.503
	LTE Band 26	15M	QPSK	1	0	Front	0mm	Soft Holster	Battery 2	26865	831.5	23.70	24.50	1.202	-0.01	0.408	0.491
	LTE Band 26	15M	QPSK	1	0	Front	0mm	Soft Holster	Battery 3	26865	831.5	23.70	24.50	1.202	0.04	0.393	0.472
	LTE Band 66	20M	QPSK	1	0	Front	15mm	-	Battery 1	132322	1745	24.35	25.50	1.303	0.05	0.212	0.276
	LTE Band 66	20M	QPSK	50	0	Front	15mm	-	Battery 1	132322	1745	23.38	24.50	1.294	0.06	0.171	0.221
45	LTE Band 66	20M	QPSK	1	0	Back	15mm	-	Battery 1	132322	1745	24.35	25.50	1.303	-0.1	0.851	1.109
	LTE Band 66	20M	QPSK	1	0	Back	15mm	-	Battery 1	132072	1720	24.21	25.50	1.346	-0.06	0.764	1.028
	LTE Band 66	20M	QPSK	1	0	Back	15mm	-	Battery 1	132572	1770	24.34	25.50	1.306	-0.06	0.829	1.083
	LTE Band 66	20M	QPSK	50	0	Back	15mm	-	Battery 1	132322	1745	23.38	24.50	1.294	-0.11	0.678	0.877
	LTE Band 66	20M	QPSK	50	0	Back	15mm	-	Battery 1	132072	1720	23.11	24.50	1.377	-0.07	0.621	0.855
	LTE Band 66	20M	QPSK	50	0	Back	15mm	-	Battery 1	132572	1770	23.29	24.50	1.321	-0.04	0.673	0.889
	LTE Band 66	20M	QPSK	100	0	Back	15mm	-	Battery 1	132322	1745	23.27	24.50	1.327	-0.06	0.680	0.903
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	132322	1745	24.35	25.50	1.303	0.07	0.452	0.589
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	132322	1745	24.35	25.50	1.303	-0.01	0.747	0.973
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	132072	1720	24.21	25.50	1.346	0.03	0.686	0.923
	LTE Band 66	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	132572	1770	24.34	25.50	1.306	-0.17	0.705	0.921
	LTE Band 66	20M	QPSK	1	0	Back	15mm	-	Battery 2	132322	1745	24.35	25.50	1.303	-0.06	0.832	1.084
	LTE Band 66	20M	QPSK	1	0	Back	15mm	-	Battery 3	132322	1745	24.35	25.50	1.303	-0.08	0.810	1.056



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41	20M	QPSK	1	0	Front	15mm	-	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.07	0.177	0.178
	LTE Band 41	20M	QPSK	50	0	Front	15mm	-	Battery 1	41490	2680	22.67	24.00	1.358	62.90	1.006	0.02	0.094	0.128
	LTE Band 41	20M	QPSK	1	0	Back	15mm	-	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.04	0.265	0.267
	LTE Band 41	20M	QPSK	50	0	Back	15mm	-	Battery 1	41490	2680	22.67	24.00	1.358	62.90	1.006	0.03	0.143	0.195
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Rigid Holster	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.13	0.224	0.226
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	41490	2680	24.99	25.00	1.002	62.90	1.006	-0.04	0.457	0.461
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	39750	2506	23.56	25.00	1.393	62.90	1.006	0	0.302	0.423
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	40185	2549.5	23.57	25.00	1.390	62.90	1.006	-0.03	0.353	0.494
46	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	40620	2593	23.56	25.00	1.393	62.90	1.006	-0.01	0.357	0.500
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 1	41055	2636.5	23.56	25.00	1.393	62.90	1.006	0	0.324	0.454
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 2	40620	2593	23.56	25.00	1.393	62.90	1.006	0.06	0.311	0.436
	LTE Band 41	20M	QPSK	1	0	Front	0mm	Soft Holster	Battery 3	40620	2593	23.56	25.00	1.393	62.90	1.006	-0.01	0.297	0.416

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	SISO Ant 1	-	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.08	0.042	0.046
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 1	-	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.04	0.225	0.248
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	SISO Ant 1	Rigid Holster	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	-0.01	0.044	0.049
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	SISO Ant 1	Soft Holster	Battery 1	6	2437	22.63	23.00	1.089	98.59	1.014	0.03	0.040	0.044
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	SISO Ant 2	-	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	0	0.148	0.155
47	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	0.01	0.280	0.294
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 1	1	2412	14.81	15.00	1.045	98.59	1.014	0.13	0.121	0.128
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 1	2	2417	22.34	22.50	1.038	98.59	1.014	0.09	0.245	0.258
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 1	10	2457	22.72	23.00	1.067	98.59	1.014	-0.14	0.269	0.291
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 1	11	2462	21.71	22.00	1.069	98.59	1.014	-0.05	0.231	0.250
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	SISO Ant 2	Rigid Holster	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.01	0.181	0.190
	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	SISO Ant 2	Soft Holster	Battery 1	6	2437	22.85	23.00	1.035	98.59	1.014	-0.04	0.256	0.269
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 2	6	2437	22.85	23.00	1.035	98.59	1.014	0.01	0.265	0.278
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	SISO Ant 2	-	Battery 3	6	2437	22.85	23.00	1.035	98.59	1.014	0.16	0.259	0.272
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	SISO Ant 1	-	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	0.02	0.011	0.014
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	SISO Ant 1	-	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	0.1	0.244	0.307
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	SISO Ant 1	Rigid Holster	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	0.02	0.005	0.006
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	SISO Ant 1	Soft Holster	Battery 1	54	5270	20.12	20.50	1.093	86.99	1.150	-0.07	0.005	0.007
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	SISO Ant 2	-	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	-0.02	0.029	0.037
48	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	SISO Ant 2	-	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	0.03	0.449	0.568
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	SISO Ant 2	-	Battery 1	62	5310	14.82	15.00	1.043	85.60	1.168	-0.15	0.164	0.200
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	SISO Ant 2	Rigid Holster	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	-0.04	0.029	0.037
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	SISO Ant 2	Soft Holster	Battery 1	54	5270	20.16	20.50	1.083	85.60	1.168	0.04	0.029	0.037
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	SISO Ant 2	-	Battery 2	54	5270	20.16	20.50	1.083	85.60	1.168	0.11	0.439	0.555
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	SISO Ant 2	-	Battery 3	54	5270	20.16	20.50	1.083	85.60	1.168	-0.14	0.422	0.534



Plot No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Holster	Battery	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	SISO Ant 1	-	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.03	0.030	0.038
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 1	-	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.08	0.148	0.188
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 1	Rigid Holster	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	0.03	0.004	0.005
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 1	Soft Holster	Battery 1	138	5690	20.14	20.50	1.087	85.71	1.167	-0.01	0.004	0.005
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	SISO Ant 2	-	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	-0.07	0.030	0.038
49	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 2	-	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	0.01	0.652	0.832
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 2	-	Battery 1	106	5530	14.92	15.00	1.019	85.71	1.167	-0.04	0.180	0.214
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 2	-	Battery 1	122	5610	20.09	20.50	1.099	85.71	1.167	-0.01	0.635	0.814
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 2	Rigid Holster	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	0.04	0.031	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 2	Soft Holster	Battery 1	138	5690	20.11	20.50	1.094	85.71	1.167	0.06	0.029	0.037
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 2	-	Battery 2	138	5690	20.11	20.50	1.094	85.71	1.167	0.12	0.641	0.818
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 2	-	Battery 3	138	5690	20.11	20.50	1.094	85.71	1.167	0.11	0.638	0.815
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	SISO Ant 1	-	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.11	0.031	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 1	-	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.18	0.185	0.236
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 1	Rigid Holster	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	0.16	0.007	0.009
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 1	Soft Holster	Battery 1	155	5775	20.11	20.50	1.094	85.71	1.167	-0.03	0.006	0.008
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	SISO Ant 2	-	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0.14	0.033	0.042
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	SISO Ant 2	-	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	-0.02	0.353	0.451
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 2	Rigid Holster	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	-0.03	0.033	0.042
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	SISO Ant 2	Soft Holster	Battery 1	155	5775	17.11	17.50	1.094	85.71	1.167	0.04	0.031	0.040
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	15mm	MIMO Ant 2	-	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	-0.1	0.033	0.041
50	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	MIMO Ant 2	-	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	0.08	0.567	0.704
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	MIMO Ant 2	Rigid Holster	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	0.14	0.045	0.056
	WLAN5GHz	802.11ac-VHT80 MCS0	Front	0mm	MIMO Ant 2	Soft Holster	Battery 1	155	5775	18.73	19.00	1.064	85.71	1.167	-0.19	0.039	0.048
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	MIMO Ant 2	-	Battery 2	155	5775	18.73	19.00	1.064	85.71	1.167	-0.09	0.553	0.687
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	15mm	MIMO Ant 2	-	Battery 3	155	5775	18.73	19.00	1.064	85.71	1.167	-0.07	0.560	0.695



14.4 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Transmit Antenna	Battery	Power Reduction	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	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	-	Battery 1	ON	9538	1907.6	20.62	21.00	1.091	-	-	0.12	1.250	-	1.364
2nd	WCDMA II	RMC 12.2Kbps	Bottom Side	10mm	-	Battery 1	ON	9538	1907.6	20.62	21.00	1.091	-	-	-0.02	1.170	1.07	1.277
1st	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	-	Battery 1	ON	1513	1752.6	21.24	22.00	1.191	-	-	-0.11	1.070	-	1.275
2nd	WCDMA IV	RMC 12.2Kbps	Bottom Side	10mm	-	Battery 1	ON	1513	1752.6	21.24	22.00	1.191	-	-	-0.14	1.050	1.02	1.251
1st	LTE Band 7	20M_QPSK_1_0	Bottom Side	10mm	-	Battery 1	OFF	20850	2510	23.63	24.50	1.222	-	-	-0.03	1.080	-	1.320
2nd	LTE Band 7	20M_QPSK_1_0	Bottom Side	10mm	-	Battery 1	OFF	20850	2510	23.63	24.50	1.222	-	-	-0.06	1.030	1.05	1.258
1st	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	-	6	2437	22.85	23.00	1.035	98.59	1.014	0.05	0.823	-	0.864
2nd	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	SISO Ant 2	Battery 1	-	6	2437	22.85	23.00	1.035	98.59	1.014	0.12	0.807	1.02	0.847
1st	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	MIMO Ant 2	Battery 1	-	155	5775	18.73	19.00	1.064	85.71	1.167	-0.02	1.010	-	1.254
2nd	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	MIMO Ant 2	Battery 1	-	155	5775	18.73	19.00	1.064	85.71	1.167	-0.02	0.995	1.02	1.236

General Note:

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

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Handset		
		Head	Body-worn	Hotspot
1.	2.4G MIMO(Ant 1+ Ant2)+WWAN	Yes	Yes	Yes
2.	2.4G(Ant 1)+5G(Ant 2)+WWAN	Yes	Yes	Yes
3.	BT(Ant 1)+5G(Ant 2)+WWAN	Yes	Yes	Yes
4.	5G MIMO(Ant 1+ Ant2)+WWAN	Yes	Yes	Yes

General Note:

1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
2. Transmit simultaneous configuration only limit as above table.
3. Due to the output power level at 5.8GHz WLAN ant 2 are different within SISO and MIMO transmit antenna, therefore:
 - a. For head and body-worn transmit simultaneous analysis is used worst case SAR from SISO and MIMO transmit antenna 2 to evaluate all SISO and MIMO operations
 - b. For Hotspot condition analysis will evaluate two different SISO transmit antenna 2 and MIMO transmit antenna 2 separately.
- c. The Scaled SAR summation is calculated based on the same configuration and test position.
- d. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
 - v) The SPLSR calculated results please refer to section 15.3
- e. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
 - i) $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})} / x] \text{ W/kg}$ for test separation distances $\leq 50 \text{ mm}$; where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
 - ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
 - iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Bluetooth Max Power	Exposure Position	Head	Hotspot	Body worn
	Test separation	0 mm	10 mm	15 mm
2.0 dBm	Estimated SAR (W/kg)	0.066 W/kg	0.033 W/kg	0.022 W/kg



15.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)					
GSM	GSM850	Right Cheek	0.530	0.210	0.369	0.343	0.198	0.066	1.109	1.071	0.938	0.794
		Right Tilted	0.186	0.113	0.352	0.250	0.238	0.066	0.651	0.674	0.537	0.490
		Left Cheek	0.225	0.144	0.569	0.260	0.157	0.066	0.938	0.642	0.526	0.448
		Left Tilted	0.165	0.104	0.608	0.235	0.147	0.066	0.877	0.547	0.416	0.378
	GSM1900	Right Cheek	0.221	0.210	0.369	0.343	0.198	0.066	0.800	0.762	0.629	0.485
		Right Tilted	0.133	0.113	0.352	0.250	0.238	0.066	0.598	0.621	0.484	0.437
		Left Cheek	0.537	0.144	0.569	0.260	0.157	0.066	1.250	0.954	0.838	0.760
		Left Tilted	0.100	0.104	0.608	0.235	0.147	0.066	0.812	0.482	0.351	0.313
WCDMA	WCDMA II	Right Cheek	0.275	0.210	0.369	0.343	0.198	0.066	0.854	0.816	0.683	0.539
		Right Tilted	0.198	0.113	0.352	0.250	0.238	0.066	0.663	0.686	0.549	0.502
		Left Cheek	0.593	0.144	0.569	0.260	0.157	0.066	1.306	1.010	0.894	0.816
		Left Tilted	0.174	0.104	0.608	0.235	0.147	0.066	0.886	0.556	0.425	0.387
	WCDMA IV	Right Cheek	0.259	0.210	0.369	0.343	0.198	0.066	0.838	0.800	0.667	0.523
		Right Tilted	0.218	0.113	0.352	0.250	0.238	0.066	0.683	0.706	0.569	0.522
		Left Cheek	0.464	0.144	0.569	0.260	0.157	0.066	1.177	0.881	0.765	0.687
		Left Tilted	0.152	0.104	0.608	0.235	0.147	0.066	0.864	0.534	0.403	0.365
	WCDMA V	Right Cheek	0.374	0.210	0.369	0.343	0.198	0.066	0.953	0.915	0.782	0.638
		Right Tilted	0.148	0.113	0.352	0.250	0.238	0.066	0.613	0.636	0.499	0.452
		Left Cheek	0.167	0.144	0.569	0.260	0.157	0.066	0.880	0.584	0.468	0.390
		Left Tilted	0.143	0.104	0.608	0.235	0.147	0.066	0.855	0.525	0.394	0.356



WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)					
LTE	LTE Band 7	Right Cheek	0.586	0.210	0.369	0.343	0.198	0.066	1.165	1.127	0.994	0.850
		Right Tilted	0.132	0.113	0.352	0.250	0.238	0.066	0.597	0.620	0.483	0.436
		Left Cheek	0.155	0.144	0.569	0.260	0.157	0.066	0.868	0.572	0.456	0.378
		Left Tilted	0.165	0.104	0.608	0.235	0.147	0.066	0.877	0.547	0.416	0.378
	LTE Band 12	Right Cheek	0.312	0.210	0.369	0.343	0.198	0.066	0.891	0.853	0.720	0.576
		Right Tilted	0.177	0.113	0.352	0.250	0.238	0.066	0.642	0.665	0.528	0.481
		Left Cheek	0.225	0.144	0.569	0.260	0.157	0.066	0.938	0.642	0.526	0.448
		Left Tilted	0.153	0.104	0.608	0.235	0.147	0.066	0.865	0.535	0.404	0.366
	LTE Band 13	Right Cheek	0.308	0.210	0.369	0.343	0.198	0.066	0.887	0.849	0.716	0.572
		Right Tilted	0.176	0.113	0.352	0.250	0.238	0.066	0.641	0.664	0.527	0.480
		Left Cheek	0.187	0.144	0.569	0.260	0.157	0.066	0.900	0.604	0.488	0.410
		Left Tilted	0.145	0.104	0.608	0.235	0.147	0.066	0.857	0.527	0.396	0.358
	LTE Band 14	Right Cheek	0.328	0.210	0.369	0.343	0.198	0.066	0.907	0.869	0.736	0.592
		Right Tilted	0.180	0.113	0.352	0.250	0.238	0.066	0.645	0.668	0.531	0.484
		Left Cheek	0.192	0.144	0.569	0.260	0.157	0.066	0.905	0.609	0.493	0.415
		Left Tilted	0.151	0.104	0.608	0.235	0.147	0.066	0.863	0.533	0.402	0.364
	LTE Band 25	Right Cheek	0.360	0.210	0.369	0.343	0.198	0.066	0.939	0.901	0.768	0.624
		Right Tilted	0.221	0.113	0.352	0.250	0.238	0.066	0.686	0.709	0.572	0.525
		Left Cheek	0.556	0.144	0.569	0.260	0.157	0.066	1.269	0.973	0.857	0.779
		Left Tilted	0.138	0.104	0.608	0.235	0.147	0.066	0.850	0.520	0.389	0.351
	LTE Band 26	Right Cheek	0.239	0.210	0.369	0.343	0.198	0.066	0.818	0.780	0.647	0.503
		Right Tilted	0.119	0.113	0.352	0.250	0.238	0.066	0.584	0.607	0.470	0.423
		Left Cheek	0.133	0.144	0.569	0.260	0.157	0.066	0.846	0.550	0.434	0.356
		Left Tilted	0.118	0.104	0.608	0.235	0.147	0.066	0.830	0.500	0.369	0.331
	LTE Band 41	Right Cheek	0.477	0.210	0.369	0.343	0.198	0.066	1.056	1.018	0.885	0.741
		Right Tilted	0.127	0.113	0.352	0.250	0.238	0.066	0.592	0.615	0.478	0.431
		Left Cheek	0.094	0.144	0.569	0.260	0.157	0.066	0.807	0.511	0.395	0.317
		Left Tilted	0.083	0.104	0.608	0.235	0.147	0.066	0.795	0.465	0.334	0.296
	LTE Band 66	Right Cheek	0.186	0.210	0.369	0.343	0.198	0.066	0.765	0.727	0.594	0.450
		Right Tilted	0.173	0.113	0.352	0.250	0.238	0.066	0.638	0.661	0.524	0.477
		Left Cheek	0.418	0.144	0.569	0.260	0.157	0.066	1.131	0.835	0.719	0.641
		Left Tilted	0.113	0.104	0.608	0.235	0.147	0.066	0.825	0.495	0.364	0.326



15.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+2+3 Summed 1g SAR (W/kg)	1+4+6 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+7 Summed 1g SAR (W/kg)	SPLSR	Case No	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN SISO Ant 2	5GHz WLAN MIMO Ant 2	Bluetooth Ant 1							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)							
GSM	GSM850	Front	0.351	0.056	0.204	0.101	0.051	0.049	0.033	0.611	0.501	0.458	0.435		
		Back	0.576	0.636	0.487	0.572	1.062	1.254	0.033	1.699	2.402	2.274	1.671	0.04	Case 1
		Left side	0.171	0.653		0.711				0.033	0.824	0.882	0.824	0.204	
		Right side	0.516		0.864		0.676	0.830	0.033	1.380	1.346	1.192	1.225		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	0.850						0.033	0.850	0.850	0.850	0.883		
	GSM1900	Front	0.280	0.056	0.204	0.101	0.051	0.049	0.033	0.540	0.430	0.387	0.364		
		Back	0.700	0.636	0.487	0.572	1.062	1.254	0.033	1.823	2.526	2.398	1.795	0.04	Case 2
		Left side	0.124	0.653		0.711				0.033	0.777	0.835	0.777	0.157	
		Right side	0.079		0.864		0.676	0.830	0.033	0.943	0.909	0.755	0.788		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	1.236						0.033	1.236	1.236	1.236	1.269		
WCDMA	WCDMA II	Front	0.271	0.056	0.204	0.101	0.051	0.049	0.033	0.531	0.421	0.378	0.355		
		Back	0.867	0.636	0.487	0.572	1.062	1.254	0.033	1.990	2.693	2.565	1.962	0.04	Case 3
		Left side	0.129	0.653		0.711				0.033	0.782	0.840	0.782	0.162	
		Right side	0.062		0.864		0.676	0.830	0.033	0.926	0.892	0.738	0.771		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	1.364						0.033	1.364	1.364	1.364	1.397		
	WCDMA IV	Front	0.227	0.056	0.204	0.101	0.051	0.049	0.033	0.487	0.377	0.334	0.311		
		Back	0.960	0.636	0.487	0.572	1.062	1.254	0.033	2.083	2.786	2.658	2.055	0.04	Case 4
		Left side	0.151	0.653		0.711				0.033	0.804	0.862	0.804	0.184	
		Right side	0.064		0.864		0.676	0.830	0.033	0.928	0.894	0.740	0.773		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	1.275						0.033	1.275	1.275	1.275	1.308		
	WCDMA V	Front	0.376	0.056	0.204	0.101	0.051	0.049	0.033	0.636	0.526	0.483	0.460		
		Back	0.571	0.636	0.487	0.572	1.062	1.254	0.033	1.694	2.397	2.269	1.666	0.04	Case 5
		Left side	0.182	0.653		0.711				0.033	0.835	0.893	0.835	0.215	
		Right side	0.516		0.864		0.676	0.830	0.033	1.380	1.346	1.192	1.225		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	0.544						0.033	0.544	0.544	0.544	0.577		



WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+2+3 Summed 1g SAR (W/kg)	1+4+6 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+7 Summed 1g SAR (W/kg)	SPLSR	Case No	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN SISO Ant 2	5GHz WLAN MIMO Ant 2	Bluetooth Ant 1							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)							
LTE	LTE Band 7	Front	0.414	0.056	0.204	0.101	0.051	0.049	0.033	0.674	0.564	0.521	0.498		
		Back	0.522	0.636	0.487	0.572	1.062	1.254	0.033	1.645	2.348	2.220	1.617	0.04	Case 6
		Left side	0.123	0.653		0.711			0.033	0.776	0.834	0.776	0.156		
		Right side	0.560		0.864		0.676	0.830	0.033	1.424	1.390	1.236	1.269		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	1.320						0.033	1.320	1.320	1.320	1.353		
	LTE Band 12	Front	0.284	0.056	0.204	0.101	0.051	0.049	0.033	0.544	0.434	0.391	0.368		
		Back	0.589	0.636	0.487	0.572	1.062	1.254	0.033	1.712	2.415	2.287	1.684	0.04	Case 7
		Left side	0.287	0.653		0.711			0.033	0.940	0.998	0.940	0.320		
		Right side	0.460		0.864		0.676	0.830	0.033	1.324	1.290	1.136	1.169		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	0.279						0.033	0.279	0.279	0.279	0.312		
	LTE Band 13	Front	0.331	0.056	0.204	0.101	0.051	0.049	0.033	0.591	0.481	0.438	0.415		
		Back	0.541	0.636	0.487	0.572	1.062	1.254	0.033	1.664	2.367	2.239	1.636	0.04	Case 8
		Left side	0.252	0.653		0.711			0.033	0.905	0.963	0.905	0.285		
		Right side	0.550		0.864		0.676	0.830	0.033	1.414	1.380	1.226	1.259		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	0.425						0.033	0.425	0.425	0.425	0.458		
	LTE Band 14	Front	0.334	0.056	0.204	0.101	0.051	0.049	0.033	0.594	0.484	0.441	0.418		
		Back	0.540	0.636	0.487	0.572	1.062	1.254	0.033	1.663	2.366	2.238	1.635	0.04	Case 9
		Left side	0.246	0.653		0.711			0.033	0.899	0.957	0.899	0.279		
		Right side	0.568		0.864		0.676	0.830	0.033	1.432	1.398	1.244	1.277		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	0.441						0.033	0.441	0.441	0.441	0.474		
	LTE Band 25	Front	0.269	0.056	0.204	0.101	0.051	0.049	0.033	0.529	0.419	0.376	0.353		
		Back	0.909	0.636	0.487	0.572	1.062	1.254	0.033	2.032	2.735	2.607	2.004	0.04	Case 10
		Left side	0.122	0.653		0.711			0.033	0.775	0.833	0.775	0.155		
		Right side	0.069		0.864		0.676	0.830	0.033	0.933	0.899	0.745	0.778		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	1.389						0.033	1.389	1.389	1.389	1.422		
	LTE Band 26	Front	0.283	0.056	0.204	0.101	0.051	0.049	0.033	0.543	0.433	0.390	0.367		
		Back	0.456	0.636	0.487	0.572	1.062	1.254	0.033	1.579	2.282	2.154	1.551	0.04	Case 11
		Left side	0.214	0.653		0.711			0.033	0.867	0.925	0.867	0.247		
		Right side	0.482		0.864		0.676	0.830	0.033	1.346	1.312	1.158	1.191		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	0.400						0.033	0.400	0.400	0.400	0.433		
	LTE Band 41	Front	0.308	0.056	0.204	0.101	0.051	0.049	0.033	0.568	0.458	0.415	0.392		
		Back	0.451	0.636	0.487	0.572	1.062	1.254	0.033	1.574	2.277	2.149	1.546	0.04	Case 12
		Left side	0.088	0.653		0.711			0.033	0.741	0.799	0.741	0.121		
		Right side	0.389		0.864		0.676	0.830	0.033	1.253	1.219	1.065	1.098		
		Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722		
		Bottom side	1.074						0.033	1.074	1.074	1.074	1.107		
LTE Band 66	Front	0.230	0.056	0.204	0.101	0.051	0.049	0.033	0.490	0.380	0.337	0.314			
	Back	1.009	0.636	0.487	0.572	1.062	1.254	0.033	2.132	2.835	2.707	2.104	0.04	Case 13	
	Left side	0.184	0.653		0.711			0.033	0.837	0.895	0.837	0.217			
	Right side	0.068		0.864		0.676	0.830	0.033	0.932	0.898	0.744	0.777			
	Top side		0.092	0.536	0.152	0.689	0.908	0.033	0.628	1.060	0.781	0.722			
	Bottom side	1.254						0.033	1.254	1.254	1.254	1.287			



15.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	SPLSR	Case No		
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)								
GSM	GSM850	Front	0.309	0.046	0.155	0.040	0.042	0.022	0.510	0.391	0.397	0.373			
		Back	0.653	0.248	0.294	0.307	0.832	0.022	1.195	1.792	1.733	1.507	0.02	Case 14	
		Front with Rigid Holster	0.344	0.049	0.190	0.009	0.056	0.066	0.066	0.583	0.409	0.449	0.466		
		Front with Soft Holster	0.966	0.044	0.269	0.008	0.048	0.066	0.066	1.279	1.022	1.058	1.080		
	GSM1900	Front	0.325	0.046	0.155	0.040	0.042	0.022	0.022	0.526	0.407	0.413	0.389		
		Back	0.898	0.248	0.294	0.307	0.832	0.022	0.022	1.440	2.037	1.978	1.752	0.02	Case 15
		Front with Soft Holster	0.765	0.044	0.269	0.008	0.048	0.066	0.066	1.078	0.821	0.857	0.879		
WCDMA	WCDMA II	Front	0.399	0.046	0.155	0.040	0.042	0.022	0.600	0.481	0.487	0.463			
		Back	1.196	0.248	0.294	0.307	0.832	0.022	0.022	1.738	2.335	2.276	2.050	0.02	Case 16
		Front with Rigid Holster	0.962	0.049	0.190	0.009	0.056	0.066	0.066	1.201	1.027	1.067	1.084		
		Front with Soft Holster	1.158	0.044	0.269	0.008	0.048	0.066	0.066	1.471	1.214	1.250	1.272		
	WCDMA IV	Front	0.242	0.046	0.155	0.040	0.042	0.022	0.022	0.443	0.324	0.330	0.306		
		Back	1.047	0.248	0.294	0.307	0.832	0.022	0.022	1.589	2.186	2.127	1.901	0.02	Case 17
		Front with Soft Holster	0.845	0.044	0.269	0.008	0.048	0.066	0.066	1.158	0.901	0.937	0.959		
	WCDMA V	Front	0.228	0.046	0.155	0.040	0.042	0.022	0.022	0.429	0.310	0.316	0.292		
		Back	0.453	0.248	0.294	0.307	0.832	0.022	0.022	0.995	1.592	1.533	1.307		
		Front with Rigid Holster	0.281	0.049	0.190	0.009	0.056	0.066	0.066	0.520	0.346	0.386	0.403		
		Front with Soft Holster	0.628	0.044	0.269	0.008	0.048	0.066	0.066	0.941	0.684	0.720	0.742		



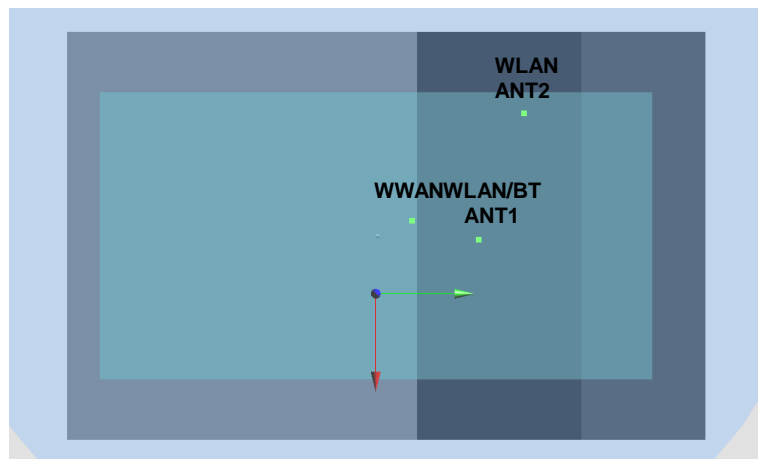
WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)	1+5+6 Summed 1g SAR (W/kg)	SPLSR	Case No		
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 1								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)								
LTE	LTE Band 7	Front	0.219	0.046	0.155	0.040	0.042	0.022	0.420	0.301	0.307	0.283			
		Back	0.415	0.248	0.294	0.307	0.832	0.022	0.957	1.554	1.495	1.269			
		Front with Rigid Holster	0.406	0.049	0.190	0.009	0.056	0.066	0.066	0.645	0.471	0.511	0.528		
		Front with Soft Holster	0.636	0.044	0.269	0.008	0.048	0.066	0.066	0.949	0.692	0.728	0.750		
	LTE Band 12	Front	0.260	0.046	0.155	0.040	0.042	0.022	0.461	0.342	0.348	0.324			
		Back	0.444	0.248	0.294	0.307	0.832	0.022	0.986	1.583	1.524	1.298			
		Front with Rigid Holster	0.260	0.049	0.190	0.009	0.056	0.066	0.066	0.499	0.325	0.365	0.382		
		Front with Soft Holster	0.327	0.044	0.269	0.008	0.048	0.066	0.066	0.640	0.383	0.419	0.441		
	LTE Band 13	Front	0.264	0.046	0.155	0.040	0.042	0.022	0.465	0.346	0.352	0.328			
		Back	0.418	0.248	0.294	0.307	0.832	0.022	0.960	1.557	1.498	1.272			
		Front with Rigid Holster	0.293	0.049	0.190	0.009	0.056	0.066	0.066	0.532	0.358	0.398	0.415		
		Front with Soft Holster	0.438	0.044	0.269	0.008	0.048	0.066	0.066	0.751	0.494	0.530	0.552		
	LTE Band 14	Front	0.266	0.046	0.155	0.040	0.042	0.022	0.467	0.348	0.354	0.330			
		Back	0.413	0.248	0.294	0.307	0.832	0.022	0.955	1.552	1.493	1.267			
		Front with Rigid Holster	0.293	0.049	0.190	0.009	0.056	0.066	0.066	0.532	0.358	0.398	0.415		
		Front with Soft Holster	0.560	0.044	0.269	0.008	0.048	0.066	0.066	0.873	0.616	0.652	0.674		
	LTE Band 25	Front	0.433	0.046	0.155	0.040	0.042	0.022	0.634	0.515	0.521	0.497			
		Back	1.190	0.248	0.294	0.307	0.832	0.022	1.732	2.329	2.270	2.044	0.02	Case 18	
		Front with Rigid Holster	0.866	0.049	0.190	0.009	0.056	0.066	0.066	1.105	0.931	0.971	0.988		
		Front with Soft Holster	1.112	0.044	0.269	0.008	0.048	0.066	0.066	1.425	1.168	1.204	1.226		
	LTE Band 26	Front	0.212	0.046	0.155	0.040	0.042	0.022	0.413	0.294	0.300	0.276			
		Back	0.376	0.248	0.294	0.307	0.832	0.022	0.918	1.515	1.456	1.230			
		Front with Rigid Holster	0.206	0.049	0.190	0.009	0.056	0.066	0.066	0.445	0.271	0.311	0.328		
		Front with Soft Holster	0.503	0.044	0.269	0.008	0.048	0.066	0.066	0.816	0.559	0.595	0.617		
LTE Band 41	Front	0.178	0.046	0.155	0.040	0.042	0.022	0.379	0.260	0.266	0.242				
	Back	0.267	0.248	0.294	0.307	0.832	0.022	0.809	1.406	1.347	1.121				
	Front with Rigid Holster	0.226	0.049	0.190	0.009	0.056	0.066	0.066	0.465	0.291	0.331	0.348			
	Front with Soft Holster	0.500	0.044	0.269	0.008	0.048	0.066	0.066	0.813	0.556	0.592	0.614			
LTE Band 66	Front	0.276	0.046	0.155	0.040	0.042	0.022	0.477	0.358	0.364	0.340				
	Back	1.109	0.248	0.294	0.307	0.832	0.022	1.651	2.248	2.189	1.963	0.02	Case 19		
	Front with Rigid Holster	0.589	0.049	0.190	0.009	0.056	0.066	0.066	0.828	0.654	0.694	0.711			
	Front with Soft Holster	0.973	0.044	0.269	0.008	0.048	0.066	0.066	1.286	1.029	1.065	1.087			

15.4 SPLSR Evaluation and Analysis

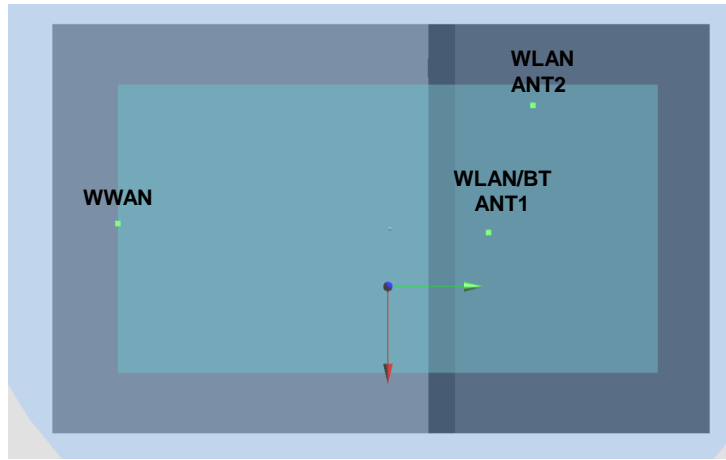
General Note:

1. $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. \text{ separation distance, mm})$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary
2. The configuration of 2.4GHz Ant 1 + 5GHz Ant 2 in hotspot mode is used SISO mode worse reported SAR to evaluate SPLSR analysis, otherwise the worst 5GHz SAR is evaluated for others configuration.

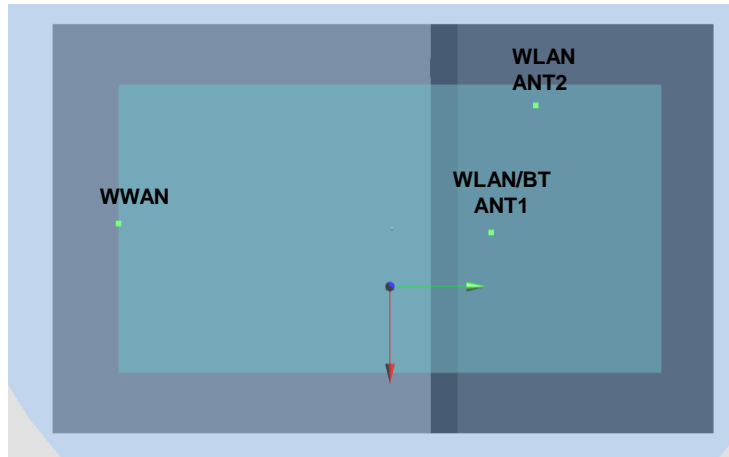
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 1	GSM850	Back	0.576	10	-6.1	1.1	-1.69	30.4	1.21	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	GSM850	Back	0.576	10	-6.1	1.1	-1.69	45.8	1.06	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	GSM850	Back	0.576	10	-6.1	1.1	-1.69	55.8	1.15	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	GSM850	Back	0.576	10	-6.1	1.1	-1.69	77.1	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	GSM850	Back	0.576	10	-6.1	1.1	-1.69	30.4	0.61	0.02	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



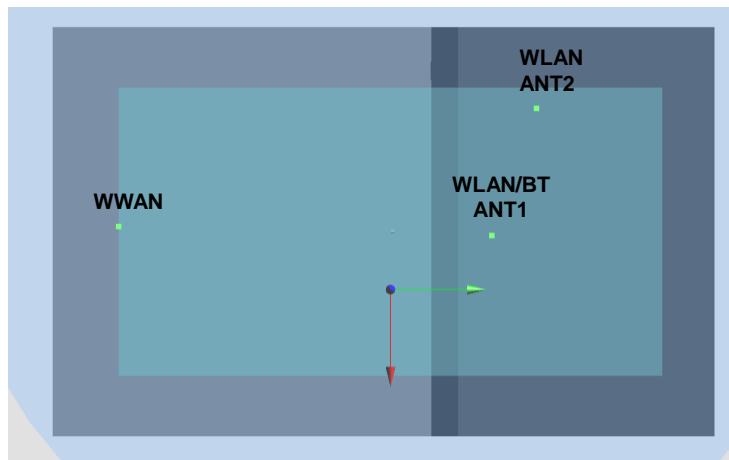
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 2	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	109.1	1.34	0.01	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	120.8	1.19	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	121.3	1.27	0.01	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	156.2	1.95	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	GSM1900	Back	0.7	10	-3.1	-78.9	-1.2	109.1	0.73	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



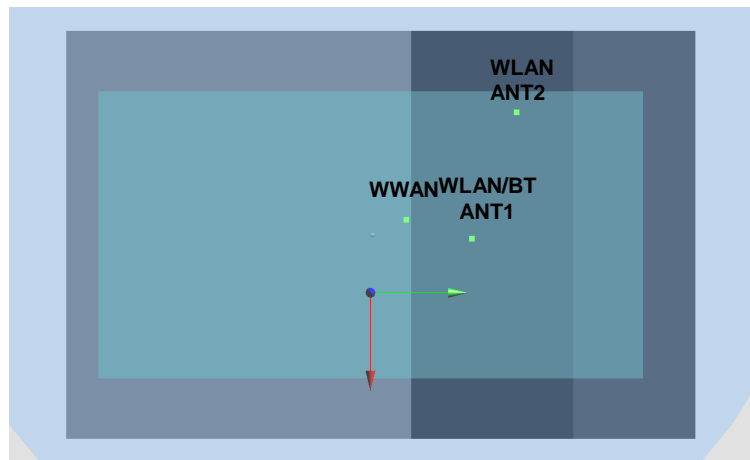
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 3	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	109.1	1.50	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	120.8	1.35	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	121.3	1.44	0.01	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	156.2	2.12	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	WCDMA II	Back	0.867	10	-3.1	-78.9	-1.2	109.1	0.90	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



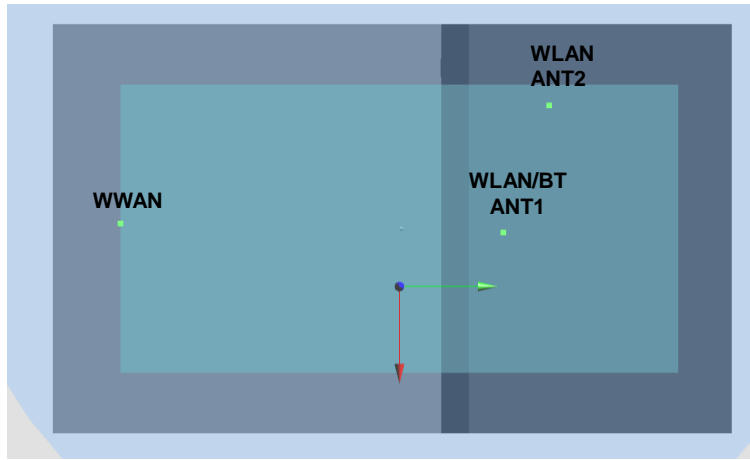
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 4	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	109.2	1.60	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	120.9	1.45	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	121.4	1.53	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	156.3	2.21	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	WCDMA IV	Back	0.96	10	-3.1	-79	-1.18	109.2	0.99	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



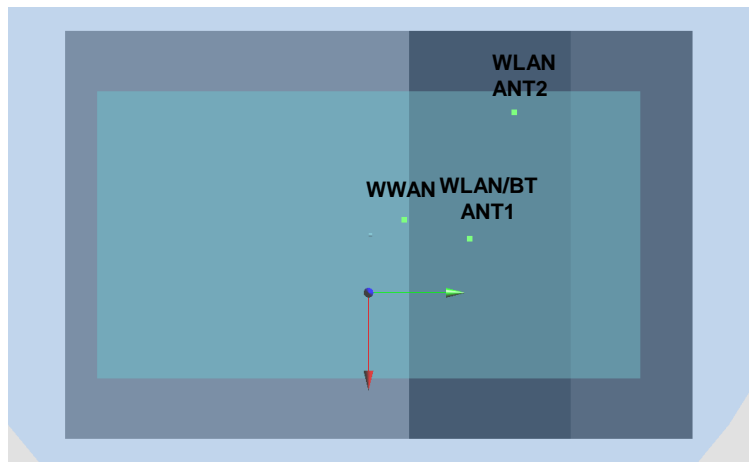
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 5	WCDMA V	Back	0.571	10	-6.1	1.1	-1.69	30.4	1.21	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WCDMA V	Back	0.571	10	-6.1	1.1	-1.69	45.8	1.06	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WCDMA V	Back	0.571	10	-6.1	1.1	-1.69	55.8	1.14	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	WCDMA V	Back	0.571	10	-6.1	1.1	-1.69	77.1	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	WCDMA V	Back	0.571	10	-6.1	1.1	-1.69	30.4	0.60	0.02	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



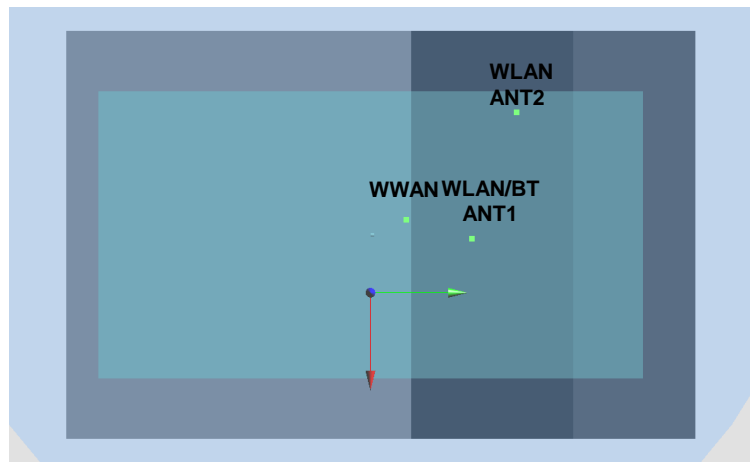
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 6	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	106.9	1.16	0.01	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	117.5	1.01	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	120.4	1.09	0.01	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	153.2	1.78	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	LTE Band 7	Back	0.522	10	-7.2	-76.4	-1.19	106.9	0.56	0.00	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



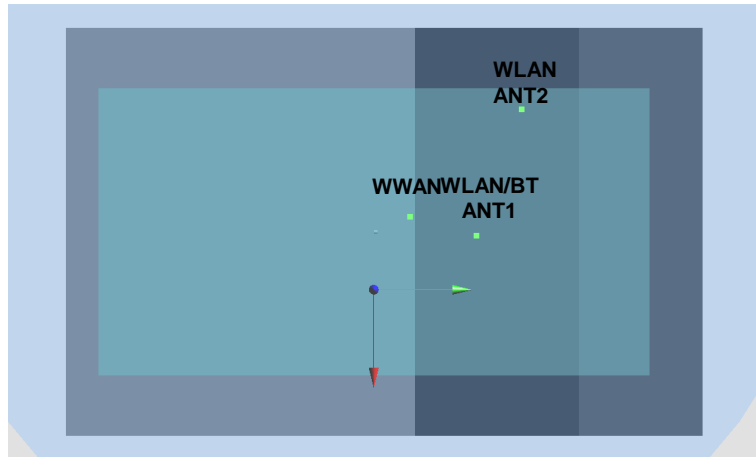
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 7	LTE Band 12	Back	0.589	10	0	-10.4	-1.79	40.5	1.23	0.03	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 12	Back	0.589	10	0	-10.4	-1.79	58.7	1.08	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 12	Back	0.589	10	0	-10.4	-1.79	59.4	1.16	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 12	Back	0.589	10	0	-10.4	-1.79	89.8	1.84	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	LTE Band 12	Back	0.589	10	0	-10.4	-1.79	40.5	0.62	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



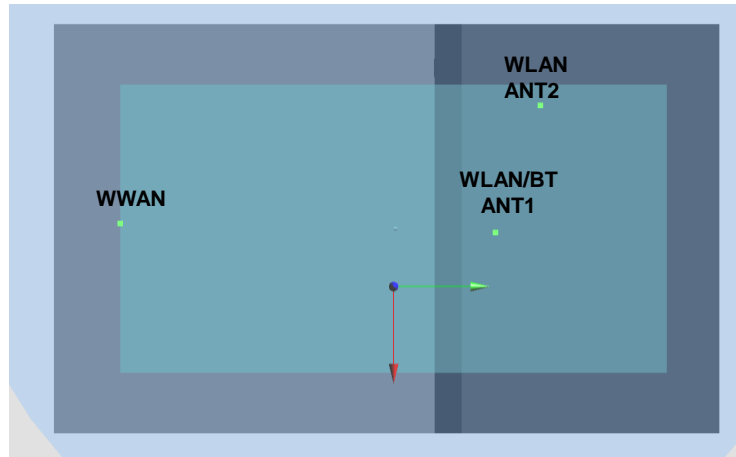
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 8	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	32.2	1.18	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	49.8	1.03	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	55.1	1.11	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	80.5	1.80	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	LTE Band 13	Back	0.541	10	-3	-1.6	-1.83	32.2	0.57	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



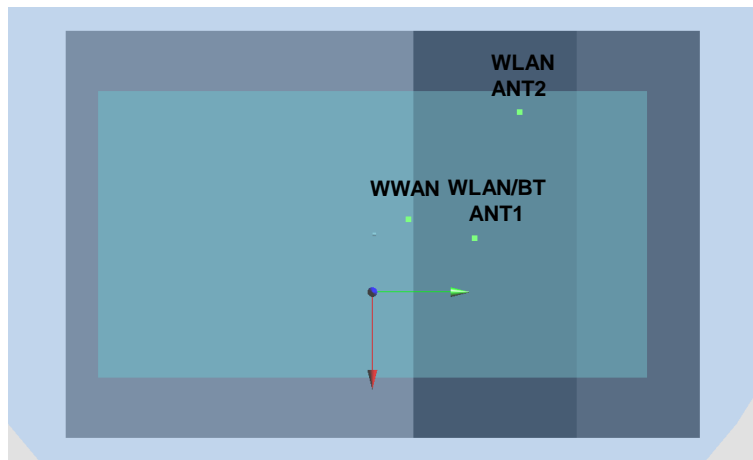
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 9	LTE Band 14	Back	0.54	10	-3	0	-1.83	30.7	1.18	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 14	Back	0.54	10	-3	0	-1.83	48.6	1.03	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 14	Back	0.54	10	-3	0	-1.83	54.0	1.11	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 14	Back	0.54	10	-3	0	-1.83	78.9	1.79	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	LTE Band 14	Back	0.54	10	-3	0	-1.83	30.7	0.57	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required	
Bluetooth_Ant 1		0.033	10	3.2	30	-0.7					



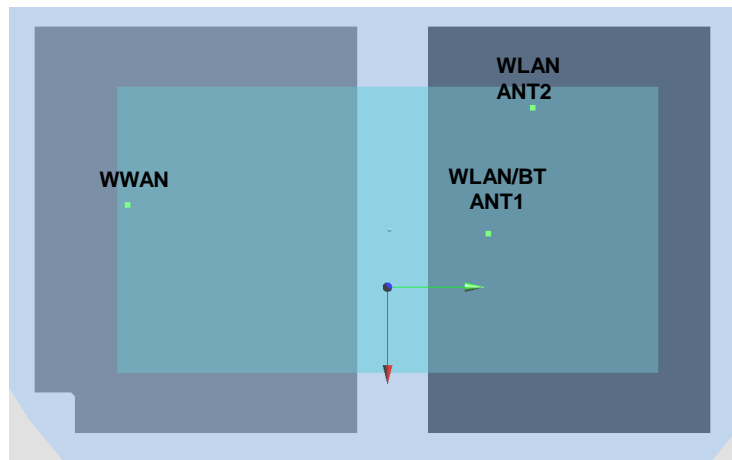
Case 10	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	109.4	1.55	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	120.7	1.40	0.01	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	121.9	1.48	0.01	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	156.3	2.16	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	LTE Band 25	Back	0.909	10	-4.5	-79.1	-1.18	109.4	0.94	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
	WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				



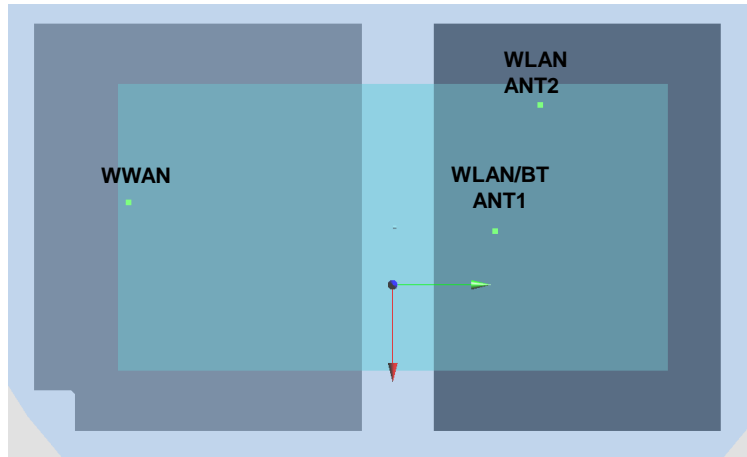
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
11	LTE Band 26	Back	0.456	10	-6	6	-1.75	52.8	1.03	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 26	Back	0.456	10	-6	6	-1.75	72.3	1.71	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	LTE Band 26	Back	0.456	10	-6	6	-1.75	25.7	1.09	0.04	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				



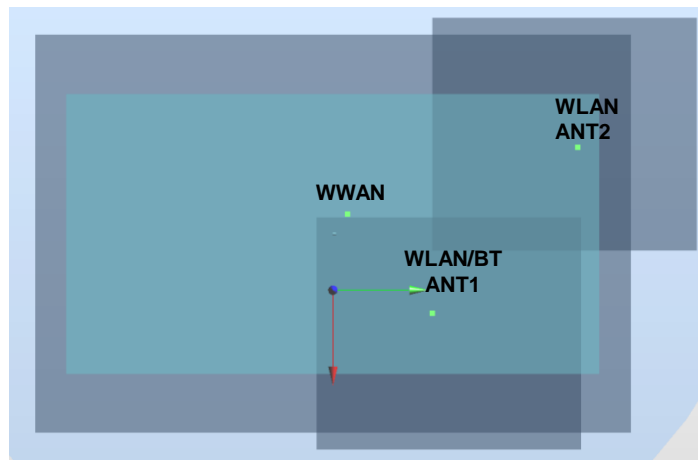
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
12	LTE Band 41	Back	0.451	10	-13.2	-71.2	-1.23	118.1	1.02	0.01	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 41	Back	0.451	10	-13.2	-71.2	-1.23	147.5	1.71	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	LTE Band 41	Back	0.451	10	-13.2	-71.2	-1.23	102.5	1.09	0.01	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				



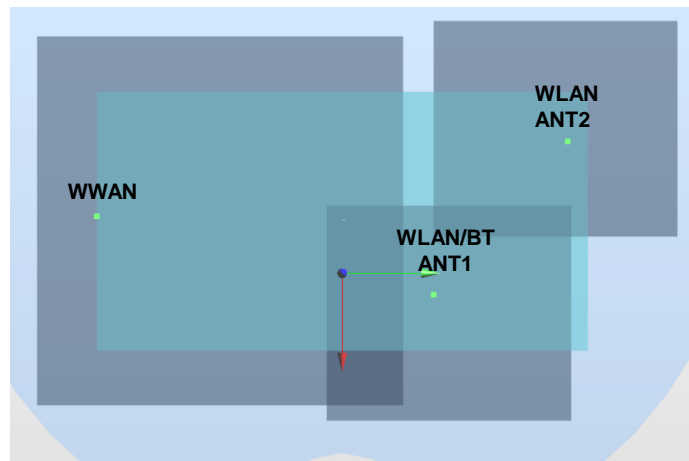
Case 13	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	109.2	1.65	0.02	Not required
	WLAN2.4G_Ant 1		0.636	10	3.2	30	-0.7				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	120.9	1.50	0.02	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	37.1	1.12	0.03	Not required
	WLAN2.4G_Ant 2		0.487	10	-33	38.19	-0.82				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	121.4	1.58	0.02	Not required
	WLAN5G_Ant 1		0.572	10	38	35.2	-0.77				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	156.3	2.26	0.02	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN5G_Ant 1	Back	0.572	10	38	35.2	-0.77	74.9	1.83	0.03	Not required
	WLAN5G_Ant 2		1.254	10	-25	75.8	-0.79				
	WLAN2.4G_Ant 1	Back	0.636	10	3.2	30	-0.7	53.8	1.70	0.04	Not required
	WLAN5G_Ant 2		1.062	10	-25	75.8	-0.79				
	LTE Band 66	Back	1.009	10	-3.1	-79	-1.16	109.2	1.04	0.01	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				
	WLAN5G_Ant 2	Back	1.062	10	-25	75.8	-0.79	53.8	1.10	0.02	Not required
	Bluetooth_Ant 1		0.033	10	3.2	30	-0.7				



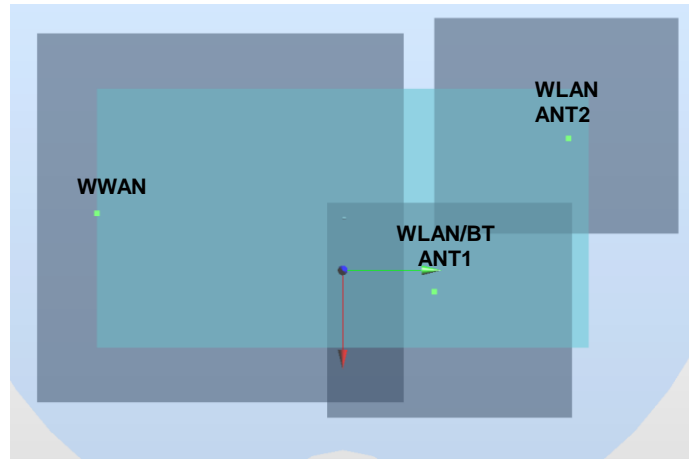
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 14	GSM850	Back	0.653	15	-9.2	-3.5	-1.87	47.2	0.96	0.02	Not required
	WLAN5G_Ant 1		0.307	15	24	30	-0.45				
	GSM850	Back	0.653	15	-9.2	-3.5	-1.87	80.1	1.49	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN5G_Ant 1	Back	0.307	15	24	30	-0.45	67.1	1.14	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	GSM850	Back	0.653	15	-9.2	-3.5	-1.87	36.1	0.90	0.02	Not required
	WLAN2.4G_Ant 1		0.248	15	3.4	30.3	-0.62				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	53.3	1.08	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				



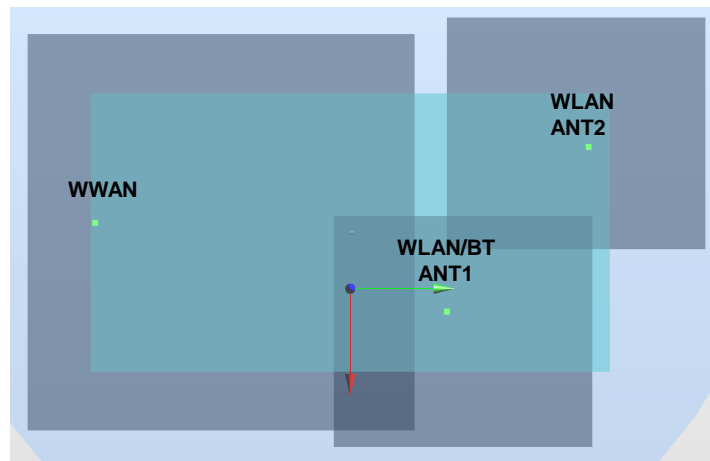
Case 15	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 15	GSM1900	Back	0.898	15	0.1	-78.9	-1.29	111.5	1.21	0.01	Not required
	WLAN5G_Ant 1		0.307	15	24	30	-0.45				
	GSM1900	Back	0.898	15	0.1	-78.9	-1.29	155.9	1.73	0.01	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN5G_Ant 1	Back	0.307	15	24	30	-0.45	67.1	1.14	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	GSM1900	Back	0.898	15	0.1	-78.9	-1.29	109.3	1.15	0.01	Not required
	WLAN2.4G_Ant 1		0.248	15	3.4	30.3	-0.62				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	53.3	1.08	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	GSM1900	Back	0.898	15	0.1	-78.9	-1.29	109.3	0.92	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.832	15	-26	74.8	-1.19	53.3	0.85	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				



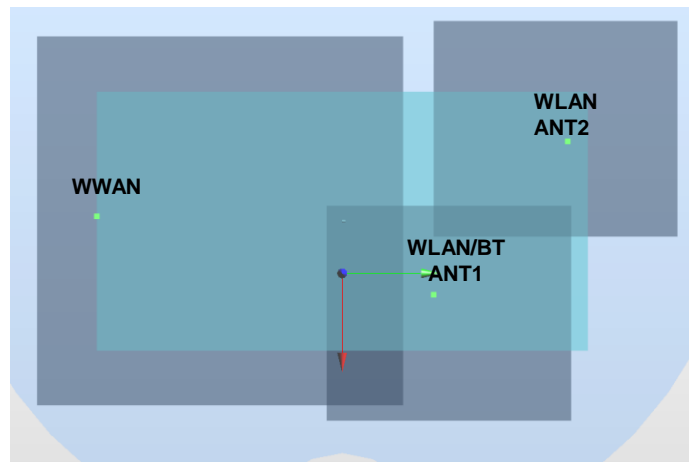
Case 16	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 16	WCDMA II	Back	1.196	15	-2.9	-80.5	-1.3	111.0	1.44	0.02	Not required
	WLAN2.4G_Ant 1		0.248	15	3.4	30.3	-0.62				
	WCDMA II	Back	1.196	15	-2.9	-80.5	-1.3	121.7	1.49	0.01	Not required
	WLAN2.4G_Ant 2		0.294	15	-32.4	37.6	-0.94				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	36.5	0.54	0.01	Not required
	WLAN2.4G_Ant 2		0.294	15	-32.4	37.6	-0.94				
	WCDMA II	Back	1.196	15	-2.9	-80.5	-1.3	113.7	1.50	0.02	Not required
	WLAN5G_Ant 1		0.307	15	24	30	-0.45				
	WCDMA II	Back	1.196	15	-2.9	-80.5	-1.3	157.0	2.03	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN5G_Ant 1	Back	0.307	15	24	30	-0.45	67.1	1.14	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	53.3	1.08	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WCDMA II	Back	1.196	15	-2.9	-80.5	-1.3	111.0	1.22	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
WLAN5G_Ant 2	Back	0.832	15	-26	74.8	-1.19	53.3	0.85	0.01	Not required	
Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62					



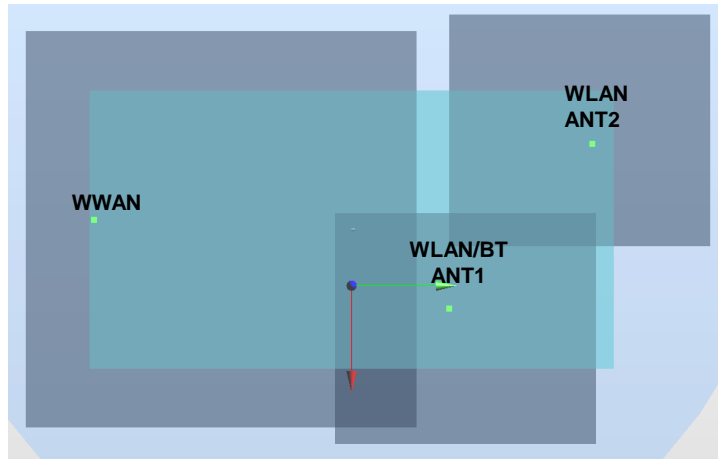
Case 17	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 17	WCDMA IV	Back	1.047	15	-3	-79	-1.27	112.3	1.35	0.01	Not required
	WLAN5G_Ant 1		0.307	15	24	30	-0.45				
	WCDMA IV	Back	1.047	15	-3	-79	-1.27	155.5	1.88	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN5G_Ant 1	Back	0.307	15	24	30	-0.45	67.1	1.14	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WCDMA IV	Back	1.047	15	-3	-79	-1.27	109.5	1.30	0.01	Not required
	WLAN2.4G_Ant 1		0.248	15	3.4	30.3	-0.62				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	53.3	1.08	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WCDMA IV	Back	1.047	15	-3	-79	-1.27	109.5	1.07	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.832	15	-26	74.8	-1.19	53.3	0.85	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				



Case 18	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 25	Back	1.19	15	0.1	-81	-1.26	111.4	1.44	0.02	Not required
	WLAN2.4G_Ant 1		0.248	15	3.4	30.3	-0.62				
	LTE Band 25	Back	1.19	15	0.1	-81	-1.26	123.0	1.48	0.01	Not required
	WLAN2.4G_Ant 2		0.294	15	-32.4	37.6	-0.94				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	36.5	0.54	0.01	Not required
	WLAN2.4G_Ant 2		0.294	15	-32.4	37.6	-0.94				
	LTE Band 25	Back	1.19	15	0.1	-81	-1.26	113.5	1.50	0.02	Not required
	WLAN5G_Ant 1		0.307	15	24	30	-0.45				
	LTE Band 25	Back	1.19	15	0.1	-81	-1.26	158.0	2.02	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN5G_Ant 1	Back	0.307	15	24	30	-0.45	67.1	1.14	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	53.3	1.08	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	LTE Band 25	Back	1.19	15	0.1	-81	-1.26	111.4	1.21	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.832	15	-26	74.8	-1.19	53.3	0.85	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				



Case 19	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 66	Back	1.109	15	-3	-79.5	-1.27	110.0	1.36	0.01	Not required
	WLAN2.4G_Ant 1		0.248	15	3.4	30.3	-0.62				
	LTE Band 66	Back	1.109	15	-3	-79.5	-1.27	120.7	1.40	0.01	Not required
	WLAN2.4G_Ant 2		0.294	15	-32.4	37.6	-0.94				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	36.5	0.54	0.01	Not required
	WLAN2.4G_Ant 2		0.294	15	-32.4	37.6	-0.94				
	LTE Band 66	Back	1.109	15	-3	-79.5	-1.27	112.8	1.42	0.01	Not required
	WLAN5G_Ant 1		0.307	15	24	30	-0.45				
	LTE Band 66	Back	1.109	15	-3	-79.5	-1.27	156.0	1.94	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN5G_Ant 1	Back	0.307	15	24	30	-0.45	67.1	1.14	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	WLAN2.4G_Ant 1	Back	0.248	15	3.4	30.3	-0.62	53.3	1.08	0.02	Not required
	WLAN5G_Ant 2		0.832	15	-26	74.8	-1.19				
	LTE Band 66	Back	1.109	15	-3	-79.5	-1.27	110.0	1.13	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				
	WLAN5G_Ant 2	Back	0.832	15	-26	74.8	-1.19	53.3	0.85	0.01	Not required
	Bluetooth_Ant 1		0.022	15	3.4	30.3	-0.62				



Test Engineer : Nick Yu Tom Jiang Galen Chang Iran Wang Kurt Liu Mood Huang Thomas Bevis Chang Carter Chuang and Ted Hsieh



16. 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 $\leq 30\%$, 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. Therefore, the measurement uncertainty table is not required in this report.

17. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", 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 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [8] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [9] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [10] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015
- [11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.
- [12] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [13] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.