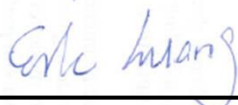


FCC SAR Test Report

APPLICANT : ASUSTeK COMPUTER INC.
EQUIPMENT : ASUS Phone
BRAND NAME : ASUS
MODEL NAME : ASUS_Z01GD
FCC ID : MSQZ01GD
STANDARD : FCC 47 CFR Part 2 (2.1093)
ANSI/IEEE C95.1-1992
IEEE 1528-2013

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

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



Reviewed by: Eric Huang / Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



Table of Contents

1. Statement of Compliance 4
2. Administration Data 5
3. Guidance Applied..... 5
4. Equipment Under Test (EUT) Information 6
4.1 General Information 6
4.2 Maximum Tune-up Limit..... 7
4.3 General LTE SAR Test and Reporting Considerations 9
5. RF Exposure Limits.....12
5.1 Uncontrolled Environment.....12
5.2 Controlled Environment.....12
6. Specific Absorption Rate (SAR).....13
6.1 Introduction13
6.2 SAR Definition.....13
7. System Description and Setup14
7.1 E-Field Probe15
7.2 Data Acquisition Electronics (DAE)15
7.3 Phantom.....16
7.4 Device Holder.....17
8. Measurement Procedures18
8.1 Spatial Peak SAR Evaluation18
8.2 Power Reference Measurement.....19
8.3 Area Scan19
8.4 Zoom Scan.....20
8.5 Volume Scan Procedures20
8.6 Power Drift Monitoring.....20
9. Test Equipment List21
10. System Verification22
10.1 Tissue Simulating Liquids.....22
10.2 Tissue Verification23
10.3 System Performance Check Results.....30
11. RF Exposure Positions32
11.1 Ear and handset reference point32
11.2 Definition of the cheek position.....33
11.3 Definition of the tilt position.....34
11.4 Body Worn Accessory34
11.5 Extremity Exposure35
11.6 Wireless Router.....35
12. Conducted RF Output Power (Unit: dBm).....36
13. Antenna Location131
14. SAR Test Results132
14.1 Head SAR134
14.2 Hotspot SAR140
14.3 Body Worn Accessory SAR146
14.4 Product Specific149
14.5 Repeated SAR Measurement150
15. Simultaneous Transmission Analysis151
15.1 Head Exposure Conditions152
15.2 Hotspot Exposure Conditions.....154
15.3 Body-Worn Accessory Exposure Conditions157
15.4 Product Specific158
16. Supplemental tuner tests results.....159
16.1 Supplemental Head SAR results.....160
16.2 Supplemental Body SAR results161
17. Uncertainty Assessment162
18. References.....165
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASY Calibration Certificate
Appendix D. Test Setup Photos



Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA740840	Rev. 01	Initial issue of report	Aug. 11, 2017
FA740840	Rev. 02	Revised section15	Aug. 15, 2017
FA740840	Rev. 03	Revised section16	Aug. 31, 2017



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for ASUSTeK COMPUTER INC., ASUS Phone, ASUS_Z01GD, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 15mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)				
Licensed	GSM850	1.08	0.34	0.60		1.59
	GSM1900	0.06	0.43	0.97		
	WCDMA II	0.08	0.53	0.94		
	WCDMA IV	0.08	0.44	1.11		
	WCDMA V	0.84	0.34	0.58		
	LTE Band 2	0.07	0.55	1.16		
	LTE Band 4	0.09	0.50	1.19		
	LTE Band 5	1.03	0.38	0.55		
	LTE Band 7	0.16	0.52	1.15	2.95	
	LTE Band 12 / 17	0.61	0.25	0.47		
	LTE Band 26	1.05	0.40	0.58		
	LTE Band 30	0.04	0.06	0.19		
LTE Band 38 / 41	0.09	0.23	1.18			
DSS	Bluetooth	0.23	0.01	0.02		1.58
DTS	2.4GHz WLAN	0.45	0.07	0.23		1.59
NII	5GHz WLAN	0.34	0.24	0.35	1.79	1.58
Date of Testing:		2017/7/20 ~ 2017/8/4				

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

2. Administration Data

Sporton 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.

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	ASUSTeK COMPUTER INC.
Address	4F, No. 150, LI-TE RD., PEITOU, TAIPEI, TAIWAN

Manufacturer	
Company Name	COTEK ELECTRONICS (SUZHOU) CO., LTD.
Address	No.288, Mayun Road, Suzhou Hi-and-New Tech Park, Jiangsu, PRC

3. Guidance Applied

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

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



4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	ASUS Phone
Brand Name	ASUS
Model Name	ASUS_Z01GD
FCC ID	MSQZ01GD
IMEI Code	SIM 1: 358453080040545 SIM 2: 358453080040552
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 30: 2307.5 MHz ~ 2312.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2547.5 MHz ~ 2652.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 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 802.11 a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE v4.0/v5.0 NFC: ASK
HW Version	R2.0E
SW Version	14.2200.1702.9 & 14.2400.1706.11
GSM / (E)GPRS Dual Transfer mode	Class A – EUT can support Packet Switched and Circuit Switched Network simultaneously.
EUT Stage	Production Unit
Remark: 1. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications. 2. This device has two antennas. The Primary Cellular Antenna (LAT) is location on the bottom edge of the device and the Secondary Cellular Antenna (UAT) is location on the top edge of the device. 3. For WWAN LAT and UAT antennas will not transmit simultaneous at the same time and when the two antennas operating in the Head / Hotspot / Body worn / Product Specific exposure configuration, this device will limit different maximum output powers in several frequency bands. The detail descriptions of the power control of the mechanisms are included in the operational description. 4. For WLAN operating in the Head / Hotspot / Body worn / Product Specific exposure configuration, this device will limit different maximum output powers. The detail descriptions of the power control of the mechanisms are included in the operational description. 5. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the WCDMA and LTE modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner are included in the operational description and supplemental data for additional information on section 16.	



4.2 Maximum Tune-up Limit

When WWAN LAT Ant Transmitter				
Mode / Exposure Position	Head (separation 0mm)	Hotspot Mode (separation 10mm)	Body-Worn (separation 15mm)	Product Specific (separation 0mm)
GSM 850	33.50	33.50	33.50	33.50
GPRS 850, 1 Tx slot	33.50	33.50	33.50	33.50
GPRS 850, 2 Tx slots	30.50	30.50	30.50	30.50
GPRS 850, 3 Tx slots	28.50	28.50	28.50	28.50
GPRS 850, 4 Tx slots	26.50	26.50	26.50	26.50
EDGE 850, 1 Tx slot	27.00	27.00	27.00	27.00
EDGE 850, 2 Tx slots	24.00	24.00	24.00	24.00
EDGE 850, 3 Tx slots	22.00	22.00	22.00	22.00
EDGE 850, 4 Tx slots	20.50	20.50	20.50	20.50
GSM 1900	30.50	30.50	30.50	30.50
GPRS 1900, 1 Tx slot	30.50	30.50	30.50	30.50
GPRS 1900, 2 Tx slots	27.50	27.50	27.50	27.50
GPRS 1900, 3 Tx slots	25.50	25.50	25.50	25.50
GPRS 1900, 4 Tx slots	24.00	24.00	24.00	24.00
EDGE 1900, 1 Tx slot	26.50	26.50	26.50	26.50
EDGE 1900, 2 Tx slots	23.00	23.00	23.00	23.00
EDGE 1900, 3 Tx slots	21.50	21.50	21.50	21.50
EDGE 1900, 4 Tx slots	20.00	20.00	20.00	20.00
WCDMA II	22.00	21.00	22.00	22.00
WCDMA IV	22.50	22.50	22.50	22.50
WCDMA V	23.00	23.00	23.00	23.00
LTE Band 2	22.00	22.00	22.00	22.00
LTE Band 4	23.00	23.00	23.00	23.00
LTE Band 5	24.00	24.00	24.00	24.00
LTE Band 7	24.00	22.00	24.00	24.00
LTE Band 12	24.00	24.00	24.00	24.00
LTE Band 17	24.00	24.00	24.00	24.00
LTE Band 26	24.00	24.00	24.00	24.00
LTE Band 30	19.00	19.00	19.00	19.00
LTE Band 38	24.00	24.00	24.00	24.00
LTE Band 41	24.00	24.00	24.00	24.00



When WWAN UAT Ant Transmitter				
Mode / Exposure Position	Head (separation 0mm)	Hotspot Mode (separation 10mm)	Body-Worn (separation 15mm)	Product Specific (separation 0mm)
GSM 850	30.50	33.50	33.50	33.50
GPRS 850, 1 Tx slot	30.50	33.50	33.50	33.50
GPRS 850, 2 Tx slots	29.50	30.50	30.50	30.50
GPRS 850, 3 Tx slots	27.50	28.50	28.50	28.50
GPRS 850, 4 Tx slots	26.00	26.50	26.50	26.50
EDGE 850, 1 Tx slot	27.00	27.00	27.00	27.00
EDGE 850, 2 Tx slots	24.00	24.00	24.00	24.00
EDGE 850, 3 Tx slots	22.00	22.00	22.00	22.00
EDGE 850, 4 Tx slots	20.50	20.50	20.50	20.50
WCDMA V	21.50	23.00	23.00	23.00
LTE Band 5	22.50	24.00	24.00	24.00
LTE Band 12	24.00	24.00	24.00	24.00
LTE Band 17	24.00	24.00	24.00	24.00
LTE Band 26	22.00	24.00	24.00	24.00

When WLAN / Bluetooth Transmitter				
Mode / Exposure Position	Head (separation 0mm)	Hotspot Mode (separation 10mm)	Body-Worn (separation 15mm)	Product Specific (separation 0mm)
2.4GHz WLAN	15.00	19.00	19.00	19.00
Bluetooth	11.50	11.50	11.50	11.50
5.2GHz WLAN	15.50	20.00	20.00	20.00
5.3GHz WLAN	15.50		20.00	20.00
5.5GHz WLAN	10.00		20.00	20.00
5.8GHz WLAN	9.50	19.00	19.00	20.00



4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																																					
FCC ID	MSQZ01GD																																																																				
Equipment Name	ASUS Phone																																																																				
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 30: 2307.5 MHz ~ 2312.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2547.5 MHz ~ 2652.5 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 17: 5MHz, 10MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz																																																																				
uplink modulations used	QPSK / 16QAM / 64QAM																																																																				
LTE Voice / Data requirements	Data only																																																																				
LTE MPR permanently built-in by design	<p style="text-align: center;">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (RB)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 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> </tbody> </table> <p style="text-align: center;">Table 6.2.3_3.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth configuration (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>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> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	Modulation	Channel bandwidth / Transmission bandwidth configuration (RB)						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)																																																														
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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																																																														
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	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																															
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																														
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																														
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.																																																																				
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations as below page and the detail power verification please referred to section 12.																																																																				
LTE Carrier Aggregation Additional Information	This device does not support full CA features on 3GPP Release 10. It supports a maximum of 2 carriers in the downlink only. All uplink communications are identical to the Release 8 Specifications. Uplink communications are done on the PCC. Due to carrier capability, only the combinations listed above are supported. The 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 17													
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz
	Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #
L	23755		706.5		23780		709		23780		709		23780
M	23790		710		23790		710		23790		710		23790
H	23825		713.5		23800		711		23800		711		23800
LTE Band 26													
	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	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 30								
	Bandwidth 5 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	27685		2307.5		27710	2310		
M	27710		2310					
H	27735		2312.5					
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)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610
LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	40165	2547.5	40190	2550	40215	2552.5	40240	2555
L	40485	2579.5	40490	2580	40495	2580.5	40500	2581
M								
H	40805	2611.5	40790	2610	40780	2609.5	40770	2608
H	41215	2652.5	41190	2650	41165	2647.5	41140	2645



5. RF Exposure Limits

5.1 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.

5.2 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.

6. Specific Absorption Rate (SAR)

6.1 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.

6.2 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:

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

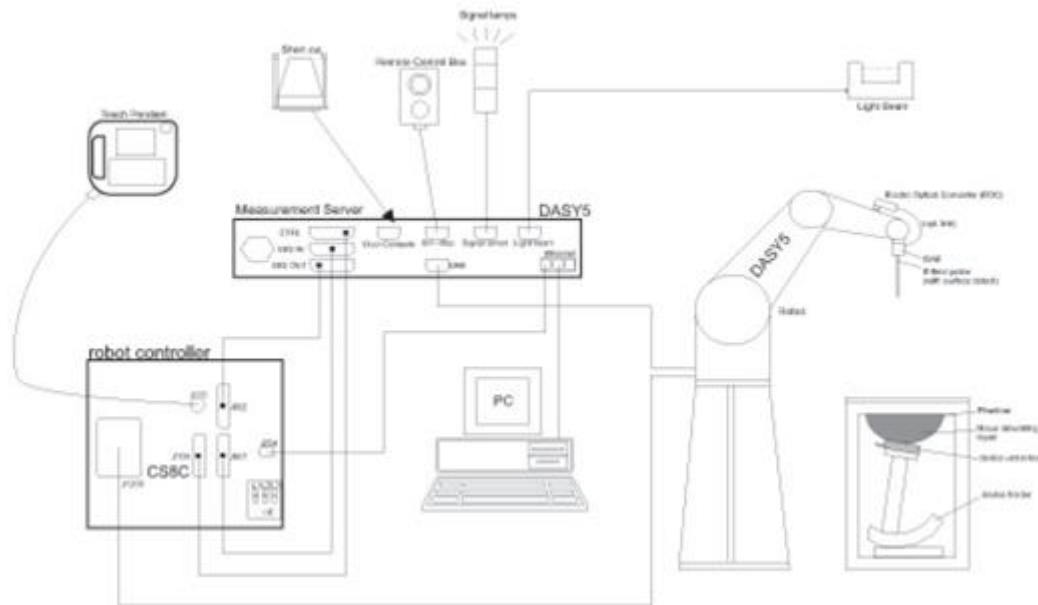
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. 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.


7.1 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	

7.2 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

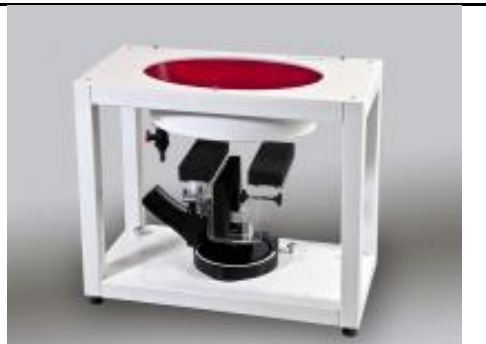
7.3 Phantom

<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.

7.4 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



8. 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

8.1 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

8.2 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.

8.3 Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ 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.	

8.4 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.				

8.5 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.

8.6 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.



9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1012	May. 22, 2017	May. 21, 2018
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 21, 2017	Mar. 20, 2018
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 16, 2016	Nov. 15, 2017
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Sep. 30, 2016	Sep. 29, 2017
SPEAG	2300MHz System Validation Kit	D2300V2	1006	Jan. 25, 2017	Jan. 24, 2018
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 30, 2016	Aug. 29, 2017
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 30, 2016	Aug. 29, 2017
SPEAG	5GHz System Validation Kit	D5GHZV2	1006	Sep. 27, 2016	Sep. 26, 2017
SPEAG	Data Acquisition Electronics	DAE4	1424	Feb. 16, 2017	Feb. 15, 2018
SPEAG	Data Acquisition Electronics	DAE4	778	May. 22, 2017	May. 21, 2018
SPEAG	Data Acquisition Electronics	DAE3	577	Sep. 28, 2016	Sep. 27, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3976	Feb. 21, 2017	Feb. 20, 2018
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Aug. 26, 2016	Aug. 25, 2017
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Oct. 03, 2016	Oct. 02, 2017
WonDer	Thermometer	WD-5016	TM281-1	Mar. 17, 2017	Mar. 16, 2018
WonDer	Thermometer	WD-5016	TM281-2	Mar. 17, 2017	Mar. 16, 2018
WonDer	Thermometer	WD-5016	TM560-1	Mar. 17, 2017	Mar. 16, 2018
WonDer	Thermometer	WD-5016	TM560-2	Mar. 17, 2017	Mar. 16, 2018
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Apr. 20, 2017	Apr. 19, 2018
Anritsu	Radio Communication Analyzer	MT8820C	6201381760	May. 17, 2017	May. 16, 2018
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 30, 2017	May. 29, 2018
R&S	BT Base Station	CBT32	100522	Mar. 14, 2017	Mar. 13, 2018
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Dec. 09, 2016	Dec. 08, 2017
Agilent	ENA Network Analyzer	E5071C	MY46316648	Jan. 04, 2017	Jan. 03, 2018
SPEAG	Dielectric Probe Kit	DAK-3.5	1047	Nov. 29, 2016	Nov. 28, 2017
LINE SEIKI	Digital Thermometer	LKMelectronic	DTM3000SPEZIAL	Sep. 05, 2016	Sep. 04, 2017
Anritsu	Power Meter	ML2495A	1438002	Dec. 06, 2016	Dec. 05, 2017
Anritsu	Power Sensor	MA2411B	1339195	Dec. 06, 2016	Dec. 05, 2017
Agilent	Spectrum Analyzer	E4408B	MY44211028	Aug. 22, 2016	Aug. 21, 2017
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Mar. 09, 2017	Mar. 08, 2018
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Mar. 09, 2017	Mar. 08, 2018
AR	Power Amplifier	5S1G4	0325228	Jul. 06, 2017	Jul. 05, 2018
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.

10. System Verification

10.1 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.

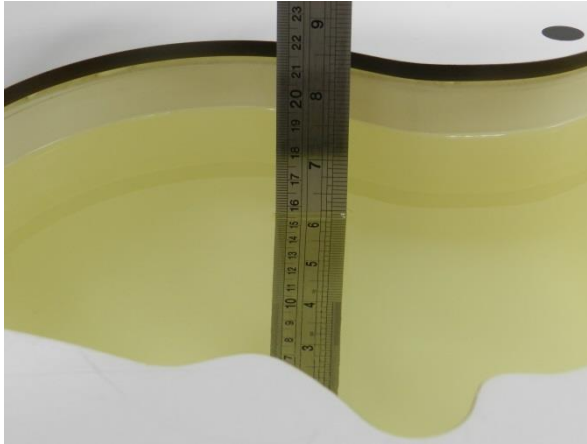


Fig 10.1 Photo of Liquid Height for Head SAR

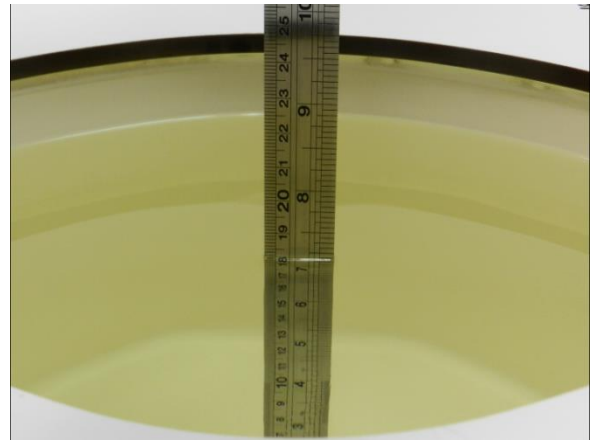


Fig 10.2 Photo of Liquid Height for Body SAR



10.2 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	22.5	0.891	43.469	0.89	41.90	0.11	3.74	±5	2017/7/25
750	HSL	22.7	0.888	42.029	0.89	41.90	-0.22	0.31	±5	2017/7/27
750	MSL	22.1	0.955	56.903	0.96	55.50	-0.52	2.53	±5	2017/7/23
835	HSL	22.4	0.884	40.514	0.90	41.50	-1.78	-2.38	±5	2017/7/24
835	HSL	22.7	0.877	42.568	0.90	41.50	-2.56	2.57	±5	2017/7/26
835	HSL	22.9	0.896	40.993	0.90	41.50	-0.44	-1.22	±5	2017/8/4
835	MSL	22.4	0.963	57.250	0.97	55.20	-0.72	3.71	±5	2017/7/23
835	MSL	22.5	1.011	56.598	0.97	55.20	4.23	2.53	±5	2017/7/27
835	MSL	22.9	0.991	55.044	0.97	55.20	2.16	-0.28	±5	2017/8/4
1750	HSL	22.2	1.389	41.369	1.37	40.10	1.39	3.16	±5	2017/7/28
1750	MSL	22.2	1.500	55.538	1.49	53.40	0.67	4.00	±5	2017/7/20
1900	HSL	22.2	1.455	39.471	1.40	40.00	3.93	-1.32	±5	2017/7/28
1900	HSL	22.3	1.425	38.101	1.40	40.00	1.79	-4.75	±5	2017/8/3
1900	MSL	22.2	1.546	53.932	1.52	53.30	1.71	1.19	±5	2017/7/20
1900	MSL	22.3	1.556	55.129	1.52	53.30	2.37	3.43	±5	2017/7/29
1900	MSL	22.3	1.520	54.188	1.52	53.30	0.00	1.67	±5	2017/8/3
2300	HSL	22.1	1.642	39.453	1.67	39.50	-1.68	-0.12	±5	2017/8/3
2300	MSL	22.1	1.731	54.610	1.81	52.90	-4.36	3.23	±5	2017/8/3
2450	HSL	22.5	1.837	38.428	1.80	39.20	2.06	-1.97	±5	2017/7/25
2450	MSL	22.7	1.968	54.456	1.95	52.70	0.92	3.33	±5	2017/7/30
2600	HSL	22.2	2.008	37.856	1.96	39.00	2.45	-2.93	±5	2017/7/29
2600	MSL	22.2	2.144	52.247	2.16	52.50	-0.74	-0.48	±5	2017/7/21
5250	HSL	22.6	4.554	37.267	4.71	35.95	-3.31	3.66	±5	2017/7/25
5250	MSL	22.7	5.492	46.888	5.36	48.95	2.46	-4.21	±5	2017/7/31
5600	HSL	22.6	4.912	36.858	5.07	35.50	-3.12	3.83	±5	2017/7/25
5600	MSL	22.3	5.933	46.370	5.77	48.50	2.82	-4.39	±5	2017/8/2
5750	HSL	22.6	5.069	36.655	5.22	35.35	-2.89	3.69	±5	2017/7/26
5750	MSL	22.3	6.131	46.108	5.94	48.28	3.22	-4.50	±5	2017/8/2



<Tissue Dielectric Parameter Check for Low / Middle / High Frequencies>

General Note:

The tissue measure results for low / middle / high frequencies list below, the results were used in the Dasy SAR system to perform interpolation to determine the dielectric parameters on the SAR test device. The SAR test plots may slightly difference between the tables below due to the digit rounding in the software calculated.

CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
9262	1852.4	Body	1.485	54.114	1.520	53.300	-2.33	1.53	±5	Jul. 20, 2017
9400	1880	Body	1.518	54.010	1.520	53.300	-0.15	1.33	±5	Jul. 20, 2017
9538	1907.6	Body	1.553	53.927	1.520	53.300	2.18	1.18	±5	Jul. 20, 2017
18700	1860	Body	1.496	54.087	1.520	53.300	-1.60	1.48	±5	Jul. 20, 2017
18900	1880	Body	1.518	54.010	1.520	53.300	-0.15	1.33	±5	Jul. 20, 2017
19100	1900	Body	1.545	53.932	1.520	53.300	1.68	1.19	±5	Jul. 20, 2017
1312	1712.4	Body	1.457	55.666	1.471	53.471	-0.87	4.05	±5	Jul. 20, 2017
1413	1732.6	Body	1.481	55.595	1.481	53.433	0.04	4.11	±5	Jul. 20, 2017
1513	1752.6	Body	1.503	55.531	1.492	53.395	0.87	3.99	±5	Jul. 20, 2017
20050	1720	Body	1.466	55.637	1.474	53.456	-0.27	3.99	±5	Jul. 20, 2017
20175	1732.5	Body	1.480	55.595	1.481	53.433	0.03	4.11	±5	Jul. 20, 2017
20300	1745	Body	1.495	55.552	1.487	53.409	0.33	4.03	±5	Jul. 20, 2017
20850	2510	Body	2.014	52.545	2.034	52.620	-0.76	-0.11	±5	Jul. 21, 2017
21100	2535	Body	2.051	52.455	2.069	52.587	-0.92	-0.28	±5	Jul. 21, 2017
21350	2560	Body	2.086	52.373	2.104	52.553	-0.67	-0.43	±5	Jul. 21, 2017
40240	2555	Body	2.079	52.391	2.099	52.566	-1.02	-0.40	±5	Jul. 21, 2017
40500	2581	Body	2.117	52.306	2.136	52.533	-1.09	-0.37	±5	Jul. 21, 2017
40770	2608	Body	2.154	52.224	2.174	52.499	-0.72	-0.53	±5	Jul. 21, 2017
41140	2645	Body	2.206	52.089	2.227	52.452	-1.06	-0.78	±5	Jul. 21, 2017
26765	821.5	Body	0.950	57.372	0.968	55.248	-2.10	3.93	±5	Jul. 23, 2017
26865	831.5	Body	0.959	57.281	0.970	55.212	-1.11	3.77	±5	Jul. 23, 2017
26965	841.5	Body	0.969	57.193	0.978	55.180	-1.14	3.61	±5	Jul. 23, 2017
26865	831.5	Body	0.959	57.281	0.968	55.248	-1.11	3.77	±5	Jul. 23, 2017
26915	836.5	Body	0.964	57.237	0.970	55.212	-0.62	3.69	±5	Jul. 23, 2017
26965	841.5	Body	0.969	57.193	0.978	55.180	-1.14	3.61	±5	Jul. 23, 2017
4132	826.4	Body	0.954	57.326	0.969	55.230	-1.61	3.85	±5	Jul. 23, 2017
4182	836.4	Body	0.964	57.238	0.972	55.196	-0.63	3.69	±5	Jul. 23, 2017
4233	846.6	Body	0.974	57.149	0.984	55.164	-0.65	3.53	±5	Jul. 23, 2017
23060	704	Body	0.914	57.355	0.957	55.684	-4.81	2.97	±5	Jul. 23, 2017
23095	707.5	Body	0.917	57.325	0.957	55.670	-4.49	2.92	±5	Jul. 23, 2017
23130	711	Body	0.920	57.292	0.957	55.656	-4.17	2.86	±5	Jul. 23, 2017
20450	829	Body	0.957	57.304	0.969	55.221	-1.35	3.81	±5	Jul. 23, 2017
20525	836.5	Body	0.964	57.237	0.972	55.195	-0.62	3.69	±5	Jul. 23, 2017
20600	844	Body	0.971	57.170	0.981	55.172	-0.91	3.57	±5	Jul. 23, 2017
128	824.2	Head	0.874	40.656	0.899	41.551	-2.86	-2.27	±5	Jul. 24, 2017
189	836.4	Head	0.885	40.494	0.902	41.500	-1.65	-2.42	±5	Jul. 24, 2017
251	848.8	Head	0.896	40.332	0.915	41.500	-1.53	-2.81	±5	Jul. 24, 2017
4132	826.4	Head	0.876	40.627	0.899	41.540	-2.65	-2.10	±5	Jul. 24, 2017
4182	836.4	Head	0.885	40.494	0.902	41.500	-1.65	-2.42	±5	Jul. 24, 2017
4233	846.6	Head	0.894	40.360	0.912	41.500	-1.73	-2.75	±5	Jul. 24, 2017

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
20450	829	Head	0.878	40.594	0.899	41.528	-2.39	-2.18	±5	Jul. 24, 2017
20525	836.5	Head	0.885	40.493	0.902	41.500	-1.64	-2.43	±5	Jul. 24, 2017
20600	844	Head	0.892	40.392	0.910	41.500	-1.99	-2.67	±5	Jul. 24, 2017
26765	821.5	Head	0.872	40.690	0.898	41.564	-3.12	-2.19	±5	Jul. 24, 2017
26865	831.5	Head	0.881	40.560	0.900	41.516	-2.15	-2.26	±5	Jul. 24, 2017
26965	841.5	Head	0.890	40.426	0.907	41.500	-2.25	-2.59	±5	Jul. 24, 2017
26865	831.5	Head	0.881	40.560	0.898	41.564	-2.15	-2.50	±5	Jul. 24, 2017
26915	836.5	Head	0.885	40.493	0.900	41.516	-1.64	-2.43	±5	Jul. 24, 2017
26965	841.5	Head	0.890	40.426	0.907	41.500	-2.25	-2.59	±5	Jul. 24, 2017
0	2402	Head	1.781	38.616	1.757	39.285	1.20	-1.74	±5	Jul. 25, 2017
39	2441	Head	1.825	38.470	1.792	39.216	1.96	-1.86	±5	Jul. 25, 2017
78	2480	Head	1.873	38.312	1.800	39.200	4.05	-2.26	±5	Jul. 25, 2017
23060	704	Head	0.847	44.085	0.887	42.145	-4.81	4.71	±5	Jul. 25, 2017
23095	707.5	Head	0.850	44.035	0.887	42.127	-4.47	4.60	±5	Jul. 25, 2017
23130	711	Head	0.854	43.988	0.887	42.108	-4.10	4.48	±5	Jul. 25, 2017
1	2412	Head	1.794	38.584	1.766	39.268	1.34	-1.82	±5	Jul. 25, 2017
3	2422	Head	1.804	38.553	1.775	39.250	1.37	-1.65	±5	Jul. 25, 2017
6	2437	Head	1.820	38.492	1.788	39.223	1.70	-1.81	±5	Jul. 25, 2017
9	2452	Head	1.840	38.419	1.802	39.197	2.20	-1.99	±5	Jul. 25, 2017
11	2462	Head	1.853	38.384	1.813	39.184	2.36	-2.08	±5	Jul. 25, 2017
52	5260	Head	4.564	37.262	4.720	35.940	-3.31	3.79	±5	Jul. 25, 2017
54	5270	Head	4.573	37.257	4.730	35.930	-3.31	3.78	±5	Jul. 25, 2017
56	5280	Head	4.583	37.248	4.740	35.920	-3.32	3.76	±5	Jul. 25, 2017
58	5290	Head	4.592	37.239	4.750	35.910	-3.32	3.73	±5	Jul. 25, 2017
60	5300	Head	4.601	37.224	4.760	35.900	-3.34	3.69	±5	Jul. 25, 2017
62	5310	Head	4.609	37.211	4.770	35.887	-3.38	3.65	±5	Jul. 25, 2017
64	5320	Head	4.615	37.197	4.781	35.873	-3.45	3.61	±5	Jul. 25, 2017
100	5500	Head	4.798	36.962	4.967	35.633	-3.46	3.83	±5	Jul. 25, 2017
102	5510	Head	4.812	36.964	4.977	35.620	-3.37	3.83	±5	Jul. 25, 2017
104	5520	Head	4.825	36.964	4.987	35.607	-3.31	3.83	±5	Jul. 25, 2017
106	5530	Head	4.836	36.959	4.998	35.593	-3.29	3.82	±5	Jul. 25, 2017
108	5540	Head	4.846	36.955	5.008	35.580	-3.28	3.81	±5	Jul. 25, 2017
110	5550	Head	4.853	36.945	5.018	35.567	-3.33	3.78	±5	Jul. 25, 2017
112	5560	Head	4.861	36.926	5.029	35.553	-3.35	3.72	±5	Jul. 25, 2017
116	5580	Head	4.886	36.882	5.049	35.527	-3.26	3.89	±5	Jul. 25, 2017
128	5640	Head	4.959	36.833	5.110	35.460	-2.95	3.75	±5	Jul. 25, 2017
132	5660	Head	4.978	36.820	5.130	35.440	-2.96	4.01	±5	Jul. 25, 2017
134	5670	Head	4.985	36.805	5.140	35.430	-3.01	3.97	±5	Jul. 25, 2017
136	5680	Head	4.994	36.782	5.150	35.420	-3.04	3.90	±5	Jul. 25, 2017
138	5690	Head	5.006	36.757	5.160	35.410	-2.98	3.83	±5	Jul. 25, 2017
140	5700	Head	5.020	36.738	5.170	35.400	-2.91	3.78	±5	Jul. 25, 2017
142	5710	Head	5.031	36.726	5.180	35.390	-2.87	3.75	±5	Jul. 25, 2017
144	5720	Head	5.042	36.717	5.190	35.380	-2.84	3.72	±5	Jul. 25, 2017
149	5745	Head	5.063	36.658	5.215	35.355	-3.01	3.55	±5	Jul. 26, 2017

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
149	5745	Head	5.063	36.658	5.215	35.355	-3.01	3.55	±5	Jul. 26, 2017
151	5755	Head	5.074	36.649	5.225	35.345	-2.98	3.82	±5	Jul. 26, 2017
153	5765	Head	5.084	36.643	5.235	35.335	-2.97	3.80	±5	Jul. 26, 2017
155	5775	Head	5.093	36.636	5.245	35.325	-3.00	3.79	±5	Jul. 26, 2017
157	5785	Head	5.100	36.622	5.255	35.315	-3.04	3.74	±5	Jul. 26, 2017
159	5795	Head	5.108	36.599	5.265	35.305	-3.07	3.68	±5	Jul. 26, 2017
161	5805	Head	5.120	36.575	5.275	35.295	-3.03	3.61	±5	Jul. 26, 2017
165	5825	Head	5.144	36.545	5.296	35.275	-2.94	3.53	±5	Jul. 26, 2017
26765	821.5	Head	0.865	42.743	0.898	41.564	-3.93	2.75	±5	Jul. 26, 2017
26865	831.5	Head	0.874	42.616	0.900	41.516	-2.92	2.69	±5	Jul. 26, 2017
26965	841.5	Head	0.883	42.487	0.907	41.500	-3.00	2.38	±5	Jul. 26, 2017
26865	831.5	Head	0.874	42.616	0.898	41.564	-2.92	2.44	±5	Jul. 26, 2017
26915	836.5	Head	0.878	42.550	0.900	41.516	-2.42	2.53	±5	Jul. 26, 2017
26965	841.5	Head	0.883	42.487	0.907	41.500	-3.00	2.38	±5	Jul. 26, 2017
20450	829	Head	0.871	42.651	0.899	41.528	-3.18	2.77	±5	Jul. 26, 2017
20525	836.5	Head	0.878	42.550	0.902	41.500	-2.42	2.53	±5	Jul. 26, 2017
20600	844	Head	0.885	42.453	0.910	41.500	-2.74	2.30	±5	Jul. 26, 2017
4132	826.4	Head	0.869	42.681	0.899	41.540	-3.42	2.85	±5	Jul. 26, 2017
4182	836.4	Head	0.878	42.551	0.902	41.500	-2.44	2.53	±5	Jul. 26, 2017
4233	846.6	Head	0.888	42.420	0.912	41.500	-2.45	2.22	±5	Jul. 26, 2017
23060	704	Head	0.846	42.649	0.887	42.145	-4.93	1.30	±5	Jul. 27, 2017
23095	707.5	Head	0.849	42.603	0.887	42.127	-4.57	1.20	±5	Jul. 27, 2017
23130	711	Head	0.853	42.555	0.887	42.108	-4.21	1.08	±5	Jul. 27, 2017
20450	829	Body	1.005	56.658	0.969	55.221	3.59	2.64	±5	Jul. 27, 2017
20525	836.5	Body	1.012	56.583	0.972	55.195	4.33	2.51	±5	Jul. 27, 2017
20600	844	Body	1.019	56.507	0.981	55.172	4.00	2.37	±5	Jul. 27, 2017
4132	826.4	Body	1.002	56.686	0.969	55.230	3.33	2.69	±5	Jul. 27, 2017
4182	836.4	Body	1.012	56.585	0.972	55.196	4.32	2.51	±5	Jul. 27, 2017
4233	846.6	Body	1.022	56.482	0.984	55.164	4.27	2.32	±5	Jul. 27, 2017
128	824.2	Body	1.000	56.706	0.969	55.238	3.11	2.73	±5	Jul. 27, 2017
189	836.4	Body	1.012	56.585	0.972	55.196	4.32	2.51	±5	Jul. 27, 2017
251	848.8	Body	1.024	56.461	0.987	55.158	3.43	2.28	±5	Jul. 27, 2017
9262	1852.4	Head	1.413	39.687	1.400	40.000	0.96	-0.78	±5	Jul. 28, 2017
9400	1880	Head	1.436	39.575	1.400	40.000	2.59	-1.06	±5	Jul. 28, 2017
9538	1907.6	Head	1.463	39.435	1.400	40.000	4.49	-1.41	±5	Jul. 28, 2017
18700	1860	Head	1.421	39.668	1.400	40.000	1.52	-0.83	±5	Jul. 28, 2017
18900	1880	Head	1.436	39.575	1.400	40.000	2.59	-1.06	±5	Jul. 28, 2017
19100	1900	Head	1.455	39.471	1.400	40.000	3.94	-1.32	±5	Jul. 28, 2017
1312	1712.4	Head	1.350	41.454	1.352	40.162	0.01	3.12	±5	Jul. 28, 2017
1413	1732.6	Head	1.371	41.403	1.362	40.129	0.81	3.25	±5	Jul. 28, 2017
1513	1752.6	Head	1.392	41.367	1.372	40.095	1.61	3.16	±5	Jul. 28, 2017
20050	1720	Head	1.358	41.440	1.356	40.149	-0.18	3.34	±5	Jul. 28, 2017
20175	1732.5	Head	1.371	41.404	1.362	40.129	0.80	3.25	±5	Jul. 28, 2017
20300	1745	Head	1.385	41.362	1.368	40.108	1.06	3.15	±5	Jul. 28, 2017

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
9262	1852.4	Body	1.502	55.254	1.520	53.300	-1.15	3.67	±5	Jul. 29, 2017
9400	1880	Body	1.534	55.184	1.520	53.300	0.94	3.53	±5	Jul. 29, 2017
9538	1907.6	Body	1.564	55.100	1.520	53.300	2.91	3.38	±5	Jul. 29, 2017
20850	2510	Head	1.908	38.210	1.864	39.120	2.57	-2.28	±5	Jul. 29, 2017
21100	2535	Head	1.937	38.124	1.891	39.087	2.47	-2.50	±5	Jul. 29, 2017
21350	2560	Head	1.962	37.996	1.917	39.053	2.21	-2.82	±5	Jul. 29, 2017
40240	2555	Head	1.956	38.024	1.915	39.066	2.42	-2.75	±5	Jul. 29, 2017
40500	2581	Head	1.989	37.926	1.943	39.033	2.52	-2.75	±5	Jul. 29, 2017
40770	2608	Head	2.017	37.821	1.972	38.999	2.40	-3.02	±5	Jul. 29, 2017
41140	2645	Head	2.065	37.690	2.013	38.952	2.72	-3.36	±5	Jul. 29, 2017
1	2412	Body	1.918	54.584	1.914	52.751	0.39	3.38	±5	Jul. 30, 2017
3	2422	Body	1.932	54.545	1.923	52.737	0.60	3.50	±5	Jul. 30, 2017
6	2437	Body	1.952	54.500	1.938	52.717	0.63	3.42	±5	Jul. 30, 2017
9	2452	Body	1.970	54.446	1.953	52.697	1.03	3.31	±5	Jul. 30, 2017
11	2462	Body	1.983	54.401	1.967	52.684	0.68	3.23	±5	Jul. 30, 2017
0	2402	Body	1.905	54.634	1.904	52.764	0.24	3.47	±5	Jul. 30, 2017
39	2441	Body	1.957	54.488	1.941	52.712	0.89	3.39	±5	Jul. 30, 2017
78	2480	Body	2.009	54.320	1.950	52.700	3.05	3.07	±5	Jul. 30, 2017
36	5180	Body	5.404	47.002	5.276	49.027	2.35	-4.08	±5	Jul. 31, 2017
38	5190	Body	5.415	46.988	5.288	49.013	2.36	-4.11	±5	Jul. 31, 2017
40	5200	Body	5.427	46.967	5.300	49.000	2.39	-4.15	±5	Jul. 31, 2017
42	5210	Body	5.440	46.943	5.312	48.990	2.45	-4.20	±5	Jul. 31, 2017
44	5220	Body	5.454	46.924	5.323	48.980	2.53	-4.24	±5	Jul. 31, 2017
46	5230	Body	5.470	46.903	5.335	48.970	2.62	-4.28	±5	Jul. 31, 2017
48	5240	Body	5.483	46.899	5.346	48.960	2.48	-4.29	±5	Jul. 31, 2017
52	5260	Body	5.502	46.861	5.370	48.940	2.47	-4.17	±5	Jul. 31, 2017
54	5270	Body	5.517	46.837	5.381	48.930	2.54	-4.22	±5	Jul. 31, 2017
56	5280	Body	5.531	46.820	5.393	48.920	2.62	-4.25	±5	Jul. 31, 2017
58	5290	Body	5.545	46.807	5.404	48.910	2.68	-4.28	±5	Jul. 31, 2017
60	5300	Body	5.556	46.793	5.416	48.900	2.51	-4.31	±5	Jul. 31, 2017
62	5310	Body	5.566	46.765	5.428	48.787	2.50	-4.17	±5	Jul. 31, 2017
64	5320	Body	5.581	46.743	5.439	48.673	2.59	-4.02	±5	Jul. 31, 2017
100	5500	Body	5.796	46.540	5.650	48.600	2.59	-4.24	±5	Aug. 02, 2017
102	5510	Body	5.807	46.525	5.661	48.590	2.59	-4.27	±5	Aug. 02, 2017
104	5520	Body	5.819	46.500	5.673	48.580	2.63	-4.32	±5	Aug. 02, 2017
106	5530	Body	5.834	46.475	5.685	48.570	2.71	-4.37	±5	Aug. 02, 2017
108	5540	Body	5.849	46.457	5.696	48.560	2.62	-4.41	±5	Aug. 02, 2017
110	5550	Body	5.866	46.440	5.708	48.550	2.74	-4.44	±5	Aug. 02, 2017
112	5560	Body	5.880	46.438	5.720	48.540	2.80	-4.25	±5	Aug. 02, 2017
116	5580	Body	5.903	46.401	5.743	48.520	2.84	-4.33	±5	Aug. 02, 2017
128	5640	Body	5.982	46.289	5.813	48.440	2.97	-4.36	±5	Aug. 02, 2017
132	5660	Body	6.016	46.261	5.837	48.410	3.01	-4.42	±5	Aug. 02, 2017
134	5670	Body	6.027	46.258	5.848	48.395	3.02	-4.43	±5	Aug. 02, 2017
136	5680	Body	6.037	46.240	5.860	48.380	3.02	-4.46	±5	Aug. 02, 2017
138	5690	Body	6.050	46.218	5.872	48.365	3.07	-4.51	±5	Aug. 02, 2017
140	5700	Body	6.067	46.200	5.883	48.350	3.17	-4.54	±5	Aug. 02, 2017
142	5710	Body	6.080	46.189	5.895	48.335	3.22	-4.37	±5	Aug. 02, 2017
144	5720	Body	6.092	46.173	5.907	48.320	3.07	-4.40	±5	Aug. 02, 2017

Table of Low/Middle/High Channel for Liquid Validation



CH	Frequency (MHz)	Liquid Type	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
149	5745	Body	6.124	46.120	5.936	48.283	3.09	-4.51	±5	Aug. 02, 2017
151	5755	Body	6.140	46.097	5.947	48.268	3.19	-4.56	±5	Aug. 02, 2017
153	5765	Body	6.156	46.088	5.959	48.253	3.28	-4.58	±5	Aug. 02, 2017
155	5775	Body	6.167	46.087	5.971	48.238	3.30	-4.38	±5	Aug. 02, 2017
157	5785	Body	6.178	46.070	5.982	48.223	3.31	-4.42	±5	Aug. 02, 2017
159	5795	Body	6.191	46.049	5.994	48.208	3.36	-4.46	±5	Aug. 02, 2017
161	5805	Body	6.208	46.031	6.000	48.200	3.46	-4.50	±5	Aug. 02, 2017
165	5825	Body	6.232	46.003	6.030	48.200	3.35	-4.56	±5	Aug. 02, 2017
512	1850.2	Head	1.378	38.334	1.400	40.000	-1.55	-4.17	±5	Aug. 03, 2017
661	1880	Head	1.405	38.199	1.400	40.000	0.34	-4.50	±5	Aug. 03, 2017
810	1909.8	Head	1.435	38.066	1.400	40.000	2.52	-4.84	±5	Aug. 03, 2017
512	1850.2	Body	1.463	54.357	1.520	53.300	-3.74	1.98	±5	Aug. 03, 2017
661	1880	Body	1.496	54.242	1.520	53.300	-1.58	1.77	±5	Aug. 03, 2017
810	1909.8	Body	1.529	54.173	1.520	53.300	0.60	1.64	±5	Aug. 03, 2017
27710	2310	Body	1.745	54.564	1.780	52.884	-1.99	3.15	±5	Aug. 03, 2017
27710	2310	Head	1.652	39.397	1.673	39.424	-1.08	-0.01	±5	Aug. 03, 2017
128	824.2	Head	0.886	41.135	0.899	41.551	-1.52	-1.12	±5	Aug. 04, 2017
189	836.4	Head	0.897	40.977	0.902	41.500	-0.32	-1.26	±5	Aug. 04, 2017
251	848.8	Head	0.909	40.832	0.915	41.500	-0.14	-1.61	±5	Aug. 04, 2017
128	824.2	Body	0.981	55.153	0.969	55.238	1.09	-0.09	±5	Aug. 04, 2017
189	836.4	Body	0.992	55.031	0.972	55.196	2.26	-0.31	±5	Aug. 04, 2017
251	848.8	Body	1.004	54.918	0.987	55.158	1.38	-0.51	±5	Aug. 04, 2017

Table of Low/Middle/High Channel for Liquid Validation



10.3 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.

<System Verification for 1g SAR Results>

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 (%)
2017/7/25	750	HSL	250	D750V3-1012	ES3DV3 - SN3270	DAE4 Sn778	2.02	8.22	8.08	-1.70
2017/7/27	750	HSL	250	D750V3-1012	EX3DV4 - SN3976	DAE4 Sn1424	1.93	8.22	7.72	-6.08
2017/7/23	750	MSL	250	D750V3-1012	ES3DV3 - SN3270	DAE4 Sn778	2.28	8.71	9.12	4.71
2017/7/24	835	HSL	250	D835V2-499	ES3DV3 - SN3270	DAE4 Sn778	2.39	9.45	9.56	1.16
2017/7/26	835	HSL	250	D835V2-499	EX3DV4 - SN3976	DAE4 Sn1424	2.31	9.45	9.24	-2.22
2017/8/4	835	HSL	250	D835V2-499	EX3DV4 - SN3976	DAE4 Sn1424	2.31	9.45	9.24	-2.22
2017/7/23	835	MSL	250	D835V2-499	ES3DV3 - SN3270	DAE4 Sn778	2.57	9.67	10.28	6.31
2017/7/27	835	MSL	250	D835V2-499	EX3DV4 - SN3976	DAE4 Sn1424	2.51	9.67	10.04	3.83
2017/8/4	835	MSL	250	D835V2-499	EX3DV4 - SN3976	DAE4 Sn1424	2.55	9.67	10.20	5.48
2017/7/28	1750	HSL	250	D1750V2-1068	EX3DV4 - SN3976	DAE4 Sn1424	8.81	36.60	35.24	-3.72
2017/7/20	1750	MSL	250	D1750V2-1068	ES3DV3 - SN3270	DAE4 Sn778	9.11	36.20	36.44	0.66
2017/7/28	1900	HSL	250	D1900V2-5d041	EX3DV4 - SN3976	DAE4 Sn1424	9.68	40.50	38.72	-4.40
2017/8/3	1900	HSL	250	D1900V2-5d041	EX3DV4 - SN3976	DAE4 Sn1424	9.48	40.50	37.92	-6.37
2017/7/20	1900	MSL	250	D1900V2-5d041	ES3DV3 - SN3270	DAE4 Sn778	10.00	38.80	40.00	3.09
2017/7/29	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn1424	10.20	38.80	40.80	5.15
2017/8/3	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3976	DAE4 Sn1424	10.20	38.80	40.80	5.15
2017/8/3	2300	HSL	250	D2300V2-1006	EX3DV4 - SN3931	DAE3 Sn577	13.00	49.00	52.00	6.12
2017/8/3	2300	MSL	250	D2300V2-1006	EX3DV4 - SN3931	DAE3 Sn577	11.90	47.90	47.60	-0.63
2017/7/25	2450	HSL	250	D2450V2-736	ES3DV3 - SN3270	DAE4 Sn778	14.20	53.10	56.80	6.97
2017/7/30	2450	MSL	250	D2450V2-736	EX3DV4 - SN3931	DAE4 Sn1424	13.30	52.10	53.20	2.11
2017/7/29	2600	HSL	250	D2600V2-1008	EX3DV4 - SN3931	DAE4 Sn1424	14.10	56.80	56.40	-0.70
2017/7/21	2600	MSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	14.20	55.20	56.80	2.90
2017/7/25	5250	HSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3976	DAE4 Sn1424	8.16	80.60	81.60	1.24
2017/7/31	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3976	DAE4 Sn1424	7.18	75.50	71.80	-4.90
2017/7/25	5600	HSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3976	DAE4 Sn1424	8.76	83.80	87.60	4.53
2017/8/2	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3976	DAE4 Sn1424	7.73	78.60	77.30	-1.65
2017/7/26	5750	HSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3976	DAE4 Sn1424	7.82	80.50	78.20	-2.86
2017/8/2	5750	MSL	100	D5GHzV2-1006-5750	EX3DV4 - SN3976	DAE4 Sn1424	7.21	74.60	72.10	-3.35

<System Verification for 10g SAR Results>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2017/7/21	2600	MSL	250	D2600V2-1008	ES3DV3 - SN3270	DAE4 Sn778	6.33	25.00	25.32	1.28
2017/7/31	5250	MSL	100	D5GHzV2-1006-5250	EX3DV4 - SN3976	DAE4 Sn1424	1.93	21.20	19.30	-8.96
2017/8/2	5600	MSL	100	D5GHzV2-1006-5600	EX3DV4 - SN3976	DAE4 Sn1424	2.06	22.00	20.60	-6.36

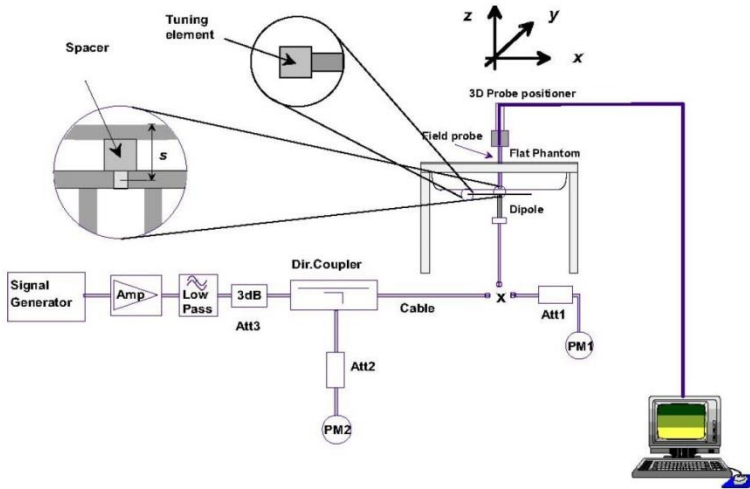


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 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.

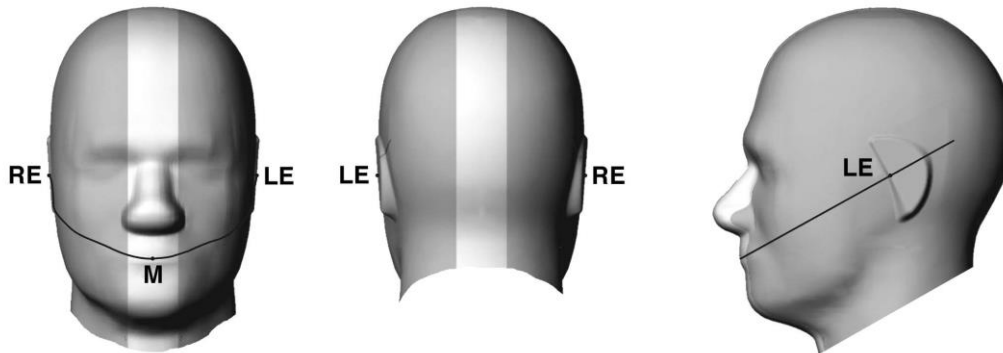


Fig 9.1.1 Front, back, and side views of SAM twin phantom

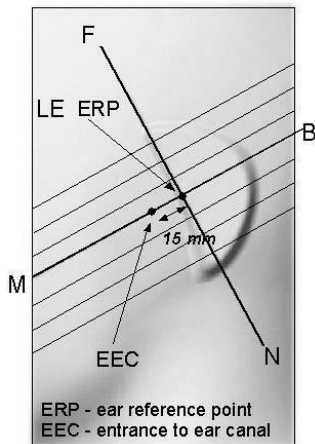


Fig 9.1.2 Close-up side view of phantom showing the ear region.

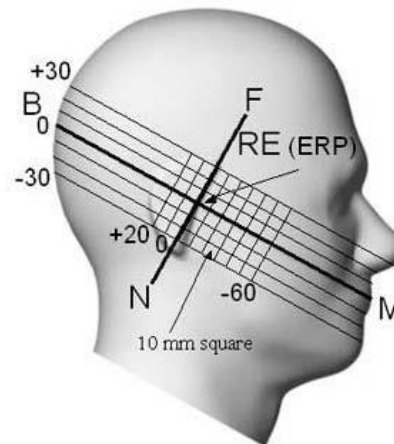


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 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”

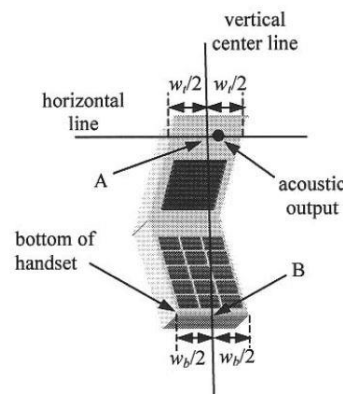


Fig 9.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

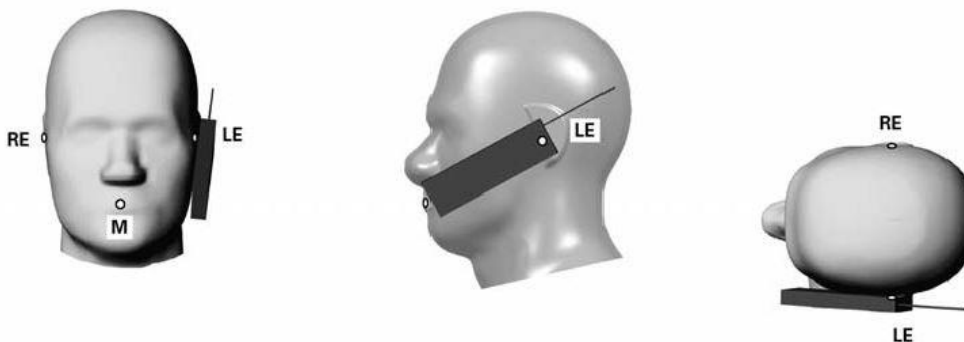


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 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

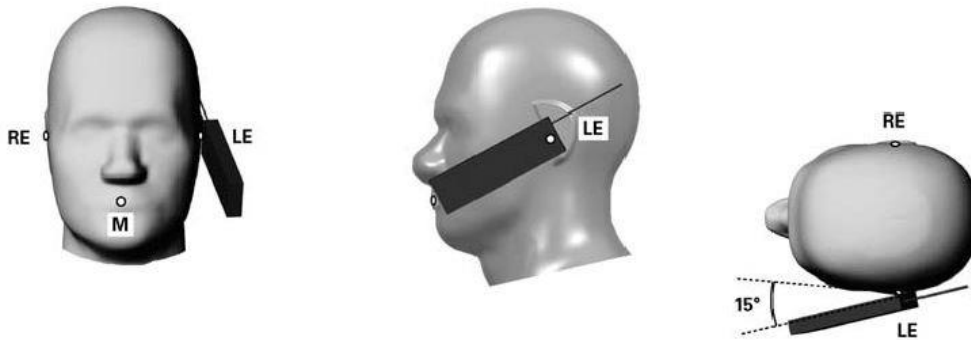


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 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 handset attached to the handset.

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

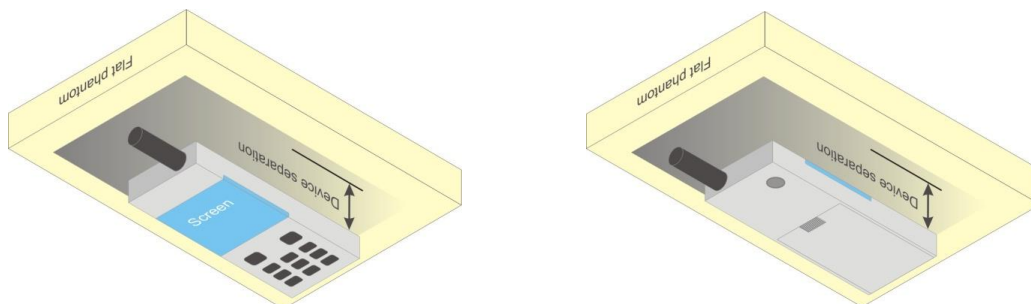


Fig 9.4 Body Worn Position



11.5 Extremity Exposure

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

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

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 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.



12. 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 (2Tx 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.

<Head/Hotspot/Body-worn/Product Specific mode for WWAN LAT>

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		33.17	33.32	33.33	33.50	24.17	24.32	24.33	24.50
GPRS 1 Tx slot		33.23	33.37	33.37	33.50	24.23	24.37	24.37	24.50
GPRS 2 Tx slots		30.39	30.36	30.29	30.50	24.39	24.36	24.29	24.50
GPRS 3 Tx slots		27.95	28.05	28.01	28.50	23.69	23.79	23.75	24.24
GPRS 4 Tx slots		26.22	26.39	26.37	26.50	23.22	23.39	23.37	23.50
EDGE 1 Tx slot		26.91	26.87	26.87	27.00	17.91	17.87	17.87	18.00
EDGE 2 Tx slots		23.70	23.64	23.65	24.00	17.70	17.64	17.65	18.00
EDGE 3 Tx slots		21.79	21.80	21.86	22.00	17.53	17.54	17.60	17.74
EDGE 4 Tx slots		20.37	20.35	20.37	20.50	17.37	17.35	17.37	17.50
DTM Multi-slot class 5	GSM 1 Tx slot	30.33	30.35	30.27	30.50	24.29	24.30	24.23	24.48
	GPRS 1 Tx slot	30.30	30.29	30.23	30.50				
DTM Multi-slot class 9	GSM 1 Tx slot	30.33	30.36	30.21	30.50	24.29	24.31	24.18	24.48
	GPRS 1 Tx slot	30.29	30.31	30.19	30.50				
DTM Multi-slot class 11	GSM 1 Tx slot	27.88	27.95	27.98	28.50	23.61	23.66	23.69	24.24
	GPRS 2 Tx slots	27.86	27.90	27.93	28.50				
DTM Multi-slot class 5	GSM 1 Tx slot	30.21	30.18	30.08	30.50	22.04	22.01	21.94	22.35
	EDGE 1 Tx slot	23.63	23.58	23.63	24.00				
DTM Multi-slot class 9	GSM 1 Tx slot	30.24	30.26	30.11	30.50	22.08	22.08	21.96	22.35
	EDGE 1 Tx slot	23.69	23.64	23.64	24.00				
DTM Multi-slot class 11	GSM 1 Tx slot	27.83	27.94	27.87	28.50	20.53	20.61	20.60	21.08
	EDGE 2 Tx slots	21.73	21.73	21.85	22.00				



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		30.05	30.06	30.09	30.50	21.05	21.06	21.09	21.50
GPRS 1 Tx slot		30.08	30.09	30.10	30.50	21.08	21.09	21.10	21.50
GPRS 2 Tx slots		27.11	27.09	27.02	27.50	21.11	21.09	21.02	21.50
GPRS 3 Tx slots		25.18	25.19	25.14	25.50	20.92	20.93	20.88	21.24
GPRS 4 Tx slots		23.89	23.85	23.73	24.00	20.89	20.85	20.73	21.00
EDGE 1 Tx slot		26.03	25.99	26.01	26.50	17.03	16.99	17.01	17.50
EDGE 2 Tx slots		22.90	22.83	22.82	23.00	16.90	16.83	16.82	17.00
EDGE 3 Tx slots		21.01	20.95	20.96	21.50	16.75	16.69	16.70	17.24
EDGE 4 Tx slots		19.70	19.60	19.59	20.00	16.70	16.60	16.59	17.00
DTM Multi-slot class 5	GSM 1 Tx slot	27.08	27.05	26.99	27.50	20.99	20.98	20.93	21.48
	GPRS 1 Tx slot	26.93	26.96	26.92	27.50				
DTM Multi-slot class 9	GSM 1 Tx slot	27.02	27.01	26.92	27.50	20.99	20.98	20.87	21.48
	GPRS 1 Tx slot	27.01	27.00	26.87	27.50				
DTM Multi-slot class 11	GSM 1 Tx slot	25.08	25.11	25.09	25.50	20.80	20.80	20.82	21.24
	GPRS 2 Tx slots	25.05	25.03	25.07	25.50				
DTM Multi-slot class 5	GSM 1 Tx slot	27.06	27.02	26.94	27.50	19.43	19.39	19.31	19.79
	EDGE 1 Tx slot	22.87	22.82	22.75	23.00				
DTM Multi-slot class 9	GSM 1 Tx slot	27.03	27.07	26.96	27.50	19.40	19.43	19.33	19.79
	EDGE 1 Tx slot	22.85	22.83	22.77	23.00				
DTM Multi-slot class 11	GSM 1 Tx slot	25.14	25.13	25.04	25.50	18.56	18.56	18.51	19.01
	EDGE 2 Tx slots	20.92	20.93	20.94	21.50				



<Head mode for WWAN UAT>

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		30.50	30.10	30.30	30.50	21.50	21.10	21.30	21.50
GPRS 1 Tx slot		30.50	30.11	30.32	30.50	21.50	21.11	21.32	21.50
GPRS 2 Tx slots		29.05	28.97	28.92	29.50	23.05	22.97	22.92	23.50
GPRS 3 Tx slots		27.49	27.48	27.50	27.50	23.23	23.22	23.24	23.24
GPRS 4 Tx slots		26.00	25.80	25.84	26.00	23.00	22.80	22.84	23.00
EDGE 1 Tx slot		26.57	26.60	26.62	27.00	17.57	17.60	17.62	18.00
EDGE 2 Tx slots		23.31	23.33	23.54	24.00	17.31	17.33	17.54	18.00
EDGE 3 Tx slots		21.38	21.40	21.59	22.00	17.12	17.14	17.33	17.74
EDGE 4 Tx slots		19.98	19.97	20.08	20.50	16.98	16.97	17.08	17.50
DTM Multi-slot class 5	GSM 1 Tx slot	28.74	28.46	28.46	29.50	22.63	22.36	22.36	23.48
	GPRS 1 Tx slot	28.55	28.29	28.30	29.50				
DTM Multi-slot class 9	GSM 1 Tx slot	28.73	28.47	28.48	29.50	22.62	22.36	22.38	23.48
	GPRS 1 Tx slot	28.54	28.29	28.31	29.50				
DTM Multi-slot class 11	GSM 1 Tx slot	27.48	27.50	27.49	27.50	23.13	23.17	23.24	23.24
	GPRS 2 Tx slots	27.34	27.39	27.50	27.50				
DTM Multi-slot class 5	GSM 1 Tx slot	28.74	28.52	28.51	29.50	20.80	20.63	20.67	21.55
	EDGE 1 Tx slot	23.28	23.30	23.50	24.00				
DTM Multi-slot class 9	GSM 1 Tx slot	28.73	28.48	28.47	29.50	20.79	20.60	20.64	21.55
	EDGE 1 Tx slot	23.30	23.32	23.52	24.00				
DTM Multi-slot class 11	GSM 1 Tx slot	27.50	27.48	27.49	27.50	20.19	20.18	20.25	20.41
	EDGE 2 Tx slots	21.35	21.38	21.57	22.00				



<Hotspot/Body-worn/Product Specific mode for WWAN UAT>

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		33.17	33.32	33.33	33.50	24.17	24.32	24.33	24.50
GPRS 1 Tx slot		33.23	33.37	33.37	33.50	24.23	24.37	24.37	24.50
GPRS 2 Tx slots		30.39	30.36	30.29	30.50	24.39	24.36	24.29	24.50
GPRS 3 Tx slots		27.95	28.05	28.01	28.50	23.69	23.79	23.75	24.24
GPRS 4 Tx slots		26.22	26.39	26.37	26.50	23.22	23.39	23.37	23.50
EDGE 1 Tx slot		26.91	26.87	26.87	27.00	17.91	17.87	17.87	18.00
EDGE 2 Tx slots		23.70	23.64	23.65	24.00	17.70	17.64	17.65	18.00
EDGE 3 Tx slots		21.79	21.80	21.86	22.00	17.53	17.54	17.60	17.74
EDGE 4 Tx slots		20.37	20.35	20.37	20.50	17.37	17.35	17.37	17.50
DTM Multi-slot class 5	GSM 1 Tx slot	30.33	30.35	30.27	30.50	24.29	24.30	24.23	24.48
	GPRS 1 Tx slot	30.30	30.29	30.23	30.50				
DTM Multi-slot class 9	GSM 1 Tx slot	30.33	30.36	30.21	30.50	24.29	24.31	24.18	24.48
	GPRS 1 Tx slot	30.29	30.31	30.19	30.50				
DTM Multi-slot class 11	GSM 1 Tx slot	27.88	27.95	27.98	28.50	23.61	23.66	23.69	24.24
	GPRS 2 Tx slots	27.86	27.90	27.93	28.50				
DTM Multi-slot class 5	GSM 1 Tx slot	30.21	30.18	30.08	30.50	22.04	22.01	21.94	22.35
	EDGE 1 Tx slot	23.63	23.58	23.63	24.00				
DTM Multi-slot class 9	GSM 1 Tx slot	30.24	30.26	30.11	30.50	22.08	22.08	21.96	22.35
	EDGE 1 Tx slot	23.69	23.64	23.64	24.00				
DTM Multi-slot class 11	GSM 1 Tx slot	27.83	27.94	27.87	28.50	20.53	20.61	20.60	21.08
	EDGE 2 Tx slots	21.73	21.73	21.85	22.00				

<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: Δ_{ACK} , Δ_{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.		

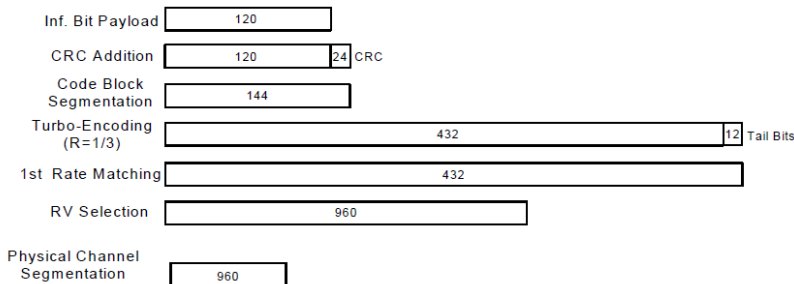


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

<Head/Body-worn/Product Specific mode for WWAN LAT>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	21.10	21.05	20.98	22.00	21.30	21.22	21.10	22.50	22.51	22.50	22.75	23.00
3GPP Rel 99	RMC 12.2Kbps	21.14	21.10	20.98	22.00	21.34	21.25	21.11	22.50	22.51	22.50	22.77	23.00
3GPP Rel 6	HSDPA Subtest-1	19.93	20.09	19.97	21.00	20.33	20.24	20.22	21.50	21.52	21.52	21.70	22.50
3GPP Rel 6	HSDPA Subtest-2	19.91	20.00	19.89	21.00	20.25	20.20	20.15	21.50	21.50	21.56	21.69	22.50
3GPP Rel 6	HSDPA Subtest-3	19.67	19.63	19.50	20.50	19.85	19.77	19.73	21.00	21.06	21.05	21.12	22.00
3GPP Rel 6	HSDPA Subtest-4	19.60	19.62	19.45	20.50	19.80	19.75	19.65	21.00	21.05	21.07	21.11	22.00
3GPP Rel 8	DC-HSDPA Subtest-1	19.93	20.03	19.96	21.00	20.30	20.17	20.22	21.50	21.49	21.43	21.67	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	19.91	19.94	19.88	21.00	20.25	20.14	20.10	21.50	21.44	21.56	21.59	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	19.62	19.56	19.43	20.50	19.80	19.77	19.63	21.00	21.05	20.96	21.10	22.00
3GPP Rel 8	DC-HSDPA Subtest-4	19.59	19.62	19.45	20.50	19.72	19.65	19.57	21.00	20.95	20.98	21.11	22.00
3GPP Rel 6	HSUPA Subtest-1	19.94	19.78	19.58	21.00	20.20	19.80	19.82	21.50	21.40	21.50	21.68	22.50
3GPP Rel 6	HSUPA Subtest-2	18.06	18.07	17.65	19.00	18.22	17.87	18.16	19.50	19.60	19.66	19.71	20.50
3GPP Rel 6	HSUPA Subtest-3	19.09	19.08	18.72	20.00	19.15	18.83	19.11	20.50	20.62	20.65	20.72	21.50
3GPP Rel 6	HSUPA Subtest-4	18.06	18.04	17.70	19.00	18.19	17.84	18.11	19.50	19.62	19.64	19.69	20.50
3GPP Rel 6	HSUPA Subtest-5	20.13	20.11	20.03	21.00	20.35	20.24	20.13	21.50	21.48	21.47	21.64	22.50

<Hotspot mode for WWAN LAT>

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938	1537	1638	1738	4357	4407	4458			
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	AMR 12.2Kbps	19.80	19.65	19.65	21.00	21.30	21.22	21.10	22.50	22.51	22.50	22.75	23.00
3GPP Rel 99	RMC 12.2Kbps	19.81	19.70	19.68	21.00	21.34	21.25	21.11	22.50	22.51	22.50	22.77	23.00
3GPP Rel 6	HSDPA Subtest-1	18.61	18.78	18.66	20.00	20.33	20.24	20.22	21.50	21.52	21.52	21.70	22.50
3GPP Rel 6	HSDPA Subtest-2	18.62	18.80	18.68	20.00	20.25	20.20	20.15	21.50	21.50	21.56	21.69	22.50
3GPP Rel 6	HSDPA Subtest-3	18.33	18.30	17.77	19.50	19.85	19.77	19.73	21.00	21.06	21.05	21.12	22.00
3GPP Rel 6	HSDPA Subtest-4	18.14	18.32	17.77	19.50	19.80	19.75	19.65	21.00	21.05	21.07	21.11	22.00
3GPP Rel 8	DC-HSDPA Subtest-1	18.60	18.76	18.60	20.00	20.30	20.17	20.22	21.50	21.49	21.43	21.67	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	18.59	18.71	18.66	20.00	20.25	20.14	20.10	21.50	21.44	21.56	21.59	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	18.30	18.23	17.70	19.50	19.80	19.77	19.63	21.00	21.05	20.96	21.10	22.00
3GPP Rel 8	DC-HSDPA Subtest-4	18.09	18.30	17.67	19.50	19.72	19.65	19.57	21.00	20.95	20.98	21.11	22.00
3GPP Rel 6	HSUPA Subtest-1	18.57	18.46	18.22	20.00	20.20	19.80	19.82	21.50	21.40	21.50	21.68	22.50
3GPP Rel 6	HSUPA Subtest-2	16.61	16.48	16.27	18.00	18.22	17.87	18.16	19.50	19.60	19.66	19.71	20.50
3GPP Rel 6	HSUPA Subtest-3	17.63	17.51	17.25	19.00	19.15	18.83	19.11	20.50	20.62	20.65	20.72	21.50
3GPP Rel 6	HSUPA Subtest-4	16.61	16.47	16.26	18.00	18.19	17.84	18.11	19.50	19.62	19.64	19.69	20.50
3GPP Rel 6	HSUPA Subtest-5	18.59	18.81	18.68	20.00	20.35	20.24	20.13	21.50	21.48	21.47	21.64	22.50



<Head mode for WWAN UAT>

Band		WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233	
Rx Channel		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	20.41	20.40	20.25	21.50
3GPP Rel 99	RMC 12.2Kbps	20.43	20.41	20.26	21.50
3GPP Rel 6	HSDPA Subtest-1	19.93	19.74	19.84	20.50
3GPP Rel 6	HSDPA Subtest-2	19.92	19.82	19.88	20.50
3GPP Rel 6	HSDPA Subtest-3	19.48	19.28	19.35	20.00
3GPP Rel 6	HSDPA Subtest-4	19.47	19.21	19.37	20.00
3GPP Rel 8	DC-HSDPA Subtest-1	19.90	19.70	19.82	20.50
3GPP Rel 8	DC-HSDPA Subtest-2	19.87	19.80	19.87	20.50
3GPP Rel 8	DC-HSDPA Subtest-3	19.45	19.58	19.31	20.00
3GPP Rel 8	DC-HSDPA Subtest-4	19.44	19.17	19.36	20.00
3GPP Rel 6	HSUPA Subtest-1	19.83	19.79	19.80	20.50
3GPP Rel 6	HSUPA Subtest-2	17.83	17.86	17.67	18.50
3GPP Rel 6	HSUPA Subtest-3	18.87	18.84	18.75	19.50
3GPP Rel 6	HSUPA Subtest-4	17.83	17.83	17.68	18.50
3GPP Rel 6	HSUPA Subtest-5	19.80	19.90	19.70	20.50

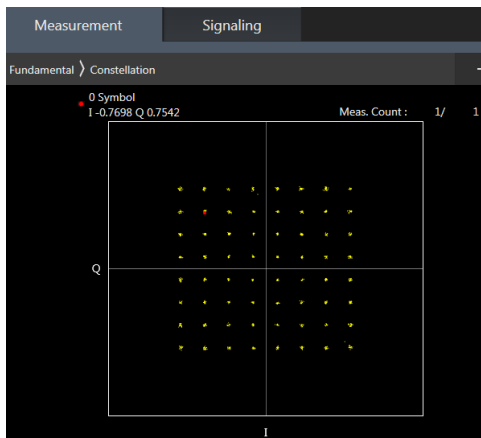
<Hotspot/Body-worn/Product Specific mode for WWAN UAT>

Band		WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233	
Rx Channel		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.51	22.50	22.75	23.00
3GPP Rel 99	RMC 12.2Kbps	22.51	22.50	22.77	23.00
3GPP Rel 6	HSDPA Subtest-1	21.52	21.52	21.70	22.50
3GPP Rel 6	HSDPA Subtest-2	21.50	21.56	21.69	22.50
3GPP Rel 6	HSDPA Subtest-3	21.06	21.05	21.12	22.00
3GPP Rel 6	HSDPA Subtest-4	21.05	21.07	21.11	22.00
3GPP Rel 8	DC-HSDPA Subtest-1	21.49	21.43	21.67	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	21.44	21.56	21.59	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	21.05	20.96	21.10	22.00
3GPP Rel 8	DC-HSDPA Subtest-4	20.95	20.98	21.11	22.00
3GPP Rel 6	HSUPA Subtest-1	21.40	21.50	21.68	22.50
3GPP Rel 6	HSUPA Subtest-2	19.60	19.66	19.71	20.50
3GPP Rel 6	HSUPA Subtest-3	20.62	20.65	20.72	21.50
3GPP Rel 6	HSUPA Subtest-4	19.62	19.64	19.69	20.50
3GPP Rel 6	HSUPA Subtest-5	21.48	21.47	21.64	22.50

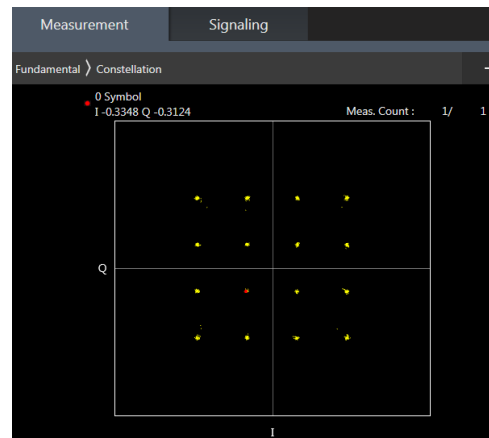
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 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 B4 / B5 / 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 17 / 38 SAR test was covered by Band 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



<Head/Body-worn/Product Specific mode for WWAN LAT>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	21.53	21.45	21.41	22	0
20	QPSK	1	49	21.09	21.01	21.22		
20	QPSK	1	99	21.14	21.05	21.17		
20	QPSK	50	0	20.47	20.18	20.46	21	1
20	QPSK	50	24	20.21	20.09	20.36		
20	QPSK	50	50	20.12	19.99	20.28		
20	QPSK	100	0	20.36	20.10	20.35		
20	16QAM	1	0	20.83	20.80	20.70	21	1
20	16QAM	1	49	20.48	20.36	20.61		
20	16QAM	1	99	20.51	20.36	20.48		
20	16QAM	50	0	19.32	19.22	19.44	20	2
20	16QAM	50	24	19.22	19.11	19.35		
20	16QAM	50	50	19.13	19.02	19.27		
20	16QAM	100	0	19.23	19.11	19.39		
20	64QAM	1	0	19.73	19.68	19.58	20	2
20	64QAM	1	49	19.31	19.23	19.46		
20	64QAM	1	99	19.37	19.24	19.38		
20	64QAM	50	0	18.32	18.20	18.46	19	3
20	64QAM	50	24	18.23	18.11	18.36		
20	64QAM	50	50	18.13	18.00	18.26		
20	64QAM	100	0	18.24	18.07	18.40		
Channel				18675	18900	19125		
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	21.33	21.26	21.44	22	0
15	QPSK	1	37	21.13	21.01	21.24		
15	QPSK	1	74	21.09	20.94	21.20		
15	QPSK	36	0	20.27	20.15	20.37	21	1
15	QPSK	36	20	20.19	20.06	20.32		
15	QPSK	36	39	20.10	20.00	20.24		
15	QPSK	75	0	20.20	20.05	20.31	21	1
15	16QAM	1	0	20.65	20.59	20.77		
15	16QAM	1	37	20.45	20.40	20.59		
15	16QAM	1	74	20.42	20.25	20.49	20	2
15	16QAM	36	0	19.28	19.17	19.38		
15	16QAM	36	20	19.19	19.10	19.31		
15	16QAM	36	39	19.11	19.00	19.25		
15	16QAM	75	0	19.20	19.09	19.30	20	2
15	64QAM	1	0	19.28	19.19	19.40		
15	64QAM	1	37	19.29	19.13	19.39		
15	64QAM	1	74	19.28	19.16	19.25	19	3
15	64QAM	36	0	18.11	18.03	18.27		
15	64QAM	36	20	18.14	18.08	18.26		
15	64QAM	36	39	18.08	18.01	18.24		
15	64QAM	75	0	18.16	18.01	18.18		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	21.43	21.32	21.30	22	0
10	QPSK	1	25	21.12	21.01	21.21		
10	QPSK	1	49	21.22	21.14	21.15		
10	QPSK	25	0	20.20	20.07	20.31	21	1
10	QPSK	25	12	20.15	20.02	20.25		
10	QPSK	25	25	20.13	19.99	20.23		
10	QPSK	50	0	20.18	20.05	20.27	21	1
10	16QAM	1	0	20.75	20.71	20.67		
10	16QAM	1	25	20.42	20.33	20.52		
10	16QAM	1	49	20.61	20.45	20.47	20	2
10	16QAM	25	0	19.20	19.09	19.28		
10	16QAM	25	12	19.19	19.08	19.28		
10	16QAM	25	25	19.12	19.01	19.20	19	3
10	16QAM	50	0	19.19	19.08	19.29		
10	64QAM	1	0	19.65	19.58	19.54		
10	64QAM	1	25	19.33	19.24	19.46	20	2
10	64QAM	1	49	19.45	19.35	19.38		
10	64QAM	25	0	18.24	18.12	18.30		
10	64QAM	25	12	18.19	18.08	18.29	19	3
10	64QAM	25	25	18.15	18.03	18.22		
10	64QAM	50	0	18.19	18.07	18.28		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.18	21.07	21.23	22	0
5	QPSK	1	12	21.09	20.98	21.16		
5	QPSK	1	24	21.11	20.98	21.17		
5	QPSK	12	0	20.15	20.02	20.22	21	1
5	QPSK	12	7	20.14	20.04	20.25		
5	QPSK	12	13	20.08	19.98	20.20		
5	QPSK	25	0	20.14	19.99	20.19	21	1
5	16QAM	1	0	20.48	20.48	20.61		
5	16QAM	1	12	20.47	20.34	20.53		
5	16QAM	1	24	20.47	20.34	20.49	20	2
5	16QAM	12	0	19.17	19.09	19.27		
5	16QAM	12	7	19.17	19.06	19.26		
5	16QAM	12	13	19.11	19.02	19.21	20	2
5	16QAM	25	0	19.15	19.03	19.24		
5	64QAM	1	0	19.37	19.29	19.45		
5	64QAM	1	12	19.29	19.19	19.39	20	2
5	64QAM	1	24	19.28	19.16	19.34		
5	64QAM	12	0	18.19	18.10	18.27		
5	64QAM	12	7	18.20	18.08	18.26	19	3
5	64QAM	12	13	18.18	18.08	18.24		
5	64QAM	25	0	18.16	18.03	18.24		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.11	20.98	21.14	22	0
3	QPSK	1	8	21.09	20.96	21.15		
3	QPSK	1	14	21.06	20.94	21.12		
3	QPSK	8	0	20.11	19.99	20.17	21	1
3	QPSK	8	4	20.12	20.00	20.21		
3	QPSK	8	7	20.08	19.98	20.15		
3	QPSK	15	0	20.10	19.98	20.19		
3	16QAM	1	0	20.43	20.38	20.53	21	1
3	16QAM	1	8	20.42	20.36	20.49		
3	16QAM	1	14	20.41	20.30	20.46		
3	16QAM	8	0	19.18	19.07	19.25	20	2
3	16QAM	8	4	19.18	19.08	19.29		
3	16QAM	8	7	19.16	19.05	19.22		
3	16QAM	15	0	19.13	19.03	19.20		
3	64QAM	1	0	19.27	19.23	19.38	20	2
3	64QAM	1	8	19.28	19.21	19.37		
3	64QAM	1	14	19.26	19.17	19.34		
3	64QAM	8	0	18.17	18.06	18.23	19	3
3	64QAM	8	4	18.17	18.05	18.25		
3	64QAM	8	7	18.16	18.04	18.20		
3	64QAM	15	0	18.13	18.00	18.17		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.04	20.93	21.10	22	0
1.4	QPSK	1	3	21.10	21.00	21.16		
1.4	QPSK	1	5	21.01	20.92	21.06		
1.4	QPSK	3	0	21.06	20.98	21.15		
1.4	QPSK	3	1	21.12	21.02	21.19		
1.4	QPSK	3	3	21.05	20.97	21.11		
1.4	QPSK	6	0	20.05	19.93	20.12	21	1
1.4	16QAM	1	0	20.35	20.31	20.43	21	1
1.4	16QAM	1	3	20.41	20.37	20.47		
1.4	16QAM	1	5	20.34	20.24	20.40		
1.4	16QAM	3	0	20.10	19.99	20.15		
1.4	16QAM	3	1	20.15	20.04	20.21		
1.4	16QAM	3	3	20.08	19.98	20.14		
1.4	16QAM	6	0	19.12	19.00	19.19	20	2
1.4	64QAM	1	0	19.23	19.16	19.28	20	2
1.4	64QAM	1	3	19.27	19.18	19.34		
1.4	64QAM	1	5	19.18	19.11	19.26		
1.4	64QAM	3	0	19.23	19.13	19.29		
1.4	64QAM	3	1	19.27	19.18	19.34		
1.4	64QAM	3	3	19.23	19.11	19.28		
1.4	64QAM	6	0	18.07	17.95	18.13	19	3



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.55	22.50	22.43	23	0
20	QPSK	1	49	22.33	22.17	22.07		
20	QPSK	1	99	22.15	22.10	21.98		
20	QPSK	50	0	21.55	21.37	21.40	22	1
20	QPSK	50	24	21.45	21.30	21.22		
20	QPSK	50	50	21.30	21.22	21.13		
20	QPSK	100	0	21.47	21.34	21.19		
20	16QAM	1	0	21.77	21.67	21.65	22	1
20	16QAM	1	49	21.57	21.40	21.34		
20	16QAM	1	99	21.41	21.34	21.22		
20	16QAM	50	0	20.57	20.39	20.38	21	2
20	16QAM	50	24	20.47	20.34	20.23		
20	16QAM	50	50	20.28	20.25	20.12		
20	16QAM	100	0	20.44	20.29	20.20		
20	64QAM	1	0	20.80	20.65	20.65	21	2
20	64QAM	1	49	20.54	20.41	20.30		
20	64QAM	1	99	20.35	20.33	20.21		
20	64QAM	50	0	19.57	19.43	19.39	20	3
20	64QAM	50	24	19.47	19.34	19.22		
20	64QAM	50	50	19.28	19.25	19.11		
20	64QAM	100	0	19.46	19.33	19.23		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.53	22.39	22.35	23	0
15	QPSK	1	37	22.21	22.16	22.03		
15	QPSK	1	74	22.08	22.10	22.03		
15	QPSK	36	0	21.42	21.26	21.24	22	1
15	QPSK	36	20	21.37	21.29	21.17		
15	QPSK	36	39	21.18	21.16	21.10		
15	QPSK	75	0	21.39	21.28	21.16		
15	16QAM	1	0	21.62	21.65	21.66	22	1
15	16QAM	1	37	21.50	21.43	21.33		
15	16QAM	1	74	21.35	21.41	21.28		
15	16QAM	36	0	20.49	20.39	20.27	21	2
15	16QAM	36	20	20.48	20.30	20.18		
15	16QAM	36	39	20.29	20.21	20.10		
15	16QAM	75	0	20.47	20.32	20.20		
15	64QAM	1	0	20.75	20.62	20.59	21	2
15	64QAM	1	37	20.56	20.40	20.28		
15	64QAM	1	74	20.43	20.36	20.20		
15	64QAM	36	0	19.55	19.37	19.26	20	3
15	64QAM	36	20	19.47	19.35	19.22		
15	64QAM	36	39	19.34	19.26	19.15		
15	64QAM	75	0	19.47	19.32	19.20		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.40	22.32	22.22	23	0
10	QPSK	1	25	22.24	22.19	22.09		
10	QPSK	1	49	22.22	22.06	22.04		
10	QPSK	25	0	21.40	21.25	21.23	22	1
10	QPSK	25	12	21.34	21.18	21.20		
10	QPSK	25	25	21.33	21.15	21.12		
10	QPSK	50	0	21.35	21.20	21.20	22	1
10	16QAM	1	0	21.57	21.44	21.47		
10	16QAM	1	25	21.47	21.32	21.35		
10	16QAM	1	49	21.45	21.30	21.26	21	2
10	16QAM	25	0	20.40	20.25	20.21		
10	16QAM	25	12	20.37	20.32	20.17		
10	16QAM	25	25	20.30	20.26	20.14	21	2
10	16QAM	50	0	20.37	20.32	20.18		
10	64QAM	1	0	20.56	20.52	20.42		
10	64QAM	1	25	20.44	20.39	20.29	21	2
10	64QAM	1	49	20.40	20.35	20.25		
10	64QAM	25	0	19.42	19.36	19.22		
10	64QAM	25	12	19.40	19.34	19.21	20	3
10	64QAM	25	25	19.42	19.29	19.16		
10	64QAM	50	0	19.46	19.31	19.20		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.37	22.29	22.14	23	0
5	QPSK	1	12	22.32	22.22	22.07		
5	QPSK	1	24	22.27	22.18	22.06		
5	QPSK	12	0	21.39	21.20	21.16	22	1
5	QPSK	12	7	21.39	21.25	21.18		
5	QPSK	12	13	21.33	21.24	21.12		
5	QPSK	25	0	21.35	21.26	21.14	22	1
5	16QAM	1	0	21.50	21.43	21.37		
5	16QAM	1	12	21.52	21.46	21.35		
5	16QAM	1	24	21.48	21.43	21.29	21	2
5	16QAM	12	0	20.41	20.32	20.20		
5	16QAM	12	7	20.40	20.33	20.21		
5	16QAM	12	13	20.35	20.27	20.15	21	2
5	16QAM	25	0	20.35	20.30	20.18		
5	64QAM	1	0	20.54	20.46	20.32		
5	64QAM	1	12	20.48	20.43	20.29	21	2
5	64QAM	1	24	20.46	20.39	20.24		
5	64QAM	12	0	19.42	19.36	19.21		
5	64QAM	12	7	19.49	19.33	19.21	20	3
5	64QAM	12	13	19.48	19.33	19.17		
5	64QAM	25	0	19.48	19.27	19.14		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.42	22.26	22.08	23	0
3	QPSK	1	8	22.41	22.20	22.06		
3	QPSK	1	14	22.37	22.18	22.05		
3	QPSK	8	0	21.47	21.28	21.13	22	1
3	QPSK	8	4	21.47	21.28	21.14		
3	QPSK	8	7	21.42	21.27	21.10		
3	QPSK	15	0	21.44	21.27	21.13	22	1
3	16QAM	1	0	21.53	21.42	21.34		
3	16QAM	1	8	21.54	21.42	21.33		
3	16QAM	1	14	21.51	21.38	21.26	21	2
3	16QAM	8	0	20.52	20.33	20.19		
3	16QAM	8	4	20.51	20.36	20.21		
3	16QAM	8	7	20.48	20.32	20.19	20	3
3	16QAM	15	0	20.48	20.27	20.15		
3	64QAM	1	0	20.57	20.42	20.29		
3	64QAM	1	8	20.56	20.37	20.25	21	2
3	64QAM	1	14	20.54	20.35	20.22		
3	64QAM	8	0	19.50	19.33	19.18		
3	64QAM	8	4	19.52	19.34	19.21	20	3
3	64QAM	8	7	19.48	19.28	19.15		
3	64QAM	15	0	19.44	19.28	19.12		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.29	22.14	22.02	23	0
1.4	QPSK	1	3	22.34	22.19	22.05		
1.4	QPSK	1	5	22.26	22.11	21.97		
1.4	QPSK	3	0	22.27	22.18	22.05		
1.4	QPSK	3	1	22.32	22.22	22.10		
1.4	QPSK	3	3	22.23	22.20	22.04		
1.4	QPSK	6	0	21.28	21.19	21.04	22	1
1.4	16QAM	1	0	21.34	21.34	21.27	22	1
1.4	16QAM	1	3	21.41	21.42	21.28		
1.4	16QAM	1	5	21.34	21.33	21.21		
1.4	16QAM	3	0	21.23	21.19	21.06		
1.4	16QAM	3	1	21.30	21.22	21.09		
1.4	16QAM	3	3	21.23	21.17	21.02		
1.4	16QAM	6	0	20.34	20.27	20.14	21	2
1.4	64QAM	1	0	20.45	20.34	20.21	21	2
1.4	64QAM	1	3	20.55	20.37	20.24		
1.4	64QAM	1	5	20.39	20.29	20.18		
1.4	64QAM	3	0	20.47	20.33	20.16		
1.4	64QAM	3	1	20.52	20.37	20.22		
1.4	64QAM	3	3	20.46	20.31	20.16		
1.4	64QAM	6	0	19.36	19.21	19.08	20	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	23.28	22.95	23.20	24	0
10	QPSK	1	25	23.00	22.76	23.15		
10	QPSK	1	49	22.75	22.92	23.18		
10	QPSK	25	0	22.25	21.95	22.24	23	1
10	QPSK	25	12	22.04	21.83	22.08		
10	QPSK	25	25	22.15	21.90	22.20		
10	QPSK	50	0	22.10	21.79	22.09	23	1
10	16QAM	1	0	22.60	22.15	22.24		
10	16QAM	1	25	22.31	21.99	22.44		
10	16QAM	1	49	22.03	22.24	22.34	22	2
10	16QAM	25	0	21.15	20.74	20.99		
10	16QAM	25	12	21.13	20.81	21.12		
10	16QAM	25	25	20.86	20.84	21.24	22	2
10	16QAM	50	0	21.04	20.79	21.13		
10	64QAM	1	0	21.49	21.05	21.13		
10	64QAM	1	25	21.24	20.94	21.35	22	2
10	64QAM	1	49	20.97	21.15	21.34		
10	64QAM	25	0	20.20	19.75	20.02		
10	64QAM	25	12	20.17	19.83	20.15	21	3
10	64QAM	25	25	19.87	19.85	20.25		
10	64QAM	50	0	20.03	19.82	20.12		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.26	22.66	23.12	24	0
5	QPSK	1	12	23.10	22.69	23.13		
5	QPSK	1	24	22.96	22.77	23.19		
5	QPSK	12	0	22.27	21.69	22.16	23	1
5	QPSK	12	7	22.16	21.80	22.24		
5	QPSK	12	13	22.14	21.82	22.29		
5	QPSK	25	0	22.12	21.79	22.27	23	1
5	16QAM	1	0	22.59	21.92	22.47		
5	16QAM	1	12	22.41	21.97	22.36		
5	16QAM	1	24	22.29	22.07	22.35	22	2
5	16QAM	12	0	21.29	20.71	21.17		
5	16QAM	12	7	21.21	20.79	21.23		
5	16QAM	12	13	21.15	20.84	21.30	22	2
5	16QAM	25	0	21.17	20.76	21.23		
5	64QAM	1	0	21.47	20.86	21.33		
5	64QAM	1	12	21.32	20.89	21.35	22	2
5	64QAM	1	24	21.17	20.96	21.36		
5	64QAM	12	0	20.30	19.74	20.20		
5	64QAM	12	7	20.22	19.84	20.31	21	3
5	64QAM	12	13	20.17	19.91	20.37		
5	64QAM	25	0	20.16	19.80	20.27		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.22	22.65	23.17	24	0
3	QPSK	1	8	23.11	22.70	23.22		
3	QPSK	1	14	23.06	22.79	23.18		
3	QPSK	8	0	22.24	21.67	22.22	23	1
3	QPSK	8	4	22.17	21.78	22.34		
3	QPSK	8	7	22.10	21.74	22.33		
3	QPSK	15	0	22.15	21.75	22.29	23	1
3	16QAM	1	0	22.57	21.88	22.37		
3	16QAM	1	8	22.47	21.97	22.37		
3	16QAM	1	14	22.43	22.04	22.35	22	2
3	16QAM	8	0	21.31	20.72	21.28		
3	16QAM	8	4	21.24	20.84	21.37		
3	16QAM	8	7	21.18	20.81	21.36	22	2
3	16QAM	15	0	21.16	20.78	21.32		
3	64QAM	1	0	21.42	20.84	21.38		
3	64QAM	1	8	21.35	20.91	21.41	22	2
3	64QAM	1	14	21.29	20.97	21.40		
3	64QAM	8	0	20.29	19.72	20.25		
3	64QAM	8	4	20.20	19.82	20.39	21	3
3	64QAM	8	7	20.16	19.78	20.33		
3	64QAM	15	0	20.17	19.78	20.34		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.17	22.64	23.10	24	0
1.4	QPSK	1	3	23.24	22.71	23.14		
1.4	QPSK	1	5	23.14	22.61	23.06		
1.4	QPSK	3	0	23.21	22.69	23.18		
1.4	QPSK	3	1	23.26	22.75	23.24		
1.4	QPSK	3	3	23.20	22.70	23.20		
1.4	QPSK	6	0	22.20	21.68	22.23	23	1
1.4	16QAM	1	0	22.47	21.87	22.28	23	1
1.4	16QAM	1	3	22.54	21.96	22.35		
1.4	16QAM	1	5	22.47	21.88	22.26		
1.4	16QAM	3	0	22.23	21.71	22.19		
1.4	16QAM	3	1	22.30	21.74	22.25		
1.4	16QAM	3	3	22.25	21.70	22.18		
1.4	16QAM	6	0	21.28	20.77	21.32	22	2
1.4	64QAM	1	0	21.41	20.88	21.38	22	2
1.4	64QAM	1	3	21.42	20.90	21.41		
1.4	64QAM	1	5	21.36	20.84	21.35		
1.4	64QAM	3	0	21.37	20.83	21.32		
1.4	64QAM	3	1	21.41	20.87	21.35		
1.4	64QAM	3	3	21.36	20.81	21.32		
1.4	64QAM	6	0	20.19	19.68	20.23	21	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	22.82	22.59	22.75	24	0
20	QPSK	1	49	22.66	22.43	22.66		
20	QPSK	1	99	22.52	22.46	22.74		
20	QPSK	50	0	21.79	21.63	21.78	23	1
20	QPSK	50	24	21.75	21.50	21.74		
20	QPSK	50	50	21.60	21.52	21.76		
20	QPSK	100	0	21.75	21.53	21.74		
20	16QAM	1	0	22.03	21.84	21.97	23	1
20	16QAM	1	49	21.92	21.68	21.92		
20	16QAM	1	99	21.76	21.73	21.98		
20	16QAM	50	0	20.77	20.66	20.77	22	2
20	16QAM	50	24	20.77	20.56	20.80		
20	16QAM	50	50	20.62	20.52	20.77		
20	16QAM	100	0	20.73	20.50	20.74		
20	64QAM	1	0	21.03	20.83	20.92	22	2
20	64QAM	1	49	20.90	20.64	20.89		
20	64QAM	1	99	20.72	20.67	20.94		
20	64QAM	50	0	19.77	19.62	19.78	21	3
20	64QAM	50	24	19.76	19.56	19.77		
20	64QAM	50	50	19.63	19.51	19.78		
20	64QAM	100	0	19.73	19.52	19.77		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.80	22.59	22.71	24	0
15	QPSK	1	37	22.64	22.41	22.66		
15	QPSK	1	74	22.60	22.46	22.72		
15	QPSK	36	0	21.74	21.60	21.78	23	1
15	QPSK	36	20	21.78	21.55	21.78		
15	QPSK	36	39	21.65	21.51	21.77		
15	QPSK	75	0	21.75	21.49	21.79		
15	16QAM	1	0	22.06	21.88	21.98	23	1
15	16QAM	1	37	21.94	21.72	21.95		
15	16QAM	1	74	21.91	21.77	22.03		
15	16QAM	36	0	20.76	20.64	20.76	22	2
15	16QAM	36	20	20.75	20.54	20.79		
15	16QAM	36	39	20.62	20.49	20.77		
15	16QAM	75	0	20.74	20.50	20.79		
15	64QAM	1	0	21.01	20.83	20.96	22	2
15	64QAM	1	37	20.89	20.61	20.90		
15	64QAM	1	74	20.80	20.65	20.98		
15	64QAM	36	0	19.76	19.64	19.81	21	3
15	64QAM	36	20	19.79	19.58	19.82		
15	64QAM	36	39	19.65	19.53	19.80		
15	64QAM	75	0	19.74	19.50	19.78		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.77	22.57	22.74	24	0
10	QPSK	1	25	22.68	22.47	22.71		
10	QPSK	1	49	22.67	22.46	22.71		
10	QPSK	25	0	21.80	21.51	21.77	23	1
10	QPSK	25	12	21.74	21.53	21.77		
10	QPSK	25	25	21.69	21.48	21.77		
10	QPSK	50	0	21.69	21.48	21.75	23	1
10	16QAM	1	0	22.00	21.83	21.96		
10	16QAM	1	25	21.94	21.70	21.97		
10	16QAM	1	49	21.93	21.70	21.99	22	2
10	16QAM	25	0	20.82	20.51	20.76		
10	16QAM	25	12	20.73	20.52	20.80		
10	16QAM	25	25	20.69	20.49	20.79	22	2
10	16QAM	50	0	20.71	20.48	20.78		
10	64QAM	1	0	20.95	20.75	20.89		
10	64QAM	1	25	20.91	20.65	20.92	22	2
10	64QAM	1	49	20.87	20.62	20.95		
10	64QAM	25	0	19.81	19.49	19.77		
10	64QAM	25	12	19.75	19.54	19.82	21	3
10	64QAM	25	25	19.69	19.48	19.77		
10	64QAM	50	0	19.72	19.51	19.79		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.75	22.43	22.71	24	0
5	QPSK	1	12	22.76	22.44	22.74		
5	QPSK	1	24	22.67	22.41	22.72		
5	QPSK	12	0	21.80	21.51	21.78	23	1
5	QPSK	12	7	21.80	21.53	21.80		
5	QPSK	12	13	21.67	21.46	21.80		
5	QPSK	25	0	21.82	21.51	21.78	23	1
5	16QAM	1	0	21.97	21.69	21.96		
5	16QAM	1	12	22.01	21.72	22.00		
5	16QAM	1	24	21.89	21.70	21.98	22	2
5	16QAM	12	0	20.80	20.52	20.79		
5	16QAM	12	7	20.85	20.52	20.84		
5	16QAM	12	13	20.69	20.50	20.76	22	2
5	16QAM	25	0	20.83	20.50	20.79		
5	64QAM	1	0	20.94	20.62	20.93		
5	64QAM	1	12	20.96	20.64	20.95	22	2
5	64QAM	1	24	20.85	20.61	20.93		
5	64QAM	12	0	19.86	19.52	19.82		
5	64QAM	12	7	19.87	19.59	19.84	21	3
5	64QAM	12	13	19.73	19.51	19.82		
5	64QAM	25	0	19.79	19.53	19.77		



<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	23.01	22.98	22.84	24	0
10	QPSK	1	25	22.92	22.88	23.10		
10	QPSK	1	49	23.06	23.10	23.47		
10	QPSK	25	0	22.08	21.94	21.95	23	1
10	QPSK	25	12	22.01	21.91	22.21		
10	QPSK	25	25	22.09	22.08	22.38		
10	QPSK	50	0	21.96	21.92	22.21	23	1
10	16QAM	1	0	22.27	22.11	22.08		
10	16QAM	1	25	22.05	22.13	22.35		
10	16QAM	1	49	22.14	22.32	22.53	22	2
10	16QAM	25	0	21.09	20.91	20.97		
10	16QAM	25	12	21.00	20.95	21.22		
10	16QAM	25	25	20.94	21.11	21.39	22	2
10	16QAM	50	0	20.96	20.92	21.22		
10	64QAM	1	0	21.25	21.09	21.05		
10	64QAM	1	25	21.03	21.06	21.33	22	2
10	64QAM	1	49	21.06	21.30	21.59		
10	64QAM	25	0	20.10	19.97	20.00		
10	64QAM	25	12	20.02	19.99	20.24	21	3
10	64QAM	25	25	19.98	20.12	20.39		
10	64QAM	50	0	20.00	19.95	20.22		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.05	22.86	23.10	24	0
5	QPSK	1	12	23.02	22.84	23.26		
5	QPSK	1	24	22.94	22.94	23.46		
5	QPSK	12	0	22.10	21.93	22.24	23	1
5	QPSK	12	7	22.09	21.91	22.36		
5	QPSK	12	13	22.06	21.99	22.41		
5	QPSK	25	0	22.09	21.89	22.35	23	1
5	16QAM	1	0	22.27	22.06	22.31		
5	16QAM	1	12	22.18	22.11	22.36		
5	16QAM	1	24	22.06	22.22	22.55	22	2
5	16QAM	12	0	21.10	20.92	21.24		
5	16QAM	12	7	21.10	20.95	21.34		
5	16QAM	12	13	21.05	21.01	21.43	22	2
5	16QAM	25	0	21.10	20.92	21.34		
5	64QAM	1	0	21.28	21.07	21.30		
5	64QAM	1	12	21.15	21.07	21.39	22	2
5	64QAM	1	24	21.06	21.16	21.56		
5	64QAM	12	0	20.15	19.97	20.31		
5	64QAM	12	7	20.16	19.99	20.44	21	3
5	64QAM	12	13	20.14	20.04	20.49		
5	64QAM	25	0	20.11	19.92	20.36		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.05	22.85	23.30	24	0
3	QPSK	1	8	23.05	22.85	23.35		
3	QPSK	1	14	23.04	22.92	23.43		
3	QPSK	8	0	22.09	21.92	22.35	23	1
3	QPSK	8	4	22.10	21.90	22.46		
3	QPSK	8	7	22.08	21.89	22.46		
3	QPSK	15	0	22.06	21.87	22.41	23	1
3	16QAM	1	0	22.24	22.07	22.36		
3	16QAM	1	8	22.21	22.12	22.44		
3	16QAM	1	14	22.14	22.19	22.54	22	2
3	16QAM	8	0	21.15	20.96	21.36		
3	16QAM	8	4	21.17	20.97	21.48		
3	16QAM	8	7	21.14	20.94	21.49	21	3
3	16QAM	15	0	21.11	20.92	21.44		
3	64QAM	1	0	21.29	21.03	21.41		
3	64QAM	1	8	21.22	21.06	21.49	22	2
3	64QAM	1	14	21.17	21.15	21.61		
3	64QAM	8	0	20.14	19.93	20.38		
3	64QAM	8	4	20.16	19.95	20.52	21	3
3	64QAM	8	7	20.14	19.92	20.50		
3	64QAM	15	0	20.11	19.92	20.47		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.99	22.76	23.21	24	0
1.4	QPSK	1	3	23.01	22.82	23.37		
1.4	QPSK	1	5	22.92	22.76	23.29		
1.4	QPSK	3	0	23.02	22.82	23.29		
1.4	QPSK	3	1	23.07	22.87	23.38		
1.4	QPSK	3	3	23.04	22.82	23.43		
1.4	QPSK	6	0	22.03	21.84	22.35	23	1
1.4	16QAM	1	0	22.19	22.03	22.34	23	1
1.4	16QAM	1	3	22.26	22.11	22.51		
1.4	16QAM	1	5	22.16	22.04	22.43		
1.4	16QAM	3	0	22.02	21.83	22.29		
1.4	16QAM	3	1	22.09	21.88	22.33		
1.4	16QAM	3	3	22.00	21.83	22.36		
1.4	16QAM	6	0	21.09	20.87	21.39	22	2
1.4	64QAM	1	0	21.18	20.97	21.46	22	2
1.4	64QAM	1	3	21.22	21.02	21.61		
1.4	64QAM	1	5	21.14	20.94	21.54		
1.4	64QAM	3	0	21.15	20.96	21.39		
1.4	64QAM	3	1	21.17	21.01	21.43		
1.4	64QAM	3	3	21.12	20.95	21.49		
1.4	64QAM	6	0	20.06	19.85	20.30	21	3



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.55	22.60	22.69		
10	QPSK	1	25	22.89	22.96	23.06	24	0
10	QPSK	1	49	23.25	23.35	23.33		
10	QPSK	25	0	21.76	21.82	21.91		
10	QPSK	25	12	21.94	22.02	22.12	23	1
10	QPSK	25	25	22.13	22.35	22.32		
10	QPSK	50	0	21.95	22.16	22.14		
10	16QAM	1	0	21.70	21.81	21.97	23	1
10	16QAM	1	25	22.17	22.26	22.31		
10	16QAM	1	49	22.36	22.41	22.45		
10	16QAM	25	0	20.79	20.85	20.94	22	2
10	16QAM	25	12	20.98	21.07	21.14		
10	16QAM	25	25	21.14	21.23	21.34		
10	16QAM	50	0	20.98	21.09	21.16	22	2
10	64QAM	1	0	20.67	20.77	20.90		
10	64QAM	1	25	21.14	21.18	21.26		
10	64QAM	1	49	21.41	21.48	21.45	21	3
10	64QAM	25	0	19.77	19.86	19.95		
10	64QAM	25	12	20.00	20.10	20.18		
10	64QAM	25	25	20.18	20.25	20.33	21	3
10	64QAM	50	0	19.97	20.06	20.17		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5	Tune-up limit (dBm)	MPR (dB)
5	QPSK	1	0	22.54	22.79	23.03	24	0
5	QPSK	1	12	22.71	22.97	23.22		
5	QPSK	1	24	22.89	23.13	23.33		
5	QPSK	12	0	21.70	21.92	22.19	23	1
5	QPSK	12	7	21.79	22.05	22.31		
5	QPSK	12	13	21.87	22.11	22.38		
5	QPSK	25	0	21.77	22.00	22.31	23	1
5	16QAM	1	0	21.73	22.07	22.28		
5	16QAM	1	12	21.98	22.24	22.33		
5	16QAM	1	24	22.16	22.30	22.44	22	2
5	16QAM	12	0	20.67	20.97	21.21		
5	16QAM	12	7	20.80	21.11	21.29		
5	16QAM	12	13	20.89	21.13	21.38	22	2
5	16QAM	25	0	20.75	21.06	21.33		
5	64QAM	1	0	20.69	21.01	21.26		
5	64QAM	1	12	20.93	21.16	21.33	22	2
5	64QAM	1	24	21.11	21.31	21.50		
5	64QAM	12	0	19.75	20.00	20.26		
5	64QAM	12	7	19.83	20.11	20.37	21	3
5	64QAM	12	13	19.90	20.17	20.46		
5	64QAM	25	0	19.80	20.03	20.34		



<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	23.06	22.91	22.94	24	0
15	QPSK	1	37	22.82	22.59	23.04		
15	QPSK	1	74	22.59	22.81	22.93		
15	QPSK	36	0	21.98	21.74	22.09	23	1
15	QPSK	36	20	21.96	21.64	22.01		
15	QPSK	36	39	21.74	21.73	22.08		
15	QPSK	75	0	21.91	21.65	22.11		
15	16QAM	1	0	22.26	22.05	22.05	23	1
15	16QAM	1	37	22.14	21.90	22.38		
15	16QAM	1	74	21.91	22.11	22.18		
15	16QAM	36	0	20.98	20.73	20.98	22	2
15	16QAM	36	20	20.94	20.68	21.12		
15	16QAM	36	39	20.72	20.74	21.18		
15	16QAM	75	0	20.91	20.63	21.07		
15	64QAM	1	0	21.20	20.93	21.03	22	2
15	64QAM	1	37	21.04	20.81	21.28		
15	64QAM	1	74	20.79	21.01	21.25		
15	64QAM	36	0	20.00	19.72	20.00	21	3
15	64QAM	36	20	19.97	19.70	20.14		
15	64QAM	36	39	19.73	19.78	20.19		
15	64QAM	75	0	19.92	19.63	20.06		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.92	22.62	22.96	24	0
10	QPSK	1	25	22.82	22.51	23.02		
10	QPSK	1	49	22.63	22.71	22.97		
10	QPSK	25	0	21.95	21.61	22.02	23	1
10	QPSK	25	12	21.93	21.59	22.10		
10	QPSK	25	25	21.86	21.63	22.15		
10	QPSK	50	0	21.91	21.58	22.09		
10	16QAM	1	0	22.18	22.00	22.26	23	1
10	16QAM	1	25	22.08	21.83	22.37		
10	16QAM	1	49	21.97	21.98	22.18		
10	16QAM	25	0	20.93	20.61	21.01	22	2
10	16QAM	25	12	20.92	20.62	21.09		
10	16QAM	25	25	20.83	20.61	21.14		
10	16QAM	50	0	20.91	20.59	21.12		
10	64QAM	1	0	21.09	20.84	21.13	22	2
10	64QAM	1	25	21.01	20.74	21.28		
10	64QAM	1	49	20.83	20.90	21.18		
10	64QAM	25	0	19.95	19.66	20.05	21	3
10	64QAM	25	12	19.93	19.64	20.12		
10	64QAM	25	25	19.87	19.64	20.14		
10	64QAM	50	0	19.94	19.60	20.10		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.88	22.55	23.05	24	0
5	QPSK	1	12	22.82	22.50	23.04		
5	QPSK	1	24	22.79	22.53	23.00		
5	QPSK	12	0	21.96	21.58	22.13	23	1
5	QPSK	12	7	21.94	21.58	22.13		
5	QPSK	12	13	21.88	21.64	22.10		
5	QPSK	25	0	21.91	21.56	22.16	23	1
5	16QAM	1	0	22.18	21.91	22.42		
5	16QAM	1	12	22.11	21.83	22.29		
5	16QAM	1	24	22.04	21.82	22.19	22	2
5	16QAM	12	0	20.98	20.63	21.17		
5	16QAM	12	7	20.94	20.60	21.16		
5	16QAM	12	13	20.89	20.66	21.09	22	2
5	16QAM	25	0	20.93	20.58	21.14		
5	64QAM	1	0	21.10	20.77	21.26		
5	64QAM	1	12	21.05	20.70	21.27	22	2
5	64QAM	1	24	21.00	20.71	21.24		
5	64QAM	12	0	20.00	19.63	20.21		
5	64QAM	12	7	19.99	19.64	20.22	21	3
5	64QAM	12	13	19.95	19.70	20.18		
5	64QAM	25	0	19.92	19.57	20.16		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.87	22.52	23.05	24	0
3	QPSK	1	8	22.83	22.49	23.04		
3	QPSK	1	14	22.82	22.56	22.98		
3	QPSK	8	0	21.94	21.57	22.12	23	1
3	QPSK	8	4	21.94	21.58	22.16		
3	QPSK	8	7	21.90	21.53	22.13		
3	QPSK	15	0	21.90	21.53	22.11	23	1
3	16QAM	1	0	22.14	21.87	22.30		
3	16QAM	1	8	22.13	21.83	22.21		
3	16QAM	1	14	22.04	21.85	22.19	22	2
3	16QAM	8	0	21.01	20.61	21.19		
3	16QAM	8	4	21.02	20.64	21.18		
3	16QAM	8	7	20.98	20.59	21.17	22	2
3	16QAM	15	0	20.95	20.59	21.13		
3	64QAM	1	0	21.07	20.73	21.28		
3	64QAM	1	8	21.06	20.73	21.25	22	2
3	64QAM	1	14	21.02	20.75	21.23		
3	64QAM	8	0	19.97	19.59	20.17		
3	64QAM	8	4	20.00	19.62	20.18	21	3
3	64QAM	8	7	19.96	19.57	20.16		
3	64QAM	15	0	19.94	19.56	20.17		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.80	22.45	22.94	24	0
1.4	QPSK	1	3	22.82	22.50	22.96		
1.4	QPSK	1	5	22.78	22.43	22.90		
1.4	QPSK	3	0	22.86	22.49	23.03		
1.4	QPSK	3	1	22.90	22.51	22.75		
1.4	QPSK	3	3	22.84	22.49	23.01		
1.4	QPSK	6	0	21.88	21.49	22.04	23	1
1.4	16QAM	1	0	22.07	21.79	22.09	23	1
1.4	16QAM	1	3	22.13	21.82	22.18		
1.4	16QAM	1	5	22.03	21.72	22.09		
1.4	16QAM	3	0	21.88	21.51	22.04		
1.4	16QAM	3	1	21.90	21.57	22.08		
1.4	16QAM	3	3	21.83	21.52	22.01		
1.4	16QAM	6	0	20.93	20.57	21.12	22	2
1.4	64QAM	1	0	21.00	20.66	21.17	22	2
1.4	64QAM	1	3	21.04	20.70	21.24		
1.4	64QAM	1	5	21.00	20.62	21.18		
1.4	64QAM	3	0	20.99	20.63	21.14		
1.4	64QAM	3	1	21.03	20.70	21.18		
1.4	64QAM	3	3	20.98	20.61	21.15		
1.4	64QAM	6	0	19.89	19.52	20.01	21	3



<LTE Band 30>

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				27710				
Frequency (MHz)				2310				
10	QPSK	1	0	18.62			19	0
10	QPSK	1	25	18.43				
10	QPSK	1	49	18.32				
10	QPSK	25	0	17.52			18	1
10	QPSK	25	12	17.47				
10	QPSK	25	25	17.35				
10	QPSK	50	0	17.50				
10	16QAM	1	0	17.89			18	1
10	16QAM	1	25	17.73				
10	16QAM	1	49	17.65				
10	16QAM	25	0	16.51			17	2
10	16QAM	25	12	16.50				
10	16QAM	25	25	16.37				
10	16QAM	50	0	16.51				
10	64QAM	1	0	16.78			17	2
10	64QAM	1	25	16.60				
10	64QAM	1	49	16.53				
10	64QAM	25	0	15.53			16	3
10	64QAM	25	12	15.51				
10	64QAM	25	25	15.39				
10	64QAM	50	0	15.51				
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	18.53	18.45	18.48	19	0
5	QPSK	1	12	18.40	18.42	18.32		
5	QPSK	1	24	18.43	18.34	18.36		
5	QPSK	12	0	17.53	17.50	17.50	18	1
5	QPSK	12	7	17.45	17.51	17.39		
5	QPSK	12	13	17.46	17.46	17.37		
5	QPSK	25	0	17.43	17.48	17.34		
5	16QAM	1	0	17.84	17.73	17.78	18	1
5	16QAM	1	12	17.70	17.72	17.62		
5	16QAM	1	24	17.71	17.63	17.65		
5	16QAM	12	0	16.58	16.48	16.53	17	2
5	16QAM	12	7	16.46	16.50	16.41		
5	16QAM	12	13	16.46	16.51	16.39		
5	16QAM	25	0	16.44	16.47	16.39		
5	64QAM	1	0	16.74	16.66	16.68	17	2
5	64QAM	1	12	16.60	16.64	16.53		
5	64QAM	1	24	16.62	16.56	16.54		
5	64QAM	12	0	15.61	15.52	15.53	16	3
5	64QAM	12	7	15.52	15.54	15.43		
5	64QAM	12	13	15.48	15.50	15.40		
5	64QAM	25	0	15.45	15.49	15.37		



<Hotspot mode for WWAN LAT>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	21.53	21.45	21.41	22	0
20	QPSK	1	49	21.09	21.01	21.22		
20	QPSK	1	99	21.14	21.05	21.17		
20	QPSK	50	0	20.47	20.18	20.46	21	1
20	QPSK	50	24	20.21	20.09	20.36		
20	QPSK	50	50	20.12	19.99	20.28		
20	QPSK	100	0	20.36	20.10	20.35		
20	16QAM	1	0	20.83	20.80	20.70	21	1
20	16QAM	1	49	20.48	20.36	20.61		
20	16QAM	1	99	20.51	20.36	20.48		
20	16QAM	50	0	19.32	19.22	19.44	20	2
20	16QAM	50	24	19.22	19.11	19.35		
20	16QAM	50	50	19.13	19.02	19.27		
20	16QAM	100	0	19.23	19.11	19.39		
20	64QAM	1	0	19.73	19.68	19.58	20	2
20	64QAM	1	49	19.31	19.23	19.46		
20	64QAM	1	99	19.37	19.24	19.38		
20	64QAM	50	0	18.32	18.20	18.46	19	3
20	64QAM	50	24	18.23	18.11	18.36		
20	64QAM	50	50	18.13	18.00	18.26		
20	64QAM	100	0	18.24	18.07	18.40		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	21.33	21.26	21.44	22	0
15	QPSK	1	37	21.13	21.01	21.24		
15	QPSK	1	74	21.09	20.94	21.20		
15	QPSK	36	0	20.27	20.15	20.37	21	1
15	QPSK	36	20	20.19	20.06	20.32		
15	QPSK	36	39	20.10	20.00	20.24		
15	QPSK	75	0	20.20	20.05	20.31	21	1
15	16QAM	1	0	20.65	20.59	20.77		
15	16QAM	1	37	20.45	20.40	20.59		
15	16QAM	1	74	20.42	20.25	20.49	20	2
15	16QAM	36	0	19.28	19.17	19.38		
15	16QAM	36	20	19.19	19.10	19.31		
15	16QAM	36	39	19.11	19.00	19.25		
15	16QAM	75	0	19.20	19.09	19.30	20	2
15	64QAM	1	0	19.28	19.19	19.40		
15	64QAM	1	37	19.29	19.13	19.39		
15	64QAM	1	74	19.28	19.16	19.25	19	3
15	64QAM	36	0	18.11	18.03	18.27		
15	64QAM	36	20	18.14	18.08	18.26		
15	64QAM	36	39	18.08	18.01	18.24		
15	64QAM	75	0	18.16	18.01	18.18		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	21.43	21.32	21.30	22	0
10	QPSK	1	25	21.12	21.01	21.21		
10	QPSK	1	49	21.22	21.14	21.15		
10	QPSK	25	0	20.20	20.07	20.31	21	1
10	QPSK	25	12	20.15	20.02	20.25		
10	QPSK	25	25	20.13	19.99	20.23		
10	QPSK	50	0	20.18	20.05	20.27	21	1
10	16QAM	1	0	20.75	20.71	20.67		
10	16QAM	1	25	20.42	20.33	20.52		
10	16QAM	1	49	20.61	20.45	20.47	20	2
10	16QAM	25	0	19.20	19.09	19.28		
10	16QAM	25	12	19.19	19.08	19.28		
10	16QAM	25	25	19.12	19.01	19.20	19	3
10	16QAM	50	0	19.19	19.08	19.29		
10	64QAM	1	0	19.65	19.58	19.54		
10	64QAM	1	25	19.33	19.24	19.46	20	2
10	64QAM	1	49	19.45	19.35	19.38		
10	64QAM	25	0	18.24	18.12	18.30		
10	64QAM	25	12	18.19	18.08	18.29	19	3
10	64QAM	25	25	18.15	18.03	18.22		
10	64QAM	50	0	18.19	18.07	18.28		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.18	21.07	21.23	22	0
5	QPSK	1	12	21.09	20.98	21.16		
5	QPSK	1	24	21.11	20.98	21.17		
5	QPSK	12	0	20.15	20.02	20.22	21	1
5	QPSK	12	7	20.14	20.04	20.25		
5	QPSK	12	13	20.08	19.98	20.20		
5	QPSK	25	0	20.14	19.99	20.19	21	1
5	16QAM	1	0	20.48	20.48	20.61		
5	16QAM	1	12	20.47	20.34	20.53		
5	16QAM	1	24	20.47	20.34	20.49	20	2
5	16QAM	12	0	19.17	19.09	19.27		
5	16QAM	12	7	19.17	19.06	19.26		
5	16QAM	12	13	19.11	19.02	19.21	20	2
5	16QAM	25	0	19.15	19.03	19.24		
5	64QAM	1	0	19.37	19.29	19.45		
5	64QAM	1	12	19.29	19.19	19.39	20	2
5	64QAM	1	24	19.28	19.16	19.34		
5	64QAM	12	0	18.19	18.10	18.27		
5	64QAM	12	7	18.20	18.08	18.26	19	3
5	64QAM	12	13	18.18	18.08	18.24		
5	64QAM	25	0	18.16	18.03	18.24		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.11	20.98	21.14	22	0
3	QPSK	1	8	21.09	20.96	21.15		
3	QPSK	1	14	21.06	20.94	21.12		
3	QPSK	8	0	20.11	19.99	20.17	21	1
3	QPSK	8	4	20.12	20.00	20.21		
3	QPSK	8	7	20.08	19.98	20.15		
3	QPSK	15	0	20.10	19.98	20.19		
3	16QAM	1	0	20.43	20.38	20.53	21	1
3	16QAM	1	8	20.42	20.36	20.49		
3	16QAM	1	14	20.41	20.30	20.46		
3	16QAM	8	0	19.18	19.07	19.25	20	2
3	16QAM	8	4	19.18	19.08	19.29		
3	16QAM	8	7	19.16	19.05	19.22		
3	16QAM	15	0	19.13	19.03	19.20		
3	64QAM	1	0	19.27	19.23	19.38	20	2
3	64QAM	1	8	19.28	19.21	19.37		
3	64QAM	1	14	19.26	19.17	19.34		
3	64QAM	8	0	18.17	18.06	18.23	19	3
3	64QAM	8	4	18.17	18.05	18.25		
3	64QAM	8	7	18.16	18.04	18.20		
3	64QAM	15	0	18.13	18.00	18.17		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.04	20.93	21.10	22	0
1.4	QPSK	1	3	21.10	21.00	21.16		
1.4	QPSK	1	5	21.01	20.92	21.06		
1.4	QPSK	3	0	21.06	20.98	21.15		
1.4	QPSK	3	1	21.12	21.02	21.19		
1.4	QPSK	3	3	21.05	20.97	21.11		
1.4	QPSK	6	0	20.05	19.93	20.12	21	1
1.4	16QAM	1	0	20.35	20.31	20.43	21	1
1.4	16QAM	1	3	20.41	20.37	20.47		
1.4	16QAM	1	5	20.34	20.24	20.40		
1.4	16QAM	3	0	20.10	19.99	20.15		
1.4	16QAM	3	1	20.15	20.04	20.21		
1.4	16QAM	3	3	20.08	19.98	20.14		
1.4	16QAM	6	0	19.12	19.00	19.19	20	2
1.4	64QAM	1	0	19.23	19.16	19.28	20	2
1.4	64QAM	1	3	19.27	19.18	19.34		
1.4	64QAM	1	5	19.18	19.11	19.26		
1.4	64QAM	3	0	19.23	19.13	19.29		
1.4	64QAM	3	1	19.27	19.18	19.34		
1.4	64QAM	3	3	19.23	19.11	19.28		
1.4	64QAM	6	0	18.07	17.95	18.13	19	3



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.55	22.50	22.43	23	0
20	QPSK	1	49	22.33	22.17	22.07		
20	QPSK	1	99	22.15	22.10	21.98		
20	QPSK	50	0	21.55	21.37	21.40	22	1
20	QPSK	50	24	21.45	21.30	21.22		
20	QPSK	50	50	21.30	21.22	21.13		
20	QPSK	100	0	21.47	21.34	21.19		
20	16QAM	1	0	21.77	21.67	21.65	22	1
20	16QAM	1	49	21.57	21.40	21.34		
20	16QAM	1	99	21.41	21.34	21.22		
20	16QAM	50	0	20.57	20.39	20.38	21	2
20	16QAM	50	24	20.47	20.34	20.23		
20	16QAM	50	50	20.28	20.25	20.12		
20	16QAM	100	0	20.44	20.29	20.20		
20	64QAM	1	0	20.80	20.65	20.65	21	2
20	64QAM	1	49	20.54	20.41	20.30		
20	64QAM	1	99	20.35	20.33	20.21		
20	64QAM	50	0	19.57	19.43	19.39	20	3
20	64QAM	50	24	19.47	19.34	19.22		
20	64QAM	50	50	19.28	19.25	19.11		
20	64QAM	100	0	19.46	19.33	19.23		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	22.53	22.39	22.35	23	0
15	QPSK	1	37	22.21	22.16	22.03		
15	QPSK	1	74	22.08	22.10	22.03		
15	QPSK	36	0	21.42	21.26	21.24	22	1
15	QPSK	36	20	21.37	21.29	21.17		
15	QPSK	36	39	21.18	21.16	21.10		
15	QPSK	75	0	21.39	21.28	21.16		
15	16QAM	1	0	21.62	21.65	21.66	22	1
15	16QAM	1	37	21.50	21.43	21.33		
15	16QAM	1	74	21.35	21.41	21.28		
15	16QAM	36	0	20.49	20.39	20.27	21	2
15	16QAM	36	20	20.48	20.30	20.18		
15	16QAM	36	39	20.29	20.21	20.10		
15	16QAM	75	0	20.47	20.32	20.20		
15	64QAM	1	0	20.75	20.62	20.59	21	2
15	64QAM	1	37	20.56	20.40	20.28		
15	64QAM	1	74	20.43	20.36	20.20		
15	64QAM	36	0	19.55	19.37	19.26	20	3
15	64QAM	36	20	19.47	19.35	19.22		
15	64QAM	36	39	19.34	19.26	19.15		
15	64QAM	75	0	19.47	19.32	19.20		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.40	22.32	22.22	23	0
10	QPSK	1	25	22.24	22.19	22.09		
10	QPSK	1	49	22.22	22.06	22.04		
10	QPSK	25	0	21.40	21.25	21.23	22	1
10	QPSK	25	12	21.34	21.18	21.20		
10	QPSK	25	25	21.33	21.15	21.12		
10	QPSK	50	0	21.35	21.20	21.20	22	1
10	16QAM	1	0	21.57	21.44	21.47		
10	16QAM	1	25	21.47	21.32	21.35		
10	16QAM	1	49	21.45	21.30	21.26	21	2
10	16QAM	25	0	20.40	20.25	20.21		
10	16QAM	25	12	20.37	20.32	20.17		
10	16QAM	25	25	20.30	20.26	20.14	21	2
10	16QAM	50	0	20.37	20.32	20.18		
10	64QAM	1	0	20.56	20.52	20.42		
10	64QAM	1	25	20.44	20.39	20.29	21	2
10	64QAM	1	49	20.40	20.35	20.25		
10	64QAM	25	0	19.42	19.36	19.22		
10	64QAM	25	12	19.40	19.34	19.21	20	3
10	64QAM	25	25	19.42	19.29	19.16		
10	64QAM	50	0	19.46	19.31	19.20		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	22.37	22.29	22.14	23	0
5	QPSK	1	12	22.32	22.22	22.07		
5	QPSK	1	24	22.27	22.18	22.06		
5	QPSK	12	0	21.39	21.20	21.16	22	1
5	QPSK	12	7	21.39	21.25	21.18		
5	QPSK	12	13	21.33	21.24	21.12		
5	QPSK	25	0	21.35	21.26	21.14	22	1
5	16QAM	1	0	21.50	21.43	21.37		
5	16QAM	1	12	21.52	21.46	21.35		
5	16QAM	1	24	21.48	21.43	21.29	21	2
5	16QAM	12	0	20.41	20.32	20.20		
5	16QAM	12	7	20.40	20.33	20.21		
5	16QAM	12	13	20.35	20.27	20.15	21	2
5	16QAM	25	0	20.35	20.30	20.18		
5	64QAM	1	0	20.54	20.46	20.32		
5	64QAM	1	12	20.48	20.43	20.29	21	2
5	64QAM	1	24	20.46	20.39	20.24		
5	64QAM	12	0	19.42	19.36	19.21		
5	64QAM	12	7	19.49	19.33	19.21	20	3
5	64QAM	12	13	19.48	19.33	19.17		
5	64QAM	25	0	19.48	19.27	19.14		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.42	22.26	22.08	23	0
3	QPSK	1	8	22.41	22.20	22.06		
3	QPSK	1	14	22.37	22.18	22.05		
3	QPSK	8	0	21.47	21.28	21.13	22	1
3	QPSK	8	4	21.47	21.28	21.14		
3	QPSK	8	7	21.42	21.27	21.10		
3	QPSK	15	0	21.44	21.27	21.13		
3	16QAM	1	0	21.53	21.42	21.34	22	1
3	16QAM	1	8	21.54	21.42	21.33		
3	16QAM	1	14	21.51	21.38	21.26		
3	16QAM	8	0	20.52	20.33	20.19	21	2
3	16QAM	8	4	20.51	20.36	20.21		
3	16QAM	8	7	20.48	20.32	20.19		
3	16QAM	15	0	20.48	20.27	20.15		
3	64QAM	1	0	20.57	20.42	20.29	21	2
3	64QAM	1	8	20.56	20.37	20.25		
3	64QAM	1	14	20.54	20.35	20.22		
3	64QAM	8	0	19.50	19.33	19.18	20	3
3	64QAM	8	4	19.52	19.34	19.21		
3	64QAM	8	7	19.48	19.28	19.15		
3	64QAM	8	7	19.48	19.28	19.15		
3	64QAM	15	0	19.44	19.28	19.12		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.29	22.14	22.02	23	0
1.4	QPSK	1	3	22.34	22.19	22.05		
1.4	QPSK	1	5	22.26	22.11	21.97		
1.4	QPSK	3	0	22.27	22.18	22.05		
1.4	QPSK	3	1	22.32	22.22	22.10		
1.4	QPSK	3	3	22.23	22.20	22.04		
1.4	QPSK	6	0	21.28	21.19	21.04	22	1
1.4	16QAM	1	0	21.34	21.34	21.27	22	1
1.4	16QAM	1	3	21.41	21.42	21.28		
1.4	16QAM	1	5	21.34	21.33	21.21		
1.4	16QAM	3	0	21.23	21.19	21.06		
1.4	16QAM	3	1	21.30	21.22	21.09		
1.4	16QAM	3	3	21.23	21.17	21.02		
1.4	16QAM	6	0	20.34	20.27	20.14	21	2
1.4	64QAM	1	0	20.45	20.34	20.21	21	2
1.4	64QAM	1	3	20.55	20.37	20.24		
1.4	64QAM	1	5	20.39	20.29	20.18		
1.4	64QAM	3	0	20.47	20.33	20.16		
1.4	64QAM	3	1	20.52	20.37	20.22		
1.4	64QAM	3	3	20.46	20.31	20.16		
1.4	64QAM	6	0	19.36	19.21	19.08	20	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	23.28	22.95	23.20	24	0
10	QPSK	1	25	23.00	22.76	23.15		
10	QPSK	1	49	22.75	22.92	23.18		
10	QPSK	25	0	22.25	21.95	22.24	23	1
10	QPSK	25	12	22.04	21.83	22.08		
10	QPSK	25	25	22.15	21.90	22.20		
10	QPSK	50	0	22.10	21.79	22.09	23	1
10	16QAM	1	0	22.60	22.15	22.24		
10	16QAM	1	25	22.31	21.99	22.44		
10	16QAM	1	49	22.03	22.24	22.34	22	2
10	16QAM	25	0	21.15	20.74	20.99		
10	16QAM	25	12	21.13	20.81	21.12		
10	16QAM	25	25	20.86	20.84	21.24	22	2
10	16QAM	50	0	21.04	20.79	21.13		
10	64QAM	1	0	21.49	21.05	21.13		
10	64QAM	1	25	21.24	20.94	21.35	22	2
10	64QAM	1	49	20.97	21.15	21.34		
10	64QAM	25	0	20.20	19.75	20.02		
10	64QAM	25	12	20.17	19.83	20.15	21	3
10	64QAM	25	25	19.87	19.85	20.25		
10	64QAM	50	0	20.03	19.82	20.12		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.26	22.66	23.12	24	0
5	QPSK	1	12	23.10	22.69	23.13		
5	QPSK	1	24	22.96	22.77	23.19		
5	QPSK	12	0	22.27	21.69	22.16	23	1
5	QPSK	12	7	22.16	21.80	22.24		
5	QPSK	12	13	22.14	21.82	22.29		
5	QPSK	25	0	22.12	21.79	22.27	23	1
5	16QAM	1	0	22.59	21.92	22.47		
5	16QAM	1	12	22.41	21.97	22.36		
5	16QAM	1	24	22.29	22.07	22.35	22	2
5	16QAM	12	0	21.29	20.71	21.17		
5	16QAM	12	7	21.21	20.79	21.23		
5	16QAM	12	13	21.15	20.84	21.30	22	2
5	16QAM	25	0	21.17	20.76	21.23		
5	64QAM	1	0	21.47	20.86	21.33		
5	64QAM	1	12	21.32	20.89	21.35	22	2
5	64QAM	1	24	21.17	20.96	21.36		
5	64QAM	12	0	20.30	19.74	20.20		
5	64QAM	12	7	20.22	19.84	20.31	21	3
5	64QAM	12	13	20.17	19.91	20.37		
5	64QAM	25	0	20.16	19.80	20.27		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.22	22.65	23.17	24	0
3	QPSK	1	8	23.11	22.70	23.22		
3	QPSK	1	14	23.06	22.79	23.18		
3	QPSK	8	0	22.24	21.67	22.22	23	1
3	QPSK	8	4	22.17	21.78	22.34		
3	QPSK	8	7	22.10	21.74	22.33		
3	QPSK	15	0	22.15	21.75	22.29	23	1
3	16QAM	1	0	22.57	21.88	22.37		
3	16QAM	1	8	22.47	21.97	22.37		
3	16QAM	1	14	22.43	22.04	22.35	22	2
3	16QAM	8	0	21.31	20.72	21.28		
3	16QAM	8	4	21.24	20.84	21.37		
3	16QAM	8	7	21.18	20.81	21.36	21	3
3	16QAM	15	0	21.16	20.78	21.32		
3	64QAM	1	0	21.42	20.84	21.38		
3	64QAM	1	8	21.35	20.91	21.41	22	2
3	64QAM	1	14	21.29	20.97	21.40		
3	64QAM	8	0	20.29	19.72	20.25		
3	64QAM	8	4	20.20	19.82	20.39	21	3
3	64QAM	8	7	20.16	19.78	20.33		
3	64QAM	15	0	20.17	19.78	20.34		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.17	22.64	23.10	24	0
1.4	QPSK	1	3	23.24	22.71	23.14		
1.4	QPSK	1	5	23.14	22.61	23.06		
1.4	QPSK	3	0	23.21	22.69	23.18		
1.4	QPSK	3	1	23.26	22.75	23.24		
1.4	QPSK	3	3	23.20	22.70	23.20		
1.4	QPSK	6	0	22.20	21.68	22.23	23	1
1.4	16QAM	1	0	22.47	21.87	22.28	23	1
1.4	16QAM	1	3	22.54	21.96	22.35		
1.4	16QAM	1	5	22.47	21.88	22.26		
1.4	16QAM	3	0	22.23	21.71	22.19		
1.4	16QAM	3	1	22.30	21.74	22.25		
1.4	16QAM	3	3	22.25	21.70	22.18		
1.4	16QAM	6	0	21.28	20.77	21.32	22	2
1.4	64QAM	1	0	21.41	20.88	21.38	22	2
1.4	64QAM	1	3	21.42	20.90	21.41		
1.4	64QAM	1	5	21.36	20.84	21.35		
1.4	64QAM	3	0	21.37	20.83	21.32		
1.4	64QAM	3	1	21.41	20.87	21.35		
1.4	64QAM	3	3	21.36	20.81	21.32		
1.4	64QAM	6	0	20.19	19.68	20.23	21	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	21.02	20.84	20.69	22	0
20	QPSK	1	49	20.84	20.68	20.66		
20	QPSK	1	99	20.76	20.61	20.65		
20	QPSK	50	0	19.93	19.85	19.75	21	1
20	QPSK	50	24	19.92	19.76	19.74		
20	QPSK	50	50	19.78	19.72	19.67		
20	QPSK	100	0	19.92	19.77	19.74		
20	16QAM	1	0	20.28	20.14	20.00	21	1
20	16QAM	1	49	20.14	20.01	19.98		
20	16QAM	1	99	20.06	19.95	20.01		
20	16QAM	50	0	18.94	18.87	18.76	20	2
20	16QAM	50	24	18.93	18.79	18.76		
20	16QAM	50	50	18.80	18.78	18.65		
20	16QAM	100	0	18.89	18.77	18.76		
20	64QAM	1	0	19.18	19.05	18.90	20	2
20	64QAM	1	49	19.03	18.91	18.86		
20	64QAM	1	99	18.93	18.84	18.86		
20	64QAM	50	0	17.94	17.89	17.77	19	3
20	64QAM	50	24	17.93	17.75	17.75		
20	64QAM	50	50	17.80	17.78	17.66		
20	64QAM	100	0	17.92	17.79	17.77		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	20.98	20.84	20.70	22	0
15	QPSK	1	37	20.84	20.69	20.57		
15	QPSK	1	74	20.76	20.65	20.69		
15	QPSK	36	0	19.98	19.74	19.74	21	1
15	QPSK	36	20	19.88	19.73	19.68		
15	QPSK	36	39	19.85	19.71	19.65		
15	QPSK	75	0	19.91	19.72	19.66		
15	16QAM	1	0	20.28	20.17	20.00	21	1
15	16QAM	1	37	20.14	20.00	19.89		
15	16QAM	1	74	20.06	19.95	20.02		
15	16QAM	36	0	18.99	18.78	18.75	20	2
15	16QAM	36	20	18.89	18.77	18.68		
15	16QAM	36	39	18.87	18.75	18.66		
15	16QAM	75	0	18.90	18.76	18.65		
15	64QAM	1	0	19.19	19.04	18.90	20	2
15	64QAM	1	37	19.04	18.87	18.77		
15	64QAM	1	74	18.93	18.82	18.85		
15	64QAM	36	0	18.00	17.79	17.75	19	3
15	64QAM	36	20	17.92	17.79	17.72		
15	64QAM	36	39	17.88	17.76	17.69		
15	64QAM	75	0	17.92	17.75	17.63		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	20.94	20.81	20.69	22	0
10	QPSK	1	25	20.83	20.72	20.61		
10	QPSK	1	49	20.82	20.72	20.62		
10	QPSK	25	0	19.95	19.71	19.63	21	1
10	QPSK	25	12	19.88	19.76	19.63		
10	QPSK	25	25	19.85	19.73	19.63		
10	QPSK	50	0	19.86	19.73	19.65	21	1
10	16QAM	1	0	20.25	20.11	19.98		
10	16QAM	1	25	20.14	20.03	19.94		
10	16QAM	1	49	20.17	20.04	19.98	20	2
10	16QAM	25	0	18.95	18.71	18.62		
10	16QAM	25	12	18.87	18.73	18.67		
10	16QAM	25	25	18.85	18.71	18.65	20	2
10	16QAM	50	0	18.87	18.73	18.65		
10	64QAM	1	0	19.13	19.01	18.87		
10	64QAM	1	25	19.04	18.94	18.80	20	2
10	64QAM	1	49	19.05	18.93	18.84		
10	64QAM	25	0	17.96	17.73	17.64		
10	64QAM	25	12	17.89	17.77	17.69	19	3
10	64QAM	25	25	17.86	17.75	17.65		
10	64QAM	50	0	17.87	17.72	17.66		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	20.88	20.67	20.59	22	0
5	QPSK	1	12	20.90	20.69	20.61		
5	QPSK	1	24	20.78	20.66	20.62		
5	QPSK	12	0	19.97	19.73	19.63	21	1
5	QPSK	12	7	20.00	19.73	19.69		
5	QPSK	12	13	19.94	19.71	19.63		
5	QPSK	25	0	19.96	19.69	19.67	21	1
5	16QAM	1	0	20.19	20.00	19.96		
5	16QAM	1	12	20.23	20.02	19.97		
5	16QAM	1	24	20.11	20.02	20.00	20	2
5	16QAM	12	0	18.97	18.71	18.65		
5	16QAM	12	7	18.99	18.78	18.74		
5	16QAM	12	13	18.93	18.73	18.66	20	2
5	16QAM	25	0	18.95	18.75	18.64		
5	64QAM	1	0	19.10	18.91	18.84		
5	64QAM	1	12	19.10	18.90	18.87	20	2
5	64QAM	1	24	18.99	18.87	18.81		
5	64QAM	12	0	17.99	17.73	17.70		
5	64QAM	12	7	18.02	17.81	17.74	19	3
5	64QAM	12	13	18.01	17.76	17.72		
5	64QAM	25	0	17.94	17.74	17.65		



<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	23.01	22.98	22.84		
10	QPSK	1	25	22.92	22.88	23.10	24	0
10	QPSK	1	49	23.06	23.10	23.47		
10	QPSK	25	0	22.08	21.94	21.95		
10	QPSK	25	12	22.01	21.91	22.21	23	1
10	QPSK	25	25	22.09	22.08	22.38		
10	QPSK	50	0	21.96	21.92	22.21		
10	16QAM	1	0	22.27	22.11	22.08	23	1
10	16QAM	1	25	22.05	22.13	22.35		
10	16QAM	1	49	22.14	22.32	22.53		
10	16QAM	25	0	21.09	20.91	20.97	22	2
10	16QAM	25	12	21.00	20.95	21.22		
10	16QAM	25	25	20.94	21.11	21.39		
10	16QAM	50	0	20.96	20.92	21.22	22	2
10	64QAM	1	0	21.25	21.09	21.05		
10	64QAM	1	25	21.03	21.06	21.33		
10	64QAM	1	49	21.06	21.30	21.59	22	2
10	64QAM	25	0	20.10	19.97	20.00		
10	64QAM	25	12	20.02	19.99	20.24		
10	64QAM	25	25	19.98	20.12	20.39	21	3
10	64QAM	50	0	20.00	19.95	20.22		
Channel				23035	23095	23155		
Frequency (MHz)				701.5	707.5	713.5	Tune-up limit (dBm)	MPR (dB)
5	QPSK	1	0	23.05	22.86	23.10	24	0
5	QPSK	1	12	23.02	22.84	23.26		
5	QPSK	1	24	22.94	22.94	23.46		
5	QPSK	12	0	22.10	21.93	22.24	23	1
5	QPSK	12	7	22.09	21.91	22.36		
5	QPSK	12	13	22.06	21.99	22.41		
5	QPSK	25	0	22.09	21.89	22.35	23	1
5	16QAM	1	0	22.27	22.06	22.31		
5	16QAM	1	12	22.18	22.11	22.36		
5	16QAM	1	24	22.06	22.22	22.55	22	2
5	16QAM	12	0	21.10	20.92	21.24		
5	16QAM	12	7	21.10	20.95	21.34		
5	16QAM	12	13	21.05	21.01	21.43	22	2
5	16QAM	25	0	21.10	20.92	21.34		
5	64QAM	1	0	21.28	21.07	21.30		
5	64QAM	1	12	21.15	21.07	21.39	22	2
5	64QAM	1	24	21.06	21.16	21.56		
5	64QAM	12	0	20.15	19.97	20.31		
5	64QAM	12	7	20.16	19.99	20.44	21	3
5	64QAM	12	13	20.14	20.04	20.49		
5	64QAM	25	0	20.11	19.92	20.36		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.05	22.85	23.30	24	0
3	QPSK	1	8	23.05	22.85	23.35		
3	QPSK	1	14	23.04	22.92	23.43		
3	QPSK	8	0	22.09	21.92	22.35	23	1
3	QPSK	8	4	22.10	21.90	22.46		
3	QPSK	8	7	22.08	21.89	22.46		
3	QPSK	15	0	22.06	21.87	22.41	23	1
3	16QAM	1	0	22.24	22.07	22.36		
3	16QAM	1	8	22.21	22.12	22.44		
3	16QAM	1	14	22.14	22.19	22.54	22	2
3	16QAM	8	0	21.15	20.96	21.36		
3	16QAM	8	4	21.17	20.97	21.48		
3	16QAM	8	7	21.14	20.94	21.49	21	3
3	16QAM	15	0	21.11	20.92	21.44		
3	64QAM	1	0	21.29	21.03	21.41		
3	64QAM	1	8	21.22	21.06	21.49	22	2
3	64QAM	1	14	21.17	21.15	21.61		
3	64QAM	8	0	20.14	19.93	20.38		
3	64QAM	8	4	20.16	19.95	20.52	21	3
3	64QAM	8	7	20.14	19.92	20.50		
3	64QAM	15	0	20.11	19.92	20.47		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.99	22.76	23.21	24	0
1.4	QPSK	1	3	23.01	22.82	23.37		
1.4	QPSK	1	5	22.92	22.76	23.29		
1.4	QPSK	3	0	23.02	22.82	23.29		
1.4	QPSK	3	1	23.07	22.87	23.38		
1.4	QPSK	3	3	23.04	22.82	23.43		
1.4	QPSK	6	0	22.03	21.84	22.35	23	1
1.4	16QAM	1	0	22.19	22.03	22.34	23	1
1.4	16QAM	1	3	22.26	22.11	22.51		
1.4	16QAM	1	5	22.16	22.04	22.43		
1.4	16QAM	3	0	22.02	21.83	22.29		
1.4	16QAM	3	1	22.09	21.88	22.33		
1.4	16QAM	3	3	22.00	21.83	22.36		
1.4	16QAM	6	0	21.09	20.87	21.39	22	2
1.4	64QAM	1	0	21.18	20.97	21.46	22	2
1.4	64QAM	1	3	21.22	21.02	21.61		
1.4	64QAM	1	5	21.14	20.94	21.54		
1.4	64QAM	3	0	21.15	20.96	21.39		
1.4	64QAM	3	1	21.17	21.01	21.43		
1.4	64QAM	3	3	21.12	20.95	21.49		
1.4	64QAM	6	0	20.06	19.85	20.30	21	3



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.55	22.60	22.69		
10	QPSK	1	25	22.89	22.96	23.06	24	0
10	QPSK	1	49	23.25	23.35	23.33		
10	QPSK	25	0	21.76	21.82	21.91		
10	QPSK	25	12	21.94	22.02	22.12	23	1
10	QPSK	25	25	22.13	22.35	22.32		
10	QPSK	50	0	21.95	22.16	22.14		
10	16QAM	1	0	21.70	21.81	21.97	23	1
10	16QAM	1	25	22.17	22.26	22.31		
10	16QAM	1	49	22.36	22.41	22.45		
10	16QAM	25	0	20.79	20.85	20.94	22	2
10	16QAM	25	12	20.98	21.07	21.14		
10	16QAM	25	25	21.14	21.23	21.34		
10	16QAM	50	0	20.98	21.09	21.16	22	2
10	64QAM	1	0	20.67	20.77	20.90		
10	64QAM	1	25	21.14	21.18	21.26		
10	64QAM	1	49	21.41	21.48	21.45	21	3
10	64QAM	25	0	19.77	19.86	19.95		
10	64QAM	25	12	20.00	20.10	20.18		
10	64QAM	25	25	20.18	20.25	20.33	21	3
10	64QAM	50	0	19.97	20.06	20.17		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5	Tune-up limit (dBm)	MPR (dB)
5	QPSK	1	0	22.54	22.79	23.03	24	0
5	QPSK	1	12	22.71	22.97	23.22		
5	QPSK	1	24	22.89	23.13	23.33		
5	QPSK	12	0	21.70	21.92	22.19	23	1
5	QPSK	12	7	21.79	22.05	22.31		
5	QPSK	12	13	21.87	22.11	22.38		
5	QPSK	25	0	21.77	22.00	22.31	23	1
5	16QAM	1	0	21.73	22.07	22.28		
5	16QAM	1	12	21.98	22.24	22.33		
5	16QAM	1	24	22.16	22.30	22.44	22	2
5	16QAM	12	0	20.67	20.97	21.21		
5	16QAM	12	7	20.80	21.11	21.29		
5	16QAM	12	13	20.89	21.13	21.38	22	2
5	16QAM	25	0	20.75	21.06	21.33		
5	64QAM	1	0	20.69	21.01	21.26		
5	64QAM	1	12	20.93	21.16	21.33	22	2
5	64QAM	1	24	21.11	21.31	21.50		
5	64QAM	12	0	19.75	20.00	20.26		
5	64QAM	12	7	19.83	20.11	20.37	21	3
5	64QAM	12	13	19.90	20.17	20.46		
5	64QAM	25	0	19.80	20.03	20.34		



<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	23.06	22.91	22.94		
15	QPSK	1	37	22.82	22.59	23.04	24	0
15	QPSK	1	74	22.59	22.81	22.93		
15	QPSK	36	0	21.98	21.74	22.09		
15	QPSK	36	20	21.96	21.64	22.01	23	1
15	QPSK	36	39	21.74	21.73	22.08		
15	QPSK	75	0	21.91	21.65	22.11		
15	16QAM	1	0	22.26	22.05	22.05	23	1
15	16QAM	1	37	22.14	21.90	22.38		
15	16QAM	1	74	21.91	22.11	22.18		
15	16QAM	36	0	20.98	20.73	20.98	22	2
15	16QAM	36	20	20.94	20.68	21.12		
15	16QAM	36	39	20.72	20.74	21.18		
15	16QAM	75	0	20.91	20.63	21.07	22	2
15	64QAM	1	0	21.20	20.93	21.03		
15	64QAM	1	37	21.04	20.81	21.28		
15	64QAM	1	74	20.79	21.01	21.25	21	3
15	64QAM	36	0	20.00	19.72	20.00		
15	64QAM	36	20	19.97	19.70	20.14		
15	64QAM	36	39	19.73	19.78	20.19	21	3
15	64QAM	75	0	19.92	19.63	20.06		
Channel				26740	26865	26990		
Frequency (MHz)				819	831.5	844	Tune-up limit (dBm)	MPR (dB)
10	QPSK	1	0	22.92	22.62	22.96	24	0
10	QPSK	1	25	22.82	22.51	23.02		
10	QPSK	1	49	22.63	22.71	22.97		
10	QPSK	25	0	21.95	21.61	22.02	23	1
10	QPSK	25	12	21.93	21.59	22.10		
10	QPSK	25	25	21.86	21.63	22.15		
10	QPSK	50	0	21.91	21.58	22.09	23	1
10	16QAM	1	0	22.18	22.00	22.26		
10	16QAM	1	25	22.08	21.83	22.37		
10	16QAM	1	49	21.97	21.98	22.18	22	2
10	16QAM	25	0	20.93	20.61	21.01		
10	16QAM	25	12	20.92	20.62	21.09		
10	16QAM	25	25	20.83	20.61	21.14	22	2
10	16QAM	50	0	20.91	20.59	21.12		
10	64QAM	1	0	21.09	20.84	21.13		
10	64QAM	1	25	21.01	20.74	21.28	22	2
10	64QAM	1	49	20.83	20.90	21.18		
10	64QAM	25	0	19.95	19.66	20.05		
10	64QAM	25	12	19.93	19.64	20.12	21	3
10	64QAM	25	25	19.87	19.64	20.14		
10	64QAM	50	0	19.94	19.60	20.10		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.88	22.55	23.05	24	0
5	QPSK	1	12	22.82	22.50	23.04		
5	QPSK	1	24	22.79	22.53	23.00		
5	QPSK	12	0	21.96	21.58	22.13	23	1
5	QPSK	12	7	21.94	21.58	22.13		
5	QPSK	12	13	21.88	21.64	22.10		
5	QPSK	25	0	21.91	21.56	22.16	23	1
5	16QAM	1	0	22.18	21.91	22.42		
5	16QAM	1	12	22.11	21.83	22.29		
5	16QAM	1	24	22.04	21.82	22.19	22	2
5	16QAM	12	0	20.98	20.63	21.17		
5	16QAM	12	7	20.94	20.60	21.16		
5	16QAM	12	13	20.89	20.66	21.09	22	2
5	16QAM	25	0	20.93	20.58	21.14		
5	64QAM	1	0	21.10	20.77	21.26		
5	64QAM	1	12	21.05	20.70	21.27	22	2
5	64QAM	1	24	21.00	20.71	21.24		
5	64QAM	12	0	20.00	19.63	20.21		
5	64QAM	12	7	19.99	19.64	20.22	21	3
5	64QAM	12	13	19.95	19.70	20.18		
5	64QAM	25	0	19.92	19.57	20.16		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.87	22.52	23.05	24	0
3	QPSK	1	8	22.83	22.49	23.04		
3	QPSK	1	14	22.82	22.56	22.98		
3	QPSK	8	0	21.94	21.57	22.12	23	1
3	QPSK	8	4	21.94	21.58	22.16		
3	QPSK	8	7	21.90	21.53	22.13		
3	QPSK	15	0	21.90	21.53	22.11	23	1
3	16QAM	1	0	22.14	21.87	22.30		
3	16QAM	1	8	22.13	21.83	22.21		
3	16QAM	1	14	22.04	21.85	22.19	22	2
3	16QAM	8	0	21.01	20.61	21.19		
3	16QAM	8	4	21.02	20.64	21.18		
3	16QAM	8	7	20.98	20.59	21.17	22	2
3	16QAM	15	0	20.95	20.59	21.13		
3	64QAM	1	0	21.07	20.73	21.28		
3	64QAM	1	8	21.06	20.73	21.25	22	2
3	64QAM	1	14	21.02	20.75	21.23		
3	64QAM	8	0	19.97	19.59	20.17		
3	64QAM	8	4	20.00	19.62	20.18	21	3
3	64QAM	8	7	19.96	19.57	20.16		
3	64QAM	15	0	19.94	19.56	20.17		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.80	22.45	22.94	24	0
1.4	QPSK	1	3	22.82	22.50	22.96		
1.4	QPSK	1	5	22.78	22.43	22.90		
1.4	QPSK	3	0	22.86	22.49	23.03		
1.4	QPSK	3	1	22.90	22.51	22.75		
1.4	QPSK	3	3	22.84	22.49	23.01		
1.4	QPSK	6	0	21.88	21.49	22.04	23	1
1.4	16QAM	1	0	22.07	21.79	22.09	23	1
1.4	16QAM	1	3	22.13	21.82	22.18		
1.4	16QAM	1	5	22.03	21.72	22.09		
1.4	16QAM	3	0	21.88	21.51	22.04		
1.4	16QAM	3	1	21.90	21.57	22.08		
1.4	16QAM	3	3	21.83	21.52	22.01		
1.4	16QAM	6	0	20.93	20.57	21.12	22	2
1.4	64QAM	1	0	21.00	20.66	21.17	22	2
1.4	64QAM	1	3	21.04	20.70	21.24		
1.4	64QAM	1	5	21.00	20.62	21.18		
1.4	64QAM	3	0	20.99	20.63	21.14		
1.4	64QAM	3	1	21.03	20.70	21.18		
1.4	64QAM	3	3	20.98	20.61	21.15		
1.4	64QAM	6	0	19.89	19.52	20.01	21	3



<LTE Band 30>

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				27710				
Frequency (MHz)				2310				
10	QPSK	1	0	18.62			19	0
10	QPSK	1	25	18.43				
10	QPSK	1	49	18.32				
10	QPSK	25	0	17.52			18	1
10	QPSK	25	12	17.47				
10	QPSK	25	25	17.35				
10	QPSK	50	0	17.50				
10	16QAM	1	0	17.89			18	1
10	16QAM	1	25	17.73				
10	16QAM	1	49	17.65				
10	16QAM	25	0	16.51			17	2
10	16QAM	25	12	16.50				
10	16QAM	25	25	16.37				
10	16QAM	50	0	16.51				
10	64QAM	1	0	16.78			17	2
10	64QAM	1	25	16.60				
10	64QAM	1	49	16.53				
10	64QAM	25	0	15.53			16	3
10	64QAM	25	12	15.51				
10	64QAM	25	25	15.39				
10	64QAM	50	0	15.51				
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	18.53	18.45	18.48	19	0
5	QPSK	1	12	18.40	18.42	18.32		
5	QPSK	1	24	18.43	18.34	18.36		
5	QPSK	12	0	17.53	17.50	17.50	18	1
5	QPSK	12	7	17.45	17.51	17.39		
5	QPSK	12	13	17.46	17.46	17.37		
5	QPSK	25	0	17.43	17.48	17.34		
5	16QAM	1	0	17.84	17.73	17.78	18	1
5	16QAM	1	12	17.70	17.72	17.62		
5	16QAM	1	24	17.71	17.63	17.65		
5	16QAM	12	0	16.58	16.48	16.53	17	2
5	16QAM	12	7	16.46	16.50	16.41		
5	16QAM	12	13	16.46	16.51	16.39		
5	16QAM	25	0	16.44	16.47	16.39		
5	64QAM	1	0	16.74	16.66	16.68	17	2
5	64QAM	1	12	16.60	16.64	16.53		
5	64QAM	1	24	16.62	16.56	16.54		
5	64QAM	12	0	15.61	15.52	15.53	16	3
5	64QAM	12	7	15.52	15.54	15.43		
5	64QAM	12	13	15.48	15.50	15.40		
5	64QAM	25	0	15.45	15.49	15.37		



<Head mode for WWAN UAT>

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	21.64	21.65	21.60	22.5	0
10	QPSK	1	25	21.50	21.34	21.31		
10	QPSK	1	49	21.58	21.31	21.27		
10	QPSK	25	0	20.46	20.45	20.41	21.5	1
10	QPSK	25	12	20.42	20.41	20.39		
10	QPSK	25	25	20.45	20.44	20.40		
10	QPSK	50	0	20.49	20.38	20.48	21.5	1
10	16QAM	1	0	20.71	20.68	20.73		
10	16QAM	1	25	20.73	20.62	20.69		
10	16QAM	1	49	20.73	20.67	20.55	20.5	2
10	16QAM	25	0	19.46	19.44	19.41		
10	16QAM	25	12	19.53	19.40	19.38		
10	16QAM	25	25	19.44	19.43	19.40	20.5	2
10	16QAM	50	0	19.60	19.39	19.50		
10	64QAM	1	0	19.56	19.56	19.60		
10	64QAM	1	25	19.74	19.51	19.56	20.5	2
10	64QAM	1	49	19.66	19.54	19.48		
10	64QAM	25	0	18.46	18.46	18.42		
10	64QAM	25	12	18.57	18.43	18.42	19.5	3
10	64QAM	25	25	18.47	18.47	18.42		
10	64QAM	50	0	18.50	18.41	18.48		
Channel				20425	20525	20625		
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	21.42	21.34	21.39	22.5	0
5	QPSK	1	12	21.35	21.29	21.45		
5	QPSK	1	24	21.42	21.33	21.36		
5	QPSK	12	0	20.41	20.36	20.48	21.5	1
5	QPSK	12	7	20.40	20.35	20.49		
5	QPSK	12	13	20.46	20.28	20.44		
5	QPSK	25	0	20.38	20.34	20.51	21.5	1
5	16QAM	1	0	20.76	20.64	20.78		
5	16QAM	1	12	20.71	20.58	20.71		
5	16QAM	1	24	20.78	20.63	20.65	20.5	2
5	16QAM	12	0	19.45	19.37	19.53		
5	16QAM	12	7	19.46	19.33	19.48		
5	16QAM	12	13	19.43	19.29	19.42	20.5	2
5	16QAM	25	0	19.39	19.34	19.49		
5	64QAM	1	0	19.65	19.53	19.65		
5	64QAM	1	12	19.57	19.46	19.62	20.5	2
5	64QAM	1	24	19.63	19.53	19.55		
5	64QAM	12	0	18.47	18.41	18.54		
5	64QAM	12	7	18.47	18.43	18.56	19.5	3
5	64QAM	12	13	18.52	18.35	18.52		
5	64QAM	25	0	18.40	18.34	18.50		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	21.39	21.32	21.46	22.5	0
3	QPSK	1	8	21.37	21.26	21.41		
3	QPSK	1	14	21.35	21.23	21.37		
3	QPSK	8	0	20.40	20.31	20.46	21.5	1
3	QPSK	8	4	20.43	20.36	20.48		
3	QPSK	8	7	20.37	20.32	20.48		
3	QPSK	15	0	20.39	20.30	20.46	21.5	1
3	16QAM	1	0	20.73	20.56	20.71		
3	16QAM	1	8	20.72	20.54	20.66		
3	16QAM	1	14	20.71	20.51	20.63	20.5	2
3	16QAM	8	0	19.48	19.39	19.52		
3	16QAM	8	4	19.48	19.39	19.52		
3	16QAM	8	7	19.43	19.37	19.50	20.5	2
3	16QAM	15	0	19.42	19.33	19.45		
3	64QAM	1	0	19.64	19.51	19.65		
3	64QAM	1	8	19.59	19.48	19.60	20.5	2
3	64QAM	1	14	19.58	19.46	19.58		
3	64QAM	8	0	18.46	18.37	18.50		
3	64QAM	8	4	18.47	18.40	18.51	19.5	3
3	64QAM	8	7	18.45	18.36	18.49		
3	64QAM	15	0	18.42	18.35	18.49		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	21.35	21.23	21.31	22.5	0
1.4	QPSK	1	3	21.40	21.28	21.36		
1.4	QPSK	1	5	21.32	21.19	21.29		
1.4	QPSK	3	0	21.37	21.22	21.36		
1.4	QPSK	3	1	21.42	21.29	21.41		
1.4	QPSK	3	3	21.37	21.22	21.38		
1.4	QPSK	6	0	20.33	20.25	20.37	21.5	1
1.4	16QAM	1	0	20.67	20.48	20.60	21.5	1
1.4	16QAM	1	3	20.74	20.56	20.64		
1.4	16QAM	1	5	20.63	20.46	20.57		
1.4	16QAM	3	0	20.39	20.30	20.41		
1.4	16QAM	3	1	20.45	20.31	20.43		
1.4	16QAM	3	3	20.38	20.27	20.38		
1.4	16QAM	6	0	19.41	19.31	19.44	20.5	2
1.4	64QAM	1	0	19.51	19.43	19.56	20.5	2
1.4	64QAM	1	3	19.60	19.47	19.59		
1.4	64QAM	1	5	19.50	19.40	19.52		
1.4	64QAM	3	0	19.54	19.39	19.52		
1.4	64QAM	3	1	19.58	19.43	19.57		
1.4	64QAM	3	3	19.50	19.40	19.50		
1.4	64QAM	6	0	18.35	18.23	18.35	19.5	3



<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	23.01	22.98	22.84	24	0
10	QPSK	1	25	22.92	22.88	23.10		
10	QPSK	1	49	23.06	23.10	23.47		
10	QPSK	25	0	22.08	21.94	21.95	23	1
10	QPSK	25	12	22.01	21.91	22.21		
10	QPSK	25	25	22.09	22.08	22.38		
10	QPSK	50	0	21.96	21.92	22.21	23	1
10	16QAM	1	0	22.27	22.11	22.08		
10	16QAM	1	25	22.05	22.13	22.35		
10	16QAM	1	49	22.14	22.32	22.53	22	2
10	16QAM	25	0	21.09	20.91	20.97		
10	16QAM	25	12	21.00	20.95	21.22		
10	16QAM	25	25	20.94	21.11	21.39	22	2
10	16QAM	50	0	20.96	20.92	21.22		
10	64QAM	1	0	21.25	21.09	21.05		
10	64QAM	1	25	21.03	21.06	21.33	22	2
10	64QAM	1	49	21.06	21.30	21.59		
10	64QAM	25	0	20.10	19.97	20.00		
10	64QAM	25	12	20.02	19.99	20.24	21	3
10	64QAM	25	25	19.98	20.12	20.39		
10	64QAM	50	0	20.00	19.95	20.22		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.05	22.86	23.10	24	0
5	QPSK	1	12	23.02	22.84	23.26		
5	QPSK	1	24	22.94	22.94	23.46		
5	QPSK	12	0	22.10	21.93	22.24	23	1
5	QPSK	12	7	22.09	21.91	22.36		
5	QPSK	12	13	22.06	21.99	22.41		
5	QPSK	25	0	22.09	21.89	22.35	23	1
5	16QAM	1	0	22.27	22.06	22.31		
5	16QAM	1	12	22.18	22.11	22.36		
5	16QAM	1	24	22.06	22.22	22.55	22	2
5	16QAM	12	0	21.10	20.92	21.24		
5	16QAM	12	7	21.10	20.95	21.34		
5	16QAM	12	13	21.05	21.01	21.43	22	2
5	16QAM	25	0	21.10	20.92	21.34		
5	64QAM	1	0	21.28	21.07	21.30		
5	64QAM	1	12	21.15	21.07	21.39	22	2
5	64QAM	1	24	21.06	21.16	21.56		
5	64QAM	12	0	20.15	19.97	20.31		
5	64QAM	12	7	20.16	19.99	20.44	21	3
5	64QAM	12	13	20.14	20.04	20.49		
5	64QAM	25	0	20.11	19.92	20.36		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.05	22.85	23.30	24	0
3	QPSK	1	8	23.05	22.85	23.35		
3	QPSK	1	14	23.04	22.92	23.43		
3	QPSK	8	0	22.09	21.92	22.35	23	1
3	QPSK	8	4	22.10	21.90	22.46		
3	QPSK	8	7	22.08	21.89	22.46		
3	QPSK	15	0	22.06	21.87	22.41	23	1
3	16QAM	1	0	22.24	22.07	22.36		
3	16QAM	1	8	22.21	22.12	22.44		
3	16QAM	1	14	22.14	22.19	22.54	22	2
3	16QAM	8	0	21.15	20.96	21.36		
3	16QAM	8	4	21.17	20.97	21.48		
3	16QAM	8	7	21.14	20.94	21.49	21	3
3	16QAM	15	0	21.11	20.92	21.44		
3	64QAM	1	0	21.29	21.03	21.41		
3	64QAM	1	8	21.22	21.06	21.49	22	2
3	64QAM	1	14	21.17	21.15	21.61		
3	64QAM	8	0	20.14	19.93	20.38		
3	64QAM	8	4	20.16	19.95	20.52	21	3
3	64QAM	8	7	20.14	19.92	20.50		
3	64QAM	15	0	20.11	19.92	20.47		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.99	22.76	23.21	24	0
1.4	QPSK	1	3	23.01	22.82	23.37		
1.4	QPSK	1	5	22.92	22.76	23.29		
1.4	QPSK	3	0	23.02	22.82	23.29		
1.4	QPSK	3	1	23.07	22.87	23.38		
1.4	QPSK	3	3	23.04	22.82	23.43		
1.4	QPSK	6	0	22.03	21.84	22.35	23	1
1.4	16QAM	1	0	22.19	22.03	22.34	23	1
1.4	16QAM	1	3	22.26	22.11	22.51		
1.4	16QAM	1	5	22.16	22.04	22.43		
1.4	16QAM	3	0	22.02	21.83	22.29		
1.4	16QAM	3	1	22.09	21.88	22.33		
1.4	16QAM	3	3	22.00	21.83	22.36		
1.4	16QAM	6	0	21.09	20.87	21.39	22	2
1.4	64QAM	1	0	21.18	20.97	21.46	22	2
1.4	64QAM	1	3	21.22	21.02	21.61		
1.4	64QAM	1	5	21.14	20.94	21.54		
1.4	64QAM	3	0	21.15	20.96	21.39		
1.4	64QAM	3	1	21.17	21.01	21.43		
1.4	64QAM	3	3	21.12	20.95	21.49		
1.4	64QAM	6	0	20.06	19.85	20.30	21	3



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.55	22.60	22.69		
10	QPSK	1	25	22.89	22.96	23.06	24	0
10	QPSK	1	49	23.25	23.35	23.33		
10	QPSK	25	0	21.76	21.82	21.91		
10	QPSK	25	12	21.94	22.02	22.12	23	1
10	QPSK	25	25	22.13	22.35	22.32		
10	QPSK	50	0	21.95	22.16	22.14		
10	16QAM	1	0	21.70	21.81	21.97	23	1
10	16QAM	1	25	22.17	22.26	22.31		
10	16QAM	1	49	22.36	22.41	22.45		
10	16QAM	25	0	20.79	20.85	20.94	22	2
10	16QAM	25	12	20.98	21.07	21.14		
10	16QAM	25	25	21.14	21.23	21.34		
10	16QAM	50	0	20.98	21.09	21.16	22	2
10	64QAM	1	0	20.67	20.77	20.90		
10	64QAM	1	25	21.14	21.18	21.26		
10	64QAM	1	49	21.41	21.48	21.45	21	3
10	64QAM	25	0	19.77	19.86	19.95		
10	64QAM	25	12	20.00	20.10	20.18		
10	64QAM	25	25	20.18	20.25	20.33	21	3
10	64QAM	50	0	19.97	20.06	20.17		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5	Tune-up limit (dBm)	MPR (dB)
5	QPSK	1	0	22.54	22.79	23.03	24	0
5	QPSK	1	12	22.71	22.97	23.22		
5	QPSK	1	24	22.89	23.13	23.33		
5	QPSK	12	0	21.70	21.92	22.19	23	1
5	QPSK	12	7	21.79	22.05	22.31		
5	QPSK	12	13	21.87	22.11	22.38		
5	QPSK	25	0	21.77	22.00	22.31	23	1
5	16QAM	1	0	21.73	22.07	22.28		
5	16QAM	1	12	21.98	22.24	22.33		
5	16QAM	1	24	22.16	22.30	22.44	22	2
5	16QAM	12	0	20.67	20.97	21.21		
5	16QAM	12	7	20.80	21.11	21.29		
5	16QAM	12	13	20.89	21.13	21.38	22	2
5	16QAM	25	0	20.75	21.06	21.33		
5	64QAM	1	0	20.69	21.01	21.26		
5	64QAM	1	12	20.93	21.16	21.33	22	2
5	64QAM	1	24	21.11	21.31	21.50		
5	64QAM	12	0	19.75	20.00	20.26		
5	64QAM	12	7	19.83	20.11	20.37	21	3
5	64QAM	12	13	19.90	20.17	20.46		
5	64QAM	25	0	19.80	20.03	20.34		



<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	21.58	21.70	21.43	22	0
15	QPSK	1	37	21.54	21.46	21.42		
15	QPSK	1	74	21.46	21.36	21.26		
15	QPSK	36	0	20.62	20.57	20.52	21	1
15	QPSK	36	20	20.58	20.50	20.46		
15	QPSK	36	39	20.47	20.48	20.42		
15	QPSK	75	0	20.56	20.48	20.55		
15	16QAM	1	0	20.85	20.85	20.70	21	1
15	16QAM	1	37	20.86	20.80	20.77		
15	16QAM	1	74	20.82	20.64	20.54		
15	16QAM	36	0	19.53	19.60	19.51	20	2
15	16QAM	36	20	19.61	19.53	19.44		
15	16QAM	36	39	19.48	19.49	19.43		
15	16QAM	75	0	19.57	19.49	19.52		
15	64QAM	1	0	19.80	19.72	19.64	20	2
15	64QAM	1	37	19.74	19.67	19.62		
15	64QAM	1	74	19.69	19.53	19.48		
15	64QAM	36	0	18.59	18.60	18.54	19	3
15	64QAM	36	20	18.65	18.54	18.46		
15	64QAM	36	39	18.51	18.53	18.44		
15	64QAM	75	0	18.57	18.48	18.52		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	21.56	21.44	21.45	22	0
10	QPSK	1	25	21.57	21.46	21.42		
10	QPSK	1	49	21.48	21.42	21.31		
10	QPSK	25	0	20.57	20.53	20.43	21	1
10	QPSK	25	12	20.67	20.50	20.48		
10	QPSK	25	25	20.58	20.43	20.45		
10	QPSK	50	0	20.61	20.50	20.49		
10	16QAM	1	0	20.87	20.84	20.75	21	1
10	16QAM	1	25	20.85	20.77	20.77		
10	16QAM	1	49	20.81	20.71	20.57		
10	16QAM	25	0	19.57	19.55	19.44	20	2
10	16QAM	25	12	19.65	19.52	19.51		
10	16QAM	25	25	19.56	19.42	19.44		
10	16QAM	50	0	19.62	19.52	19.51		
10	64QAM	1	0	19.75	19.68	19.65	20	2
10	64QAM	1	25	19.76	19.69	19.69		
10	64QAM	1	49	19.68	19.60	19.48		
10	64QAM	25	0	18.57	18.56	18.44	19	3
10	64QAM	25	12	18.66	18.54	18.55		
10	64QAM	25	25	18.57	18.46	18.46		
10	64QAM	50	0	18.65	18.49	18.51		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	21.50	21.45	21.42	22	0
5	QPSK	1	12	21.46	21.41	21.35		
5	QPSK	1	24	21.51	21.37	21.29		
5	QPSK	12	0	20.55	20.49	20.42	21	1
5	QPSK	12	7	20.53	20.49	20.44		
5	QPSK	12	13	20.46	20.44	20.37		
5	QPSK	25	0	20.51	20.41	20.43	21	1
5	16QAM	1	0	20.82	20.78	20.80		
5	16QAM	1	12	20.76	20.73	20.63		
5	16QAM	1	24	20.81	20.67	20.56	20	2
5	16QAM	12	0	19.58	19.52	19.48		
5	16QAM	12	7	19.53	19.53	19.41		
5	16QAM	12	13	19.48	19.46	19.37	20	2
5	16QAM	25	0	19.54	19.46	19.40		
5	64QAM	1	0	19.75	19.70	19.68		
5	64QAM	1	12	19.68	19.64	19.53	20	2
5	64QAM	1	24	19.72	19.57	19.48		
5	64QAM	12	0	18.60	18.56	18.48		
5	64QAM	12	7	18.59	18.54	18.47	19	3
5	64QAM	12	13	18.55	18.48	18.45		
5	64QAM	25	0	18.54	18.46	18.44		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	21.50	21.41	21.39	22	0
3	QPSK	1	8	21.46	21.37	21.32		
3	QPSK	1	14	21.45	21.33	21.30		
3	QPSK	8	0	20.53	20.44	20.39	21	1
3	QPSK	8	4	20.55	20.43	20.42		
3	QPSK	8	7	20.51	20.42	20.40		
3	QPSK	15	0	20.48	20.43	20.40	21	1
3	16QAM	1	0	20.79	20.78	20.64		
3	16QAM	1	8	20.74	20.75	20.59		
3	16QAM	1	14	20.68	20.68	20.56	20	2
3	16QAM	8	0	19.58	19.53	19.45		
3	16QAM	8	4	19.62	19.52	19.46		
3	16QAM	8	7	19.57	19.48	19.44	20	2
3	16QAM	15	0	19.52	19.43	19.40		
3	64QAM	1	0	19.70	19.65	19.56		
3	64QAM	1	8	19.68	19.61	19.53	20	2
3	64QAM	1	14	19.65	19.59	19.50		
3	64QAM	8	0	18.59	18.51	18.44		
3	64QAM	8	4	18.57	18.50	18.45	19	3
3	64QAM	8	7	18.55	18.46	18.42		
3	64QAM	15	0	18.53	18.43	18.41		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	21.42	21.36	21.23	22	0
1.4	QPSK	1	3	21.49	21.40	21.31		
1.4	QPSK	1	5	21.39	21.33	21.23		
1.4	QPSK	3	0	21.46	21.39	21.30		
1.4	QPSK	3	1	21.55	21.43	21.33		
1.4	QPSK	3	3	21.48	21.36	21.27		
1.4	QPSK	6	0	20.45	20.35	20.31	21	1
1.4	16QAM	1	0	20.77	20.69	20.49	21	1
1.4	16QAM	1	3	20.80	20.74	20.59		
1.4	16QAM	1	5	20.72	20.69	20.51		
1.4	16QAM	3	0	20.51	20.41	20.31		
1.4	16QAM	3	1	20.57	20.46	20.35		
1.4	16QAM	3	3	20.47	20.42	20.31		
1.4	16QAM	6	0	19.54	19.43	19.37	20	2
1.4	64QAM	1	0	19.62	19.54	19.50	20	2
1.4	64QAM	1	3	19.66	19.63	19.50		
1.4	64QAM	1	5	19.60	19.51	19.45		
1.4	64QAM	3	0	19.62	19.52	19.42		
1.4	64QAM	3	1	19.67	19.59	19.49		
1.4	64QAM	3	3	19.62	19.53	19.43		
1.4	64QAM	6	0	18.49	18.41	18.30	19	3



<Hotspot/Body-worn/Product Specific mode for WWAN UAT>

<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	23.28	22.95	23.20	24	0
10	QPSK	1	25	23.00	22.76	23.15		
10	QPSK	1	49	22.75	22.92	23.18		
10	QPSK	25	0	22.25	21.95	22.24	23	1
10	QPSK	25	12	22.04	21.83	22.08		
10	QPSK	25	25	22.15	21.90	22.20		
10	QPSK	50	0	22.10	21.79	22.09	23	1
10	16QAM	1	0	22.60	22.15	22.24		
10	16QAM	1	25	22.31	21.99	22.44		
10	16QAM	1	49	22.03	22.24	22.34	22	2
10	16QAM	25	0	21.15	20.74	20.99		
10	16QAM	25	12	21.13	20.81	21.12		
10	16QAM	25	25	20.86	20.84	21.24	22	2
10	16QAM	50	0	21.04	20.79	21.13		
10	64QAM	1	0	21.49	21.05	21.13		
10	64QAM	1	25	21.24	20.94	21.35	22	2
10	64QAM	1	49	20.97	21.15	21.34		
10	64QAM	25	0	20.20	19.75	20.02		
10	64QAM	25	12	20.17	19.83	20.15	21	3
10	64QAM	25	25	19.87	19.85	20.25		
10	64QAM	50	0	20.03	19.82	20.12		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.26	22.66	23.12	24	0
5	QPSK	1	12	23.10	22.69	23.13		
5	QPSK	1	24	22.96	22.77	23.19		
5	QPSK	12	0	22.27	21.69	22.16	23	1
5	QPSK	12	7	22.16	21.80	22.24		
5	QPSK	12	13	22.14	21.82	22.29		
5	QPSK	25	0	22.12	21.79	22.27	23	1
5	16QAM	1	0	22.59	21.92	22.47		
5	16QAM	1	12	22.41	21.97	22.36		
5	16QAM	1	24	22.29	22.07	22.35	22	2
5	16QAM	12	0	21.29	20.71	21.17		
5	16QAM	12	7	21.21	20.79	21.23		
5	16QAM	12	13	21.15	20.84	21.30	22	2
5	16QAM	25	0	21.17	20.76	21.23		
5	64QAM	1	0	21.47	20.86	21.33		
5	64QAM	1	12	21.32	20.89	21.35	22	2
5	64QAM	1	24	21.17	20.96	21.36		
5	64QAM	12	0	20.30	19.74	20.20		
5	64QAM	12	7	20.22	19.84	20.31	21	3
5	64QAM	12	13	20.17	19.91	20.37		
5	64QAM	25	0	20.16	19.80	20.27		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.22	22.65	23.17	24	0
3	QPSK	1	8	23.11	22.70	23.22		
3	QPSK	1	14	23.06	22.79	23.18		
3	QPSK	8	0	22.24	21.67	22.22	23	1
3	QPSK	8	4	22.17	21.78	22.34		
3	QPSK	8	7	22.10	21.74	22.33		
3	QPSK	15	0	22.15	21.75	22.29	23	1
3	16QAM	1	0	22.57	21.88	22.37		
3	16QAM	1	8	22.47	21.97	22.37		
3	16QAM	1	14	22.43	22.04	22.35	22	2
3	16QAM	8	0	21.31	20.72	21.28		
3	16QAM	8	4	21.24	20.84	21.37		
3	16QAM	8	7	21.18	20.81	21.36	21	3
3	16QAM	15	0	21.16	20.78	21.32		
3	64QAM	1	0	21.42	20.84	21.38		
3	64QAM	1	8	21.35	20.91	21.41	22	2
3	64QAM	1	14	21.29	20.97	21.40		
3	64QAM	8	0	20.29	19.72	20.25		
3	64QAM	8	4	20.20	19.82	20.39	21	3
3	64QAM	8	7	20.16	19.78	20.33		
3	64QAM	15	0	20.17	19.78	20.34		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.17	22.64	23.10	24	0
1.4	QPSK	1	3	23.24	22.71	23.14		
1.4	QPSK	1	5	23.14	22.61	23.06		
1.4	QPSK	3	0	23.21	22.69	23.18		
1.4	QPSK	3	1	23.26	22.75	23.24		
1.4	QPSK	3	3	23.20	22.70	23.20		
1.4	QPSK	6	0	22.20	21.68	22.23	23	1
1.4	16QAM	1	0	22.47	21.87	22.28	23	1
1.4	16QAM	1	3	22.54	21.96	22.35		
1.4	16QAM	1	5	22.47	21.88	22.26		
1.4	16QAM	3	0	22.23	21.71	22.19		
1.4	16QAM	3	1	22.30	21.74	22.25		
1.4	16QAM	3	3	22.25	21.70	22.18		
1.4	16QAM	6	0	21.28	20.77	21.32	22	2
1.4	64QAM	1	0	21.41	20.88	21.38	22	2
1.4	64QAM	1	3	21.42	20.90	21.41		
1.4	64QAM	1	5	21.36	20.84	21.35		
1.4	64QAM	3	0	21.37	20.83	21.32		
1.4	64QAM	3	1	21.41	20.87	21.35		
1.4	64QAM	3	3	21.36	20.81	21.32		
1.4	64QAM	6	0	20.19	19.68	20.23	21	3



<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	23.01	22.98	22.84	24	0
10	QPSK	1	25	22.92	22.88	23.10		
10	QPSK	1	49	23.06	23.10	23.47		
10	QPSK	25	0	22.08	21.94	21.95	23	1
10	QPSK	25	12	22.01	21.91	22.21		
10	QPSK	25	25	22.09	22.08	22.38		
10	QPSK	50	0	21.96	21.92	22.21	23	1
10	16QAM	1	0	22.27	22.11	22.08		
10	16QAM	1	25	22.05	22.13	22.35		
10	16QAM	1	49	22.14	22.32	22.53	22	2
10	16QAM	25	0	21.09	20.91	20.97		
10	16QAM	25	12	21.00	20.95	21.22		
10	16QAM	25	25	20.94	21.11	21.39	22	2
10	16QAM	50	0	20.96	20.92	21.22		
10	64QAM	1	0	21.25	21.09	21.05		
10	64QAM	1	25	21.03	21.06	21.33	22	2
10	64QAM	1	49	21.06	21.30	21.59		
10	64QAM	25	0	20.10	19.97	20.00		
10	64QAM	25	12	20.02	19.99	20.24	21	3
10	64QAM	25	25	19.98	20.12	20.39		
10	64QAM	50	0	20.00	19.95	20.22		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.05	22.86	23.10	24	0
5	QPSK	1	12	23.02	22.84	23.26		
5	QPSK	1	24	22.94	22.94	23.46		
5	QPSK	12	0	22.10	21.93	22.24	23	1
5	QPSK	12	7	22.09	21.91	22.36		
5	QPSK	12	13	22.06	21.99	22.41		
5	QPSK	25	0	22.09	21.89	22.35	23	1
5	16QAM	1	0	22.27	22.06	22.31		
5	16QAM	1	12	22.18	22.11	22.36		
5	16QAM	1	24	22.06	22.22	22.55	22	2
5	16QAM	12	0	21.10	20.92	21.24		
5	16QAM	12	7	21.10	20.95	21.34		
5	16QAM	12	13	21.05	21.01	21.43	22	2
5	16QAM	25	0	21.10	20.92	21.34		
5	64QAM	1	0	21.28	21.07	21.30		
5	64QAM	1	12	21.15	21.07	21.39	22	2
5	64QAM	1	24	21.06	21.16	21.56		
5	64QAM	12	0	20.15	19.97	20.31		
5	64QAM	12	7	20.16	19.99	20.44	21	3
5	64QAM	12	13	20.14	20.04	20.49		
5	64QAM	25	0	20.11	19.92	20.36		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.05	22.85	23.30	24	0
3	QPSK	1	8	23.05	22.85	23.35		
3	QPSK	1	14	23.04	22.92	23.43		
3	QPSK	8	0	22.09	21.92	22.35	23	1
3	QPSK	8	4	22.10	21.90	22.46		
3	QPSK	8	7	22.08	21.89	22.46		
3	QPSK	15	0	22.06	21.87	22.41	23	1
3	16QAM	1	0	22.24	22.07	22.36		
3	16QAM	1	8	22.21	22.12	22.44		
3	16QAM	1	14	22.14	22.19	22.54	22	2
3	16QAM	8	0	21.15	20.96	21.36		
3	16QAM	8	4	21.17	20.97	21.48		
3	16QAM	8	7	21.14	20.94	21.49	21	3
3	16QAM	15	0	21.11	20.92	21.44		
3	64QAM	1	0	21.29	21.03	21.41		
3	64QAM	1	8	21.22	21.06	21.49	22	2
3	64QAM	1	14	21.17	21.15	21.61		
3	64QAM	8	0	20.14	19.93	20.38		
3	64QAM	8	4	20.16	19.95	20.52	21	3
3	64QAM	8	7	20.14	19.92	20.50		
3	64QAM	15	0	20.11	19.92	20.47		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.99	22.76	23.21	24	0
1.4	QPSK	1	3	23.01	22.82	23.37		
1.4	QPSK	1	5	22.92	22.76	23.29		
1.4	QPSK	3	0	23.02	22.82	23.29		
1.4	QPSK	3	1	23.07	22.87	23.38		
1.4	QPSK	3	3	23.04	22.82	23.43		
1.4	QPSK	6	0	22.03	21.84	22.35	23	1
1.4	16QAM	1	0	22.19	22.03	22.34	23	1
1.4	16QAM	1	3	22.26	22.11	22.51		
1.4	16QAM	1	5	22.16	22.04	22.43		
1.4	16QAM	3	0	22.02	21.83	22.29		
1.4	16QAM	3	1	22.09	21.88	22.33		
1.4	16QAM	3	3	22.00	21.83	22.36		
1.4	16QAM	6	0	21.09	20.87	21.39	22	2
1.4	64QAM	1	0	21.18	20.97	21.46	22	2
1.4	64QAM	1	3	21.22	21.02	21.61		
1.4	64QAM	1	5	21.14	20.94	21.54		
1.4	64QAM	3	0	21.15	20.96	21.39		
1.4	64QAM	3	1	21.17	21.01	21.43		
1.4	64QAM	3	3	21.12	20.95	21.49		
1.4	64QAM	6	0	20.06	19.85	20.30	21	3



<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.55	22.60	22.69		
10	QPSK	1	25	22.89	22.96	23.06	24	0
10	QPSK	1	49	23.25	23.35	23.33		
10	QPSK	25	0	21.76	21.82	21.91		
10	QPSK	25	12	21.94	22.02	22.12	23	1
10	QPSK	25	25	22.13	22.35	22.32		
10	QPSK	50	0	21.95	22.16	22.14		
10	16QAM	1	0	21.70	21.81	21.97	23	1
10	16QAM	1	25	22.17	22.26	22.31		
10	16QAM	1	49	22.36	22.41	22.45		
10	16QAM	25	0	20.79	20.85	20.94	22	2
10	16QAM	25	12	20.98	21.07	21.14		
10	16QAM	25	25	21.14	21.23	21.34		
10	16QAM	50	0	20.98	21.09	21.16	22	2
10	64QAM	1	0	20.67	20.77	20.90		
10	64QAM	1	25	21.14	21.18	21.26		
10	64QAM	1	49	21.41	21.48	21.45	21	3
10	64QAM	25	0	19.77	19.86	19.95		
10	64QAM	25	12	20.00	20.10	20.18		
10	64QAM	25	25	20.18	20.25	20.33	21	3
10	64QAM	50	0	19.97	20.06	20.17		
Channel				23755	23790	23825		
Frequency (MHz)				706.5	710	713.5	Tune-up limit (dBm)	MPR (dB)
5	QPSK	1	0	22.54	22.79	23.03	24	0
5	QPSK	1	12	22.71	22.97	23.22		
5	QPSK	1	24	22.89	23.13	23.33		
5	QPSK	12	0	21.70	21.92	22.19	23	1
5	QPSK	12	7	21.79	22.05	22.31		
5	QPSK	12	13	21.87	22.11	22.38		
5	QPSK	25	0	21.77	22.00	22.31	23	1
5	16QAM	1	0	21.73	22.07	22.28		
5	16QAM	1	12	21.98	22.24	22.33		
5	16QAM	1	24	22.16	22.30	22.44	22	2
5	16QAM	12	0	20.67	20.97	21.21		
5	16QAM	12	7	20.80	21.11	21.29		
5	16QAM	12	13	20.89	21.13	21.38	22	2
5	16QAM	25	0	20.75	21.06	21.33		
5	64QAM	1	0	20.69	21.01	21.26		
5	64QAM	1	12	20.93	21.16	21.33	22	2
5	64QAM	1	24	21.11	21.31	21.50		
5	64QAM	12	0	19.75	20.00	20.26		
5	64QAM	12	7	19.83	20.11	20.37	21	3
5	64QAM	12	13	19.90	20.17	20.46		
5	64QAM	25	0	19.80	20.03	20.34		



<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	23.06	22.91	22.94	24	0
15	QPSK	1	37	22.82	22.59	23.04		
15	QPSK	1	74	22.59	22.81	22.93		
15	QPSK	36	0	21.98	21.74	22.09	23	1
15	QPSK	36	20	21.96	21.64	22.01		
15	QPSK	36	39	21.74	21.73	22.08		
15	QPSK	75	0	21.91	21.65	22.11		
15	16QAM	1	0	22.26	22.05	22.05	23	1
15	16QAM	1	37	22.14	21.90	22.38		
15	16QAM	1	74	21.91	22.11	22.18		
15	16QAM	36	0	20.98	20.73	20.98	22	2
15	16QAM	36	20	20.94	20.68	21.12		
15	16QAM	36	39	20.72	20.74	21.18		
15	16QAM	75	0	20.91	20.63	21.07		
15	64QAM	1	0	21.20	20.93	21.03	22	2
15	64QAM	1	37	21.04	20.81	21.28		
15	64QAM	1	74	20.79	21.01	21.25		
15	64QAM	36	0	20.00	19.72	20.00	21	3
15	64QAM	36	20	19.97	19.70	20.14		
15	64QAM	36	39	19.73	19.78	20.19		
15	64QAM	75	0	19.92	19.63	20.06		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.92	22.62	22.96	24	0
10	QPSK	1	25	22.82	22.51	23.02		
10	QPSK	1	49	22.63	22.71	22.97		
10	QPSK	25	0	21.95	21.61	22.02	23	1
10	QPSK	25	12	21.93	21.59	22.10		
10	QPSK	25	25	21.86	21.63	22.15		
10	QPSK	50	0	21.91	21.58	22.09		
10	16QAM	1	0	22.18	22.00	22.26	23	1
10	16QAM	1	25	22.08	21.83	22.37		
10	16QAM	1	49	21.97	21.98	22.18		
10	16QAM	25	0	20.93	20.61	21.01	22	2
10	16QAM	25	12	20.92	20.62	21.09		
10	16QAM	25	25	20.83	20.61	21.14		
10	16QAM	50	0	20.91	20.59	21.12		
10	64QAM	1	0	21.09	20.84	21.13	22	2
10	64QAM	1	25	21.01	20.74	21.28		
10	64QAM	1	49	20.83	20.90	21.18		
10	64QAM	25	0	19.95	19.66	20.05	21	3
10	64QAM	25	12	19.93	19.64	20.12		
10	64QAM	25	25	19.87	19.64	20.14		
10	64QAM	50	0	19.94	19.60	20.10		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.88	22.55	23.05	24	0
5	QPSK	1	12	22.82	22.50	23.04		
5	QPSK	1	24	22.79	22.53	23.00		
5	QPSK	12	0	21.96	21.58	22.13	23	1
5	QPSK	12	7	21.94	21.58	22.13		
5	QPSK	12	13	21.88	21.64	22.10		
5	QPSK	25	0	21.91	21.56	22.16	23	1
5	16QAM	1	0	22.18	21.91	22.42		
5	16QAM	1	12	22.11	21.83	22.29		
5	16QAM	1	24	22.04	21.82	22.19	22	2
5	16QAM	12	0	20.98	20.63	21.17		
5	16QAM	12	7	20.94	20.60	21.16		
5	16QAM	12	13	20.89	20.66	21.09	22	2
5	16QAM	25	0	20.93	20.58	21.14		
5	64QAM	1	0	21.10	20.77	21.26		
5	64QAM	1	12	21.05	20.70	21.27	22	2
5	64QAM	1	24	21.00	20.71	21.24		
5	64QAM	12	0	20.00	19.63	20.21		
5	64QAM	12	7	19.99	19.64	20.22	21	3
5	64QAM	12	13	19.95	19.70	20.18		
5	64QAM	25	0	19.92	19.57	20.16		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.87	22.52	23.05	24	0
3	QPSK	1	8	22.83	22.49	23.04		
3	QPSK	1	14	22.82	22.56	22.98		
3	QPSK	8	0	21.94	21.57	22.12	23	1
3	QPSK	8	4	21.94	21.58	22.16		
3	QPSK	8	7	21.90	21.53	22.13		
3	QPSK	15	0	21.90	21.53	22.11	23	1
3	16QAM	1	0	22.14	21.87	22.30		
3	16QAM	1	8	22.13	21.83	22.21		
3	16QAM	1	14	22.04	21.85	22.19	22	2
3	16QAM	8	0	21.01	20.61	21.19		
3	16QAM	8	4	21.02	20.64	21.18		
3	16QAM	8	7	20.98	20.59	21.17	22	2
3	16QAM	15	0	20.95	20.59	21.13		
3	64QAM	1	0	21.07	20.73	21.28		
3	64QAM	1	8	21.06	20.73	21.25	22	2
3	64QAM	1	14	21.02	20.75	21.23		
3	64QAM	8	0	19.97	19.59	20.17		
3	64QAM	8	4	20.00	19.62	20.18	21	3
3	64QAM	8	7	19.96	19.57	20.16		
3	64QAM	15	0	19.94	19.56	20.17		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.80	22.45	22.94	24	0
1.4	QPSK	1	3	22.82	22.50	22.96		
1.4	QPSK	1	5	22.78	22.43	22.90		
1.4	QPSK	3	0	22.86	22.49	23.03		
1.4	QPSK	3	1	22.90	22.51	22.75		
1.4	QPSK	3	3	22.84	22.49	23.01		
1.4	QPSK	6	0	21.88	21.49	22.04	23	1
1.4	16QAM	1	0	22.07	21.79	22.09	23	1
1.4	16QAM	1	3	22.13	21.82	22.18		
1.4	16QAM	1	5	22.03	21.72	22.09		
1.4	16QAM	3	0	21.88	21.51	22.04		
1.4	16QAM	3	1	21.90	21.57	22.08		
1.4	16QAM	3	3	21.83	21.52	22.01		
1.4	16QAM	6	0	20.93	20.57	21.12	22	2
1.4	64QAM	1	0	21.00	20.66	21.17	22	2
1.4	64QAM	1	3	21.04	20.70	21.24		
1.4	64QAM	1	5	21.00	20.62	21.18		
1.4	64QAM	3	0	20.99	20.63	21.14		
1.4	64QAM	3	1	21.03	20.70	21.18		
1.4	64QAM	3	3	20.98	20.61	21.15		
1.4	64QAM	6	0	19.89	19.52	20.01	21	3

<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.

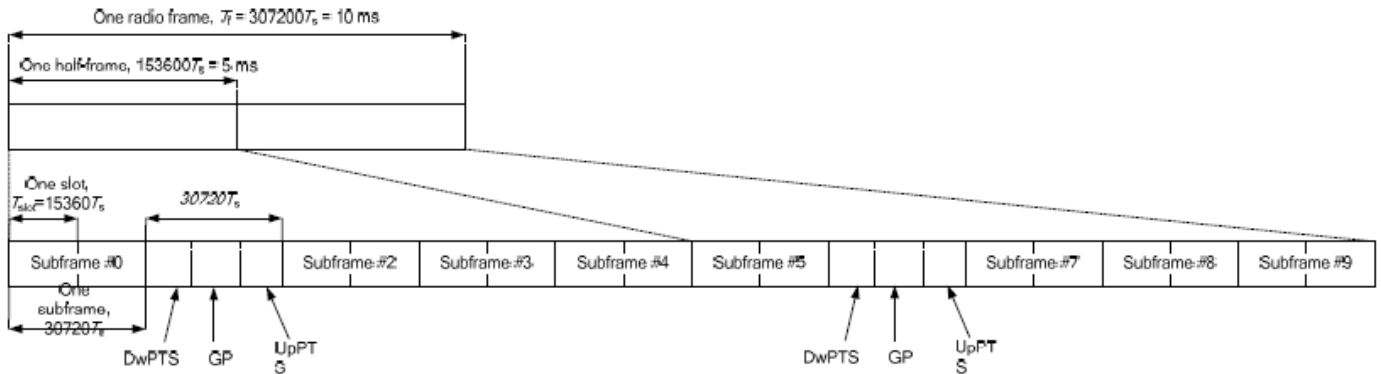


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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 · Ts	2192 · Ts	2560 · Ts	7680 · Ts	2192 · Ts	2560 · Ts
1	19760 · Ts			20480 · Ts		
2	21952 · Ts			23040 · Ts		
3	24144 · Ts			25600 · Ts		
4	26336 · Ts			7680 · Ts	4384 · Ts	5120 · Ts
5	6592 · Ts	4384 · Ts	5120 · Ts	20480 · Ts		
6	19760 · Ts			23040 · Ts		
7	21952 · Ts			12800 · Ts		
8	24144 · Ts			-	-	
9	13168 · Ts			-	-	-

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.



<Head/Hotspot/Body-worn/Product Specific mode for WWAN LAT>

<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	22.98	23.28	23.64	24	0
20	QPSK	1	49	22.88	23.15	23.50		
20	QPSK	1	99	23.04	23.21	23.62		
20	QPSK	50	0	21.93	22.23	22.47	23	1
20	QPSK	50	24	21.77	22.12	22.45		
20	QPSK	50	50	21.89	22.21	22.44		
20	QPSK	100	0	21.89	22.14	22.48		
20	16QAM	1	0	21.85	22.22	22.54	23	1
20	16QAM	1	49	21.98	22.27	22.56		
20	16QAM	1	99	22.09	22.37	22.68		
20	16QAM	50	0	20.77	21.14	21.32	22	2
20	16QAM	50	24	20.87	21.13	21.45		
20	16QAM	50	50	20.99	21.24	21.48		
20	16QAM	100	0	20.87	21.17	21.45		
20	64QAM	1	0	20.57	20.94	21.23	22	2
20	64QAM	1	49	20.68	20.99	21.33		
20	64QAM	1	99	20.74	21.10	21.40		
20	64QAM	50	0	19.80	20.14	20.38	21	3
20	64QAM	50	24	19.78	20.17	20.48		
20	64QAM	50	50	19.96	20.29	20.51		
20	64QAM	100	0	19.85	20.17	20.51		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	22.71	23.09	23.38	24	0
15	QPSK	1	37	22.72	23.10	23.45		
15	QPSK	1	74	22.84	23.28	23.60		
15	QPSK	36	0	21.73	22.11	22.44	23	1
15	QPSK	36	20	21.75	22.14	22.47		
15	QPSK	36	39	21.78	22.19	22.54		
15	QPSK	75	0	21.76	22.15	22.45		
15	16QAM	1	0	21.79	22.22	22.51	23	1
15	16QAM	1	37	21.83	22.25	22.58		
15	16QAM	1	74	21.94	22.36	22.68		
15	16QAM	36	0	20.76	21.18	21.47	22	2
15	16QAM	36	20	20.74	21.05	21.51		
15	16QAM	36	39	20.72	21.20	21.56		
15	16QAM	75	0	20.74	21.12	21.51		
15	64QAM	1	0	20.54	20.92	21.22	22	2
15	64QAM	1	37	20.54	20.93	21.27		
15	64QAM	1	74	20.69	21.09	21.46		
15	64QAM	36	0	19.77	20.14	20.46	21	3
15	64QAM	36	20	19.72	20.12	20.47		
15	64QAM	36	39	19.82	20.24	20.55		
15	64QAM	75	0	19.76	20.16	20.49		



Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	22.71	23.20	23.59	24	0
10	QPSK	1	25	22.76	23.23	23.55		
10	QPSK	1	49	22.87	23.28	23.52		
10	QPSK	25	0	21.62	22.10	22.49	23	1
10	QPSK	25	12	21.71	22.12	22.51		
10	QPSK	25	25	21.63	22.13	22.60		
10	QPSK	50	0	21.70	22.07	22.49	23	1
10	16QAM	1	0	21.77	22.31	22.64		
10	16QAM	1	25	21.82	22.31	22.58		
10	16QAM	1	49	21.95	22.36	22.68	22	2
10	16QAM	25	0	20.66	21.17	21.53		
10	16QAM	25	12	20.73	21.15	21.57		
10	16QAM	25	25	20.65	21.09	21.58	22	2
10	16QAM	50	0	20.70	21.15	21.57		
10	64QAM	1	0	20.43	20.96	21.37		
10	64QAM	1	25	20.52	20.94	21.36	22	2
10	64QAM	1	49	20.61	21.03	21.45		
10	64QAM	25	0	19.65	20.19	20.54		
10	64QAM	25	12	19.79	20.15	20.55	21	3
10	64QAM	25	25	19.75	20.12	20.64		
10	64QAM	50	0	19.74	20.13	20.52		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	22.59	23.14	23.57	24	0
5	QPSK	1	12	22.62	23.15	23.57		
5	QPSK	1	24	22.64	23.11	23.54		
5	QPSK	12	0	21.51	22.07	22.56	23	1
5	QPSK	12	7	21.52	22.05	22.59		
5	QPSK	12	13	21.60	22.07	22.56		
5	QPSK	25	0	21.47	22.12	22.54	23	1
5	16QAM	1	0	21.64	22.16	22.63		
5	16QAM	1	12	21.63	22.19	22.64		
5	16QAM	1	24	21.72	22.20	22.64	22	2
5	16QAM	12	0	20.59	21.09	21.56		
5	16QAM	12	7	20.51	21.10	21.56		
5	16QAM	12	13	20.57	20.95	21.55	22	2
5	16QAM	25	0	20.54	21.06	21.60		
5	64QAM	1	0	20.31	20.85	21.41		
5	64QAM	1	12	20.32	20.84	21.40	22	2
5	64QAM	1	24	20.41	20.86	21.41		
5	64QAM	12	0	19.58	20.09	20.63		
5	64QAM	12	7	19.59	20.10	20.59	21	3
5	64QAM	12	13	19.66	20.09	20.58		
5	64QAM	25	0	19.58	20.12	20.62		



<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Low Ch. / Freq.	Power Middle High Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				40240	40500	40770	41140		
Frequency (MHz)				2555	2581	2608	2645		
20	QPSK	1	0	23.08	23.02	22.90	23.14	24	0
20	QPSK	1	49	22.99	22.99	22.89	23.03		
20	QPSK	1	99	22.89	22.93	22.88	22.96		
20	QPSK	50	0	22.14	22.01	22.08	22.15	23	1
20	QPSK	50	24	22.08	21.94	21.90	22.04		
20	QPSK	50	50	22.01	21.94	21.96	22.06		
20	QPSK	100	0	22.09	22.05	21.91	22.10		
20	16QAM	1	0	22.33	22.41	22.29	22.36	23	1
20	16QAM	1	49	22.36	22.33	22.27	22.22		
20	16QAM	1	99	22.33	22.23	22.19	22.24		
20	16QAM	50	0	21.14	20.98	21.00	21.15	22	2
20	16QAM	50	24	21.12	21.09	20.99	21.11		
20	16QAM	50	50	21.00	20.99	21.00	21.16		
20	16QAM	100	0	21.12	21.06	20.99	21.11		
20	64QAM	1	0	21.30	21.18	21.08	21.25	22	2
20	64QAM	1	49	21.12	20.99	20.95	21.20		
20	64QAM	1	99	21.03	21.00	20.95	21.17		
20	64QAM	50	0	20.14	20.01	20.02	20.11	21	3
20	64QAM	50	24	20.14	19.98	19.90	20.11		
20	64QAM	50	50	19.99	19.98	19.94	20.11		
20	64QAM	100	0	20.14	20.00	19.97	20.10		
Channel				40215	40495	40785	41165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2552.5	2580.5	2609.5	2647.5		
15	QPSK	1	0	23.11	23.05	23.04	23.10	24	0
15	QPSK	1	37	23.05	23.01	22.96	23.00		
15	QPSK	1	74	23.00	23.01	23.00	23.03		
15	QPSK	36	0	22.08	21.93	21.96	22.02	23	1
15	QPSK	36	20	22.05	21.97	21.91	22.13		
15	QPSK	36	39	22.06	21.95	21.90	22.01		
15	QPSK	75	0	22.05	21.96	21.92	22.12		
15	16QAM	1	0	22.35	22.36	22.38	22.37	23	1
15	16QAM	1	37	22.31	22.35	22.21	22.32		
15	16QAM	1	74	22.25	22.30	22.25	22.26		
15	16QAM	36	0	21.11	20.95	20.99	21.06	22	2
15	16QAM	36	20	21.10	20.98	20.93	21.11		
15	16QAM	36	39	21.07	20.99	20.93	20.98		
15	16QAM	75	0	21.09	21.00	20.94	21.10		
15	64QAM	1	0	21.24	21.15	21.17	21.35	22	2
15	64QAM	1	37	21.18	21.06	21.02	21.23		
15	64QAM	1	74	21.07	21.02	21.05	21.25		
15	64QAM	36	0	20.12	19.95	20.01	20.04	21	3
15	64QAM	36	20	20.14	19.96	19.96	20.16		
15	64QAM	36	39	20.06	19.94	19.96	20.00		
15	64QAM	75	0	20.09	19.98	19.99	20.13		



Channel				40190	40490	40790	41190	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2550	2580	2610	2650		
10	QPSK	1	0	23.03	22.80	22.90	23.02	24	0
10	QPSK	1	25	23.04	23.03	22.97	23.00		
10	QPSK	1	49	22.95	23.03	22.96	23.00		
10	QPSK	25	0	22.07	21.91	21.90	22.11	23	1
10	QPSK	25	12	22.06	21.94	21.93	22.16		
10	QPSK	25	25	22.05	21.93	21.93	22.06		
10	QPSK	50	0	22.05	21.93	21.90	22.12	23	1
10	16QAM	1	0	22.28	22.31	22.34	22.36		
10	16QAM	1	25	22.35	22.35	22.28	22.27		
10	16QAM	1	49	22.35	22.40	22.34	22.35	22	2
10	16QAM	25	0	21.10	20.98	20.97	21.18		
10	16QAM	25	12	21.11	21.02	20.98	21.21		
10	16QAM	25	25	21.06	20.94	20.96	21.05	22	2
10	16QAM	50	0	21.08	20.98	20.94	21.15		
10	64QAM	1	0	21.19	21.07	21.13	21.27		
10	64QAM	1	25	21.15	21.07	21.07	21.21	22	2
10	64QAM	1	49	21.16	21.09	21.13	21.21		
10	64QAM	25	0	20.16	20.05	20.01	20.20		
10	64QAM	25	12	20.15	20.09	20.05	20.23	21	3
10	64QAM	25	25	20.11	20.01	20.02	20.11		
10	64QAM	50	0	20.09	19.96	19.92	20.15		
Channel				40165	40485	40805	41215	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2547.5	2579.5	2611.5	2652.5		
5	QPSK	1	0	23.01	22.81	22.80	22.97	24	0
5	QPSK	1	12	22.99	22.95	23.00	22.97		
5	QPSK	1	24	22.91	22.99	22.92	22.98		
5	QPSK	12	0	22.05	21.89	21.96	22.06	23	1
5	QPSK	12	7	22.05	21.95	21.96	22.10		
5	QPSK	12	13	22.06	21.90	21.93	22.04		
5	QPSK	25	0	22.05	21.89	21.91	22.03	23	1
5	16QAM	1	0	22.30	22.30	22.26	22.29		
5	16QAM	1	12	22.31	22.37	22.31	22.32		
5	16QAM	1	24	22.30	22.34	22.33	22.33	22	2
5	16QAM	12	0	21.10	21.00	20.99	21.11		
5	16QAM	12	7	21.13	21.04	21.08	21.15		
5	16QAM	12	13	21.12	21.00	21.00	21.10	22	2
5	16QAM	25	0	21.08	20.98	20.99	21.09		
5	64QAM	1	0	21.16	21.09	21.06	21.20		
5	64QAM	1	12	21.16	21.13	21.14	21.26	22	2
5	64QAM	1	24	21.15	21.16	21.14	21.26		
5	64QAM	12	0	20.11	20.02	20.00	20.08		
5	64QAM	12	7	20.17	20.03	20.05	20.12	21	3
5	64QAM	12	13	20.10	20.01	20.01	20.11		
5	64QAM	25	0	20.10	20.00	19.99	20.09		



<LTE Carrier Aggregation>

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 bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. All permutations exist. No restrictions on Pcell & Scell combinations. Only LTE Band 29A is limited to Scell.
3. This device supported inter-band two and three carrier aggregation, for intra-band supported non-contiguous and contiguous configuration.

<Inter-Band two carrier combinations>

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-5A	2			Yes	Yes	Yes	Yes	30	0
	5			Yes	Yes				
	2			Yes	Yes			20	1
	5			Yes	Yes				
CA_2A-12A	2			Yes	Yes	Yes	Yes	30	0
	12			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	1
	12		Yes	Yes	Yes				
	2			Yes	Yes			20	2
12			Yes	Yes					
CA_2A-17A	2			Yes	Yes			20	0
	17			Yes	Yes				
CA_2A-29A	2			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	2			Yes	Yes			20	1
	29			Yes	Yes				
	2			Yes	Yes	Yes	Yes	30	2
29			Yes	Yes					
CA_2A-30A	2			Yes	Yes	Yes	Yes	30	0
	30			Yes	Yes				
CA_4A-5A	4			Yes	Yes			20	0
	5			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	1
	5			Yes	Yes				
CA_4A-12A	4	Yes	Yes	Yes	Yes			20	0
	12			Yes	Yes				
	4	Yes	Yes	Yes	Yes	Yes	Yes	30	1
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
	12		Yes	Yes	Yes				
	4			Yes	Yes			20	3
	12			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	4
	12			Yes	Yes				
CA_4A-17A	4			Yes	Yes			20	0
	17			Yes	Yes				



E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_4A-29A	4			Yes	Yes			20	0
	29		Yes	Yes	Yes				
	4			Yes	Yes			20	1
	29			Yes	Yes				
	4			Yes	Yes	Yes	Yes	30	2
29			Yes	Yes					
CA_4A-30A	4			Yes	Yes	Yes	Yes	30	0
	30			Yes	Yes				
CA_5A-7A	5	Yes	Yes	Yes	Yes			30	0
	7				Yes	Yes	Yes		
	5			Yes	Yes			30	1
7				Yes	Yes	Yes			
CA_5A-30A	5			Yes	Yes			20	0
	30			Yes	Yes				
CA_29A-30A	29			Yes	Yes			20	0
	30			Yes	Yes				
CA_12A-30A	12			Yes	Yes			20	0
	30			Yes	Yes				

<Inter-Band three carrier combinations>

E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_2A-2A-5A	2	See CA_2A-2A Bandwidth Combination Set 0 in Table 5.4.2A.1-3						50	0
	5			Yes	Yes				
CA_2A-2A-12A	2	See CA_2A-2A Bandwidth Combination Set 0 in Table 5.4.2A.1-3						50	0
	12			Yes	Yes				
CA_2A-2A-29A	2	See CA_2A-2A Bandwidth Combination Set 0 in Table 5.6A.1-3						50	0
	29			Yes	Yes				
CA_2A-2A-30A	2	See CA_2A-2A Bandwidth Combination Set 0 in Table 5.6A.1-3						50	0
	30			Yes	Yes				
CA_2A-5A-30A	2			Yes	Yes	Yes	Yes	40	0
	5			Yes	Yes				
	30			Yes	Yes				
CA_2A-12A- 30A	2			Yes	Yes	Yes	Yes	40	0
	12			Yes	Yes				
	30			Yes	Yes				
CA_2A-29A- 30A	2			Yes	Yes	Yes	Yes	40	0
	29			Yes	Yes				
	30			Yes	Yes				



E-UTRA CA configuration / Bandwidth combination set									
E-UTRA CA Configuration	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_4A-4A-5A	4	See CA_4A-4A Bandwidth Combination Set 0 in table 5.4.2A.1-3						50	0
	5			Yes	Yes				
CA_4A-4A- 12A	4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.4.2A.1-3						50	0
	12			Yes	Yes				
CA_4A-4A- 29A	4	See CA_4A-4A Bandwidth combination set 0 in Table 5.4.2A.1-3						50	0
	29			Yes	Yes				
CA_4A-4A- 30A	4	See CA_4A-4A Bandwidth combination set 0 in Table 5.4.2A.1-3						50	0
	30			Yes	Yes				
CA_4A-5A-30A	4			Yes	Yes	Yes	Yes	40	0
	5			Yes	Yes				
	30			Yes	Yes				
CA_4A-12A- 30A	4			Yes	Yes	Yes	Yes	40	0
	12			Yes	Yes				
	30			Yes	Yes				
CA_4A-29A- 30A	4			Yes	Yes	Yes	Yes	40	0
	29			Yes	Yes				
	30			Yes	Yes				
CA_2C-30A	2	See CA_2C Bandwidth combination set 0 in Table 5.4.2A.1-1						50	0
	30			Yes	Yes				
CA_2C-5A	2	See CA_2C Bandwidth combination set 0 in Table 5.4.2A.1-1						50	0
	5			Yes	Yes				
CA_2C-29A	2	See CA_2C Bandwidth Combination Set 0 in table 5.4.2A.1-1						50	0
	29			Yes	Yes				

<Intra-Band Carrier Combination>

E-UTRA CA configuration / Bandwidth combination set						
E-UTRACA configuration	Component carriers in order of increasing carrier frequency				Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_2A-2A	5, 10, 15, 20	5, 10, 15, 20			40	0
CA_4A-4A	5, 10, 15, 20	5, 10, 15, 20			40	0
	5, 10	5, 10			20	1
CA_7A-7A	5	15			40	0
	10	10, 15				
	15	15, 20				
	20	20				
	5, 10, 15, 20	5, 10, 15, 20			40	1
	5, 10, 15, 20	5, 10			30	2
CA_41A-41A	10, 15, 20	10, 15, 20			40	3
	10, 15, 20	10, 15, 20			40	0
	5, 10, 15, 20	5, 10, 15, 20			40	1



E-UTRA CA configuration / Bandwidth combination set						
E-UTRACA configuration	Component carriers in order of increasing carrier frequency				Maximum aggregated bandwidth [MHz]	Bandwidth combination set
	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]	Channel bandwidths for carrier [MHz]		
CA_2C	5	20			40	0
	10	15, 20				
	15	10, 15, 20				
	20	5, 10, 15, 20				
CA_7C	15	15			40	0
	20	20				
	10	20			40	1
	15	15, 20				
	20	10, 15, 20			40	2
	15	10, 15				
CA_7B	15	5			20	0
CA_41C	10	20			40	0
	15	15, 20				
	20	10, 15, 20				
	5, 10	20			40	1
	15	15, 20				
	20	5, 10, 15, 20			40	2
	10	15, 20				
	15	10, 15, 20				
	20	10, 15, 20			40	3
	10	20				
20	20					

LTE Carrier Aggregation Conducted Power**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 carrier aggregation only. Uplink carrier aggregation is not supported. 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 inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band.
- vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

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



<Maximum output power for 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	1860	18700	QPSK	1	0	5	10	881.5	2525	21.50	21.53	
	5	10	829	20450	QPSK	1	0	2	20	1960	900	23.26	23.28	
	2	20	1860	18700	QPSK	1	0	12	10	737.5	5095	21.51	21.53	
	12	10	711	23130	QPSK	1	49	2	20	1960	900	23.43	23.47	
	2	10	1855	18650	QPSK	1	0	17	10	740	5790	21.41	21.43	
	17	10	710	23790	QPSK	1	49	2	10	1960	900	23.28	23.35	
	2	20	1860	18700	QPSK	1	0	29	10	722.5	9715	21.49	21.53	
	2	20	1860	18700	QPSK	1	0	30	10	2355	9820	21.48	21.53	
	30	10	2310	27710	QPSK	1	0	2	20	1960	900	23.21	23.25	
	4	20	1720	20050	QPSK	1	0	5	10	881.5	2525	22.51	22.55	
	5	10	829	20450	QPSK	1	0	4	20	2132.5	2175	23.26	23.28	
	4	20	1720	20050	QPSK	1	0	12	10	737.5	5095	22.51	22.55	
	12	10	711	23130	QPSK	1	49	4	20	2132.5	2175	23.43	23.47	
	4	10	1715	20000	QPSK	1	0	17	10	740	5790	22.35	22.40	
	17	10	710	23790	QPSK	1	49	4	10	2132.5	2175	23.31	23.35	
	4	20	1720	20050	QPSK	1	0	29	10	722.5	9715	22.51	22.55	
	4	20	1720	20050	QPSK	1	0	30	10	2355	9820	22.52	22.55	
	30	10	2310	27710	QPSK	1	0	4	20	2132.5	2175	23.21	23.25	
	5	10	829	20450	QPSK	1	0	7	20	2655	3100	23.14	23.28	
	7	20	2510	20850	QPSK	1	0	5	10	881.5	2525	22.76	22.82	
	5	10	829	20450	QPSK	1	0	30	10	2355	9820	23.22	23.28	
	30	10	2310	27710	QPSK	1	0	5	10	881.5	2525	23.19	23.25	
	30	10	2310	27710	QPSK	1	0	29	10	722.5	9715	23.21	23.25	
12	10	711	23130	QPSK	1	49	30	10	2355	9820	23.42	23.47		
30	10	2310	27710	QPSK	1	0	12	10	737.5	5095	23.20	23.25		
Intra-Band	Non-Contiguous	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	21.48	21.53
		4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	22.50	22.55
		7	20	2510	20850	QPSK	1	0	7	5	2687.5	3425	22.73	22.82
		41	20	2645	41140	QPSK	1	0	41	5	2547.5	40165	23.11	23.14
	Contiguous	2	20	1860	18700	QPSK	1	0	2	20	1959.80	898	21.50	21.53
		7	20	2510	20850	QPSK	1	0	7	20	2649.80	3048	22.72	22.82
		7	15	2507.5	20825	QPSK	1	0	7	5	2636.80	2918	22.80	22.82
		41	20	2645	41140	QPSK	1	0	41	20	2625.20	40942	23.11	23.14



<Maximum output power for 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	1860	18700	QPSK	1	0	2	5	1987.5	1175	5	10	881.5	2525	21.51	21.53
	5	10	829	20450	QPSK	1	0	2	20	1960	900	2	5	1987.5	1175	23.21	23.28
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	12	10	737.5	5095	21.52	21.53
	12	10	711	23130	QPSK	1	49	2	20	1960	900	2	5	1987.5	1175	23.41	23.47
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	29	10	722.5	9715	21.48	21.53
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	30	10	2355	9820	23.51	21.53
	30	10	2310	27710	QPSK	1	0	2	20	1960	900	2	5	1987.5	1175	23.22	23.25
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	30	10	2355	9820	21.50	21.53
	5	10	829	20450	QPSK	1	0	2	20	1960	900	30	10	2355	9820	23.24	23.28
	30	10	2310	27710	QPSK	1	0	2	20	1960	900	5	10	881.5	2525	23.21	23.25
	2	20	1860	18700	QPSK	1	0	12	10	737.5	5095	30	10	2355	9820	21.49	21.53
	12	10	711	23130	QPSK	1	49	2	20	1960	900	30	10	2355	9820	23.41	23.47
	30	10	2310	27710	QPSK	1	0	2	20	1960	900	12	10	737.5	5095	23.18	23.25
	2	20	1860	18700	QPSK	1	0	29	10	722.5	9715	30	10	2355	9820	21.51	21.53
	30	10	2310	27710	QPSK	1	0	2	20	1960	900	29	10	722.5	9715	23.20	23.25
	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	22.51	22.55
	5	10	829	20450	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.21	23.28
	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	12	10	737.5	5095	22.49	22.55
	12	10	711	23130	QPSK	1	49	4	20	2132.5	2175	4	5	2152.5	2375	23.41	23.47
	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	29	10	722.5	9715	22.51	22.55
	4	20	1720	20050	QPSK	1	0	4	5	2152.5	2375	30	10	2355	9820	22.52	22.55
	30	10	2310	27710	QPSK	1	0	4	20	2132.5	2175	4	5	2152.5	2375	23.21	23.25
	4	20	1720	20050	QPSK	1	0	5	10	881.5	2525	30	10	2355	9820	22.50	22.55
	5	10	829	20450	QPSK	1	0	4	20	2132.5	2175	30	10	2355	9820	23.22	23.28
	30	10	2310	27710	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	23.22	23.25
	4	20	1720	20050	QPSK	1	0	12	10	737.5	5095	30	10	2355	9820	22.51	22.55
	12	10	711	23130	QPSK	1	49	4	20	2132.5	2175	30	10	2355	9820	23.41	23.47
	30	10	2310	27710	QPSK	1	0	4	20	2132.5	2175	12	10	737.5	5095	23.21	23.25
	4	20	1720	20050	QPSK	1	0	29	10	722.5	9715	30	10	2355	9820	22.49	22.55
	30	10	2310	27710	QPSK	1	0	4	20	2132.5	2175	29	10	722.5	9715	23.21	23.25
	2	20	1860	18700	QPSK	1	0	2	20	1959.8	898	30	10	2355	9820	21.48	21.53
	30	10	2310	27710	QPSK	1	0	2	20	1960	900	2	20	1979.8	1098	23.21	23.25
2	20	1860	18700	QPSK	1	0	2	20	1959.8	898	5	10	881.5	2525	21.51	21.53	
5	10	829	20450	QPSK	1	0	2	20	1960	900	2	20	1979.8	1098	23.22	23.28	
2	20	1860	18700	QPSK	1	0	2	20	1959.8	898	29	10	722.5	9715	21.47	21.53	

**<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. 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.
4. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
5. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is $\leq 0.4\text{ W/kg}$, 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.



<Head mode for WLAN transmitter>

<2.4GHz WLAN ANT 1>

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps	1	2412	14.89	15.00	99.05
	6	2437	14.87	15.00	
	11	2462	14.80	15.00	
802.11g 6Mbps	1	2412	14.76	15.00	94.74
	6	2437	14.88	15.00	
	11	2462	14.75	15.00	
802.11n-HT20 MCS0	1	2412	14.79	15.00	94.61
	6	2437	14.84	15.00	
	11	2462	14.74	15.00	

<2.4GHz WLAN ANT 2>

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps	1	2412	14.71	15.00	98.57
	6	2437	14.61	15.00	
	11	2462	14.60	15.00	
802.11g 6Mbps	1	2412	14.68	15.00	94.52
	6	2437	14.62	15.00	
	11	2462	14.69	15.00	
802.11n-HT20 MCS0	1	2412	14.69	15.00	94.61
	6	2437	14.66	15.00	
	11	2462	14.70	15.00	

<2.4GHz WLAN ANT 1+2>

Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
802.11b 1Mbps	1	2412	17.85	18.00	99.05
	6	2437	17.80	18.00	
	11	2462	17.76	18.00	
802.11g 6Mbps	1	2412	17.74	18.00	94.52
	6	2437	17.79	18.00	
	11	2462	17.75	18.00	
802.11n-HT20 MCS0	1	2412	17.77	18.00	94.15
	6	2437	17.78	18.00	
	11	2462	17.76	18.00	



<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	15.43	15.50	94.95
		40	5200	15.42	15.50	
		44	5220	15.42	15.50	
		48	5240	15.38	15.50	
	802.11n-HT20 MCS0	36	5180	15.41	15.50	94.15
		40	5200	15.40	15.50	
		44	5220	15.40	15.50	
		48	5240	15.36	15.50	
	802.11n-HT40 MCS0	38	5190	15.34	15.50	90.29
		46	5230	15.44	15.50	
	802.11ac-VHT20 MCS0	36	5180	15.40	15.50	94.63
		40	5200	15.38	15.50	
		44	5220	15.38	15.50	
		48	5240	15.34	15.50	
	802.11ac-VHT40 MCS0	38	5190	15.33	15.50	89.27
		46	5230	15.42	15.50	
802.11ac-VHT80 MCS0	42	5210	15.30	15.50	87.17	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	CH 52	5260	15.43	15.50	94.95
		56	5280	15.45	15.50	
		60	5300	15.48	15.50	
		64	5320	15.49	15.50	
	802.11n-HT20 MCS0	52	5260	15.41	15.50	94.15
		56	5280	15.42	15.50	
		60	5300	15.46	15.50	
		64	5320	15.47	15.50	
	802.11n-HT40 MCS0	54	5270	15.48	15.50	90.29
		62	5310	15.49	15.50	
	802.11ac-VHT20 MCS0	52	5260	15.40	15.50	94.63
		56	5280	15.41	15.50	
		60	5300	15.42	15.50	
		64	5320	15.44	15.50	
	802.11ac-VHT40 MCS0	54	5270	15.47	15.50	89.27
		62	5310	15.48	15.50	
802.11ac-VHT80 MCS0	58	5290	15.48	15.50	87.17	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.91	10.00	94.95
		116	5580	9.95	10.00	
		124	5620	9.87	10.00	
		132	5660	9.75	10.00	
		140	5700	9.66	10.00	
		144	5720	9.73	10.00	
	802.11n-HT20 MCS0	100	5500	9.90	10.00	94.15
		116	5580	9.88	10.00	
		124	5620	9.85	10.00	
		132	5660	9.73	10.00	
		140	5700	9.71	10.00	
		144	5720	9.65	10.00	
	802.11n-HT40 MCS0	102	5510	9.97	10.00	90.29
		110	5550	9.85	10.00	
		126	5630	9.83	10.00	
		134	5670	9.84	10.00	
		142	5710	9.71	10.00	
	802.11ac-VHT20 MCS0	100	5500	9.89	10.00	94.63
		116	5580	9.84	10.00	
		124	5620	9.79	10.00	
		132	5660	9.72	10.00	
		140	5700	9.70	10.00	
		144	5720	9.63	10.00	
	802.11ac-VHT40 MCS0	102	5510	9.96	10.00	89.27
		110	5550	9.80	10.00	
		126	5630	9.81	10.00	
		134	5670	9.82	10.00	
142		5710	9.69	10.00		
802.11ac-VHT80 MCS0	106	5530	9.93	10.00	87.17	
	122	5610	9.92	10.00		
	138	5690	9.80	10.00		



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	9.22	9.50	94.95
		157	5785	9.19	9.50	
		165	5825	9.01	9.50	
	802.11n-HT20 MCS0	149	5745	9.06	9.50	94.15
		157	5785	9.03	9.50	
		165	5825	9.01	9.50	
	802.11n-HT40 MCS0	151	5755	9.01	9.50	90.29
		159	5795	9.00	9.50	
	802.11ac-VHT20 MCS0	149	5745	9.03	9.50	94.63
		157	5785	9.01	9.50	
		165	5825	9.00	9.50	
	802.11ac-VHT40 MCS0	151	5755	9.14	9.50	89.27
159		5795	9.04	9.50		
802.11ac-VHT80 MCS0	155	5775	9.01	9.50	87.17	

<5GHz WLAN ANT2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	15.22	15.50	94.09
		40	5200	15.16	15.50	
		44	5220	15.14	15.50	
		48	5240	15.11	15.50	
	802.11n-HT20 MCS0	36	5180	15.20	15.50	94.12
		40	5200	15.15	15.50	
		44	5220	15.04	15.50	
		48	5240	15.02	15.50	
	802.11n-HT40 MCS0	38	5190	15.10	15.50	89.21
		46	5230	15.05	15.50	
	802.11ac-VHT20 MCS0	36	5180	15.12	15.50	94.63
		40	5200	15.08	15.50	
		44	5220	15.03	15.50	
		48	5240	15.01	15.50	
	802.11ac-VHT40 MCS0	38	5190	15.09	15.50	90.86
		46	5230	15.04	15.50	
	802.11ac-VHT80 MCS0	42	5210	15.05	15.50	85.71



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	15.01	15.50	94.09
		56	5280	15.01	15.50	
		60	5300	15.02	15.50	
		64	5320	15.11	15.50	
	802.11n-HT20 MCS0	52	5260	15.00	15.50	94.12
		56	5280	15.00	15.50	
		60	5300	15.01	15.50	
		64	5320	15.10	15.50	
	802.11n-HT40 MCS0	54	5270	15.13	15.50	89.21
		62	5310	15.08	15.50	
	802.11ac-VHT20 MCS0	52	5260	15.00	15.50	94.63
		56	5280	15.00	15.50	
		60	5300	15.01	15.50	
		64	5320	15.03	15.50	
	802.11ac-VHT40 MCS0	54	5270	15.06	15.50	90.86
		62	5310	15.00	15.50	
802.11ac-VHT80 MCS0	58	5290	15.20	15.50	85.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	9.98	10.00	94.09
		116	5580	9.69	10.00	
		124	5620	9.65	10.00	
		132	5660	9.70	10.00	
		140	5700	9.66	10.00	
		144	5720	9.64	10.00	
	802.11n-HT20 MCS0	100	5500	9.86	10.00	94.12
		116	5580	9.68	10.00	
		124	5620	9.65	10.00	
		132	5660	9.62	10.00	
		140	5700	9.61	10.00	
		144	5720	9.60	10.00	
	802.11n-HT40 MCS0	102	5510	9.85	10.00	89.21
		110	5550	9.83	10.00	
		126	5630	9.81	10.00	
		134	5670	9.82	10.00	
		142	5710	9.70	10.00	
	802.11ac-VHT20 MCS0	100	5500	9.81	10.00	94.63
		116	5580	9.62	10.00	
		124	5620	9.60	10.00	
		132	5660	9.57	10.00	
		140	5700	9.56	10.00	
		144	5720	9.54	10.00	
	802.11ac-VHT40 MCS0	102	5510	9.83	10.00	90.86
		110	5550	9.79	10.00	
		126	5630	9.78	10.00	
		134	5670	9.80	10.00	
142		5710	9.68	10.00		
802.11ac-VHT80 MCS0	106	5530	9.94	10.00	85.71	
	122	5610	9.77	10.00		
	138	5690	9.75	10.00		



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	9.25	9.50	94.09
		157	5785	9.49	9.50	
		165	5825	9.48	9.50	
	802.11n-HT20 MCS0	149	5745	9.21	9.50	94.12
		157	5785	9.41	9.50	
		165	5825	9.34	9.50	
	802.11n-HT40 MCS0	151	5755	9.38	9.50	89.21
		159	5795	9.36	9.50	
	802.11ac-VHT20 MCS0	149	5745	9.20	9.50	94.63
		157	5785	9.39	9.50	
		165	5825	9.32	9.50	
	802.11ac-VHT40 MCS0	151	5755	9.22	9.50	90.86
		159	5795	9.20	9.50	
	802.11ac-VHT80 MCS0	155	5775	9.47	9.50	85.71

<5GHz WLAN ANT1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	18.47	18.50	94.95
		40	5200	18.46	18.50	
		44	5220	18.45	18.50	
		48	5240	18.43	18.50	
	802.11n-HT20 MCS0	36	5180	18.46	18.50	94.12
		40	5200	18.44	18.50	
		44	5220	18.43	18.50	
		48	5240	18.41	18.50	
	802.11n-HT40 MCS0	38	5190	18.42	18.50	89.77
		46	5230	18.44	18.50	
	802.11ac-VHT20 MCS0	36	5180	18.35	18.50	94.63
		40	5200	18.40	18.50	
		44	5220	18.42	18.50	
		48	5240	18.40	18.50	
	802.11ac-VHT40 MCS0	38	5190	18.40	18.50	89.80
		46	5230	18.43	18.50	
	802.11ac-VHT80 MCS0	42	5210	18.39	18.50	85.71



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	18.47	18.50	94.95
		56	5280	18.47	18.50	
		60	5300	18.48	18.50	
		64	5320	18.49	18.50	
	802.11n-HT20 MCS0	52	5260	18.36	18.50	94.12
		56	5280	18.42	18.50	
		60	5300	18.45	18.50	
		64	5320	18.48	18.50	
	802.11n-HT40 MCS0	54	5270	18.48	18.50	89.77
		62	5310	18.49	18.50	
	802.11ac-VHT20 MCS0	52	5260	18.35	18.50	94.63
		56	5280	18.41	18.50	
		60	5300	18.44	18.50	
		64	5320	18.47	18.50	
	802.11ac-VHT40 MCS0	54	5270	18.47	18.50	89.80
		62	5310	18.48	18.50	
802.11ac-VHT80 MCS0	58	5290	18.49	18.50	86.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	12.98	13.00	94.95
		116	5580	12.90	13.00	
		124	5620	12.88	13.00	
		132	5660	12.80	13.00	
		140	5700	12.74	13.00	
		144	5720	12.72	13.00	
	802.11n-HT20 MCS0	100	5500	12.96	13.00	94.12
		116	5580	12.89	13.00	
		124	5620	12.87	13.00	
		132	5660	12.75	13.00	
		140	5700	12.73	13.00	
		144	5720	12.71	13.00	
	802.11n-HT40 MCS0	102	5510	12.98	13.00	89.77
		110	5550	12.94	13.00	
		126	5630	12.92	13.00	
		134	5670	12.93	13.00	
		142	5710	12.79	13.00	
		100	5500	12.95	13.00	
	802.11ac-VHT20 MCS0	116	5580	12.83	13.00	
		124	5620	12.80	13.00	
		132	5660	12.72	13.00	
		140	5700	12.67	13.00	
		144	5720	12.61	13.00	
		802.11ac-VHT40 MCS0	102	5510	12.97	13.00
110	5550		12.92	13.00		
126	5630		12.91	13.00		
134	5670		12.92	13.00		
142	5710		12.78	13.00		
802.11ac-VHT80 MCS0	106		5530	12.98	13.00	85.71
	122	5610	12.96	13.00		
	138	5690	12.90	13.00		



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	12.40	12.50	94.95
		157	5785	12.38	12.50	
		165	5825	12.35	12.50	
	802.11n-HT20 MCS0	149	5745	12.34	12.50	94.12
		157	5785	12.30	12.50	
		165	5825	12.33	12.50	
	802.11n-HT40 MCS0	151	5755	12.47	12.50	89.77
		159	5795	12.45	12.50	
	802.11ac-VHT20 MCS0	149	5745	12.31	12.50	94.63
		157	5785	12.27	12.50	
		165	5825	12.29	12.50	
	802.11ac-VHT40 MCS0	151	5755	12.46	12.50	89.80
159		5795	12.44	12.50		
802.11ac-VHT80 MCS0	155	5775	12.45	12.50	85.71	



<Hotspot / Body-worn / Product Specific for WLAN Transmitter>

<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	18.04	19.00	99.05
		6	2437	18.44	19.00	
		11	2462	17.89	19.00	
	802.11g 6Mbps	1	2412	16.59	17.50	94.74
		6	2437	18.83	19.00	
		11	2462	15.35	16.00	
	802.11n-HT20 MCS0	1	2412	16.00	16.50	94.61
		6	2437	17.84	18.00	
		11	2462	15.09	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	17.84	19.00	98.57
		6	2437	18.54	19.00	
		11	2462	17.98	19.00	
	802.11g 6Mbps	1	2412	17.06	17.50	94.52
		6	2437	18.53	19.00	
		11	2462	15.92	16.00	
	802.11n-HT20 MCS0	1	2412	16.20	16.50	94.61
		6	2437	17.37	18.00	
		11	2462	15.58	16.00	

<2.4GHz WLAN ANT 1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b 1Mbps	1	2412	21.36	22.00	99.05
		6	2437	22.00	22.00	
		11	2462	21.19	22.00	
	802.11g 6Mbps	1	2412	20.23	20.50	94.52
		6	2437	21.88	22.00	
		11	2462	18.97	19.00	
	802.11n-HT20 MCS0	1	2412	19.44	19.50	94.15
		6	2437	20.68	21.00	
		11	2462	18.65	19.00	



<5GHz WLAN ANT1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN	802.11a 6Mbps	36	5180	18.81	19.00	94.95
		40	5200	20.00	20.00	
		44	5220	19.41	19.50	
		48	5240	19.45	19.50	
	802.11n-HT20 MCS0	36	5180	18.64	19.00	94.15
		40	5200	18.81	19.00	
		44	5220	18.79	19.00	
		48	5240	19.74	20.00	
	802.11n-HT40 MCS0	38	5190	17.21	17.50	90.29
		46	5230	18.87	20.00	
	802.11ac-VHT20 MCS0	36	5180	18.62	19.00	94.63
		40	5200	18.70	19.00	
		44	5220	18.72	19.00	
		48	5240	19.57	20.00	
	802.11ac-VHT40 MCS0	38	5190	17.15	17.50	89.27
		46	5230	19.14	19.50	
802.11ac-VHT80 MCS0	42	5210	16.29	16.50	87.17	

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	19.71	20.00	94.95
		56	5280	20.00	20.00	
		60	5300	19.89	20.00	
		64	5320	19.05	19.50	
	802.11n-HT20 MCS0	52	5260	19.27	19.50	94.15
		56	5280	19.27	19.50	
		60	5300	19.29	19.50	
		64	5320	18.53	19.00	
	802.11n-HT40 MCS0	54	5270	18.85	19.50	90.29
		62	5310	18.09	18.50	
	802.11ac-VHT20 MCS0	52	5260	19.08	19.50	94.63
		56	5280	19.09	19.50	
		60	5300	19.26	19.50	
		64	5320	18.50	19.00	
	802.11ac-VHT40 MCS0	54	5270	18.98	19.50	89.27
		62	5310	18.02	18.50	
802.11ac-VHT80 MCS0	58	5290	16.57	17.00	87.17	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	18.87	19.50	94.95
		116	5580	18.30	19.00	
		124	5620	18.25	18.50	
		132	5660	17.15	17.50	
		144	5720	17.03	17.50	
	802.11n-HT20 MCS0	100	5500	18.73	19.50	94.15
		116	5580	18.30	19.00	
		124	5620	18.30	18.50	
		132	5660	17.60	18.00	
		144	5720	17.08	18.00	
	802.11n-HT40 MCS0	102	5510	18.30	18.50	90.29
		110	5550	18.78	19.50	
		126	5630	19.02	19.50	
		134	5670	17.39	18.50	
		142	5710	15.76	17.00	
	802.11ac-VHT20 MCS0	100	5500	18.69	19.50	94.63
		116	5580	18.29	19.00	
		124	5620	18.28	18.50	
		132	5660	17.50	18.00	
		144	5720	17.07	18.00	
	802.11ac-VHT40 MCS0	102	5510	18.24	18.50	89.27
		110	5550	18.76	19.50	
		126	5630	19.50	19.50	
		134	5670	17.41	18.50	
142		5710	15.74	17.00		
802.11ac-VHT80 MCS0	106	5530	16.20	16.50	87.17	
	122	5610	16.00	16.50		
	138	5690	15.51	16.50		



5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a MCS0	149	5745	16.27	17.00	94.95
		157	5785	16.21	17.00	
		165	5825	16.44	17.00	
	802.11n-HT20 MCS0	149	5745	16.86	18.00	94.15
		157	5785	16.77	18.00	
		165	5825	16.96	18.00	
	802.11n-HT40 MCS0	151	5755	18.33	19.00	90.29
		159	5795	17.80	19.00	
802.11ac-VHT20 MCS0	149	5745	16.83	18.00	94.63	
	157	5785	16.71	18.00		
	165	5825	16.90	18.00		
802.11ac-VHT40 MCS0	151	5755	17.85	19.00	89.27	
	159	5795	17.72	19.00		
802.11ac-VHT80 MCS0	155	5775	17.20	18.00	87.17	

<5GHz WLAN ANT2>

5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	36	5180	18.56	19.00	94.09
		40	5200	19.90	20.00	
		44	5220	18.96	19.50	
		48	5240	18.97	19.50	
	802.11n-HT20 MCS0	36	5180	18.56	19.00	94.12
		40	5200	18.37	19.00	
		44	5220	18.37	19.00	
		48	5240	19.38	20.00	
	802.11n-HT40 MCS0	38	5190	17.25	17.50	89.21
		46	5230	19.52	20.00	
	802.11ac-VHT20 MCS0	36	5180	18.53	19.00	94.63
		40	5200	18.36	19.00	
		44	5220	18.34	19.00	
		48	5240	19.26	20.00	
	802.11ac-VHT40 MCS0	38	5190	17.15	17.50	90.86
		46	5230	18.94	19.50	
	802.11ac-VHT80 MCS0	42	5210	15.64	16.50	85.71



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	19.31	20.00	94.09
		56	5280	19.90	20.00	
		60	5300	19.42	20.00	
		64	5320	18.78	19.50	
	802.11n-HT20 MCS0	52	5260	18.85	19.50	94.12
		56	5280	18.87	19.50	
		60	5300	19.03	19.50	
		64	5320	18.20	19.00	
	802.11n-HT40 MCS0	54	5270	19.06	19.50	89.21
		62	5310	17.74	18.50	
	802.11ac-VHT20 MCS0	52	5260	18.82	19.50	94.63
		56	5280	18.86	19.50	
		60	5300	18.98	19.50	
		64	5320	18.17	19.00	
802.11ac-VHT40 MCS0	54	5270	18.92	19.50	90.86	
	62	5310	17.60	18.50		
802.11ac-VHT80 MCS0	58	5290	15.90	17.00	85.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	19.49	19.50	94.09
		116	5580	18.81	19.00	
		124	5620	18.30	18.50	
		132	5660	17.35	17.50	
		144	5720	19.83	20.00	
	802.11n-HT20 MCS0	100	5500	19.20	19.50	94.12
		116	5580	18.96	19.00	
		124	5620	18.50	18.50	
		132	5660	17.95	18.00	
		144	5720	17.72	18.00	
	802.11n-HT40 MCS0	102	5510	18.50	18.50	89.21
		110	5550	19.00	19.50	
		126	5630	19.26	19.50	
		134	5670	18.47	18.50	
		142	5710	16.31	17.00	
	802.11ac-VHT20 MCS0	100	5500	19.17	19.50	94.63
		116	5580	18.86	19.00	
		124	5620	18.45	18.50	
		132	5660	17.85	18.00	
		144	5720	17.54	18.00	
	802.11ac-VHT40 MCS0	102	5510	18.32	18.50	90.86
		110	5550	19.17	19.50	
		126	5630	19.44	19.50	
		134	5670	18.05	18.50	
142		5710	16.35	17.00		
802.11ac-VHT80 MCS0	106	5530	16.24	16.50	85.71	
	122	5610	16.30	16.50		
	138	5690	16.03	16.50		



5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a MCS0	149	5745	16.74	17.00	94.09
		157	5785	16.96	17.00	
		165	5825	16.99	17.00	
	802.11n-HT20 MCS0	149	5745	17.30	18.00	94.12
		157	5785	17.42	18.00	
		165	5825	17.77	18.00	
	802.11n-HT40 MCS0	151	5755	18.34	19.00	89.21
		159	5795	18.68	19.00	
802.11ac-VHT20 MCS0	149	5745	17.28	18.00	94.63	
	157	5785	17.39	18.00		
	165	5825	17.42	18.00		
802.11ac-VHT40 MCS0	151	5755	18.28	19.00	90.86	
	159	5795	18.46	19.00		
802.11ac-VHT80 MCS0	155	5775	17.97	18.00	85.71	

<5GHz WLAN ANT1+2>

5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
	802.11a 6Mbps	36	5180	21.71	22.00	94.95
		40	5200	23.00	23.00	
		44	5220	22.22	22.50	
		48	5240	22.26	22.50	
	802.11n-HT20 MCS0	36	5180	21.72	22.00	94.12
		40	5200	21.73	22.00	
		44	5220	21.71	22.00	
		48	5240	22.73	23.00	
	802.11n-HT40 MCS0	38	5190	20.27	20.50	89.77
		46	5230	22.37	23.00	
	802.11ac-VHT20 MCS0	36	5180	21.70	22.00	94.63
		40	5200	21.69	22.00	
		44	5220	21.69	22.00	
	802.11ac-VHT40 MCS0	38	5190	20.24	20.50	89.80
46		5230	22.11	22.50		
802.11ac-VHT80 MCS0	42	5210	19.09	19.50	85.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN	802.11a 6Mbps	52	5260	22.54	23.00	94.95
		56	5280	23.00	23.00	
		60	5300	22.70	23.00	
		64	5320	21.95	22.50	
	802.11n-HT20 MCS0	52	5260	22.12	22.50	94.12
		56	5280	22.15	22.50	
		60	5300	22.21	22.50	
		64	5320	21.44	22.00	
	802.11n-HT40 MCS0	54	5270	22.03	22.50	89.77
		62	5310	20.95	21.50	
	802.11ac-VHT20 MCS0	52	5260	22.10	22.50	94.63
		56	5280	22.12	22.50	
		60	5300	22.18	22.50	
		64	5320	21.40	22.00	
802.11ac-VHT40 MCS0	54	5270	22.02	22.50	89.80	
	62	5310	20.94	21.50		
802.11ac-VHT80 MCS0	58	5290	19.31	20.00	85.71	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN	802.11a 6Mbps	100	5500	22.40	22.50	94.95
		116	5580	21.59	22.00	
		124	5620	21.50	21.50	
		132	5660	20.24	20.50	
		144	5720	22.84	23.00	
	802.11n-HT20 MCS0	100	5500	22.05	22.50	94.12
		116	5580	21.70	22.00	
		124	5620	21.48	21.50	
		132	5660	20.90	21.00	
		144	5720	20.45	21.00	
	802.11n-HT40 MCS0	102	5510	21.43	21.50	89.77
		110	5550	22.11	22.50	
		126	5630	22.23	22.50	
		134	5670	21.11	21.50	
		142	5710	19.20	20.00	
	802.11ac-VHT20 MCS0	100	5500	22.02	22.50	94.63
		116	5580	21.67	22.00	
		124	5620	21.50	21.50	
		132	5660	20.88	21.00	
		144	5720	20.41	21.00	
802.11ac-VHT40 MCS0	102	5510	21.38	21.50	89.80	
	110	5550	22.08	22.50		
	126	5630	22.47	22.50		
	134	5670	21.00	21.50		
	142	5710	19.14	20.00		
802.11ac-VHT80 MCS0	106	5530	19.28	19.50	85.71	
	122	5610	19.25	19.50		
	138	5690	18.88	19.50		



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN	802.11a MCS0	149	5745	19.91	20.00	94.95
		157	5785	19.97	20.00	
		165	5825	20.27	20.50	
	802.11n-HT20 MCS0	149	5745	20.44	21.00	94.12
		157	5785	20.47	21.00	
		165	5825	20.66	21.00	
	802.11n-HT40 MCS0	151	5755	21.65	22.00	89.77
		159	5795	21.73	22.00	
	802.11ac-VHT20 MCS0	149	5745	20.12	21.00	94.63
		157	5785	20.14	21.00	
		165	5825	20.36	21.00	
	802.11ac-VHT40 MCS0	151	5755	21.63	22.00	89.80
		159	5795	21.69	22.00	
	802.11ac-VHT80 MCS0	155	5775	20.87	21.00	85.71

<2.4GHz Bluetooth>

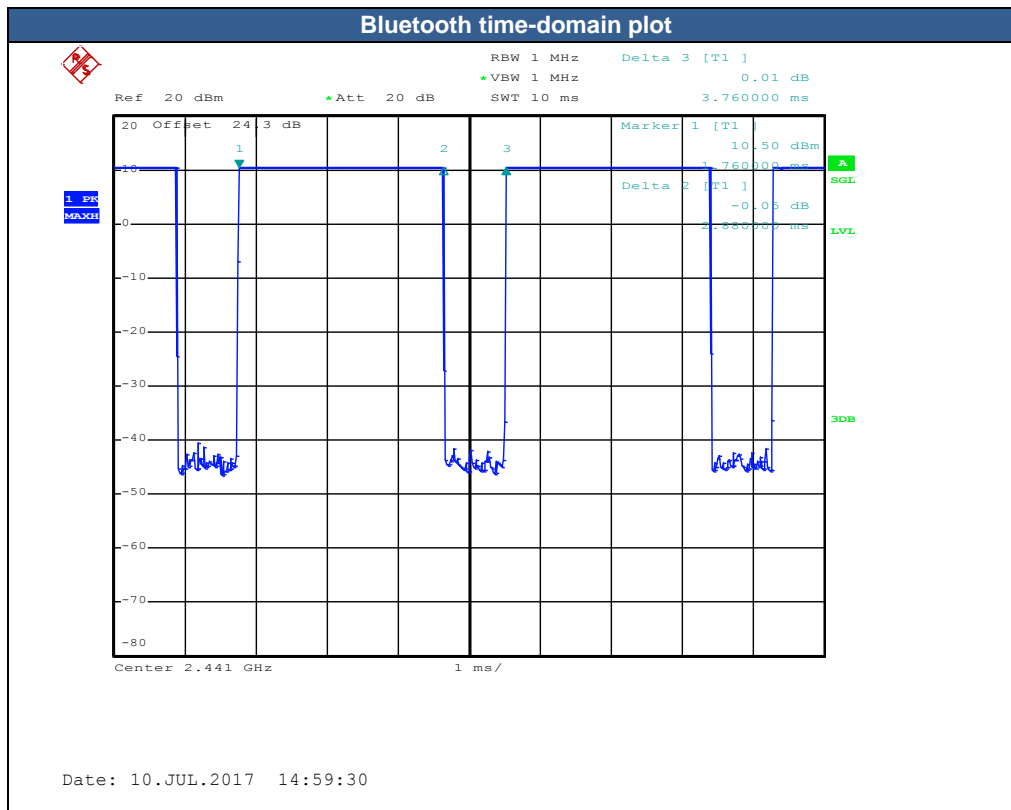
Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
v2.0	CH 00	2402	10.96	8.53	8.61
	CH 39	2441	11.19	8.46	8.52
	CH 78	2480	10.88	9.16	9.20
Tune-up Limit			11.5	9.5	9.5

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.0	CH 00	2402	1.58
	CH 19	2440	1.11
	CH 39	2480	1.27
Tune-up Limit			2

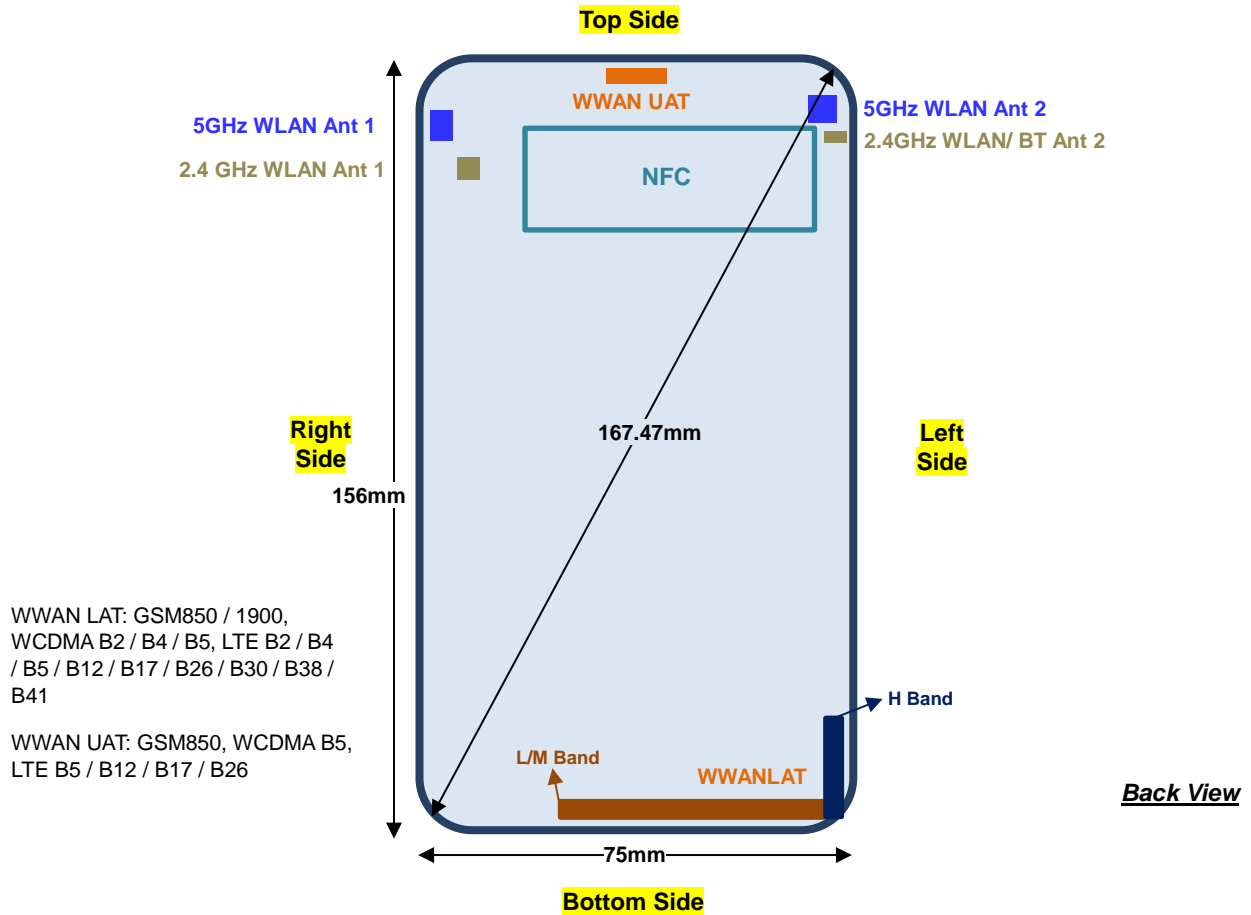
Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v5.0	CH 00	2402	1.14
	CH 19	2440	-0.28
	CH 39	2480	0.59
Tune-up Limit			2

General Note:

- For 2.4GHz Bluetooth SAR testing was selected v2.0 1Mbps, due to its highest average power.
- The Bluetooth duty cycle is 76.6% as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation



13. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN LAT	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN UAT	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	>25mm
2.4GHz WLAN MIMO	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
2.4GHz BT Ant 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
5GHz WLAN MIMO	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN LAT	Yes	Yes	No	Yes	Yes	Yes
WWAN UAT	Yes	Yes	Yes	No	No	No
2.4GHz WLAN MIMO	Yes	Yes	Yes	No	Yes	Yes
2.4GHz BT Ant 2	Yes	Yes	Yes	No	No	Yes
5GHz WLAN MIMO	Yes	Yes	Yes	No	Yes	Yes

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/Bluetooth: 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. 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.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device only LTE B7 bottom side is necessary.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16cm.
7. According to TCB workshop October 2016, when the highest reported SAR of an antenna is > 1.2 W/kg, holder perturbation verification is required for each antenna, in this report is not required even SAR is > 1.2W/kg, due to all the test result is used a low-loss foam block performed testing, the relative permittivity and loss tangent of the foam material is 1.0 and 10-5, respectively.
8. For WWAN LAT and UAT antennas will not transmit simultaneous at the same time and when the two antennas operating in the Head / Hotspot / Body worn / Product Specific exposure configuration, this device will limit different maximum output powers in several frequency bands. The detail descriptions of the power control of the mechanisms are included in the operational description.
9. For WLAN operating in the Head / Hotspot / Body worn / Product Specific exposure configuration, this device will limit different maximum output powers. The detail descriptions of the power control of the mechanisms are included in the operational description.

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 (2Tx 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.

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 $\leq \frac{1}{4}$ 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.

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 B4 / B5 / 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 17 / 38 SAR test was covered by Band 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 Head and body-worn SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For WLAN SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
6. Per KDB 248227 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. 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)	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_LAT	GPRS (2 Tx slots)	Right Cheek	0mm	128	824.2	30.39	30.50	1.026	-0.01	0.155	0.159
	GSM850_LAT	GPRS (2 Tx slots)	Right Cheek	0mm	189	836.4	30.36	30.50	1.033	0.05	0.188	0.194
	GSM850_LAT	GPRS (2 Tx slots)	Right Cheek	0mm	251	848.8	30.29	30.50	1.050	0	0.189	0.198
	GSM850_LAT	GPRS (2 Tx slots)	Right Tilted	0mm	128	824.2	30.39	30.50	1.026	0.12	0.061	0.063
	GSM850_LAT	GPRS (2 Tx slots)	Left Cheek	0mm	128	824.2	30.39	30.50	1.026	-0.03	0.096	0.098
	GSM850_LAT	GPRS (2 Tx slots)	Left Tilted	0mm	128	824.2	30.39	30.50	1.026	-0.14	0.048	0.049
	GSM850_UAT	GPRS (2 Tx slots)	Right Cheek	0mm	128	824.2	29.05	29.50	1.109	-0.01	0.887	0.984
	GSM850_UAT	GPRS (2 Tx slots)	Right Cheek	0mm	189	836.4	28.97	29.50	1.130	-0.04	0.900	1.017
	GSM850_UAT	GPRS (2 Tx slots)	Right Cheek	0mm	251	848.8	28.92	29.50	1.143	0.06	0.850	0.971
	GSM850_UAT	GPRS (2 Tx slots)	Right Tilted	0mm	128	824.2	29.05	29.50	1.109	0.12	0.813	0.902
	GSM850_UAT	GPRS (2 Tx slots)	Right Tilted	0mm	189	836.4	28.97	29.50	1.130	0.06	0.794	0.897
	GSM850_UAT	GPRS (2 Tx slots)	Right Tilted	0mm	251	848.8	28.92	29.50	1.143	-0.01	0.759	0.867
	GSM850_UAT	GPRS (2 Tx slots)	Left Cheek	0mm	128	824.2	29.05	29.50	1.109	0.17	0.965	1.070
01	GSM850_UAT	GPRS (2 Tx slots)	Left Cheek	0mm	189	836.4	28.97	29.50	1.130	0.02	0.955	1.079
	GSM850_UAT	GPRS (2 Tx slots)	Left Cheek	0mm	251	848.8	28.92	29.50	1.143	-0.04	0.929	1.062
	GSM850_UAT	GPRS (2 Tx slots)	Left Tilted	0mm	128	824.2	29.05	29.50	1.109	-0.11	0.828	0.918
	GSM850_UAT	GPRS (2 Tx slots)	Left Tilted	0mm	189	836.4	28.97	29.50	1.130	-0.07	0.777	0.878
	GSM850_UAT	GPRS (2 Tx slots)	Left Tilted	0mm	251	848.8	28.92	29.50	1.143	0.02	0.749	0.856
02	GSM1900_LAT	GPRS (2 Tx slots)	Right Cheek	0mm	512	1850.2	27.11	27.50	1.094	-0.04	0.057	0.062
	GSM1900_LAT	GPRS (2 Tx slots)	Right Cheek	0mm	661	1880	27.09	27.50	1.099	-0.11	0.042	0.046
	GSM1900_LAT	GPRS (2 Tx slots)	Right Cheek	0mm	810	1909.8	27.02	27.50	1.117	-0.15	0.029	0.032
	GSM1900_LAT	GPRS (2 Tx slots)	Right Tilted	0mm	512	1850.2	27.11	27.50	1.094	-0.04	0.011	0.012
	GSM1900_LAT	GPRS (2 Tx slots)	Left Cheek	0mm	512	1850.2	27.11	27.50	1.094	-0.12	0.056	0.061
	GSM1900_LAT	GPRS (2 Tx slots)	Left Tilted	0mm	512	1850.2	27.11	27.50	1.094	0.16	0.027	0.030



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
03	WCDMA II_LAT	RMC 12.2Kbps	Right Cheek	0mm	9262	1852.4	21.14	22.00	1.219	-0.11	0.065	0.079
	WCDMA II_LAT	RMC 12.2Kbps	Right Cheek	0mm	9400	1880	21.10	22.00	1.230	-0.09	0.058	0.071
	WCDMA II_LAT	RMC 12.2Kbps	Right Cheek	0mm	9538	1907.6	20.98	22.00	1.265	-0.08	0.047	0.059
	WCDMA II_LAT	RMC 12.2Kbps	Right Tilted	0mm	9262	1852.4	21.14	22.00	1.219	0.07	0.022	0.027
	WCDMA II_LAT	RMC 12.2Kbps	Left Cheek	0mm	9262	1852.4	21.14	22.00	1.219	0.16	0.060	0.073
	WCDMA II_LAT	RMC 12.2Kbps	Left Tilted	0mm	9262	1852.4	21.14	22.00	1.219	-0.18	0.036	0.044
	WCDMA IV_LAT	RMC 12.2Kbps	Right Cheek	0mm	1312	1712.4	21.34	22.50	1.306	-0.08	0.054	0.071
04	WCDMA IV_LAT	RMC 12.2Kbps	Right Cheek	0mm	1413	1732.6	21.25	22.50	1.334	-0.04	0.056	0.075
	WCDMA IV_LAT	RMC 12.2Kbps	Right Cheek	0mm	1513	1752.6	21.11	22.50	1.377	-0.04	0.049	0.067
	WCDMA IV_LAT	RMC 12.2Kbps	Right Tilted	0mm	1312	1712.4	21.34	22.50	1.306	0.01	0.015	0.020
	WCDMA IV_LAT	RMC 12.2Kbps	Left Cheek	0mm	1312	1712.4	21.34	22.50	1.306	-0.03	0.033	0.043
	WCDMA IV_LAT	RMC 12.2Kbps	Left Tilted	0mm	1312	1712.4	21.34	22.50	1.306	0.07	0.020	0.026
	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	0mm	4233	846.6	22.77	23.00	1.054	0.11	0.176	0.186
	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	0mm	4132	826.4	22.51	23.00	1.119	0.17	0.127	0.142
	WCDMA V_LAT	RMC 12.2Kbps	Right Cheek	0mm	4182	836.4	22.50	23.00	1.122	0.1	0.166	0.186
	WCDMA V_LAT	RMC 12.2Kbps	Right Tilted	0mm	4233	846.6	22.77	23.00	1.054	-0.01	0.084	0.089
	WCDMA V_LAT	RMC 12.2Kbps	Left Cheek	0mm	4233	846.6	22.77	23.00	1.054	0.02	0.118	0.124
	WCDMA V_LAT	RMC 12.2Kbps	Left Tilted	0mm	4233	846.6	22.77	23.00	1.054	-0.11	0.009	0.009
	WCDMA V_UAT	RMC 12.2Kbps	Right Cheek	0mm	4132	826.4	20.43	21.50	1.279	-0.06	0.597	0.764
	WCDMA V_UAT	RMC 12.2Kbps	Right Tilted	0mm	4132	826.4	20.43	21.50	1.279	0	0.588	0.752
	WCDMA V_UAT	RMC 12.2Kbps	Left Cheek	0mm	4132	826.4	20.43	21.50	1.279	0.04	0.630	0.806
05	WCDMA V_UAT	RMC 12.2Kbps	Left Cheek	0mm	4182	836.4	20.41	21.50	1.285	0.04	0.653	0.839
	WCDMA V_UAT	RMC 12.2Kbps	Left Cheek	0mm	4233	846.6	20.26	21.50	1.330	0.04	0.614	0.817
	WCDMA V_UAT	RMC 12.2Kbps	Left Tilted	0mm	4132	826.4	20.43	21.50	1.279	0.13	0.540	0.691



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
06	LTE Band 2_LAT	20M	QPSK	1	0	Right Cheek	0mm	18700	1860	21.53	22.00	1.114	-0.16	0.058	0.065	
	LTE Band 2_LAT	20M	QPSK	1	0	Right Cheek	0mm	18900	1880	21.45	22.00	1.135	-0.02	0.059	0.067	
	LTE Band 2_LAT	20M	QPSK	1	0	Right Cheek	0mm	19100	1900	21.41	22.00	1.146	0.02	0.054	0.062	
	LTE Band 2_LAT	20M	QPSK	50	0	Right Cheek	0mm	18700	1860	20.47	22.00	1.422	-0.03	0.045	0.064	
	LTE Band 2_LAT	20M	QPSK	1	0	Right Tilted	0mm	18700	1860	21.53	22.00	1.114	0.1	0.015	0.017	
	LTE Band 2_LAT	20M	QPSK	50	0	Right Tilted	0mm	18700	1860	20.47	22.00	1.422	0.15	0.011	0.016	
	LTE Band 2_LAT	20M	QPSK	1	0	Left Cheek	0mm	18700	1860	21.53	22.00	1.114	-0.06	0.053	0.059	
	LTE Band 2_LAT	20M	QPSK	50	0	Left Cheek	0mm	18700	1860	20.47	22.00	1.422	-0.02	0.040	0.057	
	LTE Band 2_LAT	20M	QPSK	1	0	Left Tilted	0mm	18700	1860	21.53	22.00	1.114	0.1	0.028	0.031	
	LTE Band 2_LAT	20M	QPSK	50	0	Left Tilted	0mm	18700	1860	20.47	22.00	1.422	-0.16	0.021	0.030	
07	LTE Band 4_LAT	20M	QPSK	1	0	Right Cheek	0mm	20175	1732.5	22.50	23.00	1.122	0.04	0.082	0.092	
	LTE Band 4_LAT	20M	QPSK	50	0	Right Cheek	0mm	20175	1732.5	21.37	22.00	1.156	0.1	0.067	0.077	
	LTE Band 4_LAT	20M	QPSK	1	0	Right Tilted	0mm	20175	1732.5	22.50	23.00	1.122	0.16	0.031	0.035	
	LTE Band 4_LAT	20M	QPSK	50	0	Right Tilted	0mm	20175	1732.5	21.37	22.00	1.156	-0.1	0.026	0.030	
	LTE Band 4_LAT	20M	QPSK	1	0	Left Cheek	0mm	20175	1732.5	22.50	23.00	1.122	0.12	0.046	0.052	
	LTE Band 4_LAT	20M	QPSK	50	0	Left Cheek	0mm	20175	1732.5	21.37	22.00	1.156	0.12	0.035	0.040	
	LTE Band 4_LAT	20M	QPSK	1	0	Left Tilted	0mm	20175	1732.5	22.50	23.00	1.122	-0.03	0.034	0.038	
	LTE Band 4_LAT	20M	QPSK	50	0	Left Tilted	0mm	20175	1732.5	21.37	22.00	1.156	0.11	0.025	0.029	
	LTE Band 5_LAT	10M	QPSK	1	0	Right Cheek	0mm	20525	836.5	22.95	24.00	1.274	0.03	0.150	0.191	
	LTE Band 5_LAT	10M	QPSK	25	0	Right Cheek	0mm	20525	836.5	21.95	23.00	1.274	0	0.124	0.158	
	LTE Band 5_LAT	10M	QPSK	1	0	Right Tilted	0mm	20525	836.5	22.95	24.00	1.274	0.14	0.032	0.041	
	LTE Band 5_LAT	10M	QPSK	25	0	Right Tilted	0mm	20525	836.5	21.95	23.00	1.274	0.02	0.025	0.032	
	LTE Band 5_LAT	10M	QPSK	1	0	Left Cheek	0mm	20525	836.5	22.95	24.00	1.274	-0.05	0.110	0.140	
	LTE Band 5_LAT	10M	QPSK	25	0	Left Cheek	0mm	20525	836.5	21.95	23.00	1.274	0.1	0.061	0.078	
	LTE Band 5_LAT	10M	QPSK	1	0	Left Tilted	0mm	20525	836.5	22.95	24.00	1.274	0.03	0.066	0.084	
	LTE Band 5_LAT	10M	QPSK	25	0	Left Tilted	0mm	20525	836.5	21.95	23.00	1.274	0.12	0.037	0.047	
	LTE Band 5_UAT	10M	QPSK	1	0	Right Cheek	0mm	20525	836.5	21.65	22.50	1.216	-0.04	0.807	0.981	
	LTE Band 5_UAT	10M	QPSK	25	0	Right Cheek	0mm	20525	836.5	20.45	21.50	1.274	0.07	0.590	0.751	
	LTE Band 5_UAT	10M	QPSK	50	0	Right Cheek	0mm	20525	836.5	20.38	21.50	1.294	0.03	0.583	0.755	
	LTE Band 5_UAT	10M	QPSK	1	0	Right Tilted	0mm	20525	836.5	21.65	22.50	1.216	-0.02	0.738	0.898	
	LTE Band 5_UAT	10M	QPSK	25	0	Right Tilted	0mm	20525	836.5	20.45	21.50	1.274	0	0.543	0.692	
	LTE Band 5_UAT	10M	QPSK	50	0	Right Tilted	0mm	20525	836.5	20.38	21.50	1.294	-0.04	0.526	0.681	
	08	LTE Band 5_UAT	10M	QPSK	1	0	Left Cheek	0mm	20525	836.5	21.65	22.50	1.216	0.02	0.845	1.028
	LTE Band 5_UAT	10M	QPSK	25	0	Left Cheek	0mm	20525	836.5	20.45	21.50	1.274	0.06	0.632	0.805	
LTE Band 5_UAT	10M	QPSK	50	0	Left Cheek	0mm	20525	836.5	20.38	21.50	1.294	-0.01	0.629	0.814		
LTE Band 5_UAT	10M	QPSK	1	0	Left Tilted	0mm	20525	836.5	21.65	22.50	1.216	0.02	0.696	0.846		
LTE Band 5_UAT	10M	QPSK	25	0	Left Tilted	0mm	20525	836.5	20.45	21.50	1.274	-0.03	0.517	0.658		
LTE Band 5_UAT	10M	QPSK	50	0	Left Tilted	0mm	20525	836.5	20.38	21.50	1.294	0.01	0.508	0.657		



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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_LAT	20M	QPSK	1	0	Right Cheek	0mm	20850	2510	22.82	24.00	1.312	0.15	0.085	0.112
	LTE Band 7_LAT	20M	QPSK	50	0	Right Cheek	0mm	20850	2510	21.79	23.00	1.321	0.01	0.060	0.079
	LTE Band 7_LAT	20M	QPSK	1	0	Right Tilted	0mm	20850	2510	22.82	24.00	1.312	0.15	0.078	0.102
	LTE Band 7_LAT	20M	QPSK	50	0	Right Tilted	0mm	20850	2510	21.79	23.00	1.321	-0.06	0.066	0.087
	LTE Band 7_LAT	20M	QPSK	1	0	Left Cheek	0mm	20850	2510	22.82	24.00	1.312	-0.07	0.092	0.121
	LTE Band 7_LAT	20M	QPSK	1	0	Left Cheek	0mm	21100	2535	22.59	24.00	1.384	0.08	0.090	0.125
09	LTE Band 7_LAT	20M	QPSK	1	0	Left Cheek	0mm	21350	2560	22.75	24.00	1.334	0.08	0.122	0.163
	LTE Band 7_LAT	20M	QPSK	50	0	Left Cheek	0mm	20850	2510	21.79	23.00	1.321	0.13	0.073	0.096
	LTE Band 7_LAT	20M	QPSK	1	0	Left Tilted	0mm	20850	2510	22.82	24.00	1.312	0.04	0.047	0.062
	LTE Band 7_LAT	20M	QPSK	50	0	Left Tilted	0mm	20850	2510	21.79	23.00	1.321	-0.06	0.037	0.049
	LTE Band 12_LAT	10M	QPSK	1	49	Right Cheek	0mm	23095	707.5	23.10	24.00	1.230	-0.15	0.097	0.119
	LTE Band 12_LAT	10M	QPSK	25	25	Right Cheek	0mm	23095	707.5	22.08	23.00	1.236	-0.02	0.077	0.095
	LTE Band 12_LAT	10M	QPSK	1	49	Right Tilted	0mm	23095	707.5	23.10	24.00	1.230	0.03	0.056	0.069
	LTE Band 12_LAT	10M	QPSK	25	25	Right Tilted	0mm	23095	707.5	22.08	23.00	1.236	-0.08	0.044	0.054
	LTE Band 12_LAT	10M	QPSK	1	49	Left Cheek	0mm	23095	707.5	23.10	24.00	1.230	-0.17	0.058	0.071
	LTE Band 12_LAT	10M	QPSK	25	25	Left Cheek	0mm	23095	707.5	22.08	23.00	1.236	-0.02	0.046	0.057
	LTE Band 12_LAT	10M	QPSK	1	49	Left Tilted	0mm	23095	707.5	23.10	24.00	1.230	-0.01	0.068	0.084
	LTE Band 12_LAT	10M	QPSK	25	25	Left Tilted	0mm	23095	707.5	22.08	23.00	1.236	-0.02	0.053	0.066
	LTE Band 12_UAT	10M	QPSK	1	49	Right Cheek	0mm	23095	707.5	23.10	24.00	1.230	0	0.448	0.551
	LTE Band 12_UAT	10M	QPSK	25	25	Right Cheek	0mm	23095	707.5	22.08	23.00	1.236	-0.01	0.344	0.425
10	LTE Band 12_UAT	10M	QPSK	1	49	Right Tilted	0mm	23095	707.5	23.10	24.00	1.230	0.05	0.495	0.609
	LTE Band 12_UAT	10M	QPSK	25	25	Right Tilted	0mm	23095	707.5	22.08	23.00	1.236	-0.02	0.370	0.457
	LTE Band 12_UAT	10M	QPSK	1	49	Left Cheek	0mm	23095	707.5	23.10	24.00	1.230	0.12	0.434	0.534
	LTE Band 12_UAT	10M	QPSK	25	25	Left Cheek	0mm	23095	707.5	22.08	23.00	1.236	0.14	0.350	0.433
	LTE Band 12_UAT	10M	QPSK	1	49	Left Tilted	0mm	23095	707.5	23.10	24.00	1.230	0.16	0.390	0.480
	LTE Band 12_UAT	10M	QPSK	25	25	Left Tilted	0mm	23095	707.5	22.08	23.00	1.236	0	0.293	0.362
	LTE Band 26_LAT	15M	QPSK	1	0	Right Cheek	0mm	26865	831.5	22.91	24.00	1.285	0.02	0.121	0.156
	LTE Band 26_LAT	15M	QPSK	36	0	Right Cheek	0mm	26865	831.5	21.74	23.00	1.337	0	0.106	0.142
	LTE Band 26_LAT	15M	QPSK	1	0	Right Tilted	0mm	26865	831.5	22.91	24.00	1.285	0.08	0.031	0.040
	LTE Band 26_LAT	15M	QPSK	36	0	Right Tilted	0mm	26865	831.5	21.74	23.00	1.337	0.17	0.025	0.033
	LTE Band 26_LAT	15M	QPSK	1	0	Left Cheek	0mm	26865	831.5	22.91	24.00	1.285	0.01	0.086	0.111
	LTE Band 26_LAT	15M	QPSK	36	0	Left Cheek	0mm	26865	831.5	21.74	23.00	1.337	-0.02	0.066	0.088
	LTE Band 26_LAT	15M	QPSK	1	0	Left Tilted	0mm	26865	831.5	22.91	24.00	1.285	0	0.071	0.091
	LTE Band 26_LAT	15M	QPSK	36	0	Left Tilted	0mm	26865	831.5	21.74	23.00	1.337	0	0.057	0.076
	LTE Band 26_UAT	15M	QPSK	1	0	Right Cheek	0mm	26865	831.5	21.70	22.00	1.072	0	0.944	1.012
	LTE Band 26_UAT	15M	QPSK	36	0	Right Cheek	0mm	26865	831.5	20.57	21.00	1.104	-0.07	0.728	0.804
	LTE Band 26_UAT	15M	QPSK	75	0	Right Cheek	0mm	26865	831.5	20.48	21.00	1.127	0.04	0.714	0.805
	LTE Band 26_UAT	15M	QPSK	1	0	Right Tilted	0mm	26865	831.5	21.70	22.00	1.072	0	0.895	0.959
	LTE Band 26_UAT	15M	QPSK	36	0	Right Tilted	0mm	26865	831.5	20.57	21.00	1.104	0	0.654	0.722
	LTE Band 26_UAT	15M	QPSK	75	0	Right Tilted	0mm	26865	831.5	20.48	21.00	1.127	0	0.650	0.733
11	LTE Band 26_UAT	15M	QPSK	1	0	Left Cheek	0mm	26865	831.5	21.70	22.00	1.072	0.01	0.977	1.047
	LTE Band 26_UAT	15M	QPSK	36	0	Left Cheek	0mm	26865	831.5	20.57	21.00	1.104	0.04	0.731	0.807
	LTE Band 26_UAT	15M	QPSK	75	0	Left Cheek	0mm	26865	831.5	20.48	21.00	1.127	0.01	0.736	0.830
	LTE Band 26_UAT	15M	QPSK	1	0	Left Tilted	0mm	26865	831.5	21.70	22.00	1.072	0.04	0.830	0.889
	LTE Band 26_UAT	15M	QPSK	36	0	Left Tilted	0mm	26865	831.5	20.57	21.00	1.104	-0.05	0.610	0.673
	LTE Band 26_UAT	15M	QPSK	75	0	Left Tilted	0mm	26865	831.5	20.48	21.00	1.127	0.02	0.605	0.682



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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 30_LAT	10M	QPSK	1	0	Right Cheek	0mm	27710	2310	18.62	19.00	1.091	0.12	0.020	0.022
	LTE Band 30_LAT	10M	QPSK	25	0	Right Cheek	0mm	27710	2310	17.52	18.00	1.117	-0.12	0.014	0.016
	LTE Band 30_LAT	10M	QPSK	1	0	Right Tilted	0mm	27710	2310	18.62	19.00	1.091	0.15	0.012	0.013
	LTE Band 30_LAT	10M	QPSK	25	0	Right Tilted	0mm	27710	2310	17.52	18.00	1.117	0.12	0.001	0.001
12	LTE Band 30_LAT	10M	QPSK	1	0	Left Cheek	0mm	27710	2310	18.62	19.00	1.091	-0.11	0.033	0.036
	LTE Band 30_LAT	10M	QPSK	25	0	Left Cheek	0mm	27710	2310	17.52	18.00	1.117	0.05	0.018	0.020
	LTE Band 30_LAT	10M	QPSK	1	0	Left Tilted	0mm	27710	2310	18.62	19.00	1.091	0.15	0.013	0.014
	LTE Band 30_LAT	10M	QPSK	25	0	Left Tilted	0mm	27710	2310	17.52	18.00	1.117	-0.19	0.007	0.008

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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_LAT	20M	QPSK	1	0	Right Cheek	0mm	41140	2645	23.14	24.00	1.219	62.9	1.006	0.16	0.061	0.075
	LTE Band 41_LAT	20M	QPSK	50	0	Right Cheek	0mm	41140	2645	22.15	23.00	1.216	62.9	1.006	-0.11	0.046	0.056
	LTE Band 41_LAT	20M	QPSK	1	0	Right Tilted	0mm	41140	2645	23.14	24.00	1.219	62.9	1.006	-0.12	0.057	0.070
	LTE Band 41_LAT	20M	QPSK	50	0	Right Tilted	0mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0.02	0.042	0.051
	LTE Band 41_LAT	20M	QPSK	1	0	Left Cheek	0mm	41140	2645	23.14	24.00	1.219	62.9	1.006	0.07	0.070	0.086
	LTE Band 41_LAT	20M	QPSK	1	0	Left Cheek	0mm	40240	2555	23.08	24.00	1.236	62.9	1.006	-0.03	0.074	0.092
13	LTE Band 41_LAT	20M	QPSK	1	0	Left Cheek	0mm	40500	2581	23.02	24.00	1.253	62.9	1.006	0	0.074	0.093
	LTE Band 41_LAT	20M	QPSK	1	0	Left Cheek	0mm	40770	2608	22.90	24.00	1.288	62.9	1.006	0.07	0.064	0.083
	LTE Band 41_LAT	20M	QPSK	50	0	Left Cheek	0mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0.08	0.052	0.064
	LTE Band 41_LAT	20M	QPSK	1	0	Left Tilted	0mm	41140	2645	23.14	24.00	1.219	62.9	1.006	0.12	0.038	0.047
	LTE Band 41_LAT	20M	QPSK	50	0	Left Tilted	0mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0.04	0.028	0.034

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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	Ant 1	1	2412	14.89	15.00	1.025	99.05	1.010	0.16	0.102	0.106
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 1	1	2412	14.89	15.00	1.025	99.05	1.010	0.08	0.130	0.135
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 1	1	2412	14.89	15.00	1.025	99.05	1.010	0.11	0.248	0.257
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 1	1	2412	14.89	15.00	1.025	99.05	1.010	0.04	0.267	0.276
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	1	2412	14.71	15.00	1.068	98.57	1.015	0.1	0.415	0.450
14	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	6	2437	14.61	15.00	1.093	98.57	1.015	-0.14	0.407	0.452
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 2	11	2462	14.60	15.00	1.096	98.57	1.015	0.07	0.386	0.429
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 2	1	2412	14.71	15.00	1.068	98.57	1.015	0.02	0.322	0.349
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	1	2412	14.71	15.00	1.068	98.57	1.015	0	0.237	0.257
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 2	1	2412	14.71	15.00	1.068	98.57	1.015	0.04	0.176	0.191



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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	Right Cheek	0mm	Ant 1	58	5290	15.48	15.50	1.005	87.17	1.147	0.12	0.090	0.104
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	58	5290	15.48	15.50	1.005	87.17	1.147	-0.09	0.104	0.120
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	58	5290	15.48	15.50	1.005	87.17	1.147	0.09	0.197	0.227
15	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	58	5290	15.48	15.50	1.005	87.17	1.147	0.09	0.241	0.278
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	58	5290	15.20	15.50	1.072	85.71	1.167	-0.02	0.181	0.226
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	58	5290	15.20	15.50	1.072	85.71	1.167	0.09	0.201	0.251
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	58	5290	15.20	15.50	1.072	85.71	1.167	0.1	0.076	0.095
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	58	5290	15.20	15.50	1.072	85.71	1.167	0.16	0.079	0.099
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	106	5530	9.93	10.00	1.016	87.17	1.147	0.15	0.011	0.013
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	106	5530	9.93	10.00	1.016	87.17	1.147	0.14	0.011	0.013
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	106	5530	9.93	10.00	1.016	87.17	1.147	-0.01	0.022	0.026
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	106	5530	9.93	10.00	1.016	87.17	1.147	-0.18	0.026	0.030
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	106	5530	9.94	10.00	1.014	85.71	1.167	0.11	0.082	0.097
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	122	5610	9.77	10.00	1.054	85.71	1.167	0.17	0.116	0.143
16	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	138	5690	9.75	10.00	1.059	85.71	1.167	0.11	0.201	0.248
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	106	5530	9.94	10.00	1.014	85.71	1.167	0.07	0.072	0.085
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	106	5530	9.94	10.00	1.014	85.71	1.167	0	0.052	0.062
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	106	5530	9.94	10.00	1.014	85.71	1.167	0.16	0.047	0.056
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 1	155	5775	9.01	9.50	1.120	87.17	1.147	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 1	155	5775	9.01	9.50	1.120	87.17	1.147	0	0.001	0.001
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 1	155	5775	9.01	9.50	1.120	87.17	1.147	0	0.009	0.011
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 1	155	5775	9.01	9.50	1.120	87.17	1.147	0.1	0.014	0.018
17	WLAN5GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 2	155	5775	9.47	9.50	1.007	85.71	1.167	-0.14	0.286	0.336
	WLAN5GHz	802.11ac-VHT80 MCS0	Right Tilted	0mm	Ant 2	155	5775	9.47	9.50	1.007	85.71	1.167	-0.09	0.267	0.314
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 2	155	5775	9.47	9.50	1.007	85.71	1.167	0	0.159	0.187
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 2	155	5775	9.47	9.50	1.007	85.71	1.167	0.05	0.130	0.153

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.03	0.175	0.205
18	Bluetooth	1Mbps	Right Cheek	0mm	Ant 2	0	2402	10.96	11.50	1.134	76.6	1.087	0	0.185	0.228
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 2	78	2480	10.88	11.50	1.155	76.6	1.087	0.05	0.151	0.190
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	-0.01	0.135	0.158
	Bluetooth	1Mbps	Left Cheek	0mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.01	0.093	0.109
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.03	0.071	0.083



14.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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_LAT	GPRS (2 Tx slots)	Front	10mm	128	824.2	30.39	30.50	1.026	-0.06	0.511	0.524
	GSM850_LAT	GPRS (2 Tx slots)	Front	10mm	189	836.4	30.36	30.50	1.033	0.01	0.543	0.561
19	GSM850_LAT	GPRS (2 Tx slots)	Front	10mm	251	848.8	30.29	30.50	1.050	-0.03	0.568	0.596
	GSM850_LAT	GPRS (2 Tx slots)	Back	10mm	128	824.2	30.39	30.50	1.026	0.07	0.429	0.440
	GSM850_LAT	GPRS (2 Tx slots)	Left Side	10mm	128	824.2	30.39	30.50	1.026	-0.07	0.072	0.074
	GSM850_LAT	GPRS (2 Tx slots)	Right Side	10mm	128	824.2	30.39	30.50	1.026	-0.03	0.229	0.235
	GSM850_LAT	GPRS (2 Tx slots)	Bottom Side	10mm	128	824.2	30.39	30.50	1.026	0.13	0.270	0.277
	GSM850_UAT	GPRS (2 Tx slots)	Front	10mm	128	824.2	30.39	30.50	1.026	-0.16	0.491	0.504
	GSM850_UAT	GPRS (2 Tx slots)	Front	10mm	189	836.4	30.36	30.50	1.033	-0.06	0.494	0.510
	GSM850_UAT	GPRS (2 Tx slots)	Front	10mm	251	848.8	30.29	30.50	1.050	-0.13	0.472	0.495
	GSM850_UAT	GPRS (2 Tx slots)	Back	10mm	128	824.2	30.39	30.50	1.026	-0.1	0.423	0.434
	GSM850_UAT	GPRS (2 Tx slots)	Top Side	10mm	128	824.2	30.39	30.50	1.026	0.12	0.267	0.274
	GSM1900_LAT	GPRS (2 Tx slots)	Front	10mm	512	1850.2	27.11	27.50	1.094	0.02	0.854	0.934
	GSM1900_LAT	GPRS (2 Tx slots)	Front	10mm	661	1880	27.09	27.50	1.099	0.01	0.831	0.913
	GSM1900_LAT	GPRS (2 Tx slots)	Front	10mm	810	1909.8	27.02	27.50	1.117	0.07	0.761	0.850
	GSM1900_LAT	GPRS (2 Tx slots)	Back	10mm	512	1850.2	27.11	27.50	1.094	-0.01	0.780	0.853
	GSM1900_LAT	GPRS (2 Tx slots)	Back	10mm	661	1880	27.09	27.50	1.099	0	0.754	0.829
	GSM1900_LAT	GPRS (2 Tx slots)	Back	10mm	810	1909.8	27.02	27.50	1.117	-0.14	0.668	0.746
	GSM1900_LAT	GPRS (2 Tx slots)	Left Side	10mm	512	1850.2	27.11	27.50	1.094	-0.01	0.039	0.043
	GSM1900_LAT	GPRS (2 Tx slots)	Right Side	10mm	512	1850.2	27.11	27.50	1.094	-0.05	0.138	0.151
20	GSM1900_LAT	GPRS (2 Tx slots)	Bottom Side	10mm	512	1850.2	27.11	27.50	1.094	-0.01	0.883	0.966
	GSM1900_LAT	GPRS (2 Tx slots)	Bottom Side	10mm	661	1880	27.09	27.50	1.099	-0.03	0.810	0.890
	GSM1900_LAT	GPRS (2 Tx slots)	Bottom Side	10mm	810	1909.8	27.02	27.50	1.117	0.08	0.687	0.767



<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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_LAT	RMC 12.2Kbps	Front	10mm	9262	1852.4	19.81	21.00	1.315	0.02	0.646	0.850
	WCDMA II_LAT	RMC 12.2Kbps	Front	10mm	9400	1880	19.70	21.00	1.349	-0.02	0.666	0.898
	WCDMA II_LAT	RMC 12.2Kbps	Front	10mm	9538	1907.6	19.68	21.00	1.355	-0.02	0.634	0.859
	WCDMA II_LAT	RMC 12.2Kbps	Back	10mm	9262	1852.4	19.81	21.00	1.315	-0.04	0.555	0.730
	WCDMA II_LAT	RMC 12.2Kbps	Left Side	10mm	9262	1852.4	19.81	21.00	1.315	0.1	0.029	0.038
	WCDMA II_LAT	RMC 12.2Kbps	Right Side	10mm	9262	1852.4	19.81	21.00	1.315	0.09	0.106	0.139
21	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10mm	9262	1852.4	19.81	21.00	1.315	-0.03	0.711	0.935
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10mm	9400	1880	19.70	21.00	1.349	0	0.677	0.913
	WCDMA II_LAT	RMC 12.2Kbps	Bottom Side	10mm	9538	1907.6	19.68	21.00	1.355	-0.01	0.618	0.838
	WCDMA IV_LAT	RMC 12.2Kbps	Front	10mm	1312	1712.4	21.34	22.50	1.306	0	0.609	0.795
	WCDMA IV_LAT	RMC 12.2Kbps	Back	10mm	1312	1712.4	21.34	22.50	1.306	-0.01	0.516	0.674
	WCDMA IV_LAT	RMC 12.2Kbps	Left Side	10mm	1312	1712.4	21.34	22.50	1.306	-0.04	0.016	0.021
	WCDMA IV_LAT	RMC 12.2Kbps	Right Side	10mm	1312	1712.4	21.34	22.50	1.306	0.01	0.123	0.161
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10mm	1312	1712.4	21.34	22.50	1.306	-0.01	0.743	0.970
22	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10mm	1413	1732.6	21.25	22.50	1.334	-0.03	0.833	1.111
	WCDMA IV_LAT	RMC 12.2Kbps	Bottom Side	10mm	1513	1752.6	21.11	22.50	1.377	0	0.790	1.088
	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	4233	846.6	22.77	23.00	1.054	-0.07	0.519	0.547
	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	4132	826.4	22.51	23.00	1.119	0	0.402	0.450
23	WCDMA V_LAT	RMC 12.2Kbps	Front	10mm	4182	836.4	22.50	23.00	1.122	-0.03	0.515	0.578
	WCDMA V_LAT	RMC 12.2Kbps	Back	10mm	4233	846.6	22.77	23.00	1.054	0.01	0.467	0.492
	WCDMA V_LAT	RMC 12.2Kbps	Left Side	10mm	4233	846.6	22.77	23.00	1.054	-0.03	0.060	0.063
	WCDMA V_LAT	RMC 12.2Kbps	Right Side	10mm	4233	846.6	22.77	23.00	1.054	0.06	0.241	0.254
	WCDMA V_LAT	RMC 12.2Kbps	Bottom Side	10mm	4233	846.6	22.77	23.00	1.054	0.17	0.349	0.368
	WCDMA V_UAT	RMC 12.2Kbps	Front	10mm	4233	846.6	22.77	23.00	1.054	0.13	0.475	0.501
	WCDMA V_UAT	RMC 12.2Kbps	Front	10mm	4132	826.4	22.51	23.00	1.119	-0.14	0.401	0.449
	WCDMA V_UAT	RMC 12.2Kbps	Front	10mm	4182	836.4	22.50	23.00	1.122	-0.16	0.479	0.537
	WCDMA V_UAT	RMC 12.2Kbps	Back	10mm	4233	846.6	22.77	23.00	1.054	-0.03	0.412	0.434
	WCDMA V_UAT	RMC 12.2Kbps	Top Side	10mm	4233	846.6	22.77	23.00	1.054	0.07	0.233	0.246



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_LAT	20M	QPSK	1	0	Front	10mm	18700	1860	21.53	22.00	1.114	-0.05	0.975	1.086
	LTE Band 2_LAT	20M	QPSK	1	0	Front	10mm	18900	1880	21.45	22.00	1.135	-0.01	0.927	1.052
	LTE Band 2_LAT	20M	QPSK	1	0	Front	10mm	19100	1900	21.41	22.00	1.146	0.09	0.893	1.023
	LTE Band 2_LAT	20M	QPSK	50	0	Front	10mm	18700	1860	20.47	21.00	1.130	-0.04	0.703	0.794
	LTE Band 2_LAT	20M	QPSK	100	0	Front	10mm	18700	1860	20.36	21.00	1.159	0.01	0.699	0.810
	LTE Band 2_LAT	20M	QPSK	1	0	Back	10mm	18700	1860	21.53	22.00	1.114	0.01	0.769	0.857
	LTE Band 2_LAT	20M	QPSK	1	0	Back	10mm	18900	1880	21.45	22.00	1.135	-0.12	0.735	0.834
	LTE Band 2_LAT	20M	QPSK	1	0	Back	10mm	19100	1900	21.41	22.00	1.146	0	0.744	0.852
	LTE Band 2_LAT	20M	QPSK	50	0	Back	10mm	18700	1860	20.47	21.00	1.130	-0.14	0.614	0.694
	LTE Band 2_LAT	20M	QPSK	100	0	Back	10mm	18700	1860	20.36	21.00	1.159	-0.03	0.607	0.703
	LTE Band 2_LAT	20M	QPSK	1	0	Left Side	10mm	18700	1860	21.53	22.00	1.114	0.06	0.040	0.045
	LTE Band 2_LAT	20M	QPSK	50	0	Left Side	10mm	18700	1860	20.47	21.00	1.130	0	0.032	0.036
	LTE Band 2_LAT	20M	QPSK	1	0	Right Side	10mm	18700	1860	21.53	22.00	1.114	0.07	0.143	0.159
	LTE Band 2_LAT	20M	QPSK	50	0	Right Side	10mm	18700	1860	20.47	21.00	1.130	0.03	0.113	0.128
24	LTE Band 2_LAT	20M	QPSK	1	0	Bottom Side	10mm	18700	1860	21.53	22.00	1.114	0.04	1.040	1.159
	LTE Band 2_LAT	20M	QPSK	1	0	Bottom Side	10mm	18900	1880	21.45	22.00	1.135	-0.03	0.968	1.099
	LTE Band 2_LAT	20M	QPSK	1	0	Bottom Side	10mm	19100	1900	21.41	22.00	1.146	-0.03	0.899	1.030
	LTE Band 2_LAT	20M	QPSK	50	0	Bottom Side	10mm	18700	1860	20.47	21.00	1.130	-0.04	0.723	0.817
	LTE Band 2_LAT	20M	QPSK	50	0	Bottom Side	10mm	18900	1880	20.18	21.00	1.208	-0.03	0.730	0.882
	LTE Band 2_LAT	20M	QPSK	50	0	Bottom Side	10mm	19100	1900	20.46	21.00	1.132	-0.08	0.744	0.843
	LTE Band 2_LAT	20M	QPSK	100	0	Bottom Side	10mm	18700	1860	20.36	21.00	1.159	-0.03	0.761	0.882
	LTE Band 4_LAT	20M	QPSK	1	0	Front	10mm	20175	1732.5	22.50	23.00	1.122	-0.09	0.946	1.061
	LTE Band 4_LAT	20M	QPSK	50	0	Front	10mm	20175	1732.5	21.37	22.00	1.156	-0.01	0.790	0.913
	LTE Band 4_LAT	20M	QPSK	100	0	Front	10mm	20175	1732.5	21.34	22.00	1.164	-0.03	0.778	0.906
	LTE Band 4_LAT	20M	QPSK	1	0	Back	10mm	20175	1732.5	22.50	23.00	1.122	0	0.794	0.891
	LTE Band 4_LAT	20M	QPSK	50	0	Back	10mm	20175	1732.5	21.37	22.00	1.156	0.12	0.663	0.767
	LTE Band 4_LAT	20M	QPSK	100	0	Back	10mm	20175	1732.5	21.34	22.00	1.164	-0.01	0.663	0.772
	LTE Band 4_LAT	20M	QPSK	1	0	Left Side	10mm	20175	1732.5	22.50	23.00	1.122	0.04	0.023	0.026
	LTE Band 4_LAT	20M	QPSK	50	0	Left Side	10mm	20175	1732.5	21.37	22.00	1.156	0.15	0.019	0.022
	LTE Band 4_LAT	20M	QPSK	1	0	Right Side	10mm	20175	1732.5	22.50	23.00	1.122	0.15	0.166	0.186
	LTE Band 4_LAT	20M	QPSK	50	0	Right Side	10mm	20175	1732.5	21.37	22.00	1.156	0.12	0.137	0.158
25	LTE Band 4_LAT	20M	QPSK	1	0	Bottom Side	10mm	20175	1732.5	22.50	23.00	1.122	-0.06	1.060	1.189
	LTE Band 4_LAT	20M	QPSK	50	0	Bottom Side	10mm	20175	1732.5	21.37	22.00	1.156	-0.03	0.847	0.979
	LTE Band 4_LAT	20M	QPSK	100	0	Bottom Side	10mm	20175	1732.5	21.34	22.00	1.164	0	0.850	0.990
26	LTE Band 5_LAT	10M	QPSK	1	0	Front	10mm	20525	836.5	22.95	24.00	1.274	-0.03	0.432	0.550
	LTE Band 5_LAT	10M	QPSK	25	0	Front	10mm	20525	836.5	21.95	23.00	1.274	-0.05	0.353	0.450
	LTE Band 5_LAT	10M	QPSK	1	0	Back	10mm	20525	836.5	22.95	24.00	1.274	0.03	0.393	0.500
	LTE Band 5_LAT	10M	QPSK	25	0	Back	10mm	20525	836.5	21.95	23.00	1.274	-0.01	0.325	0.414
	LTE Band 5_LAT	10M	QPSK	1	0	Left Side	10mm	20525	836.5	22.95	24.00	1.274	0.01	0.056	0.071
	LTE Band 5_LAT	10M	QPSK	25	0	Left Side	10mm	20525	836.5	21.95	23.00	1.274	0	0.046	0.059
	LTE Band 5_LAT	10M	QPSK	1	0	Right Side	10mm	20525	836.5	22.95	24.00	1.274	-0.07	0.229	0.292
	LTE Band 5_LAT	10M	QPSK	25	0	Right Side	10mm	20525	836.5	21.95	23.00	1.274	-0.01	0.190	0.242
	LTE Band 5_LAT	10M	QPSK	1	0	Bottom Side	10mm	20525	836.5	22.95	24.00	1.274	0.12	0.295	0.376
	LTE Band 5_LAT	10M	QPSK	25	0	Bottom Side	10mm	20525	836.5	21.95	23.00	1.274	0.14	0.246	0.313
	LTE Band 5_UAT	10M	QPSK	1	0	Front	10mm	20525	836.5	22.95	24.00	1.274	-0.19	0.424	0.540
	LTE Band 5_UAT	10M	QPSK	25	0	Front	10mm	20525	836.5	21.95	23.00	1.274	-0.17	0.334	0.425
	LTE Band 5_UAT	10M	QPSK	1	0	Back	10mm	20525	836.5	22.95	24.00	1.274	-0.04	0.346	0.441
	LTE Band 5_UAT	10M	QPSK	25	0	Back	10mm	20525	836.5	21.95	23.00	1.274	-0.06	0.275	0.350
	LTE Band 5_UAT	10M	QPSK	1	0	Top Side	10mm	20525	836.5	22.95	24.00	1.274	0.06	0.244	0.311
	LTE Band 5_UAT	10M	QPSK	25	0	Top Side	10mm	20525	836.5	21.95	23.00	1.274	0.08	0.193	0.246



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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_LAT	20M	QPSK	1	0	Front	10mm	20850	2510	21.02	22.00	1.253	-0.02	0.382	0.479
	LTE Band 7_LAT	20M	QPSK	50	0	Front	10mm	20850	2510	19.93	21.00	1.279	0.03	0.333	0.426
	LTE Band 7_LAT	20M	QPSK	1	0	Back	10mm	20850	2510	21.02	22.00	1.253	0.02	0.386	0.484
	LTE Band 7_LAT	20M	QPSK	50	0	Back	10mm	20850	2510	19.93	21.00	1.279	0.03	0.340	0.435
	LTE Band 7_LAT	20M	QPSK	1	0	Left Side	10mm	20850	2510	21.02	22.00	1.253	0.04	0.237	0.297
	LTE Band 7_LAT	20M	QPSK	50	0	Left Side	10mm	20850	2510	19.93	21.00	1.279	-0.02	0.187	0.239
	LTE Band 7_LAT	20M	QPSK	1	0	Right Side	10mm	20850	2510	21.02	22.00	1.253	0.04	0.072	0.090
	LTE Band 7_LAT	20M	QPSK	50	0	Right Side	10mm	20850	2510	19.93	21.00	1.279	-0.02	0.057	0.073
	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	10mm	20850	2510	21.02	22.00	1.253	-0.03	0.726	0.910
	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	10mm	21100	2535	20.84	22.00	1.306	-0.01	0.768	1.003
27	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	10mm	21350	2560	20.69	22.00	1.352	0.01	0.851	1.151
	LTE Band 7_LAT	20M	QPSK	50	0	Bottom Side	10mm	20850	2510	19.93	21.00	1.279	-0.03	0.620	0.793
	LTE Band 7_LAT	20M	QPSK	100	0	Bottom Side	10mm	20850	2510	19.92	21.00	1.282	-0.03	0.600	0.769
28	LTE Band 12_LAT	10M	QPSK	1	49	Front	10mm	23095	707.5	23.10	24.00	1.230	-0.07	0.382	0.470
	LTE Band 12_LAT	10M	QPSK	25	25	Front	10mm	23095	707.5	22.08	23.00	1.236	0	0.305	0.377
	LTE Band 12_LAT	10M	QPSK	1	49	Back	10mm	23095	707.5	23.10	24.00	1.230	-0.01	0.337	0.415
	LTE Band 12_LAT	10M	QPSK	25	25	Back	10mm	23095	707.5	22.08	23.00	1.236	0.01	0.270	0.334
	LTE Band 12_LAT	10M	QPSK	1	49	Left Side	10mm	23095	707.5	23.10	24.00	1.230	0.03	0.044	0.054
	LTE Band 12_LAT	10M	QPSK	25	25	Left Side	10mm	23095	707.5	22.08	23.00	1.236	0	0.037	0.046
	LTE Band 12_LAT	10M	QPSK	1	49	Right Side	10mm	23095	707.5	23.10	24.00	1.230	-0.01	0.186	0.229
	LTE Band 12_LAT	10M	QPSK	25	25	Right Side	10mm	23095	707.5	22.08	23.00	1.236	-0.05	0.147	0.182
	LTE Band 12_LAT	10M	QPSK	1	49	Bottom Side	10mm	23095	707.5	23.10	24.00	1.230	0.09	0.243	0.299
	LTE Band 12_LAT	10M	QPSK	25	25	Bottom Side	10mm	23095	707.5	22.08	23.00	1.236	0.11	0.193	0.239
	LTE Band 12_UAT	10M	QPSK	1	49	Front	10mm	23095	707.5	23.10	24.00	1.230	-0.04	0.116	0.143
	LTE Band 12_UAT	10M	QPSK	25	25	Front	10mm	23095	707.5	22.08	23.00	1.236	-0.05	0.088	0.109
	LTE Band 12_UAT	10M	QPSK	1	49	Back	10mm	23095	707.5	23.10	24.00	1.230	-0.02	0.082	0.101
	LTE Band 12_UAT	10M	QPSK	25	25	Back	10mm	23095	707.5	22.08	23.00	1.236	0	0.062	0.077
	LTE Band 12_UAT	10M	QPSK	1	49	Top Side	10mm	23095	707.5	23.10	24.00	1.230	0.16	0.066	0.081
	LTE Band 12_UAT	10M	QPSK	25	25	Top Side	10mm	23095	707.5	22.08	23.00	1.236	0.1	0.050	0.062
	LTE Band 26_LAT	15M	QPSK	1	0	Front	10mm	26865	831.5	22.91	24.00	1.285	0.01	0.373	0.479
	LTE Band 26_LAT	15M	QPSK	36	0	Front	10mm	26865	831.5	21.74	23.00	1.337	-0.02	0.302	0.404
	LTE Band 26_LAT	15M	QPSK	1	0	Back	10mm	26865	831.5	22.91	24.00	1.285	0.01	0.331	0.425
	LTE Band 26_LAT	15M	QPSK	36	0	Back	10mm	26865	831.5	21.74	23.00	1.337	-0.01	0.267	0.357
	LTE Band 26_LAT	15M	QPSK	1	0	Left Side	10mm	26865	831.5	22.91	24.00	1.285	-0.01	0.038	0.049
	LTE Band 26_LAT	15M	QPSK	36	0	Left Side	10mm	26865	831.5	21.74	23.00	1.337	0.04	0.029	0.039
	LTE Band 26_LAT	15M	QPSK	1	0	Right Side	10mm	26865	831.5	22.91	24.00	1.285	0.01	0.206	0.265
	LTE Band 26_LAT	15M	QPSK	36	0	Right Side	10mm	26865	831.5	21.74	23.00	1.337	0.03	0.163	0.218
	LTE Band 26_LAT	15M	QPSK	1	0	Bottom Side	10mm	26865	831.5	22.91	24.00	1.285	0.15	0.272	0.350
	LTE Band 26_LAT	15M	QPSK	36	0	Bottom Side	10mm	26865	831.5	21.74	23.00	1.337	0.18	0.237	0.317
29	LTE Band 26_UAT	15M	QPSK	1	0	Front	10mm	26865	831.5	22.91	24.00	1.285	-0.04	0.452	0.581
	LTE Band 26_UAT	15M	QPSK	36	0	Front	10mm	26865	831.5	21.74	23.00	1.337	-0.15	0.363	0.485
	LTE Band 26_UAT	15M	QPSK	1	0	Back	10mm	26865	831.5	22.91	24.00	1.285	-0.08	0.390	0.501
	LTE Band 26_UAT	15M	QPSK	36	0	Back	10mm	26865	831.5	21.74	23.00	1.337	-0.05	0.318	0.425
	LTE Band 26_UAT	15M	QPSK	1	0	Top Side	10mm	26865	831.5	22.91	24.00	1.285	0.15	0.260	0.334
	LTE Band 26_UAT	15M	QPSK	36	0	Top Side	10mm	26865	831.5	21.74	23.00	1.337	0.19	0.207	0.277



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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 30_LAT	10M	QPSK	1	0	Front	10mm	27710	2310	18.62	19.00	1.091	-0.01	0.120	0.131
	LTE Band 30_LAT	10M	QPSK	25	0	Front	10mm	27710	2310	17.52	18.00	1.117	-0.02	0.097	0.108
	LTE Band 30_LAT	10M	QPSK	1	0	Back	10mm	27710	2310	18.62	19.00	1.091	0.02	0.109	0.119
	LTE Band 30_LAT	10M	QPSK	25	0	Back	10mm	27710	2310	17.52	18.00	1.117	0.05	0.087	0.097
	LTE Band 30_LAT	10M	QPSK	1	0	Left Side	10mm	27710	2310	18.62	19.00	1.091	0.17	0.057	0.062
	LTE Band 30_LAT	10M	QPSK	25	0	Left Side	10mm	27710	2310	17.52	18.00	1.117	0.16	0.047	0.052
	LTE Band 30_LAT	10M	QPSK	1	0	Right Side	10mm	27710	2310	18.62	19.00	1.091	0.05	0.018	0.020
	LTE Band 30_LAT	10M	QPSK	25	0	Right Side	10mm	27710	2310	17.52	18.00	1.117	-0.13	0.015	0.017
30	LTE Band 30_LAT	10M	QPSK	1	0	Bottom Side	10mm	27710	2310	18.62	19.00	1.091	0.15	0.170	0.186
	LTE Band 30_LAT	10M	QPSK	25	0	Bottom Side	10mm	27710	2310	17.52	18.00	1.117	0.01	0.136	0.152

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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_LAT	20M	QPSK	1	0	Front	10mm	41140	2645	23.14	24.00	1.219	62.9	1.006	-0.03	0.488	0.598
	LTE Band 41_LAT	20M	QPSK	50	0	Front	10mm	41140	2645	22.15	23.00	1.216	62.9	1.006	-0.04	0.346	0.423
	LTE Band 41_LAT	20M	QPSK	1	0	Back	10mm	41140	2645	23.14	24.00	1.219	62.9	1.006	0.01	0.512	0.628
	LTE Band 41_LAT	20M	QPSK	1	0	Back	10mm	40240	2555	23.08	24.00	1.236	62.9	1.006	-0.04	0.454	0.564
	LTE Band 41_LAT	20M	QPSK	1	0	Back	10mm	40500	2581	23.02	24.00	1.253	62.9	1.006	0	0.523	0.659
	LTE Band 41_LAT	20M	QPSK	1	0	Back	10mm	40770	2608	22.90	24.00	1.288	62.9	1.006	0.07	0.538	0.697
	LTE Band 41_LAT	20M	QPSK	50	0	Back	10mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0.01	0.386	0.472
	LTE Band 41_LAT	20M	QPSK	100	0	Back	10mm	41140	2645	22.10	23.00	1.230	62.9	1.006	-0.02	0.375	0.464
	LTE Band 41_LAT	20M	QPSK	1	0	Left Side	10mm	41140	2645	23.14	24.00	1.219	62.9	1.006	-0.04	0.226	0.277
	LTE Band 41_LAT	20M	QPSK	50	0	Left Side	10mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0.02	0.175	0.214
	LTE Band 41_LAT	20M	QPSK	1	0	Right Side	10mm	41140	2645	23.14	24.00	1.219	62.9	1.006	0.12	0.038	0.047
	LTE Band 41_LAT	20M	QPSK	50	0	Right Side	10mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0.14	0.029	0.035
	LTE Band 41_LAT	20M	QPSK	1	0	Bottom Side	10mm	41140	2645	23.14	24.00	1.219	62.9	1.006	-0.01	0.794	0.974
	LTE Band 41_LAT	20M	QPSK	1	0	Bottom Side	10mm	40240	2555	23.08	24.00	1.236	62.9	1.006	-0.02	0.851	1.058
	LTE Band 41_LAT	20M	QPSK	1	0	Bottom Side	10mm	40500	2581	23.02	24.00	1.253	62.9	1.006	-0.03	0.924	1.165
31	LTE Band 41_LAT	20M	QPSK	1	0	Bottom Side	10mm	40770	2608	22.90	24.00	1.288	62.9	1.006	0	0.911	1.181
	LTE Band 41_LAT	20M	QPSK	50	0	Bottom Side	10mm	41140	2645	22.15	23.00	1.216	62.9	1.006	-0.03	0.591	0.723
	LTE Band 41_LAT	20M	QPSK	50	0	Bottom Side	10mm	40240	2555	22.14	23.00	1.219	62.9	1.006	0.01	0.615	0.754
	LTE Band 41_LAT	20M	QPSK	50	0	Bottom Side	10mm	40500	2581	22.01	23.00	1.256	62.9	1.006	0.01	0.650	0.821
	LTE Band 41_LAT	20M	QPSK	50	0	Bottom Side	10mm	40770	2608	22.08	23.00	1.236	62.9	1.006	-0.01	0.660	0.821
	LTE Band 41_LAT	20M	QPSK	100	0	Bottom Side	10mm	41140	2645	22.10	23.00	1.230	62.9	1.006	0.01	0.557	0.689



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	-0.01	0.065	0.075
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	0.12	0.070	0.080
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	0.08	0.051	0.059
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	0.12	0.006	0.007
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	0.01	0.144	0.165
32	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	1	2412	18.04	19.00	1.247	99.05	1.010	-0.02	0.181	0.228
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 1	11	2462	17.89	19.00	1.291	99.05	1.010	0.04	0.140	0.183
	WLAN2.4GHz	802.11b 1Mbps	Front	10mm	Ant 2	6	2437	18.54	19.00	1.111	98.57	1.015	0	0.115	0.130
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 2	6	2437	18.54	19.00	1.111	98.57	1.015	-0.02	0.140	0.158
	WLAN2.4GHz	802.11b 1Mbps	Left Side	10mm	Ant 2	6	2437	18.54	19.00	1.111	98.57	1.015	-0.18	0.010	0.011
	WLAN2.4GHz	802.11b 1Mbps	Right Side	10mm	Ant 2	6	2437	18.54	19.00	1.111	98.57	1.015	-0.17	0.036	0.041
	WLAN2.4GHz	802.11b 1Mbps	Top Side	10mm	Ant 2	6	2437	18.54	19.00	1.111	98.57	1.015	-0.11	0.112	0.126
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	46	5230	18.87	20.00	1.296	90.29	1.108	-0.13	0.034	0.049
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	46	5230	18.87	20.00	1.296	90.29	1.108	-0.16	0.056	0.080
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 1	46	5230	18.87	20.00	1.296	90.29	1.108	0.09	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1	46	5230	18.87	20.00	1.296	90.29	1.108	-0.14	0.020	0.029
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 1	46	5230	18.87	20.00	1.296	90.29	1.108	-0.02	0.037	0.053
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	46	5230	19.52	20.00	1.118	89.21	1.121	0.12	0.042	0.053
33	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	46	5230	19.52	20.00	1.118	89.21	1.121	-0.16	0.093	0.117
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	38	5190	17.25	17.50	1.060	89.21	1.121	0.16	0.052	0.062
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 2	46	5230	19.52	20.00	1.118	89.21	1.121	0.01	0.041	0.051
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	46	5230	19.52	20.00	1.118	89.21	1.121	0.15	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 2	46	5230	19.52	20.00	1.118	89.21	1.121	0.19	0.062	0.078
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	-0.04	0.008	0.010
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	-0.08	0.078	0.101
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	0.15	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	0.16	0.023	0.030
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	0.13	0.004	0.005
	WLAN5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	0.04	0.239	0.289
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	-0.12	0.247	0.298
34	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 2	151	5755	18.34	19.00	1.165	89.21	1.121	-0.12	0.267	0.349
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	0.03	0.078	0.094
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	-0.18	0.009	0.011
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	-0.09	0.156	0.188

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	10mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.12	0.015	0.018
	Bluetooth	1Mbps	Back	10mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.03	0.016	0.019
	Bluetooth	1Mbps	Left Side	10mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	-0.17	0.001	0.001
35	Bluetooth	1Mbps	Top Side	10mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.05	0.019	0.022
	Bluetooth	1Mbps	Top Side	10mm	Ant 2	0	2402	10.96	11.50	1.134	76.6	1.087	0.03	0.018	0.022
	Bluetooth	1Mbps	Top Side	10mm	Ant 2	78	2480	10.88	11.50	1.155	76.6	1.087	-0.01	0.014	0.018



14.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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_LAT	GPRS (2 Tx slots)	Front	15mm	128	824.2	30.39	30.50	1.026	0	0.259	0.266
	GSM850_LAT	GPRS (2 Tx slots)	Front	15mm	189	836.4	30.36	30.50	1.033	-0.06	0.283	0.292
	GSM850_LAT	GPRS (2 Tx slots)	Front	15mm	251	848.8	30.29	30.50	1.050	-0.02	0.293	0.308
	GSM850_LAT	GPRS (2 Tx slots)	Back	15mm	128	824.2	30.39	30.50	1.026	-0.12	0.244	0.250
	GSM850_UAT	GPRS (2 Tx slots)	Front	15mm	128	824.2	30.39	30.50	1.026	-0.06	0.328	0.336
36	GSM850_UAT	GPRS (2 Tx slots)	Front	15mm	189	836.4	30.36	30.50	1.033	-0.03	0.331	0.342
	GSM850_UAT	GPRS (2 Tx slots)	Front	15mm	251	848.8	30.29	30.50	1.050	-0.02	0.312	0.327
	GSM850_UAT	GPRS (2 Tx slots)	Back	15mm	128	824.2	30.39	30.50	1.026	-0.08	0.277	0.284
37	GSM1900_LAT	GPRS (2 Tx slots)	Front	15mm	512	1850.2	27.11	27.50	1.094	-0.19	0.397	0.434
	GSM1900_LAT	GPRS (2 Tx slots)	Front	15mm	661	1880	27.09	27.50	1.099	-0.1	0.374	0.411
	GSM1900_LAT	GPRS (2 Tx slots)	Front	15mm	810	1909.8	27.02	27.50	1.117	-0.07	0.329	0.367
	GSM1900_LAT	GPRS (2 Tx slots)	Back	15mm	512	1850.2	27.11	27.50	1.094	-0.01	0.348	0.381

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	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)
38	WCDMA II_LAT	RMC 12.2Kbps	Front	15mm	9262	1852.4	21.14	22.00	1.219	-0.02	0.438	0.534
	WCDMA II_LAT	RMC 12.2Kbps	Front	15mm	9400	1880	21.10	22.00	1.230	-0.02	0.434	0.534
	WCDMA II_LAT	RMC 12.2Kbps	Front	15mm	9538	1907.6	20.98	22.00	1.265	-0.04	0.413	0.522
	WCDMA II_LAT	RMC 12.2Kbps	Back	15mm	9262	1852.4	21.14	22.00	1.219	0.01	0.391	0.477
	WCDMA IV_LAT	RMC 12.2Kbps	Front	15mm	1312	1712.4	21.34	22.50	1.306	0.01	0.292	0.381
39	WCDMA IV_LAT	RMC 12.2Kbps	Front	15mm	1413	1732.6	21.25	22.50	1.334	0.01	0.332	0.443
	WCDMA IV_LAT	RMC 12.2Kbps	Front	15mm	1513	1752.6	21.11	22.50	1.377	-0.01	0.312	0.430
	WCDMA IV_LAT	RMC 12.2Kbps	Back	15mm	1312	1712.4	21.34	22.50	1.306	-0.05	0.252	0.329
	WCDMA V_LAT	RMC 12.2Kbps	Front	15mm	4233	846.6	22.77	23.00	1.054	0	0.283	0.298
	WCDMA V_LAT	RMC 12.2Kbps	Back	15mm	4233	846.6	22.77	23.00	1.054	0.04	0.289	0.305
	WCDMA V_LAT	RMC 12.2Kbps	Back	15mm	4132	826.4	22.51	23.00	1.119	0	0.208	0.233
	WCDMA V_LAT	RMC 12.2Kbps	Back	15mm	4182	836.4	22.50	23.00	1.122	-0.01	0.273	0.306
40	WCDMA V_UAT	RMC 12.2Kbps	Front	15mm	4233	846.6	22.77	23.00	1.054	-0.07	0.325	0.343
	WCDMA V_UAT	RMC 12.2Kbps	Front	15mm	4132	826.4	22.51	23.00	1.119	-0.13	0.268	0.300
	WCDMA V_UAT	RMC 12.2Kbps	Front	15mm	4182	836.4	22.50	23.00	1.122	-0.1	0.297	0.333
	WCDMA V_UAT	RMC 12.2Kbps	Back	15mm	4233	846.6	22.77	23.00	1.054	0.1	0.272	0.287



<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_LAT	20M	QPSK	1	0	Front	15mm	18700	1860	21.53	22.00	1.114	-0.02	0.453	0.505
	LTE Band 2_LAT	20M	QPSK	1	0	Front	15mm	18900	1880	21.45	22.00	1.135	-0.02	0.444	0.504
41	LTE Band 2_LAT	20M	QPSK	1	0	Front	15mm	19100	1900	21.41	22.00	1.146	0.07	0.480	0.550
	LTE Band 2_LAT	20M	QPSK	50	0	Front	15mm	18700	1860	20.47	21.00	1.130	0.02	0.353	0.399
	LTE Band 2_LAT	20M	QPSK	1	0	Back	15mm	18700	1860	21.53	22.00	1.114	-0.04	0.391	0.436
	LTE Band 2_LAT	20M	QPSK	50	0	Back	15mm	18700	1860	20.47	21.00	1.130	-0.02	0.307	0.347
42	LTE Band 4_LAT	20M	QPSK	1	0	Front	15mm	20175	1732.5	22.50	23.00	1.122	0	0.449	0.504
	LTE Band 4_LAT	20M	QPSK	50	0	Front	15mm	20175	1732.5	21.37	22.00	1.156	0.01	0.367	0.424
	LTE Band 4_LAT	20M	QPSK	1	0	Back	15mm	20175	1732.5	22.50	23.00	1.122	-0.13	0.379	0.425
	LTE Band 4_LAT	20M	QPSK	50	0	Back	15mm	20175	1732.5	21.37	22.00	1.156	-0.02	0.316	0.365
	LTE Band 5_LAT	10M	QPSK	1	0	Front	15mm	20525	836.5	22.95	24.00	1.274	0.06	0.241	0.307
	LTE Band 5_LAT	10M	QPSK	25	0	Front	15mm	20525	836.5	21.95	23.00	1.274	-0.05	0.201	0.256
	LTE Band 5_LAT	10M	QPSK	1	0	Back	15mm	20525	836.5	22.95	24.00	1.274	0.01	0.245	0.312
	LTE Band 5_LAT	10M	QPSK	25	0	Back	15mm	20525	836.5	21.95	23.00	1.274	0.01	0.203	0.259
43	LTE Band 5_UAT	10M	QPSK	1	0	Front	15mm	20525	836.5	22.95	24.00	1.274	-0.14	0.298	0.380
	LTE Band 5_UAT	10M	QPSK	25	0	Front	15mm	20525	836.5	21.95	23.00	1.274	-0.14	0.241	0.307
	LTE Band 5_UAT	10M	QPSK	1	0	Back	15mm	20525	836.5	22.95	24.00	1.274	-0.03	0.253	0.322
	LTE Band 5_UAT	10M	QPSK	25	0	Back	15mm	20525	836.5	21.95	23.00	1.274	-0.06	0.205	0.261
	LTE Band 7_LAT	20M	QPSK	1	0	Front	15mm	20850	2510	22.82	24.00	1.312	-0.02	0.328	0.430
	LTE Band 7_LAT	20M	QPSK	50	0	Front	15mm	20850	2510	21.79	23.00	1.321	0.03	0.267	0.353
	LTE Band 7_LAT	20M	QPSK	1	0	Back	15mm	20850	2510	22.82	24.00	1.312	0.06	0.323	0.424
	LTE Band 7_LAT	20M	QPSK	1	0	Back	15mm	21100	2535	22.59	24.00	1.384	0.01	0.347	0.480
44	LTE Band 7_LAT	20M	QPSK	1	0	Back	15mm	21350	2560	22.75	24.00	1.334	0	0.386	0.515
	LTE Band 7_LAT	20M	QPSK	50	0	Back	15mm	20850	2510	21.79	23.00	1.321	-0.09	0.267	0.353
45	LTE Band 12_LAT	10M	QPSK	1	49	Front	15mm	23095	707.5	23.10	24.00	1.230	0	0.205	0.252
	LTE Band 12_LAT	10M	QPSK	25	25	Front	15mm	23095	707.5	22.08	23.00	1.236	0	0.164	0.203
	LTE Band 12_LAT	10M	QPSK	1	49	Back	15mm	23095	707.5	23.10	24.00	1.230	0	0.198	0.244
	LTE Band 12_LAT	10M	QPSK	25	25	Back	15mm	23095	707.5	22.08	23.00	1.236	0.01	0.159	0.197
	LTE Band 12_UAT	10M	QPSK	1	49	Front	15mm	23095	707.5	23.10	24.00	1.230	-0.05	0.060	0.074
	LTE Band 12_UAT	10M	QPSK	25	25	Front	15mm	23095	707.5	22.08	23.00	1.236	-0.1	0.045	0.056
	LTE Band 12_UAT	10M	QPSK	1	49	Back	15mm	23095	707.5	23.10	24.00	1.230	-0.01	0.051	0.063
	LTE Band 12_UAT	10M	QPSK	25	25	Back	15mm	23095	707.5	22.08	23.00	1.236	0.04	0.039	0.048
	LTE Band 26_LAT	15M	QPSK	1	0	Front	15mm	26865	831.5	22.91	24.00	1.285	0.02	0.199	0.256
	LTE Band 26_LAT	15M	QPSK	36	0	Front	15mm	26865	831.5	21.74	23.00	1.337	-0.04	0.157	0.210
	LTE Band 26_LAT	15M	QPSK	1	0	Back	15mm	26865	831.5	22.91	24.00	1.285	0	0.202	0.260
	LTE Band 26_LAT	15M	QPSK	36	0	Back	15mm	26865	831.5	21.74	23.00	1.337	0.03	0.161	0.215
46	LTE Band 26_UAT	15M	QPSK	1	0	Front	15mm	26865	831.5	22.91	24.00	1.285	-0.17	0.307	0.395
	LTE Band 26_UAT	15M	QPSK	36	0	Front	15mm	26865	831.5	21.74	23.00	1.337	-0.1	0.248	0.331
	LTE Band 26_UAT	15M	QPSK	1	0	Back	15mm	26865	831.5	22.91	24.00	1.285	-0.02	0.271	0.348
	LTE Band 26_UAT	15M	QPSK	36	0	Back	15mm	26865	831.5	21.74	23.00	1.337	0.01	0.220	0.294
47	LTE Band 30_LAT	10M	QPSK	1	0	Front	15mm	27710	2310	18.62	19.00	1.091	-0.05	0.050	0.055
	LTE Band 30_LAT	10M	QPSK	25	0	Front	15mm	27710	2310	17.52	18.00	1.117	-0.13	0.040	0.045
	LTE Band 30_LAT	10M	QPSK	1	0	Back	15mm	27710	2310	18.62	19.00	1.091	0.03	0.045	0.049
	LTE Band 30_LAT	10M	QPSK	25	0	Back	15mm	27710	2310	17.52	18.00	1.117	-0.09	0.036	0.040



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	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_LAT	20M	QPSK	1	0	Front	15mm	41140	2645	23.14	24.00	1.219	62.9	1.006	0.14	0.164	0.201
	LTE Band 41_LAT	20M	QPSK	1	0	Front	15mm	40240	2555	23.08	24.00	1.236	62.9	1.006	-0.01	0.163	0.203
	LTE Band 41_LAT	20M	QPSK	1	0	Front	15mm	40500	2581	23.02	24.00	1.253	62.9	1.006	0.07	0.173	0.218
48	LTE Band 41_LAT	20M	QPSK	1	0	Front	15mm	40770	2608	22.90	24.00	1.288	62.9	1.006	-0.01	0.177	0.229
	LTE Band 41_LAT	20M	QPSK	50	0	Front	15mm	41140	2645	22.15	23.00	1.216	62.9	1.006	0	0.125	0.153
	LTE Band 41_LAT	20M	QPSK	1	0	Back	15mm	41140	2645	23.14	24.00	1.219	62.9	1.006	-0.03	0.156	0.191
	LTE Band 41_LAT	20M	QPSK	50	0	Back	15mm	41140	2645	22.15	23.00	1.216	62.9	1.006	-0.05	0.119	0.146

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	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	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	0.12	0.038	0.044
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	6	2437	18.44	19.00	1.137	99.05	1.010	0.12	0.040	0.046
	WLAN2.4GHz	802.11b 1Mbps	Front	15mm	Ant 2	6	2412	18.54	19.00	1.111	98.57	1.015	0.15	0.056	0.063
49	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 2	6	2437	18.54	19.00	1.111	98.57	1.015	0.12	0.059	0.067
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 2	1	2412	17.84	19.00	1.305	98.57	1.015	-0.12	0.048	0.064
	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 2	11	2462	17.98	19.00	1.264	98.57	1.015	0.16	0.036	0.046
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	0.08	0.031	0.033
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	0.05	0.056	0.059
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	0.1	0.033	0.036
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	-0.01	0.073	0.079
50	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	60	5300	19.42	20.00	1.143	94.09	1.063	-0.12	0.079	0.096
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	0	0.011	0.014
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	-0.05	0.052	0.064
	WLAN5GHz	802.11a 6Mbps	Front	15mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	-0.12	0.207	0.229
51	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	-0.07	0.217	0.240
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	100	5500	19.49	19.50	1.002	94.09	1.063	0.01	0.110	0.117
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	116	5580	18.81	19.00	1.045	94.09	1.063	0.11	0.141	0.157
	WLAN5GHz	802.11a 6Mbps	Back	15mm	Ant 2	132	5660	17.35	17.50	1.035	94.09	1.063	-0.13	0.139	0.153
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	-0.18	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 1	151	5755	18.33	19.00	1.166	90.29	1.108	0.09	0.044	0.057
	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	-0.06	0.147	0.178
52	WLAN5GHz	802.11n-HT40 MCS0	Front	15mm	Ant 2	151	5755	18.34	19.00	1.165	89.21	1.121	-0.11	0.155	0.202
	WLAN5GHz	802.11n-HT40 MCS0	Back	15mm	Ant 2	159	5795	18.68	19.00	1.077	89.21	1.121	-0.04	0.146	0.176

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Front	15mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.11	0.005	0.006
53	Bluetooth	1Mbps	Back	15mm	Ant 2	39	2441	11.19	11.50	1.075	76.6	1.087	0.18	0.008	0.010
	Bluetooth	1Mbps	Back	15mm	Ant 2	0	2402	10.96	11.50	1.134	76.6	1.087	-0.14	0.005	0.007
	Bluetooth	1Mbps	Back	15mm	Ant 2	78	2480	10.88	11.50	1.155	76.6	1.087	-0.11	0.005	0.006



14.4 Product Specific

<LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	0mm	20850	2510	22.82	24.00	1.312	-0.08	2.150	2.821
54	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	0mm	21100	2535	22.59	24.00	1.384	-0.02	2.130	2.947
	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	0mm	21350	2560	22.75	24.00	1.334	-0.02	2.060	2.747

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	-0.1	0.405	0.426
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	-0.13	0.729	0.768
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	0.1	0.004	0.005
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	-0.02	0.093	0.098
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 1	56	5280	20.00	20.00	1.000	94.95	1.053	0.04	0.398	0.419
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	-0.11	0.329	0.358
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	-0.07	1.160	1.262
55	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	60	5300	19.42	20.00	1.143	94.09	1.063	-0.14	1.330	1.616
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	-0.09	0.132	0.144
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	0.12	0.018	0.020
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	56	5280	19.90	20.00	1.023	94.09	1.063	-0.04	0.204	0.222
	WLAN5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	0.07	0.213	0.264
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	-0.1	0.581	0.719
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	-0.05	0.024	0.030
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	0.06	0.074	0.092
	WLAN5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 1	126	5550	19.02	19.50	1.117	90.29	1.108	0.02	0.128	0.158
	WLAN5GHz	802.11a 6Mbps	Front	0mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	0.06	1.260	1.393
56	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	-0.11	1.620	1.791
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	100	5500	19.49	19.50	1.002	94.09	1.063	-0.18	1.560	1.662
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	116	5580	18.81	19.00	1.045	94.09	1.063	-0.19	1.440	1.599
	WLAN5GHz	802.11a 6Mbps	Back	0mm	Ant 2	132	5660	17.35	17.50	1.035	94.09	1.063	-0.1	1.100	1.210
	WLAN5GHz	802.11a 6Mbps	Left Side	0mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	0.13	0.235	0.260
	WLAN5GHz	802.11a 6Mbps	Right Side	0mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	0.1	0.003	0.004
	WLAN5GHz	802.11a 6Mbps	Top Side	0mm	Ant 2	144	5720	19.83	20.00	1.040	94.09	1.063	-0.01	0.471	0.521



14.5 Repeated SAR Measurement

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 26_UAT	15M	QPSK	1	0	Left Cheek	0mm	26865	831.5	21.70	22.00	1.072	0.01	0.977	-	1.047
2nd	LTE Band 26_UAT	15M	QPSK	1	0	Left Cheek	0mm	26865	831.5	21.70	22.00	1.072	0.05	0.907	1.08	0.972
1st	LTE Band 2_LAT	20M	QPSK	1	0	Bottom Side	10mm	18700	1860	21.53	22.00	1.114	0.04	1.040	-	1.159
2nd	LTE Band 2_LAT	20M	QPSK	1	0	Bottom Side	10mm	18700	1860	21.53	22.00	1.114	-0.01	0.913	1.14	1.017
1st	LTE Band 4_LAT	20M	QPSK	1	0	Bottom Side	10mm	20175	1732.5	22.50	23.00	1.122	-0.06	1.060	-	1.189
2nd	LTE Band 4_LAT	20M	QPSK	1	0	Bottom Side	10mm	20175	1732.5	22.50	23.00	1.122	-0.04	0.975	1.09	1.094

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 41_LAT	20M	QPSK	1	0	Bottom Side	10mm	40500	2581	23.02	24.00	1.253	62.9	1.006	-0.03	0.924	-	1.165
2nd	LTE Band 41_LAT	20M	QPSK	1	0	Bottom Side	10mm	40500	2581	23.02	24.00	1.253	62.9	1.006	0	0.895	1.03	1.128

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	0mm	20850	2510	22.82	24.00	1.312	-0.08	2.150	-	2.821
2nd	LTE Band 7_LAT	20M	QPSK	1	0	Bottom Side	0mm	20850	2510	22.82	24.00	1.312	-0.05	2.090	1.03	2.742

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. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

Simultaneous transmission combination scenarios	WWAN LAT	WWAN UAT	2.4GHz WLAN Ant 1	2.4GHz WLAN/BT Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Remark
1	v		v			v	1. WWAN data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 2. WWAN voice call, data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 3. WWAN voice call or data 2.4GHz WLAN data 5GHz WLAN data
2	v			v	v		1. WWAN data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 2. WWAN voice call, data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 3. WWAN voice call or data 2.4GHz WLAN data 5GHz WLAN data
3	v		v	v			WWAN voice or data 2.4GHz WLAN data (and MIMO)
4	v				v	v	WWAN voice or data 5GHz WLAN data (and MIMO)
5	v			v		v	1. WWAN data / Bluetooth tethering (for WWAN) 5GHz WLAN hotspot (for WWAN) 2. WWAN voice call, data / Bluetooth tethering (for WWAN) 5GHz WLAN hotspot (for WWAN) 3. WWAN voice call or data Bluetooth data, 5GHz WLAN data
6		v	v			v	1. WWAN data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 2. WWAN voice call, data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 3. WWAN voice call or data 2.4GHz WLAN data 5GHz WLAN data
7		v		v	v		1. WWAN data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 2. WWAN voice call, data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 3. WWAN voice call or data 2.4GHz WLAN data 5GHz WLAN data
8		v	v	v			WWAN voice or data 2.4GHz WLAN data (and MIMO)
9		v			v	v	WWAN voice or data 5GHz WLAN data (and MIMO)
10		v		v		v	1. WWAN data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 2. WWAN voice call, data / 2.4GHz WLAN hotspot (for WWAN) 5GHz WLAN hotspot (for WWAN) 3. WWAN voice call or data 2.4GHz WLAN data 5GHz WLAN data
11			v	v			2.4GHz WLAN MIMO
12					v	v	5GHz WLAN MIMO
13			v			v	2.4GHz WLAN data and 5GHz WLAN data
14				v	v		2.4GHz WLAN or BT data and 5GHz WLAN data
Remark	BT and 2.4GHz WLAN share the same antenna2 but won't operate simultaneously.						

General Note:

- This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
- The worst case WLAN reported SAR for each configuration was used for SAR summation, regardless of whether the WLAN channel has WiFi Direct and Hotspot capability.
- For SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
- 2.4GHz WLAN and Bluetooth share the same antenna 2, and cannot transmit simultaneously.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, 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.
 - If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.



15.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	7	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+2+7 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+5+7 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 2								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
GSM	GSM850_LAT	Right Cheek	0.198	0.106	0.452	0.104	0.336	0.228	0.756	0.638	0.640	0.532	0.530	0.754	0.762
		Right Tilted	0.063	0.135	0.349	0.120	0.314	0.158	0.547	0.497	0.512	0.356	0.341	0.532	0.535
		Left Cheek	0.098	0.257	0.257	0.227	0.187	0.109	0.612	0.512	0.542	0.464	0.434	0.582	0.394
		Left Tilted	0.049	0.276	0.191	0.278	0.153	0.083	0.516	0.480	0.478	0.408	0.410	0.518	0.285
	GSM850_UAT	Right Cheek	1.017	0.106	0.452	0.104	0.336	0.228	1.575	1.457	1.459	1.351	1.349	1.573	1.581
		Right Tilted	0.902	0.135	0.349	0.120	0.314	0.158	1.386	1.336	1.351	1.195	1.180	1.371	1.374
		Left Cheek	1.079	0.257	0.257	0.227	0.187	0.109	1.593	1.493	1.523	1.445	1.415	1.563	1.375
		Left Tilted	0.918	0.276	0.191	0.278	0.153	0.083	1.385	1.349	1.347	1.277	1.279	1.387	1.154
	GSM1900_LAT	Right Cheek	0.062	0.106	0.452	0.104	0.336	0.228	0.620	0.502	0.504	0.396	0.394	0.618	0.626
		Right Tilted	0.012	0.135	0.349	0.120	0.314	0.158	0.496	0.446	0.461	0.305	0.290	0.481	0.484
		Left Cheek	0.061	0.257	0.257	0.227	0.187	0.109	0.575	0.475	0.505	0.427	0.397	0.545	0.357
		Left Tilted	0.030	0.276	0.191	0.278	0.153	0.083	0.497	0.461	0.459	0.389	0.391	0.499	0.266
WCDMA	WCDMA II_LAT	Right Cheek	0.079	0.106	0.452	0.104	0.336	0.228	0.637	0.519	0.521	0.413	0.411	0.635	0.643
		Right Tilted	0.027	0.135	0.349	0.120	0.314	0.158	0.511	0.461	0.476	0.320	0.305	0.496	0.499
		Left Cheek	0.073	0.257	0.257	0.227	0.187	0.109	0.587	0.487	0.517	0.439	0.409	0.557	0.369
		Left Tilted	0.044	0.276	0.191	0.278	0.153	0.083	0.511	0.475	0.473	0.403	0.405	0.513	0.280
	WCDMA IV_LAT	Right Cheek	0.075	0.106	0.452	0.104	0.336	0.228	0.633	0.515	0.517	0.409	0.407	0.631	0.639
		Right Tilted	0.020	0.135	0.349	0.120	0.314	0.158	0.504	0.454	0.469	0.313	0.298	0.489	0.492
		Left Cheek	0.043	0.257	0.257	0.227	0.187	0.109	0.557	0.457	0.487	0.409	0.379	0.527	0.339
		Left Tilted	0.026	0.276	0.191	0.278	0.153	0.083	0.493	0.457	0.455	0.385	0.387	0.495	0.262
	WCDMA V_LAT	Right Cheek	0.186	0.106	0.452	0.104	0.336	0.228	0.744	0.626	0.628	0.520	0.518	0.742	0.750
		Right Tilted	0.089	0.135	0.349	0.120	0.314	0.158	0.573	0.523	0.538	0.382	0.367	0.558	0.561
		Left Cheek	0.124	0.257	0.257	0.227	0.187	0.109	0.638	0.538	0.568	0.490	0.460	0.608	0.420
		Left Tilted	0.009	0.276	0.191	0.278	0.153	0.083	0.476	0.440	0.438	0.368	0.370	0.478	0.245
	WCDMA V_UAT	Right Cheek	0.764	0.106	0.452	0.104	0.336	0.228	1.322	1.204	1.206	1.098	1.096	1.320	1.328
		Right Tilted	0.752	0.135	0.349	0.120	0.314	0.158	1.236	1.186	1.201	1.045	1.030	1.221	1.224
		Left Cheek	0.839	0.257	0.257	0.227	0.187	0.109	1.353	1.253	1.283	1.205	1.175	1.323	1.135
		Left Tilted	0.691	0.276	0.191	0.278	0.153	0.083	1.158	1.122	1.120	1.050	1.052	1.160	0.927



WWAN Band	Exposure Position	1	2	3	4	5	7	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+2+7 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+5+7 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 2								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
LTE	LTE Band 2_LAT	Right Cheek	0.067	0.106	0.452	0.104	0.336	0.228	0.625	0.507	0.509	0.401	0.399	0.623	0.631
		Right Tilted	0.017	0.135	0.349	0.120	0.314	0.158	0.501	0.451	0.466	0.310	0.295	0.486	0.489
		Left Cheek	0.059	0.257	0.257	0.227	0.187	0.109	0.573	0.473	0.503	0.425	0.395	0.543	0.355
		Left Tilted	0.031	0.276	0.191	0.278	0.153	0.083	0.498	0.462	0.460	0.390	0.392	0.500	0.267
	LTE Band 4_LAT	Right Cheek	0.092	0.106	0.452	0.104	0.336	0.228	0.650	0.532	0.534	0.426	0.424	0.648	0.656
		Right Tilted	0.035	0.135	0.349	0.120	0.314	0.158	0.519	0.469	0.484	0.328	0.313	0.504	0.507
		Left Cheek	0.052	0.257	0.257	0.227	0.187	0.109	0.566	0.466	0.496	0.418	0.388	0.536	0.348
		Left Tilted	0.038	0.276	0.191	0.278	0.153	0.083	0.505	0.469	0.467	0.397	0.399	0.507	0.274
	LTE Band 5_LAT	Right Cheek	0.191	0.106	0.452	0.104	0.336	0.228	0.749	0.631	0.633	0.525	0.523	0.747	0.755
		Right Tilted	0.041	0.135	0.349	0.120	0.314	0.158	0.525	0.475	0.490	0.334	0.319	0.510	0.513
		Left Cheek	0.140	0.257	0.257	0.227	0.187	0.109	0.654	0.554	0.584	0.506	0.476	0.624	0.436
		Left Tilted	0.084	0.276	0.191	0.278	0.153	0.083	0.551	0.515	0.513	0.443	0.445	0.553	0.320
	LTE Band 5_UAT	Right Cheek	0.981	0.106	0.452	0.104	0.336	0.228	1.539	1.421	1.423	1.315	1.313	1.537	1.545
		Right Tilted	0.898	0.135	0.349	0.120	0.314	0.158	1.382	1.332	1.347	1.191	1.176	1.367	1.370
		Left Cheek	1.028	0.257	0.257	0.227	0.187	0.109	1.542	1.442	1.472	1.394	1.364	1.512	1.324
		Left Tilted	0.846	0.276	0.191	0.278	0.153	0.083	1.313	1.277	1.275	1.205	1.207	1.315	1.082
	LTE Band 7_LAT	Right Cheek	0.112	0.106	0.452	0.104	0.336	0.228	0.670	0.552	0.554	0.446	0.444	0.668	0.676
		Right Tilted	0.102	0.135	0.349	0.120	0.314	0.158	0.586	0.536	0.551	0.395	0.380	0.571	0.574
		Left Cheek	0.163	0.257	0.257	0.227	0.187	0.109	0.677	0.577	0.607	0.529	0.499	0.647	0.459
		Left Tilted	0.062	0.276	0.191	0.278	0.153	0.083	0.529	0.493	0.491	0.421	0.423	0.531	0.298
	LTE Band 12_LAT	Right Cheek	0.119	0.106	0.452	0.104	0.336	0.228	0.677	0.559	0.561	0.453	0.451	0.675	0.683
		Right Tilted	0.069	0.135	0.349	0.120	0.314	0.158	0.553	0.503	0.518	0.362	0.347	0.538	0.541
		Left Cheek	0.071	0.257	0.257	0.227	0.187	0.109	0.585	0.485	0.515	0.437	0.407	0.555	0.367
		Left Tilted	0.084	0.276	0.191	0.278	0.153	0.083	0.551	0.515	0.513	0.443	0.445	0.553	0.320
	LTE Band 12_UAT	Right Cheek	0.551	0.106	0.452	0.104	0.336	0.228	1.109	0.991	0.993	0.885	0.883	1.107	1.115
		Right Tilted	0.609	0.135	0.349	0.120	0.314	0.158	1.093	1.043	1.058	0.902	0.887	1.078	1.081
		Left Cheek	0.534	0.257	0.257	0.227	0.187	0.109	1.048	0.948	0.978	0.900	0.870	1.018	0.830
		Left Tilted	0.480	0.276	0.191	0.278	0.153	0.083	0.947	0.911	0.909	0.839	0.841	0.949	0.716
LTE Band 26_LAT	Right Cheek	0.156	0.106	0.452	0.104	0.336	0.228	0.714	0.596	0.598	0.490	0.488	0.712	0.720	
	Right Tilted	0.040	0.135	0.349	0.120	0.314	0.158	0.524	0.474	0.489	0.333	0.318	0.509	0.512	
	Left Cheek	0.111	0.257	0.257	0.227	0.187	0.109	0.625	0.525	0.555	0.477	0.447	0.595	0.407	
	Left Tilted	0.091	0.276	0.191	0.278	0.153	0.083	0.558	0.522	0.520	0.450	0.452	0.560	0.327	
LTE Band 26_UAT	Right Cheek	1.012	0.106	0.452	0.104	0.336	0.228	1.570	1.452	1.454	1.346	1.344	1.568	1.576	
	Right Tilted	0.959	0.135	0.349	0.120	0.314	0.158	1.443	1.393	1.408	1.252	1.237	1.428	1.431	
	Left Cheek	1.047	0.257	0.257	0.227	0.187	0.109	1.561	1.461	1.491	1.413	1.383	1.531	1.343	
	Left Tilted	0.889	0.276	0.191	0.278	0.153	0.083	1.356	1.320	1.318	1.248	1.250	1.358	1.125	
LTE Band 30_LAT	Right Cheek	0.022	0.106	0.452	0.104	0.336	0.228	0.580	0.462	0.464	0.356	0.354	0.578	0.586	
	Right Tilted	0.013	0.135	0.349	0.120	0.314	0.158	0.497	0.447	0.462	0.306	0.291	0.482	0.485	
	Left Cheek	0.036	0.257	0.257	0.227	0.187	0.109	0.550	0.450	0.480	0.402	0.372	0.520	0.332	
	Left Tilted	0.014	0.276	0.191	0.278	0.153	0.083	0.481	0.445	0.443	0.373	0.375	0.483	0.250	
LTE Band 41_LAT	Right Cheek	0.075	0.106	0.452	0.104	0.336	0.228	0.633	0.515	0.517	0.409	0.407	0.631	0.639	
	Right Tilted	0.070	0.135	0.349	0.120	0.314	0.158	0.554	0.504	0.519	0.363	0.348	0.539	0.542	
	Left Cheek	0.093	0.257	0.257	0.227	0.187	0.109	0.607	0.507	0.537	0.459	0.429	0.577	0.389	
	Left Tilted	0.047	0.276	0.191	0.278	0.153	0.083	0.514	0.478	0.476	0.406	0.408	0.516	0.283	



15.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	7	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+2+7 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+5+7 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 2								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
GSM	GSM850_LAT	Front	0.596	0.075	0.130	0.049	0.289	0.018	0.801	0.934	0.960	0.689	0.663	0.775	0.903
		Back	0.440	0.080	0.158	0.101	0.349	0.019	0.678	0.890	0.869	0.539	0.560	0.699	0.808
		Left side	0.074	0.059	0.011	0.001	0.094	0.001	0.144	0.169	0.227	0.134	0.076	0.086	0.169
		Right side	0.235	0.007	0.041	0.030	0.011		0.283	0.276	0.253	0.242	0.265	0.306	0.246
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.277						0.277	0.277	0.277	0.277	0.277	0.277	0.277
	GSM850_UAT	Front	0.510	0.075	0.130	0.049	0.289	0.018	0.715	0.848	0.874	0.603	0.577	0.689	0.817
		Back	0.434	0.080	0.158	0.101	0.349	0.019	0.672	0.884	0.863	0.533	0.554	0.693	0.802
		Left side		0.059	0.011	0.001	0.094	0.001	0.070	0.095	0.153	0.060	0.002	0.012	0.095
		Right side		0.007	0.041	0.030	0.011		0.048	0.041	0.018	0.007	0.030	0.071	0.011
		Top side	0.274	0.228	0.126	0.053	0.188	0.022	0.628	0.515	0.690	0.524	0.349	0.453	0.484
		Bottom side							0.000	0.000	0.000	0.000	0.000	0.000	0.000
	GSM1900_LAT	Front	0.934	0.075	0.130	0.049	0.289	0.018	1.139	1.272	1.298	1.027	1.001	1.113	1.241
		Back	0.853	0.080	0.158	0.101	0.349	0.019	1.091	1.303	1.282	0.952	0.973	1.112	1.221
		Left side	0.043	0.059	0.011	0.001	0.094	0.001	0.113	0.138	0.196	0.103	0.045	0.055	0.138
		Right side	0.151	0.007	0.041	0.030	0.011		0.199	0.192	0.169	0.158	0.181	0.222	0.162
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.966						0.966	0.966	0.966	0.966	0.966	0.966	0.966
WCDMA	WCDMA II_LAT	Front	0.898	0.075	0.130	0.049	0.289	0.018	1.103	1.236	1.262	0.991	0.965	1.077	1.205
		Back	0.730	0.080	0.158	0.101	0.349	0.019	0.968	1.180	1.159	0.829	0.850	0.989	1.098
		Left side	0.038	0.059	0.011	0.001	0.094	0.001	0.108	0.133	0.191	0.098	0.040	0.050	0.133
		Right side	0.139	0.007	0.041	0.030	0.011		0.187	0.180	0.157	0.146	0.169	0.210	0.150
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.935						0.935	0.935	0.935	0.935	0.935	0.935	0.935
	WCDMA IV_LAT	Front	0.795	0.075	0.130	0.049	0.289	0.018	1.000	1.133	1.159	0.888	0.862	0.974	1.102
		Back	0.674	0.080	0.158	0.101	0.349	0.019	0.912	1.124	1.103	0.773	0.794	0.933	1.042
		Left side	0.021	0.059	0.011	0.001	0.094	0.001	0.091	0.116	0.174	0.081	0.023	0.033	0.116
		Right side	0.161	0.007	0.041	0.030	0.011		0.209	0.202	0.179	0.168	0.191	0.232	0.172
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	1.111						1.111	1.111	1.111	1.111	1.111	1.111	1.111
	WCDMA V_LAT	Front	0.578	0.075	0.130	0.049	0.289	0.018	0.783	0.916	0.942	0.671	0.645	0.757	0.885
		Back	0.492	0.080	0.158	0.101	0.349	0.019	0.730	0.942	0.921	0.591	0.612	0.751	0.860
		Left side	0.063	0.059	0.011	0.001	0.094	0.001	0.133	0.158	0.216	0.123	0.065	0.075	0.158
		Right side	0.254	0.007	0.041	0.030	0.011		0.302	0.295	0.272	0.261	0.284	0.325	0.265
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.368						0.368	0.368	0.368	0.368	0.368	0.368	0.368
WCDMA V_UAT	Front	0.537	0.075	0.130	0.049	0.289	0.018	0.742	0.875	0.901	0.630	0.604	0.716	0.844	
	Back	0.434	0.080	0.158	0.101	0.349	0.019	0.672	0.884	0.863	0.533	0.554	0.693	0.802	
	Left side		0.059	0.011	0.001	0.094	0.001	0.070	0.095	0.153	0.060	0.002	0.012	0.095	
	Right side		0.007	0.041	0.030	0.011		0.048	0.041	0.018	0.007	0.030	0.071	0.011	
	Top side	0.246	0.228	0.126	0.053	0.188	0.022	0.600	0.487	0.662	0.496	0.321	0.425	0.456	
	Bottom side							0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



WWAN Band	Exposure Position	1	2	3	4	5	7	1+2+3	1+4+5	1+2+5	1+2+7	1+4+7	1+3+4	1+5+7	
		WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 2	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
LTE	LTE Band 2_LAT	Front	1.086	0.075	0.130	0.049	0.289	0.018	1.291	1.424	1.450	1.179	1.153	1.265	1.393
		Back	0.857	0.080	0.158	0.101	0.349	0.019	1.095	1.307	1.286	0.956	0.977	1.116	1.225
		Left side	0.045	0.059	0.011	0.001	0.094	0.001	0.115	0.140	0.198	0.105	0.047	0.057	0.140
		Right side	0.159	0.007	0.041	0.030	0.011		0.207	0.200	0.177	0.166	0.189	0.230	0.170
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	1.159						1.159	1.159	1.159	1.159	1.159	1.159	1.159
	LTE Band 4_LAT	Front	1.061	0.075	0.130	0.049	0.289	0.018	1.266	1.399	1.425	1.154	1.128	1.240	1.368
		Back	0.891	0.080	0.158	0.101	0.349	0.019	1.129	1.341	1.320	0.990	1.011	1.150	1.259
		Left side	0.026	0.059	0.011	0.001	0.094	0.001	0.096	0.121	0.179	0.086	0.028	0.038	0.121
		Right side	0.186	0.007	0.041	0.030	0.011		0.234	0.227	0.204	0.193	0.216	0.257	0.197
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	1.189						1.189	1.189	1.189	1.189	1.189	1.189	1.189
	LTE Band 5_LAT	Front	0.550	0.075	0.130	0.049	0.289	0.018	0.755	0.888	0.914	0.643	0.617	0.729	0.857
		Back	0.500	0.080	0.158	0.101	0.349	0.019	0.738	0.950	0.929	0.599	0.620	0.759	0.868
		Left side	0.071	0.059	0.011	0.001	0.094	0.001	0.141	0.166	0.224	0.131	0.073	0.083	0.166
		Right side	0.292	0.007	0.041	0.030	0.011		0.340	0.333	0.310	0.299	0.322	0.363	0.303
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.376						0.376	0.376	0.376	0.376	0.376	0.376	0.376
	LTE Band 5_UAT	Front	0.540	0.075	0.130	0.049	0.289	0.018	0.745	0.878	0.904	0.633	0.607	0.719	0.847
		Back	0.441	0.080	0.158	0.101	0.349	0.019	0.679	0.891	0.870	0.540	0.561	0.700	0.809
		Left side		0.059	0.011	0.001	0.094	0.001	0.070	0.095	0.153	0.060	0.002	0.012	0.095
		Right side		0.007	0.041	0.030	0.011		0.048	0.041	0.018	0.007	0.030	0.071	0.011
		Top side	0.311	0.228	0.126	0.053	0.188	0.022	0.665	0.552	0.727	0.561	0.386	0.490	0.521
		Bottom side							0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 7_LAT	Front	0.479	0.075	0.130	0.049	0.289	0.018	0.684	0.817	0.843	0.572	0.546	0.658	0.786	
	Back	0.484	0.080	0.158	0.101	0.349	0.019	0.722	0.934	0.913	0.583	0.604	0.743	0.852	
	Left side	0.297	0.059	0.011	0.001	0.094	0.001	0.367	0.392	0.450	0.357	0.299	0.309	0.392	
	Right side	0.090	0.007	0.041	0.030	0.011		0.138	0.131	0.108	0.097	0.120	0.161	0.101	
	Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210	
	Bottom side	1.151						1.151	1.151	1.151	1.151	1.151	1.151	1.151	1.151
LTE Band 12_LAT	Front	0.470	0.075	0.130	0.049	0.289	0.018	0.675	0.808	0.834	0.563	0.537	0.649	0.777	
	Back	0.415	0.080	0.158	0.101	0.349	0.019	0.653	0.865	0.844	0.514	0.535	0.674	0.783	
	Left side	0.054	0.059	0.011	0.001	0.094	0.001	0.124	0.149	0.207	0.114	0.056	0.066	0.149	
	Right side	0.229	0.007	0.041	0.030	0.011		0.277	0.270	0.247	0.236	0.259	0.300	0.240	
	Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210	
	Bottom side	0.299						0.299	0.299	0.299	0.299	0.299	0.299	0.299	0.299
LTE Band 12_UAT	Front	0.143	0.075	0.130	0.049	0.289	0.018	0.348	0.481	0.507	0.236	0.210	0.322	0.450	
	Back	0.101	0.080	0.158	0.101	0.349	0.019	0.339	0.551	0.530	0.200	0.221	0.360	0.469	
	Left side		0.059	0.011	0.001	0.094	0.001	0.070	0.095	0.153	0.060	0.002	0.012	0.095	
	Right side		0.007	0.041	0.030	0.011		0.048	0.041	0.018	0.007	0.030	0.071	0.011	
	Top side	0.081	0.228	0.126	0.053	0.188	0.022	0.435	0.322	0.497	0.331	0.156	0.260	0.291	
	Bottom side							0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



WWAN Band	Exposure Position	1	2	3	4	5	7	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+2+7 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+5+7 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 2								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
LTE	LTE Band 26_LAT	Front	0.479	0.075	0.130	0.049	0.289	0.018	0.684	0.817	0.843	0.572	0.546	0.658	0.786
		Back	0.425	0.080	0.158	0.101	0.349	0.019	0.663	0.875	0.854	0.524	0.545	0.684	0.793
		Left side	0.049	0.059	0.011	0.001	0.094	0.001	0.119	0.144	0.202	0.109	0.051	0.061	0.144
		Right side	0.265	0.007	0.041	0.030	0.011		0.313	0.306	0.283	0.272	0.295	0.336	0.276
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.350						0.350	0.350	0.350	0.350	0.350	0.350	0.350
	LTE Band 26_UAT	Front	0.581	0.075	0.130	0.049	0.289	0.018	0.786	0.919	0.945	0.674	0.648	0.760	0.888
		Back	0.501	0.080	0.158	0.101	0.349	0.019	0.739	0.951	0.930	0.600	0.621	0.760	0.869
		Left side		0.059	0.011	0.001	0.094	0.001	0.070	0.095	0.153	0.060	0.002	0.012	0.095
		Right side		0.007	0.041	0.030	0.011		0.048	0.041	0.018	0.007	0.030	0.071	0.011
		Top side	0.334	0.228	0.126	0.053	0.188	0.022	0.688	0.575	0.750	0.584	0.409	0.513	0.544
		Bottom side							0.000	0.000	0.000	0.000	0.000	0.000	0.000
	LTE Band 30_LAT	Front	0.131	0.075	0.130	0.049	0.289	0.018	0.336	0.469	0.495	0.224	0.198	0.310	0.438
		Back	0.119	0.080	0.158	0.101	0.349	0.019	0.357	0.569	0.548	0.218	0.239	0.378	0.487
		Left side	0.062	0.059	0.011	0.001	0.094	0.001	0.132	0.157	0.215	0.122	0.064	0.074	0.157
		Right side	0.020	0.007	0.041	0.030	0.011		0.068	0.061	0.038	0.027	0.050	0.091	0.031
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	0.186						0.186	0.186	0.186	0.186	0.186	0.186	0.186
	LTE Band 41_LAT	Front	0.598	0.075	0.130	0.049	0.289	0.018	0.803	0.936	0.962	0.691	0.665	0.777	0.905
		Back	0.697	0.080	0.158	0.101	0.349	0.019	0.935	1.147	1.126	0.796	0.817	0.956	1.065
		Left side	0.277	0.059	0.011	0.001	0.094	0.001	0.347	0.372	0.430	0.337	0.279	0.289	0.372
		Right side	0.047	0.007	0.041	0.030	0.011		0.095	0.088	0.065	0.054	0.077	0.118	0.058
		Top side		0.228	0.126	0.053	0.188	0.022	0.354	0.241	0.416	0.250	0.075	0.179	0.210
		Bottom side	1.181						1.181	1.181	1.181	1.181	1.181	1.181	1.181



15.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	7	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+2+7 Summed 1g SAR (W/kg)	1+4+7 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	1+5+7 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 2								
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)								
GSM	GSM850_LAT	Front	0.308	0.044	0.063	0.033	0.229	0.006	0.415	0.570	0.581	0.358	0.347	0.404	0.543
		Back	0.250	0.046	0.067	0.064	0.240	0.010	0.363	0.554	0.536	0.306	0.324	0.381	0.500
	GSM850_UAT	Front	0.342	0.044	0.063	0.033	0.229	0.006	0.449	0.604	0.615	0.392	0.381	0.438	0.577
		Back	0.284	0.046	0.067	0.064	0.240	0.010	0.397	0.588	0.570	0.340	0.358	0.415	0.534
	GSM1900_LAT	Front	0.434	0.044	0.063	0.033	0.229	0.006	0.541	0.696	0.707	0.484	0.473	0.530	0.669
		Back	0.381	0.046	0.067	0.064	0.240	0.010	0.494	0.685	0.667	0.437	0.455	0.512	0.631
WCDMA	WCDMA II_LAT	Front	0.534	0.044	0.063	0.033	0.229	0.006	0.641	0.796	0.807	0.584	0.573	0.630	0.769
		Back	0.477	0.046	0.067	0.064	0.240	0.010	0.590	0.781	0.763	0.533	0.551	0.608	0.727
	WCDMA IV_LAT	Front	0.443	0.044	0.063	0.033	0.229	0.006	0.550	0.705	0.716	0.493	0.482	0.539	0.678
		Back	0.329	0.046	0.067	0.064	0.240	0.010	0.442	0.633	0.615	0.385	0.403	0.460	0.579
	WCDMA V_LAT	Front	0.298	0.044	0.063	0.033	0.229	0.006	0.405	0.560	0.571	0.348	0.337	0.394	0.533
		Back	0.306	0.046	0.067	0.064	0.240	0.010	0.419	0.610	0.592	0.362	0.380	0.437	0.556
WCDMA V_UAT	Front	0.343	0.044	0.063	0.033	0.229	0.006	0.450	0.605	0.616	0.393	0.382	0.439	0.578	
	Back	0.287	0.046	0.067	0.064	0.240	0.010	0.400	0.591	0.573	0.343	0.361	0.418	0.537	
LTE	LTE Band 2_LAT	Front	0.550	0.044	0.063	0.033	0.229	0.006	0.657	0.812	0.823	0.600	0.589	0.646	0.785
		Back	0.436	0.046	0.067	0.064	0.240	0.010	0.549	0.740	0.722	0.492	0.510	0.567	0.686
	LTE Band 4_LAT	Front	0.504	0.044	0.063	0.033	0.229	0.006	0.611	0.766	0.777	0.554	0.543	0.600	0.739
		Back	0.425	0.046	0.067	0.064	0.240	0.010	0.538	0.729	0.711	0.481	0.499	0.556	0.675
	LTE Band 5_LAT	Front	0.307	0.044	0.063	0.033	0.229	0.006	0.414	0.569	0.580	0.357	0.346	0.403	0.542
		Back	0.312	0.046	0.067	0.064	0.240	0.010	0.425	0.616	0.598	0.368	0.386	0.443	0.562
	LTE Band 5_UAT	Front	0.380	0.044	0.063	0.033	0.229	0.006	0.487	0.642	0.653	0.430	0.419	0.476	0.615
		Back	0.322	0.046	0.067	0.064	0.240	0.010	0.435	0.626	0.608	0.378	0.396	0.453	0.572
	LTE Band 7_LAT	Front	0.430	0.044	0.063	0.033	0.229	0.006	0.537	0.692	0.703	0.480	0.469	0.526	0.665
		Back	0.515	0.046	0.067	0.064	0.240	0.010	0.628	0.819	0.801	0.571	0.589	0.646	0.765
	LTE Band 12_LAT	Front	0.252	0.044	0.063	0.033	0.229	0.006	0.359	0.514	0.525	0.302	0.291	0.348	0.487
		Back	0.244	0.046	0.067	0.064	0.240	0.010	0.357	0.548	0.530	0.300	0.318	0.375	0.494
	LTE Band 12_UAT	Front	0.074	0.044	0.063	0.033	0.229	0.006	0.181	0.336	0.347	0.124	0.113	0.170	0.309
		Back	0.063	0.046	0.067	0.064	0.240	0.010	0.176	0.367	0.349	0.119	0.137	0.194	0.313
	LTE Band 26_LAT	Front	0.256	0.044	0.063	0.033	0.229	0.006	0.363	0.518	0.529	0.306	0.295	0.352	0.491
		Back	0.260	0.046	0.067	0.064	0.240	0.010	0.373	0.564	0.546	0.316	0.334	0.391	0.510
	LTE Band 26_UAT	Front	0.395	0.044	0.063	0.033	0.229	0.006	0.502	0.657	0.668	0.445	0.434	0.491	0.630
		Back	0.348	0.046	0.067	0.064	0.240	0.010	0.461	0.652	0.634	0.404	0.422	0.479	0.598
	LTE Band 30_LAT	Front	0.055	0.044	0.063	0.033	0.229	0.006	0.162	0.317	0.328	0.105	0.094	0.151	0.290
		Back	0.049	0.046	0.067	0.064	0.240	0.010	0.162	0.353	0.335	0.105	0.123	0.180	0.299
LTE Band 41_LAT	Front	0.229	0.044	0.063	0.033	0.229	0.006	0.336	0.491	0.502	0.279	0.268	0.325	0.464	
	Back	0.191	0.046	0.067	0.064	0.240	0.010	0.304	0.495	0.477	0.247	0.265	0.322	0.441	

15.4 Product Specific

WWAN Band		Exposure Position	1	2	3	4	5	7	1+4+5 Summed 10g SAR (W/kg)
			WWAN	2.4GHz WLAN Ant 1	2.4GHz WLAN Ant 2	5GHz WLAN Ant 1	5GHz WLAN Ant 2	Bluetooth Ant 2	
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
LTE	LTE Band 7	Front	-	-	-	0.426	1.393	-	1.819
		Back	-	-	-	0.768	1.791	-	2.559
		Left side	-	-	-	0.030	0.260	-	0.290
		Right side	-	-	-	0.098	0.020	-	0.118
		Top side	-	-	-	0.419	0.521	-	0.940
		Bottom side	2.947	-	-	-	-	-	2.947

Remark:

1. According to KDB 648474 D04v01r03, for WWAN / 2.4GHz WLAN SAR ("-") was excluded, due to Hotspot SAR was < 1.2W/kg.
2. According to KDB 941225 D06 v02r01, for 5GHz WLAN SAR ("-") was excluded, due to transmitting antenna located larger 25mm from that surface or edge



16. Supplemental tuner tests results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 96 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
3. The device supports both LTE B12 and LTE B17. Since the supported frequency span for LTE Band17 falls completely within the supported frequency span for LTE B12, and both bands have the same target power and both LTE bands share the same transmission path, therefore standalone SAR was only assessed for LTE Band 12. The single point SAR time-sweep measurements were treated independently for each supported ACL frequency band. For the LTE Band 17 single point SAR measurement selected the highest measured SAR configuration and exposure condition of LTE Band 12. and the number of required single point measurements at least 11 apply to the band.
4. The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).
5. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.



16.1 Supplemental Head SAR results

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 24)	0	9	18	27	36	45	54	63	72	81	90
WCDMA B2	RMC12.2Kbps	1852.4	9262	N/A	N/A	Right Cheek	0 mm	0.065	0.0970	0.0732	0.0768	0.0849	0.0951	0.0937	0.0781	0.0840	0.0920	0.0958	0.0769	0.0866
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
WCDMA B4	RMC12.2Kbps	1732.6	1413	N/A	N/A	Right Cheek	0 mm	0.056	0.0798	0.0486	0.0701	0.0621	0.0472	0.0401	0.0781	0.0574	0.0561	0.0424	0.0784	0.0604
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
WCDMA B5	RMC12.2Kbps	846.6	4233	N/A	N/A	Right Cheek	0 mm	0.176	0.203	0.088	0.2	0.183	0.122	0.088	0.198	0.161	0.15	0.114	0.171	0.17
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
LTE B2	QPSK	1880	18900	1	0	Right Cheek	0 mm	0.059	0.092	0.082	0.085	0.054	0.076	0.084	0.086	0.05	0.065	0.084	0.087	0.06
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
LTE B4	QPSK	1732.5	20175	1	0	Right Cheek	0 mm	0.082	0.113	0.068	0.691	0.094	0.0782	0.063	0.0672	0.0781	0.0779	0.0651	0.583	0.104
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
LTE B5	QPSK	836.5	20525	1	0	Right Cheek	0 mm	0.15	0.19	0.098	0.089	0.16	0.138	0.102	0.118	0.091	0.111	0.112	0.109	0.111
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
LTE B12	QPSK	707.5	23095	1	49	Right Cheek	0 mm	0.097	0.115	0.045	0.085	0.115	0.013	0.029	0.046	0.018	0.01	0.038	0.058	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
LTE B17	QPSK	710	23790	1	0	Right Cheek	0 mm	0.097	0.116	0.033	0.061	0.099	0.006	0.022	0.06	0.03	0.002	0.023	0.064	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
LTE B26	QPSK	831.5	26865	1	0	Right Cheek	0 mm	0.121	0.154	0.105	0.097	0.07	0.148	0.119	0.105	0.12	0.07	0.094	0.104	



16.2 Supplemental Body SAR results

Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 1)	0	9	18	27	36	45	54	63	72	81	90
WCDMA B2	RMC12.2Kbps	1852.4	9262	N/A	N/A	Bottom Side	10 mm	0.711	1.229	0.979	1.022	1.115	1.19	1.141	1.04	1.095	1.182	1.183	1.019	1.129
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 35)	1	10	19	28	37	46	55	64	73	82	91
WCDMA B4	RMC12.2Kbps	1732.6	1413	N/A	N/A	Bottom Side	10 mm	0.833	1.346	0.89	1.09	1.068	0.867	0.764	1.332	0.966	0.984	0.801	1.267	1.063
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 47)	2	11	20	29	38	47	56	65	74	83	92
WCDMA B5	RMC12.2Kbps	836.4	4182	N/A	N/A	Front	10 mm	0.515	0.837	0.44	0.734	0.702	0.529	0.428	0.837	0.569	0.633	0.559	0.54	0.618
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 1)	3	12	21	30	39	48	57	66	75	84	93
LTE B2	QPSK	1860	18700	1	0	Bottom Side	10 mm	1.04	1.775	1.765	1.75	1.44	1.671	1.678	1.763	1.387	1.591	1.723	1.675	1.487
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 46)	4	13	22	31	40	49	58	67	76	85	94
LTE B4	QPSK	1732.5	20175	1	0	Bottom Side	10 mm	1.06	1.704	1.182	1.204	1.397	1.315	1.115	1.167	1.152	1.261	1.138	1.055	1.606
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 47)	5	14	23	32	41	50	59	68	77	86	95
LTE B5	QPSK	836.5	20525	1	0	Front	10 mm	0.432	0.736	0.464	0.432	0.635	0.601	0.479	0.56	0.373	0.481	0.517	0.519	0.446
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 24)	6	15	24	33	42	51	60	69	78	87	
LTE B12	QPSK	707.5	23095	1	49	Front	10 mm	0.382	0.662	0.316	0.537	0.659	0.11	0.214	0.306	0.137	0.08	0.265	0.377	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 2)	7	16	25	34	43	52	61	70	79	88	
LTE B17	QPSK	710	23790	1	0	Front	10 mm	0.329	0.611	0.223	0.377	0.562	0.061	0.156	0.369	0.194	0.034	0.161	0.391	
Mode	Service/Modulation	Frequency (MHz)	Channel	RB Size	RB Offset	Test Position	Spacing	Measured 1g SAR (W/kg)	Average Value of Time Sweep (W/kg)											
									Auto-Tune (State 47)	8	17	26	35	44	53	62	71	80	89	
LTE B26	QPSK	831.5	26865	1	0	Front	10 mm	0.373	0.612	0.486	0.471	0.355	0.604	0.545	0.501	0.576	0.308	0.429	0.496	

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17. Uncertainty Assessment

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

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

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

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	1/k ^(b)	1/√3	1/√6	1/√2

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

(b) κ is the coverage factor

Table 17.1. Standard Uncertainty for Assumed Distribution

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

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



Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.00	N	1	1	1	6.0	6.0
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	1.00	R	1.732	1	1	0.6	0.6
Linearity	4.70	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	2.90	R	1.732	1	1	1.7	1.7
Max. SAR Eval.	2.00	R	1.732	1	1	1.2	1.2
Test Sample Related							
Device Positioning	3.03	N	1	1	1	3.0	3.0
Device Holder	3.60	N	1	1	1	3.6	3.6
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.10	R	1.732	1	1	3.5	3.5
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.71	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.71	1.7	1.5
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						11.6%	11.6%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						23.2%	23.1%

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



Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Linearity	4.70	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Max. SAR Eval.	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Positioning	3.03	N	1	1	1	3.0	3.0
Device Holder	3.60	N	1	1	1	3.6	3.6
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Phantom and Setup							
Phantom Uncertainty	6.60	R	1.732	1	1	3.8	3.8
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.71	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.71	2.3	2.0
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.71	1.1	1.0
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.71	1.7	1.5
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						12.7%	12.6%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						25.4%	25.3%

Table 17.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz



18. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 248227 D01 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 D03 v01r04, "Evaluation and Approval Considerations for Handsets with Specific Wireless Charging Battery Covers" Dec 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.



Appendix A. Plots of System Performance Check

The plots are shown as follows.



Appendix B. Plots of SAR Measurement

The plots are shown as follows.



Appendix C. DASYS Calibration Certificate

The DASYS calibration certificates are shown as follows.