



# FCC SAR Test Report

APPLICANT : OnePlus Technology (shenzhen) Co., Ltd  
EQUIPMENT : Smart Phone  
BRAND NAME : ONEPLUS  
MODEL NAME : ONEPLUS A5010  
MARKETING NAME : ONEPLUS 5T  
FCC ID : 2ABZ2-A5010  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013

We, Sporton International (Shenzhen) 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Mark Qu / Manager

**Sporton International (Shenzhen) Inc.**  
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Guangdong Province 518055 China



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### Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA782510-01	Rev. 01	Initial issue of report	Oct. 23, 2017



# 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for OnePlus Technology (shenzhen) Co., Ltd, Smart Phone, ONEPLUS A5010, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	1.22	0.63	0.62	1.50
		GSM1900	1.35	0.95	0.37	
	WCDMA	Band V	1.18	0.77	0.37	
		Band IV	1.12	1.04	0.68	
		Band II	1.11	<b>1.25</b>	0.48	
	CDMA2000	BC0	<b>1.38</b>	0.35	0.19	
	LTE	Band 12/17	1.17	0.49	0.25	
		Band 5	1.28	0.80	0.39	
		Band 26	1.36	0.87	0.37	
		Band 4	1.22	0.86	0.67	
		Band 66	1.34	1.14	<b>0.76</b>	
		Band 25/2	1.17	1.16	0.62	
		Band 30	1.27	0.74	0.36	
		Band 7	1.22	1.14	0.50	
Band 41/38		1.37	0.79	0.24		
DTS	WLAN	2.4GHz WLAN	1.15	0.23	0.12	1.42
NII		5GHz WLAN	1.24	0.35	0.12	1.50
DSS	Bluetooth	Bluetooth		<0.10	<0.10	1.28

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM1900	3.03	3.89
	WCDMA	Band IV	3.45	
		Band II	<b>3.61</b>	
	LTE	Band 4	3.01	
		Band 66	3.11	
		Band 25/2	3.34	
NII	WLAN	5GHz WLAN	1.01	

Date of Testing: 2017/10/5~2017/10/17

**Remark:** This device supports both LTE B2/17/38 and B25/12/41. Since the supported frequency span for LTE B2/17/38 falls completely within the supports frequency span for LTE B25/12/41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25/12/41.

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



## 2. Administration Data

Testing Laboratory	
Test Site	Sporton International (Shenzhen) Inc.
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

Applicant	
Company Name	OnePlus Technology (shenzhen) Co., Ltd
Address	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

Manufacturer	
Company Name	OnePlus Technology (shenzhen) Co., Ltd
Address	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

## 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	Smart Phone
Brand Name	ONEPLUS
Model Name	ONEPLUS A5010
Marketing Name	ONEPLUS 5T
FCC ID	2ABZ2-A5010
IMEI Code	Top Antenna: SIM1: 866817030002034 SIM2: 866817030003685 Bottom Antenna: SIM1: 866817030002018 SIM2: 866817030003669
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 CDMA2000 BC0: 824.7 MHz ~ 848.31 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 25: 1850.7 MHz ~ 1914.3 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: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ CDMA2000 : 1xRTT/1xEv-Do(Rev.0)/1xEv-Do(Rev.A) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v3.0+EDR, Bluetooth v4.0 LE, Bluetooth v4.1 LE, Bluetooth v4.2 LE, Bluetooth v5.0 LE NFC:ASK
HW Version	EC017
SW Version	oxygen version 4.7
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Production Unit
Remark:	



1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP) and LTE supports VoLTE operation.
2. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 33.
3. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
4. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
5. This device has two antennas. The primary cellular antenna is located on the bottom edge of the device and the secondary cellular antenna is located on the top edge of the device and can't transmit simultaneously.
6. There are totally three power reduction levels of WWAN Antenna. Reduced power 1 is for WWAN at top antenna, reduced power 2 is for WWAN top antenna +WLAN simultaneous transmission at WWAN top antenna, and reduced power 3 is for hotspot mode at bottom antenna, detail descriptions of the power reduction mechanism are included in the operational description.
7. For WLAN transmitter  
Head exposure conditions:  
Power reduction for WLAN 2.4GHz Ant. 1, WLAN 5GHz MIMO mode: While the device WLAN is transmitting simultaneously with the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off
8. For WWAN transmitter (3 sets of power reduction levels).
  - a) Head exposure conditions:  
Reduced power level 1 – GSM 850/1900, WCDMA Band 2/4/5, CDMA BC0, LTE Band 2/4/5/7/12/17/25/26/30/38/41/66, LTE Uplink CA CA\_7C and CA\_41C. While the device WWAN is transmitting at the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off, power reduction enabled for those bands.  
  
Reduced power level 2 – GSM 850/1900, WCDMA Band 2/4/5, CDMA BC0, LTE Band 2/4/5/7/12/17/25/26/30/38/41/66, LTE Uplink CA CA\_7C and CA\_41C.  
While the device WLAN is transmitting simultaneously with the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off, power reduction enabled for those bands.
  - b) Hotspot exposure condition  
Reduced power level 3 – GSM 1900, WCDMA Band 2/4, LTE Band 2/4/7/25/30/66  
While the device WWAN is transmitting at the WWAN Bottom antenna, and hotspot mode is enabled, power reduction enabled for those bands
9. WLAN 5GHz can transmit in MIMO antenna mode only, and it has no SISO antenna mode.
10. WLAN 2.4GHz can transmit in SISO antenna mode only when transmit simultaneously with WWAN.
11. This device implements antenna tuning techniques for several WWAN operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the GSM, CDMA2000, 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 section16.



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																																					
FCC ID	2ABZ2-A5010																																																																				
Equipment Name	Smart 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 25: 1850.7 MHz ~ 1914.3 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: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz																																																																				
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz 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 LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																																				
Uplink modulations used	QPSK, 16QAM and 64QAM																																																																				
LTE Voice / Data requirements	Voice and Data																																																																				
LTE MPR permanently built-in by design	<p style="text-align: center;"><b>Table 6.2.3.3-1: Maximum Power Reduction (MPR) for Power Class 3</b></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>QPSK</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 2</td> </tr> </tbody> </table> <p style="text-align: center;"><b>Table 6.2.3_3.3-1: Maximum Power Reduction (MPR) for Power Class 3</b></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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 3</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth configuration [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
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16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																														
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																														
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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 Release Version	R11, Cat 12																																																																				
CA Support	Yes, Uplink and Downlink																																																																				
Power reduction applied to satisfy SAR compliance	Yes, 1. Head exposure conditions: Reduced power level 1 –LTE Band 2/4/5/7/12/17/25/26/30/38/41/66, LTE Uplink CA CA_7C and CA_41C. While the device WWAN is transmitting at the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off, power reduction enabled for those bands. 2. Reduced power level 2 –LTE Band 2/4/5/7/12/17/25/26/30/38/41/66, LTE Uplink CA CA_7C and CA_41C. While the device WLAN is transmitting simultaneously with the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off, power reduction enabled for those bands. 3. Hotspot exposure condition																																																																				





	Reduced power level 3 –LTE Band 2/4/7/25/30/66 While the device WWAN is transmitting at the WWAN Bottom antenna, and hotspot mode is enabled, power reduction enabled for those bands
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	(1) This device supports LTE Carrier Aggregation (CA) in the uplink for LTE B7/41 with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. (2) This device supports maximum of 2 and 3 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905



LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 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	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
L	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
H	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

## **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

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

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

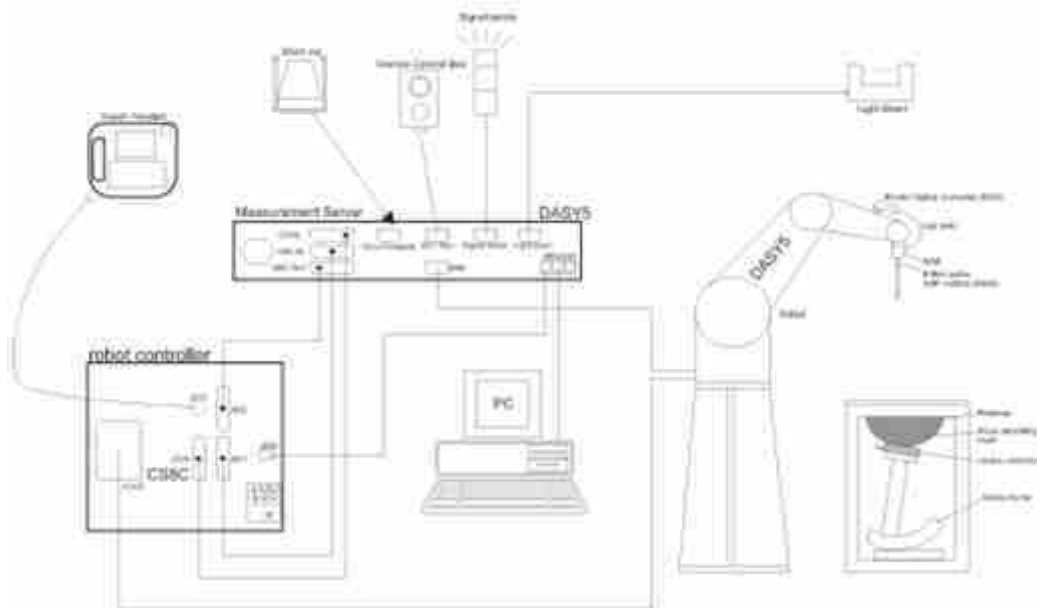
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

## 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.

**<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 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

**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 dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
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: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm $2 - 3$ GHz: $\leq 5$ mm*	$3 - 4$ GHz: $\leq 5$ mm* $4 - 6$ GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	$3 - 4$ GHz: $\leq 4$ mm $4 - 5$ GHz: $\leq 3$ mm $5 - 6$ GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	$3 - 4$ GHz: $\leq 3$ mm $4 - 5$ GHz: $\leq 2.5$ mm $5 - 6$ GHz: $\leq 2$ mm
		$\Delta z_{Zoom}(n>1)$ : between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	$\geq 30$ mm	$3 - 4$ GHz: $\geq 28$ mm $4 - 5$ GHz: $\geq 25$ mm $5 - 6$ GHz: $\geq 22$ mm	
Note: $\delta$ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the reported SAR from the area scan based I-g SAR estimation procedures of KDB 447498 is $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

### 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	1099	2016/11/21	2017/11/20
SPEAG	835MHz System Validation Kit	D835V2	4d162	2016/11/22	2017/11/21
SPEAG	1750MHz System Validation Kit	D1750V2	1137	2017/6/5	2018/6/4
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	2016/11/24	2017/11/23
SPEAG	2300MHz System Validation Kit	D2300V2	1006	2017/1/25	2018/1/24
SPEAG	2450MHz System Validation Kit	D2450V2	908	2017/3/21	2018/3/20
SPEAG	2600MHz System Validation Kit	D2600V2	1070	2016/11/24	2017/11/23
SPEAG	5GHz System Validation Kit	D5GHZV2	1113	2016/12/13	2017/12/12
SPEAG	Data Acquisition Electronics	DAE4	1386	2017/7/20	2018/7/19
SPEAG	Data Acquisition Electronics	DAE4	1338	2016/11/22	2017/11/21
SPEAG	Data Acquisition Electronics	DAE4	1303	2016/11/22	2017/11/21
SPEAG	Data Acquisition Electronics	DAE4	1437	2017/9/15	2018/9/14
SPEAG	Dosimetric E-Field Probe	EX3DV4	3958	2016/12/12	2017/12/11
SPEAG	Dosimetric E-Field Probe	EX3DV4	3642	2017/9/25	2018/9/24
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	2016/11/28	2017/11/27
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	2016/11/28	2017/11/27
SPEAG	SAM Twin Phantom	QD000P40CD	TP-1670	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CD	TP-1671	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CD	TP-1795	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CD	TP-1753	NCR	NCR
SPEAG	SAM Twin Phantom	QD000P40CD	TP-1754	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201300653	2017/7/19	2018/7/18
Anritsu	Radio communication analyzer	MT8821C	6201692204	2017/3/29	2018/3/28
Agilent	Wireless Communication Test Set	E5515C	MY50267224	2017/9/12	2018/9/11
Agilent	ENA Series Network Analyzer	E5071C	MY46317418	2016/12/5	2017/12/4
Speag	Dielectric Assessment KIT	DAK-3.5	1071	2016/11/23	2017/11/22
R&S	Signal Generator	N5181A	MY50145381	2017/1/3	2018/1/2
R&S	Bluetooth Tester	CBT	100963	2017/1/3	2018/1/2
Anritsu	Power Sensor	MA2411B	1306099	2017/1/3	2018/1/2
Anritsu	Power Meter	ML2495A	1349001	2017/1/3	2018/1/2
Anritsu	Power Sensor	MA2411B	1207253	2017/1/3	2018/1/2
Anritsu	Power Meter	ML2495A	1218010	2017/1/3	2018/1/2
R&S	Spectrum Analyzer	FSP7	100818	2017/7/19	2018/7/18
LKM Electronic	Hygrometer	DTM3000	3241	2017/7/21	2018/7/20
Anymetre	Thermo-Hygrometer	JR593	2015030904	2017/4/22	2018/4/21
Anymetre	Thermo-Hygrometer	JR593	2015030903	2017/1/6	2018/1/5
Anymetre	Thermo-Hygrometer	JR593	2015102801	2017/1/6	2018/1/5
ARRA	Power Divider	A3200-2	N/A	Note	
PASTERNAK	Dual Directional Coupler	PE2214-10	N/A	Note	
Agilent	Dual Directional Coupler	778D	50422	Note	
MCL	Attenuation1	BW-S10W5	N/A	Note	
Weinschel	Attenuation2	3M-20	N/A	Note	
Zhongjilianhe	Attenuation3	MVE2214-03	N/A	Note	
AR	Amplifier	5S1G4	333096	Note	
mini-circuits	Amplifier	ZVE-3W-83+	162601250	Note	

**Note:**

Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check 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
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
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 <sub>r</sub> )	Conductivity Target (σ)	Permittivity Target (ε <sub>r</sub> )	Delta (σ) (%)	Delta (ε <sub>r</sub> ) (%)	Limit (%)	Date
750	Head	22.5	0.886	41.534	0.89	41.90	-0.45	-0.87	±5	2017/10/6
835	Head	22.5	0.915	41.980	0.90	41.50	1.67	1.16	±5	2017/10/5
835	Head	22.8	0.885	39.608	0.90	41.50	-1.67	-4.56	±5	2017/10/10
835	Head	22.8	0.927	42.674	0.90	41.50	3.00	2.83	±5	2017/10/13
1750	Head	22.4	1.406	41.525	1.37	40.10	2.63	3.55	±5	2017/10/9
1750	Head	22.6	1.404	41.634	1.37	40.10	2.48	3.83	±5	2017/10/14
1900	Head	22.6	1.448	39.000	1.40	40.00	3.43	-2.50	±5	2017/10/7
1900	Head	22.5	1.445	40.021	1.40	40.00	3.21	0.05	±5	2017/10/14
2300	Head	22.5	1.689	38.800	1.67	39.50	1.14	-1.77	±5	2017/10/9
2450	Head	22.5	1.871	39.909	1.80	39.20	3.94	1.81	±5	2017/10/6
2450	Head	22.7	1.870	39.908	1.80	39.20	3.89	1.81	±5	2017/10/17
2600	Head	22.4	1.995	40.438	1.96	39.00	1.79	3.69	±5	2017/10/5
5250	Head	22.2	4.601	36.866	4.71	35.90	-2.31	2.69	±5	2017/10/6
5250	Head	22.6	4.599	36.837	4.71	35.90	-2.36	2.61	±5	2017/10/17
5600	Head	22.2	4.948	36.364	5.07	35.50	-2.41	2.43	±5	2017/10/6
5600	Head	22.6	4.945	36.333	5.07	35.50	-2.47	2.35	±5	2017/10/17
5750	Head	22.2	5.114	36.165	5.22	35.40	-2.03	2.16	±5	2017/10/6
5750	Head	22.6	5.111	36.138	5.22	35.40	-2.09	2.08	±5	2017/10/17
750	Body	22.4	0.970	54.821	0.96	55.50	1.04	-1.22	±5	2017/10/9
835	Body	22.5	1.000	54.086	0.97	55.20	3.09	-2.02	±5	2017/10/8
835	Body	22.9	0.971	56.000	0.97	55.20	0.10	1.45	±5	2017/10/11
835	Body	22.4	0.998	54.379	0.97	55.20	2.89	-1.49	±5	2017/10/12
1750	Body	22.7	1.515	55.246	1.49	53.40	1.68	3.46	±5	2017/10/11
1900	Body	22.9	1.532	52.397	1.52	53.30	0.79	-1.69	±5	2017/10/10
2300	Body	22.4	1.764	53.765	1.81	52.90	-2.54	1.64	±5	2017/10/10
2450	Body	22.6	1.939	53.636	1.95	52.70	-0.56	1.78	±5	2017/10/7
2600	Body	22.8	2.201	50.729	2.16	52.50	1.90	-3.37	±5	2017/10/10
5250	Body	22.5	5.495	49.145	5.36	48.90	2.52	0.50	±5	2017/10/8
5600	Body	22.5	5.963	48.567	5.77	48.50	3.34	0.14	±5	2017/10/8
5750	Body	22.5	6.177	48.313	5.94	48.30	3.99	0.03	±5	2017/10/8



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.

<1g SAR>

Table with 11 columns: 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 (%). It contains 35 rows of test data.



**<10g SAR>**

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2017/10/11	1750	Body	250	1137	3642	1338	4.97	19.70	19.88	0.91
2017/10/10	1900	Body	250	5d182	3642	1338	5.19	21.30	20.76	-2.54
2017/10/10	2600	Body	250	1070	3819	1303	5.92	25.40	23.68	-6.77
2017/10/8	5250	Body	100	1113	3935	1437	2.25	21.50	22.5	4.65
2017/10/8	5600	Body	100	1113	3935	1437	2.41	22.60	24.1	6.64

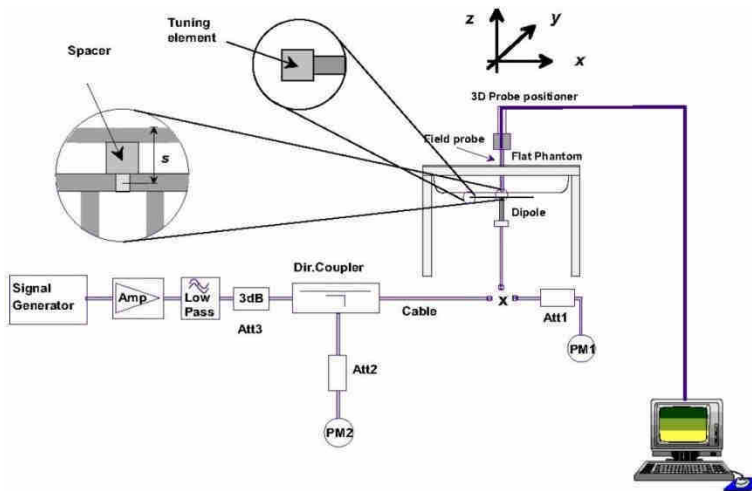


Fig 8.3.1 System Performance Check Setup



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.

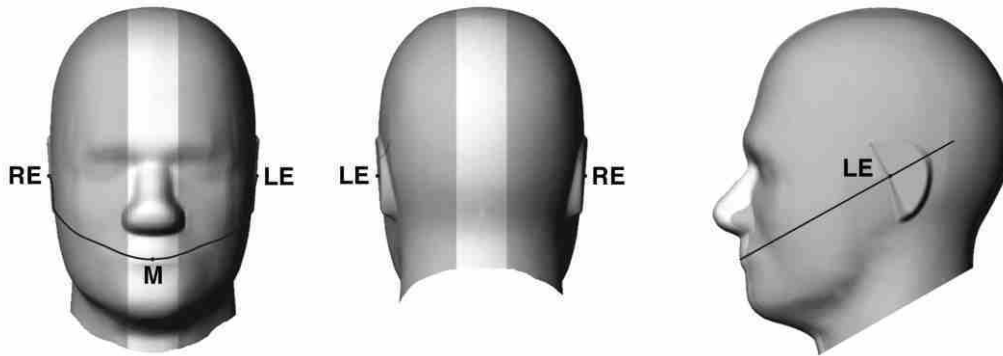


Fig 9.1.1 Front, back, and side views of SAM twin phantom

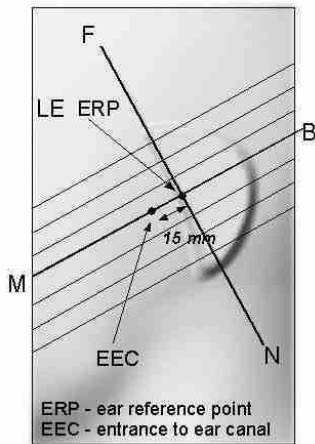


Fig 9.1.2 Close-up side view of phantom showing the ear region.

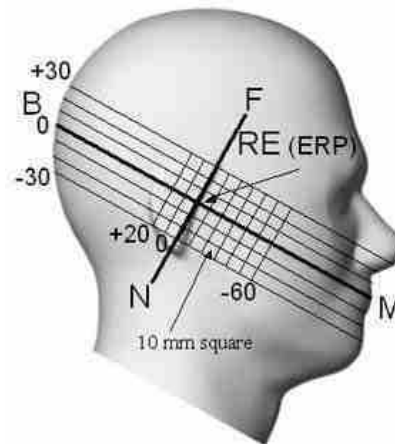


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

**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.

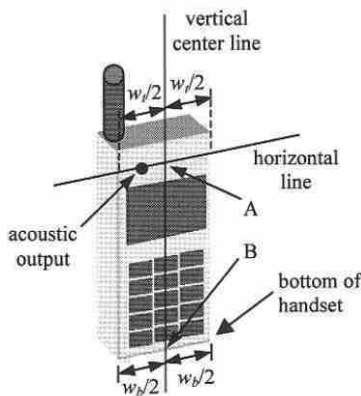


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case"

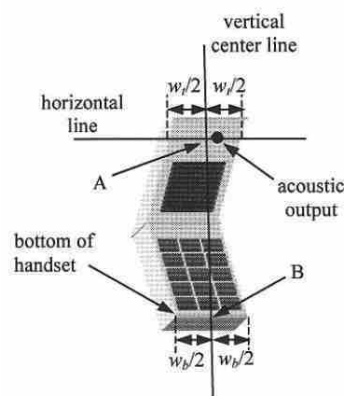


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

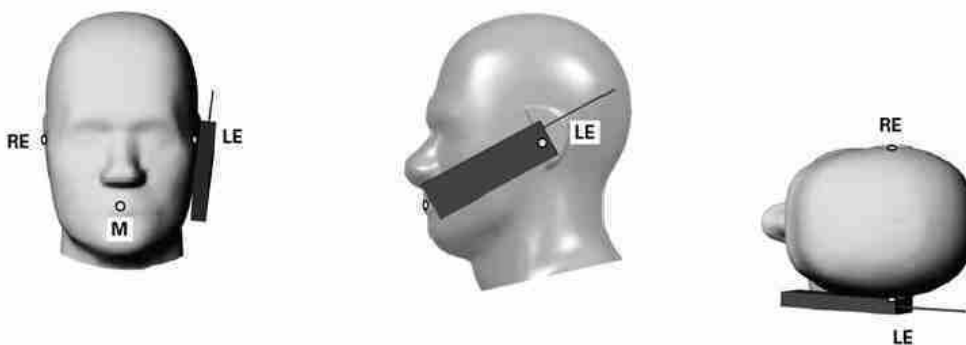


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

**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

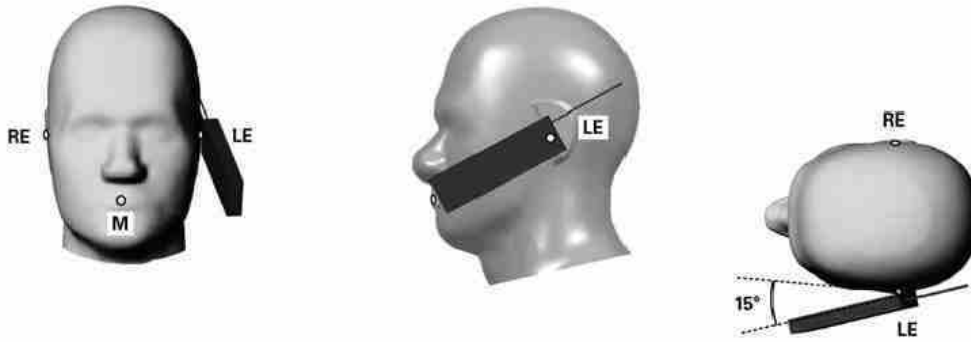


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

## 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  $> 1.2 \text{ W/kg}$ , the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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

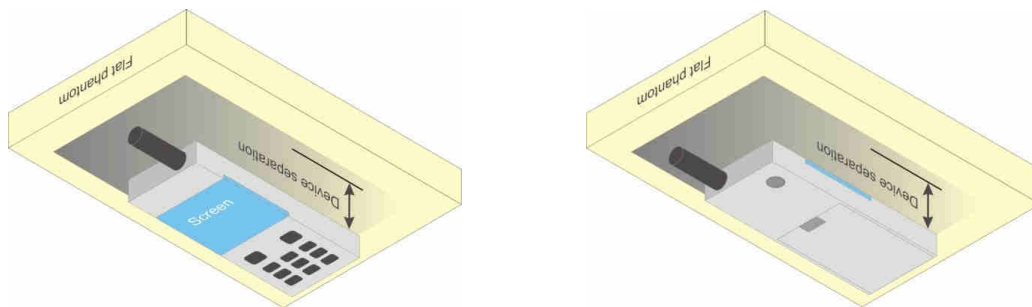


Fig 9.4 Body Worn Position

## 11.5 Product Specific 10g SAR Exposure

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

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at  $\leq 25 \text{ mm}$  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  $> 1.2 \text{ W/kg}$ .



### **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  $\geq$  9 cm x 5 cm) are based on a composite test separation distance of 10 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>

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

### <Full Power>

GSM850 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.05	32.12	31.95	32.50	23.05	23.12	22.95	23.50
GPRS 1 Tx slot	32.03	32.09	31.94	32.50	23.03	23.09	22.94	23.50
GPRS 2 Tx slots	30.54	30.72	30.58	31.00	24.54	24.72	24.58	25.00
GPRS 3 Tx slots	28.81	29.01	28.85	29.50	24.55	24.75	24.59	25.24
GPRS 4 Tx slots	27.22	27.31	27.26	27.50	24.22	24.31	24.26	24.50
EDGE 1 Tx slot	26.42	26.47	26.55	27.00	17.42	17.47	17.55	18.00
EDGE 2 Tx slots	24.31	24.36	24.29	24.50	18.31	18.36	18.29	18.50
EDGE 3 Tx slots	22.74	22.63	22.70	23.00	18.48	18.37	18.44	18.74
EDGE 4 Tx slots	21.61	21.48	21.55	22.00	18.61	18.48	18.55	19.00
<b>GSM1900</b>								
Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	30.07	30.06	29.98	30.50	21.07	21.06	20.98	21.50
GPRS 1 Tx slot	30.06	30.05	29.95	30.50	21.06	21.05	20.95	21.50
GPRS 2 Tx slots	27.85	27.90	27.92	28.00	21.85	21.90	21.92	22.00
GPRS 3 Tx slots	26.62	26.74	26.72	27.00	22.36	22.48	22.46	22.74
GPRS 4 Tx slots	24.80	24.93	24.86	25.00	21.80	21.93	21.86	22.00
EDGE 1 Tx slot	25.42	25.24	25.36	25.50	16.42	16.24	16.36	16.50
EDGE 2 Tx slots	24.26	24.21	24.24	24.50	18.26	18.21	18.24	18.50
EDGE 3 Tx slots	23.01	23.11	23.13	23.50	18.75	18.85	18.87	19.24
EDGE 4 Tx slots	21.91	21.98	21.97	22.50	18.91	18.98	18.97	19.50

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

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB



<Reduced Power Level 1 for WWAN Only>

GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	Tx Channel	128	189		251	128	189	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	31.38	31.43	31.34	31.50	22.38	22.43	22.34	22.50
GPRS 1 Tx slot	31.37	31.40	31.32	31.50	22.37	22.40	22.32	22.50
GPRS 2 Tx slots	30.05	30.07	30.05	30.50	24.05	24.07	24.05	24.50
GPRS 3 Tx slots	28.32	28.71	28.70	29.00	24.06	24.45	24.44	24.74
GPRS 4 Tx slots	26.83	26.88	26.85	27.00	23.83	23.88	23.85	24.00
EDGE 1 Tx slot	25.99	25.89	26.01	26.50	16.99	16.89	17.01	17.50
EDGE 2 Tx slots	24.01	23.87	23.95	24.50	18.01	17.87	17.95	18.50
EDGE 3 Tx slots	22.25	22.23	22.27	22.50	17.99	17.97	18.01	18.24
EDGE 4 Tx slots	21.17	21.10	21.13	21.50	18.17	18.10	18.13	18.50
GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Tx Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.83	29.88	29.78	30.00	20.83	20.88	20.78	21.00
GPRS 1 Tx slot	29.81	29.87	29.77	30.00	20.81	20.87	20.77	21.00
GPRS 2 Tx slots	27.19	27.21	27.22	27.50	21.19	21.21	21.22	21.50
GPRS 3 Tx slots	26.02	26.03	25.95	26.50	21.76	21.77	21.69	22.24
GPRS 4 Tx slots	24.21	24.32	24.22	24.50	21.21	21.32	21.22	21.50
EDGE 1 Tx slot	24.99	24.89	24.64	25.50	15.99	15.89	15.64	16.50
EDGE 2 Tx slots	23.76	23.79	23.56	24.00	17.76	17.79	17.56	18.00
EDGE 3 Tx slots	22.58	22.65	22.37	23.00	18.32	18.39	18.11	18.74
EDGE 4 Tx slots	21.47	21.43	21.34	22.00	18.47	18.43	18.34	19.00

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

The calculated method are shown as below:

- Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
- Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
- Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
- Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB



**<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission>**

GSM850 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	29.49	29.59	29.88	30.00	20.49	20.59	20.88	21.00
GPRS 1 Tx slot	29.47	29.57	29.87	30.00	20.47	20.57	20.87	21.00
GPRS 2 Tx slots	28.17	28.25	28.20	28.50	22.17	22.25	22.20	22.50
GPRS 3 Tx slots	26.45	26.52	26.50	27.00	22.19	22.26	22.24	22.74
GPRS 4 Tx slots	24.85	24.95	24.97	25.00	21.85	21.95	21.97	22.00
EDGE 1 Tx slot	24.04	24.07	23.92	24.50	15.04	15.07	14.92	15.50
EDGE 2 Tx slots	21.99	21.83	21.81	22.50	15.99	15.83	15.81	16.50
EDGE 3 Tx slots	20.34	20.29	20.33	20.50	16.08	16.03	16.07	16.24
EDGE 4 Tx slots	19.30	19.50	19.54	20.00	16.30	16.50	16.54	17.00
<b>GSM1900</b>								
Burst Average Power (dBm)								
Tx Channel	512	661	810	Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	28.05	28.16	28.07	28.50	19.05	19.16	19.07	19.50
GPRS 1 Tx slot	28.03	28.15	28.04	28.50	19.03	19.15	19.04	19.50
GPRS 2 Tx slots	25.19	25.34	25.16	25.50	19.19	19.34	19.16	19.50
GPRS 3 Tx slots	23.99	24.13	23.96	24.50	19.73	19.87	19.70	20.24
GPRS 4 Tx slots	22.16	22.34	22.14	22.50	19.16	19.34	19.14	19.50
EDGE 1 Tx slot	23.04	22.95	22.80	23.50	14.04	13.95	13.80	14.50
EDGE 2 Tx slots	21.92	21.77	21.58	22.50	15.92	15.77	15.58	16.50
EDGE 3 Tx slots	20.69	20.65	20.48	21.00	16.43	16.39	16.22	16.74
EDGE 4 Tx slots	19.48	19.44	19.30	20.00	16.48	16.44	16.30	17.00

**Remark:** The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.  
The calculated method are shown as below:  
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB  
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB  
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB  
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

**<Reduced Power Level 3 for Hotspot On>**

GSM1900 Tx Channel	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.18	29.27	29.14	29.50	20.18	20.27	20.14	20.50
GPRS 1 Tx slot	29.16	29.25	29.13	29.50	20.16	20.25	20.13	20.50
GPRS 2 Tx slots	26.81	26.98	27.01	27.50	20.81	20.98	21.01	21.50
GPRS 3 Tx slots	25.61	25.74	25.72	26.00	21.35	21.48	21.46	21.74
GPRS 4 Tx slots	23.78	23.96	23.93	24.00	20.78	20.96	20.93	21.00
EDGE 1 Tx slot	24.51	24.56	24.40	25.00	15.51	15.56	15.40	16.00
EDGE 2 Tx slots	23.28	23.23	23.37	23.50	17.28	17.23	17.37	17.50
EDGE 3 Tx slots	22.09	22.34	22.12	22.50	17.83	18.08	17.86	18.24
EDGE 4 Tx slots	20.89	21.06	21.03	21.50	17.89	18.06	18.03	18.50

**Remark:** The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.  
The calculated method are shown as below:  
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB  
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB  
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB  
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

**<WCDMA Conducted Power>**

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

A summary of these settings are illustrated below:

**HSDPA Setup Configuration:**

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

**Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

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

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

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

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

**Setup Configuration**

**HSUPA Setup Configuration:**

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

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

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{ES}$ (Note1)	$\beta_{EC}$	$\beta_{ed}$ (Note 4) (Note 5)	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-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	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CSI} = 30/15$  with  $\beta_{MS} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CSI} = 5/15$  with  $\beta_{MS} = 5/15 * \beta_c$ .

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

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

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

Note 5:  $\beta_{ed}$  can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

**Setup Configuration**

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

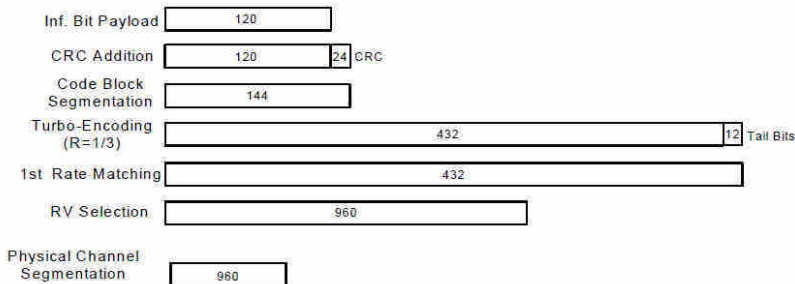
- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power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

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

**C.8.1.12 Fixed Reference Channel Definition H-Set 12**

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

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



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

**Setup Configuration**

**HSPA+ 3GPP release 7 (uplink category 7) 16QAM, Setup Configuration:**

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting \* :
  - i. Call Configs = 5.2E:HSPA+:UL with 16QAM
  - ii. Set the Gain Factors ( $\beta_c$  and  $\beta_d$ ) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
  - iii. Set Channel Parms
  - iv. Set Cell Power = -86 dBm
  - v. Set Channel Type = HSPA
  - vi. Set UE Target Power =21 dBm
  - vii. Power Ctrl Mode= All Up Bits
  - viii. Set Manual Uplink DPCH Bc/Bd = Manual
  - ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
  - x. Set HSPA Conn DL Channel Levels
  - xi. Set HS-SCCH Configs
  - xii. Set RB Test Mode Setup
  - xiii. Set Common HSUPA Parameters
  - xiv. Set Serving Grant
  - xv. Confirm that E-TFCl is equal to the target E-TFCl of 105 for sub-test 1, and other subtest's E-TFCl
- d. The transmitted maximum output power was recorded.

**Table C.11.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM**

Sub-test	$\beta_c$ (Note 3)	$\beta_d$	$\beta_{HS}$ (Note 1)	$\beta_{ec}$	$\beta_{ed}$ (2xSF2) (Note 4)	$\beta_{ed}$ (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCl (Note 5)	E-TFCl (boost)
1	1	0	30/15	30/15	$\beta_{ed1}$ : 30/15 $\beta_{ed2}$ : 30/15	$\beta_{ed3}$ : 24/15 $\beta_{ed4}$ : 24/15	3.5	2.5	14	105	105
<p>Note 1: <math>\Delta_{ACK}, \Delta_{NACK}</math> and <math>\Delta_{CQI} = 30/15</math> with <math>\beta_{fs} = 30/15 * \beta_c</math>.</p> <p>Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).</p> <p>Note 3: DPDCH is not configured, therefore the <math>\beta_c</math> is set to 1 and <math>\beta_d = 0</math> by default.</p> <p>Note 4: <math>\beta_{ed}</math> can not be set directly; it is set by Absolute Grant Value.</p> <p>Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.</p>											

**Setup Configuration**



<WCDMA Conducted Power>

General Note:

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

<Full Power>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.01	23.02	22.86	23.50	23.02	23.10	23.05	23.50	22.94	23.06	23.13	23.50
3GPP Rel 99	RMC 12.2Kbps	23.02	23.04	22.89	23.50	23.04	23.14	23.06	23.50	22.96	23.07	23.15	23.50
3GPP Rel 6	HSDPA Subtest-1	22.60	22.55	22.42	23.00	22.07	22.17	22.10	22.50	22.62	22.78	22.87	23.00
3GPP Rel 6	HSDPA Subtest-2	22.61	22.58	22.44	23.00	22.08	22.20	22.14	22.50	22.65	22.80	22.91	23.00
3GPP Rel 6	HSDPA Subtest-3	22.18	22.10	22.00	22.50	21.61	21.70	21.59	22.00	22.22	22.36	22.48	22.50
3GPP Rel 6	HSDPA Subtest-4	22.20	22.11	22.00	22.50	21.57	21.72	21.66	22.00	22.21	22.33	22.43	22.50
3GPP Rel 8	DC-HSDPA Subtest-1	22.02	22.07	21.96	22.50	22.01	22.10	22.03	22.50	21.99	22.17	22.21	22.50
3GPP Rel 8	DC-HSDPA Subtest-2	21.98	22.03	21.93	22.50	21.96	22.09	22.01	22.50	21.97	22.15	22.18	22.50
3GPP Rel 8	DC-HSDPA Subtest-3	21.66	21.94	21.56	22.00	21.28	21.48	21.44	22.00	21.56	21.86	21.92	22.00
3GPP Rel 8	DC-HSDPA Subtest-4	21.68	21.95	21.51	22.00	21.31	21.45	21.39	22.00	21.53	21.81	21.95	22.00
3GPP Rel 6	HSUPA Subtest-1	22.62	22.67	22.54	23.00	22.04	22.26	22.11	22.50	22.63	22.71	22.75	23.00
3GPP Rel 6	HSUPA Subtest-2	20.74	20.76	20.73	21.00	20.11	20.36	20.16	20.50	20.78	20.96	20.91	21.00
3GPP Rel 6	HSUPA Subtest-3	21.53	21.61	21.52	22.00	21.11	21.33	21.13	21.50	21.71	21.86	21.83	22.00
3GPP Rel 6	HSUPA Subtest-4	20.75	20.74	20.56	21.00	20.09	20.36	20.18	20.50	20.80	20.93	20.91	21.00
3GPP Rel 6	HSUPA Subtest-5	22.60	22.70	22.50	23.00	22.00	22.30	22.10	22.50	22.70	22.80	22.80	23.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	20.26	20.29	20.28	20.50	19.88	20.12	19.97	20.50	20.54	20.65	20.70	21.00



<Reduced Power Level 1 for WWAN Only>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	19.08	19.11	18.98	19.50	18.05	18.17	18.07	18.50	20.47	20.61	20.76	21.00
3GPP Rel 99	RMC 12.2Kbps	19.10	19.12	19.00	19.50	18.06	18.18	18.09	18.50	20.49	20.62	20.79	21.00
3GPP Rel 6	HSDPA Subtest-1	18.62	18.55	18.39	19.00	17.00	17.15	17.11	17.50	20.13	20.35	20.36	20.50
3GPP Rel 6	HSDPA Subtest-2	18.66	18.56	18.45	19.00	17.05	17.16	17.08	17.50	20.18	20.37	20.39	20.50
3GPP Rel 6	HSDPA Subtest-3	18.19	17.76	17.97	18.50	16.58	16.68	16.62	17.00	19.65	19.90	19.95	20.00
3GPP Rel 6	HSDPA Subtest-4	18.14	18.14	17.96	18.50	16.55	16.68	16.57	17.00	19.67	19.88	19.91	20.00
3GPP Rel 8	DC-HSDPA Subtest-1	18.80	18.86	18.77	19.00	17.79	17.87	17.83	18.00	19.87	19.89	19.94	20.00
3GPP Rel 8	DC-HSDPA Subtest-2	18.78	18.81	18.71	19.00	17.75	17.82	17.78	18.00	19.88	19.87	19.92	20.00
3GPP Rel 8	DC-HSDPA Subtest-3	17.63	17.74	17.65	18.00	16.56	16.77	16.58	17.00	18.89	18.97	18.99	19.00
3GPP Rel 8	DC-HSDPA Subtest-4	17.77	17.68	17.66	18.00	16.58	16.74	16.71	17.00	18.88	18.93	18.95	19.00
3GPP Rel 6	HSUPA Subtest-1	16.86	16.89	17.25	17.50	17.11	17.24	17.06	17.50	20.56	20.33	20.33	21.00
3GPP Rel 6	HSUPA Subtest-2	16.82	16.83	16.70	17.00	15.78	15.32	15.29	16.00	18.43	18.52	18.50	19.00
3GPP Rel 6	HSUPA Subtest-3	16.63	16.56	16.78	17.00	16.06	16.28	16.09	16.50	19.26	19.44	19.43	20.50
3GPP Rel 6	HSUPA Subtest-4	16.74	16.81	16.71	17.00	15.78	15.38	15.32	16.00	18.37	18.52	18.50	19.00
3GPP Rel 6	HSUPA Subtest-5	16.62	16.72	17.01	17.50	17.08	17.20	17.10	17.50	20.30	20.40	20.40	20.50
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	15.85	15.86	15.94	16.00	15.78	15.89	15.86	16.00	18.69	18.86	18.88	19.00

<Reduced Power Level 2 for WWAN + WLAN Simultaneous Transmission>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)	WCDMA Band V			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	17.54	17.58	17.47	18.00	16.52	16.65	16.55	17.00	18.97	19.07	19.20	19.50
3GPP Rel 99	RMC 12.2Kbps	17.57	17.59	17.48	18.00	16.55	16.67	16.56	17.00	18.98	19.09	19.21	19.50
3GPP Rel 6	HSDPA Subtest-1	17.00	17.02	16.90	17.50	15.54	15.65	15.60	16.00	18.61	18.85	18.87	19.00
3GPP Rel 6	HSDPA Subtest-2	16.99	17.01	16.91	17.50	15.51	15.65	15.57	16.00	18.65	18.87	18.86	19.00
3GPP Rel 6	HSDPA Subtest-3	16.66	16.57	16.44	17.00	15.06	15.15	15.08	15.50	18.18	18.44	18.45	18.50
3GPP Rel 6	HSDPA Subtest-4	16.45	16.54	16.47	17.00	15.06	15.16	15.12	15.50	18.14	18.41	18.40	18.50
3GPP Rel 8	DC-HSDPA Subtest-1	16.73	16.75	16.69	17.00	16.33	16.37	16.35	16.50	18.79	18.83	18.89	19.00
3GPP Rel 8	DC-HSDPA Subtest-2	16.70	16.74	16.67	17.00	16.31	16.35	16.33	16.50	18.71	18.79	18.85	19.00
3GPP Rel 8	DC-HSDPA Subtest-3	16.31	16.34	16.30	16.50	15.61	15.67	15.59	16.00	17.67	17.86	17.98	18.00
3GPP Rel 8	DC-HSDPA Subtest-4	16.28	16.31	16.26	16.50	15.57	15.58	15.58	16.00	17.65	17.81	17.93	18.00
3GPP Rel 6	HSUPA Subtest-1	17.13	17.18	16.98	17.50	15.77	15.72	15.71	16.00	18.77	18.79	18.82	19.00
3GPP Rel 6	HSUPA Subtest-2	15.32	15.39	15.23	15.50	13.58	13.82	13.62	14.00	16.88	17.04	17.00	17.50
3GPP Rel 6	HSUPA Subtest-3	16.22	16.20	16.14	16.50	14.20	14.11	14.23	14.50	17.76	17.95	17.89	18.00
3GPP Rel 6	HSUPA Subtest-4	15.32	15.33	15.19	15.50	13.60	13.83	13.60	14.00	16.88	17.02	17.02	17.50
3GPP Rel 6	HSUPA Subtest-5	17.10	17.10	17.10	17.50	15.50	15.80	15.60	16.00	18.70	18.80	18.80	19.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	15.72	15.75	15.68	16.00	14.17	14.23	14.21	14.50	17.07	17.28	17.33	17.50



<Reduced Power Level 3 for Hotspot On>

Band		WCDMA Band II			Tune-up Limit (dBm)	WCDMA Band IV			Tune-up Limit (dBm)
Tx Channel		9262	9400	9538		1312	1413	1513	
Rx Channel		9662	9800	9938		1537	1638	1738	
Frequency (MHz)		1852.4	1880	1907.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	20.04	20.07	19.85	20.50	18.00	18.10	18.07	18.50
3GPP Rel 99	RMC 12.2Kbps	20.05	20.08	19.87	20.50	18.01	18.12	18.09	18.50
3GPP Rel 6	HSDPA Subtest-1	19.44	19.47	19.30	20.00	16.96	17.08	17.00	17.50
3GPP Rel 6	HSDPA Subtest-2	18.99	19.45	19.29	20.00	16.98	17.08	17.04	17.50
3GPP Rel 6	HSDPA Subtest-3	19.01	19.05	18.86	19.50	16.50	16.62	16.52	17.00
3GPP Rel 6	HSDPA Subtest-4	19.02	19.04	18.83	19.50	16.52	16.62	16.56	17.00
3GPP Rel 8	DC-HSDPA Subtest-1	19.33	19.35	19.21	19.50	17.05	17.06	17.06	17.50
3GPP Rel 8	DC-HSDPA Subtest-2	19.28	19.32	19.18	19.50	17.03	17.05	17.04	17.50
3GPP Rel 8	DC-HSDPA Subtest-3	18.88	18.87	18.74	19.00	16.62	16.68	16.61	17.00
3GPP Rel 8	DC-HSDPA Subtest-4	18.84	18.85	18.76	19.00	16.63	16.67	16.62	17.00
3GPP Rel 6	HSUPA Subtest-1	17.43	17.88	17.83	18.00	16.96	16.88	16.68	17.00
3GPP Rel 6	HSUPA Subtest-2	17.71	17.79	17.57	18.00	15.03	15.43	15.23	15.50
3GPP Rel 6	HSUPA Subtest-3	18.62	18.69	18.46	19.00	15.97	15.88	15.63	16.00
3GPP Rel 6	HSUPA Subtest-4	17.76	17.75	17.55	18.00	15.00	15.23	15.22	15.50
3GPP Rel 6	HSUPA Subtest-5	19.60	19.60	19.40	20.00	16.88	16.56	16.48	17.00
3GPP Rel 7	HSPA+ (16QAM) Subtest-1	17.21	17.35	17.18	17.50	15.31	15.36	15.34	15.50





<CDMA2000 Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

<Full Power>

Band	CDMA2000 BC0			Tune-up Limit (dBm)
	Tx Channel	1013	384	
Frequency (MHz)	824.7	836.52	848.31	
RC1 SO55	22.57	22.78	22.66	23.00
RC3 SO55	22.21	22.29	22.25	23.00
RC3 SO32 (F+SCH)	22.18	22.20	22.19	23.00
RC3 SO32 (+SCH)	22.15	22.18	22.16	23.00
RTAP 153.6Kbps	22.68	22.77	22.34	23.00
RETAP 4096Bits	22.52	22.64	22.17	23.00

<Reduced Power Level 1 for WWAN Only>

Band	CDMA2000 BC0			Tune-up Limit (dBm)
	Tx Channel	1013	384	
Frequency (MHz)	824.7	836.52	848.31	
RC1 SO55	20.27	20.25	20.24	20.50
RC3 SO55	20.17	20.28	20.27	20.50
RC3 SO32 (F+SCH)	20.16	20.22	20.28	20.50
RC3 SO32 (+SCH)	20.18	20.26	20.25	20.50
RTAP 153.6Kbps	20.22	20.33	20.32	20.50
RETAP 4096Bits	20.18	20.28	20.29	20.50

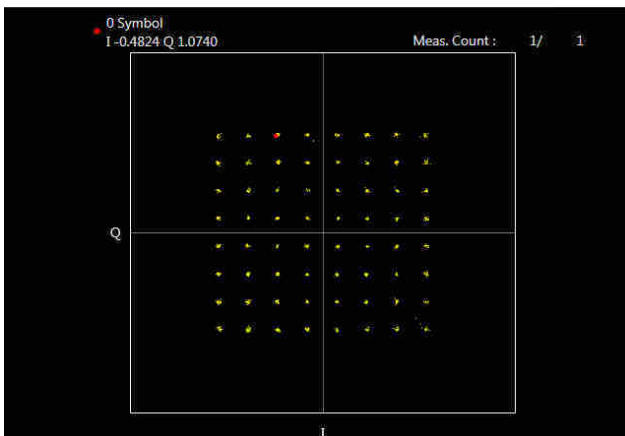
<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission>

Band	CDMA BC0			Tune-up Limit (dBm)
	Tx Channel	1013	384	
Frequency (MHz)	824.7	836.52	848.31	
RC1 SO55	19.19	19.22	19.23	19.50
RC3 SO55	19.17	19.27	19.26	19.50
RC3 SO32 (F+SCH)	19.16	19.27	19.25	19.50
RC3 SO32 (+SCH)	19.18	19.25	19.24	19.50
RTAP 153.6Kbps	19.20	19.28	19.27	19.50
RETAP 4096Bits	19.17	19.25	19.28	19.50

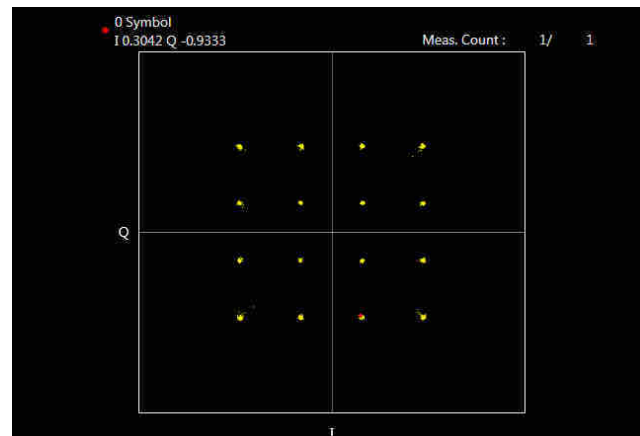
**<LTE Conducted Power>**

**General Note:**

1. Anritsu MT8820C/MT8821C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 17 / 2 / 38 SAR test was covered by Band 12 / 25 / 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**



<Full Power>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.26	23.30	23.36	23.50	0
20	QPSK	1	49	22.75	22.84	23.10		
20	QPSK	1	99	22.94	22.83	22.90		
20	QPSK	50	0	21.96	21.98	22.20	22.50	1
20	QPSK	50	24	21.83	21.95	22.18		
20	QPSK	50	50	21.74	21.77	22.01		
20	QPSK	100	0	21.85	21.93	22.09		
20	16QAM	1	0	22.38	22.61	22.38	23.00	0.5
20	16QAM	1	49	22.19	21.70	21.97		
20	16QAM	1	99	21.79	22.35	22.09		
20	16QAM	50	0	20.93	20.94	21.25	22.00	1.5
20	16QAM	50	24	20.81	20.87	21.08		
20	16QAM	50	50	20.81	20.91	21.07		
20	16QAM	100	0	20.81	20.96	21.14		
20	64QAM	1	0	21.10	21.33	21.12	21.50	2
20	64QAM	1	49	21.47	21.07	21.27		
20	64QAM	1	99	20.57	21.13	21.41		
20	64QAM	50	0	19.95	19.96	20.26	20.50	3
20	64QAM	50	24	19.78	19.81	20.03		
20	64QAM	50	50	19.72	19.82	19.96		
20	64QAM	100	0	19.85	20.00	20.21		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.86	22.93	23.09	23.50	0
15	QPSK	1	37	22.59	22.71	22.90		
15	QPSK	1	74	22.71	22.66	22.80		
15	QPSK	36	0	21.88	21.90	22.18	22.50	1
15	QPSK	36	20	21.76	21.88	21.93		
15	QPSK	36	39	21.68	21.90	21.97		
15	QPSK	75	0	21.82	21.87	22.03	23.00	0.5
15	16QAM	1	0	22.18	21.88	22.69		
15	16QAM	1	37	21.67	21.95	22.37		
15	16QAM	1	74	21.78	22.01	22.34	22.00	1.5
15	16QAM	36	0	20.84	20.95	21.26		
15	16QAM	36	20	20.81	20.93	21.05		
15	16QAM	36	39	20.71	20.84	20.96		
15	16QAM	75	0	20.81	20.92	20.96	21.50	2
15	64QAM	1	0	21.47	21.17	21.06		
15	64QAM	1	37	20.79	21.04	21.44		
15	64QAM	1	74	19.89	19.99	20.29	20.50	3
15	64QAM	36	0	19.80	19.90	20.20		
15	64QAM	36	20	19.81	19.94	20.04		
15	64QAM	36	39	19.76	19.88	19.98		
15	64QAM	75	0	19.82	19.93	19.96		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.35	22.96	23.21	23.50	0
10	QPSK	1	25	22.82	22.89	22.97		
10	QPSK	1	49	22.98	23.04	22.82		
10	QPSK	25	0	21.87	21.84	21.99	22.50	1
10	QPSK	25	12	21.76	21.90	22.02		
10	QPSK	25	25	21.71	21.84	21.84		
10	QPSK	50	0	21.84	21.87	21.93		
10	16QAM	1	0	22.12	22.16	22.33	23.00	0.5
10	16QAM	1	25	21.99	21.90	21.80		
10	16QAM	1	49	22.21	22.28	21.87		
10	16QAM	25	0	20.92	20.88	20.95	22.00	1.5
10	16QAM	25	12	20.81	20.89	21.03		
10	16QAM	25	25	20.72	20.84	20.98		
10	16QAM	50	0	20.79	20.92	21.06		
10	64QAM	1	0	21.19	21.23	21.41	21.50	2
10	64QAM	1	25	21.08	20.99	21.09		
10	64QAM	1	49	21.09	21.15	20.85		
10	64QAM	25	0	19.92	19.87	19.97	20.50	3
10	64QAM	25	12	19.81	19.88	20.09		
10	64QAM	25	25	19.88	19.98	20.08		
10	64QAM	50	0	19.77	19.86	20.02		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.83	22.98	22.83	23.50	0
5	QPSK	1	12	22.81	22.77	22.88		
5	QPSK	1	24	22.76	22.72	22.77		
5	QPSK	12	0	21.84	21.83	21.89	22.50	1
5	QPSK	12	7	21.84	21.80	21.95		
5	QPSK	12	13	21.77	21.87	21.91		
5	QPSK	25	0	21.77	21.76	21.84		
5	16QAM	1	0	21.99	22.38	22.28	23.00	0.5
5	16QAM	1	12	21.74	22.30	22.36		
5	16QAM	1	24	21.99	22.33	21.93		
5	16QAM	12	0	20.87	20.85	20.98	22.00	1.5
5	16QAM	12	7	20.83	20.79	20.90		
5	16QAM	12	13	20.89	20.88	20.79		
5	16QAM	25	0	20.81	20.89	20.91		
5	64QAM	1	0	20.67	21.06	20.94	21.50	2
5	64QAM	1	12	20.37	20.93	20.97		
5	64QAM	1	24	20.68	21.00	20.57		
5	64QAM	12	0	19.89	19.86	19.98	20.50	3
5	64QAM	12	7	19.92	19.87	19.96		
5	64QAM	12	13	19.88	19.85	19.79		
5	64QAM	25	0	19.77	19.85	19.87		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.82	22.70	22.78	23.50	0
3	QPSK	1	8	22.66	22.66	22.90		
3	QPSK	1	14	22.65	22.74	22.73		
3	QPSK	8	0	21.73	21.80	21.85	22.50	1
3	QPSK	8	4	21.81	21.80	21.83		
3	QPSK	8	7	21.80	21.81	21.81		
3	QPSK	15	0	21.82	21.77	21.85		
3	16QAM	1	0	21.72	21.89	21.86	23.00	0.5
3	16QAM	1	8	22.21	22.08	22.28		
3	16QAM	1	14	21.77	21.78	22.03		
3	16QAM	8	0	20.86	20.94	21.04	22.00	1.5
3	16QAM	8	4	20.91	20.89	20.94		
3	16QAM	8	7	20.84	20.87	20.77		
3	16QAM	15	0	20.80	20.89	20.97		
3	64QAM	1	0	20.76	20.96	20.93	21.50	2
3	64QAM	1	8	21.09	20.98	21.16		
3	64QAM	1	14	20.92	20.95	21.20		
3	64QAM	8	0	19.67	19.77	19.86	20.50	3
3	64QAM	8	4	19.88	19.84	19.91		
3	64QAM	8	7	19.77	19.80	19.72		
3	64QAM	15	0	19.74	19.85	19.95		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.68	22.71	22.61	23.50	0
1.4	QPSK	1	3	22.72	22.78	22.76		
1.4	QPSK	1	5	22.58	22.70	22.70		
1.4	QPSK	3	0	22.66	22.78	22.75		
1.4	QPSK	3	1	22.71	22.74	22.83		
1.4	QPSK	3	3	22.64	22.82	22.79	22.50	1
1.4	16QAM	1	0	21.69	21.81	21.88	23.00	0.5
1.4	16QAM	1	3	21.90	22.36	22.11		
1.4	16QAM	1	5	21.63	21.68	22.22		
1.4	16QAM	3	0	21.62	21.65	21.86		
1.4	16QAM	3	1	21.85	21.79	21.91		
1.4	16QAM	3	3	21.69	21.76	21.81	22.00	1.5
1.4	16QAM	6	0	20.77	20.82	20.85	21.50	2
1.4	64QAM	1	0	20.75	20.88	20.98		
1.4	64QAM	1	3	20.46	20.90	20.64		
1.4	64QAM	1	5	20.78	20.85	21.38		
1.4	64QAM	3	0	20.72	20.76	20.95		
1.4	64QAM	3	1	20.89	20.81	20.91		
1.4	64QAM	3	3	20.65	20.74	20.76		
1.4	64QAM	6	0	19.69	19.77	19.82	20.50	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	23.10	23.37	23.28	23.50	0
20	QPSK	1	49	23.07	23.08	23.02		
20	QPSK	1	99	22.98	23.06	23.04		
20	QPSK	50	0	22.11	22.32	22.31	22.50	1
20	QPSK	50	24	22.10	22.18	22.14		
20	QPSK	50	50	22.06	22.12	22.11		
20	QPSK	100	0	22.15	22.19	22.17	23.00	0.5
20	16QAM	1	0	22.35	22.76	22.47		
20	16QAM	1	49	22.22	22.30	22.11		
20	16QAM	1	99	22.11	21.98	22.52	21.50	2
20	16QAM	50	0	21.30	21.23	21.35		
20	16QAM	50	24	21.16	21.26	21.16		
20	16QAM	50	50	21.04	21.14	21.06	21.50	2
20	16QAM	100	0	21.15	21.12	21.20		
20	64QAM	1	0	21.03	21.47	21.19		
20	64QAM	1	49	21.30	21.44	21.25	21.50	2
20	64QAM	1	99	21.39	21.27	21.39		
20	64QAM	50	0	20.43	20.37	20.48		
20	64QAM	50	24	20.22	20.33	20.22	20.50	3
20	64QAM	50	50	20.14	20.25	20.16		
20	64QAM	100	0	20.29	20.27	20.34		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.14	23.25	23.25	23.50	0
15	QPSK	1	37	23.01	22.99	23.01		
15	QPSK	1	74	22.98	23.11	23.02		
15	QPSK	36	0	22.08	22.23	22.16	22.50	1
15	QPSK	36	20	22.03	22.22	22.09		
15	QPSK	36	39	22.04	22.15	22.12		
15	QPSK	75	0	22.06	22.10	22.14	23.00	0.5
15	16QAM	1	0	22.33	22.67	22.54		
15	16QAM	1	37	22.51	22.39	22.21		
15	16QAM	1	74	22.48	22.63	22.43	21.50	2
15	16QAM	36	0	21.19	21.29	21.17		
15	16QAM	36	20	21.12	21.17	21.11		
15	16QAM	36	39	21.11	21.11	21.06	21.50	2
15	16QAM	75	0	21.10	21.25	21.13		
15	64QAM	1	0	21.15	21.48	21.35		
15	64QAM	1	37	21.46	21.32	21.13	21.50	2
15	64QAM	1	74	21.32	21.46	21.25		
15	64QAM	36	0	20.25	20.33	20.20		
15	64QAM	36	20	20.24	20.29	20.23	20.50	3
15	64QAM	36	39	20.23	20.24	20.19		
15	64QAM	75	0	20.07	20.22	20.11		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	22.96	23.21	23.10	23.50	0
10	QPSK	1	25	23.20	23.08	23.02		
10	QPSK	1	49	22.98	23.07	23.02		
10	QPSK	25	0	22.03	22.16	22.16	22.50	1
10	QPSK	25	12	22.09	22.19	22.10		
10	QPSK	25	25	21.97	22.17	22.08		
10	QPSK	50	0	22.11	22.16	22.11	23.00	0.5
10	16QAM	1	0	22.23	22.70	22.52		
10	16QAM	1	25	22.11	22.63	22.39		
10	16QAM	1	49	22.17	22.57	22.16	21.50	2
10	16QAM	25	0	21.12	21.13	21.14		
10	16QAM	25	12	21.08	21.27	21.06		
10	16QAM	25	25	21.06	21.23	21.08	21.50	2
10	16QAM	25	25	21.06	21.23	21.08		
10	16QAM	50	0	21.15	21.24	21.12		
10	64QAM	1	0	20.99	21.46	21.27	21.50	2
10	64QAM	1	25	20.83	21.36	21.13		
10	64QAM	1	49	20.94	21.33	20.91		
10	64QAM	25	0	20.24	20.26	20.26	20.50	3
10	64QAM	25	12	20.05	20.23	20.02		
10	64QAM	25	25	20.06	20.22	20.08		
10	64QAM	50	0	20.12	20.21	20.09		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.26	23.11	23.07	23.50	0
5	QPSK	1	12	22.87	23.09	22.92		
5	QPSK	1	24	22.94	23.13	22.90		
5	QPSK	12	0	22.10	22.16	22.06	22.50	1
5	QPSK	12	7	22.04	22.11	22.10		
5	QPSK	12	13	22.01	22.13	22.05		
5	QPSK	25	0	22.08	22.17	22.05	23.00	0.5
5	16QAM	1	0	22.35	22.03	22.28		
5	16QAM	1	12	22.05	22.63	22.00		
5	16QAM	1	24	22.18	22.56	22.56	21.50	2
5	16QAM	12	0	21.16	21.10	21.03		
5	16QAM	12	7	21.08	21.06	20.99		
5	16QAM	12	13	20.97	21.14	21.04	21.50	2
5	16QAM	25	0	21.07	21.12	21.04		
5	64QAM	1	0	21.35	21.44	21.38		
5	64QAM	1	12	20.77	21.36	20.74	21.50	2
5	64QAM	1	24	20.95	21.34	21.33		
5	64QAM	12	0	20.33	20.27	20.20		
5	64QAM	12	7	20.26	20.24	20.17	20.50	3
5	64QAM	12	13	20.05	20.23	20.13		
5	64QAM	25	0	20.16	20.21	20.15		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	22.99	22.99	23.02	23.50	0
3	QPSK	1	8	22.96	23.12	22.97		
3	QPSK	1	14	22.99	23.11	22.93		
3	QPSK	8	0	22.02	22.07	22.04	22.50	1
3	QPSK	8	4	22.04	22.10	22.00		
3	QPSK	8	7	21.97	22.12	22.07		
3	QPSK	15	0	21.97	22.05	21.99	23.00	0.5
3	16QAM	1	0	22.16	22.45	22.25		
3	16QAM	1	8	22.15	22.26	22.33		
3	16QAM	1	14	22.32	22.54	22.03	21.50	2
3	16QAM	8	0	21.03	21.06	21.18		
3	16QAM	8	4	21.07	21.12	21.07		
3	16QAM	8	7	21.13	21.20	20.95	21.50	2
3	16QAM	15	0	21.07	21.13	21.13		
3	64QAM	1	0	21.09	21.39	21.19		
3	64QAM	1	8	21.30	21.38	21.47	21.50	2
3	64QAM	1	14	21.12	21.34	20.84		
3	64QAM	8	0	20.14	20.17	20.30		
3	64QAM	8	4	20.10	20.15	20.11	20.50	3
3	64QAM	8	7	20.14	20.19	19.96		
3	64QAM	15	0	20.15	20.20	20.21		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	22.86	22.99	22.85	23.50	0
1.4	QPSK	1	3	22.94	23.07	23.02		
1.4	QPSK	1	5	22.96	23.00	22.89		
1.4	QPSK	3	0	23.03	23.06	22.93	22.50	1
1.4	QPSK	3	1	23.05	23.02	23.05		
1.4	QPSK	3	3	22.96	22.99	22.95		
1.4	QPSK	6	0	21.96	21.97	21.93	23.00	0.5
1.4	16QAM	1	0	22.17	22.26	22.27		
1.4	16QAM	1	3	22.18	22.25	22.16		
1.4	16QAM	1	5	22.14	22.31	22.01	21.50	2
1.4	16QAM	3	0	22.00	22.13	21.98		
1.4	16QAM	3	1	21.92	22.06	22.05		
1.4	16QAM	3	3	22.02	22.13	22.00	20.50	2
1.4	16QAM	6	0	20.97	21.03	21.10		
1.4	64QAM	1	0	21.26	21.34	21.36		
1.4	64QAM	1	3	21.24	21.33	21.25	21.50	2
1.4	64QAM	1	5	21.09	21.26	20.96		
1.4	64QAM	3	0	21.05	21.19	21.05		
1.4	64QAM	3	1	21.03	21.17	21.17	20.50	3
1.4	64QAM	3	3	21.01	21.12	20.99		
1.4	64QAM	6	0	20.22	20.15	20.24		





<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.96	22.78	22.86	23.50	0
10	QPSK	1	25	22.92	22.85	23.01		
10	QPSK	1	49	23.02	22.93	23.03		
10	QPSK	25	0	21.95	22.05	22.06	22.50	1
10	QPSK	25	12	21.93	22.01	22.01		
10	QPSK	25	25	21.86	21.91	21.91		
10	QPSK	50	0	21.91	21.90	21.97	22.50	1
10	16QAM	1	0	22.01	22.02	22.31		
10	16QAM	1	25	21.89	22.49	22.35		
10	16QAM	1	49	22.17	22.43	22.22	21.50	2
10	16QAM	25	0	20.91	21.04	21.03		
10	16QAM	25	12	20.93	21.03	21.06		
10	16QAM	25	25	20.79	20.89	20.83	22.00	1.5
10	16QAM	50	0	20.85	20.97	20.98		
10	64QAM	1	0	21.48	21.50	21.78		
10	64QAM	1	25	20.87	21.48	21.33	21.00	2.5
10	64QAM	1	49	21.20	21.46	21.25		
10	64QAM	25	0	20.38	20.49	20.49		
10	64QAM	25	12	20.35	20.45	20.50	21.00	2.5
10	64QAM	25	25	20.34	20.44	20.39		
10	64QAM	50	0	20.33	20.46	20.49		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.01	22.98	22.87	23.50	0
5	QPSK	1	12	22.98	22.93	22.83		
5	QPSK	1	24	22.86	22.86	22.83		
5	QPSK	12	0	22.03	22.00	21.92	22.50	1
5	QPSK	12	7	21.96	21.97	21.89		
5	QPSK	12	13	21.95	21.91	21.93		
5	QPSK	25	0	21.95	21.89	21.93	22.50	1
5	16QAM	1	0	22.41	21.94	22.20		
5	16QAM	1	12	22.38	22.41	22.07		
5	16QAM	1	24	22.23	22.06	22.35	21.50	2
5	16QAM	12	0	21.07	20.94	20.98		
5	16QAM	12	7	21.00	20.86	20.92		
5	16QAM	12	13	20.96	20.99	20.96	22.00	1.5
5	16QAM	25	0	20.94	20.99	21.05		
5	64QAM	1	0	21.96	21.50	21.75		
5	64QAM	1	12	21.47	21.49	21.14	21.00	2.5
5	64QAM	1	24	21.64	21.46	21.75		
5	64QAM	12	0	20.64	20.50	20.53		
5	64QAM	12	7	20.62	20.48	20.55	21.00	2.5
5	64QAM	12	13	20.44	20.47	20.44		
5	64QAM	25	0	20.43	20.47	20.54		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.89	22.96	22.93	23.50	0
3	QPSK	1	8	22.86	22.82	22.90		
3	QPSK	1	14	22.80	22.80	22.83		
3	QPSK	8	0	21.97	21.92	21.91	22.50	1
3	QPSK	8	4	21.94	21.89	21.89		
3	QPSK	8	7	21.89	21.95	21.83		
3	QPSK	15	0	21.95	21.87	21.92		
3	16QAM	1	0	22.05	21.87	22.11	22.50	1
3	16QAM	1	8	22.08	22.02	22.36		
3	16QAM	1	14	22.36	22.03	21.93		
3	16QAM	8	0	20.84	21.01	21.05	21.50	2
3	16QAM	8	4	21.03	20.91	21.05		
3	16QAM	8	7	21.09	20.99	20.85		
3	16QAM	15	0	20.91	20.88	20.94		
3	64QAM	1	0	21.68	21.49	21.74	22.00	1.5
3	64QAM	1	8	21.53	21.48	21.83		
3	64QAM	1	14	21.82	21.48	21.38		
3	64QAM	8	0	20.35	20.50	20.54	21.00	2.5
3	64QAM	8	4	20.62	20.49	20.64		
3	64QAM	8	7	20.52	20.44	20.31		
3	64QAM	15	0	20.46	20.45	20.52		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.78	22.86	22.76	23.50	0
1.4	QPSK	1	3	22.90	22.96	22.91		
1.4	QPSK	1	5	22.76	22.76	22.76		
1.4	QPSK	3	0	22.82	22.91	22.89		
1.4	QPSK	3	1	22.89	22.93	22.91		
1.4	QPSK	3	3	22.76	22.84	22.76	22.50	1
1.4	QPSK	6	0	21.86	21.90	21.88		
1.4	16QAM	1	0	22.26	21.87	21.97	22.50	1
1.4	16QAM	1	3	21.95	22.41	22.31		
1.4	16QAM	1	5	22.33	22.23	21.70		
1.4	16QAM	3	0	21.89	21.95	21.83		
1.4	16QAM	3	1	21.91	22.02	21.95		
1.4	16QAM	3	3	21.94	21.87	21.78	21.50	2
1.4	16QAM	6	0	20.91	20.86	20.92	22.00	1.5
1.4	64QAM	1	0	21.86	21.48	21.57		
1.4	64QAM	1	3	21.04	21.48	21.39		
1.4	64QAM	1	5	21.58	21.47	20.95		
1.4	64QAM	3	0	21.41	21.46	21.35		
1.4	64QAM	3	1	21.35	21.45	21.39		
1.4	64QAM	3	3	21.52	21.44	21.36		
1.4	64QAM	6	0	20.55	20.49	20.56	21.00	2.5



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350	23.50	0
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.92	23.13	23.17	23.50	0
20	QPSK	1	49	22.69	22.89	23.00		
20	QPSK	1	99	22.73	22.85	22.96		
20	QPSK	50	0	21.89	22.09	22.19	22.50	1
20	QPSK	50	24	21.75	21.94	22.01		
20	QPSK	50	50	21.87	22.01	21.99		
20	QPSK	100	0	21.78	22.00	22.03	23.00	0.5
20	16QAM	1	0	22.14	22.19	22.12		
20	16QAM	1	49	22.21	22.32	22.27		
20	16QAM	1	99	22.11	22.49	21.96	21.50	2
20	16QAM	50	0	20.76	21.01	21.14		
20	16QAM	50	24	20.79	21.11	21.16		
20	16QAM	50	50	20.92	20.99	20.99	21.50	2
20	16QAM	100	0	20.71	20.98	20.95		
20	64QAM	1	0	21.26	21.32	21.24		
20	64QAM	1	49	20.84	20.97	20.93	21.50	2
20	64QAM	1	99	20.47	20.86	20.34		
20	64QAM	50	0	19.74	20.00	20.14		
20	64QAM	50	24	19.57	19.89	19.95	20.50	3
20	64QAM	50	50	19.82	19.88	19.89		
20	64QAM	100	0	19.59	19.87	19.85		
Channel				20825	21100	21375	23.50	0
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.76	23.10	23.15	23.50	0
15	QPSK	1	37	22.65	22.93	22.81		
15	QPSK	1	74	22.74	22.91	22.82		
15	QPSK	36	0	21.81	22.05	22.07	22.50	1
15	QPSK	36	20	21.80	22.10	21.99		
15	QPSK	36	39	21.88	21.93	21.91		
15	QPSK	75	0	21.77	21.97	21.94	23.00	0.5
15	16QAM	1	0	22.32	22.44	22.44		
15	16QAM	1	37	21.89	22.55	21.85		
15	16QAM	1	74	21.91	22.37	21.82	21.50	2
15	16QAM	36	0	20.77	21.08	21.04		
15	16QAM	36	20	20.83	21.01	21.02		
15	16QAM	36	39	20.85	20.97	20.95	21.50	2
15	16QAM	75	0	20.77	21.00	21.00		
15	64QAM	1	0	21.09	21.21	21.20		
15	64QAM	1	37	20.41	21.05	20.34	21.50	2
15	64QAM	1	74	20.43	20.88	20.35		
15	64QAM	36	0	19.58	19.90	19.86		
15	64QAM	36	20	19.69	19.86	19.87	20.50	3
15	64QAM	36	39	19.61	19.74	19.73		
15	64QAM	75	0	19.55	19.79	19.80		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.85	23.11	23.02	23.50	0
10	QPSK	1	25	22.81	23.01	22.93		
10	QPSK	1	49	22.47	22.95	22.88		
10	QPSK	25	0	21.74	21.98	22.03	22.50	1
10	QPSK	25	12	21.72	21.96	22.01		
10	QPSK	25	25	21.63	21.96	21.97		
10	QPSK	50	0	21.73	22.03	21.91	23.00	0.5
10	16QAM	1	0	21.89	22.50	22.61		
10	16QAM	1	25	21.89	22.40	22.44		
10	16QAM	1	49	21.82	22.37	22.32	21.50	2
10	16QAM	25	0	20.75	20.99	20.96		
10	16QAM	25	12	20.66	21.13	20.98		
10	16QAM	25	25	20.63	20.95	20.91	21.50	2
10	16QAM	50	0	20.76	20.98	20.90		
10	64QAM	1	0	20.50	21.12	21.24		
10	64QAM	1	25	20.48	20.98	21.03	21.50	2
10	64QAM	1	49	20.32	20.85	20.81		
10	64QAM	25	0	19.62	19.85	19.83		
10	64QAM	25	12	19.38	19.84	19.70	20.50	3
10	64QAM	25	25	19.48	19.79	19.76		
10	64QAM	50	0	19.56	19.77	19.69		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.70	22.92	22.86	23.50	0
5	QPSK	1	12	22.74	22.98	22.98		
5	QPSK	1	24	22.69	22.92	22.88		
5	QPSK	12	0	21.72	21.98	21.88	22.50	1
5	QPSK	12	7	21.68	21.98	21.91		
5	QPSK	12	13	21.69	21.99	22.00		
5	QPSK	25	0	21.69	21.99	21.94	23.00	0.5
5	16QAM	1	0	22.24	22.15	22.08		
5	16QAM	1	12	22.14	22.41	21.77		
5	16QAM	1	24	21.87	22.25	22.37	21.50	2
5	16QAM	12	0	20.77	20.97	21.00		
5	16QAM	12	7	20.69	21.01	20.95		
5	16QAM	12	13	20.78	20.90	20.96	21.50	2
5	16QAM	25	0	20.61	20.93	20.91		
5	64QAM	1	0	21.08	21.00	20.93		
5	64QAM	1	12	20.70	20.96	20.33	21.50	2
5	64QAM	1	24	20.49	20.86	20.99		
5	64QAM	12	0	19.64	19.85	19.89		
5	64QAM	12	7	19.52	19.83	19.76	20.50	3
5	64QAM	12	13	19.66	19.77	19.84		
5	64QAM	25	0	19.43	19.74	19.73		



<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	23.18	23.25	23.16	23.50	0
10	QPSK	1	25	23.07	23.16	23.15		
10	QPSK	1	49	23.04	23.11	22.99		
10	QPSK	25	0	22.16	22.13	22.09	22.50	1
10	QPSK	25	12	22.11	22.12	22.21		
10	QPSK	25	25	22.17	22.25	22.23		
10	QPSK	50	0	22.18	22.19	22.16	23.00	0.5
10	16QAM	1	0	22.61	22.62	22.55		
10	16QAM	1	25	22.33	22.22	22.73		
10	16QAM	1	49	22.32	22.74	22.50	21.50	2
10	16QAM	25	0	21.20	21.13	21.12		
10	16QAM	25	12	21.13	21.27	21.19		
10	16QAM	25	25	21.05	21.26	21.15	22.00	1.5
10	16QAM	50	0	21.15	21.20	21.22		
10	64QAM	1	0	21.36	21.38	21.32		
10	64QAM	1	25	21.15	21.03	21.55	21.00	2.5
10	64QAM	1	49	20.48	20.89	20.66		
10	64QAM	25	0	19.95	19.88	19.88		
10	64QAM	25	12	19.71	19.85	19.78	23.05	0
10	64QAM	25	25	19.60	19.80	19.71		
10	64QAM	50	0	19.77	19.81	19.84		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	23.18	23.07	23.04	23.50	0
5	QPSK	1	12	23.13	22.96	23.17		
5	QPSK	1	24	23.20	23.19	23.14		
5	QPSK	12	0	22.22	22.16	22.10	22.50	1
5	QPSK	12	7	22.17	22.15	22.18		
5	QPSK	12	13	22.19	22.07	22.16		
5	QPSK	25	0	22.23	22.05	22.10	23.00	0.5
5	16QAM	1	0	22.18	22.52	22.68		
5	16QAM	1	12	22.33	22.21	22.27		
5	16QAM	1	24	22.61	22.49	22.34	21.50	2
5	16QAM	12	0	21.18	21.15	21.15		
5	16QAM	12	7	21.17	21.23	21.24		
5	16QAM	12	13	21.22	21.12	21.13	22.00	1.5
5	16QAM	25	0	21.19	21.11	21.10		
5	64QAM	1	0	21.17	21.50	21.67		
5	64QAM	1	12	21.62	21.48	21.55	21.00	2.5
5	64QAM	1	24	21.61	21.49	21.34		
5	64QAM	12	0	20.53	20.49	20.50		
5	64QAM	12	7	20.41	20.48	20.48	20.51	20.44
5	64QAM	12	13	20.55	20.46	20.47		
5	64QAM	25	0	20.51	20.44	20.44		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	23.10	23.06	23.08	23.50	0
3	QPSK	1	8	23.19	22.99	23.04		
3	QPSK	1	14	23.12	23.04	23.01		
3	QPSK	8	0	22.12	22.05	22.09	22.50	1
3	QPSK	8	4	22.09	22.11	22.07		
3	QPSK	8	7	22.19	22.06	22.18		
3	QPSK	15	0	22.10	22.03	22.14		
3	16QAM	1	0	22.31	22.21	21.93	23.00	0.5
3	16QAM	1	8	22.25	22.02	22.52		
3	16QAM	1	14	22.40	22.59	22.12		
3	16QAM	8	0	21.33	21.18	21.15	21.50	2
3	16QAM	8	4	21.35	21.19	21.21		
3	16QAM	8	7	21.23	21.22	21.13		
3	16QAM	15	0	21.06	21.11	21.21		
3	64QAM	1	0	21.61	21.50	21.23	22.00	1.5
3	64QAM	1	8	21.73	21.49	21.73		
3	64QAM	1	14	21.29	21.47	21.29		
3	64QAM	8	0	20.66	20.50	20.66	21.00	2.5
3	64QAM	8	4	20.64	20.47	20.64		
3	64QAM	8	7	20.49	20.48	20.49		
3	64QAM	15	0	20.41	20.45	20.40		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	22.95	23.00	22.98	23.50	0
1.4	QPSK	1	3	23.09	23.05	22.99		
1.4	QPSK	1	5	23.03	22.97	22.94		
1.4	QPSK	3	0	23.05	22.93	22.92		
1.4	QPSK	3	1	23.08	23.04	23.03		
1.4	QPSK	3	3	23.03	22.94	22.95	22.50	1
1.4	QPSK	6	0	22.08	21.93	21.96		
1.4	16QAM	1	0	22.44	22.41	22.15	23.00	0.5
1.4	16QAM	1	3	22.15	22.05	22.14		
1.4	16QAM	1	5	22.56	22.45	22.16		
1.4	16QAM	3	0	22.16	22.10	22.06		
1.4	16QAM	3	1	22.02	22.09	22.05		
1.4	16QAM	3	3	22.17	21.96	22.08	21.50	2
1.4	16QAM	6	0	21.18	21.13	21.09		
1.4	64QAM	1	0	21.53	21.48	21.23	22.00	1.5
1.4	64QAM	1	3	21.58	21.47	21.58		
1.4	64QAM	1	5	21.56	21.45	21.56		
1.4	64QAM	3	0	21.54	21.48	21.53		
1.4	64QAM	3	1	21.43	21.49	21.42		
1.4	64QAM	3	3	21.66	21.44	21.66		
1.4	64QAM	6	0	20.53	20.47	20.52	21.00	2.5



<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	23.22	23.15	23.16	23.50	0
10	QPSK	1	25	23.05	23.14	23.14		
10	QPSK	1	49	23.19	23.00	22.99		
10	QPSK	25	0	22.23	22.16	22.13	22.50	1
10	QPSK	25	12	22.16	22.15	22.11		
10	QPSK	25	25	22.21	22.13	22.12		
10	QPSK	50	0	22.23	22.20	22.22	23.00	0.5
10	16QAM	1	0	22.41	22.41	22.30		
10	16QAM	1	25	22.17	22.48	22.26		
10	16QAM	1	49	22.28	22.39	22.51	21.50	2
10	16QAM	25	0	21.23	21.19	21.18		
10	16QAM	25	12	21.25	21.25	21.18		
10	16QAM	25	25	21.18	21.16	21.17	22.00	1.5
10	16QAM	50	0	21.21	21.21	21.16		
10	64QAM	1	0	21.50	21.49	21.38		
10	64QAM	1	25	21.15	21.47	21.26	21.00	2.5
10	64QAM	1	49	21.38	21.48	21.59		
10	64QAM	25	0	20.55	20.50	20.49		
10	64QAM	25	12	20.49	20.49	20.41	20.49	20.44
10	64QAM	25	25	20.51	20.48	20.48		
10	64QAM	50	0	20.49	20.49	20.44		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	23.04	23.10	23.04	23.50	0
5	QPSK	1	12	23.22	23.16	23.04		
5	QPSK	1	24	23.17	23.12	23.21		
5	QPSK	12	0	22.24	22.20	22.11	22.50	1
5	QPSK	12	7	22.20	22.21	22.09		
5	QPSK	12	13	22.16	22.16	22.10		
5	QPSK	25	0	22.20	22.10	22.12	23.00	0.5
5	16QAM	1	0	22.57	22.63	22.58		
5	16QAM	1	12	22.34	22.47	22.56		
5	16QAM	1	24	22.10	22.33	22.43	21.50	2
5	16QAM	12	0	21.30	21.22	21.19		
5	16QAM	12	7	21.27	21.19	21.13		
5	16QAM	12	13	21.14	21.22	21.10	22.00	1.5
5	16QAM	25	0	21.24	21.24	21.13		
5	64QAM	1	0	21.43	21.48	21.43		
5	64QAM	1	12	21.36	21.48	21.58	21.00	2.5
5	64QAM	1	24	21.25	21.47	21.57		
5	64QAM	12	0	20.58	20.49	20.47		
5	64QAM	12	7	20.56	20.47	20.43	20.48	20.37
5	64QAM	12	13	20.40	20.48	20.37		
5	64QAM	25	0	20.46	20.45	20.34		



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	23.04	23.08	23.11	23.50	0
20	QPSK	1	49	22.79	22.71	22.83		
20	QPSK	1	99	22.69	22.78	22.67		
20	QPSK	50	0	21.73	21.76	22.07	22.50	1
20	QPSK	50	24	21.60	21.73	21.91		
20	QPSK	50	50	21.62	21.72	21.81		
20	QPSK	100	0	21.65	21.74	21.92	23.00	0.5
20	16QAM	1	0	22.49	22.01	22.64		
20	16QAM	1	49	21.67	21.88	22.12		
20	16QAM	1	99	21.97	21.86	21.88	22.00	1.5
20	16QAM	50	0	20.68	20.74	21.09		
20	16QAM	50	24	20.64	20.71	20.91		
20	16QAM	50	50	20.57	20.73	20.79	21.50	2
20	16QAM	100	0	20.58	20.71	20.85		
20	64QAM	1	0	21.34	21.35	21.39		
20	64QAM	1	49	20.69	20.89	21.13	20.50	3
20	64QAM	1	99	21.26	21.14	21.17		
20	64QAM	50	0	19.79	19.84	20.21		
20	64QAM	50	24	19.81	19.86	20.05	20.50	3
20	64QAM	50	50	19.66	19.81	19.88		
20	64QAM	100	0	19.67	19.79	19.94		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	22.90	22.83	23.00	23.50	0
15	QPSK	1	37	22.64	22.67	22.71		
15	QPSK	1	74	22.62	22.67	22.60		
15	QPSK	36	0	21.85	21.75	21.90	22.50	1
15	QPSK	36	20	21.68	21.80	21.82		
15	QPSK	36	39	21.68	21.68	21.78		
15	QPSK	75	0	21.79	21.79	21.83	23.00	0.5
15	16QAM	1	0	22.09	22.02	22.62		
15	16QAM	1	37	21.57	22.03	22.19		
15	16QAM	1	74	21.73	21.77	22.15	22.00	1.5
15	16QAM	36	0	20.75	20.85	20.95		
15	16QAM	36	20	20.78	20.74	20.83		
15	16QAM	36	39	20.66	20.73	20.76	21.50	2
15	16QAM	75	0	20.75	20.79	20.92		
15	64QAM	1	0	21.18	21.12	21.33		
15	64QAM	1	37	20.54	20.99	21.16	20.50	3
15	64QAM	1	74	20.93	20.96	21.35		
15	64QAM	36	0	19.70	19.79	19.89		
15	64QAM	36	20	19.82	19.77	19.85	20.50	3
15	64QAM	36	39	19.69	19.75	19.79		
15	64QAM	75	0	19.74	19.77	19.91		





Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	23.02	22.94	22.94	23.50	0
10	QPSK	1	25	22.63	22.77	22.78		
10	QPSK	1	49	22.80	22.95	22.88		
10	QPSK	25	0	21.80	21.68	21.66	22.50	1
10	QPSK	25	12	21.67	21.76	21.75		
10	QPSK	25	25	21.64	21.70	21.68		
10	QPSK	50	0	21.76	21.74	21.70	23.00	0.5
10	16QAM	1	0	22.18	22.12	22.10		
10	16QAM	1	25	21.83	21.75	21.73		
10	16QAM	1	49	22.14	22.30	22.25	22.00	1.5
10	16QAM	25	0	20.80	20.75	20.71		
10	16QAM	25	12	20.68	20.70	20.68		
10	16QAM	25	25	20.71	20.65	20.66	21.50	2
10	16QAM	50	0	20.67	20.78	20.80		
10	64QAM	1	0	21.18	21.11	21.18		
10	64QAM	1	25	20.99	20.90	20.95	20.50	3
10	64QAM	1	49	21.02	21.17	21.22		
10	64QAM	25	0	19.83	19.76	19.75		
10	64QAM	25	12	19.99	19.77	19.80	20.50	3
10	64QAM	25	25	20.00	19.74	19.76		
10	64QAM	50	0	19.82	19.75	19.73		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	22.71	22.68	22.78	23.50	0
5	QPSK	1	12	22.67	22.70	22.74		
5	QPSK	1	24	22.65	22.93	22.62		
5	QPSK	12	0	21.68	21.72	21.75	22.50	1
5	QPSK	12	7	21.71	21.78	21.74		
5	QPSK	12	13	21.68	21.66	21.68		
5	QPSK	25	0	21.71	21.68	21.70	23.00	0.5
5	16QAM	1	0	22.05	21.90	22.24		
5	16QAM	1	12	21.85	21.94	22.06		
5	16QAM	1	24	21.79	22.23	21.81	22.00	1.5
5	16QAM	12	0	20.73	20.75	20.77		
5	16QAM	12	7	20.81	20.67	20.71		
5	16QAM	12	13	20.65	20.75	20.73	21.50	2
5	16QAM	25	0	20.81	20.71	20.68		
5	64QAM	1	0	20.92	20.93	20.88		
5	64QAM	1	12	20.88	20.90	20.81	20.50	3
5	64QAM	1	24	20.85	20.89	20.78		
5	64QAM	12	0	19.71	19.73	19.80		
5	64QAM	12	7	19.73	19.76	19.73	20.50	3
5	64QAM	12	13	19.65	19.72	19.68		
5	64QAM	25	0	19.61	19.68	19.65		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	22.57	22.60	22.58	23.50	0
3	QPSK	1	8	22.76	22.72	22.65		
3	QPSK	1	14	22.86	22.63	22.59		
3	QPSK	8	0	21.72	21.71	21.68	22.50	1
3	QPSK	8	4	21.70	21.76	21.64		
3	QPSK	8	7	21.72	21.66	21.66		
3	QPSK	15	0	21.65	21.64	21.71		
3	16QAM	1	0	22.03	22.20	21.79	23.00	0.5
3	16QAM	1	8	21.84	21.75	21.94		
3	16QAM	1	14	21.59	21.75	22.18		
3	16QAM	8	0	20.71	20.78	20.67	22.00	1.5
3	16QAM	8	4	20.85	20.66	20.77		
3	16QAM	8	7	20.67	20.72	20.76		
3	16QAM	15	0	20.78	20.72	20.79		
3	64QAM	1	0	20.91	20.98	20.96	21.50	2
3	64QAM	1	8	20.78	20.83	20.93		
3	64QAM	1	14	20.88	20.90	20.92		
3	64QAM	8	0	19.59	19.66	19.75	20.50	3
3	64QAM	8	4	19.71	19.70	19.73		
3	64QAM	8	7	19.70	19.73	19.80		
3	64QAM	15	0	19.69	19.71	19.77		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	22.63	22.54	22.57	23.50	0
1.4	QPSK	1	3	22.61	22.66	22.58		
1.4	QPSK	1	5	22.64	22.54	22.53		
1.4	QPSK	3	0	22.63	22.73	22.52		
1.4	QPSK	3	1	22.61	22.7	22.64		
1.4	QPSK	3	3	22.58	22.59	22.58	22.50	1
1.4	16QAM	1	0	21.59	21.6	21.79	23.00	0.5
1.4	16QAM	1	3	22.23	22.25	22.07		
1.4	16QAM	1	5	22.02	21.95	21.48		
1.4	16QAM	3	0	21.45	21.75	21.54		
1.4	16QAM	3	1	21.66	21.75	21.68		
1.4	16QAM	3	3	21.72	21.58	21.59	22.00	1.5
1.4	64QAM	1	0	20.75	20.81	20.88	21.50	2
1.4	64QAM	1	3	20.71	20.88	20.85		
1.4	64QAM	1	5	20.88	20.85	20.83		
1.4	64QAM	3	0	20.63	20.64	20.57		
1.4	64QAM	3	1	20.63	20.71	20.68		
1.4	64QAM	3	3	20.55	20.65	20.59		
1.4	64QAM	6	0	19.55	19.62	19.72	20.50	3



<LTE Band 26>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	23.07	23.13	23.25	23.50	0
15	QPSK	1	37	23.04	23.09	23.17		
15	QPSK	1	74	23.06	23.04	23.09		
15	QPSK	36	0	22.15	22.23	22.31	22.50	1
15	QPSK	36	20	22.05	22.21	22.3		
15	QPSK	36	39	22.12	22.06	22.23		
15	QPSK	75	0	22.07	22.06	22.32	23.00	0.5
15	16QAM	1	0	22.56	22.31	22.67		
15	16QAM	1	37	22.61	22.69	22.36		
15	16QAM	1	74	22.53	22.35	22.04	21.50	2
15	16QAM	36	0	21.09	21.11	21.25		
15	16QAM	36	20	21.1	21.24	21.35		
15	16QAM	36	39	21.19	21.08	21.26	22.00	1.5
15	16QAM	75	0	21.04	21.11	21.32		
15	64QAM	1	0	21.63	21.50	21.66		
15	64QAM	1	37	21.43	21.47	21.53	21.00	2.5
15	64QAM	1	74	21.52	21.48	21.43		
15	64QAM	36	0	20.38	20.49	20.55		
15	64QAM	36	20	20.44	20.48	20.59	20.39	
15	64QAM	36	39	20.52	20.47	20.52		
15	64QAM	75	0	20.39	20.46	20.62		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.14	23.03	23.16	23.50	0
10	QPSK	1	25	23.09	23.11	23.24		
10	QPSK	1	49	22.97	23.11	23.06		
10	QPSK	25	0	22.12	22.05	22.28	22.50	1
10	QPSK	25	12	22.09	22.2	22.31		
10	QPSK	25	25	22.04	22.05	22.27		
10	QPSK	50	0	22.07	22.12	22.23	23.00	0.5
10	16QAM	1	0	22.69	22.32	22.36		
10	16QAM	1	25	22.2	22.27	22.39		
10	16QAM	1	49	22.05	22.45	22.67	21.50	2
10	16QAM	25	0	21.1	21.02	21.25		
10	16QAM	25	12	21.04	21.11	21.34		
10	16QAM	25	25	20.94	21.18	21.29	22.00	1.5
10	16QAM	50	0	21.03	21.17	21.37		
10	64QAM	1	0	21.56	21.49	21.68		
10	64QAM	1	25	21.43	21.48	21.59	21.00	2.5
10	64QAM	1	49	21.33	21.47	21.58		
10	64QAM	25	0	20.81	20.48	20.60		
10	64QAM	25	12	20.38	20.49	20.56	20.39	
10	64QAM	25	25	20.41	20.47	20.48		
10	64QAM	50	0	20.39	20.47	20.56		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.96	23.03	23.16	23.50	0
5	QPSK	1	12	22.98	23.18	23.13		
5	QPSK	1	24	22.97	23	23.07		
5	QPSK	12	0	22.03	22.09	22.22	22.50	1
5	QPSK	12	7	22.01	22.16	22.17		
5	QPSK	12	13	21.93	22.14	22.18		
5	QPSK	25	0	22.03	22.14	22.23	23.00	0.5
5	16QAM	1	0	22.14	22.24	22.15		
5	16QAM	1	12	22.31	22.58	22.73		
5	16QAM	1	24	22.05	22.59	22.27	21.50	2
5	16QAM	12	0	21.07	21.04	21.21		
5	16QAM	12	7	21.08	21.1	21.32		
5	16QAM	12	13	21.02	21.03	21.14	21.00	2.5
5	16QAM	25	0	21.12	21.19	21.16		
5	64QAM	1	0	21.47	21.50	21.41		
5	64QAM	1	12	21.31	21.49	21.53	22.00	1.5
5	64QAM	1	24	21.43	21.47	21.57		
5	64QAM	12	0	20.79	20.50	20.46		
5	64QAM	12	7	20.38	20.48	20.57	21.00	2.5
5	64QAM	12	13	20.39	20.48	20.44		
5	64QAM	25	0	20.56	20.47	20.42		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.88	22.97	23.19	23.50	0
3	QPSK	1	8	23.09	23.11	23.1		
3	QPSK	1	14	22.9	23.07	23.03		
3	QPSK	8	0	21.98	22.08	22.24	22.50	1
3	QPSK	8	4	22.03	22.12	22.24		
3	QPSK	8	7	21.96	22.05	22.17		
3	QPSK	15	0	21.99	22.09	22.25	23.00	0.5
3	16QAM	1	0	22.36	22.24	22.3		
3	16QAM	1	8	22.14	22.26	22.67		
3	16QAM	1	14	22.07	22.38	22.43	21.50	2
3	16QAM	8	0	21.02	21.15	21.24		
3	16QAM	8	4	21.15	21.21	21.25		
3	16QAM	8	7	20.99	21.2	21.25	22.00	1.5
3	16QAM	15	0	21	21.06	21.11		
3	64QAM	1	0	21.53	21.49	21.35		
3	64QAM	1	8	21.37	21.47	21.63	21.00	2.5
3	64QAM	1	14	21.33	21.46	21.57		
3	64QAM	8	0	20.45	20.50	20.48		
3	64QAM	8	4	20.36	20.49	20.53	21.00	2.5
3	64QAM	8	7	20.33	20.48	20.63		
3	64QAM	15	0	20.29	20.47	20.46		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.04	22.89	23.01	23.50	0
1.4	QPSK	1	3	23	23.06	23.18		
1.4	QPSK	1	5	22.96	22.99	22.98		
1.4	QPSK	3	0	23.01	22.95	22.98		
1.4	QPSK	3	1	23.1	23	23.11		
1.4	QPSK	3	3	23	23.01	23.12		
1.4	QPSK	6	0	21.98	21.98	22.06	22.50	1
1.4	16QAM	1	0	22.32	22.21	22.46	23.00	0.5
1.4	16QAM	1	3	22.01	21.97	22.27		
1.4	16QAM	1	5	22.45	22.49	22.49		
1.4	16QAM	3	0	22.08	22	22.19		
1.4	16QAM	3	1	22.12	22.15	22.16		
1.4	16QAM	3	3	21.97	21.92	22.12		
1.4	16QAM	6	0	21	21.09	21.29	21.50	2
1.4	64QAM	1	0	21.66	21.47	21.37	22.00	1.5
1.4	64QAM	1	3	21.51	21.49	21.49		
1.4	64QAM	1	5	21.44	21.48	21.69		
1.4	64QAM	3	0	21.39	21.47	21.41		
1.4	64QAM	3	1	21.44	21.45	21.43		
1.4	64QAM	3	3	21.53	21.44	21.45		
1.4	64QAM	6	0	20.39	20.47	20.55	21.00	2.5



<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		22.44		23.00	0
10	QPSK	1	25		22.51			
10	QPSK	1	49		22.3			
10	QPSK	25	0		21.53		22.00	1
10	QPSK	25	12		21.44			
10	QPSK	25	25		21.42			
10	QPSK	50	0		21.46			
10	16QAM	1	0		21.57		22.00	1
10	16QAM	1	25		21.44			
10	16QAM	1	49		21.62			
10	16QAM	25	0		20.51		21.00	2
10	16QAM	25	12		20.48			
10	16QAM	25	25		20.37			
10	16QAM	50	0		20.5			
10	64QAM	1	0		20.96		21.50	1.5
10	64QAM	1	25		20.97			
10	64QAM	1	49		20.79			
10	64QAM	25	0		19.81		20.00	3
10	64QAM	25	12		19.74			
10	64QAM	25	25		19.64			
10	64QAM	50	0		19.69			
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	22.43	22.34	22.5	23.00	0
5	QPSK	1	12	22.25	22.26	22.4		
5	QPSK	1	24	22.31	22.49	22.44		
5	QPSK	12	0	21.37	21.44	21.44	22.00	1
5	QPSK	12	7	21.49	21.48	21.52		
5	QPSK	12	13	21.41	21.47	21.44		
5	QPSK	25	0	21.47	21.41	21.42		
5	16QAM	1	0	21.46	21.67	21.58	22.00	1
5	16QAM	1	12	21.38	21.65	21.32		
5	16QAM	1	24	21.5	21.56	21.68		
5	16QAM	12	0	20.42	20.53	20.42	21.00	2
5	16QAM	12	7	20.52	20.59	20.52		
5	16QAM	12	13	20.39	20.43	20.53		
5	16QAM	25	0	20.37	20.4	20.53		
5	64QAM	1	0	20.93	20.96	21.16	21.50	1.5
5	64QAM	1	12	21.06	21.00	21.13		
5	64QAM	1	24	21.02	20.93	20.96		
5	64QAM	12	0	19.91	19.74	19.97	20.00	3
5	64QAM	12	7	19.89	19.66	19.91		
5	64QAM	12	13	19.94	19.67	19.98		
5	64QAM	25	0	19.99	19.64	19.84		



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	23.03	23.23	23.13		
20	QPSK	1	49	22.91	23.03	22.91	23.50	0
20	QPSK	1	99	22.84	22.99	22.96		
20	QPSK	50	0	22.06	22.19	22.07		
20	QPSK	50	24	22	22.18	22.01	22.50	1
20	QPSK	50	50	21.96	22.07	22		
20	QPSK	100	0	22.01	22.18	22.07		
20	16QAM	1	0	22.6	22.82	22.09	23.00	0.5
20	16QAM	1	49	22	21.99	21.91		
20	16QAM	1	99	22.13	22.42	22.42		
20	16QAM	50	0	21	21.27	21.1	21.50	2
20	16QAM	50	24	21	21.08	20.96		
20	16QAM	50	50	21.04	21.06	20.95		
20	16QAM	100	0	21.02	21.2	21.01	22.00	1.5
20	64QAM	1	0	21.64	21.49	21.59		
20	64QAM	1	49	21.42	21.31	21.39		
20	64QAM	1	99	21.48	21.38	21.46	20.50	3
20	64QAM	50	0	20.49	20.26	20.46		
20	64QAM	50	24	20.34	20.21	20.38		
20	64QAM	50	50	20.37	20.16	20.33		
20	64QAM	100	0	20.36	20.22	20.41		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5	Tune-up limit (dBm)	MPR (dB)
15	QPSK	1	0	23.05	23.22	23.04		
15	QPSK	1	37	22.92	22.98	22.85		
15	QPSK	1	74	22.92	23.02	22.99	23.50	0
15	QPSK	36	0	22.04	22.2	22.04		
15	QPSK	36	20	22	22.15	22.02		
15	QPSK	36	39	21.89	22.11	21.98	22.50	1
15	QPSK	75	0	21.99	22.16	22		
15	16QAM	1	0	22.5	22.64	22.56		
15	16QAM	1	37	21.97	22.5	22.08	23.00	0.5
15	16QAM	1	74	22.04	22.59	22.37		
15	16QAM	36	0	21.03	21.2	21.06		
15	16QAM	36	20	20.95	21.16	20.92	21.50	2
15	16QAM	36	39	20.98	21.09	20.95		
15	16QAM	75	0	20.99	21.17	21.02		
15	64QAM	1	0	21.76	21.44	21.61	22.00	1.5
15	64QAM	1	37	21.39	21.33	21.40		
15	64QAM	1	74	21.42	21.38	21.34		
15	64QAM	36	0	20.38	20.21	20.36	20.50	3
15	64QAM	36	20	20.40	20.19	20.45		
15	64QAM	36	39	20.37	20.14	20.33		
15	64QAM	75	0	20.39	20.19	20.46		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.97	23.11	23.07	23.50	0
10	QPSK	1	25	22.85	22.99	22.95		
10	QPSK	1	49	22.87	23.1	22.98		
10	QPSK	25	0	22.03	22.11	22.06	22.50	1
10	QPSK	25	12	21.96	22.08	21.93		
10	QPSK	25	25	21.9	22.12	21.95		
10	QPSK	50	0	21.94	22.1	21.98		
10	16QAM	1	0	22.37	22.69	22.55	23.00	0.5
10	16QAM	1	25	22.28	22.58	22.01		
10	16QAM	1	49	22.37	22.52	22.13		
10	16QAM	25	0	21.01	21.04	20.95	21.50	2
10	16QAM	25	12	21.06	21.11	21.03		
10	16QAM	25	25	20.98	21.14	20.92		
10	16QAM	50	0	21.06	21.21	21		
10	64QAM	1	0	21.11	21.29	21.51	22.00	1.5
10	64QAM	1	25	21.38	21.34	21.67		
10	64QAM	1	49	21.37	21.31	21.52		
10	64QAM	25	0	20.38	20.25	20.36	20.50	3
10	64QAM	25	12	20.37	20.16	20.40		
10	64QAM	25	25	20.31	20.15	20.33		
10	64QAM	50	0	20.38	20.17	20.44		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	23.09	23.12	22.85	23.50	0
5	QPSK	1	12	22.83	23.1	22.88		
5	QPSK	1	24	22.92	23.18	22.93		
5	QPSK	12	0	21.93	22.09	21.94	22.50	1
5	QPSK	12	7	22	22.1	21.96		
5	QPSK	12	13	21.87	22.03	21.92		
5	QPSK	25	0	21.93	22.05	21.94		
5	16QAM	1	0	22.36	22.5	22.21	23.00	0.5
5	16QAM	1	12	21.97	22.38	22.44		
5	16QAM	1	24	22.11	22.09	22.45		
5	16QAM	12	0	21.08	21.17	20.99	21.50	2
5	16QAM	12	7	21	21.09	20.95		
5	16QAM	12	13	20.88	21.09	20.92		
5	16QAM	25	0	20.95	21.14	20.96		
5	64QAM	1	0	21.58	21.33	21.50	22.00	1.5
5	64QAM	1	12	21.49	21.30	21.53		
5	64QAM	1	24	21.48	21.36	21.48		
5	64QAM	12	0	20.38	20.21	20.37	20.50	3
5	64QAM	12	7	20.35	20.18	20.38		
5	64QAM	12	13	20.33	20.17	20.35		
5	64QAM	25	0	20.35	20.16	20.32		





Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	22.95	23.07	22.85	23.50	0
3	QPSK	1	8	22.84	23.1	22.9		
3	QPSK	1	14	22.76	23.06	22.79		
3	QPSK	8	0	21.93	22.09	21.88	22.50	1
3	QPSK	8	4	21.89	22.09	21.96		
3	QPSK	8	7	21.88	22.11	21.89		
3	QPSK	15	0	21.87	22.02	21.94		
3	16QAM	1	0	22.13	22.2	21.8	23.00	0.5
3	16QAM	1	8	21.94	22.52	22.03		
3	16QAM	1	14	21.99	22.29	22.24		
3	16QAM	8	0	21.03	21.09	20.95	21.50	2
3	16QAM	8	4	20.95	21.2	21.07		
3	16QAM	8	7	20.99	21.09	21.03		
3	16QAM	15	0	20.98	21.13	20.97		
3	64QAM	1	0	21.54	21.26	21.52	22.00	1.5
3	64QAM	1	8	21.53	21.25	21.58		
3	64QAM	1	14	21.57	21.33	21.47		
3	64QAM	8	0	20.32	20.16	20.29	20.50	3
3	64QAM	8	4	20.34	20.17	20.33		
3	64QAM	8	7	20.36	20.10	20.34		
3	64QAM	15	0	20.34	20.12	20.38		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	22.92	22.98	22.88	23.50	0
1.4	QPSK	1	3	22.86	23.09	22.94		
1.4	QPSK	1	5	22.77	22.98	22.8		
1.4	QPSK	3	0	22.88	23.01	22.9		
1.4	QPSK	3	1	22.95	23.09	22.95		
1.4	QPSK	3	3	22.87	23.06	22.86	22.50	1
1.4	QPSK	6	0	21.87	22.05	21.87		
1.4	16QAM	1	0	21.72	22.21	22.38	23.00	0.5
1.4	16QAM	1	3	22.34	22.44	22.14		
1.4	16QAM	1	5	22.01	21.98	22.3		
1.4	16QAM	3	0	21.95	22.15	21.89		
1.4	16QAM	3	1	21.75	22.04	21.96		
1.4	16QAM	3	3	21.7	22.01	21.91	21.50	2
1.4	16QAM	6	0	21.03	21.11	20.98		
1.4	64QAM	1	0	21.51	21.25	21.43	22.00	1.5
1.4	64QAM	1	3	21.56	21.27	21.57		
1.4	64QAM	1	5	21.42	21.20	21.43		
1.4	64QAM	3	0	21.32	21.06	21.27		
1.4	64QAM	3	1	21.36	21.18	21.33		
1.4	64QAM	3	3	21.34	21.02	21.28		
1.4	64QAM	6	0	20.28	20.03	20.27	20.50	3



<Reduced Power Level 1 for WWAN Only>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.74	20.08	20.14	20.50	0
20	QPSK	1	49	19.30	19.43	19.69		
20	QPSK	1	99	19.36	19.43	19.57		
20	QPSK	50	0	19.58	19.54	19.78	20.00	0.5
20	QPSK	50	24	19.35	19.48	19.75		
20	QPSK	50	50	19.29	19.38	19.52		
20	QPSK	100	0	19.39	19.47	19.65		
20	16QAM	1	0	19.89	20.10	20.12	20.50	0
20	16QAM	1	49	19.35	19.51	19.80		
20	16QAM	1	99	20.12	20.03	19.63		
20	16QAM	50	0	19.52	19.57	19.71	20.50	0
20	16QAM	50	24	19.42	19.62	19.77		
20	16QAM	50	50	19.31	19.36	19.68		
20	16QAM	100	0	19.42	19.57	19.74		
20	64QAM	1	0	19.63	19.82	19.93	20.50	0
20	64QAM	1	49	19.46	19.52	19.65		
20	64QAM	1	99	19.39	19.68	19.72		
20	64QAM	50	0	19.24	19.40	19.54	20.50	0
20	64QAM	50	24	19.21	19.38	19.48		
20	64QAM	50	50	19.21	19.33	19.45		
20	64QAM	100	0	19.28	19.42	19.46		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.57	19.59	19.76	20.50	0
15	QPSK	1	37	19.27	19.32	19.39		
15	QPSK	1	74	19.31	19.25	19.40		
15	QPSK	36	0	19.44	19.45	19.72	20.00	0.5
15	QPSK	36	20	19.36	19.50	19.58		
15	QPSK	36	39	19.33	19.48	19.53		
15	QPSK	75	0	19.39	19.42	19.62		
15	16QAM	1	0	19.69	19.55	20.03	20.50	0
15	16QAM	1	37	19.71	19.52	19.51		
15	16QAM	1	74	19.46	19.88	19.89		
15	16QAM	36	0	19.43	19.54	19.75	20.50	0
15	16QAM	36	20	19.47	19.47	19.63		
15	16QAM	36	39	19.31	19.42	19.51		
15	16QAM	75	0	19.36	19.46	19.62		
15	64QAM	1	0	19.65	19.73	19.86	20.50	0
15	64QAM	1	37	19.48	19.55	19.65		
15	64QAM	1	74	19.47	19.53	19.66		
15	64QAM	36	0	19.35	19.40	19.47	20.50	0
15	64QAM	36	20	19.27	19.36	19.42		
15	64QAM	36	39	19.34	19.37	19.41		
15	64QAM	75	0	19.31	19.34	19.44		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.66	19.72	19.72	20.50	0
10	QPSK	1	25	19.39	19.21	19.46		
10	QPSK	1	49	19.43	19.38	19.32		
10	QPSK	25	0	19.39	19.44	19.60	20.00	0.5
10	QPSK	25	12	19.41	19.39	19.56		
10	QPSK	25	25	19.38	19.42	19.49		
10	QPSK	50	0	19.41	19.46	19.48	20.50	0
10	16QAM	1	0	19.78	20.01	19.60		
10	16QAM	1	25	19.68	19.80	19.94		
10	16QAM	1	49	19.76	19.58	19.98	20.50	0
10	16QAM	25	0	19.37	19.44	19.67		
10	16QAM	25	12	19.47	19.42	19.56		
10	16QAM	25	25	19.39	19.36	19.53	20.50	0
10	16QAM	50	0	19.49	19.39	19.64		
10	64QAM	1	0	19.67	19.82	19.88		
10	64QAM	1	25	19.40	19.51	19.64	20.50	0
10	64QAM	1	49	19.58	19.76	19.81		
10	64QAM	25	0	19.34	19.37	19.45		
10	64QAM	25	12	19.30	19.38	19.47	20.50	0
10	64QAM	25	25	19.21	19.39	19.43		
10	64QAM	50	0	19.28	19.40	19.49		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.40	19.48	19.47	20.50	0
5	QPSK	1	12	19.25	19.43	19.40		
5	QPSK	1	24	19.31	19.34	19.30		
5	QPSK	12	0	19.41	19.40	19.56	20.00	0.5
5	QPSK	12	7	19.35	19.47	19.55		
5	QPSK	12	13	19.39	19.44	19.47		
5	QPSK	25	0	19.33	19.38	19.51	20.50	0
5	16QAM	1	0	19.89	19.55	20.02		
5	16QAM	1	12	19.40	19.85	19.99		
5	16QAM	1	24	19.27	19.27	19.78	20.50	0
5	16QAM	12	0	19.37	19.55	19.50		
5	16QAM	12	7	19.47	19.46	19.59		
5	16QAM	12	13	19.32	19.43	19.57	20.50	0
5	16QAM	25	0	19.39	19.33	19.59		
5	64QAM	1	0	19.48	19.58	19.67		
5	64QAM	1	12	19.42	19.59	19.64	20.50	0
5	64QAM	1	24	19.38	19.55	19.69		
5	64QAM	12	0	19.24	19.37	19.53		
5	64QAM	12	7	19.26	19.38	19.58	20.50	0
5	64QAM	12	13	19.25	19.37	19.52		
5	64QAM	25	0	19.18	19.32	19.48		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.34	19.28	19.46	20.50	0
3	QPSK	1	8	19.34	19.31	19.45		
3	QPSK	1	14	19.26	19.30	19.41		
3	QPSK	8	0	19.32	19.40	19.48	20.00	0.5
3	QPSK	8	4	19.38	19.37	19.46		
3	QPSK	8	7	19.34	19.38	19.49		
3	QPSK	15	0	19.38	19.40	19.45		
3	16QAM	1	0	19.53	19.84	19.35	20.50	0
3	16QAM	1	8	19.68	19.55	20.00		
3	16QAM	1	14	19.57	19.51	19.59		
3	16QAM	8	0	19.52	19.45	19.47	20.50	0
3	16QAM	8	4	19.58	19.52	19.58		
3	16QAM	8	7	19.36	19.44	19.52		
3	16QAM	15	0	19.45	19.43	19.39		
3	64QAM	1	0	19.35	19.47	19.54	20.50	0
3	64QAM	1	8	19.34	19.51	19.68		
3	64QAM	1	14	19.28	19.50	19.57		
3	64QAM	8	0	19.17	19.31	19.61	20.50	0
3	64QAM	8	4	19.24	19.33	19.48		
3	64QAM	8	7	19.26	19.31	19.53		
3	64QAM	15	0	19.17	19.34	19.47		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.21	19.20	19.34	20.50	0
1.4	QPSK	1	3	19.35	19.28	19.38		
1.4	QPSK	1	5	19.20	19.31	19.30		
1.4	QPSK	3	0	19.30	19.38	19.39		
1.4	QPSK	3	1	19.33	19.36	19.39		
1.4	QPSK	3	3	19.24	19.45	19.34	20.00	0.5
1.4	16QAM	1	0	19.29	19.80	19.83	20.50	0
1.4	16QAM	1	3	19.47	19.27	19.42		
1.4	16QAM	1	5	19.41	19.82	19.76		
1.4	16QAM	3	0	19.41	19.19	19.28		
1.4	16QAM	3	1	19.43	19.43	19.45		
1.4	16QAM	3	3	19.37	19.41	19.18	20.50	0
1.4	16QAM	6	0	19.49	19.50	19.48	20.50	0
1.4	64QAM	1	0	19.34	19.42	19.45	20.50	0
1.4	64QAM	1	3	19.24	19.47	19.38		
1.4	64QAM	1	5	19.27	19.42	19.48		
1.4	64QAM	3	0	19.31	19.26	19.51		
1.4	64QAM	3	1	19.14	19.33	19.39		
1.4	64QAM	3	3	19.18	19.27	19.42	20.50	0
1.4	64QAM	6	0	19.22	19.26	19.37	20.50	0



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	20.33	20.74	20.54	21.00	0
20	QPSK	1	49	20.09	20.13	20.18		
20	QPSK	1	99	19.98	19.94	20.05		
20	QPSK	50	0	20.18	20.28	20.27	20.50	0.5
20	QPSK	50	24	20.17	20.27	20.21		
20	QPSK	50	50	20.13	20.24	20.14		
20	QPSK	100	0	20.20	20.25	20.24		
20	16QAM	1	0	20.26	20.70	20.51	21.00	0
20	16QAM	1	49	20.70	20.67	20.17		
20	16QAM	1	99	20.55	20.59	20.52		
20	16QAM	50	0	20.21	20.39	20.37	21.00	0
20	16QAM	50	24	20.22	20.28	20.17		
20	16QAM	50	50	20.08	20.32	20.24		
20	16QAM	100	0	20.26	20.28	20.25		
20	64QAM	1	0	20.35	20.54	20.42	21.00	0
20	64QAM	1	49	20.24	20.37	20.35		
20	64QAM	1	99	20.28	20.30	20.25		
20	64QAM	50	0	20.31	20.34	20.23	21.00	0
20	64QAM	50	24	20.25	20.30	20.21		
20	64QAM	50	50	20.18	20.22	20.28		
20	64QAM	100	0	20.17	20.29	20.23		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.14	20.33	20.46	21.00	0
15	QPSK	1	37	20.07	20.10	20.08		
15	QPSK	1	74	20.16	20.13	20.05		
15	QPSK	36	0	20.19	20.29	20.22	20.50	0.5
15	QPSK	36	20	20.16	20.20	20.19		
15	QPSK	36	39	20.08	20.22	20.18		
15	QPSK	75	0	20.11	20.23	20.15		
15	16QAM	1	0	20.38	20.41	20.57	21.00	0
15	16QAM	1	37	20.27	20.51	20.02		
15	16QAM	1	74	20.44	20.66	20.23		
15	16QAM	36	0	20.28	20.38	20.25	21.00	0
15	16QAM	36	20	20.19	20.24	20.28		
15	16QAM	36	39	20.16	20.26	20.14		
15	16QAM	75	0	20.23	20.33	20.21		
15	64QAM	1	0	20.28	20.53	20.38	21.00	0
15	64QAM	1	37	20.31	20.36	20.31		
15	64QAM	1	74	20.15	20.39	20.42		
15	64QAM	36	0	20.18	20.28	20.26	21.00	0
15	64QAM	36	20	20.25	20.26	20.28		
15	64QAM	36	39	20.21	20.24	20.30		
15	64QAM	75	0	20.22	20.25	20.20		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.10	20.21	20.16	21.00	0
10	QPSK	1	25	19.99	20.08	20.04		
10	QPSK	1	49	20.03	20.16	20.06		
10	QPSK	25	0	20.13	20.22	20.17	20.50	0.5
10	QPSK	25	12	20.05	20.23	20.16		
10	QPSK	25	25	20.09	20.24	20.13		
10	QPSK	50	0	20.15	20.20	20.13	21.00	0
10	16QAM	1	0	20.23	20.20	20.43		
10	16QAM	1	25	20.31	20.64	20.17		
10	16QAM	1	49	19.96	20.20	20.48	21.00	0
10	16QAM	25	0	20.21	20.27	20.08		
10	16QAM	25	12	20.15	20.25	20.15		
10	16QAM	25	25	20.10	20.13	20.14	21.00	0
10	16QAM	50	0	20.16	20.24	20.17		
10	64QAM	1	0	20.22	20.43	20.31		
10	64QAM	1	25	20.18	20.35	20.26	21.00	0
10	64QAM	1	49	20.31	20.36	20.30		
10	64QAM	25	0	20.14	20.25	20.10		
10	64QAM	25	12	20.13	20.23	20.13	21.00	0
10	64QAM	25	25	20.20	20.21	20.16		
10	64QAM	50	0	20.16	20.26	20.25		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.08	20.16	20.06	21.00	0
5	QPSK	1	12	19.89	20.10	19.90		
5	QPSK	1	24	20.05	20.13	20.02		
5	QPSK	12	0	20.05	20.15	20.14	20.50	0.5
5	QPSK	12	7	20.10	20.17	20.09		
5	QPSK	12	13	20.05	20.19	20.09		
5	QPSK	25	0	20.13	20.15	20.13	21.00	0
5	16QAM	1	0	20.64	20.69	20.37		
5	16QAM	1	12	20.25	20.29	20.18		
5	16QAM	1	24	20.18	20.31	20.63	21.00	0
5	16QAM	12	0	20.16	20.22	20.15		
5	16QAM	12	7	20.16	20.29	20.18		
5	16QAM	12	13	20.11	20.29	20.11	21.00	0
5	16QAM	25	0	20.09	20.24	20.16		
5	64QAM	1	0	20.12	20.39	20.32		
5	64QAM	1	12	20.09	20.32	20.24	21.00	0
5	64QAM	1	24	20.21	20.36	20.26		
5	64QAM	12	0	20.15	20.22	20.29		
5	64QAM	12	7	20.11	20.19	20.10	21.00	0
5	64QAM	12	13	20.08	20.18	20.16		
5	64QAM	25	0	20.15	20.16	20.08		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.00	20.19	20.01	21.00	0
3	QPSK	1	8	20.03	20.07	19.96		
3	QPSK	1	14	19.99	20.04	19.95		
3	QPSK	8	0	20.04	20.22	20.09	20.50	0.5
3	QPSK	8	4	20.07	20.20	20.07		
3	QPSK	8	7	20.02	20.24	20.06		
3	QPSK	15	0	20.07	20.18	20.10		
3	16QAM	1	0	20.31	20.36	20.43	21.00	0
3	16QAM	1	8	20.15	20.64	19.91		
3	16QAM	1	14	20.52	20.35	20.52		
3	16QAM	8	0	20.15	20.19	20.03	21.00	0
3	16QAM	8	4	20.04	20.21	20.12		
3	16QAM	8	7	20.16	20.27	20.18		
3	16QAM	15	0	20.17	20.20	20.07		
3	64QAM	1	0	20.11	20.34	20.25	21.00	0
3	64QAM	1	8	20.16	20.31	20.21		
3	64QAM	1	14	20.14	20.33	20.14		
3	64QAM	8	0	20.05	20.16	20.08	21.00	0
3	64QAM	8	4	20.03	20.23	20.16		
3	64QAM	8	7	20.11	20.18	20.19		
3	64QAM	15	0	20.07	20.15	20.10		
3	64QAM	15	0	20.07	20.15	20.10		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.99	20.04	19.94	21.00	0
1.4	QPSK	1	3	19.98	20.19	19.99		
1.4	QPSK	1	5	19.86	20.04	20.01		
1.4	QPSK	3	0	19.94	20.10	20.06		
1.4	QPSK	3	1	20.01	20.09	20.09		
1.4	QPSK	3	3	20.00	20.16	20.03		
1.4	QPSK	6	0	19.98	20.06	20.06	20.50	0.5
1.4	16QAM	1	0	19.93	20.03	20.40	21.00	0
1.4	16QAM	1	3	20.60	20.65	20.28		
1.4	16QAM	1	5	19.85	20.05	20.44		
1.4	16QAM	3	0	20.06	20.20	20.14		
1.4	16QAM	3	1	19.96	20.15	19.98		
1.4	16QAM	3	3	19.91	20.01	20.07		
1.4	16QAM	6	0	20.16	20.19	20.05	21.00	0
1.4	64QAM	1	0	20.18	20.31	20.26	21.00	0
1.4	64QAM	1	3	20.31	20.37	20.22		
1.4	64QAM	1	5	20.15	20.25	20.21		
1.4	64QAM	3	0	20.08	20.14	20.23		
1.4	64QAM	3	1	20.18	20.16	20.18		
1.4	64QAM	3	3	20.12	20.15	20.13		
1.4	64QAM	6	0	20.08	20.11	20.14	21.00	0



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600	20.50	0
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	20.19	19.85	19.99		
10	QPSK	1	25	19.90	19.89	19.94	20.50	0
10	QPSK	1	49	19.99	19.90	20.38		
10	QPSK	25	0	20.07	20.05	20.15		
10	QPSK	25	12	20.05	20.03	20.11	20.50	0
10	QPSK	25	25	19.95	20.00	20.05		
10	QPSK	50	0	20.03	20.02	20.04		
10	16QAM	1	0	20.15	20.08	20.18	20.50	0
10	16QAM	1	25	20.07	20.20	20.18		
10	16QAM	1	49	20.06	19.89	20.10		
10	16QAM	25	0	20.12	20.03	20.06	20.50	0
10	16QAM	25	12	20.07	20.07	20.15		
10	16QAM	25	25	19.90	19.97	20.06		
10	16QAM	50	0	19.97	19.98	20.01	20.50	0
10	64QAM	1	0	20.21	20.27	20.24		
10	64QAM	1	25	20.20	20.29	20.26		
10	64QAM	1	49	20.19	20.28	20.21	20.50	0
10	64QAM	25	0	20.05	20.17	20.14		
10	64QAM	25	12	20.11	20.10	20.10		
10	64QAM	25	25	20.14	20.14	20.15	20.50	0
10	64QAM	50	0	20.23	20.17	20.13		
Channel				20425	20525	20625		
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	19.97	20.00	19.98	20.50	0
5	QPSK	1	12	19.92	19.83	19.95		
5	QPSK	1	24	19.91	20.03	19.90		
5	QPSK	12	0	19.97	20.02	20.05	20.50	0
5	QPSK	12	7	20.00	20.00	20.06		
5	QPSK	12	13	20.01	20.00	19.97		
5	QPSK	25	0	19.98	20.05	20.04	20.50	0
5	16QAM	1	0	19.92	20.14	20.17		
5	16QAM	1	12	20.11	20.17	19.91		
5	16QAM	1	24	20.37	20.21	20.02	20.50	0
5	16QAM	12	0	20.08	20.08	20.03		
5	16QAM	12	7	19.99	20.04	19.98		
5	16QAM	12	13	20.01	20.04	20.09	20.50	0
5	16QAM	25	0	20.02	20.08	20.10		
5	64QAM	1	0	20.21	20.28	20.25		
5	64QAM	1	12	20.23	20.26	20.26	20.50	0
5	64QAM	1	24	20.24	20.23	20.27		
5	64QAM	12	0	20.20	20.17	20.14		
5	64QAM	12	7	20.14	20.13	20.11	20.50	0
5	64QAM	12	13	20.15	20.14	20.16		
5	64QAM	25	0	20.17	20.15	20.18		





Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	20.03	19.87	19.91	20.50	0
3	QPSK	1	8	19.96	19.82	19.97		
3	QPSK	1	14	19.86	19.89	19.91		
3	QPSK	8	0	20.01	20.04	20.06	20.50	0
3	QPSK	8	4	20.08	19.99	20.02		
3	QPSK	8	7	20.04	20.01	20.01		
3	QPSK	15	0	20.05	20.04	20.03		
3	16QAM	1	0	20.23	20.08	20.25	20.50	0
3	16QAM	1	8	19.98	20.22	19.98		
3	16QAM	1	14	20.04	20.00	20.29		
3	16QAM	8	0	20.06	20.05	20.11	20.50	0
3	16QAM	8	4	20.21	20.18	20.09		
3	16QAM	8	7	20.14	20.06	20.07		
3	16QAM	15	0	19.88	20.02	19.97		
3	64QAM	1	0	20.26	20.28	20.22	20.50	0
3	64QAM	1	8	20.21	20.26	20.23		
3	64QAM	1	14	20.25	20.22	20.29		
3	64QAM	8	0	20.18	20.15	20.14	20.50	0
3	64QAM	8	4	20.14	20.14	20.20		
3	64QAM	8	7	20.16	20.12	20.11		
3	64QAM	15	0	20.12	20.15	20.13		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	19.91	19.80	19.88	20.50	0
1.4	QPSK	1	3	19.92	19.91	20.01		
1.4	QPSK	1	5	19.83	19.91	19.78		
1.4	QPSK	3	0	19.92	19.88	19.95		
1.4	QPSK	3	1	19.91	19.94	19.99		
1.4	QPSK	3	3	19.84	19.87	19.84	20.50	0
1.4	QPSK	6	0	19.91	19.91	19.90		
1.4	16QAM	1	0	20.16	19.97	19.79	20.50	0
1.4	16QAM	1	3	20.15	20.36	20.22		
1.4	16QAM	1	5	19.97	19.92	20.31		
1.4	16QAM	3	0	20.01	19.99	19.78		
1.4	16QAM	3	1	20.03	19.91	19.99		
1.4	16QAM	3	3	20.01	19.95	20.07	20.50	0
1.4	16QAM	6	0	20.01	20.07	20.09		
1.4	64QAM	1	0	20.20	20.25	20.36	20.50	0
1.4	64QAM	1	3	20.29	20.28	20.20		
1.4	64QAM	1	5	20.23	20.26	20.18		
1.4	64QAM	3	0	20.33	20.31	20.20		
1.4	64QAM	3	1	20.36	20.34	20.28		
1.4	64QAM	3	3	20.30	20.29	20.24	20.50	0
1.4	64QAM	6	0	20.30	20.27	20.20		



<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	17.55	17.60	17.93	18.00	0
20	QPSK	1	49	17.25	17.28	17.62		
20	QPSK	1	99	17.35	17.41	17.48		
20	QPSK	50	0	17.42	17.62	17.64	18.00	0
20	QPSK	50	24	17.35	17.60	17.48		
20	QPSK	50	50	17.40	17.41	17.55		
20	QPSK	100	0	17.33	17.64	17.65	18.00	0
20	16QAM	1	0	17.86	17.63	17.71		
20	16QAM	1	49	17.17	17.75	17.74		
20	16QAM	1	99	17.60	17.62	17.55	18.00	0
20	16QAM	50	0	17.53	17.67	17.67		
20	16QAM	50	24	17.40	17.63	17.65		
20	16QAM	50	50	17.44	17.54	17.51	18.00	0
20	16QAM	100	0	17.43	17.66	17.55		
20	64QAM	1	0	17.48	17.75	17.66		
20	64QAM	1	49	17.52	17.60	17.49	18.00	0
20	64QAM	1	99	17.25	17.48	17.40		
20	64QAM	50	0	17.34	17.47	17.38		
20	64QAM	50	24	17.26	17.38	17.25	18.00	0
20	64QAM	50	50	17.21	17.33	17.22		
20	64QAM	100	0	17.27	17.35	17.26		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	17.37	17.56	17.73	18.00	0
15	QPSK	1	37	17.23	17.44	17.40		
15	QPSK	1	74	17.35	17.45	17.39		
15	QPSK	36	0	17.42	17.59	17.52	18.00	0
15	QPSK	36	20	17.33	17.55	17.50		
15	QPSK	36	39	17.40	17.57	17.52		
15	QPSK	75	0	17.37	17.58	17.43	18.00	0
15	16QAM	1	0	17.82	17.90	17.72		
15	16QAM	1	37	17.78	17.50	17.47		
15	16QAM	1	74	17.52	17.66	17.76	18.00	0
15	16QAM	36	0	17.33	17.59	17.58		
15	16QAM	36	20	17.34	17.68	17.61		
15	16QAM	36	39	17.39	17.52	17.50	18.00	0
15	16QAM	75	0	17.42	17.65	17.58		
15	64QAM	1	0	17.65	17.86	17.76		
15	64QAM	1	37	17.42	17.48	17.41	18.00	0
15	64QAM	1	74	17.23	17.38	17.25		
15	64QAM	36	0	17.42	17.44	17.39		
15	64QAM	36	20	17.25	17.40	17.28	18.00	0
15	64QAM	36	39	17.18	17.30	17.24		
15	64QAM	75	0	17.21	17.37	17.32		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	17.50	17.64	17.51	18.00	0
10	QPSK	1	25	17.27	17.58	17.40		
10	QPSK	1	49	17.24	17.35	17.43		
10	QPSK	25	0	17.25	17.51	17.47	18.00	0
10	QPSK	25	12	17.32	17.55	17.55		
10	QPSK	25	25	17.29	17.58	17.46		
10	QPSK	50	0	17.27	17.60	17.62	18.00	0
10	16QAM	1	0	17.85	17.74	17.35		
10	16QAM	1	25	17.79	17.69	17.69		
10	16QAM	1	49	17.86	17.76	17.78	18.00	0
10	16QAM	25	0	17.34	17.75	17.46		
10	16QAM	25	12	17.43	17.68	17.56		
10	16QAM	25	25	17.37	17.60	17.50	18.00	0
10	16QAM	50	0	17.37	17.56	17.50		
10	64QAM	1	0	17.42	17.66	17.50		
10	64QAM	1	25	17.32	17.53	17.36	18.00	0
10	64QAM	1	49	17.24	17.40	17.23		
10	64QAM	25	0	17.20	17.39	17.28		
10	64QAM	25	12	17.20	17.37	17.29	18.00	0
10	64QAM	25	25	17.15	17.31	17.23		
10	64QAM	50	0	17.21	17.36	17.26		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	17.30	17.52	17.47	18.00	0
5	QPSK	1	12	17.21	17.48	17.59		
5	QPSK	1	24	17.17	17.52	17.42		
5	QPSK	12	0	17.26	17.57	17.55	18.00	0
5	QPSK	12	7	17.31	17.53	17.49		
5	QPSK	12	13	17.30	17.51	17.50		
5	QPSK	25	0	17.24	17.57	17.48	18.00	0
5	16QAM	1	0	17.51	17.61	17.79		
5	16QAM	1	12	17.19	17.35	17.62		
5	16QAM	1	24	17.65	17.80	17.59	18.00	0
5	16QAM	12	0	17.31	17.60	17.60		
5	16QAM	12	7	17.33	17.52	17.49		
5	16QAM	12	13	17.23	17.42	17.45	18.00	0
5	16QAM	25	0	17.32	17.54	17.50		
5	64QAM	1	0	17.36	17.54	17.37		
5	64QAM	1	12	17.36	17.51	17.40	18.00	0
5	64QAM	1	24	17.30	17.41	17.29		
5	64QAM	12	0	17.20	17.38	17.30		
5	64QAM	12	7	17.23	17.43	17.30	18.00	0
5	64QAM	12	13	17.20	17.32	17.27		
5	64QAM	25	0	17.18	17.34	17.24		



<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	21.41	21.48	21.87	22.00	0
10	QPSK	1	25	21.13	21.17	21.23		
10	QPSK	1	49	21.23	21.29	21.19		
10	QPSK	25	0	21.23	21.25	21.18	21.50	0.5
10	QPSK	25	12	21.28	21.18	21.30		
10	QPSK	25	25	21.30	21.35	21.39		
10	QPSK	50	0	21.24	21.23	21.28	22.00	0
10	16QAM	1	0	21.37	21.40	21.68		
10	16QAM	1	25	21.37	21.68	21.48		
10	16QAM	1	49	21.45	21.72	21.44	22.00	0
10	16QAM	25	0	21.20	21.15	21.22		
10	16QAM	25	12	21.30	21.35	21.29		
10	16QAM	25	25	21.29	21.31	21.19	22.00	0
10	16QAM	50	0	21.31	21.23	21.22		
10	64QAM	1	0	21.71	21.85	21.67		
10	64QAM	1	25	21.65	21.77	21.62	22.00	0
10	64QAM	1	49	21.72	21.80	21.66		
10	64QAM	25	0	20.50	20.70	20.63		
10	64QAM	25	12	20.54	20.67	20.48	22.00	0
10	64QAM	25	25	20.46	20.65	20.54		
10	64QAM	50	0	20.39	20.66	20.39		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	21.30	21.12	21.16	22.00	0
5	QPSK	1	12	21.14	21.15	21.23		
5	QPSK	1	24	21.31	21.19	21.20		
5	QPSK	12	0	21.19	21.19	21.22	21.50	0.5
5	QPSK	12	7	21.24	21.17	21.19		
5	QPSK	12	13	21.22	21.19	21.21		
5	QPSK	25	0	21.24	21.20	21.20	22.00	0
5	16QAM	1	0	21.36	21.66	21.68		
5	16QAM	1	12	21.68	21.26	21.50		
5	16QAM	1	24	21.38	21.39	21.44	22.00	0
5	16QAM	12	0	21.18	21.26	21.33		
5	16QAM	12	7	21.31	21.26	21.29		
5	16QAM	12	13	21.28	21.20	21.20	22.00	0
5	16QAM	25	0	21.27	21.22	21.23		
5	64QAM	1	0	21.58	21.86	21.74		
5	64QAM	1	12	21.67	21.75	21.58	22.00	0
5	64QAM	1	24	21.73	21.82	21.69		
5	64QAM	12	0	20.44	20.64	20.47		
5	64QAM	12	7	20.43	20.67	20.58	22.00	0
5	64QAM	12	13	20.37	20.57	20.61		
5	64QAM	25	0	20.34	20.64	20.37		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	21.18	21.09	21.07	22.00	0
3	QPSK	1	8	21.17	21.10	21.16		
3	QPSK	1	14	21.15	21.21	21.04		
3	QPSK	8	0	21.20	21.12	21.12	21.50	0.5
3	QPSK	8	4	21.27	21.17	21.23		
3	QPSK	8	7	21.23	21.17	21.18		
3	QPSK	15	0	21.19	21.16	21.11		
3	16QAM	1	0	21.74	21.35	21.65	22.00	0
3	16QAM	1	8	21.61	21.64	21.21		
3	16QAM	1	14	21.07	21.51	21.65		
3	16QAM	8	0	21.34	21.12	21.21	22.00	0
3	16QAM	8	4	21.29	21.29	21.33		
3	16QAM	8	7	21.26	21.27	21.14		
3	16QAM	15	0	21.26	21.17	21.14		
3	64QAM	1	0	21.72	21.81	21.67	22.00	0
3	64QAM	1	8	21.64	21.77	21.48		
3	64QAM	1	14	21.66	21.74	21.39		
3	64QAM	8	0	20.43	20.58	20.19	22.00	0
3	64QAM	8	4	20.75	20.62	20.43		
3	64QAM	8	7	20.43	20.53	20.34		
3	64QAM	15	0	20.73	20.59	20.48		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	21.07	20.98	21.02	22.00	0
1.4	QPSK	1	3	21.17	21.02	20.98		
1.4	QPSK	1	5	21.11	20.93	20.98		
1.4	QPSK	3	0	21.11	21.04	21.19		
1.4	QPSK	3	1	21.10	21.16	21.05		
1.4	QPSK	3	3	21.15	21.05	21.07	21.50	0.5
1.4	QPSK	6	0	21.10	21.09	21.12		
1.4	16QAM	1	0	21.62	21.26	21.17	22.00	0
1.4	16QAM	1	3	21.61	21.67	21.64		
1.4	16QAM	1	5	21.00	21.44	21.10		
1.4	16QAM	3	0	21.19	21.17	21.10		
1.4	16QAM	3	1	21.20	21.20	21.06		
1.4	16QAM	3	3	21.14	21.12	21.15	22.00	0
1.4	16QAM	6	0	21.24	21.06	21.33		
1.4	64QAM	1	0	21.47	21.73	21.38	22.00	0
1.4	64QAM	1	3	21.71	21.74	21.46		
1.4	64QAM	1	5	21.38	21.70	21.58		
1.4	64QAM	3	0	21.43	21.56	21.66		
1.4	64QAM	3	1	21.31	21.60	21.78		
1.4	64QAM	3	3	21.33	21.53	21.47		
1.4	64QAM	6	0	20.44	20.54	21.63	22.00	0



<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	21.66	21.28	21.16	22.00	0
10	QPSK	1	25	21.12	21.14	21.13		
10	QPSK	1	49	21.11	21.15	21.06		
10	QPSK	25	0	21.28	21.27	21.27	21.50	0.5
10	QPSK	25	12	21.27	21.22	21.22		
10	QPSK	25	25	21.21	21.26	21.22		
10	QPSK	50	0	21.25	21.23	21.24		
10	16QAM	1	0	21.41	21.54	21.46	22.00	0
10	16QAM	1	25	21.36	21.60	21.41		
10	16QAM	1	49	21.17	21.61	21.65		
10	16QAM	25	0	21.34	21.34	21.31	22.00	0
10	16QAM	25	12	21.37	21.26	21.39		
10	16QAM	25	25	21.25	21.19	21.28		
10	16QAM	50	0	21.21	21.24	21.22		
10	64QAM	1	0	21.57	21.65	21.54	22.00	0
10	64QAM	1	25	21.59	21.55	21.39		
10	64QAM	1	49	21.58	21.55	21.45		
10	64QAM	25	0	21.46	20.76	20.36	22.00	0
10	64QAM	25	12	21.44	20.74	20.71		
10	64QAM	25	25	20.55	20.63	20.57		
10	64QAM	50	0	20.63	20.73	20.67		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	21.18	21.10	21.14	22.00	0
5	QPSK	1	12	21.29	21.07	21.10		
5	QPSK	1	24	21.16	21.17	21.15		
5	QPSK	12	0	21.29	21.22	21.25	21.50	0.5
5	QPSK	12	7	21.28	21.29	21.26		
5	QPSK	12	13	21.25	21.23	21.22		
5	QPSK	25	0	21.23	21.20	21.14		
5	16QAM	1	0	21.48	21.62	21.34	22.00	0
5	16QAM	1	12	21.11	21.40	21.17		
5	16QAM	1	24	21.55	21.12	21.58		
5	16QAM	12	0	21.32	21.24	21.15	22.00	0
5	16QAM	12	7	21.34	21.29	21.26		
5	16QAM	12	13	21.30	21.28	21.24		
5	16QAM	25	0	21.21	21.27	21.21		
5	64QAM	1	0	21.57	21.55	21.65	22.00	0
5	64QAM	1	12	21.46	21.58	21.54		
5	64QAM	1	24	21.58	21.58	21.63		
5	64QAM	12	0	20.61	20.76	20.61	22.00	0
5	64QAM	12	7	20.47	20.73	20.37		
5	64QAM	12	13	20.71	20.70	20.41		
5	64QAM	25	0	20.66	20.73	20.77		



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	19.78	19.75	19.90	20.50	0
20	QPSK	1	49	19.18	19.23	19.43		
20	QPSK	1	99	19.34	19.12	19.19		
20	QPSK	50	0	19.34	19.33	19.66	20.00	0.5
20	QPSK	50	24	19.23	19.32	19.47		
20	QPSK	50	50	19.17	19.23	19.43		
20	QPSK	100	0	19.18	19.31	19.49		
20	16QAM	1	0	19.68	19.74	19.74	20.50	0
20	16QAM	1	49	19.15	19.61	19.61		
20	16QAM	1	99	19.49	19.37	19.40		
20	16QAM	50	0	19.22	19.42	19.68	20.50	0
20	16QAM	50	24	19.17	19.31	19.56		
20	16QAM	50	50	19.17	19.25	19.38		
20	16QAM	100	0	19.23	19.32	19.54		
20	64QAM	1	0	19.48	19.77	19.78	20.50	0
20	64QAM	1	49	19.23	19.46	19.66		
20	64QAM	1	99	19.21	19.60	19.76		
20	64QAM	50	0	19.18	19.36	19.45	20.50	0
20	64QAM	50	24	19.24	19.33	19.42		
20	64QAM	50	50	19.18	19.26	19.53		
20	64QAM	100	0	19.11	19.36	19.38		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	19.26	19.32	19.64	20.50	0
15	QPSK	1	37	19.10	19.25	19.24		
15	QPSK	1	74	19.08	19.08	19.14		
15	QPSK	36	0	19.32	19.32	19.42	20.00	0.5
15	QPSK	36	20	19.21	19.32	19.32		
15	QPSK	36	39	19.11	19.25	19.24		
15	QPSK	75	0	19.20	19.30	19.41		
15	16QAM	1	0	19.73	19.58	19.73	20.50	0
15	16QAM	1	37	19.24	19.39	19.75		
15	16QAM	1	74	19.14	19.55	19.66		
15	16QAM	36	0	19.28	19.27	19.55	20.50	0
15	16QAM	36	20	19.28	19.28	19.40		
15	16QAM	36	39	19.18	19.25	19.29		
15	16QAM	75	0	19.26	19.30	19.39		
15	64QAM	1	0	19.35	19.59	19.58	20.50	0
15	64QAM	1	37	19.28	19.53	19.67		
15	64QAM	1	74	19.36	19.43	19.56		
15	64QAM	36	0	19.27	19.33	19.74	20.50	0
15	64QAM	36	20	19.24	19.32	19.19		
15	64QAM	36	39	19.14	19.24	19.43		
15	64QAM	75	0	19.21	19.32	19.41		



Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	19.51	19.47	19.34	20.50	0
10	QPSK	1	25	19.13	19.15	19.22		
10	QPSK	1	49	19.19	19.32	19.18		
10	QPSK	25	0	19.22	19.27	19.34	20.00	0.5
10	QPSK	25	12	19.19	19.25	19.29		
10	QPSK	25	25	19.16	19.26	19.24		
10	QPSK	50	0	19.17	19.26	19.33		
10	16QAM	1	0	19.68	19.39	19.53	20.50	0
10	16QAM	1	25	19.12	19.08	19.32		
10	16QAM	1	49	19.47	19.52	19.67		
10	16QAM	25	0	19.31	19.35	19.30	20.50	0
10	16QAM	25	12	19.17	19.22	19.39		
10	16QAM	25	25	19.17	19.20	19.21		
10	16QAM	50	0	19.20	19.18	19.38		
10	64QAM	1	0	19.42	19.64	19.64	20.50	0
10	64QAM	1	25	19.53	19.45	19.45		
10	64QAM	1	49	19.32	19.61	19.42		
10	64QAM	25	0	19.14	19.30	19.31	20.50	0
10	64QAM	25	12	19.21	19.29	19.23		
10	64QAM	25	25	19.16	19.20	19.18		
10	64QAM	50	0	19.23	19.32	19.25		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	19.21	19.22	19.35	20.50	0
5	QPSK	1	12	19.01	19.10	19.33		
5	QPSK	1	24	19.15	19.10	19.29		
5	QPSK	12	0	19.20	19.30	19.30	20.00	0.5
5	QPSK	12	7	19.24	19.23	19.32		
5	QPSK	12	13	19.20	19.19	19.29		
5	QPSK	25	0	19.22	19.28	19.31		
5	16QAM	1	0	19.33	19.64	19.65	20.50	0
5	16QAM	1	12	19.26	19.55	19.29		
5	16QAM	1	24	19.65	19.22	19.60		
5	16QAM	12	0	19.20	19.26	19.34	20.50	0
5	16QAM	12	7	19.19	19.18	19.35		
5	16QAM	12	13	19.17	19.18	19.29		
5	16QAM	25	0	19.21	19.20	19.44		
5	64QAM	1	0	19.34	19.48	19.54	20.50	0
5	64QAM	1	12	19.24	19.50	19.47		
5	64QAM	1	24	19.21	19.41	19.42		
5	64QAM	12	0	19.18	19.25	19.37	20.50	0
5	64QAM	12	7	19.21	19.28	19.26		
5	64QAM	12	13	19.14	19.28	19.22		
5	64QAM	25	0	19.19	19.25	19.27		





Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	19.04	19.17	19.30	20.50	0
3	QPSK	1	8	19.11	19.16	19.13		
3	QPSK	1	14	19.02	19.16	19.42		
3	QPSK	8	0	19.17	19.26	19.36	20.00	0.5
3	QPSK	8	4	19.22	19.22	19.33		
3	QPSK	8	7	19.16	19.19	19.26		
3	QPSK	15	0	19.15	19.24	19.21		
3	16QAM	1	0	19.31	19.73	19.58	20.50	0
3	16QAM	1	8	19.58	19.24	19.35		
3	16QAM	1	14	19.43	19.71	19.38		
3	16QAM	8	0	19.13	19.23	19.43	20.50	0
3	16QAM	8	4	19.31	19.29	19.46		
3	16QAM	8	7	19.20	19.21	19.20		
3	16QAM	15	0	19.27	19.22	19.19		
3	64QAM	1	0	19.37	19.46	19.56	20.50	0
3	64QAM	1	8	19.24	19.47	19.57		
3	64QAM	1	14	19.21	19.52	19.25		
3	64QAM	8	0	19.17	19.24	19.27	20.50	0
3	64QAM	8	4	19.24	19.27	19.34		
3	64QAM	8	7	19.15	19.20	19.23		
3	64QAM	15	0	19.13	19.23	19.34		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	19.07	19.13	19.19	20.50	0
1.4	QPSK	1	3	19.17	19.17	19.16		
1.4	QPSK	1	5	19.05	19.12	19.20		
1.4	QPSK	3	0	19.14	19.22	19.32		
1.4	QPSK	3	1	19.25	19.22	19.16		
1.4	QPSK	3	3	19.13	19.17	19.12	20.00	0.5
1.4	QPSK	6	0	19.15	19.20	19.17		
1.4	16QAM	1	0	19.27	19.15	19.08	20.50	0
1.4	16QAM	1	3	19.53	19.42	19.32		
1.4	16QAM	1	5	19.01	19.49	19.44		
1.4	16QAM	3	0	19.14	19.28	19.25		
1.4	16QAM	3	1	19.17	19.25	19.21		
1.4	16QAM	3	3	19.25	19.02	19.20	20.50	0
1.4	16QAM	6	0	19.05	19.10	19.21		
1.4	64QAM	1	0	19.47	19.57	19.67	20.50	0
1.4	64QAM	1	3	19.48	19.65	19.60		
1.4	64QAM	1	5	19.56	19.60	19.27		
1.4	64QAM	3	0	19.27	19.38	19.24		
1.4	64QAM	3	1	19.24	19.45	19.25		
1.4	64QAM	3	3	19.23	19.43	19.23		
1.4	64QAM	6	0	19.27	19.42	19.22	20.50	0



<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	20.67	20.71	21.11	21.50	0
15	QPSK	1	37	20.54	20.69	20.69		
15	QPSK	1	74	20.56	20.68	20.61		
15	QPSK	36	0	20.73	20.75	21.01	21.50	0
15	QPSK	36	20	20.72	20.69	20.95		
15	QPSK	36	39	20.67	20.68	20.77		
15	QPSK	75	0	20.64	20.55	20.84	21.50	0
15	16QAM	1	0	20.91	20.91	20.86		
15	16QAM	1	37	20.87	21.01	21.03		
15	16QAM	1	74	21.05	21.01	20.89	21.50	0
15	16QAM	36	0	20.74	20.65	20.87		
15	16QAM	36	20	20.70	20.77	20.90		
15	16QAM	36	39	20.72	20.75	20.77	21.50	0
15	16QAM	75	0	20.64	20.67	20.84		
15	64QAM	1	0	21.02	21.08	21.02		
15	64QAM	1	37	21.04	21.05	21.00	21.50	0
15	64QAM	1	74	21.04	21.08	20.96		
15	64QAM	36	0	20.43	20.73	20.68		
15	64QAM	36	20	20.38	20.77	20.71	21.50	0
15	64QAM	36	39	20.56	20.65	20.45		
15	64QAM	75	0	20.21	20.65	20.61		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	20.59	20.48	20.69	21.50	0
10	QPSK	1	25	20.58	20.54	20.77		
10	QPSK	1	49	20.51	20.55	20.59		
10	QPSK	25	0	20.60	20.61	20.80	21.50	0
10	QPSK	25	12	20.66	20.73	20.79		
10	QPSK	25	25	20.61	20.67	20.76		
10	QPSK	50	0	20.64	20.63	20.83	21.50	0
10	16QAM	1	0	20.57	21.01	20.86		
10	16QAM	1	25	20.87	20.99	21.01		
10	16QAM	1	49	20.82	21.02	20.84	21.50	0
10	16QAM	25	0	20.71	20.62	20.86		
10	16QAM	25	12	20.71	20.80	20.86		
10	16QAM	25	25	20.65	20.63	20.73	21.50	0
10	16QAM	50	0	20.64	20.75	20.72		
10	64QAM	1	0	20.96	21.04	21.02		
10	64QAM	1	25	20.86	21.06	20.98	21.50	0
10	64QAM	1	49	20.94	21.09	20.97		
10	64QAM	25	0	20.89	20.67	20.87		
10	64QAM	25	12	20.71	20.73	20.70	21.50	0
10	64QAM	25	25	20.66	20.67	20.62		
10	64QAM	50	0	20.78	20.75	20.71		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	20.61	20.50	20.68	21.50	0
5	QPSK	1	12	20.59	20.63	20.57		
5	QPSK	1	24	20.65	20.61	20.70		
5	QPSK	12	0	20.61	20.60	20.75	21.50	0
5	QPSK	12	7	20.69	20.72	20.79		
5	QPSK	12	13	20.60	20.64	20.76		
5	QPSK	25	0	20.63	20.69	20.81	21.50	0
5	16QAM	1	0	20.74	20.77	21.01		
5	16QAM	1	12	21.02	21.01	20.91		
5	16QAM	1	24	20.79	21.02	20.79	21.50	0
5	16QAM	12	0	20.73	20.63	20.81		
5	16QAM	12	7	20.65	20.63	20.79		
5	16QAM	12	13	20.67	20.65	20.69	21.50	0
5	16QAM	25	0	20.78	20.70	20.83		
5	64QAM	1	0	21.01	21.09	20.97		
5	64QAM	1	12	20.96	21.06	21.03	21.50	0
5	64QAM	1	24	20.87	21.06	20.94		
5	64QAM	12	0	20.61	20.66	20.71		
5	64QAM	12	7	20.67	20.75	20.68	21.50	0
5	64QAM	12	13	20.61	20.68	20.54		
5	64QAM	25	0	20.42	20.72	20.62		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	20.57	20.55	20.63	21.50	0
3	QPSK	1	8	20.50	20.49	20.75		
3	QPSK	1	14	20.43	20.59	20.67		
3	QPSK	8	0	20.63	20.55	20.82	21.50	0
3	QPSK	8	4	20.63	20.64	20.71		
3	QPSK	8	7	20.59	20.67	20.70		
3	QPSK	15	0	20.60	20.63	20.77	21.50	0
3	16QAM	1	0	20.48	20.77	20.86		
3	16QAM	1	8	20.98	20.51	20.60		
3	16QAM	1	14	20.89	21.07	21.03	21.50	0
3	16QAM	8	0	20.65	20.60	20.76		
3	16QAM	8	4	20.76	20.78	20.74		
3	16QAM	8	7	20.70	20.63	20.74	21.50	0
3	16QAM	15	0	20.52	20.75	20.82		
3	64QAM	1	0	21.02	21.10	21.05		
3	64QAM	1	8	20.96	21.07	21.01	21.50	0
3	64QAM	1	14	20.98	21.06	20.99		
3	64QAM	8	0	20.47	20.61	20.56		
3	64QAM	8	4	20.42	20.72	20.62	21.50	0
3	64QAM	8	7	20.34	20.68	20.47		
3	64QAM	15	0	20.65	20.70	20.77		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	20.52	20.45	20.61	21.50	0
1.4	QPSK	1	3	20.65	20.58	20.74		
1.4	QPSK	1	5	20.55	20.51	20.53		
1.4	QPSK	3	0	20.56	20.49	20.65		
1.4	QPSK	3	1	20.64	20.66	20.73		
1.4	QPSK	3	3	20.53	20.59	20.65		
1.4	QPSK	6	0	20.65	20.63	20.69	21.50	0
1.4	16QAM	1	0	21.00	20.64	21.05	21.50	0
1.4	16QAM	1	3	20.49	20.80	20.68		
1.4	16QAM	1	5	20.64	21.08	21.10		
1.4	16QAM	3	0	20.66	20.37	20.70		
1.4	16QAM	3	1	20.62	20.66	20.76		
1.4	16QAM	3	3	20.65	20.66	20.52		
1.4	16QAM	6	0	20.75	20.71	20.70	21.50	0
1.4	64QAM	1	0	20.94	21.01	20.89	21.50	0
1.4	64QAM	1	3	20.91	21.02	20.96		
1.4	64QAM	1	5	20.98	21.07	20.94		
1.4	64QAM	3	0	20.93	21.08	20.91		
1.4	64QAM	3	1	20.87	20.99	20.81		
1.4	64QAM	3	3	20.92	20.97	20.68		
1.4	64QAM	6	0	20.53	20.63	20.55	21.50	0



<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			19.00	0
Frequency (MHz)				2310				
10	QPSK	1	0		18.76		19.00	0
10	QPSK	1	25		18.83			
10	QPSK	1	49		18.42			
10	QPSK	25	0		18.65		19.00	0
10	QPSK	25	12		18.64			
10	QPSK	25	25		18.56			
10	QPSK	50	0		18.57		19.00	0
10	16QAM	1	0		18.57			
10	16QAM	1	25		18.65			
10	16QAM	1	49		18.76		19.00	0
10	16QAM	25	0		18.71			
10	16QAM	25	12		18.67			
10	16QAM	25	25		18.51		19.00	0
10	16QAM	50	0		18.61			
10	64QAM	1	0		18.72			
10	64QAM	1	25		18.77		19.00	0
10	64QAM	1	49		18.80			
10	64QAM	25	0		18.77			
10	64QAM	25	12		18.69		19.00	0
10	64QAM	25	25		18.60			
10	64QAM	50	0		18.73			
Channel				27685	27710	27735	19.00	0
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	18.46	18.65	18.64	19.00	0
5	QPSK	1	12	18.49	18.55	18.48		
5	QPSK	1	24	18.48	18.39	18.59		
5	QPSK	12	0	18.58	18.63	18.55	19.00	0
5	QPSK	12	7	18.56	18.63	18.62		
5	QPSK	12	13	18.52	18.52	18.59		
5	QPSK	25	0	18.54	18.61	18.56	19.00	0
5	16QAM	1	0	18.72	18.75	18.81		
5	16QAM	1	12	18.73	18.72	18.52		
5	16QAM	1	24	18.79	18.72	18.69	19.00	0
5	16QAM	12	0	18.64	18.62	18.66		
5	16QAM	12	7	18.63	18.61	18.68		
5	16QAM	12	13	18.61	18.55	18.66	19.00	0
5	16QAM	25	0	18.61	18.52	18.58		
5	64QAM	1	0	18.76	18.93	18.82		
5	64QAM	1	12	18.64	18.86	18.73	19.00	0
5	64QAM	1	24	18.47	18.78	18.66		
5	64QAM	12	0	18.62	18.73	18.65		
5	64QAM	12	7	18.34	18.68	18.54	19.00	0
5	64QAM	12	13	18.35	18.64	18.42		
5	64QAM	25	0	18.42	18.69	18.61		



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572		
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	18.05	18.60	18.14	19.00	0
20	QPSK	1	49	17.86	18.08	18.02		
20	QPSK	1	99	17.86	18.04	18.12		
20	QPSK	50	0	18.13	18.31	18.16	18.50	0.5
20	QPSK	50	24	18.12	18.21	18.02		
20	QPSK	50	50	18.00	18.13	18.10		
20	QPSK	100	0	18.12	18.20	18.06		
20	16QAM	1	0	18.46	18.56	18.14	19.00	0
20	16QAM	1	49	18.56	18.59	18.22		
20	16QAM	1	99	18.11	18.16	18.09		
20	16QAM	50	0	18.16	18.32	18.21	19.00	0
20	16QAM	50	24	18.11	18.19	18.06		
20	16QAM	50	50	17.99	18.24	18.04		
20	16QAM	100	0	18.11	18.26	18.15		
20	64QAM	1	0	18.21	18.44	18.35	19.00	0
20	64QAM	1	49	18.12	18.27	18.24		
20	64QAM	1	99	18.11	18.19	18.14		
20	64QAM	50	0	18.06	18.24	18.21	19.00	0
20	64QAM	50	24	18.09	18.16	18.13		
20	64QAM	50	50	18.13	18.18	18.14		
20	64QAM	100	0	18.14	18.19	18.12		
Channel				132047	132322	132597	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	18.06	18.23	18.14	19.00	0
15	QPSK	1	37	17.99	18.04	17.82		
15	QPSK	1	74	17.93	18.08	18.00		
15	QPSK	36	0	18.13	18.25	18.09	18.50	0.5
15	QPSK	36	20	18.04	18.23	18.08		
15	QPSK	36	39	18.01	18.18	17.95		
15	QPSK	75	0	18.10	18.23	18.06		
15	16QAM	1	0	18.34	18.59	18.52	19.00	0
15	16QAM	1	37	18.50	18.36	18.13		
15	16QAM	1	74	18.13	18.39	18.20		
15	16QAM	36	0	18.13	18.28	18.17	19.00	0
15	16QAM	36	20	18.14	18.20	18.08		
15	16QAM	36	39	18.15	18.20	18.04		
15	16QAM	75	0	18.13	18.22	18.09		
15	64QAM	1	0	18.32	18.42	18.38	19.00	0
15	64QAM	1	37	18.21	18.28	18.31		
15	64QAM	1	74	18.22	18.23	18.21		
15	64QAM	36	0	18.10	18.18	18.19	19.00	0
15	64QAM	36	20	18.04	18.13	18.12		
15	64QAM	36	39	18.07	18.14	18.08		
15	64QAM	75	0	18.12	18.14	18.15		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	17.93	18.19	18.05	19.00	0
10	QPSK	1	25	17.94	18.00	17.92		
10	QPSK	1	49	18.05	18.03	17.84		
10	QPSK	25	0	18.00	18.23	18.02	18.50	0.5
10	QPSK	25	12	18.06	18.19	17.99		
10	QPSK	25	25	18.04	18.11	18.02		
10	QPSK	50	0	18.00	18.18	18.05		
10	16QAM	1	0	18.42	18.53	18.38	19.00	0
10	16QAM	1	25	18.42	18.48	17.90		
10	16QAM	1	49	18.31	18.25	18.45		
10	16QAM	25	0	17.99	18.29	18.03	19.00	0
10	16QAM	25	12	18.00	18.15	18.02		
10	16QAM	25	25	18.00	18.10	18.08		
10	16QAM	50	0	18.05	18.24	18.05		
10	64QAM	1	0	18.20	18.29	18.24	19.00	0
10	64QAM	1	25	18.08	18.26	18.21		
10	64QAM	1	49	18.14	18.23	18.14		
10	64QAM	25	0	18.05	18.13	18.07	19.00	0
10	64QAM	25	12	18.07	18.13	18.14		
10	64QAM	25	25	18.16	18.08	18.09		
10	64QAM	50	0	18.03	18.17	18.21		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	18.01	18.05	18.04	19.00	0
5	QPSK	1	12	18.04	18.08	18.01		
5	QPSK	1	24	18.03	18.18	17.92		
5	QPSK	12	0	18.07	18.11	18.01	18.50	0.5
5	QPSK	12	7	18.06	18.19	18.05		
5	QPSK	12	13	17.95	18.12	17.96		
5	QPSK	25	0	17.99	18.14	18.00		
5	16QAM	1	0	18.21	18.40	17.99	19.00	0
5	16QAM	1	12	18.02	18.22	18.12		
5	16QAM	1	24	18.07	18.59	18.50		
5	16QAM	12	0	18.04	18.19	17.95	19.00	0
5	16QAM	12	7	18.12	18.21	18.06		
5	16QAM	12	13	17.92	18.15	18.00		
5	16QAM	25	0	18.00	18.22	17.91		
5	64QAM	1	0	18.21	18.27	18.17	19.00	0
5	64QAM	1	12	18.21	18.23	18.14		
5	64QAM	1	24	18.17	18.26	18.23		
5	64QAM	12	0	18.07	18.10	18.07	19.00	0
5	64QAM	12	7	18.11	18.15	18.11		
5	64QAM	12	13	18.07	18.09	18.04		
5	64QAM	25	0	18.04	18.06	18.04		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	17.81	18.10	17.91	19.00	0
3	QPSK	1	8	18.05	18.08	17.77		
3	QPSK	1	14	17.84	18.09	17.84		
3	QPSK	8	0	18.04	18.16	18.01	18.50	0.5
3	QPSK	8	4	18.05	18.11	17.98		
3	QPSK	8	7	17.97	18.08	18.01		
3	QPSK	15	0	17.97	18.12	18.00		
3	16QAM	1	0	18.22	18.53	18.46	19.00	0
3	16QAM	1	8	18.43	18.29	18.11		
3	16QAM	1	14	18.06	18.23	18.46		
3	16QAM	8	0	18.11	18.20	18.07	19.00	0
3	16QAM	8	4	18.22	18.20	18.13		
3	16QAM	8	7	18.13	18.19	18.08		
3	16QAM	15	0	17.99	18.29	18.08		
3	64QAM	1	0	18.17	18.23	18.21	19.00	0
3	64QAM	1	8	18.10	18.22	18.31		
3	64QAM	1	14	18.16	18.19	18.26		
3	64QAM	8	0	18.04	18.02	18.17	19.00	0
3	64QAM	8	4	18.01	18.08	18.14		
3	64QAM	8	7	18.00	18.06	18.16		
3	64QAM	15	0	18.04	18.08	18.10		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	17.79	17.98	17.87	19.00	0
1.4	QPSK	1	3	17.84	18.14	18.00		
1.4	QPSK	1	5	17.80	17.96	17.88		
1.4	QPSK	3	0	17.92	18.13	17.86		
1.4	QPSK	3	1	18.00	18.10	18.01		
1.4	QPSK	3	3	17.94	18.15	17.92	18.50	0.5
1.4	QPSK	6	0	17.86	18.10	17.96		
1.4	16QAM	1	0	18.22	18.38	18.17	19.00	0
1.4	16QAM	1	3	17.87	18.10	18.10		
1.4	16QAM	1	5	18.37	17.85	18.17		
1.4	16QAM	3	0	17.99	18.14	17.87		
1.4	16QAM	3	1	18.04	18.16	18.10		
1.4	16QAM	3	3	17.95	18.12	18.00		
1.4	16QAM	6	0	17.99	18.14	18.09	19.00	0
1.4	64QAM	1	0	18.12	18.16	18.21	19.00	0
1.4	64QAM	1	3	18.17	18.20	18.17		
1.4	64QAM	1	5	18.16	18.15	18.16		
1.4	64QAM	3	0	18.11	18.02	18.13		
1.4	64QAM	3	1	18.07	18.05	18.22		
1.4	64QAM	3	3	18.04	18.01	18.04		
1.4	64QAM	6	0	18.09	18.02	18.17	19.00	0





<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission>

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	18.00	18.20	18.57	19.00	0
20	QPSK	1	49	17.66	17.84	18.02		
20	QPSK	1	99	17.89	17.86	17.91		
20	QPSK	50	0	17.90	18.05	18.25	18.50	0.5
20	QPSK	50	24	17.84	17.88	18.13		
20	QPSK	50	50	17.79	17.81	18.02		
20	QPSK	100	0	17.84	17.90	18.13		
20	16QAM	1	0	18.52	18.39	18.46	19.00	0
20	16QAM	1	49	18.09	18.27	18.52		
20	16QAM	1	99	18.35	18.21	18.17		
20	16QAM	50	0	18.02	17.98	18.25	19.00	0
20	16QAM	50	24	17.88	17.90	18.27		
20	16QAM	50	50	17.78	17.89	18.05		
20	16QAM	100	0	17.92	17.99	18.14		
20	64QAM	1	0	18.41	18.42	18.42	19.00	0
20	64QAM	1	49	18.01	18.29	18.34		
20	64QAM	1	99	18.31	18.45	18.47		
20	64QAM	50	0	18.07	18.30	18.39	19.00	0
20	64QAM	50	24	18.15	18.26	18.31		
20	64QAM	50	50	17.99	18.12	18.34		
20	64QAM	100	0	18.02	18.25	18.44		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	17.94	18.00	18.30	19.00	0
15	QPSK	1	37	17.72	17.75	18.05		
15	QPSK	1	74	17.80	17.71	17.88		
15	QPSK	36	0	17.95	17.96	18.26	18.50	0.5
15	QPSK	36	20	17.89	17.95	18.10		
15	QPSK	36	39	17.74	17.93	17.99		
15	QPSK	75	0	17.82	17.91	18.08		
15	16QAM	1	0	18.47	18.13	18.42	19.00	0
15	16QAM	1	37	18.35	18.14	18.56		
15	16QAM	1	74	17.86	18.36	18.51		
15	16QAM	36	0	17.95	18.00	18.21	19.00	0
15	16QAM	36	20	17.86	17.99	18.13		
15	16QAM	36	39	17.83	17.91	18.01		
15	16QAM	75	0	17.92	18.02	17.97		
15	64QAM	1	0	18.21	18.42	18.40	19.00	0
15	64QAM	1	37	18.06	18.25	18.52		
15	64QAM	1	74	18.17	18.35	18.44		
15	64QAM	36	0	18.11	18.23	18.45	19.00	0
15	64QAM	36	20	18.09	18.21	18.31		
15	64QAM	36	39	18.13	18.23	18.32		
15	64QAM	75	0	18.06	18.25	18.31		



Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	18.08	18.12	18.14	19.00	0
10	QPSK	1	25	17.72	17.82	17.99		
10	QPSK	1	49	17.96	17.95	17.87		
10	QPSK	25	0	17.84	17.90	18.02	18.50	0.5
10	QPSK	25	12	17.84	17.91	18.08		
10	QPSK	25	25	17.81	17.98	17.99		
10	QPSK	50	0	17.82	17.92	18.05	19.00	0
10	16QAM	1	0	18.51	18.42	18.33		
10	16QAM	1	25	17.86	18.17	17.95		
10	16QAM	1	49	18.43	18.34	17.98	19.00	0
10	16QAM	25	0	17.91	17.95	18.11		
10	16QAM	25	12	17.89	17.90	18.07		
10	16QAM	25	25	17.86	17.93	18.00	19.00	0
10	16QAM	50	0	17.91	17.98	18.14		
10	64QAM	1	0	18.35	18.50	18.38		
10	64QAM	1	25	18.18	18.26	18.31	19.00	0
10	64QAM	1	49	18.22	18.41	18.56		
10	64QAM	25	0	18.09	18.20	18.34		
10	64QAM	25	12	18.01	18.20	18.37	19.00	0
10	64QAM	25	25	18.03	18.21	18.30		
10	64QAM	50	0	18.04	18.22	18.31		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	17.86	17.86	17.98	19.00	0
5	QPSK	1	12	17.68	17.87	17.93		
5	QPSK	1	24	17.79	17.84	17.92		
5	QPSK	12	0	17.89	17.91	18.01	18.50	0.5
5	QPSK	12	7	17.82	17.93	17.99		
5	QPSK	12	13	17.77	17.92	17.93		
5	QPSK	25	0	17.85	17.86	18.04	19.00	0
5	16QAM	1	0	18.20	18.35	18.16		
5	16QAM	1	12	18.16	17.97	18.41		
5	16QAM	1	24	18.06	18.07	18.44	19.00	0
5	16QAM	12	0	17.90	18.01	17.94		
5	16QAM	12	7	17.88	17.98	18.02		
5	16QAM	12	13	17.87	17.90	18.05	19.00	0
5	16QAM	25	0	17.79	17.96	18.07		
5	64QAM	1	0	18.22	18.39	18.44		
5	64QAM	1	12	18.17	18.27	18.31	19.00	0
5	64QAM	1	24	18.16	18.23	18.33		
5	64QAM	12	0	17.99	18.19	18.29		
5	64QAM	12	7	18.07	18.21	18.30	19.00	0
5	64QAM	12	13	18.06	18.21	18.33		
5	64QAM	25	0	18.01	18.16	18.25		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	17.80	17.80	17.91	19.00	0
3	QPSK	1	8	17.74	17.81	17.95		
3	QPSK	1	14	17.70	17.83	17.85		
3	QPSK	8	0	17.84	17.89	18.01	18.50	0.5
3	QPSK	8	4	17.80	17.85	17.95		
3	QPSK	8	7	17.83	17.82	17.88		
3	QPSK	15	0	17.85	17.87	17.91		
3	16QAM	1	0	17.71	17.98	18.43	19.00	0
3	16QAM	1	8	18.34	18.25	18.19		
3	16QAM	1	14	18.14	17.98	18.01		
3	16QAM	8	0	17.89	17.91	18.01	19.00	0
3	16QAM	8	4	17.86	17.93	18.10		
3	16QAM	8	7	17.92	17.93	18.05		
3	16QAM	15	0	17.87	17.85	17.93		
3	64QAM	1	0	18.18	18.25	18.35	19.00	0
3	64QAM	1	8	18.15	18.27	18.41		
3	64QAM	1	14	18.11	18.22	18.39		
3	64QAM	8	0	17.93	18.04	18.25	19.00	0
3	64QAM	8	4	18.08	18.07	18.22		
3	64QAM	8	7	17.92	18.05	18.28		
3	64QAM	15	0	17.96	18.09	18.23		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	17.80	17.71	17.84	19.00	0
1.4	QPSK	1	3	17.95	17.74	17.81		
1.4	QPSK	1	5	17.63	17.71	17.81		
1.4	QPSK	3	0	17.70	17.74	17.85		
1.4	QPSK	3	1	17.80	17.84	17.93		
1.4	QPSK	3	3	17.70	17.74	17.82	18.50	0.5
1.4	QPSK	6	0	17.83	17.82	17.80		
1.4	16QAM	1	0	17.69	18.20	18.12	19.00	0
1.4	16QAM	1	3	18.33	17.95	18.41		
1.4	16QAM	1	5	17.92	18.24	18.05		
1.4	16QAM	3	0	17.86	17.87	17.87		
1.4	16QAM	3	1	17.84	17.85	17.82		
1.4	16QAM	3	3	17.78	17.67	17.83	19.00	0
1.4	16QAM	6	0	17.82	17.81	18.10		
1.4	64QAM	1	0	18.03	18.17	18.22	19.00	0
1.4	64QAM	1	3	18.06	18.24	18.34		
1.4	64QAM	1	5	18.03	18.22	18.41		
1.4	64QAM	3	0	17.93	18.11	18.31		
1.4	64QAM	3	1	17.97	18.06	18.15		
1.4	64QAM	3	3	17.93	18.09	18.13		
1.4	64QAM	6	0	17.96	18.06	18.16	19.00	0



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	17.23	17.69	17.56	18.00	0
20	QPSK	1	49	17.10	17.10	17.13		
20	QPSK	1	99	17.13	17.06	17.14		
20	QPSK	50	0	17.18	17.34	17.38	18.00	0
20	QPSK	50	24	17.17	17.23	17.16		
20	QPSK	50	50	17.08	17.18	17.14		
20	QPSK	100	0	17.22	17.29	17.15	18.00	0
20	16QAM	1	0	17.60	17.49	17.68		
20	16QAM	1	49	17.51	17.30	17.58		
20	16QAM	1	99	17.18	17.11	17.20	18.00	0
20	16QAM	50	0	17.26	17.34	17.30		
20	16QAM	50	24	17.24	17.26	17.25		
20	16QAM	50	50	17.17	17.15	17.22	18.00	0
20	16QAM	100	0	17.22	17.30	17.19		
20	64QAM	1	0	17.53	17.64	17.52		
20	64QAM	1	49	17.68	17.42	17.49	18.00	0
20	64QAM	1	99	17.49	17.60	17.52		
20	64QAM	50	0	17.50	17.40	17.59		
20	64QAM	50	24	17.51	17.62	17.52	18.00	0
20	64QAM	50	50	17.42	17.57	17.41		
20	64QAM	100	0	17.53	17.63	17.44		
Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	17.25	17.33	17.41	18.00	0
15	QPSK	1	37	17.03	17.20	17.03		
15	QPSK	1	74	17.13	17.05	17.05		
15	QPSK	36	0	17.22	17.25	17.24	18.00	0
15	QPSK	36	20	17.19	17.21	17.16		
15	QPSK	36	39	17.09	17.18	17.13		
15	QPSK	75	0	17.13	17.25	17.17	18.00	0
15	16QAM	1	0	17.44	17.45	17.43		
15	16QAM	1	37	17.34	17.05	17.04		
15	16QAM	1	74	17.16	17.11	17.31	18.00	0
15	16QAM	36	0	17.26	17.28	17.21		
15	16QAM	36	20	17.15	17.26	17.13		
15	16QAM	36	39	17.07	17.21	17.13	18.00	0
15	16QAM	75	0	17.14	17.22	17.11		
15	64QAM	1	0	17.46	17.51	17.52		
15	64QAM	1	37	17.59	17.63	17.61	18.00	0
15	64QAM	1	74	17.68	17.43	17.39		
15	64QAM	36	0	17.61	17.66	17.62		
15	64QAM	36	20	17.55	17.59	17.45	18.00	0
15	64QAM	36	39	17.51	17.54	17.47		
15	64QAM	75	0	17.55	17.56	17.40		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	17.18	17.25	17.25	18.00	0
10	QPSK	1	25	17.13	17.23	17.15		
10	QPSK	1	49	17.14	17.21	17.04		
10	QPSK	25	0	17.13	17.26	17.16	18.00	0
10	QPSK	25	12	17.15	17.22	17.15		
10	QPSK	25	25	17.12	17.24	17.10		
10	QPSK	50	0	17.15	17.21	17.17	18.00	0
10	16QAM	1	0	17.21	17.36	17.21		
10	16QAM	1	25	17.19	17.18	16.99		
10	16QAM	1	49	17.53	17.62	16.99	18.00	0
10	16QAM	25	0	17.11	17.20	17.20		
10	16QAM	25	12	17.12	17.20	17.16		
10	16QAM	25	25	17.11	17.25	17.06	18.00	0
10	16QAM	50	0	17.08	17.20	17.21		
10	64QAM	1	0	17.63	17.50	17.53		
10	64QAM	1	25	17.53	17.66	17.46	18.00	0
10	64QAM	1	49	17.51	17.39	17.41		
10	64QAM	25	0	17.50	17.39	17.51		
10	64QAM	25	12	17.53	17.61	17.49	18.00	0
10	64QAM	25	25	17.49	17.54	17.33		
10	64QAM	50	0	17.50	17.60	17.38		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	17.18	17.18	17.16	18.00	0
5	QPSK	1	12	16.92	17.16	17.01		
5	QPSK	1	24	17.00	17.14	17.08		
5	QPSK	12	0	17.09	17.25	17.13	18.00	0
5	QPSK	12	7	17.12	17.24	17.10		
5	QPSK	12	13	17.17	17.17	17.11		
5	QPSK	25	0	17.04	17.24	17.15	18.00	0
5	16QAM	1	0	17.32	17.32	17.17		
5	16QAM	1	12	17.33	17.32	17.01		
5	16QAM	1	24	17.59	17.52	17.53	18.00	0
5	16QAM	12	0	17.13	17.22	17.03		
5	16QAM	12	7	17.18	17.29	17.22		
5	16QAM	12	13	17.05	17.24	17.05	18.00	0
5	16QAM	25	0	17.09	17.19	17.02		
5	64QAM	1	0	17.59	17.68	17.52		
5	64QAM	1	12	17.53	17.67	17.47	18.00	0
5	64QAM	1	24	17.54	17.62	17.51		
5	64QAM	12	0	17.50	17.57	17.41		
5	64QAM	12	7	17.48	17.61	17.36	18.00	0
5	64QAM	12	13	17.57	17.52	17.43		
5	64QAM	25	0	17.47	17.54	17.32		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.12	17.13	17.06	18.00	0
3	QPSK	1	8	17.21	17.05	17.01		
3	QPSK	1	14	17.07	17.09	17.01		
3	QPSK	8	0	17.06	17.23	17.12	18.00	0
3	QPSK	8	4	17.07	17.24	17.10		
3	QPSK	8	7	17.06	17.18	17.06		
3	QPSK	15	0	17.04	17.15	17.05		
3	16QAM	1	0	17.43	17.32	17.11	18.00	0
3	16QAM	1	8	16.88	17.31	17.53		
3	16QAM	1	14	17.47	17.51	17.32		
3	16QAM	8	0	17.03	17.26	17.21	18.00	0
3	16QAM	8	4	17.24	17.14	17.17		
3	16QAM	8	7	17.13	17.18	17.16		
3	16QAM	15	0	17.11	17.12	17.06		
3	64QAM	1	0	17.56	17.62	17.50	18.00	0
3	64QAM	1	8	17.51	17.55	17.48		
3	64QAM	1	14	17.55	17.64	17.51		
3	64QAM	8	0	17.40	17.39	17.21	18.00	0
3	64QAM	8	4	17.37	17.40	17.25		
3	64QAM	8	7	17.41	17.43	17.29		
3	64QAM	15	0	17.44	17.49	17.33		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	16.93	17.08	16.97	18.00	0
1.4	QPSK	1	3	16.93	17.13	17.07		
1.4	QPSK	1	5	16.94	17.09	16.95		
1.4	QPSK	3	0	16.89	17.18	17.02		
1.4	QPSK	3	1	17.07	17.18	17.05		
1.4	QPSK	3	3	17.09	17.15	17.01	18.00	0
1.4	QPSK	6	0	17.02	17.17	16.99		
1.4	16QAM	1	0	17.33	17.20	17.11		
1.4	16QAM	1	3	16.93	17.21	17.10		
1.4	16QAM	1	5	17.40	17.27	17.22		
1.4	16QAM	3	0	16.87	16.96	16.96		
1.4	16QAM	3	1	16.94	17.11	16.95	18.00	0
1.4	16QAM	3	3	17.08	17.06	16.92		
1.4	16QAM	6	0	17.06	17.25	17.00		
1.4	64QAM	1	0	17.44	17.54	17.41		
1.4	64QAM	1	3	17.41	17.53	17.45		
1.4	64QAM	1	5	17.49	17.61	17.51		
1.4	64QAM	3	0	17.37	17.46	17.42		
1.4	64QAM	3	1	17.36	17.44	17.41	18.00	0
1.4	64QAM	3	3	17.39	17.47	17.45		
1.4	64QAM	6	0	17.41	17.49	17.39	18.00	0



<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	18.84	18.91	19.01	19.50	0
10	QPSK	1	25	18.88	19.04	19.06		
10	QPSK	1	49	18.93	19.42	19.05		
10	QPSK	25	0	19.06	19.11	19.13	19.50	0
10	QPSK	25	12	18.96	19.01	19.12		
10	QPSK	25	25	18.92	18.93	19.00		
10	QPSK	50	0	18.96	18.99	19.05		
10	16QAM	1	0	19.30	18.83	19.24	19.50	0
10	16QAM	1	25	19.36	19.41	19.40		
10	16QAM	1	49	19.19	19.32	19.24		
10	16QAM	25	0	18.95	19.09	19.07	19.50	0
10	16QAM	25	12	18.93	19.18	19.12		
10	16QAM	25	25	18.97	19.01	18.94		
10	16QAM	50	0	18.98	19.07	19.08		
10	64QAM	1	0	19.34	19.24	19.25	19.50	0
10	64QAM	1	25	19.38	19.25	19.28		
10	64QAM	1	49	19.32	19.22	19.30		
10	64QAM	25	0	19.39	19.40	19.41	19.50	0
10	64QAM	25	12	19.33	19.38	19.36		
10	64QAM	25	25	19.29	19.31	19.40		
10	64QAM	50	0	19.37	19.36	19.38		
Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	18.88	18.99	18.98	19.50	0
5	QPSK	1	12	18.95	18.87	18.94		
5	QPSK	1	24	18.74	18.80	19.00		
5	QPSK	12	0	18.99	19.03	19.03	19.50	0
5	QPSK	12	7	19.00	19.05	19.05		
5	QPSK	12	13	18.97	18.93	18.97		
5	QPSK	25	0	18.93	18.95	19.00		
5	16QAM	1	0	19.04	19.22	19.35	19.50	0
5	16QAM	1	12	18.87	19.09	19.02		
5	16QAM	1	24	19.41	19.25	19.02		
5	16QAM	12	0	19.02	19.00	19.08	19.50	0
5	16QAM	12	7	18.98	19.00	19.04		
5	16QAM	12	13	18.92	18.87	18.94		
5	16QAM	25	0	19.03	19.03	19.02		
5	64QAM	1	0	19.33	19.22	19.32	19.50	0
5	64QAM	1	12	19.31	19.23	19.29		
5	64QAM	1	24	19.34	19.24	19.28		
5	64QAM	12	0	19.39	19.37	19.33	19.50	0
5	64QAM	12	7	19.40	19.39	19.31		
5	64QAM	12	13	19.37	19.36	19.32		
5	64QAM	25	0	19.37	19.33	19.29		



Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	18.90	18.85	18.96	19.50	0
3	QPSK	1	8	18.81	18.89	18.93		
3	QPSK	1	14	18.96	18.97	18.81		
3	QPSK	8	0	18.97	18.98	18.97	19.50	0
3	QPSK	8	4	19.04	18.98	19.07		
3	QPSK	8	7	19.02	18.97	18.97		
3	QPSK	15	0	18.99	18.99	19.04		
3	16QAM	1	0	19.07	19.30	19.03	19.50	0
3	16QAM	1	8	19.32	19.22	18.89		
3	16QAM	1	14	18.84	19.13	19.33		
3	16QAM	8	0	19.04	19.06	19.03	19.50	0
3	16QAM	8	4	19.09	19.10	19.15		
3	16QAM	8	7	18.87	19.11	19.12		
3	16QAM	15	0	19.00	19.10	18.97		
3	64QAM	1	0	19.34	19.24	19.22	19.50	0
3	64QAM	1	8	19.30	19.28	19.41		
3	64QAM	1	14	19.28	19.22	19.38		
3	64QAM	8	0	19.31	19.32	19.22	19.50	0
3	64QAM	8	4	19.40	19.38	19.35		
3	64QAM	8	7	19.21	19.26	19.19		
3	64QAM	15	0	19.35	19.33	19.27		
Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	18.87	18.88	18.80	19.50	0
1.4	QPSK	1	3	18.93	18.89	18.90		
1.4	QPSK	1	5	18.77	18.90	18.87		
1.4	QPSK	3	0	18.89	18.89	18.93		
1.4	QPSK	3	1	18.92	18.86	18.97		
1.4	QPSK	3	3	18.87	18.91	18.84		
1.4	QPSK	6	0	18.92	18.95	18.89	19.50	0
1.4	16QAM	1	0	18.95	19.40	19.01	19.50	0
1.4	16QAM	1	3	19.21	19.24	19.31		
1.4	16QAM	1	5	19.18	19.03	18.75		
1.4	16QAM	3	0	18.97	19.02	18.98		
1.4	16QAM	3	1	19.03	19.02	18.92		
1.4	16QAM	3	3	18.95	18.95	18.98	19.50	0
1.4	16QAM	6	0	19.00	18.99	18.91	19.50	0
1.4	64QAM	1	0	19.25	19.34	19.36	19.50	0
1.4	64QAM	1	3	19.29	19.23	19.41		
1.4	64QAM	1	5	19.24	19.36	19.33		
1.4	64QAM	3	0	19.32	19.28	19.26		
1.4	64QAM	3	1	19.28	19.36	19.32		
1.4	64QAM	3	3	19.31	19.27	19.21		
1.4	64QAM	6	0	19.33	19.27	19.27	19.50	0





<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	16.00	0
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	15.50	15.74	15.79		
20	QPSK	1	49	15.28	15.36	15.56	16.00	0
20	QPSK	1	99	15.25	15.43	15.36		
20	QPSK	50	0	15.41	15.68	15.70		
20	QPSK	50	24	15.38	15.59	15.45	16.00	0
20	QPSK	50	50	15.38	15.49	15.49		
20	QPSK	100	0	15.32	15.55	15.57		
20	16QAM	1	0	15.29	15.74	15.73	16.00	0
20	16QAM	1	49	15.60	15.18	15.64		
20	16QAM	1	99	15.63	15.70	15.60		
20	16QAM	50	0	15.45	15.66	15.60	16.00	0
20	16QAM	50	24	15.36	15.53	15.58		
20	16QAM	50	50	15.44	15.59	15.49		
20	16QAM	100	0	15.38	15.66	15.49	16.00	0
20	64QAM	1	0	15.67	15.69	15.65		
20	64QAM	1	49	15.51	15.61	15.68		
20	64QAM	1	99	15.57	15.62	15.67	16.00	0
20	64QAM	50	0	15.54	15.63	15.61		
20	64QAM	50	24	15.61	15.58	15.67		
20	64QAM	50	50	15.55	15.68	15.52	16.00	0
20	64QAM	100	0	15.68	15.57	15.58		
Channel				20825	21100	21375		
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	15.37	15.70	15.43	16.00	0
15	QPSK	1	37	15.27	15.44	15.40		
15	QPSK	1	74	15.34	15.35	15.44		
15	QPSK	36	0	15.36	15.66	15.63	16.00	0
15	QPSK	36	20	15.34	15.59	15.51		
15	QPSK	36	39	15.40	15.52	15.52		
15	QPSK	75	0	15.31	15.58	15.51	16.00	0
15	16QAM	1	0	15.54	15.74	15.72		
15	16QAM	1	37	15.17	15.55	15.63		
15	16QAM	1	74	15.39	15.71	15.51	16.00	0
15	16QAM	36	0	15.39	15.65	15.64		
15	16QAM	36	20	15.48	15.66	15.58		
15	16QAM	36	39	15.43	15.60	15.51	16.00	0
15	16QAM	75	0	15.37	15.56	15.62		
15	64QAM	1	0	15.64	15.63	15.64		
15	64QAM	1	37	15.71	15.57	15.52	16.00	0
15	64QAM	1	74	15.48	15.54	15.50		
15	64QAM	36	0	15.73	15.51	15.50		
15	64QAM	36	20	15.65	15.55	15.47	16.00	0
15	64QAM	36	39	15.62	15.65	15.67		
15	64QAM	75	0	15.67	15.71	15.73		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	15.28	15.53	15.58	16.00	0
10	QPSK	1	25	15.33	15.44	15.63		
10	QPSK	1	49	15.16	15.42	15.46		
10	QPSK	25	0	15.37	15.53	15.61	16.00	0
10	QPSK	25	12	15.37	15.62	15.60		
10	QPSK	25	25	15.22	15.52	15.48		
10	QPSK	50	0	15.27	15.59	15.56	16.00	0
10	16QAM	1	0	15.46	15.62	15.61		
10	16QAM	1	25	15.71	15.78	15.60		
10	16QAM	1	49	15.63	15.73	15.64	16.00	0
10	16QAM	25	0	15.34	15.60	15.50		
10	16QAM	25	12	15.36	15.58	15.59		
10	16QAM	25	25	15.36	15.54	15.53	16.00	0
10	16QAM	50	0	15.38	15.61	15.53		
10	64QAM	1	0	15.56	15.62	15.69		
10	64QAM	1	25	15.58	15.58	15.69	16.00	0
10	64QAM	1	49	15.71	15.73	15.76		
10	64QAM	25	0	15.69	15.75	15.73		
10	64QAM	25	12	15.67	15.70	15.68	16.00	0
10	64QAM	25	25	15.54	15.62	15.61		
10	64QAM	50	0	15.68	15.73	15.72		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	15.21	15.46	15.42	16.00	0
5	QPSK	1	12	15.11	15.43	15.47		
5	QPSK	1	24	15.08	15.41	15.39		
5	QPSK	12	0	15.33	15.59	15.48	16.00	0
5	QPSK	12	7	15.30	15.51	15.56		
5	QPSK	12	13	15.27	15.49	15.45		
5	QPSK	25	0	15.32	15.56	15.53	16.00	0
5	16QAM	1	0	15.37	15.46	15.53		
5	16QAM	1	12	15.13	15.60	15.77		
5	16QAM	1	24	15.71	15.65	15.38	16.00	0
5	16QAM	12	0	15.26	15.62	15.53		
5	16QAM	12	7	15.41	15.58	15.66		
5	16QAM	12	13	15.36	15.63	15.52	16.00	0
5	16QAM	25	0	15.33	15.63	15.44		
5	64QAM	1	0	15.58	15.59	15.51		
5	64QAM	1	12	15.57	15.53	15.52	16.00	0
5	64QAM	1	24	15.72	15.59	15.50		
5	64QAM	12	0	15.76	15.73	15.74		
5	64QAM	12	7	15.77	15.72	15.78	16.00	0
5	64QAM	12	13	15.61	15.68	15.66		
5	64QAM	25	0	15.65	15.69	15.71		



<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	19.25	19.46	19.15	19.50	0
10	QPSK	1	25	19.12	19.12	19.10		
10	QPSK	1	49	19.23	19.35	19.13		
10	QPSK	25	0	19.23	19.12	19.15	19.50	0
10	QPSK	25	12	19.23	19.19	19.26		
10	QPSK	25	25	19.26	19.21	19.27		
10	QPSK	50	0	19.19	19.25	19.23	19.50	0
10	16QAM	1	0	19.34	19.38	19.36		
10	16QAM	1	25	19.24	19.08	19.31		
10	16QAM	1	49	19.38	19.15	19.43	19.50	0
10	16QAM	25	0	19.18	19.21	19.17		
10	16QAM	25	12	19.23	19.26	19.30		
10	16QAM	25	25	19.07	19.25	19.27	19.50	0
10	16QAM	50	0	19.26	19.17	19.22		
10	64QAM	1	0	19.39	19.29	19.22		
10	64QAM	1	25	19.37	19.27	19.21	19.50	0
10	64QAM	1	49	19.31	19.33	19.29		
10	64QAM	25	0	19.31	19.29	19.26		
10	64QAM	25	12	19.32	19.21	19.25	19.50	0
10	64QAM	25	25	19.36	19.22	19.21		
10	64QAM	50	0	19.27	19.20	19.23		
Channel				23035	23095	23155	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				701.5	707.5	713.5		
5	QPSK	1	0	19.16	19.07	19.07	19.50	0
5	QPSK	1	12	19.13	19.11	19.31		
5	QPSK	1	24	19.32	19.22	19.14		
5	QPSK	12	0	19.18	19.21	19.17	19.50	0
5	QPSK	12	7	19.22	19.19	19.21		
5	QPSK	12	13	19.20	19.10	19.20		
5	QPSK	25	0	19.24	19.17	19.21	19.50	0
5	16QAM	1	0	19.21	19.32	19.33		
5	16QAM	1	12	19.34	19.18	19.29		
5	16QAM	1	24	19.09	19.24	19.30	19.50	0
5	16QAM	12	0	19.25	19.19	19.21		
5	16QAM	12	7	19.33	19.22	19.22		
5	16QAM	12	13	19.32	19.19	19.11	19.50	0
5	16QAM	25	0	19.30	19.20	19.15		
5	64QAM	1	0	19.32	19.31	19.32		
5	64QAM	1	12	19.37	19.21	19.29	19.50	0
5	64QAM	1	24	19.32	19.23	19.21		
5	64QAM	12	0	19.27	19.24	19.23		
5	64QAM	12	7	19.21	19.28	19.22	19.50	0
5	64QAM	12	13	19.23	19.25	19.28		
5	64QAM	25	0	19.25	19.27	19.21		



Channel				23025	23095	23165	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				700.5	707.5	714.5		
3	QPSK	1	0	19.06	19.04	19.26	19.50	0
3	QPSK	1	8	19.15	19.00	19.08		
3	QPSK	1	14	19.23	19.00	19.06		
3	QPSK	8	0	19.23	19.14	19.20	19.50	0
3	QPSK	8	4	19.21	19.16	19.22		
3	QPSK	8	7	19.18	19.22	19.11		
3	QPSK	15	0	19.18	19.09	19.16		
3	16QAM	1	0	19.28	19.30	19.35	19.50	0
3	16QAM	1	8	19.41	19.30	19.23		
3	16QAM	1	14	19.11	19.32	19.39		
3	16QAM	8	0	19.22	19.26	19.31	19.50	0
3	16QAM	8	4	19.24	19.17	19.31		
3	16QAM	8	7	19.28	19.16	19.24		
3	16QAM	15	0	19.18	19.29	19.20		
3	64QAM	1	0	19.34	19.27	19.31	19.50	0
3	64QAM	1	8	19.36	19.22	19.21		
3	64QAM	1	14	19.31	19.24	19.21		
3	64QAM	8	0	19.28	19.44	19.29	19.50	0
3	64QAM	8	4	19.27	19.20	19.21		
3	64QAM	8	7	19.40	19.39	19.27		
3	64QAM	15	0	19.23	19.27	19.45		
Channel				23017	23095	23173	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				699.7	707.5	715.3		
1.4	QPSK	1	0	19.09	18.93	18.98	19.50	0
1.4	QPSK	1	3	19.23	19.05	19.07		
1.4	QPSK	1	5	19.03	19.00	18.98		
1.4	QPSK	3	0	19.11	19.00	19.05		
1.4	QPSK	3	1	19.18	19.15	19.09		
1.4	QPSK	3	3	19.10	19.04	19.09	19.50	0
1.4	QPSK	6	0	19.20	19.05	18.99		
1.4	16QAM	1	0	19.07	19.21	19.37		
1.4	16QAM	1	3	19.32	19.32	19.21		
1.4	16QAM	1	5	19.31	19.09	19.13		
1.4	16QAM	3	0	19.20	19.15	19.07		
1.4	16QAM	3	1	19.29	19.16	18.95	19.50	0
1.4	16QAM	3	3	18.99	18.96	19.09		
1.4	16QAM	6	0	19.12	19.13	19.19		
1.4	64QAM	1	0	19.35	19.31	19.34		
1.4	64QAM	1	3	19.31	19.36	19.38		
1.4	64QAM	1	5	19.37	19.32	19.27		
1.4	64QAM	3	0	19.34	19.21	19.17		
1.4	64QAM	3	1	19.28	19.18	19.20	19.5	0
1.4	64QAM	3	3	19.26	19.23	19.25		
1.4	64QAM	6	0	19.29	19.21	19.28		



<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	19.45	19.25	19.17	19.50	0
10	QPSK	1	25	19.13	19.15	19.12		
10	QPSK	1	49	19.21	19.10	19.06		
10	QPSK	25	0	19.31	19.25	19.29	19.50	0
10	QPSK	25	12	19.27	19.22	19.30		
10	QPSK	25	25	19.25	19.17	19.19		
10	QPSK	50	0	19.25	19.19	19.22	19.50	0
10	16QAM	1	0	19.38	19.33	19.33		
10	16QAM	1	25	19.24	19.37	19.26		
10	16QAM	1	49	19.35	19.41	19.35	19.50	0
10	16QAM	25	0	19.19	19.19	19.29		
10	16QAM	25	12	19.26	19.25	19.27		
10	16QAM	25	25	19.14	19.28	19.15	19.50	0
10	16QAM	50	0	19.25	19.28	19.27		
10	64QAM	1	0	19.38	19.36	19.39		
10	64QAM	1	25	19.29	19.32	19.31	19.50	0
10	64QAM	1	49	19.31	19.20	19.28		
10	64QAM	25	0	19.35	19.33	19.36		
10	64QAM	25	12	19.22	19.24	19.21	19.50	0
10	64QAM	25	25	19.18	19.16	19.13		
10	64QAM	50	0	19.27	19.19	19.26		
Channel				23755	23790	23825	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	19.20	19.15	19.16	19.50	0
5	QPSK	1	12	19.18	19.18	19.05		
5	QPSK	1	24	19.17	19.19	19.05		
5	QPSK	12	0	19.23	19.19	19.14	19.50	0
5	QPSK	12	7	19.30	19.20	19.23		
5	QPSK	12	13	19.20	19.15	19.19		
5	QPSK	25	0	19.23	19.21	19.17	19.50	0
5	16QAM	1	0	19.38	19.35	19.39		
5	16QAM	1	12	19.43	19.44	19.33		
5	16QAM	1	24	19.35	19.39	19.28	19.50	0
5	16QAM	12	0	19.17	19.17	19.29		
5	16QAM	12	7	19.22	19.23	19.27		
5	16QAM	12	13	19.28	19.21	19.15	19.50	0
5	16QAM	25	0	19.24	19.13	19.16		
5	64QAM	1	0	19.39	19.38	19.43		
5	64QAM	1	12	19.31	19.29	19.28	19.50	0
5	64QAM	1	24	19.28	19.25	19.26		
5	64QAM	12	0	19.36	19.26	19.31		
5	64QAM	12	7	19.39	19.27	19.23	19.50	0
5	64QAM	12	13	19.32	19.20	19.22		
5	64QAM	25	0	19.30	19.18	19.29		



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	17.98	17.97	18.60	19.00	0
20	QPSK	1	49	17.55	17.56	17.84		
20	QPSK	1	99	17.69	17.72	17.82		
20	QPSK	50	0	17.75	17.82	18.15	18.50	0.5
20	QPSK	50	24	17.69	17.79	18.01		
20	QPSK	50	50	17.66	17.72	17.87		
20	QPSK	100	0	17.71	17.83	17.99		
20	16QAM	1	0	18.03	18.56	18.17	19.00	0
20	16QAM	1	49	18.01	17.75	18.04		
20	16QAM	1	99	18.34	18.01	18.25		
20	16QAM	50	0	17.80	17.86	18.20	19.00	0
20	16QAM	50	24	17.73	17.71	17.92		
20	16QAM	50	50	17.59	17.69	17.90		
20	16QAM	100	0	17.74	17.77	17.97		
20	64QAM	1	0	18.38	17.96	18.46	19.00	0
20	64QAM	1	49	17.87	17.67	18.51		
20	64QAM	1	99	18.02	17.84	18.59		
20	64QAM	50	0	17.89	17.66	18.53	19.00	0
20	64QAM	50	24	17.88	17.61	18.43		
20	64QAM	50	50	17.88	17.63	18.44		
20	64QAM	100	0	17.90	17.61	18.34		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	17.81	17.88	18.18	19.00	0
15	QPSK	1	37	17.52	17.71	17.84		
15	QPSK	1	74	17.56	17.63	17.80		
15	QPSK	36	0	17.74	17.78	18.05	18.50	0.5
15	QPSK	36	20	17.68	17.77	17.99		
15	QPSK	36	39	17.66	17.75	17.79		
15	QPSK	75	0	17.66	17.79	18.05		
15	16QAM	1	0	17.96	18.29	18.13	19.00	0
15	16QAM	1	37	18.08	18.25	18.03		
15	16QAM	1	74	18.10	18.21	18.35		
15	16QAM	36	0	17.80	17.84	18.05	19.00	0
15	16QAM	36	20	17.77	17.83	17.95		
15	16QAM	36	39	17.60	17.78	17.87		
15	16QAM	75	0	17.77	17.82	18.01		
15	64QAM	1	0	18.14	17.86	18.57	19.00	0
15	64QAM	1	37	17.98	17.62	18.48		
15	64QAM	1	74	17.97	17.69	18.46		
15	64QAM	36	0	18.00	17.61	18.31	19.00	0
15	64QAM	36	20	17.97	17.59	18.21		
15	64QAM	36	39	18.01	17.60	18.27		
15	64QAM	75	0	17.94	17.59	18.20		



Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	17.93	18.00	17.99	19.00	0
10	QPSK	1	25	17.67	17.67	17.82		
10	QPSK	1	49	17.72	17.93	17.72		
10	QPSK	25	0	17.76	17.79	17.98	18.50	0.5
10	QPSK	25	12	17.71	17.72	17.86		
10	QPSK	25	25	17.63	17.73	17.89		
10	QPSK	50	0	17.68	17.77	17.91	19.00	0
10	16QAM	1	0	18.09	18.15	18.16		
10	16QAM	1	25	18.08	17.85	17.83		
10	16QAM	1	49	18.26	18.02	17.71	19.00	0
10	16QAM	25	0	17.78	17.72	18.00		
10	16QAM	25	12	17.75	17.79	18.01		
10	16QAM	25	25	17.73	17.83	17.79	19.00	0
10	16QAM	50	0	17.71	17.88	17.98		
10	64QAM	1	0	18.22	17.96	18.35		
10	64QAM	1	25	18.00	17.71	18.26	19.00	0
10	64QAM	1	49	18.20	17.85	18.20		
10	64QAM	25	0	17.96	17.58	18.22		
10	64QAM	25	12	17.93	17.55	18.21	19.00	0
10	64QAM	25	25	17.91	17.58	18.17		
10	64QAM	50	0	17.92	17.61	18.18		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	17.62	17.68	17.83	19.00	0
5	QPSK	1	12	17.60	17.67	17.75		
5	QPSK	1	24	17.58	17.78	17.77		
5	QPSK	12	0	17.72	17.71	17.88	18.50	0.5
5	QPSK	12	7	17.70	17.73	17.87		
5	QPSK	12	13	17.67	17.73	17.74		
5	QPSK	25	0	17.69	17.73	17.89	19.00	0
5	16QAM	1	0	17.70	17.71	18.11		
5	16QAM	1	12	18.18	18.18	18.31		
5	16QAM	1	24	18.06	18.13	18.20	19.00	0
5	16QAM	12	0	17.68	17.69	17.91		
5	16QAM	12	7	17.75	17.80	17.86		
5	16QAM	12	13	17.71	17.75	17.86	19.00	0
5	16QAM	25	0	17.85	17.79	17.90		
5	64QAM	1	0	18.09	17.69	18.24		
5	64QAM	1	12	18.06	17.64	18.27	19.00	0
5	64QAM	1	24	18.01	17.66	18.31		
5	64QAM	12	0	17.93	17.54	18.11		
5	64QAM	12	7	17.91	17.53	18.10	19.00	0
5	64QAM	12	13	17.97	17.58	18.05		
5	64QAM	25	0	17.92	17.55	18.08		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	17.62	17.69	17.75	19.00	0
3	QPSK	1	8	17.56	17.67	17.66		
3	QPSK	1	14	17.56	17.62	17.74		
3	QPSK	8	0	17.63	17.68	17.81	18.50	0.5
3	QPSK	8	4	17.71	17.75	17.81		
3	QPSK	8	7	17.62	17.76	17.85		
3	QPSK	15	0	17.67	17.75	17.76		
3	16QAM	1	0	18.15	18.05	18.04	19.00	0
3	16QAM	1	8	18.02	17.87	18.23		
3	16QAM	1	14	17.69	17.60	17.79		
3	16QAM	8	0	17.79	17.85	17.83	19.00	0
3	16QAM	8	4	17.81	17.74	17.97		
3	16QAM	8	7	17.82	17.82	17.90		
3	16QAM	15	0	17.73	17.81	17.81		
3	64QAM	1	0	17.99	17.64	18.16	19.00	0
3	64QAM	1	8	17.91	17.68	18.16		
3	64QAM	1	14	17.93	17.63	18.14		
3	64QAM	8	0	17.89	17.52	18.09	19.00	0
3	64QAM	8	4	17.87	17.55	18.02		
3	64QAM	8	7	17.87	17.52	18.02		
3	64QAM	15	0	17.83	17.55	18.03		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	17.55	17.64	17.58	19.00	0
1.4	QPSK	1	3	17.68	17.73	17.71		
1.4	QPSK	1	5	17.53	17.65	17.71		
1.4	QPSK	3	0	17.66	17.65	17.68		
1.4	QPSK	3	1	17.66	17.70	17.67		
1.4	QPSK	3	3	17.63	17.68	17.66	18.50	0.5
1.4	QPSK	6	0	17.62	17.72	17.73		
1.4	16QAM	1	0	17.77	18.13	17.98	19.00	0
1.4	16QAM	1	3	17.84	17.73	18.32		
1.4	16QAM	1	5	17.54	18.10	17.61		
1.4	16QAM	3	0	17.72	17.75	17.68		
1.4	16QAM	3	1	17.78	17.81	17.81		
1.4	16QAM	3	3	17.71	17.74	17.73	19.00	0
1.4	16QAM	6	0	17.73	17.71	17.78		
1.4	64QAM	1	0	17.88	17.57	18.08	19.00	0
1.4	64QAM	1	3	17.89	17.63	18.10		
1.4	64QAM	1	5	17.91	17.62	18.15		
1.4	64QAM	3	0	17.87	17.44	17.99		
1.4	64QAM	3	1	17.83	17.55	18.00		
1.4	64QAM	3	3	17.87	17.46	17.98		
1.4	64QAM	6	0	17.83	17.47	17.97	19.00	0





<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	18.68	18.73	18.93	19.00	0
15	QPSK	1	37	18.66	18.69	18.74		
15	QPSK	1	74	18.54	18.62	18.58		
15	QPSK	36	0	18.72	18.79	18.89	19.00	0
15	QPSK	36	20	18.67	18.77	18.88		
15	QPSK	36	39	18.67	18.65	18.84		
15	QPSK	75	0	18.70	18.62	18.80	19.00	0
15	16QAM	1	0	18.82	18.89	18.73		
15	16QAM	1	37	18.82	18.85	18.92		
15	16QAM	1	74	18.75	18.56	18.89	19.00	0
15	16QAM	36	0	18.65	18.63	18.88		
15	16QAM	36	20	18.67	18.77	18.85		
15	16QAM	36	39	18.67	18.56	18.76	19.00	0
15	16QAM	75	0	18.60	18.64	18.77		
15	64QAM	1	0	18.67	18.91	18.75		
15	64QAM	1	37	18.65	18.81	18.72	19.00	0
15	64QAM	1	74	18.72	18.83	18.68		
15	64QAM	36	0	18.51	18.72	18.62		
15	64QAM	36	20	18.48	18.65	18.59	19.00	0
15	64QAM	36	39	18.32	18.74	18.58		
15	64QAM	75	0	18.46	18.61	18.53		
Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	18.62	18.71	18.83	19.00	0
10	QPSK	1	25	18.56	18.70	18.72		
10	QPSK	1	49	18.51	18.56	18.67		
10	QPSK	25	0	18.67	18.53	18.81	19.00	0
10	QPSK	25	12	18.68	18.74	18.86		
10	QPSK	25	25	18.68	18.68	18.74		
10	QPSK	50	0	18.68	18.66	18.87	19.00	0
10	16QAM	1	0	18.86	18.89	18.79		
10	16QAM	1	25	18.82	18.71	18.88		
10	16QAM	1	49	18.87	18.89	18.88	19.00	0
10	16QAM	25	0	18.62	18.51	18.91		
10	16QAM	25	12	18.61	18.68	18.77		
10	16QAM	25	25	18.62	18.68	18.75	19.00	0
10	16QAM	50	0	18.61	18.68	18.79		
10	64QAM	1	0	18.73	18.87	18.76		
10	64QAM	1	25	18.65	18.79	18.74	19.00	0
10	64QAM	1	49	18.64	18.76	18.75		
10	64QAM	25	0	18.62	18.77	18.78		
10	64QAM	25	12	18.72	18.83	18.71	19.00	0
10	64QAM	25	25	18.71	18.69	18.68		
10	64QAM	50	0	18.63	18.65	18.62		



Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	18.51	18.60	18.73	19.00	0
5	QPSK	1	12	18.55	18.77	18.63		
5	QPSK	1	24	18.55	18.55	18.78		
5	QPSK	12	0	18.63	18.64	18.78	19.00	0
5	QPSK	12	7	18.66	18.73	18.78		
5	QPSK	12	13	18.61	18.60	18.75		
5	QPSK	25	0	18.62	18.65	18.70		
5	16QAM	1	0	18.61	18.64	18.89	19.00	0
5	16QAM	1	12	18.51	18.62	18.86		
5	16QAM	1	24	18.86	18.74	18.92		
5	16QAM	12	0	18.59	18.66	18.73	19.00	0
5	16QAM	12	7	18.58	18.69	18.78		
5	16QAM	12	13	18.71	18.72	18.81		
5	16QAM	25	0	18.73	18.64	18.73		
5	64QAM	1	0	18.84	18.92	18.76	19.00	0
5	64QAM	1	12	18.72	18.83	18.81		
5	64QAM	1	24	18.76	18.85	18.52		
5	64QAM	12	0	18.79	18.74	18.75	19.00	0
5	64QAM	12	7	18.71	18.72	18.64		
5	64QAM	12	13	18.65	18.65	18.62		
5	64QAM	25	0	18.62	18.67	18.59		
Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	18.59	18.49	18.73	19.00	0
3	QPSK	1	8	18.50	18.57	18.68		
3	QPSK	1	14	18.53	18.66	18.61		
3	QPSK	8	0	18.59	18.55	18.74	19.00	0
3	QPSK	8	4	18.69	18.65	18.76		
3	QPSK	8	7	18.57	18.62	18.73		
3	QPSK	15	0	18.63	18.65	18.78		
3	16QAM	1	0	18.76	18.70	18.72	19.00	0
3	16QAM	1	8	18.50	18.88	18.85		
3	16QAM	1	14	18.82	18.52	18.87		
3	16QAM	8	0	18.66	18.59	18.78	19.00	0
3	16QAM	8	4	18.73	18.69	18.75		
3	16QAM	8	7	18.68	18.71	18.80		
3	16QAM	15	0	18.57	18.80	18.69		
3	64QAM	1	0	18.48	18.86	18.75	19.00	0
3	64QAM	1	8	18.42	18.84	18.72		
3	64QAM	1	14	18.32	18.74	18.64		
3	64QAM	8	0	18.45	18.72	18.43	19.00	0
3	64QAM	8	4	18.26	18.79	18.56		
3	64QAM	8	7	18.31	18.66	18.70		
3	64QAM	15	0	18.34	18.67	18.58		



Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	18.56	18.50	18.64	19.00	0
1.4	QPSK	1	3	18.65	18.55	18.72		
1.4	QPSK	1	5	18.51	18.50	18.57		
1.4	QPSK	3	0	18.57	18.49	18.70		
1.4	QPSK	3	1	18.62	18.61	18.67		
1.4	QPSK	3	3	18.55	18.66	18.64		
1.4	QPSK	6	0	18.53	18.58	18.64	19.00	0
1.4	16QAM	1	0	18.86	18.79	18.82	19.00	0
1.4	16QAM	1	3	18.91	18.84	18.85		
1.4	16QAM	1	5	18.52	18.84	18.73		
1.4	16QAM	3	0	18.61	18.54	18.65		
1.4	16QAM	3	1	18.65	18.64	18.73		
1.4	16QAM	3	3	18.60	18.47	18.69		
1.4	16QAM	6	0	18.59	18.58	18.88	19.00	0
1.4	64QAM	1	0	18.64	18.72	18.64	19.00	0
1.4	64QAM	1	3	18.62	18.67	18.56		
1.4	64QAM	1	5	18.52	18.64	18.47		
1.4	64QAM	3	0	18.59	18.66	18.58		
1.4	64QAM	3	1	18.47	18.59	18.35		
1.4	64QAM	3	3	18.55	18.63	18.28		
1.4	64QAM	6	0	18.46	18.60	18.42	19.00	0



<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		16.71		17.00	0
10	QPSK	1	25		16.89			
10	QPSK	1	49		16.57			
10	QPSK	25	0		16.69		17.00	0
10	QPSK	25	12		16.57			
10	QPSK	25	25		16.58			
10	QPSK	50	0		16.60		17.00	0
10	16QAM	1	0		16.86			
10	16QAM	1	25		16.80			
10	16QAM	1	49		16.65		17.00	0
10	16QAM	25	0		16.73			
10	16QAM	25	12		16.61			
10	16QAM	25	25		16.59		17.00	0
10	16QAM	50	0		16.68			
10	64QAM	1	0		16.88			
10	64QAM	1	25		16.68		17.00	0
10	64QAM	1	49		16.63			
10	64QAM	25	0		16.61			
10	64QAM	25	12		16.57		17.00	0
10	64QAM	25	25		16.51			
10	64QAM	50	0		16.60			
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	16.43	16.58	16.53	17.00	0
5	QPSK	1	12	16.56	16.49	16.57		
5	QPSK	1	24	16.55	16.37	16.55		
5	QPSK	12	0	16.51	16.59	16.63	17.00	0
5	QPSK	12	7	16.61	16.62	16.62		
5	QPSK	12	13	16.62	16.56	16.56		
5	QPSK	25	0	16.63	16.60	16.51	17.00	0
5	16QAM	1	0	16.74	16.85	16.51		
5	16QAM	1	12	16.80	16.72	16.71		
5	16QAM	1	24	16.67	16.56	16.73	17.00	0
5	16QAM	12	0	16.61	16.73	16.60		
5	16QAM	12	7	16.66	16.71	16.62		
5	16QAM	12	13	16.59	16.61	16.65	17.00	0
5	16QAM	25	0	16.70	16.52	16.69		
5	64QAM	1	0	16.62	16.77	16.71		
5	64QAM	1	12	16.59	16.74	16.68	17.00	0
5	64QAM	1	24	16.54	16.61	16.65		
5	64QAM	12	0	16.39	16.60	16.52		
5	64QAM	12	7	16.41	16.56	16.50	17.00	0
5	64QAM	12	13	16.35	16.50	16.47		
5	64QAM	25	0	16.37	16.51	16.45		



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572	16.50	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	16.21	16.32	16.15		
20	QPSK	1	49	15.96	16.09	15.98	16.50	0
20	QPSK	1	99	16.07	16.18	15.91		
20	QPSK	50	0	16.16	16.25	16.14		
20	QPSK	50	24	16.02	16.24	16.05	16.50	0
20	QPSK	50	50	15.96	16.10	16.01		
20	QPSK	100	0	16.03	16.24	16.03		
20	16QAM	1	0	16.29	16.22	16.11	16.50	0
20	16QAM	1	49	16.07	16.24	16.05		
20	16QAM	1	99	16.21	16.17	16.23		
20	16QAM	50	0	16.18	16.27	16.16	16.50	0
20	16QAM	50	24	16.03	16.18	16.05		
20	16QAM	50	50	16.02	16.15	15.98		
20	16QAM	100	0	16.07	16.22	15.95	16.50	0
20	64QAM	1	0	16.15	16.22	16.18		
20	64QAM	1	49	16.14	16.13	16.12		
20	64QAM	1	99	16.17	16.13	16.15	16.50	0
20	64QAM	50	0	16.07	16.09	16.01		
20	64QAM	50	24	15.95	15.98	15.94		
20	64QAM	50	50	15.93	15.97	15.89	16.50	0
20	64QAM	100	0	15.88	16.02	15.96		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	16.20	16.27	16.20	16.50	0
15	QPSK	1	37	15.89	16.10	15.95		
15	QPSK	1	74	16.03	16.10	15.96		
15	QPSK	36	0	16.14	16.23	16.13	16.50	0
15	QPSK	36	20	16.08	16.25	16.06		
15	QPSK	36	39	15.99	16.10	15.99		
15	QPSK	75	0	16.10	16.24	16.10	16.50	0
15	16QAM	1	0	16.23	16.27	16.21		
15	16QAM	1	37	16.22	16.14	16.01		
15	16QAM	1	74	15.85	16.26	15.94	16.50	0
15	16QAM	36	0	16.14	16.25	16.13		
15	16QAM	36	20	16.06	16.23	16.08		
15	16QAM	36	39	16.01	16.18	16.06	16.50	0
15	16QAM	75	0	16.04	16.19	16.06		
15	64QAM	1	0	16.12	16.23	16.19		
15	64QAM	1	37	16.08	16.14	16.17	16.50	0
15	64QAM	1	74	15.98	16.08	16.05		
15	64QAM	36	0	15.89	16.02	15.95		
15	64QAM	36	20	15.92	15.98	15.85	16.50	0
15	64QAM	36	39	15.88	15.96	15.81		
15	64QAM	75	0	15.83	15.99	15.89		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	16.15	16.18	16.11	16.50	0
10	QPSK	1	25	15.94	16.08	15.88		
10	QPSK	1	49	15.98	16.04	15.97		
10	QPSK	25	0	16.00	16.23	16.00	16.50	0
10	QPSK	25	12	15.99	16.16	16.01		
10	QPSK	25	25	16.02	16.16	16.04		
10	QPSK	50	0	16.07	16.15	15.98	16.50	0
10	16QAM	1	0	16.20	16.23	16.18		
10	16QAM	1	25	16.21	16.21	16.00		
10	16QAM	1	49	16.22	16.20	16.04	16.50	0
10	16QAM	25	0	15.97	16.20	16.10		
10	16QAM	25	12	15.95	16.12	16.00		
10	16QAM	25	25	16.02	16.14	15.97	16.50	0
10	16QAM	50	0	16.02	16.15	16.07		
10	64QAM	1	0	16.03	16.08	16.05		
10	64QAM	1	25	16.01	16.03	16.00	16.50	0
10	64QAM	1	49	15.86	16.08	15.98		
10	64QAM	25	0	15.94	15.99	15.87		
10	64QAM	25	12	15.91	15.95	15.84	16.50	0
10	64QAM	25	25	15.87	15.98	15.91		
10	64QAM	50	0	15.96	16.01	15.86		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	15.97	16.16	16.00	16.50	0
5	QPSK	1	12	15.85	15.92	16.00		
5	QPSK	1	24	15.83	15.97	15.84		
5	QPSK	12	0	16.06	16.10	16.01	16.50	0
5	QPSK	12	7	16.02	16.12	16.00		
5	QPSK	12	13	15.96	16.15	16.04		
5	QPSK	25	0	16.01	16.16	16.03	16.50	0
5	16QAM	1	0	16.19	16.31	16.06		
5	16QAM	1	12	16.03	16.07	15.95		
5	16QAM	1	24	16.19	16.21	15.91	16.50	0
5	16QAM	12	0	16.10	16.23	16.02		
5	16QAM	12	7	16.12	16.18	16.01		
5	16QAM	12	13	15.98	16.11	16.00	16.50	0
5	16QAM	25	0	15.97	16.16	16.05		
5	64QAM	1	0	16.07	16.14	16.07		
5	64QAM	1	12	16.04	16.08	16.01	16.50	0
5	64QAM	1	24	15.85	16.04	16.02		
5	64QAM	12	0	15.83	15.96	16.06		
5	64QAM	12	7	15.78	15.99	15.89	16.50	0
5	64QAM	12	13	15.98	16.00	15.91		
5	64QAM	25	0	15.74	15.94	15.78		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	15.88	16.21	15.99	16.50	0
3	QPSK	1	8	15.85	16.09	15.83		
3	QPSK	1	14	15.95	16.05	15.89		
3	QPSK	8	0	15.93	16.15	16.03	16.50	0
3	QPSK	8	4	15.99	16.15	15.99		
3	QPSK	8	7	15.96	16.06	16.05		
3	QPSK	15	0	16.01	16.12	16.01		
3	16QAM	1	0	16.20	16.21	15.84	16.50	0
3	16QAM	1	8	16.03	16.26	16.23		
3	16QAM	1	14	16.20	16.07	15.94		
3	16QAM	8	0	16.03	16.29	15.99	16.50	0
3	16QAM	8	4	15.98	16.22	16.05		
3	16QAM	8	7	16.04	16.19	15.88		
3	16QAM	15	0	16.05	16.16	16.03		
3	64QAM	1	0	16.07	16.12	16.10	16.50	0
3	64QAM	1	8	15.97	16.09	16.08		
3	64QAM	1	14	15.94	16.05	16.03		
3	64QAM	8	0	15.96	15.91	15.96	16.50	0
3	64QAM	8	4	15.91	15.94	15.93		
3	64QAM	8	7	15.84	15.91	15.91		
3	64QAM	15	0	15.82	15.93	15.87		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	15.85	16.03	15.89	16.50	0
1.4	QPSK	1	3	15.93	15.98	15.96		
1.4	QPSK	1	5	15.84	16.01	15.91		
1.4	QPSK	3	0	15.92	16.04	15.90		
1.4	QPSK	3	1	15.91	16.13	15.98		
1.4	QPSK	3	3	15.86	16.03	15.99	16.50	0
1.4	QPSK	6	0	15.97	16.03	15.90		
1.4	16QAM	1	0	16.06	16.21	16.03	16.50	0
1.4	16QAM	1	3	16.07	16.22	16.24		
1.4	16QAM	1	5	15.82	16.24	16.31		
1.4	16QAM	3	0	15.95	16.00	15.99		
1.4	16QAM	3	1	16.00	16.17	16.03		
1.4	16QAM	3	3	15.81	16.07	15.83	16.50	0
1.4	16QAM	6	0	15.97	16.05	15.93		
1.4	64QAM	1	0	15.87	15.94	15.94	16.50	0
1.4	64QAM	1	3	15.89	16.03	15.98		
1.4	64QAM	1	5	15.96	16.13	15.96		
1.4	64QAM	3	0	15.91	15.85	15.84		
1.4	64QAM	3	1	15.84	16.08	15.97		
1.4	64QAM	3	3	15.89	15.83	15.81		
1.4	64QAM	6	0	15.94	16.03	15.96	16.50	0



**<Reduced Power Level 3 for Hotspot On>**

**<LTE Band 2>**

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	19.04	19.08	19.47	19.50	0
20	QPSK	1	49	18.67	18.82	18.90		
20	QPSK	1	99	18.79	18.98	18.78		
20	QPSK	50	0	18.89	18.92	19.15	19.50	0
20	QPSK	50	24	18.79	18.90	19.07		
20	QPSK	50	50	18.66	18.72	19.00		
20	QPSK	100	0	18.83	18.97	19.08		
20	16QAM	1	0	19.21	19.33	19.36	19.50	0
20	16QAM	1	49	19.21	19.18	19.43		
20	16QAM	1	99	19.29	18.97	18.99		
20	16QAM	50	0	18.90	18.89	19.14	19.50	0
20	16QAM	50	24	18.84	18.86	19.06		
20	16QAM	50	50	18.77	18.77	19.03		
20	16QAM	100	0	18.81	18.87	19.02		
20	64QAM	1	0	19.23	19.38	19.41	19.50	0
20	64QAM	1	49	19.16	19.25	19.32		
20	64QAM	1	99	18.96	19.02	19.24		
20	64QAM	50	0	18.92	18.95	19.12	19.50	0
20	64QAM	50	24	18.87	18.91	19.03		
20	64QAM	50	50	18.82	18.87	18.95		
20	64QAM	100	0	18.79	18.93	18.90		
Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	18.95	18.91	19.16	19.50	0
15	QPSK	1	37	18.75	18.75	18.78		
15	QPSK	1	74	18.65	18.77	18.83		
15	QPSK	36	0	18.91	18.91	19.16	19.50	0
15	QPSK	36	20	18.84	18.93	18.97		
15	QPSK	36	39	18.76	18.81	18.97		
15	QPSK	75	0	18.77	18.92	18.95		
15	16QAM	1	0	18.84	18.86	19.35	19.50	0
15	16QAM	1	37	19.09	18.82	19.29		
15	16QAM	1	74	19.01	19.26	19.03		
15	16QAM	36	0	18.90	18.90	19.07	19.50	0
15	16QAM	36	20	18.87	18.87	18.94		
15	16QAM	36	39	18.64	18.79	18.98		
15	16QAM	75	0	18.83	18.80	18.93		
15	64QAM	1	0	19.18	19.21	19.25	19.50	0
15	64QAM	1	37	19.10	19.13	19.17		
15	64QAM	1	74	19.02	19.08	19.13		
15	64QAM	36	0	18.97	18.96	19.05	19.50	0
15	64QAM	36	20	18.92	18.93	18.93		
15	64QAM	36	39	18.88	18.89	18.86		
15	64QAM	75	0	18.83	18.92	18.97		





Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.08	18.98	18.96	19.50	0
10	QPSK	1	25	18.69	18.70	18.98		
10	QPSK	1	49	18.79	18.85	18.76		
10	QPSK	25	0	18.85	18.81	19.00	19.50	0
10	QPSK	25	12	18.78	18.82	18.95		
10	QPSK	25	25	18.67	18.76	18.91		
10	QPSK	50	0	18.79	18.79	18.96	19.50	0
10	16QAM	1	0	19.08	19.11	19.21		
10	16QAM	1	25	18.74	18.76	19.10		
10	16QAM	1	49	18.78	19.09	18.92	19.50	0
10	16QAM	25	0	18.84	18.81	18.99		
10	16QAM	25	12	18.78	18.92	18.94		
10	16QAM	25	25	18.67	18.79	18.83	19.50	0
10	16QAM	50	0	18.75	18.78	18.99		
10	64QAM	1	0	19.23	19.36	19.38		
10	64QAM	1	25	19.08	19.17	19.20	19.50	0
10	64QAM	1	49	19.01	19.13	19.15		
10	64QAM	25	0	18.98	19.05	19.07		
10	64QAM	25	12	18.89	18.96	18.98	19.50	0
10	64QAM	25	25	18.91	18.93	18.98		
10	64QAM	50	0	18.87	18.90	18.93		
Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	18.68	18.78	18.84	19.50	0
5	QPSK	1	12	18.76	18.70	18.75		
5	QPSK	1	24	18.66	18.75	18.84		
5	QPSK	12	0	18.78	18.85	18.90	19.50	0
5	QPSK	12	7	18.82	18.83	18.90		
5	QPSK	12	13	18.78	18.77	18.90		
5	QPSK	25	0	18.79	18.76	18.90	19.50	0
5	16QAM	1	0	18.92	18.92	19.34		
5	16QAM	1	12	19.18	19.19	18.95		
5	16QAM	1	24	18.86	18.78	18.79	19.50	0
5	16QAM	12	0	18.74	18.90	18.94		
5	16QAM	12	7	18.83	18.89	18.99		
5	16QAM	12	13	18.76	18.92	18.82	19.50	0
5	16QAM	25	0	18.81	18.84	18.90		
5	64QAM	1	0	19.21	19.41	19.36		
5	64QAM	1	12	19.15	19.32	19.31	19.50	0
5	64QAM	1	24	19.11	19.21	19.18		
5	64QAM	12	0	19.02	19.11	19.05		
5	64QAM	12	7	18.99	19.07	19.01	19.50	0
5	64QAM	12	13	18.96	18.94	18.91		
5	64QAM	25	0	19.02	18.89	18.85		



Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	18.70	18.76	18.83	19.50	0
3	QPSK	1	8	18.79	18.80	18.80		
3	QPSK	1	14	18.65	18.70	18.75		
3	QPSK	8	0	18.76	18.82	18.89	19.50	0
3	QPSK	8	4	18.73	18.80	18.86		
3	QPSK	8	7	18.77	18.72	18.81		
3	QPSK	15	0	18.69	18.75	18.81		
3	16QAM	1	0	18.77	19.23	18.96	19.50	0
3	16QAM	1	8	18.59	18.92	18.90		
3	16QAM	1	14	19.15	18.58	19.06		
3	16QAM	8	0	18.82	18.79	18.91	19.50	0
3	16QAM	8	4	18.86	18.89	19.03		
3	16QAM	8	7	18.86	18.72	18.92		
3	16QAM	15	0	18.86	18.86	18.79		
3	64QAM	1	0	18.89	19.00	19.01	19.50	0
3	64QAM	1	8	18.95	18.96	18.93		
3	64QAM	1	14	18.78	19.01	18.99		
3	64QAM	8	0	19.01	18.85	18.86	19.50	0
3	64QAM	8	4	18.83	18.90	18.88		
3	64QAM	8	7	18.77	18.84	18.82		
3	64QAM	15	0	18.79	18.91	18.98		
Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	18.66	18.64	18.72	19.50	0
1.4	QPSK	1	3	18.73	18.79	18.78		
1.4	QPSK	1	5	18.65	18.68	18.74		
1.4	QPSK	3	0	18.74	18.67	18.77		
1.4	QPSK	3	1	18.71	18.70	18.84		
1.4	QPSK	3	3	18.72	18.69	18.73	19.50	0
1.4	QPSK	6	0	18.66	18.76	18.69		
1.4	16QAM	1	0	18.72	19.07	19.00	19.50	0
1.4	16QAM	1	3	18.83	19.02	19.25		
1.4	16QAM	1	5	19.07	18.73	18.99		
1.4	16QAM	3	0	18.57	18.81	18.73		
1.4	16QAM	3	1	18.69	18.71	18.66		
1.4	16QAM	3	3	18.85	18.81	18.74	19.50	0
1.4	16QAM	6	0	18.67	18.58	18.73		
1.4	64QAM	1	0	18.76	18.79	18.97	19.50	0
1.4	64QAM	1	3	18.86	18.99	18.89		
1.4	64QAM	1	5	18.77	18.98	18.85		
1.4	64QAM	3	0	18.76	18.95	18.79		
1.4	64QAM	3	1	18.79	18.99	18.84		
1.4	64QAM	3	3	18.80	18.87	18.88		
1.4	64QAM	6	0	18.78	18.86	18.75	19.50	0



<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	18.20	18.54	18.25		
20	QPSK	1	49	17.91	18.10	18.04	18.50	0.5
20	QPSK	1	99	18.08	17.99	18.09		
20	QPSK	50	0	18.16	18.31	18.27		
20	QPSK	50	24	18.06	18.19	18.07	19.00	0
20	QPSK	50	50	18.04	18.15	18.08		
20	QPSK	100	0	18.05	18.18	18.16		
20	16QAM	1	0	18.34	18.53	18.51	19.00	0
20	16QAM	1	49	18.31	18.38	18.31		
20	16QAM	1	99	18.53	17.89	18.01		
20	16QAM	50	0	18.28	18.29	18.29	19.00	0
20	16QAM	50	24	18.15	18.22	18.21		
20	16QAM	50	50	18.02	18.22	18.07		
20	16QAM	100	0	18.08	18.16	18.13	19.00	0
20	64QAM	1	0	18.23	18.29	18.26		
20	64QAM	1	49	18.33	18.26	18.23		
20	64QAM	1	99	18.24	18.27	18.36	19.00	0
20	64QAM	50	0	18.17	18.37	18.35		
20	64QAM	50	24	18.26	18.30	18.24		
20	64QAM	50	50	18.34	18.24	18.17	19.00	0
20	64QAM	100	0	18.27	18.31	18.34		
Channel				20025	20175	20325		
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	18.13	18.23	18.29	19.00	0
15	QPSK	1	37	18.01	18.07	18.09		
15	QPSK	1	74	17.98	18.00	18.03		
15	QPSK	36	0	18.08	18.25	18.20	18.50	0.5
15	QPSK	36	20	18.05	18.14	18.13		
15	QPSK	36	39	18.01	18.15	18.05		
15	QPSK	75	0	18.03	18.19	18.06	19.00	0
15	16QAM	1	0	18.37	18.38	18.53		
15	16QAM	1	37	18.21	18.16	18.52		
15	16QAM	1	74	18.17	18.51	18.29	19.00	0
15	16QAM	36	0	18.20	18.22	18.19		
15	16QAM	36	20	18.04	18.17	18.17		
15	16QAM	36	39	18.00	18.09	18.06	19.00	0
15	16QAM	75	0	18.12	18.24	18.14		
15	64QAM	1	0	18.36	18.44	18.33		
15	64QAM	1	37	18.33	18.43	18.31	19.00	0
15	64QAM	1	74	18.21	18.30	18.24		
15	64QAM	36	0	18.19	18.27	18.29		
15	64QAM	36	20	18.22	18.29	18.25	19.00	0
15	64QAM	36	39	18.34	18.27	18.21		
15	64QAM	75	0	18.21	18.26	18.22		



Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	18.15	18.06	18.06	19.00	0
10	QPSK	1	25	17.90	17.93	18.11		
10	QPSK	1	49	17.96	18.06	18.03		
10	QPSK	25	0	18.06	18.18	18.08	18.50	0.5
10	QPSK	25	12	18.09	18.12	18.04		
10	QPSK	25	25	17.96	18.08	18.01		
10	QPSK	50	0	18.03	18.15	18.12		
10	16QAM	1	0	18.02	18.35	18.37	19.00	0
10	16QAM	1	25	17.95	18.13	17.91		
10	16QAM	1	49	18.12	18.06	18.32		
10	16QAM	25	0	18.02	18.19	18.03	19.00	0
10	16QAM	25	12	18.10	18.20	18.21		
10	16QAM	25	25	17.97	18.06	18.06		
10	16QAM	50	0	18.07	18.20	18.05		
10	64QAM	1	0	18.14	18.37	18.38	19.00	0
10	64QAM	1	25	18.19	18.29	18.33		
10	64QAM	1	49	18.21	18.22	18.20		
10	64QAM	25	0	18.21	18.21	18.15	19.00	0
10	64QAM	25	12	18.13	18.16	18.19		
10	64QAM	25	25	18.18	18.15	18.21		
10	64QAM	50	0	18.15	18.24	18.29		
Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	17.91	18.08	18.10	19.00	0
5	QPSK	1	12	17.99	18.07	17.86		
5	QPSK	1	24	17.98	18.07	18.10		
5	QPSK	12	0	18.04	18.06	18.05	18.50	0.5
5	QPSK	12	7	17.98	18.17	18.01		
5	QPSK	12	13	17.98	18.09	17.98		
5	QPSK	25	0	18.03	18.14	18.06		
5	16QAM	1	0	18.12	18.33	18.22	19.00	0
5	16QAM	1	12	17.97	18.03	18.51		
5	16QAM	1	24	18.46	18.21	18.37		
5	16QAM	12	0	18.04	18.14	18.04	19.00	0
5	16QAM	12	7	18.11	18.12	18.13		
5	16QAM	12	13	17.96	18.10	18.03		
5	16QAM	25	0	18.07	18.25	18.03		
5	64QAM	1	0	18.21	18.37	18.21	19.00	0
5	64QAM	1	12	18.29	18.33	18.27		
5	64QAM	1	24	18.14	18.26	18.23		
5	64QAM	12	0	18.28	18.22	18.25	19.00	0
5	64QAM	12	7	18.35	18.27	18.22		
5	64QAM	12	13	18.25	18.22	18.34		
5	64QAM	25	0	18.29	18.21	18.29		



Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.98	18.14	17.96	19.00	0
3	QPSK	1	8	17.79	17.93	17.97		
3	QPSK	1	14	17.86	18.04	17.89		
3	QPSK	8	0	18.01	18.07	18.01	18.50	0.5
3	QPSK	8	4	17.98	18.08	18.02		
3	QPSK	8	7	17.97	18.07	18.00		
3	QPSK	15	0	17.93	18.02	18.00		
3	16QAM	1	0	18.49	18.32	17.93	19.00	0
3	16QAM	1	8	18.37	18.28	18.50		
3	16QAM	1	14	18.10	18.43	18.19		
3	16QAM	8	0	18.13	18.22	18.14	19.00	0
3	16QAM	8	4	18.12	18.24	18.11		
3	16QAM	8	7	18.08	18.15	18.04		
3	16QAM	15	0	18.05	18.14	18.14		
3	64QAM	1	0	18.23	18.37	18.27	19.00	0
3	64QAM	1	8	18.21	18.23	18.26		
3	64QAM	1	14	18.29	18.24	18.25		
3	64QAM	8	0	18.25	18.19	18.27	19.00	0
3	64QAM	8	4	18.28	18.23	18.23		
3	64QAM	8	7	18.31	18.33	18.19		
3	64QAM	15	0	18.29	18.23	18.31		
3	64QAM	15	0	18.29	18.23	18.31		
Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	17.85	17.99	17.91	19.00	0
1.4	QPSK	1	3	18.01	18.13	17.92		
1.4	QPSK	1	5	17.84	17.96	17.85		
1.4	QPSK	3	0	17.96	18.02	17.94		
1.4	QPSK	3	1	17.88	18.01	17.98		
1.4	QPSK	3	3	17.84	17.99	17.96	18.50	0.5
1.4	QPSK	6	0	17.98	17.96	17.87		
1.4	16QAM	1	0	18.44	18.24	18.37	19.00	0
1.4	16QAM	1	3	18.29	18.09	18.07		
1.4	16QAM	1	5	17.81	18.46	18.35		
1.4	16QAM	3	0	17.95	18.03	18.01		
1.4	16QAM	3	1	17.92	18.05	17.93		
1.4	16QAM	3	3	17.94	18.03	17.97		
1.4	16QAM	6	0	18.02	18.19	18.03	19.00	0
1.4	64QAM	1	0	18.27	18.26	18.22	19.00	0
1.4	64QAM	1	3	18.28	18.34	18.23		
1.4	64QAM	1	5	18.27	18.22	18.15		
1.4	64QAM	3	0	18.13	18.15	18.08		
1.4	64QAM	3	1	18.24	18.20	18.13		
1.4	64QAM	3	3	18.08	18.13	18.07		
1.4	64QAM	6	0	18.11	18.12	18.09		



<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	21.95	22.04	22.43	22.50	0
20	QPSK	1	49	21.68	21.74	21.92		
20	QPSK	1	99	21.72	21.99	21.97		
20	QPSK	50	0	21.96	22.15	22.16	22.50	0
20	QPSK	50	24	21.80	22.12	22.05		
20	QPSK	50	50	21.91	22.01	22.04		
20	QPSK	100	0	21.86	22.06	22.09		
20	16QAM	1	0	22.26	22.12	22.23	22.50	0
20	16QAM	1	49	21.85	22.20	22.21		
20	16QAM	1	99	21.90	22.11	21.95		
20	16QAM	50	0	20.93	21.15	21.16	22.50	0
20	16QAM	50	24	20.83	21.11	21.06		
20	16QAM	50	50	20.88	21.01	21.08		
20	16QAM	100	0	20.77	21.02	20.99		
20	64QAM	1	0	21.37	21.22	21.23	22.50	0
20	64QAM	1	49	21.01	20.93	20.99		
20	64QAM	1	99	21.04	20.79	20.88		
20	64QAM	50	0	20.11	20.05	20.23	22.50	0
20	64QAM	50	24	19.98	19.95	19.96		
20	64QAM	50	50	19.97	19.87	19.89		
20	64QAM	100	0	19.97	19.93	19.91		
Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	21.79	22.01	22.28	22.50	0
15	QPSK	1	37	21.71	21.84	21.83		
15	QPSK	1	74	21.69	22.01	21.96		
15	QPSK	36	0	21.83	22.13	22.05	22.50	0
15	QPSK	36	20	21.82	22.07	22.02		
15	QPSK	36	39	21.91	21.99	21.93		
15	QPSK	75	0	21.79	22.01	21.97		
15	16QAM	1	0	22.02	22.18	22.27	22.50	0
15	16QAM	1	37	21.90	22.35	21.78		
15	16QAM	1	74	21.74	22.25	21.93		
15	16QAM	36	0	20.89	21.11	21.09	22.50	0
15	16QAM	36	20	20.86	21.03	21.07		
15	16QAM	36	39	20.85	21.00	20.97		
15	16QAM	75	0	20.81	20.95	21.07		
15	64QAM	1	0	21.09	21.22	21.12	22.50	0
15	64QAM	1	37	21.11	21.16	21.23		
15	64QAM	1	74	20.89	20.99	20.78		
15	64QAM	36	0	20.03	20.01	20.08	22.50	0
15	64QAM	36	20	19.96	19.93	19.99		
15	64QAM	36	39	19.88	19.83	19.91		
15	64QAM	75	0	19.90	19.94	19.93		



Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.81	21.94	21.99	22.50	0
10	QPSK	1	25	21.72	22.01	21.95		
10	QPSK	1	49	21.65	21.92	21.84		
10	QPSK	25	0	21.80	22.03	22.06	22.50	0
10	QPSK	25	12	21.70	22.01	22.01		
10	QPSK	25	25	21.71	21.97	22.00		
10	QPSK	50	0	21.67	22.07	22.03	22.50	0
10	16QAM	1	0	21.92	21.99	22.22		
10	16QAM	1	25	21.86	22.10	22.14		
10	16QAM	1	49	21.90	22.13	22.15	22.50	0
10	16QAM	25	0	20.74	20.98	21.03		
10	16QAM	25	12	20.71	21.14	21.06		
10	16QAM	25	25	20.70	21.02	20.83	22.50	0
10	16QAM	50	0	20.73	20.99	21.06		
10	64QAM	1	0	21.21	21.16	21.19		
10	64QAM	1	25	21.03	21.08	21.08	22.50	0
10	64QAM	1	49	20.96	20.98	20.91		
10	64QAM	25	0	19.99	19.95	19.98		
10	64QAM	25	12	19.91	19.93	19.96	22.50	0
10	64QAM	25	25	19.96	19.90	19.93		
10	64QAM	50	0	19.99	19.95	19.91		
Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.63	21.96	21.93	22.50	0
5	QPSK	1	12	21.65	21.99	21.97		
5	QPSK	1	24	21.65	21.92	21.80		
5	QPSK	12	0	21.77	22.05	21.94	22.50	0
5	QPSK	12	7	21.78	22.07	22.01		
5	QPSK	12	13	21.64	21.92	21.90		
5	QPSK	25	0	21.66	22.01	22.00	22.50	0
5	16QAM	1	0	22.02	22.23	21.93		
5	16QAM	1	12	22.01	21.98	21.95		
5	16QAM	1	24	21.63	22.07	22.05	22.50	0
5	16QAM	12	0	20.72	20.97	20.85		
5	16QAM	12	7	20.74	21.05	20.99		
5	16QAM	12	13	20.75	21.00	20.87	22.50	0
5	16QAM	25	0	20.63	20.99	21.06		
5	64QAM	1	0	21.17	21.09	21.05		
5	64QAM	1	12	21.11	21.03	21.13	22.50	0
5	64QAM	1	24	20.88	20.98	20.91		
5	64QAM	12	0	19.93	19.97	19.93		
5	64QAM	12	7	19.87	19.93	19.95	22.50	0
5	64QAM	12	13	19.88	19.85	19.91		
5	64QAM	25	0	19.95	19.91	19.87		



<LTE Band 25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26140	26340	26590		
Frequency (MHz)				1860	1880	1905		
20	QPSK	1	0	19.03	19.08	19.27	19.50	0
20	QPSK	1	49	18.60	18.58	18.86		
20	QPSK	1	99	18.81	18.91	18.72		
20	QPSK	50	0	18.81	18.83	19.09	19.50	0
20	QPSK	50	24	18.70	18.75	18.98		
20	QPSK	50	50	18.55	18.68	18.93		
20	QPSK	100	0	18.67	18.81	18.94	19.50	0
20	16QAM	1	0	19.10	19.21	19.21		
20	16QAM	1	49	19.12	18.53	19.17		
20	16QAM	1	99	18.67	18.83	19.20	19.50	0
20	16QAM	50	0	18.73	18.84	19.18		
20	16QAM	50	24	18.70	18.76	18.93		
20	16QAM	50	50	18.56	18.77	18.95	19.50	0
20	16QAM	100	0	18.62	18.76	18.97		
20	64QAM	1	0	18.82	18.88	18.86		
20	64QAM	1	49	18.79	18.91	18.87	19.50	0
20	64QAM	1	99	18.98	19.09	19.08		
20	64QAM	50	0	18.78	18.89	18.88		
20	64QAM	50	24	18.77	18.84	18.86	19.50	0
20	64QAM	50	50	18.67	18.87	18.79		
20	64QAM	100	0	18.77	18.88	18.73		
Channel				26115	26340	26615	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1907.5		
15	QPSK	1	0	18.87	18.83	19.11	19.50	0
15	QPSK	1	37	18.57	18.68	18.67		
15	QPSK	1	74	18.51	18.58	18.65		
15	QPSK	36	0	18.76	18.81	18.90	19.50	0
15	QPSK	36	20	18.65	18.71	18.86		
15	QPSK	36	39	18.64	18.68	18.70		
15	QPSK	75	0	18.68	18.71	18.82	19.50	0
15	16QAM	1	0	18.88	19.02	18.95		
15	16QAM	1	37	19.15	18.77	18.64		
15	16QAM	1	74	19.04	19.06	18.75	19.50	0
15	16QAM	36	0	18.75	18.84	18.82		
15	16QAM	36	20	18.72	18.64	18.78		
15	16QAM	36	39	18.52	18.64	18.76	19.50	0
15	16QAM	75	0	18.63	18.79	18.82		
15	64QAM	1	0	19.02	19.08	19.03		
15	64QAM	1	37	18.91	18.94	18.89	19.50	0
15	64QAM	1	74	18.88	18.86	18.78		
15	64QAM	36	0	18.81	18.89	18.79		
15	64QAM	36	20	18.89	18.82	18.76	19.50	0
15	64QAM	36	39	18.78	18.81	18.69		
15	64QAM	75	0	18.73	18.87	18.71		





Channel				26090	26340	26640	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1910		
10	QPSK	1	0	18.98	18.76	18.71	19.50	0
10	QPSK	1	25	18.59	18.65	18.63		
10	QPSK	1	49	18.69	18.85	18.54		
10	QPSK	25	0	18.74	18.73	18.82	19.50	0
10	QPSK	25	12	18.62	18.73	18.73		
10	QPSK	25	25	18.66	18.66	18.75		
10	QPSK	50	0	18.64	18.74	18.80		
10	16QAM	1	0	18.93	18.86	18.85	19.50	0
10	16QAM	1	25	18.68	18.81	19.07		
10	16QAM	1	49	19.10	18.73	19.03		
10	16QAM	25	0	18.72	18.72	18.72	19.50	0
10	16QAM	25	12	18.58	18.72	18.60		
10	16QAM	25	25	18.55	18.65	18.60		
10	16QAM	50	0	18.59	18.75	18.71		
10	64QAM	1	0	19.09	19.06	19.13	19.50	0
10	64QAM	1	25	18.77	18.94	18.96		
10	64QAM	1	49	19.10	19.14	19.23		
10	64QAM	25	0	18.77	18.82	18.99	19.50	0
10	64QAM	25	12	18.74	18.80	18.86		
10	64QAM	25	25	18.69	18.77	18.74		
10	64QAM	50	0	18.79	18.83	18.75		
Channel				26065	26340	26665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1912.5		
5	QPSK	1	0	18.67	18.70	18.78	19.50	0
5	QPSK	1	12	18.53	18.67	18.82		
5	QPSK	1	24	18.59	18.74	18.77		
5	QPSK	12	0	18.71	18.73	18.76	19.50	0
5	QPSK	12	7	18.65	18.76	18.70		
5	QPSK	12	13	18.67	18.68	18.62		
5	QPSK	25	0	18.63	18.69	18.71		
5	16QAM	1	0	18.82	18.82	19.18	19.50	0
5	16QAM	1	12	19.05	18.83	18.68		
5	16QAM	1	24	19.07	18.86	18.70		
5	16QAM	12	0	18.63	18.71	18.74	19.50	0
5	16QAM	12	7	18.66	18.61	18.70		
5	16QAM	12	13	18.65	18.61	18.67		
5	16QAM	25	0	18.56	18.59	18.64		
5	64QAM	1	0	19.12	19.21	18.94	19.50	0
5	64QAM	1	12	19.04	19.15	19.01		
5	64QAM	1	24	19.09	19.04	18.94		
5	64QAM	12	0	18.93	18.98	18.87	19.50	0
5	64QAM	12	7	18.89	18.98	19.01		
5	64QAM	12	13	18.88	18.97	18.88		
5	64QAM	25	0	18.91	19.02	18.99		



Channel				26055	26340	26675	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1913.5		
3	QPSK	1	0	18.65	18.65	18.64	19.50	0
3	QPSK	1	8	18.58	18.57	18.67		
3	QPSK	1	14	18.68	18.64	18.65		
3	QPSK	8	0	18.63	18.69	18.73	19.50	0
3	QPSK	8	4	18.63	18.75	18.73		
3	QPSK	8	7	18.64	18.62	18.74		
3	QPSK	15	0	18.65	18.71	18.78		
3	16QAM	1	0	18.67	18.58	19.17	19.50	0
3	16QAM	1	8	18.79	18.76	18.76		
3	16QAM	1	14	18.62	19.01	18.40		
3	16QAM	8	0	18.64	18.71	18.74	19.50	0
3	16QAM	8	4	18.64	18.75	18.66		
3	16QAM	8	7	18.74	18.76	18.76		
3	16QAM	15	0	18.62	18.61	18.56		
3	64QAM	1	0	18.94	19.05	18.11	19.50	0
3	64QAM	1	8	18.95	18.99	18.89		
3	64QAM	1	14	18.89	18.96	18.99		
3	64QAM	8	0	18.91	18.88	18.91	19.50	0
3	64QAM	8	4	18.94	18.89	18.71		
3	64QAM	8	7	18.88	18.84	18.92		
3	64QAM	15	0	18.87	18.91	18.93		
Channel				26047	26340	26683	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1914.3		
1.4	QPSK	1	0	18.50	18.55	18.65	19.50	0
1.4	QPSK	1	3	18.57	18.57	18.68		
1.4	QPSK	1	5	18.54	18.47	18.51		
1.4	QPSK	3	0	18.56	18.63	18.68		
1.4	QPSK	3	1	18.63	18.59	18.73		
1.4	QPSK	3	3	18.51	18.57	18.65	19.50	0
1.4	QPSK	6	0	18.67	18.57	18.69		
1.4	16QAM	1	0	18.68	19.04	18.70	19.50	0
1.4	16QAM	1	3	19.00	18.55	18.70		
1.4	16QAM	1	5	18.58	19.12	18.40		
1.4	16QAM	3	0	18.55	18.58	18.60		
1.4	16QAM	3	1	18.49	18.67	18.70		
1.4	16QAM	3	3	18.44	18.53	18.62	19.50	0
1.4	16QAM	6	0	18.72	18.61	18.67		
1.4	64QAM	1	0	18.92	18.95	18.78	19.50	0
1.4	64QAM	1	3	18.89	18.92	18.86		
1.4	64QAM	1	5	18.93	18.95	18.79		
1.4	64QAM	3	0	18.76	18.79	18.76		
1.4	64QAM	3	1	18.78	18.85	18.89		
1.4	64QAM	3	3	18.89	18.91	18.99		
1.4	64QAM	6	0	18.89	18.88	18.91	19.50	0



<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			22.00	0
Frequency (MHz)				2310				
10	QPSK	1	0		21.64		22.00	0
10	QPSK	1	25		21.79			
10	QPSK	1	49		21.57			
10	QPSK	25	0		21.62		22.00	0
10	QPSK	25	12		21.51			
10	QPSK	25	25		21.44			
10	QPSK	50	0		21.49		22.00	0
10	16QAM	1	0		21.75			
10	16QAM	1	25		21.57			
10	16QAM	1	49		21.59		21.00	1
10	16QAM	25	0		20.51			
10	16QAM	25	12		20.56			
10	16QAM	25	25		20.48		22.00	0
10	16QAM	50	0		20.53			
10	64QAM	1	0		21.31			
10	64QAM	1	25		20.88		22.00	0
10	64QAM	1	49		20.97			
10	64QAM	25	0		19.82			
10	64QAM	25	12		19.75		21.00	1
10	64QAM	25	25		19.68			
10	64QAM	50	0		19.77			
Channel				27685	27710	27735	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2307.5	2310	2312.5		
5	QPSK	1	0	21.42	21.58	21.50	22.00	0
5	QPSK	1	12	21.41	21.40	21.50		
5	QPSK	1	24	21.52	21.63	21.41		
5	QPSK	12	0	21.44	21.51	21.51	22.00	0
5	QPSK	12	7	21.50	21.49	21.48		
5	QPSK	12	13	21.52	21.48	21.47		
5	QPSK	25	0	21.54	21.42	21.49	22.00	0
5	16QAM	1	0	21.53	21.70	21.60		
5	16QAM	1	12	21.60	21.76	21.66		
5	16QAM	1	24	21.71	21.37	21.47	21.00	1
5	16QAM	12	0	20.45	20.59	20.54		
5	16QAM	12	7	20.49	20.52	20.51		
5	16QAM	12	13	20.55	20.41	20.55	22.00	0
5	16QAM	25	0	20.63	20.50	20.52		
5	64QAM	1	0	21.02	21.00	21.01		
5	64QAM	1	12	21.03	21.08	20.97	21.00	1
5	64QAM	1	24	20.77	20.85	20.78		
5	64QAM	12	0	20.78	20.84	20.81		
5	64QAM	12	7	20.78	20.83	20.81	21.00	1
5	64QAM	12	13	20.78	20.83	20.88		
5	64QAM	25	0	19.89	19.80	19.78		



<LTE Band 66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				132072	132322	132572	18.50	0
Frequency (MHz)				1720	1745	1770		
20	QPSK	1	0	18.03	18.46	17.90		
20	QPSK	1	49	17.86	17.99	17.89	18.50	0
20	QPSK	1	99	17.91	18.09	17.78		
20	QPSK	50	0	18.04	18.17	18.08		
20	QPSK	50	24	17.97	18.16	17.98	18.50	0
20	QPSK	50	50	17.91	18.08	17.95		
20	QPSK	100	0	18.01	18.08	18.03		
20	16QAM	1	0	18.42	18.44	18.34	18.50	0
20	16QAM	1	49	17.99	18.33	17.85		
20	16QAM	1	99	18.13	17.92	18.20		
20	16QAM	50	0	18.02	18.29	18.08	18.50	0
20	16QAM	50	24	18.01	18.18	18.07		
20	16QAM	50	50	18.11	18.17	18.00		
20	16QAM	100	0	18.05	18.18	17.91	18.50	0
20	64QAM	1	0	18.18	18.22	18.21		
20	64QAM	1	49	18.21	18.30	18.39		
20	64QAM	1	99	18.18	18.32	18.32	18.50	0
20	64QAM	50	0	18.29	18.31	18.29		
20	64QAM	50	24	18.17	18.24	18.22		
20	64QAM	50	50	18.18	18.21	18.23	18.50	0
20	64QAM	100	0	18.11	18.27	18.28		
Channel				132047	132322	132597		
Frequency (MHz)				1717.5	1745	1772.5		
15	QPSK	1	0	18.13	18.11	18.12	18.50	0
15	QPSK	1	37	17.77	17.94	17.85		
15	QPSK	1	74	17.74	17.98	17.85		
15	QPSK	36	0	18.00	18.11	18.00	18.50	0
15	QPSK	36	20	17.97	18.13	17.92		
15	QPSK	36	39	17.91	18.03	17.95		
15	QPSK	75	0	17.97	18.11	17.93	18.50	0
15	16QAM	1	0	18.08	18.42	18.32		
15	16QAM	1	37	18.14	18.33	18.00		
15	16QAM	1	74	17.94	18.42	18.29	18.50	0
15	16QAM	36	0	18.07	18.16	17.99		
15	16QAM	36	20	18.01	18.17	17.95		
15	16QAM	36	39	17.89	18.03	17.97	18.50	0
15	16QAM	75	0	18.02	18.17	17.98		
15	64QAM	1	0	18.11	18.25	18.17		
15	64QAM	1	37	18.21	18.29	18.16	18.50	0
15	64QAM	1	74	18.14	18.33	18.15		
15	64QAM	36	0	18.15	18.28	18.27		
15	64QAM	36	20	18.32	18.25	18.11	18.50	0
15	64QAM	36	39	18.12	18.17	18.21		
15	64QAM	75	0	18.32	18.24	18.31		



Channel				132022	132322	132622	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	17.86	18.08	17.88	18.50	0
10	QPSK	1	25	17.82	18.10	17.78		
10	QPSK	1	49	17.91	17.96	17.82		
10	QPSK	25	0	18.01	18.14	17.93	18.50	0
10	QPSK	25	12	17.89	18.10	17.94		
10	QPSK	25	25	17.91	18.03	17.93		
10	QPSK	50	0	17.98	18.05	17.95	18.50	0
10	16QAM	1	0	18.30	18.28	18.10		
10	16QAM	1	25	18.24	18.16	18.37		
10	16QAM	1	49	18.37	18.35	18.28	18.50	0
10	16QAM	25	0	17.95	18.19	17.91		
10	16QAM	25	12	18.06	18.09	17.98		
10	16QAM	25	25	17.94	18.14	17.84	18.50	0
10	16QAM	50	0	18.03	18.06	17.95		
10	64QAM	1	0	18.11	18.20	18.13		
10	64QAM	1	25	18.17	18.33	18.12	18.50	0
10	64QAM	1	49	18.19	18.25	18.11		
10	64QAM	25	0	18.15	18.20	18.19		
10	64QAM	25	12	18.11	18.20	18.02	18.50	0
10	64QAM	25	25	18.21	18.17	18.07		
10	64QAM	50	0	18.17	18.16	18.13		
Channel				131997	132322	132647	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	17.77	18.06	17.82	18.50	0
5	QPSK	1	12	17.80	17.89	17.86		
5	QPSK	1	24	17.84	17.97	17.85		
5	QPSK	12	0	17.95	18.13	17.90	18.50	0
5	QPSK	12	7	17.89	18.03	17.94		
5	QPSK	12	13	17.89	18.05	17.91		
5	QPSK	25	0	17.93	18.01	17.92	18.50	0
5	16QAM	1	0	18.12	18.28	18.17		
5	16QAM	1	12	18.36	18.30	18.42		
5	16QAM	1	24	18.34	18.13	18.22	18.50	0
5	16QAM	12	0	17.91	18.19	17.87		
5	16QAM	12	7	17.87	18.16	18.03		
5	16QAM	12	13	17.92	18.06	17.93	18.50	0
5	16QAM	25	0	17.99	18.13	17.82		
5	64QAM	1	0	18.21	18.32	18.17		
5	64QAM	1	12	18.11	18.25	18.21	18.50	0
5	64QAM	1	24	18.14	18.31	18.11		
5	64QAM	12	0	18.21	18.19	18.18		
5	64QAM	12	7	18.13	18.21	18.21	18.50	0
5	64QAM	12	13	18.09	18.19	18.11		
5	64QAM	25	0	18.04	18.19	18.23		



Channel				131987	132322	132657	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1745	1778.5		
3	QPSK	1	0	17.79	17.95	17.84	18.50	0
3	QPSK	1	8	17.73	18.01	17.76		
3	QPSK	1	14	17.76	18.04	17.95		
3	QPSK	8	0	17.87	18.03	17.93	18.50	0
3	QPSK	8	4	17.88	18.03	17.90		
3	QPSK	8	7	17.87	18.09	17.94		
3	QPSK	15	0	17.89	17.99	17.87		
3	16QAM	1	0	18.36	17.99	17.86	18.50	0
3	16QAM	1	8	18.18	18.21	18.43		
3	16QAM	1	14	18.06	18.13	17.91		
3	16QAM	8	0	18.00	18.18	18.02	18.50	0
3	16QAM	8	4	18.03	18.08	17.95		
3	16QAM	8	7	18.00	18.13	17.89		
3	16QAM	15	0	17.83	18.03	17.91		
3	64QAM	1	0	18.17	18.28	18.09	18.50	0
3	64QAM	1	8	18.09	18.26	18.03		
3	64QAM	1	14	18.23	18.23	18.01		
3	64QAM	8	0	18.21	18.10	18.21	18.50	0
3	64QAM	8	4	18.05	18.17	18.11		
3	64QAM	8	7	18.09	18.17	18.03		
3	64QAM	15	0	18.04	18.09	18.11		
Channel				131979	132322	132665	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1745	1779.3		
1.4	QPSK	1	0	17.79	17.91	17.77	18.50	0
1.4	QPSK	1	3	17.77	17.97	17.80		
1.4	QPSK	1	5	17.77	17.91	17.78		
1.4	QPSK	3	0	17.75	17.90	17.88		
1.4	QPSK	3	1	17.86	18.01	17.94		
1.4	QPSK	3	3	17.84	17.99	17.82	18.50	0
1.4	QPSK	6	0	17.86	17.99	17.84		
1.4	16QAM	1	0	17.95	18.44	17.84	18.50	0
1.4	16QAM	1	3	18.32	18.07	18.45		
1.4	16QAM	1	5	17.71	18.45	17.85		
1.4	16QAM	3	0	17.93	17.92	17.91		
1.4	16QAM	3	1	17.88	17.96	17.80		
1.4	16QAM	3	3	17.86	18.08	17.75	18.50	0
1.4	16QAM	6	0	17.93	17.98	18.04		
1.4	64QAM	1	0	18.12	18.18	18.21	18.50	0
1.4	64QAM	1	3	18.19	18.30	18.22		
1.4	64QAM	1	5	18.31	18.21	18.26		
1.4	64QAM	3	0	18.04	18.06	18.19		
1.4	64QAM	3	1	18.13	18.10	18.03		
1.4	64QAM	3	3	18.21	18.07	18.19		
1.4	64QAM	6	0	18.23	18.11	18.19	18.50	0

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

- a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
- b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
- c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

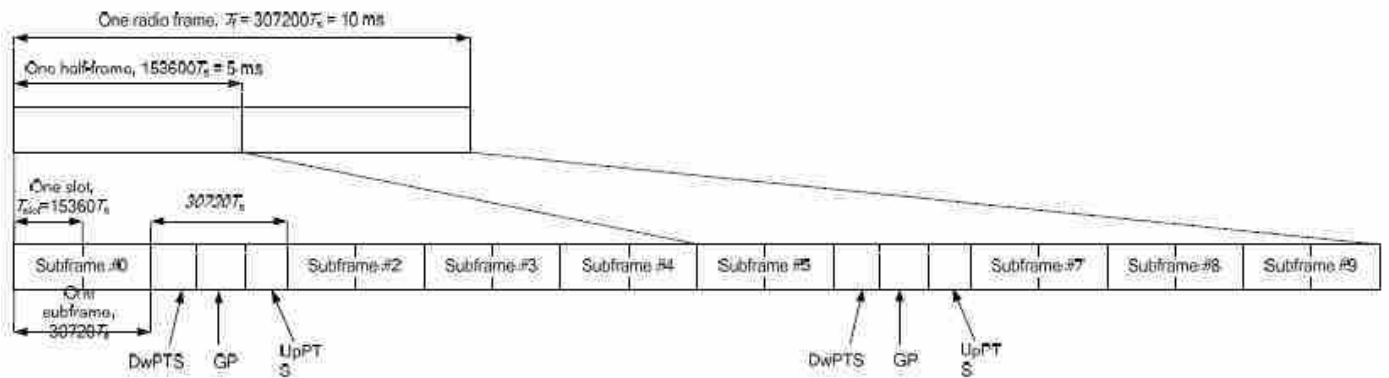


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink			
	DwPTS	UpPTS		DwPTS	UpPTS		
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink	
0	6592 · 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			
5	6592 · Ts	4384 · Ts	5120 · Ts	20480 · Ts	4384 · Ts	5120 · Ts	
6	19760 · Ts			23040 · Ts			
7	21952 · Ts			12800 · Ts			
8	24144 · Ts			-			-
9	13168 · Ts			-			-

Special subframe (30720·T <sub>s</sub> ): 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 <sub>s</sub> ): 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.





<Full Power>

<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	22.92	22.75	23.02	23.50	0
20	QPSK	1	49	22.87	22.58	22.93		
20	QPSK	1	99	22.89	22.70	23.00		
20	QPSK	50	0	22.08	21.86	22.02	22.50	1
20	QPSK	50	24	22.06	21.72	22.00		
20	QPSK	50	50	21.88	21.75	21.89		
20	QPSK	100	0	21.98	21.71	22.00		
20	16QAM	1	0	22.30	22.28	22.09	23.00	0.5
20	16QAM	1	49	22.17	22.03	22.09		
20	16QAM	1	99	22.30	22.03	22.04		
20	16QAM	50	0	21.07	20.94	20.92	21.50	2
20	16QAM	50	24	21.14	20.83	21.02		
20	16QAM	50	50	20.96	20.87	20.90		
20	16QAM	100	0	20.95	20.80	21.02		
20	64QAM	1	0	21.40	21.38	21.18	21.50	2
20	64QAM	1	49	21.18	21.08	21.18		
20	64QAM	1	99	21.32	21.07	21.14		
20	64QAM	50	0	20.28	20.19	20.17	20.50	3
20	64QAM	50	24	20.32	20.07	20.24		
20	64QAM	50	50	20.08	19.99	20.02		
20	64QAM	100	0	20.07	20.04	20.34		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	22.99	22.83	22.97	23.50	0
15	QPSK	1	37	22.92	22.78	22.89		
15	QPSK	1	74	22.93	22.84	22.87		
15	QPSK	36	0	21.98	21.84	21.89	22.50	1
15	QPSK	36	20	21.95	21.74	21.97		
15	QPSK	36	39	21.98	21.76	21.93		
15	QPSK	75	0	21.97	21.74	21.99		
15	16QAM	1	0	22.30	21.86	22.14	23.00	0.5
15	16QAM	1	37	22.07	21.84	22.09		
15	16QAM	1	74	22.09	21.92	22.07		
15	16QAM	36	0	21.00	20.87	20.86	21.50	2
15	16QAM	36	20	20.98	20.81	20.96		
15	16QAM	36	39	21.01	20.72	20.92		
15	16QAM	75	0	20.94	20.83	21.00		
15	64QAM	1	0	21.43	21.30	21.49	21.50	2
15	64QAM	1	37	21.38	21.12	21.32		
15	64QAM	1	74	21.39	21.08	21.28		
15	64QAM	36	0	20.31	20.08	20.27	20.50	3
15	64QAM	36	20	20.16	19.99	20.16		
15	64QAM	36	39	20.19	19.90	20.10		
15	64QAM	75	0	20.17	20.04	20.22		



Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	22.89	22.76	23.00	23.50	0
10	QPSK	1	25	22.81	22.62	22.89		
10	QPSK	1	49	22.79	22.68	22.78		
10	QPSK	25	0	22.04	21.82	22.05	22.50	1
10	QPSK	25	12	22.00	21.82	21.96		
10	QPSK	25	25	21.93	21.71	21.93		
10	QPSK	50	0	22.01	21.81	22.02	23.00	0.5
10	16QAM	1	0	22.29	22.08	22.17		
10	16QAM	1	25	22.12	21.97	22.15		
10	16QAM	1	49	22.09	22.02	22.03	21.50	2
10	16QAM	25	0	21.03	20.83	20.99		
10	16QAM	25	12	21.10	20.83	21.05		
10	16QAM	25	25	20.93	20.84	20.97		
10	16QAM	50	0	21.00	20.81	21.05	21.50	2
10	64QAM	1	0	21.49	21.30	21.40		
10	64QAM	1	25	21.17	21.05	21.17		
10	64QAM	1	49	21.14	21.08	21.09	20.50	3
10	64QAM	25	0	20.31	20.11	20.27		
10	64QAM	25	12	20.35	20.04	20.32		
10	64QAM	25	25	20.09	19.99	20.12		
10	64QAM	50	0	20.23	20.07	20.27		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	23.00	22.62	23.00	23.50	0
5	QPSK	1	12	22.85	22.64	23.00		
5	QPSK	1	24	22.81	22.58	23.01		
5	QPSK	12	0	22.01	21.71	22.01	22.50	1
5	QPSK	12	7	21.96	21.74	22.00		
5	QPSK	12	13	21.93	21.71	21.93		
5	QPSK	25	0	21.99	21.79	21.95	23.00	0.5
5	16QAM	1	0	22.27	21.82	22.12		
5	16QAM	1	12	22.36	21.89	22.17		
5	16QAM	1	24	22.22	21.84	22.07	21.50	2
5	16QAM	12	0	21.09	20.83	21.04		
5	16QAM	12	7	21.04	20.84	21.03		
5	16QAM	12	13	21.01	20.71	20.96	21.50	2
5	16QAM	25	0	21.00	20.82	21.04		
5	64QAM	1	0	21.49	21.27	21.39		
5	64QAM	1	12	21.47	21.19	21.37	21.50	2
5	64QAM	1	24	21.41	21.14	21.29		
5	64QAM	12	0	20.32	20.02	20.22		
5	64QAM	12	7	20.21	20.01	20.21	20.50	3
5	64QAM	12	13	20.23	19.92	20.19		
5	64QAM	25	0	20.33	20.03	20.23		



<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	23.03	23.10	22.83	22.71	22.50	23.50	0
20	QPSK	1	49	23.04	23.17	22.86	22.82	23.30		
20	QPSK	1	99	22.78	22.97	22.81	22.80	22.40		
20	QPSK	50	0	21.88	22.10	21.89	22.05	22.19	22.50	1
20	QPSK	50	24	21.75	22.08	21.85	22.00	22.12		
20	QPSK	50	50	21.72	21.94	21.76	21.96	22.04		
20	QPSK	100	0	21.83	22.16	21.90	21.89	22.00		
20	16QAM	1	0	22.09	22.15	22.04	21.94	21.40	23.00	0.5
20	16QAM	1	49	21.91	22.08	21.95	22.15	22.04		
20	16QAM	1	99	21.80	22.02	21.83	22.01	21.50		
20	16QAM	50	0	20.83	21.13	20.89	20.97	21.13	21.50	2
20	16QAM	50	24	20.83	21.13	20.85	21.11	21.19		
20	16QAM	50	50	20.70	21.00	20.76	21.07	21.01		
20	16QAM	100	0	20.79	21.09	20.88	20.99	21.05		
20	64QAM	1	0	21.15	21.21	21.19	21.17	21.22	21.50	2
20	64QAM	1	49	20.85	20.94	20.89	20.91	20.96		
20	64QAM	1	99	20.87	20.96	20.91	20.93	20.97		
20	64QAM	50	0	19.84	19.90	19.81	19.86	19.91	20.50	3
20	64QAM	50	24	19.87	19.94	19.85	19.90	19.92		
20	64QAM	50	50	19.79	19.80	19.76	19.81	19.85		
20	64QAM	100	0	19.82	19.92	19.84	19.88	19.90		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	23.02	23.28	22.69	22.87	23.26	23.50	0
15	QPSK	1	37	22.87	23.21	22.66	22.82	23.10		
15	QPSK	1	74	22.82	23.22	22.70	22.80	23.06		
15	QPSK	36	0	21.78	22.04	21.76	21.90	22.17	22.50	1
15	QPSK	36	20	21.81	22.13	21.81	21.92	22.01		
15	QPSK	36	39	21.73	22.05	21.80	21.89	22.16		
15	QPSK	75	0	21.77	22.02	21.81	21.86	22.16		
15	16QAM	1	0	22.24	22.45	22.15	22.05	22.47	23.00	0.5
15	16QAM	1	37	22.02	22.46	22.11	22.20	22.23		
15	16QAM	1	74	21.98	22.32	21.97	22.18	22.31		
15	16QAM	36	0	20.79	21.04	20.71	20.86	21.18	21.50	2
15	16QAM	36	20	20.83	21.12	20.76	20.88	21.04		
15	16QAM	36	39	20.76	21.04	20.76	20.94	21.09		
15	16QAM	75	0	20.84	21.17	20.78	20.85	21.10		
15	64QAM	1	0	21.07	21.11	21.06	21.08	21.10	21.50	2
15	64QAM	1	37	20.94	20.97	20.88	20.91	20.98		
15	64QAM	1	74	20.77	20.87	20.75	20.83	20.89		
15	64QAM	36	0	19.83	19.91	19.84	19.89	19.96	20.50	3
15	64QAM	36	20	19.85	19.89	19.83	19.88	19.95		
15	64QAM	36	39	19.74	19.77	19.73	19.78	19.85		
15	64QAM	75	0	19.85	19.92	19.79	19.84	19.82		



Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	22.70	22.92	22.71	22.84	23.02	23.50	0
10	QPSK	1	25	22.67	22.96	22.70	22.80	22.93		
10	QPSK	1	49	22.58	22.97	22.62	22.82	23.04		
10	QPSK	25	0	21.73	21.96	21.84	21.82	22.12	22.50	1
10	QPSK	25	12	21.64	22.04	21.86	21.98	22.05		
10	QPSK	25	25	21.71	21.98	21.75	21.93	22.11		
10	QPSK	50	0	21.75	22.08	21.77	22.06	22.16		
10	16QAM	1	0	22.25	22.35	21.92	22.08	22.52	23.00	0.5
10	16QAM	1	25	22.20	22.39	21.93	22.13	22.36		
10	16QAM	1	49	22.11	22.38	21.85	22.14	22.45		
10	16QAM	25	0	20.81	21.04	20.84	20.94	21.09	21.50	2
10	16QAM	25	12	20.84	21.12	20.86	20.99	21.14		
10	16QAM	25	25	20.69	21.05	20.76	20.94	21.10		
10	16QAM	50	0	20.70	21.02	20.87	20.95	21.13		
10	64QAM	1	0	21.07	21.04	21.03	21.11	21.13	21.50	2
10	64QAM	1	25	20.95	20.94	20.98	20.97	21.00		
10	64QAM	1	49	20.90	20.91	20.88	20.97	20.98		
10	64QAM	25	0	19.84	19.96	19.93	19.97	19.95	20.50	3
10	64QAM	25	12	19.87	19.96	19.89	19.98	19.99		
10	64QAM	25	25	19.80	19.86	19.88	19.82	19.89		
10	64QAM	50	0	19.75	19.95	19.83	19.88	19.94		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	22.66	22.93	22.60	22.76	22.98	23.50	0
5	QPSK	1	12	22.68	22.92	22.53	22.75	22.92		
5	QPSK	1	24	22.58	23.00	22.59	22.75	22.86		
5	QPSK	12	0	21.69	22.01	21.80	22.00	22.07	22.50	1
5	QPSK	12	7	21.70	21.93	21.82	22.00	22.07		
5	QPSK	12	13	21.69	22.04	21.75	21.97	21.98		
5	QPSK	25	0	21.72	21.97	21.76	21.93	22.00		
5	16QAM	1	0	22.05	22.44	22.01	22.05	22.15	23.00	0.5
5	16QAM	1	12	22.11	22.57	22.05	22.29	22.04		
5	16QAM	1	24	22.02	22.42	22.05	22.07	21.98		
5	16QAM	12	0	20.77	20.97	20.91	21.00	21.04	21.50	2
5	16QAM	12	7	20.88	21.11	20.87	21.00	21.04		
5	16QAM	12	13	20.75	21.10	20.74	20.96	21.07		
5	16QAM	25	0	20.70	20.94	20.80	21.05	21.12		
5	64QAM	1	0	21.10	21.15	21.14	21.15	21.13	21.50	2
5	64QAM	1	12	21.07	21.13	21.11	21.14	21.11		
5	64QAM	1	24	21.08	21.11	21.07	21.10	21.12		
5	64QAM	12	0	19.84	19.81	19.79	19.87	19.88	20.50	3
5	64QAM	12	7	19.77	19.83	19.82	19.88	19.85		
5	64QAM	12	13	19.78	19.76	19.78	19.85	19.87		
5	64QAM	25	0	19.76	19.82	19.77	19.80	19.83		



**<Reduced Power Level 1 for WWAN Only>**

**<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	19.23	18.91	19.37	19.50	0
20	QPSK	1	49	18.93	18.74	18.97		
20	QPSK	1	99	19.19	18.83	18.91		
20	QPSK	50	0	19.16	19.00	19.14	19.50	0
20	QPSK	50	24	19.12	18.95	19.03		
20	QPSK	50	50	19.03	18.90	19.03		
20	QPSK	100	0	19.04	18.93	19.16	19.50	0
20	16QAM	1	0	19.32	19.27	19.35		
20	16QAM	1	49	19.33	19.07	19.21		
20	16QAM	1	99	19.17	19.09	19.11	19.50	0
20	16QAM	50	0	19.05	19.07	19.14		
20	16QAM	50	24	19.13	18.90	19.14		
20	16QAM	50	50	19.07	18.95	19.11	19.50	0
20	16QAM	100	0	19.06	18.97	19.19		
20	64QAM	1	0	19.31	19.30	19.33		
20	64QAM	1	49	19.30	19.32	19.33	19.50	0
20	64QAM	1	99	19.33	19.32	19.30		
20	64QAM	50	0	19.20	19.21	19.22		
20	64QAM	50	24	19.34	19.30	19.35	19.50	0
20	64QAM	50	50	19.18	19.17	19.22		
20	64QAM	100	0	19.15	19.14	19.23		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	19.27	18.90	19.08	19.50	0
15	QPSK	1	37	19.09	18.83	18.98		
15	QPSK	1	74	19.14	18.90	18.94		
15	QPSK	36	0	19.07	18.94	19.01	19.50	0
15	QPSK	36	20	19.13	18.88	19.03		
15	QPSK	36	39	19.05	18.81	19.00		
15	QPSK	75	0	19.04	18.88	19.04	19.50	0
15	16QAM	1	0	19.34	19.21	19.27		
15	16QAM	1	37	19.23	19.10	19.25		
15	16QAM	1	74	19.35	19.09	19.18	19.50	0
15	16QAM	36	0	19.11	18.94	18.99		
15	16QAM	36	20	19.10	18.89	19.16		
15	16QAM	36	39	19.12	18.81	19.04	19.50	0
15	16QAM	75	0	19.06	18.91	19.09		
15	64QAM	1	0	19.28	19.23	19.30		
15	64QAM	1	37	19.15	19.12	19.18	19.50	0
15	64QAM	1	74	19.07	19.08	19.11		
15	64QAM	36	0	19.23	19.26	19.33		
15	64QAM	36	20	19.21	19.19	19.23	19.50	0
15	64QAM	36	39	19.16	19.18	19.19		
15	64QAM	75	0	19.22	19.27	19.26		



Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	19.08	18.89	19.05	19.50	0
10	QPSK	1	25	18.98	18.80	19.02		
10	QPSK	1	49	18.96	18.90	18.95		
10	QPSK	25	0	19.13	18.84	19.11	19.50	0
10	QPSK	25	12	19.09	18.88	19.14		
10	QPSK	25	25	19.00	18.77	19.04		
10	QPSK	50	0	19.10	18.84	19.11	19.50	0
10	16QAM	1	0	19.31	19.18	19.30		
10	16QAM	1	25	19.30	19.13	19.25		
10	16QAM	1	49	19.16	19.35	19.16	19.50	0
10	16QAM	25	0	19.16	19.01	19.09		
10	16QAM	25	12	19.12	18.92	19.12		
10	16QAM	25	25	19.04	18.82	19.02	19.50	0
10	16QAM	50	0	19.13	18.90	19.08		
10	64QAM	1	0	19.27	19.25	19.24		
10	64QAM	1	25	19.23	19.21	19.22	19.50	0
10	64QAM	1	49	19.15	19.11	19.13		
10	64QAM	25	0	19.23	19.22	19.21		
10	64QAM	25	12	19.18	19.16	19.11	19.50	0
10	64QAM	25	25	19.26	19.24	19.22		
10	64QAM	50	0	19.08	18.89	19.05		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	19.11	18.80	19.13	19.50	0
5	QPSK	1	12	19.15	18.74	19.09		
5	QPSK	1	24	19.10	18.74	19.00		
5	QPSK	12	0	19.23	18.89	19.22	19.50	0
5	QPSK	12	7	19.16	18.92	19.22		
5	QPSK	12	13	19.13	18.89	19.16		
5	QPSK	25	0	19.08	18.86	19.17	19.50	0
5	16QAM	1	0	19.29	19.16	19.32		
5	16QAM	1	12	19.27	19.17	19.32		
5	16QAM	1	24	19.31	19.10	19.14	19.50	0
5	16QAM	12	0	19.15	18.93	19.09		
5	16QAM	12	7	19.19	18.95	19.21		
5	16QAM	12	13	19.15	18.92	19.25	19.50	0
5	16QAM	25	0	19.14	18.92	19.28		
5	64QAM	1	0	19.29	19.25	19.33		
5	64QAM	1	12	19.14	19.11	19.15	19.50	0
5	64QAM	1	24	19.24	19.28	19.29		
5	64QAM	12	0	19.21	19.20	19.25		
5	64QAM	12	7	19.15	19.13	19.23	19.50	0
5	64QAM	12	13	19.11	19.10	19.14		
5	64QAM	25	0	19.10	19.08	19.12		



<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	18.91	19.15	18.91	18.98	18.41	19.50	0
20	QPSK	1	49	18.93	19.21	18.92	18.99	19.38		
20	QPSK	1	99	18.72	19.08	18.71	18.88	18.42		
20	QPSK	50	0	19.01	19.18	18.92	19.08	19.19	19.50	0
20	QPSK	50	24	19.00	19.14	18.90	19.03	19.10		
20	QPSK	50	50	18.83	19.04	18.81	19.03	19.11		
20	QPSK	100	0	18.92	18.98	18.94	18.99	19.07		
20	16QAM	1	0	19.23	19.24	19.32	19.23	18.62	19.50	0
20	16QAM	1	49	19.09	19.24	19.20	19.15	19.23		
20	16QAM	1	99	18.99	19.32	18.99	19.32	18.36		
20	16QAM	50	0	19.02	19.10	18.87	19.13	19.18	19.50	0
20	16QAM	50	24	18.89	19.17	18.95	19.04	19.25		
20	16QAM	50	50	18.88	19.12	18.87	19.07	19.07		
20	16QAM	100	0	18.97	19.11	18.97	19.02	19.11		
20	64QAM	1	0	19.25	19.22	19.31	19.33	19.31	19.50	0
20	64QAM	1	49	19.30	19.33	19.35	19.36	19.23		
20	64QAM	1	99	19.18	19.24	19.25	19.30	19.32		
20	64QAM	50	0	19.28	19.18	19.32	19.31	19.23	19.50	0
20	64QAM	50	24	19.19	19.24	19.30	19.29	19.21		
20	64QAM	50	50	19.09	19.15	19.16	19.31	19.32		
20	64QAM	100	0	19.21	19.12	19.30	19.31	19.21		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	19.16	19.29	19.01	19.09	19.29	19.50	0
15	QPSK	1	37	18.91	19.32	18.87	18.93	19.24		
15	QPSK	1	74	18.91	19.23	18.84	19.12	19.29		
15	QPSK	36	0	18.96	19.10	18.87	19.01	19.10	19.50	0
15	QPSK	36	20	18.85	19.13	18.93	19.00	19.04		
15	QPSK	36	39	18.88	19.13	18.91	19.03	19.21		
15	QPSK	75	0	18.94	19.14	18.92	19.03	19.17		
15	16QAM	1	0	19.31	19.30	19.22	19.22	19.31	19.50	0
15	16QAM	1	37	19.17	19.26	19.13	19.17	19.37		
15	16QAM	1	74	19.02	19.28	19.09	19.34	19.23		
15	16QAM	36	0	18.97	19.11	18.88	18.99	19.23	19.50	0
15	16QAM	36	20	18.87	19.15	18.94	18.98	19.17		
15	16QAM	36	39	18.79	19.04	18.82	19.02	19.23		
15	16QAM	75	0	18.87	19.19	18.87	19.07	19.10		
15	64QAM	1	0	18.89	19.34	18.90	19.23	19.33	19.50	0
15	64QAM	1	37	18.87	19.18	18.89	19.15	19.22		
15	64QAM	1	74	18.79	19.26	18.87	19.12	19.27		
15	64QAM	36	0	19.06	19.29	18.88	19.11	19.24	19.50	0
15	64QAM	36	20	19.01	19.23	19.00	19.21	19.25		
15	64QAM	36	39	19.03	19.15	19.11	19.08	19.17		
15	64QAM	75	0	18.88	19.08	19.02	19.00	19.11		



Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	18.85	19.07	18.81	19.06	19.27	19.50	0
10	QPSK	1	25	18.73	19.08	18.84	19.09	19.09		
10	QPSK	1	49	18.70	18.99	18.80	19.06	19.15		
10	QPSK	25	0	18.91	19.02	18.94	19.10	19.14	19.50	0
10	QPSK	25	12	18.80	19.19	18.97	19.24	19.19		
10	QPSK	25	25	18.75	19.09	18.86	19.16	19.17		
10	QPSK	50	0	18.92	19.10	18.88	19.22	19.19	19.50	0
10	16QAM	1	0	19.31	19.30	19.11	19.27	19.32		
10	16QAM	1	25	19.14	19.21	19.15	19.29	19.32		
10	16QAM	1	49	19.02	19.20	19.07	19.25	19.32	19.50	0
10	16QAM	25	0	18.88	19.10	18.90	19.17	19.21		
10	16QAM	25	12	18.89	19.16	18.94	19.20	19.27		
10	16QAM	25	25	18.82	19.17	18.83	19.23	19.24	19.50	0
10	16QAM	50	0	18.87	19.17	18.94	19.17	19.35		
10	64QAM	1	0	19.22	19.23	19.25	19.21	19.23		
10	64QAM	1	25	19.20	19.12	19.14	19.20	19.22	19.50	0
10	64QAM	1	49	19.32	19.34	19.31	19.24	19.30		
10	64QAM	25	0	19.25	19.27	19.21	19.23	19.26		
10	64QAM	25	12	19.22	19.16	19.12	19.20	19.23	19.50	0
10	64QAM	25	25	19.15	19.18	19.20	19.25	19.21		
10	64QAM	50	0	19.21	19.14	19.12	19.10	19.13		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	18.76	19.02	18.90	18.98	19.15	19.50	0
5	QPSK	1	12	18.79	18.98	18.97	19.06	19.15		
5	QPSK	1	24	18.66	18.99	18.73	19.02	19.01		
5	QPSK	12	0	18.92	19.10	18.99	19.19	19.16	19.50	0
5	QPSK	12	7	18.90	19.11	18.92	19.19	19.17		
5	QPSK	12	13	18.89	19.10	18.89	19.14	19.10		
5	QPSK	25	0	18.81	19.05	18.95	19.11	19.11	19.50	0
5	16QAM	1	0	19.14	19.30	19.27	19.14	19.25		
5	16QAM	1	12	19.21	19.31	19.29	19.36	19.26		
5	16QAM	1	24	19.08	19.23	19.18	19.31	19.22	19.50	0
5	16QAM	12	0	18.87	19.07	19.04	19.25	19.21		
5	16QAM	12	7	18.96	19.08	19.07	19.23	19.34		
5	16QAM	12	13	18.95	19.16	19.04	19.28	19.14	19.50	0
5	16QAM	25	0	18.91	19.03	18.93	19.18	19.17		
5	64QAM	1	0	19.22	19.25	19.17	19.23	19.24		
5	64QAM	1	12	19.18	19.23	19.20	19.25	19.12	19.50	0
5	64QAM	1	24	19.22	19.33	19.13	19.23	19.24		
5	64QAM	12	0	19.25	19.32	19.12	19.15	19.25		
5	64QAM	12	7	19.12	19.30	19.24	19.12	19.23	19.50	0
5	64QAM	12	13	19.22	19.24	19.12	19.14	19.21		
5	64QAM	25	0	19.14	19.22	19.15	19.24	19.25		





<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission>

<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	18.12	17.87	18.46	18.50	0
20	QPSK	1	49	17.97	17.80	17.98		
20	QPSK	1	99	18.08	17.85	17.93		
20	QPSK	50	0	18.14	18.00	18.19	18.50	0
20	QPSK	50	24	18.18	17.97	18.03		
20	QPSK	50	50	18.00	17.88	18.03		
20	QPSK	100	0	18.01	17.94	18.04		
20	16QAM	1	0	18.36	18.22	18.23	18.50	0
20	16QAM	1	49	18.37	18.00	18.14		
20	16QAM	1	99	18.31	18.08	18.08		
20	16QAM	50	0	18.14	18.00	18.05	18.50	0
20	16QAM	50	24	18.20	17.98	18.07		
20	16QAM	50	50	18.10	18.03	18.07		
20	16QAM	100	0	18.02	17.94	18.07		
20	64QAM	1	0	18.35	18.33	18.42	18.50	0
20	64QAM	1	49	18.25	18.28	18.32		
20	64QAM	1	99	18.26	18.29	18.31		
20	64QAM	50	0	18.23	18.22	18.26	18.50	0
20	64QAM	50	24	18.25	18.27	18.30		
20	64QAM	50	50	18.23	18.25	18.32		
20	64QAM	100	0	18.23	18.18	18.25		
Channel				37825	38000	38175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2577.5	2595	2612.5		
15	QPSK	1	0	18.33	18.01	18.09	18.50	0
15	QPSK	1	37	18.04	17.91	18.01		
15	QPSK	1	74	18.11	17.87	17.96		
15	QPSK	36	0	18.13	17.98	18.03	18.50	0
15	QPSK	36	20	18.08	17.91	18.05		
15	QPSK	36	39	18.12	17.82	18.02		
15	QPSK	75	0	18.13	17.90	18.06		
15	16QAM	1	0	18.38	18.18	18.28	18.50	0
15	16QAM	1	37	18.27	17.95	18.20		
15	16QAM	1	74	18.31	18.10	18.15		
15	16QAM	36	0	18.11	17.91	18.01	18.50	0
15	16QAM	36	20	18.08	17.87	18.04		
15	16QAM	36	39	18.10	17.80	18.02		
15	16QAM	75	0	18.04	17.89	18.08		
15	64QAM	1	0	18.23	18.33	18.30	18.50	0
15	64QAM	1	37	18.24	18.36	18.25		
15	64QAM	1	74	18.23	18.32	18.25		
15	64QAM	36	0	18.24	18.31	18.33	18.50	0
15	64QAM	36	20	18.22	18.24	18.26		
15	64QAM	36	39	18.14	18.15	18.12		
15	64QAM	75	0	18.11	18.14	18.15		



Channel				37800	38000	38200	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2575	2595	2615		
10	QPSK	1	0	18.06	17.84	18.19	18.50	0
10	QPSK	1	25	17.97	17.79	18.07		
10	QPSK	1	49	17.94	17.84	18.10		
10	QPSK	25	0	18.12	17.92	18.15	18.50	0
10	QPSK	25	12	18.08	17.92	18.18		
10	QPSK	25	25	18.01	17.82	18.08		
10	QPSK	50	0	18.09	17.91	18.16	18.50	0
10	16QAM	1	0	18.32	18.19	18.35		
10	16QAM	1	25	18.37	18.10	18.33		
10	16QAM	1	49	18.22	18.20	18.25	18.50	0
10	16QAM	25	0	18.18	17.91	18.30		
10	16QAM	25	12	18.14	17.95	18.24		
10	16QAM	25	25	18.06	17.94	18.13	18.50	0
10	16QAM	50	0	18.13	17.90	18.29		
10	64QAM	1	0	18.22	18.23	18.18		
10	64QAM	1	25	18.12	18.18	18.23	18.50	0
10	64QAM	1	49	18.24	18.31	18.21		
10	64QAM	25	0	18.20	18.24	18.12		
10	64QAM	25	12	18.21	18.22	18.24	18.50	0
10	64QAM	25	25	18.24	18.25	18.21		
10	64QAM	50	0	18.18	18.20	18.19		
Channel				37775	38000	38225	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2572.5	2595	2617.5		
5	QPSK	1	0	18.19	17.86	18.17	18.50	0
5	QPSK	1	12	18.12	17.82	18.15		
5	QPSK	1	24	18.07	17.75	18.06		
5	QPSK	12	0	18.20	17.93	18.26	18.50	0
5	QPSK	12	7	18.25	17.95	18.27		
5	QPSK	12	13	18.21	17.93	18.22		
5	QPSK	25	0	18.18	17.89	18.22	18.50	0
5	16QAM	1	0	18.36	18.05	18.40		
5	16QAM	1	12	18.39	18.04	18.31		
5	16QAM	1	24	18.37	17.96	18.32	18.50	0
5	16QAM	12	0	18.26	17.94	18.20		
5	16QAM	12	7	18.30	17.98	18.30		
5	16QAM	12	13	18.27	17.94	18.24	18.50	0
5	16QAM	25	0	18.25	17.94	18.27		
5	64QAM	1	0	18.24	18.43	18.35		
5	64QAM	1	12	18.34	18.41	18.42	18.50	0
5	64QAM	1	24	18.12	18.33	18.14		
5	64QAM	12	0	18.24	18.22	18.23		
5	64QAM	12	7	18.13	18.24	18.23	18.50	0
5	64QAM	12	13	18.23	18.20	18.22		
5	64QAM	25	0	18.12	18.24	18.23		



<LTE Band 41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				39750	40185	40620	41055	41490		
Frequency (MHz)				2506	2549.5	2593	2636.5	2680		
20	QPSK	1	0	17.42	17.44	17.45	17.46	16.54	18.50	0
20	QPSK	1	49	17.48	17.54	17.46	17.51	18.25		
20	QPSK	1	99	17.31	17.48	17.24	17.45	16.70		
20	QPSK	50	0	17.54	17.78	17.50	17.62	18.32	18.50	0
20	QPSK	50	24	17.53	17.76	17.47	17.50	17.65		
20	QPSK	50	50	17.42	17.54	17.36	17.60	17.57		
20	QPSK	100	0	17.50	17.71	17.50	17.56	17.73		
20	16QAM	1	0	17.81	17.81	17.79	17.82	17.10	18.50	0
20	16QAM	1	49	17.64	17.68	17.72	17.73	17.86		
20	16QAM	1	99	17.48	17.85	17.53	17.81	16.86		
20	16QAM	50	0	17.49	17.67	17.52	17.62	17.74	18.50	0
20	16QAM	50	24	17.39	17.73	17.49	17.55	17.72		
20	16QAM	50	50	17.43	17.64	17.42	17.65	17.65		
20	16QAM	100	0	17.37	17.67	17.51	17.60	17.61		
20	64QAM	1	0	17.23	17.77	17.69	17.32	17.31	18.50	0
20	64QAM	1	49	17.31	17.65	17.54	17.40	17.33		
20	64QAM	1	99	17.22	17.77	17.71	17.41	17.20		
20	64QAM	50	0	17.34	17.86	17.79	17.23	17.21	18.50	0
20	64QAM	50	24	17.42	17.79	17.76	17.24	17.41		
20	64QAM	50	50	17.41	17.70	17.69	17.33	17.23		
20	64QAM	100	0	17.42	17.68	17.64	17.21	17.24		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	17.73	17.76	17.53	17.58	17.81	18.50	0
15	QPSK	1	37	17.52	17.70	17.44	17.51	17.63		
15	QPSK	1	74	17.39	17.60	17.41	17.57	17.64		
15	QPSK	36	0	17.42	17.65	17.43	17.49	17.66	18.50	0
15	QPSK	36	20	17.44	17.66	17.49	17.48	17.51		
15	QPSK	36	39	17.35	17.64	17.46	17.59	17.69		
15	QPSK	75	0	17.39	17.66	17.47	17.51	17.64		
15	16QAM	1	0	17.78	17.77	17.55	17.78	17.82	18.50	0
15	16QAM	1	37	17.59	17.67	17.67	17.73	17.85		
15	16QAM	1	74	17.52	17.52	17.58	17.78	17.82		
15	16QAM	36	0	17.42	17.56	17.42	17.49	17.67	18.50	0
15	16QAM	36	20	17.46	17.57	17.48	17.58	17.64		
15	16QAM	36	39	17.30	17.57	17.37	17.60	17.71		
15	16QAM	75	0	17.35	17.74	17.48	17.54	17.58		
15	64QAM	1	0	17.33	17.78	17.65	17.42	17.44	18.50	0
15	64QAM	1	37	17.42	17.66	17.58	17.41	17.42		
15	64QAM	1	74	17.12	17.72	17.71	17.24	17.23		
15	64QAM	36	0	17.41	17.75	17.73	17.44	17.35	18.50	0
15	64QAM	36	20	17.35	17.72	17.70	17.23	17.42		
15	64QAM	36	39	17.31	17.65	17.68	17.24	17.41		
15	64QAM	75	0	17.21	17.68	17.55	17.42	17.22		



Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	17.34	17.50	17.35	17.56	17.76	18.50	0
10	QPSK	1	25	17.31	17.51	17.32	17.57	17.61		
10	QPSK	1	49	17.22	17.52	17.45	17.52	17.64		
10	QPSK	25	0	17.38	17.60	17.51	17.59	17.72	18.50	0
10	QPSK	25	12	17.40	17.64	17.45	17.72	17.67		
10	QPSK	25	25	17.34	17.62	17.42	17.64	17.77		
10	QPSK	50	0	17.38	17.65	17.45	17.72	17.78	18.50	0
10	16QAM	1	0	17.69	17.81	17.67	17.84	17.86		
10	16QAM	1	25	17.57	17.79	17.70	17.86	17.68		
10	16QAM	1	49	17.55	17.82	17.58	17.81	17.68	18.50	0
10	16QAM	25	0	17.45	17.57	17.55	17.65	17.86		
10	16QAM	25	12	17.37	17.61	17.48	17.69	17.76		
10	16QAM	25	25	17.32	17.60	17.44	17.70	17.74	18.50	0
10	16QAM	50	0	17.45	17.62	17.48	17.75	17.75		
10	64QAM	1	0	17.42	17.67	17.56	17.41	17.35		
10	64QAM	1	25	17.22	17.65	17.55	17.43	17.51	18.50	0
10	64QAM	1	49	17.34	17.76	17.68	17.23	17.41		
10	64QAM	25	0	17.31	17.74	17.71	17.14	17.13		
10	64QAM	25	12	17.35	17.65	17.58	17.24	17.54	18.50	0
10	64QAM	25	25	17.21	17.66	17.62	17.35	17.41		
10	64QAM	50	0	17.22	17.58	17.56	17.51	17.24		
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5		
5	QPSK	1	0	17.33	17.46	17.48	17.46	17.58	18.50	0
5	QPSK	1	12	17.25	17.42	17.46	17.64	17.58		
5	QPSK	1	24	17.24	17.45	17.35	17.48	17.54		
5	QPSK	12	0	17.39	17.57	17.57	17.68	17.66	18.50	0
5	QPSK	12	7	17.38	17.57	17.60	17.67	17.68		
5	QPSK	12	13	17.37	17.67	17.55	17.62	17.73		
5	QPSK	25	0	17.39	17.50	17.54	17.60	17.60	18.50	0
5	16QAM	1	0	17.45	17.81	17.73	17.82	17.68		
5	16QAM	1	12	17.32	17.82	17.76	17.79	17.81		
5	16QAM	1	24	17.41	17.83	17.72	17.80	17.85	18.50	0
5	16QAM	12	0	17.33	17.54	17.60	17.73	17.72		
5	16QAM	12	7	17.43	17.65	17.64	17.72	17.74		
5	16QAM	12	13	17.32	17.62	17.57	17.66	17.77	18.50	0
5	16QAM	25	0	17.37	17.60	17.60	17.77	17.80		
5	64QAM	1	0	17.24	17.66	17.67	17.56	17.64		
5	64QAM	1	12	17.34	17.57	17.55	17.23	17.54	18.50	0
5	64QAM	1	24	17.45	17.64	17.63	17.45	17.32		
5	64QAM	12	0	17.42	17.56	17.55	17.55	17.30		
5	64QAM	12	7	17.35	17.34	17.35	17.53	17.44	18.50	0
5	64QAM	12	13	17.33	17.39	17.41	17.42	17.43		
5	64QAM	25	0	17.23	17.37	17.35	17.34	17.32		



<LTE Carrier Aggregation>

General Note:

This device supports Carrier Aggregation on downlink for inter and intra band, on uplink for intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.

<Inter-Band for Two Carrier Combination>

E-UTRA CA configuration / Bandwidth combination set										
E-UTRA CA Configuration	Uplink CA configurations	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-4A	-	2	Yes	Yes	Yes	Yes	Yes	Yes	40	0
		4			Yes	Yes	Yes	Yes		
		2			Yes	Yes			20	1
		4			Yes	Yes				
		2			Yes	Yes	Yes	Yes	40	2
4			Yes	Yes	Yes	Yes				
CA_2A-5A	-	2			Yes	Yes	Yes	Yes	30	0
		5			Yes	Yes				
		2			Yes	Yes			20	1
5			Yes	Yes						
CA_2A-7A	-	2			Yes	Yes	Yes	Yes	40	0
		7			Yes	Yes	Yes	Yes		
CA_2A-12A	-	2			Yes	Yes	Yes	Yes	30	0
		12			Yes	Yes				
		2		Yes	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_2A-66A	-	2	Yes	Yes	Yes	Yes	Yes	Yes	40	0
		66			Yes	Yes	Yes	Yes		
		2			Yes	Yes			20	1
		66			Yes	Yes				
		2			Yes	Yes	Yes	Yes	40	2
66			Yes	Yes	Yes	Yes				



E-UTRA CA configuration / Bandwidth combination set										
E-UTRA CA Configuration	Uplink CA configurations	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-5A	-	4			Yes	Yes			20	0
		5			Yes	Yes				
		4			Yes	Yes	Yes	Yes	30	0
		5			Yes	Yes				
CA_4A-7A	-	4			Yes	Yes			30	0
		7			Yes	Yes	Yes	Yes		
		4			Yes	Yes	Yes	Yes	40	1
		7			Yes	Yes	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				
4			Yes	Yes	Yes		20	5		
12			Yes							
CA_4A-17A	-	4			Yes	Yes			20	0
		17			Yes	Yes				
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_5A-66A	-	5			Yes	Yes			30	0
		66			Yes	Yes	Yes	Yes		



E-UTRA CA configuration / Bandwidth combination set										
E-UTRA CA Configuration	Uplink CA configurations	E- UTRA Bands	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	Maximum aggregated bandwidth [MHz]	Bandwidth combination set
CA_7A-12A	-	7			Yes	Yes	Yes	Yes	30	0
		12			Yes	Yes				
CA_12A-30A	-	12			Yes	Yes			20	0
		30			Yes	Yes				
CA_12A-66A	-	12			Yes	Yes			20	0
		66	Yes	Yes	Yes	Yes				
		12			Yes	Yes			30	1
		66	Yes	Yes	Yes	Yes	Yes	Yes		
		12		Yes	Yes	Yes			30	2
		66			Yes	Yes	Yes	Yes		
		12			Yes	Yes			20	3
		66			Yes	Yes				
		12			Yes	Yes			30	4
		66			Yes	Yes	Yes	Yes		
12			Yes				20	5		
66			Yes	Yes	Yes					
CA_25A-26A	-	25		Yes	Yes	Yes	Yes	Yes	35	0
		26	Yes	Yes	Yes	Yes	Yes			
		25		Yes	Yes	Yes			20	1
		26		Yes	Yes	Yes				
		25			Yes	Yes			20	2
26			Yes	Yes						
CA_29A-30A	-	29			Yes	Yes			20	0
		30			Yes	Yes				



<Inter-Band for Three Carrier Combination> (three bands)

E-UTRA CA configuration / Bandwidth combination set										
E-UTRA CA Configuration	Uplink CA configurations	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-4A-5A	-	2			Yes	Yes	Yes	Yes	50	0
		4			Yes	Yes	Yes	Yes		
		5			Yes	Yes				
CA_2A-4A-12A	-	2			Yes	Yes	Yes	Yes	50	0
		4			Yes	Yes	Yes	Yes		
		12			Yes	Yes				
CA_2A-4A-29A	-	2			Yes	Yes	Yes	Yes	50	0
		4			Yes	Yes	Yes	Yes		
		29			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-12A-66A	-	2			Yes	Yes	Yes	Yes	50	0
		12			Yes	Yes				
		66			Yes	Yes	Yes	Yes		
		2			Yes	Yes				
CA_2A-29A-30A	-	12			Yes	Yes			40	1
		66			Yes	Yes	Yes	Yes		
		2			Yes	Yes	Yes	Yes		
CA_2A-29A-30A	-	2			Yes	Yes	Yes	Yes	40	0
		29			Yes	Yes				
		30			Yes	Yes				
CA_4A-5A-30A	-	4			Yes	Yes	Yes	Yes	40	0
		5			Yes	Yes				
		30			Yes	Yes				
CA_4A-7A-12A	-	4			Yes	Yes			40	0
		7			Yes	Yes	Yes	Yes		
		12			Yes	Yes				
		4			Yes	Yes	Yes	Yes		
		7			Yes	Yes	Yes	Yes		
CA_4A-12A-30A	-	12			Yes	Yes			40	0
		30			Yes	Yes				
		4			Yes	Yes	Yes	Yes		
CA_4A-29A-30A	-	4			Yes	Yes	Yes	Yes	40	0
		29			Yes	Yes				
		30			Yes	Yes				





<Inter-Band for Three Carrier Combination> (two bands)

E-UTRA CA configuration / Bandwidth combination set											
E-UTRA CA Configuration	Uplink CA configurations	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-4A-4A	-	2			Yes	Yes	Yes	Yes	60	0	
		4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.6A.1-3								
CA_2A-2A-12A	-	2	See CA_2A-2A Bandwidth Combination Set 0 in Table 5.6A.1-3							50	0
		12			Yes	Yes					
CA_2A-12B	-	2			Yes	Yes	Yes	Yes	35	0	
		12	See CA_12B Bandwidth Combination Set 0 in Table 5.6A.1-1								
CA_2C-12A	-	2	See CA_2C Bandwidth combination set 0 in Table 5.6A.1-1							50	0
		12			Yes	Yes					
CA_2A-66C	-	2			Yes	Yes	Yes	Yes	60	0	
		66	See CA_66C Bandwidth Combination Set 0 in Table 5.6A.1-1								
CA_2A-66A-66A	-	2			Yes	Yes	Yes	Yes	60	0	
		66	See CA_66A-66A Bandwidth Combination Set 0 in Table 5.6A.1-3								
CA_4A-4A-5A	-	4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.6A.1-3							50	0
		5			Yes	Yes					
CA_4A-4A-7A	-	4			Yes	Yes			40	0	
		4			Yes	Yes					
		7			Yes	Yes	Yes	Yes			
		4			Yes	Yes	Yes	Yes	60	1	
		4			Yes	Yes	Yes	Yes			
		7			Yes	Yes	Yes	Yes			
CA_4A-4A-12A	-	4	See CA_4A-4A Bandwidth Combination Set 0 in Table 5.6A.1-3							50	0
		12			Yes	Yes					
CA_4A-12B	-	4			Yes	Yes	Yes	Yes	35	0	
		12	See CA_12B Bandwidth Combination Set 0 in Table 5.6A.1-1								
CA_5A-66A-66A	-	5			Yes	Yes			50	0	
		66	See CA_66A-66A Bandwidth Combination Set 0 in Table 5.6A.1-3								
CA_5A-66C	-	5			Yes	Yes			50	0	
		66	See CA_66C Bandwidth Combination Set 0 in Table 5.6A.1-1								
CA_12A-66A-66A	-	12			Yes	Yes			50	0	
		66	See CA_66A-66A Bandwidth Combination Set 0 in Table 5.6A.1-3								
CA_12A-66C	-	12			Yes	Yes			50	0	
		66	See CA_66C Bandwidth Combination Set 0 in Table 5.6A.1-1								



<Intra-Band Carrier Combination>

E-UTRA CA configuration / Bandwidth combination set							
E-UTRA CA configuration	Uplink CA configurations	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_7B	-	15	5			20	0
CA_7C	CA_7C	15	15			40	0
		20	20			40	1
		10	20				
		15	15, 20			40	2
		20	10, 15, 20				
		15	10, 15			40	2
CA_12B	-	5	5, 10			15	0
CA_38C	-	15	15			40	0
		20	20				
CA_41C	CA_41C	10	20			40	0
		15	15, 20				
		20	10, 15, 20			40	1
		5, 10	20				
		15	15, 20			40	2
		20	5, 10, 15, 20				
		10	15, 20			40	3
		15	10, 15, 20				
		20	10, 15, 20				
		10	20			40	3
20	20						
CA_41D	-	10	20	15		60	0
		10	15, 20	20			
		15	20	10, 15			
		15	10, 15, 20	20			
		20	15, 20	10			
		20	10, 15, 20	15, 20			
CA_66B	-	5	5, 10, 15			20	0
		10	5, 10				
		15	5				
CA_66C	-	5	20			40	0
		10	15, 20				
		15	10, 15, 20				
		20	5, 10, 15, 20				



E-UTRA CA configuration / Bandwidth combination set							
E-UTRA CA configuration	Uplink CA configurations	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			40	1
		5, 10, 15, 20	5, 10, 15, 20				
		5, 10, 15, 20	5, 10				
CA_25A-25A	-	10, 15, 20	10, 15, 20			40	3
		5, 10	5, 10			20	0
CA_41A-41A	-	5, 10, 15, 20	5, 10, 15, 20			40	1
		10, 15, 20	10, 15, 20			40	0
CA_41A-41C	-	5, 10, 15, 20	See CA_41C Bandwidth Combination Set 1 in Table 5.6A.1-1		5, 10, 15, 20	60	0
		See CA_41C Bandwidth Combination Set 1 in Table 5.6A.1-1					
CA_66A-66A	-	5, 10, 15, 20	5, 10, 15, 20			40	0
CA_66A-66C	-	5, 10, 15, 20	See CA_66C Bandwidth Combination Set 1 in Table 5.6A.1-1		5, 10, 15, 20	60	0
		See CA_66C Bandwidth Combination Set 1 in Table 5.6A.1-1					

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

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

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



<Full Power 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)	Without CA Tx. Power (dBm)
Inter-Band	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	23.04	23.36
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	23.35	23.37
	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	23.07	23.36
	Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	23.13	23.03
	Band 2	20M	1900	19100	QPSK	1	0	Band 7	20M	2655	3100	23.09	23.36
	Band 7	20M	2560	21350	QPSK	1	0	Band 2	20M	1960	900	22.87	23.17
	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	23.11	23.36
	Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	23.28	23.25
	Band 2	10M	1855	18650	QPSK	1	0	Band 17	10M	740	5790	23.08	23.35
	Band 17	10M	709	23780	QPSK	1	0	Band 2	10M	1960	900	22.83	23.22
	Band 2	20M	1900	19100	QPSK	1	0	Band 29	10M	722.5	9715	23.05	23.36
	Band 2	20M	1900	19100	QPSK	1	0	Band 30	10M	2355	9820	23.02	23.36
	Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	22.70	22.51
	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	23.12	23.36
	Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	23.33	23.23
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	23.19	23.37
	Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	23.13	23.03
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	23.24	23.37
	Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	23.29	23.17
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	23.26	23.37
	Band 12	10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	22.79	23.25
	Band 4	10M	1732.5	20175	QPSK	1	0	Band 17	10M	740	5790	23.36	23.21
	Band 17	10M	709	23780	QPSK	1	0	Band 4	10M	2132.5	2175	22.84	23.22
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	23.29	23.37
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 30	10M	2355	9820	23.24	23.37
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	22.67	22.51
	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	23.17	23.03
	Band 7	20M	2560	21350	QPSK	1	0	Band 5	10M	881.5	2525	23.32	23.17
	Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	23.21	23.03
	Band 30	10M	2310	27710	QPSK	1	25	Band 5	10M	881.5	2525	22.69	22.51
	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	23.20	23.03
	Band 66	20M	1745	132322	QPSK	1	0	Band 5	10M	881.5	2525	23.43	23.23
	Band 7	20M	2560	21350	QPSK	1	0	Band 12	10M	737.5	5095	23.40	23.17
	Band 12	10M	707.5	23095	QPSK	1	0	Band 7	20M	2655	3100	23.48	23.25
	Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	23.40	23.25
	Band 30	10M	2310	27710	QPSK	1	25	Band 12	10M	737.5	5095	22.70	22.51
	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	23.40	23.25
	Band 66	20M	1745	132322	QPSK	1	0	Band 12	10M	737.5	5095	23.42	23.23
	Band 25	20M	1905	26590	QPSK	1	0	Band 26	15M	876.5	8865	23.30	23.11
	Band 26	15M	841.5	26965	QPSK	1	0	Band 25	20M	1962.5	8365	23.45	23.25
Band 30	10M	2310	27710	QPSK	1	25	Band 29	10M	722.5	9715	22.70	22.51	



Intra-Band	Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	23.50	23.36
		Band 7	15M	2562.5	21375	QPSK	1	0	Band 7	5M	2673.2	3282	23.10	23.15
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	20M	2660.2	3152	23.30	23.17
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	23.00	23.20
		Band 38	20M	2610	38150	QPSK	1	0	Band 38	20M	2590.2	37952	23.20	23.02
		Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	23.25	23.30
		Band 66	15M	1745	132322	QPSK	1	0	Band 66	5M	2164.3	66979	23.14	23.22
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	23.04	23.23
	Non-Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	23.05	23.36
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	23.27	23.37
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	5M	2622.5	2775	22.88	23.17
		Band 25	20M	1905	26590	QPSK	1	0	Band 25	5M	1932.5	8065	23.03	23.11
		Band 41	20M	2680	41490	QPSK	1	49	Band 41	5M	2498.5	39675	23.21	23.30
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	23.20	23.23



<Full 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)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	23.35	23.36
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	Band 2	20M	1960	900	23.35	23.37
		Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	23.19	23.03
	CA_2A-4A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 12	10M	737.5	5095	23.36	23.36
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	Band 2	20M	1960	900	23.41	23.37
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	23.13	23.25
	CA_2A-4A-29A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 29	10M	722.5	9715	23.34	23.36
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	Band 2	20M	1960	900	23.34	23.37
	CA_2A-5A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	Band 30	10M	2355	9820	23.27	23.36
		Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	Band 2	20M	1960	900	23.21	23.03
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 5	10M	881.5	2525	22.55	22.51
	CA_2A-12A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	Band 30	10M	2355	9820	23.28	23.36
		Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	Band 2	20M	1960	900	23.31	23.25
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 12	10M	737.5	5095	22.57	22.51
	CA_2A-12A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	Band 66	20M	2155	66886	23.25	23.36
		Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 2	20M	1960	900	23.29	23.25
		Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	Band 12	10M	737.5	5095	23.36	23.23
	CA_2A-29A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 29	10M	722.5	9715	Band 30	10M	2355	9820	23.21	23.36
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 29	10M	722.5	9715	22.53	22.51
	CA_4A-5A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	Band 30	10M	2355	9820	23.49	23.37
		Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	Band 4	20M	2132.5	2175	23.18	23.03
		Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	22.67	22.51
	CA_4A-7A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	Band 12	10M	737.5	5095	23.47	23.37
		Band 7	20M	2560	21350	QPSK	1	0	Band 12	10M	737.5	5095	Band 4	20M	2132.5	2175	23.25	23.17
		Band 12	10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	Band 7	20M	2655	3100	23.29	23.25
	CA_4A-12A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	Band 30	10M	2355	9820	23.44	23.37
		Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	Band 4	20M	2132.5	2175	23.30	23.25
		Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 12	10M	737.5	5095	22.61	22.51
CA_4A-29A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	Band 30	10M	2355	9820	23.44	23.37	
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 29	10M	722.5	9715	22.48	22.51	



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)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A-4A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	23.29	23.36	
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 2	20M	1960	900	23.35	23.37	
	CA_2A-2A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	Band 12	10M	737.5	5095	23.21	23.36	
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 2	5M	1987.5	1175	23.43	23.25	
	CA_2A-12B	Band 2	20M	1900	19100	QPSK	1	0	Band 12	5M	732.8	5048	Band 12	10M	740	5120	22.60	23.36	
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	Band 2	20M	1960	900	23.30	23.20	
	CA_2C-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	Band 12	10M	737.5	5095	23.24	23.36	
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 2	20M	1979.8	1098	23.44	23.25	
	CA_2A-66C	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	23.17	23.36	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 2	20M	1960	900	23.35	23.23	
	CA_2A-66A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	23.23	23.36	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 2	20M	1960	900	23.3	23.23	
	CA_4A-4A-5A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 5	10M	881.5	2525	23.46	23.37	
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	23.01	23.03	
	CA_4A-4A-7A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 7	20M	2655	3100	23.43	23.37	
		Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	23.29	23.17	
	CA_4A-4A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 12	10M	737.5	5095	23.42	23.37	
		Band 12	10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	23.33	23.25	
	CA_4A-12B	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	5M	732.8	5048	Band 12	10M	740	5120	23.50	23.37	
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	Band 4	20M	2132.5	2175	22.60	23.20	
CA_5A-66A-66A	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	23.08	23.03		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 5	10M	881.5	2525	23.32	23.23		
CA_5A-66C	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	23.1	23.03		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 5	10M	881.5	2525	23.18	23.23		
CA_12A-66A-66A	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	23.27	23.25		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 12	10M	737.5	5095	23.25	23.23		
CA_12A-66C	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	23.26	23.25		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 12	10M	737.5	5095	23.29	23.23		
Intra-Band	Contiguous	CA_41D	Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	Band 41	20M	2640.4	41094	23.13	23.3
	Non-Contiguous	CA_41A-41C	Band 41	20M	2680	41490	QPSK	1	49	Band 41	5M	2498.5	39675	Band 41	20M	2510.2	39792	23.06	23.3
			Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	Band 41	5M	2498.5	39675	23.17	23.3
	CA_66A-66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 66	20M	2185.8	67194	23.30	23.23	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	1764.8	132520	Band 66	5M	2197.5	67311	23.32	23.23	





<Reduced Power Level 1 for WWAN Only 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)	Without CA Tx. Power (dBm)
Inter-Band	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	19.80	20.14
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	20.69	20.74
	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	19.99	20.14
	Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	20.22	20.38
	Band 2	20M	1900	19100	QPSK	1	0	Band 7	20M	2655	3100	20.15	20.14
	Band 7	20M	2560	21350	QPSK	1	0	Band 2	20M	1960	900	17.48	17.93
	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	19.88	20.14
	Band 12	10M	711	23130	QPSK	1	0	Band 2	20M	1960	900	21.67	21.87
	Band 2	10M	1905	19150	QPSK	1	0	Band 17	10M	740	5790	19.53	19.95
	Band 17	10M	709	23780	QPSK	1	0	Band 2	10M	1960	900	21.58	21.66
	Band 2	20M	1900	19100	QPSK	1	0	Band 29	10M	722.5	9715	19.94	20.14
	Band 2	20M	1900	19100	QPSK	1	0	Band 30	10M	2355	9820	19.94	20.14
	Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	18.79	18.83
	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	20.19	20.14
	Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	18.55	18.60
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	20.36	20.74
	Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	20.25	20.38
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	20.58	20.74
	Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	17.68	17.93
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	20.55	20.74
	Band 12	10M	711	23130	QPSK	1	0	Band 4	20M	2132.5	2175	21.72	21.87
	Band 4	10M	1732.5	20175	QPSK	1	0	Band 17	10M	740	5790	20.36	20.65
	Band 17	10M	709	23780	QPSK	1	0	Band 4	10M	2132.5	2175	21.48	21.66
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	20.38	20.74
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 30	10M	2355	9820	20.57	20.74
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	18.77	18.83
	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	19.93	20.38
	Band 7	20M	2560	21350	QPSK	1	0	Band 5	10M	881.5	2525	17.88	17.93
	Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	20.28	20.38
	Band 30	10M	2310	27710	QPSK	1	25	Band 5	10M	881.5	2525	18.75	18.83
	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	20.35	20.38
	Band 66	20M	1745	132322	QPSK	1	0	Band 5	10M	881.5	2525	18.55	18.60
	Band 7	20M	2560	21350	QPSK	1	0	Band 12	10M	737.5	5095	17.94	17.93
	Band 12	10M	711	23130	QPSK	1	0	Band 7	20M	2655	3100	21.85	21.87
	Band 12	10M	711	23130	QPSK	1	0	Band 30	10M	2355	9820	21.52	21.87
	Band 30	10M	2310	27710	QPSK	1	25	Band 12	10M	737.5	5095	18.66	18.83
	Band 12	10M	711	23130	QPSK	1	0	Band 66	20M	2155	66886	21.66	21.87
	Band 66	20M	1745	132322	QPSK	1	0	Band 12	10M	737.5	5095	18.55	18.60
	Band 25	20M	1905	26590	QPSK	1	0	Band 26	15M	876.5	8865	19.64	19.90
	Band 26	15M	841.5	26965	QPSK	1	0	Band 25	20M	1962.5	8365	20.94	21.11
Band 30	10M	2310	27710	QPSK	1	25	Band 29	10M	722.5	9715	18.65	18.83	



Intra-Band	Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	20.08	20.14
		Band 7	15M	2562.5	21375	QPSK	1	0	Band 7	5M	2673.2	3282	17.60	17.73
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	20M	2660.2	3152	17.77	17.93
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	21.40	21.31
		Band 38	20M	2610	38150	QPSK	1	0	Band 38	20M	2590.2	37952	19.25	19.37
		Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	19.27	19.38
		Band 66	15M	1745	132322	QPSK	1	0	Band 66	5M	2164.3	66979	18.43	18.54
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	18.55	18.60	
	Non-Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	19.94	20.14
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	20.59	20.74
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	5M	2622.5	2775	17.62	17.93
		Band 25	20M	1905	26590	QPSK	1	0	Band 25	5M	1932.5	8065	19.53	19.90
		Band 41	20M	2680	41490	QPSK	1	49	Band 41	5M	2498.5	39675	19.25	19.38
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	18.57	18.60

<Reduced Power Level 1 for WWAN Only 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)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	20.08	20.14
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	Band 2	20M	1960	900	20.88	20.74
		Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	20.39	20.38
	CA_2A-4A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 12	10M	737.5	5095	20.1	20.14
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	Band 2	20M	1960	900	20.75	20.74
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	21.91	21.87
	CA_2A-4A-29A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 29	10M	722.5	9715	20.08	20.14
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	Band 2	20M	1960	900	20.88	20.74
	CA_2A-5A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	Band 30	10M	2355	9820	20.22	20.14
		Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	Band 2	20M	1960	900	20.21	20.38
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 5	10M	881.5	2525	19	18.83
	CA_2A-12A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	Band 30	10M	2355	9820	20.08	20.14
		Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	Band 2	20M	1960	900	21.85	21.87
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 12	10M	737.5	5095	18.8	18.83
	CA_2A-12A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	Band 66	20M	2155	66886	20.1	20.14
		Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 2	20M	1960	900	22	21.87
		Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	Band 12	10M	737.5	5095	18.63	18.6
	CA_2A-29A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 29	10M	722.5	9715	Band 30	10M	2355	9820	20.08	20.14
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 29	10M	722.5	9715	18.82	18.83
	CA_4A-5A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	Band 30	10M	2355	9820	20.88	20.74
		Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	Band 4	20M	2132.5	2175	20.32	20.38
		Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	18.81	18.83
	CA_4A-7A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	Band 12	10M	737.5	5095	20.7	20.74
		Band 7	20M	2560	21350	QPSK	1	0	Band 12	10M	737.5	5095	Band 4	20M	2132.5	2175	17.92	17.93
Band 12		10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	Band 7	20M	2655	3100	21.88	21.87	
CA_4A-12A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	Band 30	10M	2355	9820	20.7	20.74	
	Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	Band 4	20M	2132.5	2175	21.85	21.87	
CA_4A-29A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	Band 30	10M	2355	9820	20.73	20.74	
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 29	10M	722.5	9715	18.8	18.83	



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)	Without CA Tx. Power (dBm)
Inter-Band	CA_2A-4A-4A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	20.15	20.14	
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 2	20M	1960	900	20.71	20.74	
	CA_2A-2A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	Band 12	10M	737.5	5095	20.08	20.14	
		Band 12	10M	711	23130	QPSK	1	0	Band 2	20M	1960	900	Band 2	5M	1987.5	1175	21.99	21.87	
	CA_2A-12B	Band 2	20M	1900	19100	QPSK	1	0	Band 12	5M	732.8	5048	Band 12	10M	740	5120	20.08	20.14	
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	744.7	5167	Band 2	20M	1960	900	21.50	21.31	
	CA_2C-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	Band 12	10M	737.5	5095	20.08	20.14	
		Band 12	10M	711	23130	QPSK	1	0	Band 2	20M	1960	900	Band 2	20M	1979.8	1098	21.8	21.87	
	CA_2A-66C	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	20.09	20.14	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 2	20M	1960	900	18.5	18.6	
	CA_2A-66A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	20.08	20.14	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 2	20M	1960	900	18.66	18.6	
	CA_4A-4A-5A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 5	10M	881.5	2525	20.71	20.74	
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	20.32	20.38	
	CA_4A-4A-7A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 7	20M	2655	3100	20.7	20.74	
		Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	17.95	17.93	
	CA_4A-4A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 12	10M	737.5	5095	20.7	20.74	
		Band 12	10M	711	23130	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	21.81	21.87	
	CA_4A-12B	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	5M	732.8	5048	Band 12	10M	740	5120	20.72	20.74	
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	Band 4	20M	2132.5	2175	21.45	21.31	
CA_5A-66A-66A	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	20.32	20.38		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 5	10M	881.5	2525	18.32	18.6		
CA_5A-66C	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	20.39	20.38		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 5	10M	881.5	2525	18.61	18.6		
CA_12A-66A-66A	Band 12	10M	711	23130	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	21.82	21.87		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 12	10M	737.5	5095	18.55	18.6		
CA_12A-66C	Band 12	10M	711	23130	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	21.84	21.87		
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 12	10M	737.5	5095	18.55	18.6		
Intra-Band	Contiguous	CA_41D	Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	Band 41	20M	2640.4	41094	19.32	19.38
		CA_41A-41C	Band 41	20M	2680	41490	QPSK	1	49	Band 41	5M	2498.5	39675	Band 41	20M	2510.2	39792	19.32	19.38
	Non-Contiguous	CA_66A-66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 66	20M	2185.8	67194	18.62	18.6
		CA_66A-66C	Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	Band 41	5M	2498.5	39675	19.35	19.38
			Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	1764.8	132520	Band 66	5M	2197.5	67311	18.64	18.6



**<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission 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)	Without CA Tx. Power (dBm)
Inter-Band	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	18.43	18.57
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	17.55	17.69
	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	18.43	18.57
	Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	19.40	19.45
	Band 2	20M	1900	19100	QPSK	1	0	Band 7	20M	2655	3100	18.55	18.57
	Band 7	20M	2560	21350	QPSK	1	0	Band 2	20M	1960	900	15.66	15.79
	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	18.36	18.57
	Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	19.44	19.46
	Band 2	10M	1905	19150	QPSK	1	0	Band 17	10M	740	5790	18.32	18.52
	Band 17	10M	709	23780	QPSK	1	0	Band 2	10M	1960	900	19.42	19.45
	Band 2	20M	1900	19100	QPSK	1	0	Band 29	10M	722.5	9715	18.60	18.57
	Band 2	20M	1900	19100	QPSK	1	0	Band 30	10M	2355	9820	18.55	18.57
	Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	16.63	16.89
	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	18.19	18.57
	Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	16.50	16.32
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	17.71	17.69
	Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	19.33	19.45
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	17.25	17.69
	Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	15.32	15.79
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	17.55	17.69
	Band 12	10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	19.35	19.46
	Band 4	10M	1732.5	20175	QPSK	1	0	Band 17	10M	740	5790	17.39	17.62
	Band 17	10M	709	23780	QPSK	1	0	Band 4	10M	2132.5	2175	19.42	19.45
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	17.35	17.69
	Band 4	20M	1732.5	20175	QPSK	1	0	Band 30	10M	2355	9820	17.48	17.69
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	16.67	16.89
	Band 5	10M	844	20600	QPSK	1	49	Band 7	20M	2655	3100	19.43	19.45
	Band 7	20M	2560	21350	QPSK	1	0	Band 5	10M	881.5	2525	15.82	15.79
	Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	19.32	19.45
	Band 30	10M	2310	27710	QPSK	1	25	Band 5	10M	881.5	2525	16.66	16.89
	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	19.28	19.45
	Band 66	20M	1745	132322	QPSK	1	0	Band 5	10M	881.5	2525	16.35	16.32
	Band 7	20M	2560	21350	QPSK	1	0	Band 12	10M	737.5	5095	15.78	15.79
	Band 12	10M	707.5	23095	QPSK	1	0	Band 7	20M	2655	3100	19.42	19.46
	Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	19.50	19.46
	Band 30	10M	2310	27710	QPSK	1	25	Band 12	10M	737.5	5095	16.77	16.89
	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	19.33	19.46
	Band 66	20M	1745	132322	QPSK	1	0	Band 12	10M	737.5	5095	16.28	16.32
	Band 25	20M	1905	26590	QPSK	1	0	Band 26	15M	876.5	8865	18.58	18.60
	Band 26	15M	841.5	26965	QPSK	1	0	Band 25	20M	1962.5	8365	18.63	18.93
Band 30	10M	2310	27710	QPSK	1	25	Band 29	10M	722.5	9715	16.55	16.89	



Intra-Band	Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	18.31	18.57
		Band 7	15M	2562.5	21375	QPSK	1	0	Band 7	5M	2673.2	3282	15.80	15.75
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	20M	2660.2	3152	15.47	15.79
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	19.35	19.32
		Band 38	20M	2610	38150	QPSK	1	0	Band 38	20M	2590.2	37952	18.33	18.46
		Band 41	20M	2680	41490	QPSK	50	0	Band 41	20M	2660.2	41292	18.28	18.32
		Band 66	15M	1745	132322	QPSK	1	0	Band 66	5M	2164.3	66979	15.98	16.28
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	15.71	16.32	
	Non-Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	18.36	18.57
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	17.24	17.69
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	5M	2622.5	2775	15.36	15.79
		Band 25	20M	1905	26590	QPSK	1	0	Band 25	5M	1932.5	8065	18.60	18.60
		Band 41	20M	2680	41490	QPSK	50	0	Band 41	5M	2498.5	39675	17.85	18.32
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	15.99	16.32

**<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission 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)	Without CA Tx. Power (dBm)	
Inter-Band	CA_2A-4A-5A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	18.61	18.57
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	Band 2	20M	1960	900	17.62	17.69
		Band 5	10M	844	20600	QPSK	1	49	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	19.43	19.45
	CA_2A-4A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 12	10M	737.5	5095	18.52	18.57
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	Band 2	20M	1960	900	17.65	17.69
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 4	20M	2132.5	2175	19.45	19.46
	CA_2A-4A-29A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 29	10M	722.5	9715	18.66	18.57
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	Band 2	20M	1960	900	17.82	17.69
	CA_2A-5A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	Band 30	10M	2355	9820	18.55	18.57
		Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	Band 2	20M	1960	900	19.43	19.45
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 5	10M	881.5	2525	16.88	16.89
	CA_2A-12A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	Band 30	10M	2355	9820	18.52	18.57
Band 12		10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	Band 2	20M	1960	900	19.35	19.46	
Band 30		10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 12	10M	737.5	5095	16.92	16.89	
CA_2A-12A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	Band 66	20M	2155	66886	18.5	18.57	
	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 2	20M	1960	900	19.33	19.46	
	Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	Band 12	10M	737.5	5095	16.31	16.32	
CA_2A-29A-30A	Band 2	20M	1900	19100	QPSK	1	0	Band 29	10M	722.5	9715	Band 30	10M	2355	9820	18.51	18.57	
	Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	Band 29	10M	722.5	9715	16.72	16.89	
CA_4A-5A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 5	10M	881.5	2525	Band 30	10M	2355	9820	17.62	17.69	
	Band 5	10M	844	20600	QPSK	1	49	Band 30	10M	2355	9820	Band 4	20M	2132.5	2175	19.43	19.45	
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 5	10M	881.5	2525	16.8	16.89	
CA_4A-7A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	Band 12	10M	737.5	5095	17.62	17.69	
	Band 12	10M	707.5	23095	QPSK	1	0	Band 12	10M	737.5	5095	Band 4	20M	2132.5	2175	15.72	15.79	
CA_4A-12A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	10M	737.5	5095	Band 30	10M	2355	9820	17.6	17.69	
	Band 12	10M	707.5	23095	QPSK	1	0	Band 30	10M	2355	9820	Band 4	20M	2132.5	2175	19.4	19.46	
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 12	10M	737.5	5095	16.8	16.89	
CA_4A-29A-30A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 29	10M	722.5	9715	Band 30	10M	2355	9820	17.59	17.69	
	Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	Band 29	10M	722.5	9715	16.8	16.89	



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)	Without CA Tx. Power (dBm)		
Inter-Band	CA_2A-4A-4A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	18.51	18.57		
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 2	20M	1960	900	17.66	17.69		
	CA_2A-2A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	Band 12	10M	737.5	5095	18.55	18.57		
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 2	5M	1987.5	1175	19.55	19.46		
	CA_2A-12B	Band 2	20M	1900	19100	QPSK	1	0	Band 12	5M	732.8	5048	Band 12	10M	740	5120	18.60	18.57		
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	Band 2	20M	1960	900	19.55	19.32		
	CA_2C-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	Band 12	10M	737.5	5095	18.55	18.57		
		Band 12	10M	707.5	23095	QPSK	1	0	Band 2	20M	1960	900	Band 2	20M	1979.8	1098	19.33	19.46		
	CA_2A-66C	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	18.55	18.57		
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 2	20M	1960	900	16.28	16.32		
	CA_2A-66A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	18.5	18.57		
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 2	20M	1960	900	16.28	16.32		
	CA_4A-4A-5A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 5	10M	881.5	2525	17.6	17.69		
		Band 5	10M	844	20600	QPSK	1	49	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	19.4	19.45		
	CA_4A-4A-7A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 7	20M	2655	3100	17.55	17.69		
		Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	15.88	15.79		
	CA_4A-4A-12A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 12	10M	737.5	5095	17.62	17.69		
		Band 12	10M	707.5	23095	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	19.42	19.46		
	CA_4A-12B	Band 4	20M	1732.5	20175	QPSK	1	0	Band 12	5M	732.8	5048	Band 12	10M	740	5120	17.61	17.69		
		Band 12	5M	701.5	23035	QPSK	1	24	Band 12	10M	738.7	5107	Band 4	20M	2132.5	2175	19.40	19.32		
CA_5A-66A-66A	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	19.4	19.45			
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 5	10M	881.5	2525	16.28	16.32			
CA_5A-66C	Band 5	10M	844	20600	QPSK	1	49	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	19.43	19.45			
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 5	10M	881.5	2525	16.28	16.32			
CA_12A-66A-66A	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	19.23	19.46			
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 12	10M	737.5	5095	16.28	16.32			
CA_12A-66C	Band 12	10M	707.5	23095	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	19.37	19.46			
	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 12	10M	737.5	5095	16.25	16.32			
Intra-Band	Contiguous	CA_41D	Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	Band 41	20M	2640.4	41094	18.28	18.32	
		CA_41A-41C	Band 41	20M	2680	41490	QPSK	1	49	Band 41	5M	2498.5	39675	Band 41	20M	2510.2	39792	18.25	18.32	
	Non-Contiguous	CA_66A-66C	Band 41	20M	2680	41490	QPSK	1	49	Band 41	20M	2660.2	41292	Band 41	5M	2498.5	39675	18.26	18.32	
		CA_66A-66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 66	20M	2185.8	67194	16.37	16.32	
			CA_66A-66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	1764.8	132520	Band 66	5M	2197.5	67311	16.35	16.32



<Reduced Power Level 3 for Hotspot On for Two Carrier power verification>

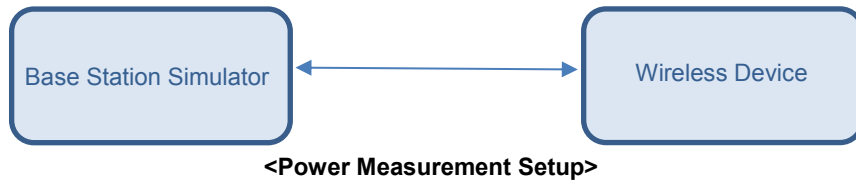
Configure		PCC						SCC				Power		
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Inter-Band		Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	19.55	19.57
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 2	20M	1960	900	18.33	18.54
		Band 2	20M	1900	19100	QPSK	1	0	Band 7	20M	2655	3100	19.44	19.57
		Band 7	20M	2560	21350	QPSK	1	0	Band 2	20M	1960	900	22.42	22.43
		Band 2	20M	1900	19100	QPSK	1	0	Band 30	10M	2355	9820	19.33	19.57
		Band 30	10M	2310	27710	QPSK	1	25	Band 2	20M	1960	900	21.31	21.79
		Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	19.33	19.57
		Band 66	20M	1745	132322	QPSK	1	0	Band 2	20M	1960	900	18.45	18.46
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 7	20M	2655	3100	18.32	18.54
		Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	22.35	22.43
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 30	10M	2355	9820	18.33	18.54
		Band 30	10M	2310	27710	QPSK	1	25	Band 4	20M	2132.5	2175	21.56	21.79
Intra-Band	Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	19.33	19.57
		Band 7	15M	2562.5	21375	QPSK	1	0	Band 7	5M	2673.2	3282	22.48	22.38
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	20M	2660.2	3152	22.25	22.43
		Band 66	15M	1745	132322	QPSK	1	0	Band 66	5M	2164.3	66979	18.20	18.39
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	18.56	18.46
	Non-Contiguous	Band 2	20M	1900	19100	QPSK	1	0	Band 2	5M	1932.5	625	19.35	19.57
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	18.30	18.54
		Band 7	20M	2560	21350	QPSK	1	0	Band 7	5M	2622.5	2775	22.20	22.43
		Band 25	20M	1905	26590	QPSK	1	0	Band 25	5M	1932.5	8065	19.06	19.27
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	18.38	18.46

<Reduced Power Level 3 for Hotspot On 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)	Without CA Tx. Power (dBm)
Inter-Band	CA_2A-4A-4A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	19.51	19.57	
		Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 2	20M	1960	900	18.56	18.54	
	CA_2A-66C	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	20M	2174.8	67084	19.55	19.57	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	2174.8	67084	Band 2	20M	1960	900	18.49	18.46	
	CA_2A-66A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	Band 66	5M	2197.5	67311	19.6	19.57	
		Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 2	20M	1960	900	18.51	18.46	
	CA_4A-4A-7A	Band 4	20M	1732.5	20175	QPSK	1	0	Band 4	5M	2152.5	2375	Band 7	20M	2655	3100	18.53	18.54	
		Band 7	20M	2560	21350	QPSK	1	0	Band 4	20M	2132.5	2175	Band 4	5M	2152.5	2375	22.47	22.43	
Intra-Band	Contiguous	CA_66A-66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	5M	2197.5	67311	Band 66	20M	2185.8	67194	18.57	18.46
		CA_66A-66C	Band 66	20M	1745	132322	QPSK	1	0	Band 66	20M	1764.8	132520	Band 66	5M	2197.5	67311	18.53	18.46

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

1. This device supports uplink carrier aggregation for LTE CA\_7C, CA\_41C with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. For the non-contiguously allocated resource blocks which the MPR level is determined by various RB separation and RB sizes requirement, and the allowed MPR levels, settings and the conducted powers are permanently implemented in this device per the 3GPP 36.36.101 section 6.2.3A.1.3 requirements.
2. According to FCC guidance, the output power with uplink CA active was measured for the high / middle / low channel configuration with the highest reported SAR for each exposure condition, the power was measured with wideband signal integration over both component carriers.
3. In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs
4. Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05. The required test channel should be associated with the UL PCC. For channels at the ends of a frequency band, the SCC and subsequent CCs are added to the side within the transmission band. Otherwise, the CCs should be added alternatively to either side of the PCC.





**<Full Power>**

**<LTE Band 7>**

CA_7C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	0	0	0	1	0	23.12	23.50
21100	20902	QPSK	1	0	1	99	2	0	23.42	23.50
21350	21152	QPSK	1	0	1	99	2	0	23.09	23.50

**<LTE Band 41>**

CA_41C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	49	0	0	1	0	23.19	23.50
40185	40383	QPSK	1	49	0	0	1	0	23.33	23.50
40620	40422	QPSK	1	49	0	0	1	0	22.84	23.50
41055	40875	QPSK	1	49	0	0	1	0	23.10	23.50
41490	41292	QPSK	1	49	0	0	1	0	23.46	23.50

**<Reduced Power Level 1 for WWAN Only>**

**<LTE Band 7>**

CA_7C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	50	0	0	0	50	0	17.58	18.00
21100	20902	QPSK	50	0	0	0	50	0	17.90	18.00
21350	21152	QPSK	50	0	0	0	50	0	17.83	18.00

**<LTE Band 41>**

CA_41C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	50	0	0	0	50	0	19.47	19.50
40185	40383	QPSK	50	0	0	0	50	0	19.46	19.50
40620	40422	QPSK	50	0	0	0	50	0	19.45	19.50
41055	40875	QPSK	50	0	0	0	50	0	19.20	19.50
41490	41292	QPSK	50	0	0	0	50	0	18.89	19.50

**<Reduced Power Level 2 for WWAN + WLAN Simutaneous Transmission>**

**<LTE Band 7>**

CA_7C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	50	0	0	0	50	0	15.67	16.00
21100	20902	QPSK	50	0	0	0	50	0	15.30	16.00
21350	21152	QPSK	50	0	0	0	50	0	15.97	16.00

**<LTE Band 41>**

CA_41C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	50	0	0	0	50	0	17.62	18.50
40185	40383	QPSK	50	0	0	0	50	0	17.58	18.50
40620	40422	QPSK	50	0	0	0	50	0	17.57	18.50
41055	40875	QPSK	50	0	0	0	50	0	17.30	18.50
41490	41292	QPSK	50	0	0	0	50	0	17.16	18.50

**<Reduced Power Level 3 for Hotspot On>**

**<LTE Band 7>**

CA_7C										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	0	0	0	1	0	22.35	22.50
21100	20902	QPSK	1	0	1	99	2	0	22.00	22.50
21350	21152	QPSK	1	0	1	99	2	0	22.48	22.50



**<WLAN Conducted Power>**

**General Note:**

1. For 2.4GHz WLAN 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. For 5GHz WLAN, SAR testing was performed on MIMO mode since it can't transmit in SISO mode, so only evaluate MIMO mode power.
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  $\leq 0.4$  W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
  - b. When the reported SAR of the test position is  $> 0.4$  W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq 0.8$  W/kg or all required test position are tested.
  - c. For all positions/configurations, when the reported SAR is  $> 0.8$  W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq 1.2$  W/kg or all required channels are tested.



<Full Power>

<2.4GHz WLAN Ant.1>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant.1	802.11b 1Mbps	1	2412	16.91	17.50	99.31
		6	2437	16.92	17.50	
		11	2462	17.26	17.50	
	802.11g 6Mbps	1	2412	14.94	15.50	94.68
		6	2437	16.89	17.00	
		11	2462	15.29	15.50	
	802.11n-HT20 MCS0	1	2412	14.67	15.50	94.33
		6	2437	16.91	17.00	
		11	2462	15.02	15.50	
	802.11n-HT40 MCS0	3	2422	10.73	12.00	88.71
		6	2437	14.05	14.50	
		9	2452	10.50	12.00	
	802.11ac-VHT20 MCS0	1	2412	13.79	15.00	94.13
		6	2437	16.89	17.00	
		11	2462	14.02	15.00	
	802.11ac-VHT40 MCS0	3	2422	10.72	12.00	88.71
		6	2437	13.20	14.50	
		9	2452	10.48	12.00	



<2.4GHz WLAN Ant.2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant.2	802.11b 1Mbps	1	2412	13.93	15.00	99.10
		6	2437	14.41	15.00	
		11	2462	14.48	15.00	
	802.11g 6Mbps	1	2412	13.90	14.50	94.67
		6	2437	14.24	14.50	
		11	2462	14.37	14.50	
	802.11n-HT20 MCS0	1	2412	13.87	14.50	94.31
		6	2437	14.21	14.50	
		11	2462	14.35	14.50	
	802.11n-HT40 MCS0	3	2422	10.83	12.00	89.84
		6	2437	13.76	14.00	
		9	2452	10.84	12.00	
	802.11ac-VHT20 MCS0	1	2412	13.26	14.50	94.35
		6	2437	14.04	14.50	
		11	2462	13.28	14.50	
	802.11ac-VHT40 MCS0	3	2422	10.81	12.00	89.88
		6	2437	13.72	14.00	
		9	2452	10.83	12.00	



<2.4GHz WLAN ANT.1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant. 1+2	802.11b 1Mbps	1	2412	18.28	19.00	99.10
		6	2437	18.52	19.00	
		11	2462	18.72	19.00	
	802.11g 6Mbps	1	2412	15.88	16.50	94.68
		6	2437	18.13	18.50	
		11	2462	16.04	16.50	
	802.11n-HT20 MCS0	1	2412	15.75	16.00	94.31
		6	2437	17.98	18.50	
		11	2462	16.10	16.50	
	802.11n-HT40 MCS0	3	2422	11.98	12.50	89.45
		6	2437	14.88	15.00	
		9	2452	11.41	12.00	
	802.11ac-VHT20 MCS0	1	2412	15.72	16.00	90.13
		6	2437	17.96	18.50	
		11	2462	15.94	16.00	
	802.11ac-VHT40 MCS0	3	2422	11.97	12.50	81.60
		6	2437	14.85	15.00	
		9	2452	11.28	12.00	

**<5GHz WLAN Ant.1+2>**

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Ant. 1+2	802.11a 6Mbps	36	5180	17.89	18.50	95.00
		40	5200	18.03	18.50	
		44	5220	18.04	18.50	
		48	5240	17.98	18.50	
	802.11n-HT20 MCS0	36	5180	17.82	18.50	94.66
		40	5200	17.82	18.50	
		44	5220	17.91	18.50	
		48	5240	17.82	18.50	
	802.11n-HT40 MCS0	38	5190	17.61	18.00	90.62
		46	5230	17.70	18.00	
	802.11ac-VHT20 MCS0	36	5180	17.75	18.50	90.85
		40	5200	17.73	18.50	
		44	5220	17.80	18.50	
		48	5240	17.76	18.50	
	802.11ac-VHT40 MCS0	38	5190	17.55	18.00	83.33
		46	5230	17.65	18.00	
802.11ac-VHT80 MCS0	42	5210	17.50	18.00	71.95	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Ant. 1+2	802.11a 6Mbps	52	5260	17.93	18.50	95.00
		56	5280	17.85	18.50	
		60	5300	17.70	18.50	
		64	5320	17.59	18.50	
	802.11n-HT20 MCS0	52	5260	17.75	18.50	94.66
		56	5280	17.66	18.50	
		60	5300	17.51	18.50	
		64	5320	17.38	18.50	
	802.11n-HT40 MCS0	54	5270	17.57	18.00	90.62
		62	5310	17.25	18.00	
	802.11ac-VHT20 MCS0	52	5260	17.72	18.50	90.85
		56	5280	17.62	18.50	
		60	5300	17.47	18.50	
		64	5320	17.37	18.50	
	802.11ac-VHT40 MCS0	54	5270	17.49	18.00	83.33
		62	5310	17.15	18.00	
802.11ac-VHT80 MCS0	58	5290	17.14	18.00	71.95	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Ant.1+2	802.11a 6Mbps	100	5500	17.90	18.50	95.00
		116	5580	17.70	18.50	
		124	5620	17.62	18.50	
		132	5660	17.60	18.50	
		140	5700	17.54	18.50	
	802.11n-HT20 MCS0	100	5500	17.80	18.50	94.66
		116	5580	17.64	18.50	
		124	5620	17.58	18.50	
		132	5660	17.57	18.50	
		140	5700	17.43	18.50	
	802.11n-HT40 MCS0	102	5510	17.45	18.00	90.62
		110	5550	17.37	18.00	
		126	5630	17.30	18.00	
		134	5670	17.12	18.00	
	802.11ac-VHT20 MCS0	100	5500	17.78	18.50	90.85
		116	5580	17.59	18.50	
		124	5620	17.55	18.50	
		132	5660	17.54	18.50	
		140	5700	17.42	18.50	
	802.11ac-VHT40 MCS0	102	5510	17.43	18.00	83.33
110		5550	17.35	18.00		
126		5630	17.27	18.00		
134		5670	17.09	18.00		
802.11ac-VHT80 MCS0	106	5530	17.25	18.00	71.95	
	122	5610	16.98	18.00		



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Ant. 1+2	802.11a 6Mbps	149	5745	17.65	18.50	95.00
		157	5785	17.95	18.50	
		165	5825	17.97	18.50	
	802.11n-HT20 MCS0	149	5745	17.43	18.50	94.66
		157	5785	17.68	18.50	
		165	5825	17.84	18.50	
	802.11n-HT40 MCS0	151	5755	17.24	18.00	90.62
		159	5795	17.48	18.00	
	802.11ac-VHT20 MCS0	149	5745	17.41	18.50	90.85
		157	5785	17.67	18.50	
		165	5825	17.83	18.50	
	802.11ac-VHT40 MCS0	151	5755	17.20	18.00	83.33
		159	5795	17.43	18.00	
	802.11ac-VHT80 MCS0	155	5775	17.12	18.00	71.95



**<Reduced Power>**

**<2.4GHz WLAN Ant.1>**

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN Ant. 1	802.11b 1Mbps	1	2412	11.75	12.50	99.31
		6	2437	11.79	12.50	
		11	2462	12.32	12.50	
	802.11g 6Mbps	1	2412	11.48	12.50	94.68
		6	2437	11.61	12.50	
		11	2462	12.06	12.50	
	802.11n-HT20 MCS0	1	2412	11.34	12.00	94.33
		6	2437	11.45	12.00	
		11	2462	11.88	12.00	
	802.11n-HT40 MCS0	3	2422	11.26	12.00	88.71
		6	2437	11.38	12.00	
		9	2452	11.67	12.00	
	802.11ac-VHT20 MCS0	1	2412	11.34	12.00	94.13
		6	2437	11.47	12.00	
		11	2462	11.71	12.00	
	802.11ac-VHT40 MCS0	3	2422	11.23	12.00	88.71
		6	2437	11.36	12.00	
		9	2452	11.58	12.00	



<5GHz WLAN Ant.1+2>

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.2GHz WLAN Ant.1+2	802.11a 6Mbps	36	5180	13.43	14.00	95.00
		40	5200	13.36	14.00	
		44	5220	13.57	14.00	
		48	5240	13.75	14.00	
	802.11n-HT20 MCS0	36	5180	13.17	14.00	94.66
		40	5200	13.16	14.00	
		44	5220	13.22	14.00	
		48	5240	13.16	14.00	
	802.11n-HT40 MCS0	38	5190	13.07	13.50	89.68
		46	5230	13.11	13.50	
	802.11ac-VHT20 MCS0	36	5180	13.26	14.00	90.13
		40	5200	13.19	14.00	
		44	5220	13.40	14.00	
		48	5240	13.36	14.00	
	802.11ac-VHT40 MCS0	38	5190	13.14	13.50	82.65
		46	5230	13.00	13.50	
802.11ac-VHT80 MCS0	42	5210	13.10	13.50	71.66	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.3GHz WLAN Ant. 1+2	802.11a 6Mbps	52	5260	13.80	14.00	95.00
		56	5280	13.72	14.00	
		60	5300	13.67	14.00	
		64	5320	13.44	14.00	
	802.11n-HT20 MCS0	52	5260	13.60	14.00	94.66
		56	5280	13.59	14.00	
		60	5300	13.52	14.00	
		64	5320	13.37	14.00	
	802.11n-HT40 MCS0	54	5270	13.25	13.50	89.68
		62	5310	13.29	13.50	
	802.11ac-VHT20 MCS0	52	5260	13.75	14.00	90.13
		56	5280	13.66	14.00	
		60	5300	13.63	14.00	
		64	5320	13.42	14.00	
	802.11ac-VHT40 MCS0	54	5270	13.29	13.50	82.65
		62	5310	13.26	13.50	
802.11ac-VHT80 MCS0	58	5290	13.30	13.50	71.66	



	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.5GHz WLAN Ant. 1+2	802.11a 6Mbps	100	5500	13.81	14.00	95.00
		116	5580	13.70	14.00	
		124	5620	13.67	14.00	
		132	5660	13.60	14.00	
		140	5700	13.59	14.00	
	802.11n-HT20 MCS0	100	5500	13.69	14.00	94.66
		116	5580	13.65	14.00	
		124	5620	13.56	14.00	
		132	5660	13.61	14.00	
		140	5700	13.53	14.00	
	802.11n-HT40 MCS0	102	5510	13.26	13.50	89.68
		110	5550	13.22	13.50	
		126	5630	13.21	13.50	
		134	5670	13.27	13.50	
	802.11ac-VHT20 MCS0	100	5500	13.72	14.00	90.13
		116	5580	13.72	14.00	
		124	5620	13.78	14.00	
		132	5660	13.72	14.00	
		140	5700	13.68	14.00	
	802.11ac-VHT40 MCS0	102	5510	13.25	13.50	82.65
110		5550	13.28	13.50		
126		5630	13.11	13.50		
134		5670	13.29	13.50		
802.11ac-VHT80 MCS0	106	5530	13.21	13.50	71.66	
	122	5610	13.27	13.50		

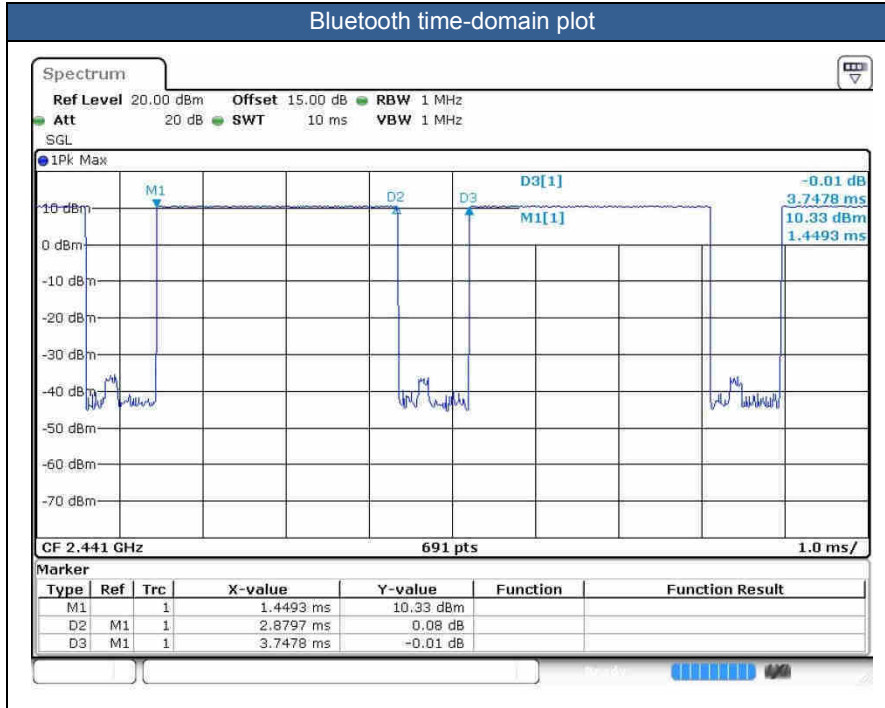


	Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Duty Cycle %
5.8GHz WLAN Ant. 1+2	802.11a 6Mbps	149	5745	13.22	14.00	95.00
		157	5785	13.79	14.00	
		165	5825	13.36	14.00	
	802.11n-HT20 MCS0	149	5745	13.08	14.00	94.66
		157	5785	13.48	14.00	
		165	5825	13.26	14.00	
	802.11n-HT40 MCS0	151	5755	12.84	13.50	89.68
		159	5795	13.20	13.50	
	802.11ac-VHT20 MCS0	149	5745	13.17	14.00	90.13
		157	5785	13.46	14.00	
		165	5825	13.31	14.00	
	802.11ac-VHT40 MCS0	151	5755	12.73	13.50	82.65
		159	5795	13.19	13.50	
	802.11ac-VHT80 MCS0	155	5775	13.11	13.50	71.66

**<2.4GHz Bluetooth>**

**General Note:**

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle is 76.84 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation.





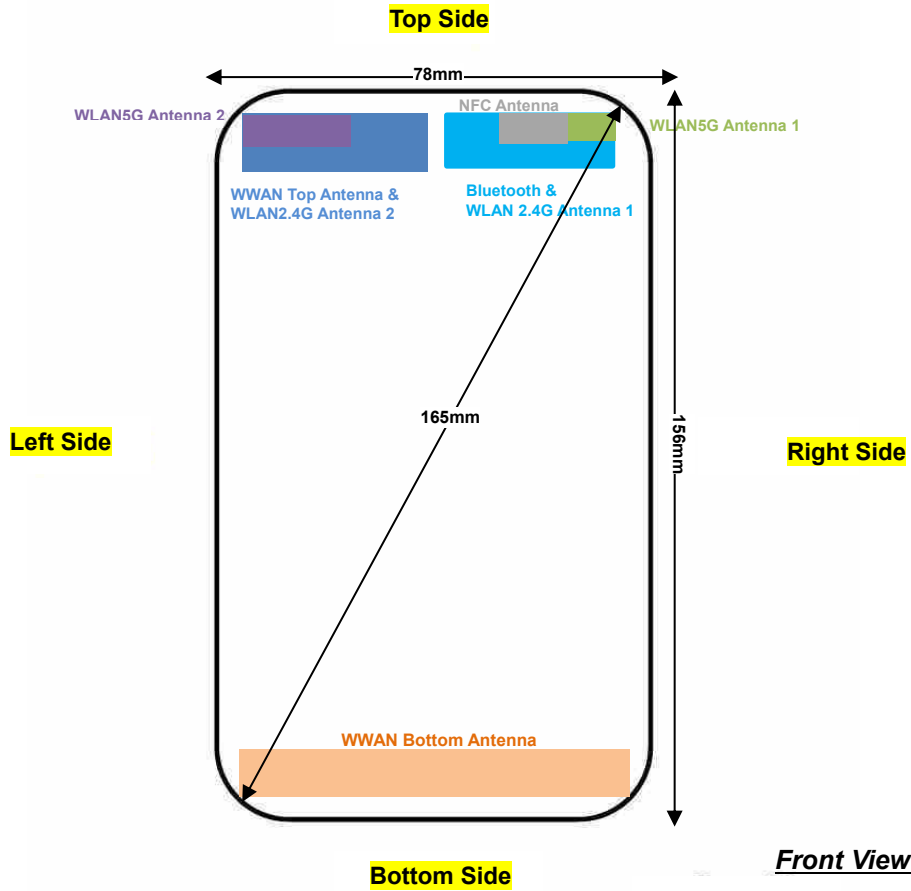


Mode	Channel	Frequency (MHz)	Average power (dBm)
			1Mbps
v3.0 with EDR	CH 00	2402	10.95
	CH 39	2441	10.82
	CH 78	2480	<b>11.04</b>
Tune-up limit (dBm)			11.50

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.0/4.1/4.2 with LE	CH 00	2402	1.07
	CH 19	2440	0.30
	CH 39	2480	<b>1.21</b>
Tune-up limit (dBm)			2.00

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v5.0 with LE	CH 00	2402	0.92
	CH 19	2440	0.27
	CH 39	2480	<b>0.99</b>
Tune-up limit (dBm)			2.00

### 13. Antenna Location



Distance of the Antenna to the EUT surface/edge						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna & WLAN 2.4G Antenna 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm
WWAN Bottom Antenna	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
Bluetooth & WLAN2.4G Antenna 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
WLAN 5G Antenna 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	>25mm
WLAN 5G Antenna 2	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	>25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Back	Front	Top Side	Bottom Side	Right Side	Left Side
WWAN Top Antenna & WLAN 2.4G Antenna 2	Yes	Yes	Yes	No	No	Yes
WWAN Bottom Antenna	Yes	Yes	No	Yes	Yes	Yes
Bluetooth & WLAN2.4G Antenna 1	Yes	Yes	Yes	No	Yes	No
WLAN 5G Antenna 1	Yes	Yes	Yes	No	Yes	No
WLAN 5G Antenna 2	Yes	Yes	Yes	No	No	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.
- WLAN 5GHz can transmit in MIMO antenna mode only, and it has no SISO antenna mode. So the positions for WLAN 5GHz MIMO hotspot mode SAR tests is equal to WLAN 5G antenna 1 plus WLAN 5G antenna 2.



## **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 BT/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:
  - $\leq 0.8$  W/kg or  $2.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  W/kg or  $1.5$  W/kg, for 1-g or 10-g respectively, when the transmission band is between  $100$  MHz and  $200$  MHz
  - $\leq 0.4$  W/kg or  $1.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8$ 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  $\leq 1.2$  W/kg, SAR testing with a headset connected to the handset is not required.
5. This device has two antennas. The primary cellular antenna is located on the bottom edge of the device and the secondary cellular antenna is located on the top edge of the device and can't transmit simultaneously.
6. For WLAN transmitter  
Head exposure conditions:  
Power reduction for WLAN 2.4GHz Ant.1, WLAN 5GHz MIMO mode: While the device WLAN is transmitting simultaneously with the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off
7. For WWAN transmitter (3 sets of power reduction levels).
  - a) Head exposure conditions:  
Reduced power level 1 – GSM 850/1900, WCDMA Band 2/4/5, CDMA BC0, LTE Band 2/4/5/7/12/17/25/26/30/38/41/66, LTE Uplink CA CA\_7C and CA\_41C. While the device WWAN is transmitting at the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off, power reduction enabled for those bands.  
  
Reduced power level 2 – GSM 850/1900, WCDMA Band 2/4/5, CDMA BC0, LTE Band 2/4/5/7/12/17/25/26/30/38/41/66, LTE Uplink CA CA\_7C and CA\_41C.  
While the device WLAN is transmitting simultaneously with the WWAN Top antenna, and the audio is actively routed through the earpiece receiver, and the proximity sensor is triggered which indicating the next-to-head condition and the LCD display is off, power reduction enabled for those bands.
  - b) Hotspot exposure condition  
Reduced power level 3 – GSM 1900, WCDMA Band 2/4, LTE Band 2/4/7/25/30/66  
While the device WWAN is transmitting at the WWAN Bottom antenna, and hotspot mode is enabled, power reduction enabled for those bands
8. 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 extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR  $> 1.2$  W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the  $1.2$  W/kg SAR test reduction threshold.
  - a. For this device, WWAN transmitter scaled to maximum output power is higher than  $1.2$ W/kg of GSM 1900, WCDMA Band 2/4, LTE Band 2/4/7/25/66, therefore product specific SAR is necessary.
  - b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
  - c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

**GSM Note:**

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

**WCDMA Note:**

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

**CDMA2000 Note:**

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

**LTE Note:**

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is  $>$  not  $1/2$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is  $>$  not  $1/2$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. Per FCC KDB inquiry guidance, the following applied to intra-band contiguous UL CA only;
  - a. Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05. The required test channel should be associated with the UL PCC. For channels at the ends of a frequency band, the SCC and subsequent CCs are added to the side within the transmission band. Otherwise, the CCs should be added alternatively to either side of the PCC
  - b. UL CA SAR is measured for each exposure condition in each frequency band using the highest SAR configuration tested in standalone LTE mode to establish the UL CA PCC. The SCC and subsequent CC must use configurations similar to the PCC to establish conservative or worst case equivalent SAR test conditions.
  - c. When the SAR configuration tested in step b) has a maximum output power specification more than  $1/4$  dB lower than



the highest maximum output power conditions measured in the power measurements in step a) above and the reported SAR in step b) is larger than 1.2 W/kg, SAR measurement is also required for the configuration in step a)

- d. All standalone SAR configurations with SAR > 1.2 W/kg must also be tested by applying the procedures in step b)
- 7. For LTE B4 / B5 / B12 / B17 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
- 8. LTE B2 / B17 / B38 SAR test was covered by LTE B25 / B12 / B41; 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. For 2.4GHz WLAN 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. For 5GHz WLAN, SAR testing was performed on MIMO mode since it can't transmit in SISO mode, so only evaluate MIMO mode SAR.
- 3. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq$  1.2 W/kg.
- 4. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is  $\leq$  1.2 W/kg, SAR is not required for U-NII-1 band.
- 5. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is  $\leq$  0.8 W/kg or all required test position are tested.
- 6. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is  $\leq$  1.2 W/kg or all required channels are tested.
- 7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.