

FCC SAR TEST REPORT

FCC ID : PU5-TP00139AM
Equipment : Notebook Computer
Brand Name : Lenovo
Model Name : TP00139A
Applicant : Wistron Corporation
21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist,
New Taipei City 221, Taiwan
Manufacturer : Lenovo PC HK Limited.
23/F, Lincoln House, Taikoo Place, 979 King's
Road, Quarry Bay, Hong Kong, China
Standard : FCC 47 CFR Part 2 (2.1093)

Equipment: Foxconn T99W175 and Murata LBEE5QG2CX tested inside of Lenovo Notebook Computer.

The product was received on Jan. 06, 2022 and testing was started from Jan. 14, 2022 and completed on Feb. 01, 2022. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

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



Approved by: Cona Huang / Deputy Manager



Sporton International Inc. EMC & Wireless Communications Laboratory



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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Wistron Corporation, Notebook Computer, TP00139A, are as follows.

Equipment Class	Frequency Band		Highest SAR Summary		Highest Simultaneous Transmission 1g SAR (W/kg)
			Body		
			1g SAR (W/kg)		
Licensed	WCDMA	WCDMA II	0.93		1.16
		WCDMA IV	0.93		
		WCDMA V	1.08		
	LTE	LTE Band 2	1.05		
		LTE Band 7	1.03		
		LTE Band 12 / 17	1.03		
		LTE Band 13	1.13		
		LTE Band 14	0.85		
		LTE Band 25	1.04		
		LTE Band 5 / 26	1.15		
		LTE Band 30	1.16		
		LTE Band 38 / 41	1.11		
		LTE Band 42	0.85		
		LTE Band 48	1.04		
		LTE Band 4 / 66	1.02		
		LTE Band 71	1.09		
	FR1	FR1 n2	1.12		
		FR1 n5	1.10		
		FR1 n7	0.87		
		FR1 n12	1.13		
		FR1 n25	1.14		
FR1 n38/41		0.74			
FR1 n66		1.11			
FR1 n71		1.04			
DTS	WLAN	2.4GHz WLAN	0.74		
NII		5GHz WLAN	0.60		
6XD		6GHz WLAN	0.51		
DSS	2.4GHz Band	Bluetooth	0.12		
Equipment Class	Frequency Band		Reported SAR	APD	Reported PD
			Body 1g SAR (W/kg)	Body (W/m ²)	Body (W/m ²)
6XD	WLAN	6GHz WLAN	0.51	3.53	6.67
Date of Testing:			2022/1/14 ~ 2022/2/1		

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR) specified in FCC 47 CFR part 2 (2.1093), Human Exposure to RF Radiation Limits (1.0 mW/cm²=10 W/m²) specified in FCC 47 CFR part 1.1310 and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

Reviewed by: Jason Wang
Report Producer: Carlie Tsai



2. Equipment Under Test (EUT) Information

2.1 General Information

Product Feature & Specification	
Equipment Name	Notebook Computer
Brand Name	Lenovo
Model Name	TP00139A
FCC ID	PU5-TP00139AM
Integrated WWAN Module	Brand Name: Foxconn Model Name: T99W175
Integrated WLAN Module	Brand Name: Murata Model Name: LBEE5QG2CX
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3550 MHz ~ 3600 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n260 : 37 GHz~40 GHz 5G NR n261 : 27.5 GHz~28.35 GHz WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
EUT Stage	Production Unit
Remark:	<ol style="list-style-type: none"> This device has two WWAN antenna vendors, RF exposure evaluation is selected AWAN as the main test, ICT will spot check worst case found in AWAN. This device has two WLAN antenna vendors, RF exposure evaluation is selected INPAQ as the main test, WNC will spot check worst case found in INPAQ. The device implements the power management and sensor detection for SAR compliance at different exposure conditions and the smart transmit feature will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description.

WWAN Antenna Information					
Antenna 1	Manufacturer	AWAN		Peak gain (dbi)	2.72
	Part number	Main Antenna:	SA30Y56103AA	Type	PIFA
		Auxiliary Antenna:	SA30Y56105AA (Rx only)		
		MIMO1 Antenna	SA30Y56103AA (Rx only)		
MIMO2 Antenna	SA30Y56105AA				
Antenna 2	Manufacturer	LUXSHARE-ICT		Peak gain (dbi)	2.9
	Part number	Main Antenna:	SA30Y56102AA	Type	PIFA
		Auxiliary Antenna:	SA30Y56104AA (Rx only)		
		MIMO1 Antenna	SA30Y56102AA (Rx only)		
MIMO2 Antenna	SA30Y56104AA				

WLAN Antenna Information					
Antenna 1	Manufacturer	INPAQ			
	Antenna Type	PIFA Antenna		PIFA Antenna	
	Part number	025.901YK.0011		025.901YL.0011	
	Peak gain (dbi)	Main Antenna :		Aux Antenna :	
		2400~2483.5MHz	2.48 dBi	2400~2483.5MHz	2.45 dBi
		5150~5250MHz	2.64 dBi	5150~5250MHz	2.64 dBi
		5250~5350MHz	2.75 dBi	5250~5350MHz	2.69 dBi
5470~5725MHz		2.84 dBi	5470~5725MHz	2.88 dBi	
5725~5850MHz	2.94 dBi	5725~5850MHz	2.97 dBi		
5925~6425MHz	3.23 dBi	5925~6425MHz	3.29 dBi		
Antenna 2	Manufacturer	WNC			
	Antenna Type	PIFA Antenna		PIFA Antenna	
	Part number	025.901YK.0001		025.901YL.0001	
	Peak gain (dbi)	Main Antenna :		Aux Antenna :	
		2400~2483.5MHz	2.62 dBi	2400~2483.5MHz	2.54 dBi
		5150~5250MHz	1.94 dBi	5150~5250MHz	2.49 dBi
		5250~5350MHz	1.70 dBi	5250~5350MHz	2.17 dBi
5470~5725MHz		2.47 dBi	5470~5725MHz	2.72 dBi	
5725~5850MHz	2.91 dBi	5725~5850MHz	3.13 dBi		
5925~6425MHz	3.28 dBi	5925~6425MHz	3.33 dBi		

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- IEC/IEEE 62209-1528:2020
- SPEAG DASY6 System Handbook
- SPEAG DASY6 Application Note (Interim Procedure for Device Operation at 6GHz-10GHz)



3.1 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	PU5-TP00139AM																																																														
Equipment Name	Notebook Computer																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3550 MHz ~ 3600 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 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 13: 5MHz, 10MHz LTE Band 14: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 30: 5MHz, 10MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM																																																														
LTE Voice / Data requirements	Data only																																																														
LTE MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)																																																								
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16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																								
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64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																								
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, Proximity Sensor and G-sensor.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 13.																																																														
LTE Carrier Aggregation Additional Information	This device supports maximum of 6 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		Bandwidth 15 MHz		Bandwidth 20 MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829	
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844	
LTE Band 7													
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510	
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560	
LTE Band 12													
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704	
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711	
LTE Band 13													
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #
L	23205		779.5		23230		782		23230		782		23230
M	23230		782		23230		782		23230		782		23230
H	23255		784.5		23230		782		23230		782		23230
LTE Band 14													
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz
	Channel #		Channel #		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #
L	23305		790.5		23330		793		23330		793		23330
M	23330		793		23330		793		23330		793		23330
H	23355		795.5		23330		793		23330		793		23330
LTE Band 17													
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)		Channel #
L	23755		706.5		23780		709		23780		709		23780
M	23790		710		23790		710		23790		710		23790
H	23825		713.5		23800		711		23800		711		23800
LTE Band 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 42												
	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	43315	3552.5	43140	3555	43165	3557.5	43190	3560				
M	43340	3575	43340	3575	43340	3575	43340	3575				
H	43565	3597.5	43540	3595	43515	3592.5	43490	3590				
LTE Band 48												
	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	55265	3552.5	55290	3555	55315	3557.5	55340	3560				
L	55810	3607	55815	3607.5	55820	3608	55830	3609				
M	56170	3643	56165	3642.5	56160	3642	56150	3641				
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770
LTE Band 71												
	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	133147	665.5	133172	668	133197	670.5	133222	673				
M	133297	680.5	133297	680.5	133297	680.5	133297	680.5				
H	133447	695.5	133422	693	133397	690.5	133372	688				



3.2 General 5G NR SAR Test and Reporting Considerations

5G NR Information								
FCC ID	PU5-TP00139AM							
Equipment Name	Notebook Computer							
Operating Frequency Range of each 5G NR transmission band	5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3700 MHz ~ 3980 MHz							
Channel Bandwidth	5G NR n2: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n12: 5MHz, 10MHz, 15MHz 5G NR n25: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n38: 20MHz 5G NR n41: 20MHz, 40MHz, 50MHz, 60MHz, 80MHz, 90MHz, 100MHz 5G NR n66: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n71: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 20MHz, 40MHz, 50MHz, 60MHz, 80MHz, 90MHz, 100MHz							
SCS	FDD: SCS15KHz, TDD: SCS30KHz							
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM							
A-MPR (Additional MPR) disabled for SAR Testing?	Yes							
LTE Anchor Bands for n2	LTE B5/12/13							
LTE Anchor Bands for n5	LTE B2/7/48/66							
LTE Anchor Bands for n7	LTE B5/12							
LTE Anchor Bands for n12	LTE B2/66							
LTE Anchor Bands for n25	LTE B12							
LTE Anchor Bands for n41	LTE B2/25/26/66							
LTE Anchor Bands for n66	LTE B5/12/13/48/71							
LTE Anchor Bands for n71	LTE B2/7/66							
LTE Anchor Bands for n77	LTE B2/5/7/12/13/14/30/41/66							
NR Band 2								
Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900
NR Band 5								
Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839
NR Band 7								
Bandwidth 5MHz		Bandwidth 10MHz	Bandwidth 15MHz		Bandwidth 20MHz			
Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510
M	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560



NR Band 12														
	Bandwidth 5MHz				Bandwidth 10MHz				Bandwidth 15MHz					
	Ch. #	Freq. (MHz)			Ch. #	Freq. (MHz)			Ch. #	Freq. (MHz)				
L	140300	701.5			140800	704			141300	706.5				
M	141500	707.5			141500	707.5			141500	707.5				
H	142700	713.5			142200	711			141700	708.5				
NR Band 25														
	Bandwidth 5MHz			Bandwidth 10MHz			Bandwidth 15MHz			Bandwidth 20MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)			
L	370500	1852.5		371000	1855		371500	1857.5		372000	1860			
M	376500	1882.5		376500	1882.5		376500	1882.5		376500	1882.5			
H	382500	1912.5		382000	1910		381500	1907.5		381000	1905			
NR Band 38														
	Bandwidth 20MHz													
	Ch. #	Freq. (MHz)						Freq. (MHz)						
L	516000	2580						2580						
M	519000	2595						2595						
H	522000	2610						2610						
NR Band 41														
	Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	501204	2506.02	503202	2516.01	504204	2521.02	505200	2526	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	535998	2679.99	534000	2670	532998	2664.99	531996	2659.98	529998	2649.99	528996	2644.98	528000	2640
NR Band 66														
	Bandwidth 5MHz			Bandwidth 10MHz			Bandwidth 15MHz			Bandwidth 20MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)			
L	342500	1712.5		343000	1715		343500	1717.5		344000	1720			
M	349000	1745		349000	1745		349000	1745		349000	1745			
H	355500	1777.5		355000	1775		354500	1772.5		354000	1770			
NR Band 71														
	Bandwidth 5MHz			Bandwidth 10MHz			Bandwidth 15MHz			Bandwidth 20MHz				
	Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)		Ch. #	Freq. (MHz)			
L	133100	665.5		133600	668		13410	670.5		134600	673			
M	136100	680.5		136100	680.5		136100	680.5		136100	680.5			
H	139100	695.5		138600	693		13810	690.5		137600	688			
NR Band 77														
	Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	648000	3720	648334	3725.01	648668	3730.02	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	664666	3969.99	664000	3960	663666	3954.99	663332	3949.98	662666	3939.99	662332	3934.98	662000	3930

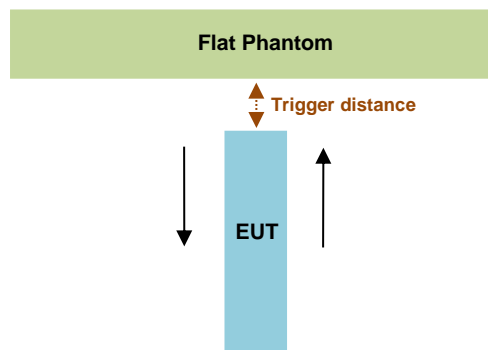
4. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance (KDB 616217 D04 section 6.2)>:

For the device is fully integrated, touch sensing capacitive sensor. It uses a charge transfer capacitive acquisition method that is capable of near range proximity detection. In this device offers a state of the art capacitive sensing engine with an embedded sampling capacitor and voltage regulator allowing the overall solution cost to be reduced and improving system immunity in noisy environments.

Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed. The details are illustrated as following, and the shortest triggering distances were reported and used for SAR assessment.

In the preliminary triggering distance testing, the tissue-equivalent medium for different frequency bands were used for verification; no other frequency bands tissue-equivalent medium was found to result in shortest triggering distance than that for 1900MHz, and the tissue-equivalent medium for 1900MHz was used for formal proximity sensor triggering testing.



Proximity Sensor Trigger Distance (mm)				
Exposure Position	Bottom of Laptop Ant 0		Bottom of Laptop Ant 2	
	Moving toward	Moving away	Moving toward	Moving away
Minimum	21	23	23	21

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

Since the antenna and sensor are collocated and all of the peak SAR location is overlapping with the sensor pad for this device, therefore, According to KDB 616217 section6.3, these procedures do not apply and are not required for this device. Due to the antenna and sensor are collocated and the peak SAR location is overlapping with the sensor on this device.

Proximity sensor power reduction

Exposure Position / wireless mode	Bottom of Laptop ⁽¹⁾
WCDMA Band II Ant 0	6 dB
WCDMA Band IV Ant 0	6 dB
WCDMA Band V Ant 0	2.7 dB
LTE Band 2 Ant 0	5.5 dB
LTE Band 2 Ant 2	6.7 dB
LTE Band 5 Ant 0	4.6 dB
LTE Band 7 Ant 0	8.5 dB
LTE Band 7 Ant 2	5.5 dB
LTE Band 12/17 Ant 0	2.7 dB
LTE Band 13 Ant 0	2.8 dB
LTE Band 14 Ant 0	3.1 dB
LTE Band 25 Ant 0	5.5 dB
LTE Band 26 Ant 0	4.6 dB
LTE Band 30 Ant 0	6 dB
LTE Band 38/41 Ant 0	5.5 dB
LTE Band 41_HPUE Ant 0	6.9 dB
LTE Band 42 Ant 2	3.6 dB
LTE Band 48 Ant 2	3.4 dB
LTE Band 4/66 Ant 0	5.6 dB
LTE Band 66 Ant 2	5.7 dB
LTE Band 71 Ant 0	1.9 dB
FR1 n2 Ant 0	4.9 dB
FR1 n2 Ant 2	7.6 dB
FR1 n5 Ant 0	3.6 dB
FR1 n7 Ant 2	6.6 dB
FR1 n12 Ant 0	1 dB
FR1 n25 Ant 2	7.6 dB
FR1 n38/n41 Ant 2	6.8 dB
FR1 n66 Ant 0	5.3 dB
FR1 n66 Ant 2	2.8 dB
FR1 n71 Ant 0	2.3 dB
FR1 n77 Ant 2	6.8 dB
FR1 n77_HPUE Ant 2	6.8 dB

Remark:

- ⁽¹⁾: Reduced maximum limit applied by activation of proximity + G-sensor.
- Power reduction is not applicable for WLAN and Bluetooth.
- Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown as below
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:

Ant 0:

- Bottom of Laptop: [20 mm](#)

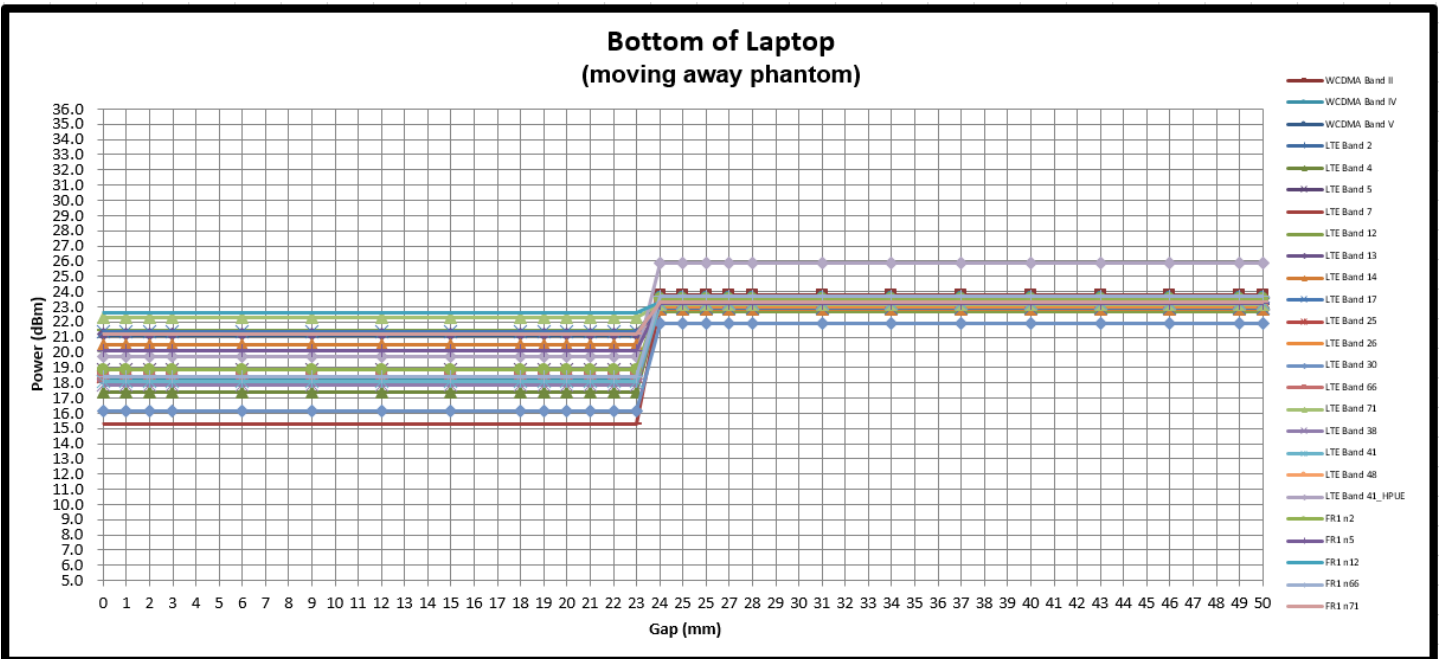
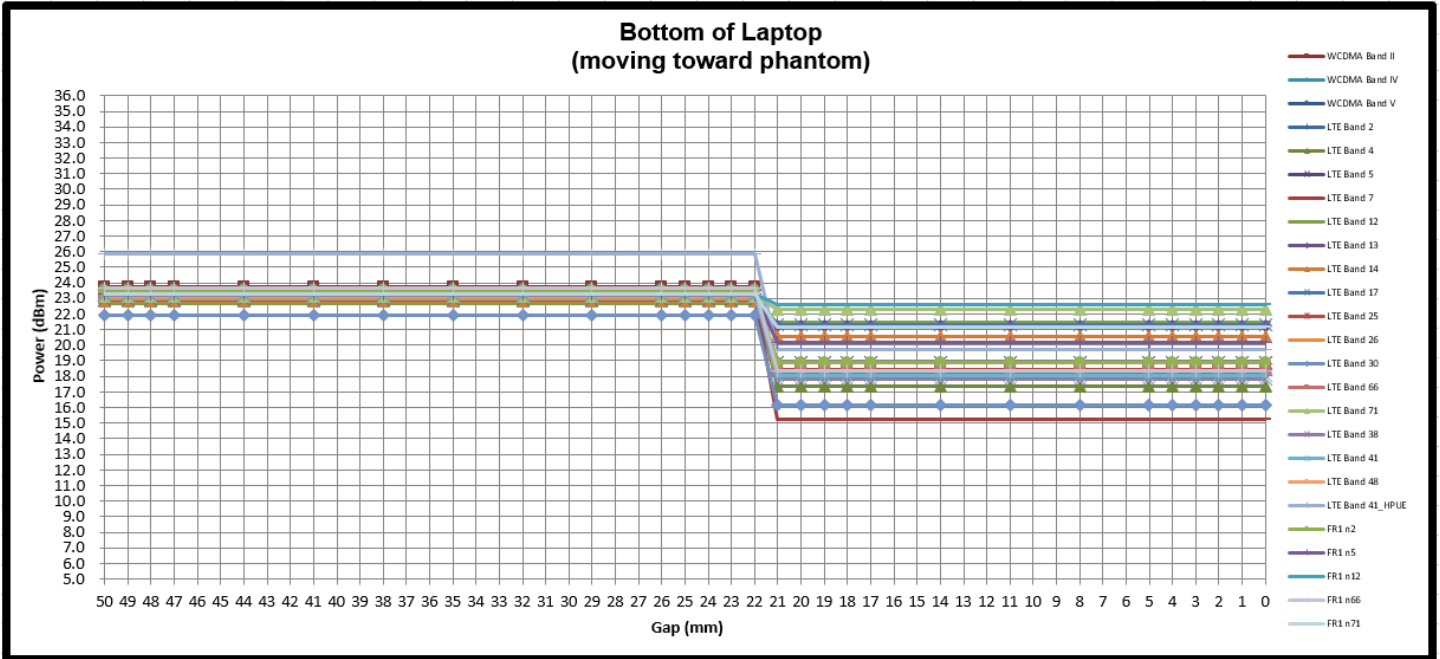
Ant 2:

- Bottom of Laptop: [20 mm](#)

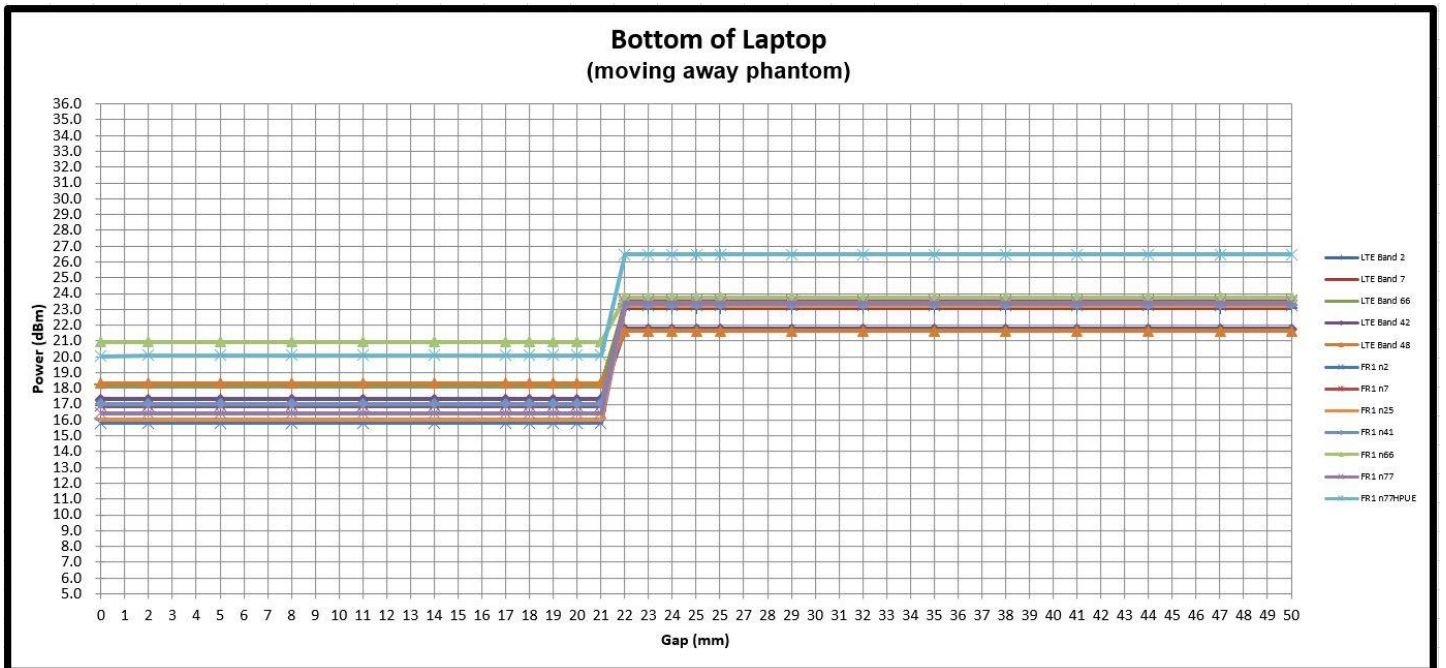
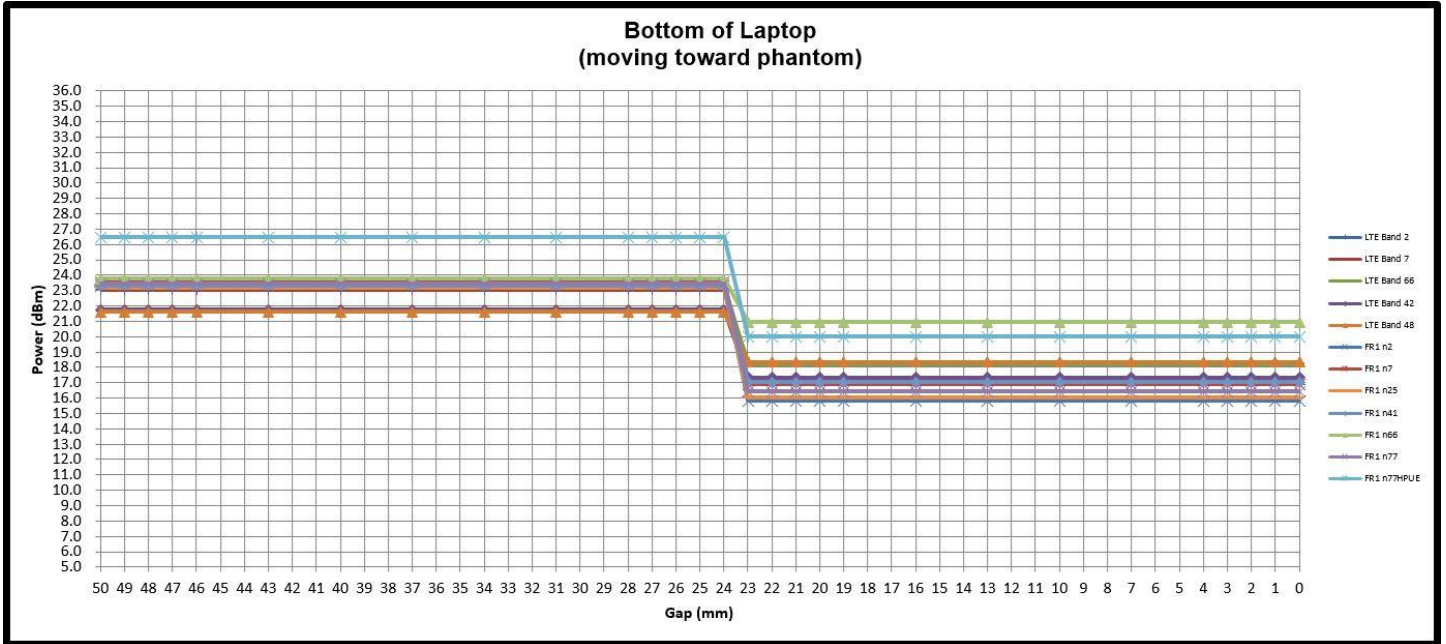


Power Measurement during Sensor Trigger distance testing

Ant 0



Ant 2



5. Smart Transmit feature for RF Exposure compliance

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target or PD_design_target, below the predefined time-averaged power limit (i.e., input.power.limit for 5G mmW NR), for each characterized technology and band

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<Terminologies in this report>

P _{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P _{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
SAR char	P _{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for f < 6 GHz.

<SAR design target and uncertainty>

The detail SAR design target relate to each exposure conditions pls refer to operation description

1g SAR design target	0.95 W/kg
Uncertainty	1 dB

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_design_target < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>
Ant 0

Band	Antenna	Duty cycle	P _{limit}	P _{Max} *
			(dBm) Time-average power	(dBm) Time-average power
WCDMA II	0	100.00%	17.50	23.50
WCDMA IV	0	100.00%	17.50	23.50
WCDMA V	0	100.00%	20.80	23.50
LTE B7	0	100.00%	14.50	23.00
LTE B12/17	0	100.00%	20.80	23.50
LTE B13	0	100.00%	20.70	23.50
LTE B14	0	100.00%	20.40	23.50
LTE B25/2	0	100.00%	17.50	23.00
LTE B26/5	0	100.00%	18.90	23.50
LTE B30	0	100.00%	16.00	22.00
LTE B38/41	0	63.30%	15.50	21.00
LTE B41_HPUE	0	43.30%		22.40
LTE B66/4	0	100.00%	17.40	23.00
LTE B71	0	100.00%	21.60	23.50
FR1 n2	0	100.00%	18.10	23.00
FR1 n5	0	100.00%	19.40	23.00
FR1 n12	0	100.00%	22.00	23.00
FR1 n66	0	100.00%	17.70	23.00
FR1 n71	0	100.00%	20.70	23.00

Ant 2

Band	Antenna	Duty cycle	P _{limit} (dBm) Time-average power	P _{Max} * (dBm) Time-average power
LTE B2	2	100.00%	16.30	23.00
LTE B7	2	100.00%	17.50	23.00
LTE B42	2	63.30%	15.40	19.00
LTE B48	2	63.30%	15.60	19.00
LTE B66	2	100.00%	17.30	23.00
FR1 n7	2	100.00%	16.40	23.00
FR1 n25/2	2	100.00%	15.40	23.00
FR1 n41/38	2	100.00%	16.20	23.00
FR1 n66	2	100.00%	20.20	23.00
FR1 n77	2	100.00%	16.20	23.00
FR1 n77_HPUE	2	50.00%		23.00

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to P_{max} + 1dB uncertainty.

**All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).

The max allowed output power is the P_{limit} + 1dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

6. RF Exposure Limits

6.1 Uncontrolled Environment

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

6.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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



6.3 RF Exposure limit for above 6GHz

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm² per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

7. Specific Absorption Rate (SAR)

7.1 Introduction

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

7.2 SAR Definition

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

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

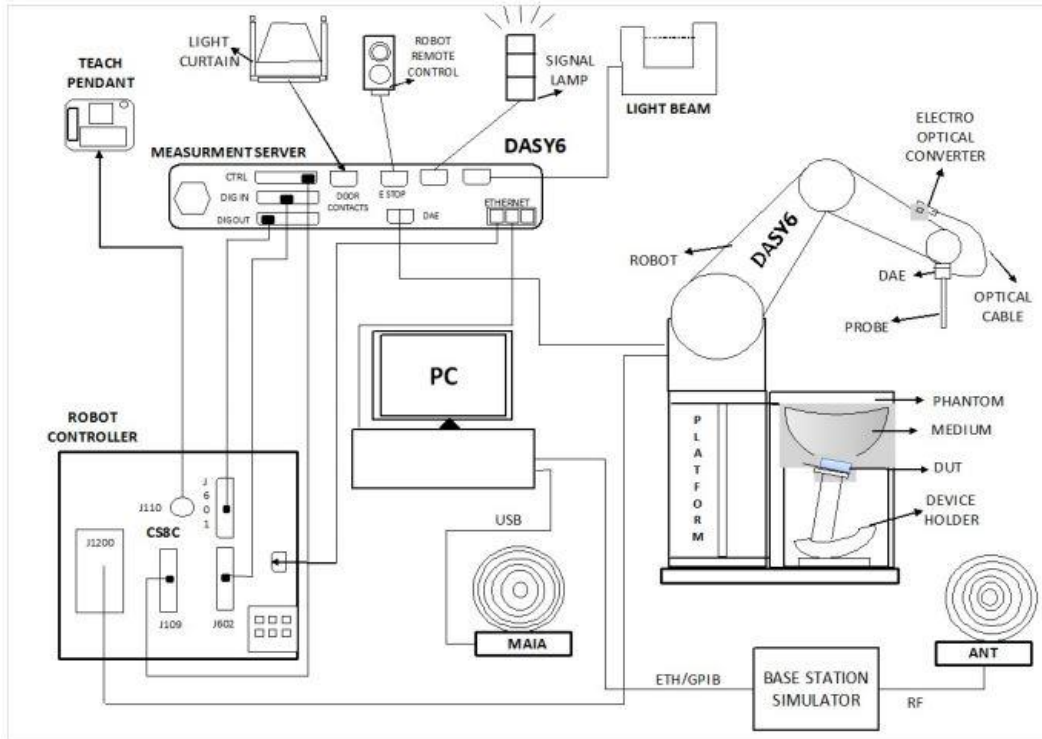
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



- The DASY system in DASY6/DASY5 V5.2 SAR Configuration is shown above
- 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 windows software and the DASY5/DASY6 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8.1 Test Site Location


The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	EMC & Wireless Communications Laboratory		Wensan Laboratory		
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan		
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY	SAR15-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY	
	SAR06-HY	SAR10-HY	SAR13-HY	SAR14-HY	


8.2 E-Field Probe

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

<ES3DV3 Probe>

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

<EX3DV4 Probe>

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

8.3 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


8.4 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.

8.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

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

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

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

9.1 Spatial Peak SAR Evaluation

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

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

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

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

9.2 Power Reference Measurement

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

9.3 Area Scan

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

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

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

9.4 Zoom Scan

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

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

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

9.5 Volume Scan Procedures

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

9.6 Power Drift Monitoring

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



10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit ⁽²⁾	D750V3	1107	Mar. 08, 2019	Mar. 05, 2022
SPEAG	835MHz System Validation Kit ⁽²⁾	D835V2	4d167	Nov. 25, 2019	Nov. 22, 2022
SPEAG	1750MHz System Validation Kit ⁽²⁾	D1750V2	1112	Mar. 07, 2019	Mar. 04, 2022
SPEAG	1900MHz System Validation Kit ⁽²⁾	D1900V2	5d185	Mar. 07, 2019	Mar. 04, 2022
SPEAG	2300MHz System Validation Kit	D2300V2	1088	Jul. 13, 2021	Jul. 12, 2022
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 17, 2021	Aug. 17, 2022
SPEAG	2600MHz System Validation Kit	D2600V2	1008	Aug. 17, 2021	Aug. 16, 2022
SPEAG	3300MHz System Validation Kit ⁽²⁾	D3300V2	1005	Apr. 11, 2019	Apr. 08, 2022
SPEAG	3500MHz System Validation Kit ⁽²⁾	D3500V2	1013	Apr. 15, 2021	Apr. 12, 2024
SPEAG	3700MHz System Validation Kit	D3700V2	1022	Jul. 14, 2021	Jul. 13, 2022
SPEAG	3900MHz System Validation Kit ⁽²⁾	D3900V2	1017	Apr. 29, 2019	Apr. 26, 2022
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 15, 2021	Sep. 14, 2022
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1003	Sep. 24, 2021	Sep. 23, 2022
SPEAG	5G Verification Source	10GHz	1020	Jan. 18, 2021	Jan. 17, 2022
SPEAG	EUmmWV Probe Tip Protection	EUmmWV4	9441	Nov. 24, 2021	Nov. 23, 2022
SPEAG	Data Acquisition Electronics	DAE4	778	May. 21, 2021	May. 20, 2022
SPEAG	Data Acquisition Electronics	DAE4	1311	Aug. 20, 2021	Aug. 19, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7350	Dec. 20, 2021	Dec. 19, 2022
SPEAG	Dosimetric E-Field Probe	EX3DV4	7439	Feb. 23, 2021	Feb. 22, 2022
RCPTWN	Thermometer	HTC-1	TM685-1	Oct. 28, 2021	Oct. 27, 2022
RCPTWN	Thermometer	HTC-1	TM560-2	Oct. 28, 2021	Oct. 27, 2022
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Oct. 21, 2021	Oct. 20, 2022
Keysight	Wireless Communication Test Set	E5515C	MY50267236	Mar. 21, 2021	Mar. 20, 2022
R&S	BT Base Station	CBT	100815	Feb. 19, 2021	Feb. 18, 2022
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Oct. 24, 2021	Oct. 23, 2022
Keysight	ENA Network Analyzer	E5071C	MY46104758	Sep. 07, 2021	Sep. 06, 2022
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 24, 2021	Sep. 23, 2022
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Oct. 26, 2021	Oct. 25, 2022
Anritsu	Power Meter	ML2495A	1419002	Aug. 18, 2021	Aug. 17, 2022
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2021	Aug. 17, 2022
Anritsu	Power Meter	ML2495A	1804003	Oct. 09, 2021	Oct. 08, 2022
Anritsu	Power Sensor	MA2411B	1726150	Oct. 09, 2021	Oct. 08, 2022
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005-3	N/A	Note 1	

General Note:

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

11. System Verification

11.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18°C to 25°C, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.

The liquid tissue depth was at least 15cm in the phantom for all SAR testing

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
750	22.5	0.890	43.137	0.89	41.90	0.00	2.95	±5	2022/1/26
750	22.5	0.888	43.087	0.89	41.90	-0.22	2.83	±5	2022/1/30
835	22.5	0.920	42.721	0.90	41.50	2.22	2.94	±5	2022/1/26
835	22.5	0.918	42.671	0.90	41.50	2.00	2.82	±5	2022/1/30
1750	22.5	1.382	40.689	1.37	40.10	0.88	1.47	±5	2022/1/27
1750	22.5	1.381	40.730	1.37	40.10	0.80	1.57	±5	2022/1/31
1900	22.5	1.448	40.894	1.40	40.00	3.43	2.24	±5	2022/1/27
1900	22.5	1.429	39.314	1.40	40.00	2.07	-1.72	±5	2022/1/31
2300	22.5	1.627	39.971	1.67	39.50	-2.57	1.19	±5	2022/1/28
2450	22.6	1.783	40.473	1.80	39.20	-0.94	3.25	±5	2022/1/27
2600	22.5	1.976	38.876	1.96	39.00	0.82	-0.32	±5	2022/1/28
2600	22.5	2.018	39.171	1.96	39.00	2.96	0.44	±5	2022/2/1
3300	22.5	2.782	38.681	2.70	38.13	3.04	1.45	±5	2022/1/29
3500	22.5	2.996	38.487	2.91	37.90	2.96	1.55	±5	2022/1/29
3700	22.5	3.200	38.165	3.12	37.70	2.56	1.23	±5	2022/1/29
3900	22.5	3.428	38.117	3.33	37.51	2.94	1.62	±5	2022/1/29
4100	22.5	3.629	37.757	3.53	37.28	2.80	1.28	±5	2022/1/29
5250	22.6	4.660	36.379	4.71	35.95	-1.06	1.19	±5	2022/1/28
5600	22.6	4.996	35.910	5.07	35.50	-1.46	1.15	±5	2022/1/28
5750	22.6	5.159	35.674	5.22	35.35	-1.17	0.92	±5	2022/1/28
6500	22.5	6.000	34.400	6.07	34.50	-1.15	-0.29	±5	2022/1/27

11.2 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.

Test Site	Date	Frequency (MHz)	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 (%)
SAR01	2022/1/26	750	50	D750V3-1107	EX3DV4 - SN7350	DAE4 Sn1311	0.427	8.32	8.54	2.64
SAR01	2022/1/30	750	50	D750V3-1107	EX3DV4 - SN7350	DAE4 Sn1311	0.426	8.32	8.52	2.40
SAR01	2022/1/26	835	50	D835V2-4d167	EX3DV4 - SN7350	DAE4 Sn1311	0.482	9.55	9.64	0.94
SAR01	2022/1/30	835	50	D835V2-4d167	EX3DV4 - SN7350	DAE4 Sn1311	0.481	9.55	9.62	0.73
SAR01	2022/1/27	1750	50	D1750V2-1112	EX3DV4 - SN7350	DAE4 Sn1311	1.92	36.70	38.4	4.63
SAR01	2022/1/31	1750	250	D1750V2-1112	EX3DV4 - SN7350	DAE4 Sn1311	8.87	36.70	35.48	-3.32
SAR01	2022/1/27	1900	50	D1900V2-5d185	EX3DV4 - SN7350	DAE4 Sn1311	2.06	39.40	41.2	4.57
SAR01	2022/1/31	1900	250	D1900V2-5d185	EX3DV4 - SN7350	DAE4 Sn1311	10.30	39.40	41.2	4.57
SAR01	2022/1/28	2300	250	D2300V2-1088	EX3DV4 - SN7350	DAE4 Sn1311	11.40	49.70	45.6	-8.25
SAR06	2022/1/27	2450	50	D2450V2-736	EX3DV4 - SN7439	DAE4 Sn778	2.56	54.20	51.2	-5.54
SAR01	2022/1/28	2600	50	D2600V2-1008	EX3DV4 - SN7350	DAE4 Sn1311	2.96	58.00	59.2	2.07
SAR01	2022/2/1	2600	50	D2600V2-1008	EX3DV4 - SN7350	DAE4 Sn1311	2.92	58.00	58.4	0.69
SAR01	2022/1/29	3300	50	D3300V2-1005	EX3DV4 - SN7350	DAE4 Sn1311	3.26	65.50	65.2	-0.46
SAR01	2022/1/29	3500	50	D3500V2-1013	EX3DV4 - SN7350	DAE4 Sn1311	3.57	65.60	71.4	8.84
SAR01	2022/1/29	3700	50	D3700V2-1022	EX3DV4 - SN7350	DAE4 Sn1311	3.56	68.20	71.2	4.40
SAR01	2022/1/29	3900	100	D3900V2-1017-3900	EX3DV4 - SN7350	DAE4 Sn1311	7.04	69.50	70.4	1.29
SAR01	2022/1/29	4100	100	D3900V2-1017-4100	EX3DV4 - SN7350	DAE4 Sn1311	6.95	66.30	69.5	4.83
SAR06	2022/1/28	5250	50	D5GHZV2-1006-5250	EX3DV4 - SN7439	DAE4 Sn778	4.02	81.70	80.4	-1.59
SAR06	2022/1/28	5600	50	D5GHZV2-1006-5600	EX3DV4 - SN7439	DAE4 Sn778	4.54	85.10	90.8	6.70
SAR06	2022/1/28	5750	50	D5GHZV2-1006-5750	EX3DV4 - SN7439	DAE4 Sn778	3.89	81.40	77.8	-4.42
SAR06	2022/1/27	6500	100	D6.5GHZV2-1003	EX3DV4 - SN7439	DAE4 Sn778	27.40	292.00	274	-6.16

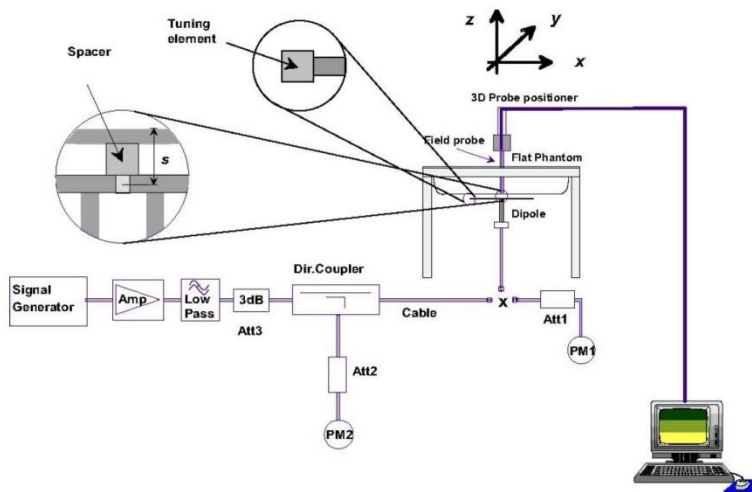


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

11.3 PD System Performance Check Results

The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user’s manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG’s mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check. The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

Test Location	Frequency (GHz)	5G Verification Source	Probe S/N	DAE S/N	Distance (mm)	Measured 4 cm ² (W/m ²)	Targeted 4 cm ² (W/m ²)	Deviation (dB)	Date
SAR06-HY	10G	10GHz_1020	9441	778	10	43.9	42.1	0.18	2022/1/14

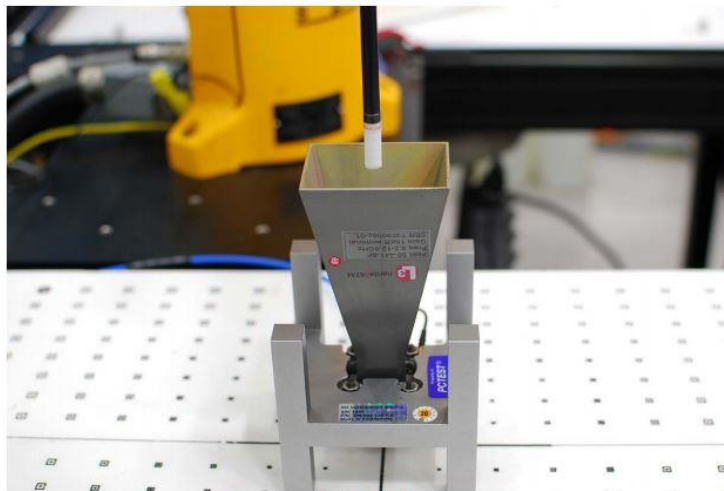


Figure 4-3
System Verification Setup Photo

System Performance Check Setup

12. RF Exposure Positions

12.1 SAR Testing for Tablet

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

13. GSM/UMTS/LTE Output Power (Unit: dBm)

<WCDMA Conducted Power>

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

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

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

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

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

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

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

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

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

Setup Configuration

HSUPA Setup Configuration:

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCl
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

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

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

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

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

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

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

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

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

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

C.8.1.12 Fixed Reference Channel Definition H-Set 12

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

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

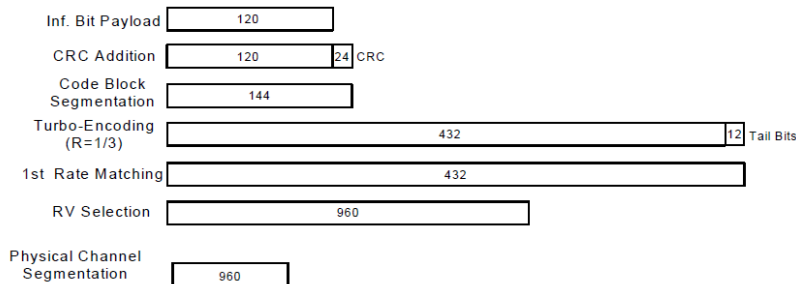


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

General Note:

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

Default Power Mode (Ant 0)

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	RMC 12.2Kbps	23.70	23.48	23.61	24.50	23.39	23.38	23.33	24.50	23.29	23.21	23.04	24.50
3GPP Rel 6	HSDPA Subtest-1	22.82	22.36	22.50	23.50	22.35	22.26	22.24	23.50	22.19	22.35	21.86	23.50
3GPP Rel 6	HSDPA Subtest-2	22.59	22.32	22.43	23.50	22.19	22.21	22.42	23.50	22.48	22.25	22.01	23.50
3GPP Rel 6	HSDPA Subtest-3	22.07	22.15	22.01	23.00	21.69	21.83	21.70	23.00	21.75	21.63	21.55	23.00
3GPP Rel 6	HSDPA Subtest-4	22.16	22.17	22.25	23.00	21.98	21.74	21.86	23.00	21.89	21.86	21.53	23.00
3GPP Rel 8	DC-HSDPA Subtest-1	22.77	22.43	22.48	23.50	22.54	22.42	22.13	23.50	22.29	22.37	22.04	23.50
3GPP Rel 8	DC-HSDPA Subtest-2	22.84	22.48	22.66	23.50	22.52	22.42	22.35	23.50	22.39	22.28	21.99	23.50
3GPP Rel 8	DC-HSDPA Subtest-3	22.31	21.94	22.22	23.00	21.86	21.72	21.73	23.00	21.75	21.90	21.48	23.00
3GPP Rel 8	DC-HSDPA Subtest-4	22.29	21.99	22.09	23.00	21.82	21.99	21.70	23.00	21.90	21.51	21.62	23.00
3GPP Rel 6	HSUPA Subtest-1	22.85	22.30	22.62	23.50	22.31	22.55	22.19	23.50	22.17	22.39	22.09	23.60
3GPP Rel 6	HSUPA Subtest-2	20.67	20.65	20.42	21.50	20.45	20.35	20.25	21.50	20.31	20.35	19.88	21.60
3GPP Rel 6	HSUPA Subtest-3	21.84	21.48	21.73	22.50	21.57	21.38	21.41	22.50	21.21	21.26	21.22	22.60
3GPP Rel 6	HSUPA Subtest-4	20.68	20.58	20.41	21.50	20.47	20.55	20.14	21.50	20.27	20.21	20.16	21.60
3GPP Rel 6	HSUPA Subtest-5	22.89	22.62	22.43	23.50	22.55	22.22	22.46	23.50	22.34	22.06	22.12	23.60

Reduced Power Mode (Ant 0)

Band		WCDMA II			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		1312	1413	1513		4132	4182	4233	
Rx Channel		9662	9800	9938		1537	1638	1738		4357	4407	4458	
Frequency (MHz)		1852.4	1880	1907.6	1712.4	1732.6	1752.6	826.4	836.4	846.6			
3GPP Rel 99	RMC 12.2Kbps	18.48	18.49	18.50	18.50	18.25	18.24	18.30	18.50	21.38	21.26	21.13	21.80
3GPP Rel 6	HSDPA Subtest-1	17.26	17.20	17.43	17.50	17.18	17.20	17.25	17.50	20.27	20.25	20.27	20.80
3GPP Rel 6	HSDPA Subtest-2	17.01	17.02	17.26	17.50	17.03	17.04	17.04	17.50	20.14	20.06	20.06	20.80
3GPP Rel 6	HSDPA Subtest-3	16.60	16.62	16.84	17.00	16.58	16.59	16.59	17.00	19.61	19.64	19.65	20.30
3GPP Rel 6	HSDPA Subtest-4	16.41	16.40	16.62	17.00	16.37	16.39	16.45	17.00	19.54	19.39	19.47	20.30
3GPP Rel 8	DC-HSDPA Subtest-1	17.05	17.15	17.32	17.50	17.09	17.11	17.13	17.50	20.19	20.18	20.16	20.80
3GPP Rel 8	DC-HSDPA Subtest-2	16.97	17.01	17.21	17.50	16.99	17.03	16.99	17.50	20.08	20.02	20.11	20.80
3GPP Rel 8	DC-HSDPA Subtest-3	16.61	16.60	16.79	17.00	16.53	16.52	16.57	17.00	19.67	19.58	19.53	20.30
3GPP Rel 8	DC-HSDPA Subtest-4	16.45	16.48	16.71	17.00	16.45	16.48	16.50	17.00	19.56	19.48	19.58	20.30
3GPP Rel 6	HSUPA Subtest-1	17.02	16.99	17.26	17.50	17.09	17.00	17.06	17.50	20.10	20.13	20.05	20.80
3GPP Rel 6	HSUPA Subtest-2	15.07	15.05	15.30	15.50	15.10	15.04	15.05	15.50	18.14	18.12	18.15	18.80
3GPP Rel 6	HSUPA Subtest-3	16.04	16.00	16.21	16.50	15.98	15.97	15.99	16.50	19.03	19.06	18.99	19.80
3GPP Rel 6	HSUPA Subtest-4	15.00	15.02	15.21	15.50	15.01	15.02	15.00	15.50	18.11	18.05	18.10	18.80
3GPP Rel 6	HSUPA Subtest-5	16.91	16.88	17.12	17.50	16.95	16.91	16.92	17.50	16.86	16.92	16.89	20.80

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

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band



Default Power Mode (Ant 0)

<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)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	23.22	23.05	23.03	24
20	QPSK	1	49	23.03	22.97	23.04	
20	QPSK	1	99	22.81	22.97	22.90	
20	QPSK	50	0	22.25	22.14	22.25	23
20	QPSK	50	24	22.24	22.10	22.17	
20	QPSK	50	50	22.16	22.16	22.22	
20	QPSK	100	0	22.17	22.10	22.17	23
20	16QAM	1	0	22.64	22.40	22.49	
20	16QAM	1	49	22.43	22.30	22.40	
20	16QAM	1	99	22.20	22.26	22.30	22
20	16QAM	50	0	21.26	21.17	21.25	
20	16QAM	50	24	21.28	21.22	21.18	
20	16QAM	50	50	21.25	21.11	21.20	22
20	16QAM	100	0	21.23	21.12	21.12	
20	64QAM	1	0	21.36	21.28	21.26	
20	64QAM	1	49	21.31	21.12	20.91	22
20	64QAM	1	99	21.14	21.12	21.14	
20	64QAM	50	0	20.29	20.15	20.16	
20	64QAM	50	24	20.29	20.15	20.15	21
20	64QAM	50	50	20.30	20.18	20.19	
20	64QAM	100	0	20.27	20.19	20.12	
20	256QAM	1	0	18.06	17.90	18.00	19
20	256QAM	1	49	18.09	17.96	17.98	
20	256QAM	1	99	18.00	17.92	18.03	
20	256QAM	50	0	17.98	17.85	17.93	19
20	256QAM	50	24	18.09	18.09	18.01	
20	256QAM	50	50	18.08	17.85	17.64	
20	256QAM	100	0	17.95	17.87	17.90	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	23.09	23.07	23.06	24
15	QPSK	1	37	23.00	23.05	23.10	
15	QPSK	1	74	23.10	23.03	23.06	
15	QPSK	36	0	22.25	22.04	22.17	23
15	QPSK	36	20	22.24	22.09	22.12	
15	QPSK	36	39	22.22	22.10	22.20	
15	QPSK	75	0	22.20	22.11	22.14	23
15	16QAM	1	0	22.36	22.18	22.33	
15	16QAM	1	37	22.33	22.24	22.22	
15	16QAM	1	74	22.23	22.24	22.24	22
15	16QAM	36	0	21.32	21.07	21.14	
15	16QAM	36	20	21.26	21.12	21.17	
15	16QAM	36	39	21.24	21.16	21.20	22
15	16QAM	75	0	21.28	21.13	21.16	
15	64QAM	1	0	21.47	21.24	21.34	
15	64QAM	1	37	21.39	21.34	21.24	22
15	64QAM	1	74	21.32	21.17	21.27	
15	64QAM	36	0	20.32	20.08	20.19	
15	64QAM	36	20	20.24	20.13	20.18	21
15	64QAM	36	39	20.25	20.13	20.26	



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15	64QAM	75	0	20.30	20.22	20.15	
15	256QAM	1	0	18.00	17.90	17.95	19
15	256QAM	1	37	18.08	17.97	17.93	
15	256QAM	1	74	17.93	17.93	18.05	
15	256QAM	36	0	17.91	17.87	17.93	19
15	256QAM	36	20	18.04	18.05	18.03	
15	256QAM	36	39	18.10	17.79	17.59	
15	256QAM	75	0	17.96	17.82	17.92	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	22.95	22.76	22.91	24
10	QPSK	1	25	22.90	22.74	22.95	
10	QPSK	1	49	22.87	22.81	22.98	
10	QPSK	25	0	22.09	21.85	21.95	23
10	QPSK	25	12	22.03	21.98	22.01	
10	QPSK	25	25	22.11	21.90	22.10	
10	QPSK	50	0	22.07	22.03	22.08	
10	16QAM	1	0	22.39	22.19	22.39	23
10	16QAM	1	25	22.26	22.13	22.17	
10	16QAM	1	49	22.30	22.15	22.28	
10	16QAM	25	0	21.11	20.82	20.94	22
10	16QAM	25	12	21.09	20.96	21.07	
10	16QAM	25	25	21.13	20.96	21.11	
10	16QAM	50	0	21.15	21.05	21.03	
10	64QAM	1	0	21.38	21.04	21.24	22
10	64QAM	1	25	21.37	21.13	21.17	
10	64QAM	1	49	21.28	21.21	21.25	
10	64QAM	25	0	20.21	19.91	20.02	21
10	64QAM	25	12	20.14	20.08	20.05	
10	64QAM	25	25	20.07	20.04	20.17	
10	64QAM	50	0	20.13	20.00	20.06	
10	256QAM	1	0	17.99	17.88	17.98	19
10	256QAM	1	25	18.10	17.90	17.88	
10	256QAM	1	49	17.95	17.93	18.08	
10	256QAM	25	0	17.88	17.87	17.91	19
10	256QAM	25	12	17.99	18.05	18.00	
10	256QAM	25	25	18.06	17.74	17.53	
10	256QAM	50	0	17.91	17.78	17.92	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	23.02	22.74	22.95	24
5	QPSK	1	12	22.87	22.84	22.95	
5	QPSK	1	24	22.99	22.93	22.96	
5	QPSK	12	0	22.15	21.83	22.09	23
5	QPSK	12	7	22.14	21.96	22.10	
5	QPSK	12	13	22.05	22.03	22.00	
5	QPSK	25	0	22.05	21.91	22.04	
5	16QAM	1	0	22.30	22.09	22.24	23
5	16QAM	1	12	22.26	22.22	22.23	
5	16QAM	1	24	22.28	22.18	22.27	
5	16QAM	12	0	21.17	20.89	21.11	22
5	16QAM	12	7	21.07	21.03	21.10	
5	16QAM	12	13	21.05	20.96	21.12	
5	16QAM	25	0	21.12	21.00	21.02	
5	64QAM	1	0	21.31	21.08	21.15	22
5	64QAM	1	12	21.27	21.19	21.16	



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5	64QAM	1	24	21.09	21.12	21.12	
5	64QAM	12	0	20.16	19.94	20.16	21
5	64QAM	12	7	20.22	20.01	20.18	
5	64QAM	12	13	20.16	20.00	20.13	
5	64QAM	25	0	20.16	20.04	20.06	
5	256QAM	1	0	18.00	17.87	18.01	19
5	256QAM	1	12	18.09	17.92	17.81	
5	256QAM	1	24	17.90	17.87	18.09	
5	256QAM	12	0	17.82	17.82	17.90	19
5	256QAM	12	7	17.93	17.98	17.99	
5	256QAM	12	13	17.99	17.75	17.47	
5	256QAM	25	0	17.86	17.79	17.94	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	23.09	22.78	22.89	24
3	QPSK	1	8	23.02	22.95	23.01	
3	QPSK	1	14	22.97	22.84	22.91	
3	QPSK	8	0	22.11	21.91	22.01	23
3	QPSK	8	4	22.13	21.93	22.05	
3	QPSK	8	7	22.08	21.97	22.06	
3	QPSK	15	0	22.09	21.93	22.09	
3	16QAM	1	0	22.31	22.04	22.29	23
3	16QAM	1	8	22.28	22.25	22.31	
3	16QAM	1	14	22.28	22.24	22.26	
3	16QAM	8	0	21.19	20.96	21.09	22
3	16QAM	8	4	21.12	21.06	21.07	
3	16QAM	8	7	21.09	21.02	21.10	
3	16QAM	15	0	21.14	20.98	21.12	
3	64QAM	1	0	21.30	20.98	21.16	22
3	64QAM	1	8	21.22	21.14	21.29	
3	64QAM	1	14	21.20	21.09	21.03	
3	64QAM	8	0	20.25	20.04	20.04	21
3	64QAM	8	4	20.23	20.02	20.19	
3	64QAM	8	7	20.16	20.03	20.10	
3	64QAM	15	0	20.17	20.01	20.12	
3	256QAM	1	0	17.93	17.88	17.97	19
3	256QAM	1	8	18.08	17.90	17.75	
3	256QAM	1	14	17.91	17.85	18.12	
3	256QAM	8	0	17.83	17.80	17.91	19
3	256QAM	8	4	17.93	17.94	17.94	
3	256QAM	8	7	17.96	17.75	17.47	
3	256QAM	15	0	17.87	17.80	17.90	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	22.99	22.77	22.86	24
1.4	QPSK	1	3	22.91	22.78	22.83	
1.4	QPSK	1	5	22.94	22.76	22.84	
1.4	QPSK	3	0	22.88	22.80	22.87	
1.4	QPSK	3	1	22.97	22.85	22.91	
1.4	QPSK	3	3	22.98	22.81	22.81	23
1.4	16QAM	1	0	22.34	21.99	22.12	23
1.4	16QAM	1	3	22.23	22.08	22.28	
1.4	16QAM	1	5	22.11	22.01	22.16	
1.4	16QAM	3	0	22.12	21.94	21.97	
1.4	16QAM	3	1	22.16	21.97	22.04	



1.4	16QAM	3	3	22.14	21.94	21.98	
1.4	16QAM	6	0	21.12	20.96	21.06	22
1.4	64QAM	1	0	21.33	21.08	21.02	22
1.4	64QAM	1	3	21.16	21.09	21.28	
1.4	64QAM	1	5	21.30	21.15	21.17	
1.4	64QAM	3	0	21.12	20.95	21.13	
1.4	64QAM	3	1	21.25	21.10	21.17	
1.4	64QAM	3	3	21.22	21.08	21.08	
1.4	64QAM	6	0	20.01	19.93	19.98	21
1.4	256QAM	1	0	17.89	17.91	17.93	19
1.4	256QAM	1	3	18.01	17.86	17.76	
1.4	256QAM	1	5	17.93	17.83	18.11	
1.4	256QAM	3	0	17.80	17.82	17.88	
1.4	256QAM	3	1	17.91	17.93	17.96	
1.4	256QAM	3	3	17.98	17.74	17.40	
1.4	256QAM	6	0	17.88	17.75	17.90	19

<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)
Channel				20050	20175	20300	24
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	23.11	23.12	22.98	24
20	QPSK	1	49	23.02	22.95	22.98	
20	QPSK	1	99	22.76	22.95	22.80	
20	QPSK	50	0	22.25	22.29	22.18	23
20	QPSK	50	24	22.24	22.04	22.17	
20	QPSK	50	50	22.13	22.06	22.22	
20	QPSK	100	0	22.11	22.03	22.11	23
20	16QAM	1	0	22.62	22.31	22.48	
20	16QAM	1	49	22.35	22.26	22.35	
20	16QAM	1	99	22.18	22.19	22.22	22
20	16QAM	50	0	21.17	21.13	21.17	
20	16QAM	50	24	21.18	21.17	21.18	
20	16QAM	50	50	21.15	21.06	21.10	22
20	16QAM	100	0	21.22	21.02	21.04	
20	64QAM	1	0	21.35	21.28	21.16	
20	64QAM	1	49	21.22	21.03	20.81	22
20	64QAM	1	99	21.11	21.09	21.05	
20	64QAM	50	0	20.19	20.06	20.10	
20	64QAM	50	24	20.28	20.13	20.13	21
20	64QAM	50	50	20.21	20.14	20.18	
20	64QAM	100	0	20.22	20.17	20.11	
20	256QAM	1	0	18.00	17.88	17.92	19
20	256QAM	1	49	17.93	17.97	17.98	
20	256QAM	1	99	17.91	17.88	17.87	
20	256QAM	50	0	18.01	17.75	17.83	19
20	256QAM	50	24	18.14	18.04	17.92	
20	256QAM	50	50	17.97	17.76	17.56	
20	256QAM	100	0	17.84	17.88	17.81	19
Channel				20025	20175	20325	
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	23.01	23.06	23.03	24
15	QPSK	1	37	22.96	23.05	23.03	



15	QPSK	1	74	23.10	22.98	23.05	
15	QPSK	36	0	22.18	22.04	22.13	23
15	QPSK	36	20	22.18	22.02	22.02	
15	QPSK	36	39	22.22	22.09	22.15	
15	QPSK	75	0	22.17	22.08	22.08	
15	16QAM	1	0	22.35	22.15	22.32	23
15	16QAM	1	37	22.31	22.17	22.12	
15	16QAM	1	74	22.17	22.16	22.18	
15	16QAM	36	0	21.24	21.01	21.10	22
15	16QAM	36	20	21.20	21.02	21.10	
15	16QAM	36	39	21.21	21.15	21.11	
15	16QAM	75	0	21.25	21.03	21.13	
15	64QAM	1	0	21.42	21.14	21.33	22
15	64QAM	1	37	21.38	21.34	21.21	
15	64QAM	1	74	21.23	21.12	21.25	
15	64QAM	36	0	20.26	20.00	20.09	21
15	64QAM	36	20	20.15	20.03	20.10	
15	64QAM	36	39	20.25	20.07	20.17	
15	64QAM	75	0	20.25	20.12	20.13	
15	256QAM	1	0	18.02	17.82	17.86	19
15	256QAM	1	37	17.96	17.94	17.97	
15	256QAM	1	74	17.84	17.88	17.82	
15	256QAM	36	0	17.94	17.71	17.79	19
15	256QAM	36	20	18.11	18.04	17.89	
15	256QAM	36	39	17.98	17.79	17.53	
15	256QAM	75	0	17.80	17.87	17.75	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	22.88	22.72	22.82	24
10	QPSK	1	25	22.88	22.66	22.94	
10	QPSK	1	49	22.77	22.81	22.96	
10	QPSK	25	0	22.05	21.84	21.87	23
10	QPSK	25	12	21.94	21.92	22.01	
10	QPSK	25	25	22.05	21.89	22.04	
10	QPSK	50	0	22.00	21.99	22.04	
10	16QAM	1	0	22.30	22.18	22.30	23
10	16QAM	1	25	22.22	22.10	22.14	
10	16QAM	1	49	22.25	22.10	22.24	
10	16QAM	25	0	21.05	20.77	20.93	22
10	16QAM	25	12	21.08	20.95	21.02	
10	16QAM	25	25	21.09	20.88	21.03	
10	16QAM	50	0	21.12	21.05	21.01	
10	64QAM	1	0	21.36	20.97	21.22	22
10	64QAM	1	25	21.36	21.12	21.13	
10	64QAM	1	49	21.26	21.17	21.18	
10	64QAM	25	0	20.21	19.87	19.92	21
10	64QAM	25	12	20.10	20.07	19.95	
10	64QAM	25	25	20.02	20.01	20.10	
10	64QAM	50	0	20.08	19.95	20.02	
10	256QAM	1	0	17.97	17.81	17.86	19
10	256QAM	1	25	17.93	17.90	17.94	
10	256QAM	1	49	17.84	17.89	17.80	
10	256QAM	25	0	17.92	17.64	17.78	19
10	256QAM	25	12	18.08	18.04	17.82	
10	256QAM	25	25	18.00	17.79	17.50	
10	256QAM	50	0	17.81	17.88	17.77	



Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	22.97	22.74	22.90	24
5	QPSK	1	12	22.82	22.82	22.93	
5	QPSK	1	24	22.98	22.87	22.94	
5	QPSK	12	0	22.08	21.74	22.00	23
5	QPSK	12	7	22.06	21.96	22.02	
5	QPSK	12	13	21.96	22.03	21.97	
5	QPSK	25	0	22.00	21.88	21.94	
5	16QAM	1	0	22.28	22.05	22.19	23
5	16QAM	1	12	22.20	22.13	22.21	
5	16QAM	1	24	22.23	22.17	22.22	
5	16QAM	12	0	21.16	20.88	21.03	22
5	16QAM	12	7	21.05	20.98	21.09	
5	16QAM	12	13	20.95	20.88	21.09	
5	16QAM	25	0	21.06	20.92	21.02	
5	64QAM	1	0	21.21	21.06	21.12	
5	64QAM	1	12	21.18	21.16	21.09	22
5	64QAM	1	24	21.02	21.11	21.11	
5	64QAM	12	0	20.11	19.85	20.12	
5	64QAM	12	7	20.16	19.95	20.08	21
5	64QAM	12	13	20.15	19.96	20.04	
5	64QAM	25	0	20.08	19.94	20.03	
5	256QAM	1	0	17.95	17.79	17.87	
5	256QAM	1	12	17.88	17.85	17.93	19
5	256QAM	1	24	17.79	17.91	17.81	
5	256QAM	12	0	17.94	17.60	17.75	
5	256QAM	12	7	18.01	18.01	17.83	19
5	256QAM	12	13	17.98	17.79	17.43	
5	256QAM	25	0	17.83	17.84	17.72	
5	256QAM	25	0	17.83	17.84	17.72	
Channel				19965	20175	20385	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	23.08	22.75	22.82	24
3	QPSK	1	8	22.97	22.94	22.92	
3	QPSK	1	14	22.88	22.78	22.82	
3	QPSK	8	0	22.06	21.86	22.00	23
3	QPSK	8	4	22.08	21.87	21.95	
3	QPSK	8	7	22.06	21.94	22.06	
3	QPSK	15	0	22.05	21.85	22.01	
3	16QAM	1	0	22.30	22.04	22.22	23
3	16QAM	1	8	22.22	22.20	22.29	
3	16QAM	1	14	22.28	22.15	22.22	
3	16QAM	8	0	21.10	20.94	21.09	22
3	16QAM	8	4	21.11	21.02	21.04	
3	16QAM	8	7	21.03	20.92	21.05	
3	16QAM	15	0	21.14	20.95	21.08	
3	64QAM	1	0	21.23	20.89	21.16	
3	64QAM	1	8	21.18	21.14	21.21	22
3	64QAM	1	14	21.10	21.05	20.93	
3	64QAM	8	0	20.25	19.98	19.99	
3	64QAM	8	4	20.14	19.96	20.19	21
3	64QAM	8	7	20.14	19.93	20.07	
3	64QAM	15	0	20.15	19.99	20.11	
3	256QAM	1	0	17.95	17.72	17.86	
3	256QAM	1	8	17.81	17.84	17.89	19
3	256QAM	1	14	17.78	17.85	17.77	



3	256QAM	8	0	17.89	17.63	17.70	19
3	256QAM	8	4	17.97	18.02	17.80	
3	256QAM	8	7	17.95	17.78	17.44	
3	256QAM	15	0	17.76	17.82	17.65	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	22.91	22.74	22.82	24
1.4	QPSK	1	3	22.90	22.75	22.77	
1.4	QPSK	1	5	22.93	22.70	22.75	
1.4	QPSK	3	0	22.80	22.73	22.79	
1.4	QPSK	3	1	22.96	22.77	22.84	
1.4	QPSK	3	3	22.97	22.73	22.71	
1.4	QPSK	6	0	21.94	21.86	21.98	23
1.4	16QAM	1	0	22.24	21.97	22.05	23
1.4	16QAM	1	3	22.21	21.99	22.21	
1.4	16QAM	1	5	22.10	21.93	22.12	
1.4	16QAM	3	0	22.03	21.84	21.94	
1.4	16QAM	3	1	22.16	21.97	22.03	
1.4	16QAM	3	3	22.05	21.86	21.92	
1.4	16QAM	6	0	21.12	20.94	21.05	22
1.4	64QAM	1	0	21.26	21.01	21.00	22
1.4	64QAM	1	3	21.08	21.05	21.25	
1.4	64QAM	1	5	21.20	21.14	21.15	
1.4	64QAM	3	0	21.12	20.88	21.12	
1.4	64QAM	3	1	21.19	21.07	21.13	
1.4	64QAM	3	3	21.15	21.06	21.03	
1.4	64QAM	6	0	19.97	19.88	19.88	21
1.4	256QAM	1	0	17.92	17.71	17.86	19
1.4	256QAM	1	3	17.77	17.82	17.84	
1.4	256QAM	1	5	17.73	17.85	17.75	
1.4	256QAM	3	0	17.86	17.56	17.68	
1.4	256QAM	3	1	18.00	18.05	17.78	
1.4	256QAM	3	3	17.88	17.77	17.43	
1.4	256QAM	6	0	17.74	17.75	17.59	19

<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)
Channel				20450	20525	20600	Tune-up limit (dBm)
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	23.04	23.05	22.96	
10	QPSK	1	25	22.74	22.72	22.62	24.5
10	QPSK	1	49	22.68	22.53	22.54	
10	QPSK	25	0	21.86	21.88	21.75	
10	QPSK	25	12	21.79	21.79	21.70	23.5
10	QPSK	25	25	21.83	21.76	21.72	
10	QPSK	50	0	21.93	21.87	21.75	
10	16QAM	1	0	22.10	22.01	22.01	23.5
10	16QAM	1	25	22.13	22.05	21.99	
10	16QAM	1	49	22.20	22.11	21.87	
10	16QAM	25	0	20.92	20.81	20.79	22.5
10	16QAM	25	12	20.95	20.87	20.78	
10	16QAM	25	25	20.86	20.86	20.78	
10	16QAM	50	0	20.81	20.85	20.67	



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10	64QAM	1	0	20.86	20.79	20.91	22.5
10	64QAM	1	25	20.95	20.82	20.84	
10	64QAM	1	49	20.89	20.87	20.83	
10	64QAM	25	0	19.93	19.91	19.75	21.5
10	64QAM	25	12	19.85	19.89	19.79	
10	64QAM	25	25	19.84	19.85	19.80	
10	64QAM	50	0	19.86	19.88	19.75	19.5
10	256QAM	1	0	18.09	17.96	17.92	
10	256QAM	1	25	18.13	18.05	17.97	
10	256QAM	1	49	18.04	18.01	17.95	19.5
10	256QAM	25	0	17.94	18.07	17.86	
10	256QAM	25	12	18.00	17.99	18.14	
10	256QAM	25	25	18.17	18.03	17.97	Tune-up limit (dBm)
10	256QAM	50	0	18.04	18.10	17.97	
Channel				20425	20525	20625	
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	22.97	23.03	22.99	24.5
5	QPSK	1	12	22.77	22.78	22.62	
5	QPSK	1	24	22.77	22.47	22.53	
5	QPSK	12	0	21.86	21.81	21.73	23.5
5	QPSK	12	7	21.77	21.89	21.62	
5	QPSK	12	13	21.90	21.83	21.62	
5	QPSK	25	0	22.00	21.79	21.79	23.5
5	16QAM	1	0	22.09	22.01	21.91	
5	16QAM	1	12	22.21	22.15	21.94	
5	16QAM	1	24	22.22	22.14	21.79	22.5
5	16QAM	12	0	20.94	20.78	20.86	
5	16QAM	12	7	20.86	20.82	20.84	
5	16QAM	12	13	20.83	20.87	20.85	22.5
5	16QAM	25	0	20.86	20.94	20.75	
5	64QAM	1	0	20.88	20.74	20.81	
5	64QAM	1	12	20.97	20.79	20.91	22.5
5	64QAM	1	24	20.80	20.85	20.75	
5	64QAM	12	0	20.01	19.89	19.79	
5	64QAM	12	7	19.92	19.86	19.76	21.5
5	64QAM	12	13	19.79	19.82	19.80	
5	64QAM	25	0	19.80	19.90	19.67	
5	256QAM	1	0	18.10	17.94	17.89	19.5
5	256QAM	1	12	18.14	18.08	17.97	
5	256QAM	1	24	17.99	18.00	17.90	
5	256QAM	12	0	17.95	18.09	17.85	19.5
5	256QAM	12	7	18.02	17.94	18.11	
5	256QAM	12	13	18.12	18.05	17.97	
5	256QAM	25	0	18.05	18.08	18.00	Tune-up limit (dBm)
Channel				20415	20525	20635	
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	22.90	22.92	22.90	24.5
3	QPSK	1	8	22.74	22.76	22.62	
3	QPSK	1	14	22.74	22.60	22.56	
3	QPSK	8	0	21.87	21.83	21.73	23.5
3	QPSK	8	4	21.76	21.75	21.64	
3	QPSK	8	7	21.89	21.68	21.64	
3	QPSK	15	0	21.83	21.97	21.82	23.5
3	16QAM	1	0	22.18	21.91	22.10	
3	16QAM	1	8	22.11	22.11	22.07	
3	16QAM	1	14	22.15	22.16	21.96	



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3	16QAM	8	0	20.98	20.72	20.88	22.5
3	16QAM	8	4	20.87	20.78	20.79	
3	16QAM	8	7	20.90	20.78	20.86	
3	16QAM	15	0	20.84	20.91	20.59	
3	64QAM	1	0	20.89	20.74	20.97	22.5
3	64QAM	1	8	20.88	20.76	20.84	
3	64QAM	1	14	20.83	20.86	20.79	
3	64QAM	8	0	19.94	19.92	19.68	21.5
3	64QAM	8	4	19.82	19.83	19.87	
3	64QAM	8	7	19.84	19.76	19.78	
3	64QAM	15	0	19.82	19.83	19.85	
3	256QAM	1	0	18.13	17.93	17.86	19.5
3	256QAM	1	8	18.16	18.08	17.97	
3	256QAM	1	14	17.93	17.96	17.87	
3	256QAM	8	0	17.90	18.12	17.82	19.5
3	256QAM	8	4	18.04	17.91	18.06	
3	256QAM	8	7	18.13	18.07	17.90	
3	256QAM	15	0	18.03	18.02	18.02	
Channel				20407	20525	20643	
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	22.67	22.66	22.53	24.5
1.4	QPSK	1	3	22.77	22.77	22.61	
1.4	QPSK	1	5	22.64	22.69	22.53	
1.4	QPSK	3	0	22.72	22.65	22.57	
1.4	QPSK	3	1	22.76	22.74	22.62	
1.4	QPSK	3	3	22.70	22.72	22.55	
1.4	QPSK	6	0	21.82	21.75	21.66	23.5
1.4	16QAM	1	0	22.05	22.03	21.91	23.5
1.4	16QAM	1	3	22.09	22.14	21.87	
1.4	16QAM	1	5	22.05	22.16	21.76	
1.4	16QAM	3	0	21.89	21.83	21.72	
1.4	16QAM	3	1	21.92	21.84	21.76	
1.4	16QAM	3	3	21.83	21.81	21.68	
1.4	16QAM	6	0	20.89	20.85	20.71	22.5
1.4	64QAM	1	0	21.04	21.00	20.88	22.5
1.4	64QAM	1	3	21.09	21.11	20.91	
1.4	64QAM	1	5	20.98	20.97	20.80	
1.4	64QAM	3	0	20.98	20.98	20.84	
1.4	64QAM	3	1	21.07	21.00	20.88	
1.4	64QAM	3	3	20.93	20.92	20.78	
1.4	64QAM	6	0	19.85	19.77	19.64	21.5
1.4	256QAM	1	0	18.08	17.94	17.84	19.5
1.4	256QAM	1	3	18.16	18.02	17.94	
1.4	256QAM	1	5	17.93	17.95	17.82	
1.4	256QAM	3	0	17.85	18.05	17.84	
1.4	256QAM	3	1	18.03	17.84	18.00	
1.4	256QAM	3	3	18.09	18.05	17.83	
1.4	256QAM	6	0	18.05	18.02	18.03	19.5



<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)
Channel				20850	21100	21350	24
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	23.10	23.11	23.16	
20	QPSK	1	49	23.04	22.89	22.96	23
20	QPSK	1	99	22.75	22.85	22.85	
20	QPSK	50	0	22.24	22.08	22.28	
20	QPSK	50	24	22.26	22.10	22.27	23
20	QPSK	50	50	22.08	21.97	22.18	
20	QPSK	100	0	22.01	21.93	22.02	
20	16QAM	1	0	22.56	22.39	22.42	23
20	16QAM	1	49	22.45	22.28	22.32	
20	16QAM	1	99	22.12	22.27	22.23	
20	16QAM	50	0	21.18	21.11	21.14	22
20	16QAM	50	24	21.20	21.09	21.14	
20	16QAM	50	50	21.05	20.99	21.06	
20	16QAM	100	0	21.32	21.08	21.01	22
20	64QAM	1	0	21.30	21.30	21.12	
20	64QAM	1	49	21.27	21.09	20.74	
20	64QAM	1	99	21.15	21.19	21.13	21
20	64QAM	50	0	20.12	20.16	20.08	
20	64QAM	50	24	20.25	20.20	20.18	
20	64QAM	50	50	20.15	20.23	20.16	19
20	64QAM	100	0	20.27	20.19	20.05	
20	256QAM	1	0	18.35	18.26	18.36	
20	256QAM	1	49	18.41	18.26	18.29	19
20	256QAM	1	99	18.25	18.12	18.25	
20	256QAM	50	0	18.47	18.26	18.17	
20	256QAM	50	24	18.53	18.44	18.28	19
20	256QAM	50	50	18.40	18.27	17.87	
20	256QAM	100	0	18.37	18.38	18.28	
Channel				20825	21100	21375	24
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	23.05	22.97	23.01	
15	QPSK	1	37	23.05	23.10	23.04	23
15	QPSK	1	74	23.16	22.91	22.98	
15	QPSK	36	0	22.10	22.04	22.09	
15	QPSK	36	20	22.19	22.00	21.98	23
15	QPSK	36	39	22.22	22.09	22.11	
15	QPSK	75	0	22.13	22.13	22.00	
15	16QAM	1	0	22.30	22.24	22.22	23
15	16QAM	1	37	22.31	22.20	22.21	
15	16QAM	1	74	22.07	22.12	22.16	
15	16QAM	36	0	21.26	21.03	21.13	22
15	16QAM	36	20	21.22	21.07	21.11	
15	16QAM	36	39	21.16	21.13	21.20	
15	16QAM	75	0	21.24	21.06	21.12	22
15	64QAM	1	0	21.44	21.24	21.23	
15	64QAM	1	37	21.31	21.31	21.25	
15	64QAM	1	74	21.27	21.11	21.23	21
15	64QAM	36	0	20.25	20.01	20.13	
15	64QAM	36	20	20.14	20.05	20.13	
15	64QAM	36	39	20.19	20.11	20.09	21
15	64QAM	75	0	20.20	20.08	20.22	



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15	256QAM	1	0	18.28	18.24	18.33	19
15	256QAM	1	37	18.41	18.21	18.31	
15	256QAM	1	74	18.26	18.15	18.27	
15	256QAM	36	0	18.40	18.29	18.15	19
15	256QAM	36	20	18.47	18.41	18.23	
15	256QAM	36	39	18.42	18.25	17.90	
15	256QAM	75	0	18.36	18.36	18.27	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	22.93	22.81	22.86	24
10	QPSK	1	25	22.94	22.73	22.95	
10	QPSK	1	49	22.67	22.77	22.88	
10	QPSK	25	0	22.06	21.91	21.85	23
10	QPSK	25	12	21.90	21.86	22.08	
10	QPSK	25	25	22.08	21.79	22.14	
10	QPSK	50	0	22.02	22.06	22.05	
10	16QAM	1	0	22.35	22.10	22.29	23
10	16QAM	1	25	22.22	22.11	22.22	
10	16QAM	1	49	22.33	22.06	22.21	
10	16QAM	25	0	21.02	20.85	20.94	22
10	16QAM	25	12	21.09	21.04	21.01	
10	16QAM	25	25	21.10	20.90	21.07	
10	16QAM	50	0	21.17	21.14	20.95	
10	64QAM	1	0	21.30	21.01	21.32	22
10	64QAM	1	25	21.31	21.17	21.12	
10	64QAM	1	49	21.18	21.11	21.22	
10	64QAM	25	0	20.16	19.86	19.85	21
10	64QAM	25	12	20.11	20.17	19.91	
10	64QAM	25	25	20.08	19.94	20.16	
10	64QAM	50	0	20.06	20.03	19.92	
10	256QAM	1	0	18.28	18.27	18.31	19
10	256QAM	1	25	18.37	18.17	18.31	
10	256QAM	1	49	18.22	18.08	18.28	
10	256QAM	25	0	18.33	18.30	18.17	19
10	256QAM	25	12	18.44	18.35	18.21	
10	256QAM	25	25	18.38	18.20	17.84	
10	256QAM	50	0	18.33	18.38	18.30	
Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	23.01	22.84	22.97	24
5	QPSK	1	12	22.92	22.91	22.99	
5	QPSK	1	24	22.98	22.87	23.03	
5	QPSK	12	0	22.00	21.75	22.10	23
5	QPSK	12	7	22.01	22.05	22.02	
5	QPSK	12	13	21.90	21.99	21.99	
5	QPSK	25	0	22.02	21.82	21.88	
5	16QAM	1	0	22.23	22.02	22.14	23
5	16QAM	1	12	22.20	22.08	22.16	
5	16QAM	1	24	22.24	22.23	22.17	
5	16QAM	12	0	21.11	20.81	21.12	22
5	16QAM	12	7	21.03	20.97	21.12	
5	16QAM	12	13	21.01	20.81	21.16	
5	16QAM	25	0	21.05	20.92	21.08	
5	64QAM	1	0	21.12	21.08	21.12	22
5	64QAM	1	12	21.21	21.12	21.12	
5	64QAM	1	24	20.96	21.12	21.10	



5	64QAM	12	0	20.04	19.85	20.03	21
5	64QAM	12	7	20.11	20.04	20.04	
5	64QAM	12	13	20.05	19.92	20.00	
5	64QAM	25	0	20.17	19.89	19.95	
5	256QAM	1	0	18.24	18.27	18.24	19
5	256QAM	1	12	18.35	18.18	18.32	
5	256QAM	1	24	18.15	18.11	18.28	
5	256QAM	12	0	18.33	18.31	18.10	19
5	256QAM	12	7	18.38	18.38	18.21	
5	256QAM	12	13	18.41	18.22	17.85	
5	256QAM	25	0	18.27	18.32	18.25	

<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)
Channel				23060	23095	23130	Tune-up limit (dBm)
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	23.04	22.85	22.95	24.5
10	QPSK	1	25	22.80	22.75	22.62	
10	QPSK	1	49	22.58	22.60	22.56	
10	QPSK	25	0	21.96	21.78	21.84	23.5
10	QPSK	25	12	21.69	21.82	21.69	
10	QPSK	25	25	21.90	21.76	21.78	
10	QPSK	50	0	21.91	21.83	21.72	23.5
10	16QAM	1	0	22.19	22.06	22.00	
10	16QAM	1	25	22.10	22.01	22.08	
10	16QAM	1	49	22.15	22.03	21.83	22.5
10	16QAM	25	0	20.92	20.75	20.89	
10	16QAM	25	12	20.98	20.77	20.80	
10	16QAM	25	25	20.76	20.83	20.75	22.5
10	16QAM	50	0	20.86	20.79	20.68	
10	64QAM	1	0	20.95	20.76	20.93	
10	64QAM	1	25	20.86	20.73	20.85	
10	64QAM	1	49	20.92	20.83	20.89	
10	64QAM	25	0	19.90	19.81	19.83	21.5
10	64QAM	25	12	19.93	19.95	19.75	
10	64QAM	25	25	19.86	19.91	19.88	
10	64QAM	50	0	19.93	19.80	19.84	19.5
10	256QAM	1	0	18.06	17.91	18.07	
10	256QAM	1	25	18.14	17.94	18.02	
10	256QAM	1	49	17.89	18.04	17.97	19.5
10	256QAM	25	0	18.08	17.95	17.84	
10	256QAM	25	12	18.10	17.91	18.10	
10	256QAM	25	25	18.09	17.90	17.98	19.5
10	256QAM	50	0	18.15	18.03	18.10	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	22.92	23.00	23.03	24.5
5	QPSK	1	12	22.82	22.74	22.66	
5	QPSK	1	24	22.77	22.37	22.48	
5	QPSK	12	0	21.77	21.74	21.82	23.5
5	QPSK	12	7	21.79	21.81	21.61	
5	QPSK	12	13	21.92	21.89	21.58	
5	QPSK	25	0	21.97	21.89	21.75	



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5	16QAM	1	0	22.09	21.94	21.94	23.5
5	16QAM	1	12	22.11	22.19	21.86	
5	16QAM	1	24	22.30	22.07	21.73	
5	16QAM	12	0	21.02	20.84	20.83	22.5
5	16QAM	12	7	20.88	20.79	20.94	
5	16QAM	12	13	20.89	20.85	20.75	
5	16QAM	25	0	20.82	20.85	20.67	22.5
5	64QAM	1	0	20.94	20.72	20.79	
5	64QAM	1	12	21.06	20.73	20.92	
5	64QAM	1	24	20.80	20.76	20.73	21.5
5	64QAM	12	0	19.98	19.97	19.85	
5	64QAM	12	7	19.95	19.79	19.82	
5	64QAM	12	13	19.75	19.88	19.73	19.5
5	64QAM	25	0	19.70	19.99	19.63	
5	256QAM	1	0	18.07	17.94	18.10	
5	256QAM	1	12	18.13	17.88	18.01	19.5
5	256QAM	1	24	17.90	18.07	17.94	
5	256QAM	12	0	18.02	17.88	17.85	
5	256QAM	12	7	18.06	17.90	18.11	19.5
5	256QAM	12	13	18.07	17.85	17.98	
5	256QAM	25	0	18.14	18.04	18.12	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	23.00	22.83	22.96	24.5
3	QPSK	1	8	22.71	22.77	22.63	
3	QPSK	1	14	22.77	22.53	22.47	
3	QPSK	8	0	21.97	21.81	21.76	23.5
3	QPSK	8	4	21.70	21.67	21.68	
3	QPSK	8	7	21.82	21.77	21.61	
3	QPSK	15	0	21.81	21.95	21.88	23.5
3	16QAM	1	0	22.24	21.87	22.00	
3	16QAM	1	8	22.11	22.12	22.17	
3	16QAM	1	14	22.09	22.13	21.95	22.5
3	16QAM	8	0	21.01	20.69	20.85	
3	16QAM	8	4	20.94	20.73	20.77	
3	16QAM	8	7	20.99	20.72	20.85	22.5
3	16QAM	15	0	20.76	20.85	20.69	
3	64QAM	1	0	20.88	20.71	21.07	
3	64QAM	1	8	20.92	20.84	20.88	22.5
3	64QAM	1	14	20.77	20.78	20.77	
3	64QAM	8	0	19.97	19.93	19.77	
3	64QAM	8	4	19.78	19.88	19.81	21.5
3	64QAM	8	7	19.93	19.84	19.77	
3	64QAM	15	0	19.87	19.85	19.87	
3	256QAM	1	0	18.09	17.96	18.06	19.5
3	256QAM	1	8	18.13	17.84	17.96	
3	256QAM	1	14	17.86	18.05	17.87	
3	256QAM	8	0	17.97	17.85	17.80	19.5
3	256QAM	8	4	18.06	17.90	18.08	
3	256QAM	8	7	18.04	17.78	18.00	
3	256QAM	15	0	18.16	17.99	18.09	Tune-up limit (dBm)
Channel				23017	23095	23173	
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	22.69	22.68	22.62	24.5
1.4	QPSK	1	3	22.76	22.87	22.62	
1.4	QPSK	1	5	22.70	22.60	22.44	



1.4	QPSK	3	0	22.63	22.56	22.49	
1.4	QPSK	3	1	22.68	22.64	22.68	
1.4	QPSK	3	3	22.71	22.65	22.47	
1.4	QPSK	6	0	21.82	21.80	21.59	23.5
1.4	16QAM	1	0	22.12	21.99	21.95	23.5
1.4	16QAM	1	3	22.00	22.21	21.79	
1.4	16QAM	1	5	22.08	22.18	21.71	
1.4	16QAM	3	0	21.97	21.86	21.76	
1.4	16QAM	3	1	21.97	21.79	21.77	
1.4	16QAM	3	3	21.73	21.87	21.59	
1.4	16QAM	6	0	20.81	20.79	20.72	22.5
1.4	64QAM	1	0	21.07	21.08	20.83	22.5
1.4	64QAM	1	3	21.12	21.17	20.92	
1.4	64QAM	1	5	21.01	20.97	20.76	
1.4	64QAM	3	0	20.99	20.92	20.89	
1.4	64QAM	3	1	21.11	21.08	20.79	
1.4	64QAM	3	3	20.88	20.87	20.75	
1.4	64QAM	6	0	19.94	19.76	19.72	21.5
1.4	256QAM	1	0	18.02	17.94	18.03	19.5
1.4	256QAM	1	3	18.13	17.83	17.89	
1.4	256QAM	1	5	17.82	18.08	17.81	
1.4	256QAM	3	0	17.91	17.85	17.73	
1.4	256QAM	3	1	18.09	17.84	18.03	
1.4	256QAM	3	3	18.04	17.73	17.95	
1.4	256QAM	6	0	18.14	17.98	18.04	19.5

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23230			
Frequency (MHz)				782			
10	QPSK	1	0		22.79		24.5
10	QPSK	1	25		22.79		
10	QPSK	1	49		22.50		
10	QPSK	25	0		21.86		23.5
10	QPSK	25	12		21.76		
10	QPSK	25	25		21.77		
10	QPSK	50	0		21.75		23.5
10	16QAM	1	0		22.03		
10	16QAM	1	25		21.92		
10	16QAM	1	49		22.02		22.5
10	16QAM	25	0		20.71		
10	16QAM	25	12		20.71		
10	16QAM	25	25		20.91		22.5
10	16QAM	50	0		20.82		
10	64QAM	1	0		20.69		
10	64QAM	1	25		20.70		22.5
10	64QAM	1	49		20.92		
10	64QAM	25	0		19.89		
10	64QAM	25	12		19.92		21.5
10	64QAM	25	25		20.00		
10	64QAM	50	0		19.84		
10	256QAM	1	0		17.85		19.5
10	256QAM	1	25		17.90		



10	256QAM	1	49		18.14		
10	256QAM	25	0		17.97		19.5
10	256QAM	25	12		17.90		
10	256QAM	25	25		17.92		
10	256QAM	50	0		18.12		
Channel				23205	23230	23255	
Frequency (MHz)				779.5	782	784.5	
5	QPSK	1	0	22.70	22.77	22.71	24.5
5	QPSK	1	12	22.75	22.74	22.75	
5	QPSK	1	24	22.23	22.28	22.26	
5	QPSK	12	0	21.77	21.77	21.70	23.5
5	QPSK	12	7	21.90	21.91	21.86	
5	QPSK	12	13	21.81	21.86	21.88	
5	QPSK	25	0	21.86	21.91	21.91	
5	16QAM	1	0	21.94	21.96	21.90	23.5
5	16QAM	1	12	22.26	22.26	22.21	
5	16QAM	1	24	22.17	22.14	22.11	
5	16QAM	12	0	20.76	20.80	20.79	22.5
5	16QAM	12	7	20.84	20.87	20.83	
5	16QAM	12	13	20.93	20.92	20.91	
5	16QAM	25	0	20.70	20.77	20.74	
5	64QAM	1	0	20.67	20.67	20.70	22.5
5	64QAM	1	12	20.80	20.79	20.82	
5	64QAM	1	24	20.62	20.67	20.68	
5	64QAM	12	0	20.01	19.99	19.99	21.5
5	64QAM	12	7	19.91	19.89	19.87	
5	64QAM	12	13	19.84	19.82	19.84	
5	64QAM	25	0	19.90	19.94	19.94	
5	256QAM	1	0	17.76	17.81	17.84	19.5
5	256QAM	1	12	17.87	17.86	17.88	
5	256QAM	1	24	18.10	18.15	18.14	
5	256QAM	12	0	17.88	17.93	17.93	19.5
5	256QAM	12	7	17.81	17.84	17.86	
5	256QAM	12	13	17.90	17.95	17.93	
5	256QAM	25	0	18.12	18.09	18.08	

<LTE Band 14>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23330			Tune-up limit (dBm)
Frequency (MHz)				793			
10	QPSK	1	0		22.81		24.5
10	QPSK	1	25		22.69		
10	QPSK	1	49		22.41		
10	QPSK	25	0		21.93		23.5
10	QPSK	25	12		21.83		
10	QPSK	25	25		21.80		
10	QPSK	50	0		21.68		23.5
10	16QAM	1	0		22.11		
10	16QAM	1	25		22.01		
10	16QAM	1	49		22.03		22.5
10	16QAM	25	0		20.76		
10	16QAM	25	12		20.77		
10	16QAM	25	25		20.82		



10	16QAM	50	0		20.92		
10	64QAM	1	0		20.64		22.5
10	64QAM	1	25		20.75		
10	64QAM	1	49		20.86		
10	64QAM	25	0		19.88		21.5
10	64QAM	25	12		19.87		
10	64QAM	25	25		20.06		
10	64QAM	50	0		19.94		
10	256QAM	1	0		17.85		19.5
10	256QAM	1	25		17.86		
10	256QAM	1	49		18.07		
10	256QAM	25	0		18.00		19.5
10	256QAM	25	12		17.89		
10	256QAM	25	25		17.90		
10	256QAM	50	0		18.14		
Channel				23305	23330	23355	Tune-up limit (dBm)
Frequency (MHz)				790.5	793	795.5	
5	QPSK	1	0	22.82	22.80	22.79	24.5
5	QPSK	1	12	22.73	22.70	22.72	
5	QPSK	1	24	22.59	22.54	22.56	
5	QPSK	12	0	21.67	21.71	21.68	23.5
5	QPSK	12	7	21.82	21.84	21.78	
5	QPSK	12	13	21.86	21.92	21.91	
5	QPSK	25	0	21.91	21.90	21.90	
5	16QAM	1	0	21.90	21.90	21.84	23.5
5	16QAM	1	12	22.17	22.22	22.19	
5	16QAM	1	24	22.24	22.23	22.25	
5	16QAM	12	0	20.81	20.84	20.78	22.5
5	16QAM	12	7	20.77	20.84	20.80	
5	16QAM	12	13	20.94	20.99	20.96	
5	16QAM	25	0	20.80	20.77	20.73	
5	64QAM	1	0	20.58	20.59	20.54	
5	64QAM	1	12	20.80	20.80	20.80	22.5
5	64QAM	1	24	20.64	20.66	20.66	
5	64QAM	12	0	19.94	19.92	19.92	
5	64QAM	12	7	19.77	19.84	19.82	21.5
5	64QAM	12	13	19.81	19.83	19.81	
5	64QAM	25	0	19.98	19.99	19.93	
5	256QAM	1	0	17.83	17.86	17.85	
5	256QAM	1	12	17.79	17.80	17.80	19.5
5	256QAM	1	24	18.04	18.03	17.97	
5	256QAM	12	0	18.01	17.98	17.93	
5	256QAM	12	7	17.95	17.92	17.91	19.5
5	256QAM	12	13	17.84	17.83	17.81	
5	256QAM	25	0	18.08	18.08	18.06	

<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)
Channel				23780	23790	23800	
Frequency (MHz)				709	710	711	
10	QPSK	1	0	22.85	22.88	22.86	24.5
10	QPSK	1	25	22.84	22.85	22.69	
10	QPSK	1	49	22.61	22.63	22.58	



10	QPSK	25	0	22.06	21.84	21.91	23.5
10	QPSK	25	12	21.73	21.86	21.75	
10	QPSK	25	25	21.87	21.71	21.87	
10	QPSK	50	0	21.86	21.93	21.64	
10	16QAM	1	0	22.20	22.12	21.95	23.5
10	16QAM	1	25	22.01	21.95	21.99	
10	16QAM	1	49	22.10	21.96	21.83	
10	16QAM	25	0	20.90	20.65	20.91	22.5
10	16QAM	25	12	20.90	20.76	20.84	
10	16QAM	25	25	20.73	20.77	20.67	
10	16QAM	50	0	20.83	20.84	20.69	
10	64QAM	1	0	21.05	20.74	20.84	22.5
10	64QAM	1	25	20.84	20.78	20.93	
10	64QAM	1	49	21.01	20.85	20.93	
10	64QAM	25	0	19.81	19.71	19.76	21.5
10	64QAM	25	12	19.99	20.03	19.67	
10	64QAM	25	25	19.87	19.97	19.86	
10	64QAM	50	0	20.01	19.90	19.82	
10	256QAM	1	0	18.03	17.87	18.14	19.5
10	256QAM	1	25	18.08	17.96	17.99	
10	256QAM	1	49	17.90	17.93	17.81	
10	256QAM	25	0	17.98	17.97	17.89	19.5
10	256QAM	25	12	18.18	17.93	18.01	
10	256QAM	25	25	18.05	17.93	18.14	
10	256QAM	50	0	18.20	18.03	18.16	
Channel				23755	23790	23825	Tune-up limit (dBm)
Frequency (MHz)				706.5	710	713.5	
5	QPSK	1	0	22.81	22.74	22.84	24.5
5	QPSK	1	12	22.83	22.81	22.56	
5	QPSK	1	24	22.77	22.47	22.48	
5	QPSK	12	0	21.79	21.66	21.85	23.5
5	QPSK	12	7	21.88	21.75	21.55	
5	QPSK	12	13	21.91	21.99	21.54	
5	QPSK	25	0	22.04	21.87	21.78	
5	16QAM	1	0	22.05	21.96	21.99	23.5
5	16QAM	1	12	22.03	22.13	21.91	
5	16QAM	1	24	22.39	22.17	21.82	
5	16QAM	12	0	21.00	20.74	20.85	22.5
5	16QAM	12	7	20.95	20.79	20.90	
5	16QAM	12	13	20.81	20.95	20.85	
5	16QAM	25	0	20.77	20.92	20.60	
5	64QAM	1	0	20.92	20.68	20.86	22.5
5	64QAM	1	12	20.99	20.73	21.01	
5	64QAM	1	24	20.74	20.86	20.73	
5	64QAM	12	0	19.94	19.96	19.90	21.5
5	64QAM	12	7	19.99	19.85	19.85	
5	64QAM	12	13	19.85	19.93	19.69	
5	64QAM	25	0	19.80	19.98	19.68	
5	256QAM	1	0	18.05	17.88	18.15	19.5
5	256QAM	1	12	18.04	17.91	17.94	
5	256QAM	1	24	17.93	17.88	17.79	
5	256QAM	12	0	17.97	17.90	17.87	19.5
5	256QAM	12	7	18.20	17.95	18.01	
5	256QAM	12	13	17.99	17.88	18.09	
5	256QAM	25	0	18.15	18.00	18.13	



<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)
Channel				26140	26340	26590	
Frequency (MHz)				1860	1880	1905	
20	QPSK	1	0	23.21	23.07	22.99	24
20	QPSK	1	49	23.19	23.00	22.82	
20	QPSK	1	99	23.11	22.93	22.87	
20	QPSK	50	0	22.33	22.15	21.80	23
20	QPSK	50	24	22.18	21.97	21.98	
20	QPSK	50	50	22.17	22.16	21.94	
20	QPSK	100	0	22.28	22.27	22.12	23
20	16QAM	1	0	22.02	22.24	22.10	
20	16QAM	1	49	22.28	21.92	22.13	
20	16QAM	1	99	22.14	22.20	21.89	22
20	16QAM	50	0	21.37	20.88	20.95	
20	16QAM	50	24	21.08	20.93	21.03	
20	16QAM	50	50	21.28	21.24	20.81	22
20	16QAM	100	0	21.40	21.21	20.93	
20	64QAM	1	0	21.16	21.21	20.81	
20	64QAM	1	49	21.17	20.87	20.92	22
20	64QAM	1	99	21.29	20.97	20.87	
20	64QAM	50	0	20.03	19.89	19.94	
20	64QAM	50	24	20.24	20.24	20.16	21
20	64QAM	50	50	20.41	20.10	20.16	
20	64QAM	100	0	20.23	20.24	19.86	
20	256QAM	1	0	18.52	18.10	18.13	19
20	256QAM	1	49	18.31	18.12	18.26	
20	256QAM	1	99	18.42	18.44	17.98	
20	256QAM	50	0	18.59	18.41	18.09	19
20	256QAM	50	24	18.39	18.40	17.94	
20	256QAM	50	50	18.32	18.10	18.11	
20	256QAM	100	0	18.45	18.15	18.09	
Channel				26115	26340	26615	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	23.07	23.03	22.92	24
15	QPSK	1	37	23.14	22.86	22.67	
15	QPSK	1	74	23.06	22.92	22.74	
15	QPSK	36	0	22.22	21.97	21.74	23
15	QPSK	36	20	22.12	21.85	21.89	
15	QPSK	36	39	22.06	22.13	21.91	
15	QPSK	75	0	22.17	22.27	21.93	23
15	16QAM	1	0	21.97	22.23	22.07	
15	16QAM	1	37	22.16	21.91	22.01	
15	16QAM	1	74	21.97	22.18	21.84	22
15	16QAM	36	0	21.26	20.84	20.94	
15	16QAM	36	20	20.94	20.83	20.88	
15	16QAM	36	39	21.18	21.13	20.65	22
15	16QAM	75	0	21.37	21.17	20.74	
15	64QAM	1	0	21.14	21.11	20.79	
15	64QAM	1	37	21.14	20.69	20.88	22
15	64QAM	1	74	21.23	20.95	20.74	
15	64QAM	36	0	19.98	19.69	19.74	
15	64QAM	36	20	20.18	20.11	19.96	21
15	64QAM	36	39	20.26	20.08	19.99	
15	64QAM	75	0	20.04	20.11	19.81	



15	256QAM	1	0	18.48	18.11	18.15	19
15	256QAM	1	37	18.32	18.11	18.22	
15	256QAM	1	74	18.40	18.40	17.96	
15	256QAM	36	0	18.52	18.35	18.03	19
15	256QAM	36	20	18.42	18.36	17.97	
15	256QAM	36	39	18.25	18.06	18.04	
15	256QAM	75	0	18.41	18.16	18.05	
Channel				26090	26340	26640	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910	
10	QPSK	1	0	23.08	22.99	22.96	24
10	QPSK	1	25	22.88	22.91	22.77	
10	QPSK	1	49	22.94	22.81	22.75	
10	QPSK	25	0	21.86	22.05	21.72	23
10	QPSK	25	12	22.12	21.92	22.01	
10	QPSK	25	25	22.29	21.99	21.93	
10	QPSK	50	0	22.14	21.95	22.14	
10	16QAM	1	0	22.26	22.13	22.00	23
10	16QAM	1	25	22.23	21.89	21.96	
10	16QAM	1	49	22.12	21.91	21.84	
10	16QAM	25	0	20.89	20.99	20.93	22
10	16QAM	25	12	21.10	20.75	20.98	
10	16QAM	25	25	21.15	20.85	20.98	
10	16QAM	50	0	21.13	21.15	20.81	
10	64QAM	1	0	21.00	20.86	20.78	22
10	64QAM	1	25	21.16	21.01	20.63	
10	64QAM	1	49	21.12	20.87	20.97	
10	64QAM	25	0	20.21	19.78	19.87	21
10	64QAM	25	12	20.12	19.89	20.17	
10	64QAM	25	25	20.18	19.92	19.83	
10	64QAM	50	0	20.24	20.05	19.84	
10	256QAM	1	0	18.48	18.11	18.10	19
10	256QAM	1	25	18.26	18.11	18.19	
10	256QAM	1	49	18.38	18.40	17.92	
10	256QAM	25	0	18.54	18.32	17.99	19
10	256QAM	25	12	18.44	18.29	17.94	
10	256QAM	25	25	18.20	18.04	17.97	
10	256QAM	50	0	18.41	18.16	18.03	
Channel				26065	26340	26665	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1912.5	
5	QPSK	1	0	23.17	22.96	22.97	24
5	QPSK	1	12	22.97	22.73	22.95	
5	QPSK	1	24	22.94	22.76	22.89	
5	QPSK	12	0	22.02	22.03	22.00	23
5	QPSK	12	7	21.88	21.97	21.93	
5	QPSK	12	13	22.00	21.79	21.98	
5	QPSK	25	0	22.33	21.87	22.02	
5	16QAM	1	0	22.08	21.79	22.07	23
5	16QAM	1	12	21.81	21.75	21.70	
5	16QAM	1	24	21.90	21.93	21.68	
5	16QAM	12	0	21.19	20.74	20.86	22
5	16QAM	12	7	20.98	21.03	21.06	
5	16QAM	12	13	21.35	21.15	20.78	
5	16QAM	25	0	21.03	20.83	20.80	
5	64QAM	1	0	21.00	20.70	20.76	22
5	64QAM	1	12	21.17	21.15	20.95	
5	64QAM	1	24	21.13	21.03	20.92	



5	64QAM	12	0	20.08	19.74	19.98	21
5	64QAM	12	7	19.97	20.02	20.05	
5	64QAM	12	13	20.03	20.24	20.00	
5	64QAM	25	0	19.90	19.93	19.92	
5	256QAM	1	0	18.42	18.11	18.06	19
5	256QAM	1	12	18.21	18.06	18.19	
5	256QAM	1	24	18.39	18.34	17.86	
5	256QAM	12	0	18.52	18.35	17.96	19
5	256QAM	12	7	18.47	18.26	17.93	
5	256QAM	12	13	18.19	18.02	17.96	
5	256QAM	25	0	18.40	18.19	17.96	
Channel				26055	26340	26675	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1913.5	
3	QPSK	1	0	23.02	22.90	22.88	24
3	QPSK	1	8	23.13	22.89	22.63	
3	QPSK	1	14	22.98	22.81	22.71	
3	QPSK	8	0	22.14	22.01	21.71	23
3	QPSK	8	4	22.04	21.87	21.86	
3	QPSK	8	7	22.03	21.97	21.93	
3	QPSK	15	0	22.09	22.22	22.10	
3	16QAM	1	0	21.89	22.22	21.95	23
3	16QAM	1	8	22.13	21.75	21.97	
3	16QAM	1	14	22.13	22.09	21.69	
3	16QAM	8	0	21.21	20.88	20.84	22
3	16QAM	8	4	21.07	20.76	20.85	
3	16QAM	8	7	21.08	21.04	20.65	
3	16QAM	15	0	21.30	21.05	20.73	
3	64QAM	1	0	21.01	21.17	20.63	22
3	64QAM	1	8	21.06	20.84	20.89	
3	64QAM	1	14	21.10	20.95	20.68	
3	64QAM	8	0	19.92	19.78	19.84	21
3	64QAM	8	4	20.19	20.07	19.99	
3	64QAM	8	7	20.23	20.08	20.15	
3	64QAM	15	0	20.18	20.11	19.81	
3	256QAM	1	0	18.39	18.11	18.01	19
3	256QAM	1	8	18.14	18.01	18.13	
3	256QAM	1	14	18.34	18.31	17.84	
3	256QAM	8	0	18.47	18.36	17.97	19
3	256QAM	8	4	18.46	18.26	17.90	
3	256QAM	8	7	18.12	18.03	17.95	
3	256QAM	15	0	18.35	18.13	17.96	
Channel				26047	26340	26683	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1914.3	
1.4	QPSK	1	0	23.06	22.97	22.86	24
1.4	QPSK	1	3	23.15	22.89	22.84	
1.4	QPSK	1	5	23.06	22.88	22.85	
1.4	QPSK	3	0	23.20	23.06	22.99	
1.4	QPSK	3	1	23.14	22.96	22.99	
1.4	QPSK	3	3	23.03	23.05	22.93	
1.4	QPSK	6	0	22.28	22.22	21.90	23
1.4	16QAM	1	0	22.16	22.26	22.16	23
1.4	16QAM	1	3	22.29	22.01	21.99	
1.4	16QAM	1	5	22.23	22.24	21.99	
1.4	16QAM	3	0	22.13	22.15	22.10	
1.4	16QAM	3	1	22.21	22.16	22.17	
1.4	16QAM	3	3	22.27	22.18	21.96	



1.4	16QAM	6	0	21.39	21.12	20.92	22
1.4	64QAM	1	0	21.29	21.02	20.88	22
1.4	64QAM	1	3	21.22	21.01	21.01	
1.4	64QAM	1	5	21.34	20.91	21.09	
1.4	64QAM	3	0	21.40	20.98	20.99	
1.4	64QAM	3	1	21.19	21.14	21.03	
1.4	64QAM	3	3	21.01	20.97	21.03	
1.4	64QAM	6	0	20.03	20.07	19.79	21
1.4	256QAM	1	0	18.34	18.13	17.94	19
1.4	256QAM	1	3	18.07	18.01	18.13	
1.4	256QAM	1	5	18.27	18.34	17.86	
1.4	256QAM	3	0	18.50	18.34	17.92	
1.4	256QAM	3	1	18.46	18.22	17.88	
1.4	256QAM	3	3	18.10	18.03	17.97	
1.4	256QAM	6	0	18.37	18.06	17.96	19

<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)
Channel				26765	26865	26965	24.5
Frequency (MHz)				821.5	831.5	841.5	
15	QPSK	1	0	22.96	22.83	22.84	24.5
15	QPSK	1	37	22.87	22.84	22.80	
15	QPSK	1	74	22.90	22.67	22.71	
15	QPSK	36	0	22.84	22.83	22.69	23.5
15	QPSK	36	20	21.83	21.64	21.84	
15	QPSK	36	39	21.79	21.71	21.64	
15	QPSK	75	0	21.90	21.69	21.97	23.5
15	16QAM	1	0	21.94	21.95	21.70	
15	16QAM	1	37	21.86	21.89	21.92	
15	16QAM	1	74	22.04	21.89	22.02	22.5
15	16QAM	36	0	22.15	21.68	22.03	
15	16QAM	36	20	20.82	20.89	20.85	
15	16QAM	36	39	21.01	20.89	20.67	22.5
15	16QAM	75	0	20.85	20.99	20.99	
15	64QAM	1	0	21.10	20.98	20.71	
15	64QAM	1	37	21.01	20.87	20.93	22.5
15	64QAM	1	74	20.89	20.73	21.04	
15	64QAM	36	0	20.85	20.96	21.02	
15	64QAM	36	20	20.12	19.74	20.01	21.5
15	64QAM	36	39	20.09	19.82	19.78	
15	64QAM	75	0	19.82	19.78	19.87	
15	256QAM	1	0	19.34	18.89	19.24	19.5
15	256QAM	1	37	18.01	18.07	17.99	
15	256QAM	1	74	18.18	18.08	17.80	
15	256QAM	36	0	18.00	18.21	18.20	19.5
15	256QAM	36	20	18.33	18.17	17.90	
15	256QAM	36	39	18.14	18.05	18.07	
15	256QAM	75	0	18.07	17.86	18.26	Tune-up limit (dBm)
Channel				26740	26865	26990	
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	22.77	22.71	22.80	24.5
10	QPSK	1	25	22.78	22.54	22.63	
10	QPSK	1	49	22.80	22.77	22.54	



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10	QPSK	25	0	21.64	21.66	21.64	23.5
10	QPSK	25	12	21.61	21.68	21.59	
10	QPSK	25	25	21.80	21.57	21.97	
10	QPSK	50	0	21.78	21.84	21.57	
10	16QAM	1	0	21.70	21.83	21.75	23.5
10	16QAM	1	25	21.90	21.82	21.83	
10	16QAM	1	49	22.00	21.51	21.94	
10	16QAM	25	0	20.80	20.73	20.73	22.5
10	16QAM	25	12	20.85	20.74	20.65	
10	16QAM	25	25	20.68	20.84	20.93	
10	16QAM	50	0	20.96	20.88	20.57	
10	64QAM	1	0	20.82	20.85	20.93	22.5
10	64QAM	1	25	20.70	20.60	20.96	
10	64QAM	1	49	20.70	20.83	21.02	
10	64QAM	25	0	20.11	19.70	19.82	21.5
10	64QAM	25	12	19.97	19.72	19.61	
10	64QAM	25	25	19.72	19.61	19.76	
10	64QAM	50	0	19.69	19.78	19.96	
10	256QAM	1	0	19.27	18.85	19.22	19.5
10	256QAM	1	25	18.00	18.01	18.01	
10	256QAM	1	49	18.15	18.02	17.74	
10	256QAM	25	0	17.99	18.21	18.16	19.5
10	256QAM	25	12	18.33	18.15	17.86	
10	256QAM	25	25	18.16	18.07	18.08	
10	256QAM	50	0	18.00	17.82	18.23	
Channel				26715	26865	27015	Tune-up limit (dBm)
Frequency (MHz)				816.5	831.5	846.5	
5	QPSK	1	0	22.79	22.63	22.74	24.5
5	QPSK	1	12	22.59	22.54	22.66	
5	QPSK	1	24	22.57	22.65	22.67	
5	QPSK	12	0	21.75	21.67	21.53	23.5
5	QPSK	12	7	21.87	21.72	21.68	
5	QPSK	12	13	21.85	21.87	21.76	
5	QPSK	25	0	21.67	21.83	21.68	
5	16QAM	1	0	21.55	21.87	21.65	23.5
5	16QAM	1	12	21.83	21.66	21.65	
5	16QAM	1	24	21.62	21.55	21.73	
5	16QAM	12	0	20.51	20.59	20.62	22.5
5	16QAM	12	7	20.68	20.89	20.82	
5	16QAM	12	13	20.60	20.78	20.64	
5	16QAM	25	0	20.97	20.96	20.95	
5	64QAM	1	0	20.86	20.75	20.67	22.5
5	64QAM	1	12	20.86	20.69	20.63	
5	64QAM	1	24	20.85	20.51	20.54	
5	64QAM	12	0	19.69	19.66	19.81	21.5
5	64QAM	12	7	19.83	19.72	19.61	
5	64QAM	12	13	19.83	19.56	19.45	
5	64QAM	25	0	19.71	19.39	19.47	
5	256QAM	1	0	19.27	18.80	19.16	19.5
5	256QAM	1	12	17.98	17.96	18.00	
5	256QAM	1	24	18.13	18.03	17.76	
5	256QAM	12	0	18.02	18.19	18.18	19.5
5	256QAM	12	7	18.26	18.18	17.84	
5	256QAM	12	13	18.09	18.09	18.04	
5	256QAM	25	0	17.97	17.78	18.17	
Channel				26705	26865	27025	Tune-up limit



Frequency (MHz)				815.5	831.5	847.5	(dBm)
3	QPSK	1	0	22.75	22.72	22.82	24.5
3	QPSK	1	8	22.59	22.65	22.60	
3	QPSK	1	14	22.55	22.51	22.60	
3	QPSK	8	0	21.68	21.66	21.62	23.5
3	QPSK	8	4	21.84	21.76	21.70	
3	QPSK	8	7	21.80	21.88	21.94	
3	QPSK	15	0	21.75	21.66	21.74	23.5
3	16QAM	1	0	21.53	21.85	21.57	
3	16QAM	1	8	21.67	21.53	21.78	
3	16QAM	1	14	21.62	21.67	21.70	22.5
3	16QAM	8	0	20.55	20.65	20.63	
3	16QAM	8	4	20.74	20.85	20.64	
3	16QAM	8	7	20.71	20.75	20.75	22.5
3	16QAM	15	0	20.80	20.96	20.59	
3	64QAM	1	0	20.92	20.77	20.69	
3	64QAM	1	8	20.88	20.74	20.76	22.5
3	64QAM	1	14	20.87	20.65	20.56	
3	64QAM	8	0	19.63	19.76	19.70	
3	64QAM	8	4	19.72	19.75	19.44	21.5
3	64QAM	8	7	19.85	19.62	19.53	
3	64QAM	15	0	19.68	19.27	19.54	
3	256QAM	1	0	19.23	18.83	19.13	19.5
3	256QAM	1	8	17.94	17.97	18.01	
3	256QAM	1	14	18.09	18.05	17.78	
3	256QAM	8	0	18.03	18.19	18.16	19.5
3	256QAM	8	4	18.27	18.21	17.84	
3	256QAM	8	7	18.03	18.08	18.03	
3	256QAM	15	0	17.97	17.74	18.18	Tune-up limit (dBm)
Channel				26697	26865	27033	
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	22.93	22.74	22.69	24.5
1.4	QPSK	1	3	22.82	22.71	22.77	
1.4	QPSK	1	5	22.79	22.82	22.71	
1.4	QPSK	3	0	22.84	22.73	22.67	
1.4	QPSK	3	1	22.78	22.79	22.73	
1.4	QPSK	3	3	22.87	22.63	22.75	23.5
1.4	QPSK	6	0	22.09	21.91	21.75	
1.4	16QAM	1	0	21.95	21.63	21.68	23.5
1.4	16QAM	1	3	21.93	21.72	21.87	
1.4	16QAM	1	5	21.96	21.66	21.96	
1.4	16QAM	3	0	21.80	21.66	21.64	
1.4	16QAM	3	1	22.02	21.77	21.65	
1.4	16QAM	3	3	21.78	21.69	21.91	22.5
1.4	16QAM	6	0	21.04	20.99	20.78	
1.4	64QAM	1	0	20.93	20.86	20.93	
1.4	64QAM	1	3	20.99	20.74	21.04	
1.4	64QAM	1	5	21.07	20.83	20.82	
1.4	64QAM	3	0	21.10	20.81	20.84	21.5
1.4	64QAM	3	1	21.07	20.78	20.79	
1.4	64QAM	3	3	21.12	20.92	20.96	
1.4	64QAM	6	0	20.02	19.73	19.67	19.5
1.4	256QAM	1	0	19.25	18.85	19.06	
1.4	256QAM	1	3	17.92	17.97	17.99	
1.4	256QAM	1	5	18.06	18.04	17.74	
1.4	256QAM	3	0	18.04	18.21	18.11	



1.4	256QAM	3	1	18.26	18.22	17.87	
1.4	256QAM	3	3	17.98	18.02	18.06	
1.4	256QAM	6	0	17.99	17.75	18.18	

<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)
Channel				27710			
Frequency (MHz)				2310			
10	QPSK	1	0		21.45		23
10	QPSK	1	25		21.36		
10	QPSK	1	49		21.33		
10	QPSK	25	0		20.60		22
10	QPSK	25	12		20.37		
10	QPSK	25	25		20.30		
10	QPSK	50	0		20.56		22
10	16QAM	1	0		20.30		
10	16QAM	1	25		20.26		
10	16QAM	1	49		20.54		21
10	16QAM	25	0		19.65		
10	16QAM	25	12		19.32		
10	16QAM	25	25		19.61		21
10	16QAM	50	0		19.55		
10	64QAM	1	0		19.36		
10	64QAM	1	25		19.63		21
10	64QAM	1	49		19.25		
10	64QAM	25	0		18.63		
10	64QAM	25	12		18.47		20
10	64QAM	25	25		18.34		
10	64QAM	50	0		18.59		
10	256QAM	1	0		16.86		18
10	256QAM	1	25		16.54		
10	256QAM	1	49		16.74		
10	256QAM	25	0		16.75		18
10	256QAM	25	12		16.54		
10	256QAM	25	25		16.85		
10	256QAM	50	0		16.39		
Channel				27685	27710	27735	
Frequency (MHz)				2307.5	2310	2312.5	Tune-up limit (dBm)
5	QPSK	1	0	21.22	21.30	21.29	23
5	QPSK	1	12	21.33	21.29	21.16	
5	QPSK	1	24	21.14	21.24	21.22	
5	QPSK	12	0	20.19	20.46	20.32	22
5	QPSK	12	7	20.50	20.31	20.16	
5	QPSK	12	13	20.18	20.18	20.31	
5	QPSK	25	0	20.20	20.43	20.48	22
5	16QAM	1	0	20.11	20.10	20.39	
5	16QAM	1	12	20.15	20.17	20.24	
5	16QAM	1	24	20.20	20.51	20.24	21
5	16QAM	12	0	19.09	19.60	19.29	
5	16QAM	12	7	19.38	19.29	19.43	
5	16QAM	12	13	19.26	19.48	19.19	21
5	16QAM	25	0	19.25	19.37	19.35	
5	64QAM	1	0	19.23	19.31	19.45	



5	64QAM	1	12	19.14	19.57	19.48	
5	64QAM	1	24	19.06	19.18	19.38	
5	64QAM	12	0	18.16	18.46	18.32	
5	64QAM	12	7	18.44	18.40	18.50	20
5	64QAM	12	13	18.20	18.33	18.23	
5	64QAM	25	0	18.14	18.54	18.54	
5	256QAM	1	0	16.22	16.82	16.49	18
5	256QAM	1	12	16.60	16.48	16.60	
5	256QAM	1	24	16.46	16.71	16.42	
5	256QAM	12	0	16.47	16.52	16.55	18
5	256QAM	12	7	16.36	16.50	16.60	
5	256QAM	12	13	16.34	16.73	16.69	
5	256QAM	25	0	16.24	16.38	16.61	

<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)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	22.92	23.07	22.99	24
20	QPSK	1	49	22.92	22.98	22.95	
20	QPSK	1	99	22.87	23.02	22.90	
20	QPSK	50	0	21.83	22.20	21.87	23
20	QPSK	50	24	21.78	22.19	21.86	
20	QPSK	50	50	22.01	21.96	21.95	
20	QPSK	100	0	22.07	22.21	22.03	23
20	16QAM	1	0	21.92	22.23	21.89	
20	16QAM	1	49	21.96	22.11	22.12	
20	16QAM	1	99	21.91	22.15	22.16	
20	16QAM	50	0	20.75	20.88	20.90	22
20	16QAM	50	24	21.08	21.01	21.18	
20	16QAM	50	50	21.07	20.94	20.98	
20	16QAM	100	0	20.78	21.26	20.95	
20	64QAM	1	0	20.84	21.19	20.92	22
20	64QAM	1	49	20.73	20.92	21.14	
20	64QAM	1	99	20.78	21.15	21.06	
20	64QAM	50	0	19.78	20.17	20.08	21
20	64QAM	50	24	19.95	20.17	20.08	
20	64QAM	50	50	19.98	20.09	19.98	
20	64QAM	100	0	19.72	19.96	19.84	
20	256QAM	1	0	17.95	18.09	18.08	19
20	256QAM	1	49	18.29	18.18	18.35	
20	256QAM	1	99	18.26	18.16	18.21	
20	256QAM	50	0	17.94	18.40	18.08	19
20	256QAM	50	24	18.02	18.38	18.10	
20	256QAM	50	50	17.93	18.12	18.27	
20	256QAM	100	0	17.98	18.34	18.22	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	22.74	22.93	22.80	24
15	QPSK	1	37	22.83	22.83	22.81	
15	QPSK	1	74	22.69	23.02	22.74	
15	QPSK	36	0	21.77	22.16	21.82	23
15	QPSK	36	20	21.75	22.17	21.84	



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15	QPSK	36	39	21.91	21.78	21.76		
15	QPSK	75	0	21.87	22.06	21.96		
15	16QAM	1	0	21.85	22.11	21.69		
15	16QAM	1	37	21.77	22.07	22.04	23	
15	16QAM	1	74	21.84	22.12	22.00		
15	16QAM	36	0	20.66	20.85	20.73		
15	16QAM	36	20	20.88	20.95	21.12	22	
15	16QAM	36	39	21.05	20.83	20.88		
15	16QAM	75	0	20.75	21.23	20.92		
15	64QAM	1	0	20.66	21.12	20.90	22	
15	64QAM	1	37	20.66	20.87	21.01		
15	64QAM	1	74	20.63	21.06	21.01		
15	64QAM	36	0	19.76	20.07	20.01	21	
15	64QAM	36	20	19.94	20.16	19.95		
15	64QAM	36	39	19.81	20.04	19.94		
15	64QAM	75	0	19.72	19.81	19.70	19	
15	256QAM	1	0	17.95	18.05	18.04		
15	256QAM	1	37	18.25	18.11	18.36		
15	256QAM	1	74	18.27	18.19	18.24	19	
15	256QAM	36	0	17.90	18.42	18.08		
15	256QAM	36	20	18.05	18.32	18.12		
15	256QAM	36	39	17.86	18.11	18.22	19	
15	256QAM	36	75	17.99	18.34	18.16		
Channel				132022	132322	132622		Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	22.66	22.83	22.78	24	
10	QPSK	1	25	22.67	22.72	22.81		
10	QPSK	1	49	22.55	22.88	22.70		
10	QPSK	25	0	21.76	21.99	21.72	23	
10	QPSK	25	12	21.71	22.02	21.68		
10	QPSK	25	25	21.83	21.65	21.76		
10	QPSK	50	0	21.82	21.97	21.83	23	
10	16QAM	1	0	21.65	22.05	21.64		
10	16QAM	1	25	21.75	22.03	21.86		
10	16QAM	1	49	21.77	22.06	21.83	22	
10	16QAM	25	0	20.57	20.83	20.71		
10	16QAM	25	12	20.69	20.93	20.99		
10	16QAM	25	25	20.98	20.80	20.75	22	
10	16QAM	50	0	20.69	21.13	20.76		
10	64QAM	1	0	20.58	21.09	20.83		
10	64QAM	1	25	20.52	20.83	20.96	22	
10	64QAM	1	49	20.46	20.98	20.98		
10	64QAM	25	0	19.73	19.99	19.82		
10	64QAM	25	12	19.94	20.00	19.95	21	
10	64QAM	25	25	19.75	19.86	19.79		
10	64QAM	50	0	19.64	19.65	19.63		
10	256QAM	1	0	17.94	18.04	18.00	19	
10	256QAM	1	25	18.20	18.11	18.37		
10	256QAM	1	49	18.21	18.18	18.23		
10	256QAM	25	0	17.88	18.38	18.03	19	
10	256QAM	25	12	17.98	18.33	18.06		
10	256QAM	25	25	17.89	18.12	18.19		
10	256QAM	50	0	18.02	18.27	18.09	19	
Channel				131997	132322	132647		Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	22.56	22.81	22.66	24	



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5	QPSK	1	12	22.78	22.70	22.80	
5	QPSK	1	24	22.57	22.92	22.69	
5	QPSK	12	0	21.75	22.01	21.72	
5	QPSK	12	7	21.69	22.15	21.71	23
5	QPSK	12	13	21.89	21.62	21.62	
5	QPSK	25	0	21.85	22.03	21.84	
5	16QAM	1	0	21.81	21.99	21.64	23
5	16QAM	1	12	21.69	21.87	21.91	
5	16QAM	1	24	21.83	22.10	21.90	
5	16QAM	12	0	20.58	20.70	20.60	22
5	16QAM	12	7	20.83	20.91	21.11	
5	16QAM	12	13	20.97	20.80	20.82	
5	16QAM	25	0	20.62	21.10	20.73	22
5	64QAM	1	0	20.51	21.02	20.70	
5	64QAM	1	12	20.61	20.68	20.91	
5	64QAM	1	24	20.43	20.96	20.94	21
5	64QAM	12	0	19.65	20.02	19.99	
5	64QAM	12	7	19.87	20.03	19.85	
5	64QAM	12	13	19.64	20.02	19.84	19
5	64QAM	25	0	19.65	19.74	19.67	
5	256QAM	1	0	17.90	18.03	17.98	
5	256QAM	1	12	18.17	18.04	18.32	19
5	256QAM	1	24	18.24	18.11	18.24	
5	256QAM	12	0	17.82	18.40	17.98	
5	256QAM	12	7	17.99	18.31	18.00	19
5	256QAM	12	13	17.85	18.08	18.22	
5	256QAM	25	0	18.01	18.21	18.12	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	22.62	22.84	22.65	24
3	QPSK	1	8	22.74	22.76	22.76	
3	QPSK	1	14	22.68	22.96	22.73	
3	QPSK	8	0	21.60	22.01	21.74	23
3	QPSK	8	4	21.72	22.05	21.74	
3	QPSK	8	7	21.77	21.74	21.57	
3	QPSK	15	0	21.75	21.87	21.79	23
3	16QAM	1	0	21.80	21.95	21.67	
3	16QAM	1	8	21.73	21.97	21.87	
3	16QAM	1	14	21.67	22.06	21.99	22
3	16QAM	8	0	20.60	20.66	20.53	
3	16QAM	8	4	20.80	20.92	20.93	
3	16QAM	8	7	20.86	20.68	20.72	22
3	16QAM	15	0	20.72	21.16	20.81	
3	64QAM	1	0	20.47	20.97	20.84	
3	64QAM	1	8	20.46	20.82	20.94	21
3	64QAM	1	14	20.63	21.05	20.96	
3	64QAM	8	0	19.60	19.87	19.95	
3	64QAM	8	4	19.78	20.11	19.88	19
3	64QAM	8	7	19.63	20.01	19.78	
3	64QAM	15	0	19.65	19.72	19.69	
3	256QAM	1	0	17.89	17.96	17.97	19
3	256QAM	1	8	18.20	18.06	18.35	
3	256QAM	1	14	18.25	18.12	18.25	
3	256QAM	8	0	17.77	18.33	17.92	19
3	256QAM	8	4	17.99	18.24	17.99	
3	256QAM	8	7	17.78	18.07	18.22	



3	256QAM	15	0	17.96	18.19	18.14	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	22.73	22.98	22.94	24
1.4	QPSK	1	3	22.78	22.90	22.96	
1.4	QPSK	1	5	22.91	23.04	22.80	
1.4	QPSK	3	0	22.88	23.05	22.94	
1.4	QPSK	3	1	22.85	23.03	22.97	
1.4	QPSK	3	3	22.81	22.92	22.97	
1.4	QPSK	6	0	22.07	22.19	22.14	23
1.4	16QAM	1	0	21.97	21.93	21.83	23
1.4	16QAM	1	3	21.87	21.91	21.96	
1.4	16QAM	1	5	21.88	22.03	21.85	
1.4	16QAM	3	0	22.06	22.00	22.19	
1.4	16QAM	3	1	21.97	22.23	21.90	
1.4	16QAM	3	3	22.00	21.98	22.16	
1.4	16QAM	6	0	20.89	20.91	21.13	22
1.4	64QAM	1	0	20.81	21.07	21.00	22
1.4	64QAM	1	3	20.75	20.87	21.16	
1.4	64QAM	1	5	20.76	21.06	20.83	
1.4	64QAM	3	0	20.77	20.90	21.19	
1.4	64QAM	3	1	20.92	21.27	21.14	
1.4	64QAM	3	3	20.74	21.27	20.82	
1.4	64QAM	6	0	19.94	20.21	20.19	21
1.4	256QAM	1	0	17.89	17.91	17.98	19
1.4	256QAM	1	3	18.18	18.02	18.37	
1.4	256QAM	1	5	18.22	18.09	18.19	
1.4	256QAM	3	0	17.75	18.27	17.86	
1.4	256QAM	3	1	18.01	18.22	18.02	
1.4	256QAM	3	3	17.72	18.03	18.18	
1.4	256QAM	6	0	17.89	18.17	18.08	19

<LTE Band 71>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				133222	133297	133372	Tune-up limit (dBm)
Frequency (MHz)				673	680.5	688	
20	QPSK	1	0	23.06	22.71	22.69	24.5
20	QPSK	1	49	23.00	22.62	22.57	
20	QPSK	1	99	22.90	22.64	22.61	
20	QPSK	50	0	22.00	21.74	21.73	23.5
20	QPSK	50	24	21.92	21.88	21.89	
20	QPSK	50	50	21.90	21.65	21.61	
20	QPSK	100	0	22.00	21.62	21.79	23.5
20	16QAM	1	0	21.95	21.63	21.55	
20	16QAM	1	49	22.14	21.54	21.61	
20	16QAM	1	99	22.23	21.64	21.55	22.5
20	16QAM	50	0	20.96	20.64	20.73	
20	16QAM	50	24	21.09	20.75	20.76	
20	16QAM	50	50	20.98	20.77	20.73	22.5
20	16QAM	100	0	20.93	20.66	20.56	
20	64QAM	1	0	20.96	20.83	20.53	
20	64QAM	1	49	21.23	20.53	20.76	22.5
20	64QAM	1	99	20.99	20.78	20.61	



20	64QAM	50	0	20.14	19.70	19.52	21.5
20	64QAM	50	24	20.04	19.74	19.85	
20	64QAM	50	50	20.23	19.54	19.59	
20	64QAM	100	0	20.15	19.65	19.75	
20	256QAM	1	0	18.15	17.77	17.87	19.5
20	256QAM	1	49	18.31	17.89	17.99	
20	256QAM	1	99	18.20	17.98	17.91	
20	256QAM	50	0	18.09	17.80	17.70	19.5
20	256QAM	50	24	18.15	18.06	17.68	
20	256QAM	50	50	18.36	17.71	17.98	
20	256QAM	100	0	18.22	17.92	17.78	
Channel				133197	133297	133397	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	QPSK	1	0	22.88	22.61	22.57	24.5
15	QPSK	1	37	23.00	22.60	22.51	
15	QPSK	1	74	22.84	22.54	22.55	
15	QPSK	36	0	21.71	21.73	21.64	23.5
15	QPSK	36	20	21.84	21.83	21.84	
15	QPSK	36	39	21.91	21.54	21.76	
15	QPSK	75	0	21.86	21.54	21.77	
15	16QAM	1	0	21.76	21.63	21.77	23.5
15	16QAM	1	37	22.01	21.75	21.71	
15	16QAM	1	74	22.15	21.77	21.68	
15	16QAM	36	0	20.86	20.64	20.54	22.5
15	16QAM	36	20	20.96	20.55	20.69	
15	16QAM	36	39	20.96	20.62	20.67	
15	16QAM	75	0	20.74	20.79	20.51	
15	64QAM	1	0	20.90	20.83	20.68	22.5
15	64QAM	1	37	21.03	20.52	20.73	
15	64QAM	1	74	20.81	20.63	20.59	
15	64QAM	36	0	20.02	19.51	19.78	21.5
15	64QAM	36	20	20.00	19.65	19.75	
15	64QAM	36	39	20.08	19.79	19.77	
15	64QAM	75	0	20.03	19.65	19.70	
15	256QAM	1	0	18.17	17.74	17.83	19.5
15	256QAM	1	37	18.34	17.88	17.98	
15	256QAM	1	74	18.20	17.98	17.85	
15	256QAM	36	0	18.03	17.76	17.70	19.5
15	256QAM	36	20	18.16	18.08	17.62	
15	256QAM	36	39	18.32	17.65	17.92	
15	256QAM	75	0	18.17	17.94	17.75	
Channel				133172	133297	133422	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	QPSK	1	0	22.97	22.75	22.50	24.5
10	QPSK	1	25	22.80	22.68	22.78	
10	QPSK	1	49	22.70	22.63	22.50	
10	QPSK	25	0	21.78	21.77	21.75	23.5
10	QPSK	25	12	22.05	21.60	21.51	
10	QPSK	25	25	21.73	21.82	21.65	
10	QPSK	50	0	22.01	21.76	21.55	
10	16QAM	1	0	21.89	21.67	21.73	23.5
10	16QAM	1	25	21.78	21.65	21.77	
10	16QAM	1	49	21.99	21.53	21.56	
10	16QAM	25	0	20.64	20.66	20.84	22.5
10	16QAM	25	12	21.08	20.62	20.51	
10	16QAM	25	25	21.04	20.64	20.69	



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10	16QAM	50	0	20.68	20.59	20.53	
10	64QAM	1	0	20.82	20.75	20.64	22.5
10	64QAM	1	25	20.80	20.52	20.61	
10	64QAM	1	49	20.70	20.58	20.68	
10	64QAM	25	0	19.79	19.74	19.79	21.5
10	64QAM	25	12	19.94	19.66	19.63	
10	64QAM	25	25	19.85	19.77	19.53	
10	64QAM	50	0	19.91	19.55	19.75	
10	256QAM	1	0	18.13	17.76	17.86	19.5
10	256QAM	1	25	18.37	17.82	17.96	
10	256QAM	1	49	18.18	17.92	17.81	
10	256QAM	25	0	18.06	17.71	17.63	19.5
10	256QAM	25	12	18.15	18.04	17.59	
10	256QAM	25	25	18.31	17.66	17.93	
10	256QAM	50	0	18.14	17.91	17.71	
Channel				133147	133297	133447	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	QPSK	1	0	22.99	22.51	22.57	24.5
5	QPSK	1	12	22.74	22.73	22.69	
5	QPSK	1	24	22.83	22.53	22.53	
5	QPSK	12	0	21.69	21.65	21.74	23.5
5	QPSK	12	7	21.87	21.52	21.55	
5	QPSK	12	13	21.76	21.76	21.58	
5	QPSK	25	0	21.96	21.57	21.63	
5	16QAM	1	0	21.86	21.70	21.63	23.5
5	16QAM	1	12	21.84	21.65	21.51	
5	16QAM	1	24	21.95	21.63	21.79	
5	16QAM	12	0	20.76	20.60	20.82	22.5
5	16QAM	12	7	21.12	20.75	20.60	
5	16QAM	12	13	21.04	20.58	20.75	
5	16QAM	25	0	20.61	20.74	20.69	
5	64QAM	1	0	20.66	20.53	20.52	22.5
5	64QAM	1	12	20.93	20.60	20.61	
5	64QAM	1	24	20.84	20.72	20.77	
5	64QAM	12	0	19.92	19.75	19.62	21.5
5	64QAM	12	7	19.87	19.72	19.69	
5	64QAM	12	13	19.76	19.56	19.53	
5	64QAM	25	0	20.00	19.68	19.65	
5	256QAM	1	0	18.07	17.76	17.85	19.5
5	256QAM	1	12	18.37	17.84	17.97	
5	256QAM	1	24	18.12	17.92	17.81	
5	256QAM	12	0	18.03	17.70	17.57	19.5
5	256QAM	12	7	18.09	17.98	17.52	
5	256QAM	12	13	18.29	17.63	17.95	
5	256QAM	25	0	18.08	17.85	17.68	



Default Power Mode (Ant 2)

<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)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	22.87	22.66	22.74	24
20	QPSK	1	49	22.74	22.52	22.54	
20	QPSK	1	99	22.82	22.58	22.65	
20	QPSK	50	0	21.88	21.78	21.56	23
20	QPSK	50	24	21.70	21.50	21.54	
20	QPSK	50	50	21.80	21.65	21.72	
20	QPSK	100	0	21.95	21.71	21.94	23
20	16QAM	1	0	21.96	21.65	21.63	
20	16QAM	1	49	21.67	21.48	21.82	
20	16QAM	1	99	22.06	21.67	21.57	22
20	16QAM	50	0	20.72	20.50	20.89	
20	16QAM	50	24	20.89	20.61	20.56	
20	16QAM	50	50	21.02	20.72	20.82	22
20	16QAM	100	0	20.82	20.84	20.66	
20	64QAM	1	0	21.04	20.57	20.55	
20	64QAM	1	49	20.81	20.69	20.59	22
20	64QAM	1	99	21.05	20.50	20.90	
20	64QAM	50	0	19.99	19.52	19.73	
20	64QAM	50	24	20.05	19.46	19.86	21
20	64QAM	50	50	20.01	19.80	19.94	
20	64QAM	100	0	19.75	19.81	19.80	
20	256QAM	1	0	17.91	17.67	18.08	19
20	256QAM	1	49	18.03	17.81	17.77	
20	256QAM	1	99	18.15	17.92	17.97	
20	256QAM	50	0	17.96	18.00	17.79	19
20	256QAM	50	24	18.27	17.71	17.72	
20	256QAM	50	50	17.98	17.90	17.77	
20	256QAM	100	0	18.23	17.64	18.12	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	22.71	22.55	22.56	24
15	QPSK	1	37	22.57	22.43	22.50	
15	QPSK	1	74	22.71	22.47	22.65	
15	QPSK	36	0	21.62	21.68	21.49	23
15	QPSK	36	20	21.65	21.34	21.50	
15	QPSK	36	39	21.84	21.56	21.61	
15	QPSK	75	0	21.72	21.58	21.83	23
15	16QAM	1	0	21.93	21.49	21.43	
15	16QAM	1	37	21.50	21.29	21.81	
15	16QAM	1	74	21.87	21.49	21.46	22
15	16QAM	36	0	20.52	20.37	20.76	
15	16QAM	36	20	20.84	20.46	20.42	
15	16QAM	36	39	21.01	20.67	20.74	22
15	16QAM	75	0	20.79	20.68	20.54	
15	64QAM	1	0	21.04	20.48	20.46	
15	64QAM	1	37	20.75	20.55	20.56	22
15	64QAM	1	74	20.86	20.39	20.72	
15	64QAM	36	0	19.96	19.51	19.53	
15	64QAM	36	20	19.86	19.44	19.84	21
15	64QAM	36	39	19.89	19.70	19.92	



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15	64QAM	75	0	19.66	19.64	19.76	
15	256QAM	1	0	17.85	17.60	18.05	19
15	256QAM	1	37	17.98	17.75	17.72	
15	256QAM	1	74	18.16	17.86	17.95	
15	256QAM	36	0	17.99	17.96	17.79	19
15	256QAM	36	20	18.29	17.68	17.75	
15	256QAM	36	39	17.96	17.85	17.78	
15	256QAM	75	0	18.24	17.65	18.11	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	22.52	22.43	22.40	24
10	QPSK	1	25	22.40	22.31	22.50	
10	QPSK	1	49	22.68	22.40	22.49	
10	QPSK	25	0	21.47	21.51	21.36	23
10	QPSK	25	12	21.48	21.17	21.43	
10	QPSK	25	25	21.79	21.49	21.59	
10	QPSK	50	0	21.70	21.44	21.70	
10	16QAM	1	0	21.80	21.44	21.33	23
10	16QAM	1	25	21.31	21.24	21.70	
10	16QAM	1	49	21.69	21.36	21.34	
10	16QAM	25	0	20.46	20.24	20.69	22
10	16QAM	25	12	20.70	20.29	20.42	
10	16QAM	25	25	20.87	20.60	20.71	
10	16QAM	50	0	20.77	20.53	20.39	
10	64QAM	1	0	20.92	20.28	20.43	22
10	64QAM	1	25	20.60	20.40	20.44	
10	64QAM	1	49	20.86	20.21	20.60	
10	64QAM	25	0	19.91	19.31	19.51	21
10	64QAM	25	12	19.82	19.27	19.81	
10	64QAM	25	25	19.73	19.63	19.87	
10	64QAM	50	0	19.46	19.57	19.66	
10	256QAM	1	0	17.85	17.62	18.07	19
10	256QAM	1	25	18.01	17.75	17.75	
10	256QAM	1	49	18.13	17.84	17.95	
10	256QAM	25	0	17.98	17.90	17.73	19
10	256QAM	25	12	18.30	17.70	17.72	
10	256QAM	25	25	17.94	17.88	17.77	
10	256QAM	50	0	18.18	17.66	18.12	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	22.63	22.36	22.42	24
5	QPSK	1	12	22.50	22.23	22.43	
5	QPSK	1	24	22.66	22.36	22.48	
5	QPSK	12	0	21.53	21.57	21.48	23
5	QPSK	12	7	21.52	21.30	21.38	
5	QPSK	12	13	21.72	21.44	21.60	
5	QPSK	25	0	21.53	21.41	21.67	
5	16QAM	1	0	21.75	21.44	21.28	23
5	16QAM	1	12	21.36	21.29	21.68	
5	16QAM	1	24	21.68	21.49	21.41	
5	16QAM	12	0	20.33	20.21	20.64	22
5	16QAM	12	7	20.82	20.45	20.36	
5	16QAM	12	13	20.90	20.57	20.72	
5	16QAM	25	0	20.70	20.59	20.44	
5	64QAM	1	0	20.98	20.35	20.32	22
5	64QAM	1	12	20.68	20.43	20.53	



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5	64QAM	1	24	20.77	20.34	20.66	
5	64QAM	12	0	19.80	19.44	19.48	21
5	64QAM	12	7	19.80	19.34	19.82	
5	64QAM	12	13	19.78	19.57	19.85	
5	64QAM	25	0	19.55	19.47	19.75	
5	256QAM	1	0	17.88	17.62	18.04	19
5	256QAM	1	12	18.02	17.70	17.71	
5	256QAM	1	24	18.13	17.86	17.97	
5	256QAM	12	0	17.98	17.90	17.67	19
5	256QAM	12	7	18.29	17.65	17.75	
5	256QAM	12	13	17.94	17.82	17.75	
5	256QAM	25	0	18.12	17.60	18.10	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	22.51	22.41	22.38	24
3	QPSK	1	8	22.48	22.33	22.50	
3	QPSK	1	14	22.67	22.45	22.58	
3	QPSK	8	0	21.59	21.58	21.30	23
3	QPSK	8	4	21.60	21.24	21.39	
3	QPSK	8	7	21.84	21.48	21.47	
3	QPSK	15	0	21.60	21.56	21.67	
3	16QAM	1	0	21.76	21.48	21.31	23
3	16QAM	1	8	21.30	21.26	21.72	
3	16QAM	1	14	21.85	21.31	21.36	
3	16QAM	8	0	20.49	20.24	20.66	22
3	16QAM	8	4	20.70	20.37	20.36	
3	16QAM	8	7	20.81	20.57	20.58	
3	16QAM	15	0	20.65	20.60	20.43	
3	64QAM	1	0	21.04	20.47	20.46	22
3	64QAM	1	8	20.65	20.37	20.49	
3	64QAM	1	14	20.83	20.27	20.65	
3	64QAM	8	0	19.93	19.38	19.51	
3	64QAM	8	4	19.69	19.37	19.69	21
3	64QAM	8	7	19.86	19.56	19.87	
3	64QAM	15	0	19.53	19.56	19.72	
3	256QAM	1	0	17.83	17.61	17.97	19
3	256QAM	1	8	18.01	17.72	17.64	
3	256QAM	1	14	18.15	17.82	17.97	
3	256QAM	8	0	17.94	17.92	17.62	19
3	256QAM	8	4	18.30	17.64	17.71	
3	256QAM	8	7	17.96	17.76	17.68	
3	256QAM	15	0	18.08	17.60	18.04	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	22.67	22.59	22.67	24
1.4	QPSK	1	3	22.87	22.50	22.61	
1.4	QPSK	1	5	22.69	22.57	22.54	
1.4	QPSK	3	0	22.75	22.49	22.73	
1.4	QPSK	3	1	22.85	22.47	22.54	
1.4	QPSK	3	3	22.77	22.63	22.71	
1.4	QPSK	6	0	22.01	21.85	21.71	23
1.4	16QAM	1	0	22.02	21.68	21.80	23
1.4	16QAM	1	3	21.78	21.65	21.62	
1.4	16QAM	1	5	21.69	21.74	21.84	
1.4	16QAM	3	0	21.94	21.69	21.67	
1.4	16QAM	3	1	22.04	21.81	21.62	



1.4	16QAM	3	3	22.02	21.74	21.87	
1.4	16QAM	6	0	20.67	20.69	20.71	22
1.4	64QAM	1	0	20.79	20.58	20.54	22
1.4	64QAM	1	3	20.82	20.46	20.65	
1.4	64QAM	1	5	20.97	20.56	20.65	
1.4	64QAM	3	0	20.87	20.59	20.87	
1.4	64QAM	3	1	20.77	20.76	20.61	
1.4	64QAM	3	3	20.70	20.83	20.70	
1.4	64QAM	6	0	19.88	19.54	19.71	21
1.4	256QAM	1	0	17.82	17.56	17.96	19
1.4	256QAM	1	3	18.04	17.71	17.57	
1.4	256QAM	1	5	18.15	17.77	17.98	
1.4	256QAM	3	0	17.88	17.91	17.61	
1.4	256QAM	3	1	18.26	17.58	17.65	
1.4	256QAM	3	3	17.99	17.71	17.63	
1.4	256QAM	6	0	18.01	17.54	18.06	19

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	22.84	22.85	22.92	24
20	QPSK	1	49	22.72	22.66	22.91	
20	QPSK	1	99	22.76	22.78	22.85	
20	QPSK	50	0	22.05	21.97	22.06	23
20	QPSK	50	24	22.04	21.80	22.03	
20	QPSK	50	50	22.00	21.96	22.00	
20	QPSK	100	0	21.94	21.93	21.95	23
20	16QAM	1	0	21.85	21.97	21.98	
20	16QAM	1	49	21.95	21.96	22.09	
20	16QAM	1	99	21.68	21.83	22.12	22
20	16QAM	50	0	20.75	20.90	21.11	
20	16QAM	50	24	20.90	20.98	20.79	
20	16QAM	50	50	20.89	20.92	20.87	
20	16QAM	100	0	20.82	20.66	20.72	
20	64QAM	1	0	20.67	20.81	21.00	
20	64QAM	1	49	20.93	20.83	21.08	
20	64QAM	1	99	20.94	21.04	21.09	
20	64QAM	50	0	20.04	20.04	19.92	21
20	64QAM	50	24	19.64	19.69	19.90	
20	64QAM	50	50	19.66	19.73	20.09	
20	64QAM	100	0	20.02	19.85	20.07	
20	256QAM	1	0	17.92	18.04	18.26	19
20	256QAM	1	49	18.06	18.13	17.98	
20	256QAM	1	99	18.09	18.08	18.07	
20	256QAM	50	0	18.02	17.83	17.88	19
20	256QAM	50	24	17.88	17.99	18.21	
20	256QAM	50	50	18.07	18.00	18.27	
20	256QAM	100	0	18.11	18.20	18.31	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	22.79	22.73	22.74	24
15	QPSK	1	37	22.67	22.46	22.81	



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15	QPSK	1	74	22.76	22.71	22.82	
15	QPSK	36	0	21.87	21.69	21.56	23
15	QPSK	36	20	21.87	21.62	21.88	
15	QPSK	36	39	21.84	21.92	22.00	
15	QPSK	75	0	21.93	21.89	21.65	
15	16QAM	1	0	21.65	21.77	21.87	23
15	16QAM	1	37	21.80	21.89	21.91	
15	16QAM	1	74	21.53	21.82	22.03	
15	16QAM	36	0	20.71	20.82	20.93	22
15	16QAM	36	20	20.77	20.96	20.70	
15	16QAM	36	39	20.75	20.81	20.83	
15	16QAM	75	0	20.80	20.47	20.66	
15	64QAM	1	0	20.57	20.77	21.00	22
15	64QAM	1	37	20.78	20.74	20.93	
15	64QAM	1	74	20.78	20.90	21.01	
15	64QAM	36	0	19.86	20.03	19.73	21
15	64QAM	36	20	19.63	19.59	19.87	
15	64QAM	36	39	19.59	19.58	20.07	
15	64QAM	75	0	19.88	19.68	20.07	
15	256QAM	1	0	17.85	18.03	18.22	19
15	256QAM	1	37	18.07	18.12	17.91	
15	256QAM	1	74	18.12	18.07	18.10	
15	256QAM	36	0	18.03	17.85	17.90	19
15	256QAM	36	20	17.88	17.92	18.18	
15	256QAM	36	39	18.01	18.02	18.25	
15	256QAM	75	0	18.13	18.20	18.33	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	22.68	22.71	22.74	24
10	QPSK	1	25	22.57	22.62	22.75	
10	QPSK	1	49	22.66	22.75	22.71	
10	QPSK	25	0	21.84	21.65	21.67	23
10	QPSK	25	12	21.94	21.77	21.85	
10	QPSK	25	25	21.99	21.90	22.03	
10	QPSK	50	0	21.85	21.86	21.63	
10	16QAM	1	0	21.85	21.77	21.85	23
10	16QAM	1	25	21.87	21.76	21.99	
10	16QAM	1	49	21.67	21.64	22.00	
10	16QAM	25	0	20.73	20.89	21.02	22
10	16QAM	25	12	20.76	20.78	20.62	
10	16QAM	25	25	20.86	20.89	20.76	
10	16QAM	50	0	20.79	20.62	20.69	
10	64QAM	1	0	20.61	20.79	20.85	22
10	64QAM	1	25	20.77	20.78	20.95	
10	64QAM	1	49	20.79	20.87	21.09	
10	64QAM	25	0	20.02	19.87	19.72	21
10	64QAM	25	12	19.58	19.68	19.86	
10	64QAM	25	25	19.65	19.66	20.00	
10	64QAM	50	0	19.90	19.80	20.06	
10	256QAM	1	0	17.88	18.01	18.22	19
10	256QAM	1	25	18.09	18.15	17.86	
10	256QAM	1	49	18.09	18.00	18.08	
10	256QAM	25	0	18.01	17.87	17.91	19
10	256QAM	25	12	17.84	17.95	18.17	
10	256QAM	25	25	17.96	18.02	18.22	
10	256QAM	50	0	18.10	18.17	18.28	



Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	22.77	22.67	22.74	24
5	QPSK	1	12	22.57	22.55	22.91	
5	QPSK	1	24	22.74	22.71	22.77	
5	QPSK	12	0	21.81	21.68	21.68	23
5	QPSK	12	7	21.89	21.75	21.85	
5	QPSK	12	13	21.96	21.96	22.05	
5	QPSK	25	0	21.90	21.74	21.62	
5	16QAM	1	0	21.84	21.84	21.84	23
5	16QAM	1	12	21.84	21.91	22.09	
5	16QAM	1	24	21.61	21.75	21.97	
5	16QAM	12	0	20.62	20.87	21.10	22
5	16QAM	12	7	20.86	20.84	20.69	
5	16QAM	12	13	20.75	20.87	20.71	
5	16QAM	25	0	20.63	20.53	20.71	
5	64QAM	1	0	20.65	20.63	20.99	
5	64QAM	1	12	20.76	20.73	20.90	22
5	64QAM	1	24	20.76	21.02	20.96	
5	64QAM	12	0	19.91	19.97	19.91	
5	64QAM	12	7	19.53	19.54	19.75	21
5	64QAM	12	13	19.53	19.62	20.02	
5	64QAM	25	0	19.89	19.79	20.05	
5	256QAM	1	0	17.79	17.92	18.18	
5	256QAM	1	12	18.06	18.04	17.87	19
5	256QAM	1	24	18.11	17.98	18.07	
5	256QAM	12	0	17.90	17.78	17.81	
5	256QAM	12	7	17.79	17.90	18.17	19
5	256QAM	12	13	18.00	18.01	18.22	
5	256QAM	25	0	18.16	18.19	18.32	

<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)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	22.47	23.76	22.88	24
20	QPSK	1	49	22.44	23.65	22.81	
20	QPSK	1	99	22.30	23.61	22.76	
20	QPSK	50	0	21.58	22.91	21.79	23
20	QPSK	50	24	21.58	22.74	21.77	
20	QPSK	50	50	21.50	22.82	21.76	
20	QPSK	100	0	21.29	22.90	21.95	
20	16QAM	1	0	21.30	22.60	22.00	23
20	16QAM	1	49	21.51	22.80	21.88	
20	16QAM	1	99	21.65	22.78	22.05	
20	16QAM	50	0	20.43	21.64	20.70	22
20	16QAM	50	24	20.59	21.68	20.77	
20	16QAM	50	50	20.29	21.92	20.76	
20	16QAM	100	0	20.33	21.72	20.77	
20	64QAM	1	0	20.66	21.66	20.94	
20	64QAM	1	49	20.38	21.66	20.75	22
20	64QAM	1	99	20.54	21.65	20.83	
20	64QAM	50	0	19.66	20.85	20.07	



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20	64QAM	50	24	19.49	20.76	19.84	
20	64QAM	50	50	19.43	20.77	19.89	
20	64QAM	100	0	19.60	20.58	20.07	
20	256QAM	1	0	17.65	18.87	17.93	19
20	256QAM	1	49	17.75	18.81	17.99	
20	256QAM	1	99	17.51	18.70	17.99	
20	256QAM	50	0	17.51	18.87	17.96	19
20	256QAM	50	24	17.84	18.82	18.08	
20	256QAM	50	50	17.60	18.84	17.88	
20	256QAM	100	0	17.71	18.81	18.02	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	22.35	23.73	22.75	24
15	QPSK	1	37	22.38	23.49	22.61	
15	QPSK	1	74	22.30	23.46	22.73	
15	QPSK	36	0	21.12	22.77	21.62	23
15	QPSK	36	20	21.53	22.68	21.65	
15	QPSK	36	39	21.43	22.66	21.85	
15	QPSK	75	0	21.24	22.85	21.77	
15	16QAM	1	0	21.24	22.42	21.92	23
15	16QAM	1	37	21.39	22.66	21.68	
15	16QAM	1	74	21.50	22.58	22.04	
15	16QAM	36	0	20.39	21.60	20.62	22
15	16QAM	36	20	20.48	21.66	20.64	
15	16QAM	36	39	20.09	21.74	20.73	
15	16QAM	75	0	20.21	21.64	20.67	
15	64QAM	1	0	20.62	21.58	20.87	
15	64QAM	1	37	20.36	21.55	20.74	22
15	64QAM	1	74	20.54	21.45	20.75	
15	64QAM	36	0	19.56	20.66	20.07	
15	64QAM	36	20	19.31	20.74	19.78	21
15	64QAM	36	39	19.26	20.77	19.80	
15	64QAM	75	0	19.42	20.55	19.98	
15	256QAM	1	0	17.61	18.82	17.92	
15	256QAM	1	37	17.78	18.77	18.01	19
15	256QAM	1	74	17.49	18.63	18.01	
15	256QAM	36	0	17.48	18.81	17.91	
15	256QAM	36	20	17.84	18.85	18.11	19
15	256QAM	36	39	17.56	18.86	17.89	
15	256QAM	75	0	17.69	18.83	17.98	
Channel				132022	132322	132622	
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	22.34	23.68	22.79	24
10	QPSK	1	25	22.38	23.52	22.62	
10	QPSK	1	49	22.20	23.48	22.57	
10	QPSK	25	0	21.26	22.71	21.66	23
10	QPSK	25	12	21.39	22.58	21.70	
10	QPSK	25	25	21.31	22.78	21.80	
10	QPSK	50	0	21.10	22.84	21.93	
10	16QAM	1	0	21.18	22.42	21.96	23
10	16QAM	1	25	21.51	22.73	21.72	
10	16QAM	1	49	21.57	22.76	22.00	
10	16QAM	25	0	20.31	21.45	20.53	22
10	16QAM	25	12	20.51	21.60	20.68	
10	16QAM	25	25	20.27	21.76	20.71	
10	16QAM	50	0	20.30	21.54	20.58	



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10	64QAM	1	0	20.59	21.57	20.92	22
10	64QAM	1	25	20.21	21.54	20.60	
10	64QAM	1	49	20.51	21.64	20.82	
10	64QAM	25	0	19.55	20.68	19.95	21
10	64QAM	25	12	19.31	20.67	19.66	
10	64QAM	25	25	19.36	20.72	19.73	
10	64QAM	50	0	19.52	20.40	19.91	19
10	256QAM	1	0	17.59	18.76	17.86	
10	256QAM	1	25	17.71	18.73	18.03	
10	256QAM	1	49	17.46	18.57	18.00	19
10	256QAM	25	0	17.43	18.75	17.86	
10	256QAM	25	12	17.85	18.82	18.06	
10	256QAM	25	25	17.54	18.87	17.92	Tune-up limit (dBm)
10	256QAM	50	0	17.69	18.84	17.99	
Channel				131997	132322	132647	
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	22.42	23.59	22.69	24
5	QPSK	1	12	22.32	23.52	22.66	
5	QPSK	1	24	22.17	23.56	22.58	
5	QPSK	12	0	21.13	22.73	21.76	23
5	QPSK	12	7	21.45	22.58	21.61	
5	QPSK	12	13	21.41	22.74	21.83	
5	QPSK	25	0	21.24	22.77	21.81	23
5	16QAM	1	0	21.17	22.59	21.87	
5	16QAM	1	12	21.43	22.66	21.86	
5	16QAM	1	24	21.62	22.72	21.85	22
5	16QAM	12	0	20.41	21.56	20.51	
5	16QAM	12	7	20.53	21.64	20.58	
5	16QAM	12	13	20.20	21.76	20.62	22
5	16QAM	25	0	20.30	21.57	20.69	
5	64QAM	1	0	20.55	21.50	20.83	
5	64QAM	1	12	20.35	21.47	20.70	21
5	64QAM	1	24	20.52	21.63	20.70	
5	64QAM	12	0	19.59	20.70	19.89	
5	64QAM	12	7	19.40	20.62	19.76	19
5	64QAM	12	13	19.25	20.70	19.79	
5	64QAM	25	0	19.43	20.46	20.04	
5	256QAM	1	0	17.55	18.71	17.81	19
5	256QAM	1	12	17.72	18.73	18.00	
5	256QAM	1	24	17.45	18.54	17.95	
5	256QAM	12	0	17.37	18.69	17.89	19
5	256QAM	12	7	17.81	18.85	18.01	
5	256QAM	12	13	17.47	18.87	17.88	
5	256QAM	25	0	17.70	18.77	17.96	Tune-up limit (dBm)
Channel				131987	132322	132657	
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	22.36	23.64	22.77	24
3	QPSK	1	8	22.37	23.59	22.75	
3	QPSK	1	14	22.14	23.59	22.63	
3	QPSK	8	0	21.11	22.77	21.76	23
3	QPSK	8	4	21.50	22.57	21.68	
3	QPSK	8	7	21.45	22.74	21.94	
3	QPSK	15	0	21.26	22.78	21.90	23
3	16QAM	1	0	21.19	22.50	21.99	
3	16QAM	1	8	21.38	22.66	21.80	
3	16QAM	1	14	21.65	22.77	21.88	



3	16QAM	8	0	20.39	21.54	20.52	22
3	16QAM	8	4	20.52	21.64	20.59	
3	16QAM	8	7	20.20	21.77	20.57	
3	16QAM	15	0	20.14	21.57	20.72	
3	64QAM	1	0	20.55	21.55	20.92	22
3	64QAM	1	8	20.18	21.63	20.68	
3	64QAM	1	14	20.46	21.50	20.66	
3	64QAM	8	0	19.59	20.69	20.00	21
3	64QAM	8	4	19.46	20.58	19.73	
3	64QAM	8	7	19.33	20.60	19.83	
3	64QAM	15	0	19.47	20.54	20.05	
3	256QAM	1	0	17.58	18.69	17.82	19
3	256QAM	1	8	17.71	18.76	17.99	
3	256QAM	1	14	17.42	18.52	17.91	
3	256QAM	8	0	17.37	18.70	17.89	19
3	256QAM	8	4	17.75	18.82	17.94	
3	256QAM	8	7	17.43	18.84	17.91	
3	256QAM	15	0	17.67	18.80	17.95	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	22.39	23.72	22.86	24
1.4	QPSK	1	3	22.36	23.59	22.88	
1.4	QPSK	1	5	22.41	23.65	22.88	
1.4	QPSK	3	0	22.34	23.60	22.75	
1.4	QPSK	3	1	22.41	23.71	22.77	
1.4	QPSK	3	3	22.30	23.67	22.71	
1.4	QPSK	6	0	21.60	22.82	21.76	23
1.4	16QAM	1	0	21.60	22.88	21.87	23
1.4	16QAM	1	3	21.67	22.92	21.91	
1.4	16QAM	1	5	21.51	22.62	21.69	
1.4	16QAM	3	0	21.43	22.62	21.78	
1.4	16QAM	3	1	21.32	22.81	21.95	
1.4	16QAM	3	3	21.61	22.84	21.84	
1.4	16QAM	6	0	20.43	21.85	20.85	22
1.4	64QAM	1	0	20.59	21.86	20.87	22
1.4	64QAM	1	3	20.48	21.82	21.07	
1.4	64QAM	1	5	20.65	21.63	20.91	
1.4	64QAM	3	0	20.56	21.85	20.99	
1.4	64QAM	3	1	20.35	21.83	21.05	
1.4	64QAM	3	3	20.32	21.83	20.95	
1.4	64QAM	6	0	19.28	20.91	19.84	21
1.4	256QAM	1	0	17.56	18.71	17.77	19
1.4	256QAM	1	3	17.68	18.76	17.97	
1.4	256QAM	1	5	17.39	18.49	17.88	
1.4	256QAM	3	0	17.38	18.69	17.84	
1.4	256QAM	3	1	17.76	18.85	17.90	
1.4	256QAM	3	3	17.38	18.84	17.94	
1.4	256QAM	6	0	17.65	18.79	17.98	19



Reduced Power Mode (Ant 0)

<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)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	18.37	18.38	18.33	18.5
20	QPSK	1	49	18.13	18.24	18.23	
20	QPSK	1	99	18.28	18.25	18.22	
20	QPSK	50	0	17.18	17.42	17.39	17.5
20	QPSK	50	24	17.31	17.39	17.28	
20	QPSK	50	50	17.31	17.41	17.39	
20	QPSK	100	0	17.27	17.34	17.34	17.5
20	16QAM	1	0	17.32	17.50	17.54	
20	16QAM	1	49	17.43	17.46	17.41	
20	16QAM	1	99	17.43	17.44	17.42	16.5
20	16QAM	50	0	16.26	16.47	16.37	
20	16QAM	50	24	16.32	16.46	16.36	
20	16QAM	50	50	16.35	16.44	16.34	16.5
20	16QAM	100	0	16.28	16.42	16.30	
20	64QAM	1	0	16.41	16.70	16.56	
20	64QAM	1	49	16.54	16.55	16.37	16.5
20	64QAM	1	99	16.32	16.48	16.44	
20	64QAM	50	0	15.27	15.52	15.35	
20	64QAM	50	24	15.36	15.47	15.36	15.5
20	64QAM	50	50	15.26	15.38	15.49	
20	64QAM	100	0	15.41	15.51	15.35	
20	256QAM	1	0	13.43	13.25	13.32	13.5
20	256QAM	1	49	13.35	13.49	12.99	
20	256QAM	1	99	13.14	13.09	13.09	
20	256QAM	50	0	13.43	13.33	13.30	13.5
20	256QAM	50	24	13.35	13.25	13.20	
20	256QAM	50	50	13.25	13.40	13.19	
20	256QAM	100	0	13.18	13.32	13.31	
Channel				18675	18900	19125	
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	18.36	18.35	18.30	18.5
15	QPSK	1	37	18.08	18.17	18.22	
15	QPSK	1	74	18.21	18.23	18.16	
15	QPSK	36	0	17.35	17.21	17.38	17.5
15	QPSK	36	20	17.40	17.31	17.21	
15	QPSK	36	39	17.42	17.32	17.40	
15	QPSK	75	0	17.31	17.25	17.32	17.5
15	16QAM	1	0	17.50	17.28	17.53	
15	16QAM	1	37	17.40	17.42	17.36	
15	16QAM	1	74	17.39	17.45	17.41	16.5
15	16QAM	36	0	16.47	16.26	16.38	
15	16QAM	36	20	16.47	16.30	16.33	
15	16QAM	36	39	16.37	16.38	16.29	16.5
15	16QAM	75	0	16.40	16.27	16.24	
15	64QAM	1	0	16.67	16.44	16.49	
15	64QAM	1	37	16.49	16.49	16.33	16.5
15	64QAM	1	74	16.42	16.26	16.41	
15	64QAM	36	0	15.46	15.22	15.31	
15	64QAM	36	20	15.42	15.38	15.36	15.5
15	64QAM	36	39	15.32	15.21	15.43	



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15	64QAM	75	0	15.45	15.44	15.35	
15	256QAM	1	0	13.27	13.43	13.27	13.5
15	256QAM	1	37	13.46	13.34	12.99	
15	256QAM	1	74	13.05	13.17	13.08	
15	256QAM	36	0	13.26	13.36	13.31	13.5
15	256QAM	36	20	13.24	13.34	13.15	
15	256QAM	36	39	13.39	13.24	13.13	
15	256QAM	75	39	13.32	13.12	13.29	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	18.36	18.28	18.23	18.5
10	QPSK	1	25	18.05	18.10	18.25	
10	QPSK	1	49	18.20	18.16	18.18	
10	QPSK	25	0	17.29	17.23	17.36	17.5
10	QPSK	25	12	17.39	17.33	17.24	
10	QPSK	25	25	17.42	17.26	17.33	
10	QPSK	50	0	17.33	17.26	17.26	
10	16QAM	1	0	17.50	17.27	17.56	17.5
10	16QAM	1	25	17.35	17.44	17.38	
10	16QAM	1	49	17.41	17.42	17.43	
10	16QAM	25	0	16.42	16.28	16.32	16.5
10	16QAM	25	12	16.49	16.29	16.29	
10	16QAM	25	25	16.36	16.34	16.31	
10	16QAM	50	0	16.41	16.26	16.21	
10	64QAM	1	0	16.62	16.47	16.46	16.5
10	64QAM	1	25	16.50	16.46	16.30	
10	64QAM	1	49	16.36	16.19	16.39	
10	64QAM	25	0	15.39	15.20	15.26	15.5
10	64QAM	25	12	15.36	15.31	15.30	
10	64QAM	25	25	15.31	15.18	15.43	
10	64QAM	50	0	15.42	15.46	15.35	
10	256QAM	1	0	13.27	13.42	13.25	13.5
10	256QAM	1	25	13.40	13.30	12.93	
10	256QAM	1	49	13.03	13.12	13.06	
10	256QAM	25	0	13.29	13.33	13.27	13.5
10	256QAM	25	12	13.20	13.27	13.17	
10	256QAM	25	25	13.38	13.25	13.14	
10	256QAM	50	0	13.31	13.13	13.32	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	18.31	18.27	18.17	18.5
5	QPSK	1	12	18.06	18.11	18.25	
5	QPSK	1	24	18.19	18.18	18.19	
5	QPSK	12	0	17.28	17.23	17.37	17.5
5	QPSK	12	7	17.32	17.33	17.25	
5	QPSK	12	13	17.36	17.25	17.35	
5	QPSK	25	0	17.28	17.23	17.20	
5	16QAM	1	0	17.49	17.23	17.54	17.5
5	16QAM	1	12	17.38	17.44	17.36	
5	16QAM	1	24	17.34	17.42	17.36	
5	16QAM	12	0	16.40	16.22	16.29	16.5
5	16QAM	12	7	16.50	16.29	16.30	
5	16QAM	12	13	16.39	16.29	16.28	
5	16QAM	25	0	16.37	16.20	16.17	
5	64QAM	1	0	16.64	16.48	16.42	16.5
5	64QAM	1	12	16.45	16.49	16.33	



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5	64QAM	1	24	16.38	16.22	16.38	
5	64QAM	12	0	15.39	15.13	15.28	15.5
5	64QAM	12	7	15.32	15.27	15.33	
5	64QAM	12	13	15.25	15.18	15.39	
5	64QAM	25	0	15.45	15.48	15.35	
5	256QAM	1	0	13.25	13.41	13.27	13.5
5	256QAM	1	12	13.36	13.28	12.91	
5	256QAM	1	24	13.05	13.07	13.02	
5	256QAM	12	0	13.27	13.33	13.22	13.5
5	256QAM	12	7	13.21	13.29	13.18	
5	256QAM	12	13	13.38	13.25	13.16	
5	256QAM	25	0	13.28	13.07	13.32	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	18.34	18.28	18.13	18.5
3	QPSK	1	8	18.08	18.14	18.28	
3	QPSK	1	14	18.16	18.14	18.12	
3	QPSK	8	0	17.21	17.22	17.38	17.5
3	QPSK	8	4	17.25	17.29	17.28	
3	QPSK	8	7	17.38	17.27	17.29	
3	QPSK	15	0	17.29	17.24	17.15	
3	16QAM	1	0	17.51	17.23	17.48	17.5
3	16QAM	1	8	17.39	17.41	17.29	
3	16QAM	1	14	17.28	17.44	17.36	
3	16QAM	8	0	16.42	16.16	16.26	16.5
3	16QAM	8	4	16.53	16.29	16.24	
3	16QAM	8	7	16.40	16.26	16.24	
3	16QAM	15	0	16.36	16.20	16.17	
3	64QAM	1	0	16.65	16.41	16.39	16.5
3	64QAM	1	8	16.44	16.49	16.36	
3	64QAM	1	14	16.40	16.16	16.37	
3	64QAM	8	0	15.35	15.10	15.27	15.5
3	64QAM	8	4	15.26	15.27	15.30	
3	64QAM	8	7	15.26	15.18	15.41	
3	64QAM	15	0	15.38	15.47	15.30	
3	256QAM	1	0	13.24	13.37	13.24	13.5
3	256QAM	1	8	13.31	13.30	12.86	
3	256QAM	1	14	13.04	13.05	13.03	
3	256QAM	8	0	13.21	13.26	13.19	13.5
3	256QAM	8	4	13.23	13.30	13.20	
3	256QAM	8	7	13.38	13.26	13.11	
3	256QAM	15	0	13.28	13.07	13.30	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	18.05	18.11	18.30	18.5
1.4	QPSK	1	3	18.07	18.07	18.29	
1.4	QPSK	1	5	18.03	18.08	18.27	
1.4	QPSK	3	0	18.11	18.07	18.30	
1.4	QPSK	3	1	18.02	18.09	18.27	
1.4	QPSK	3	3	18.05	18.12	18.22	
1.4	QPSK	6	0	17.48	17.26	17.41	17.5
1.4	16QAM	1	0	17.50	17.17	17.49	17.5
1.4	16QAM	1	3	17.53	17.24	17.50	
1.4	16QAM	1	5	17.53	17.19	17.45	
1.4	16QAM	3	0	17.54	17.22	17.45	
1.4	16QAM	3	1	17.54	17.22	17.44	



1.4	16QAM	3	3	17.53	17.23	17.47	
1.4	16QAM	6	0	16.37	16.24	16.27	16.5
1.4	64QAM	1	0	16.35	16.24	16.23	16.5
1.4	64QAM	1	3	16.42	16.19	16.23	
1.4	64QAM	1	5	16.41	16.29	16.20	
1.4	64QAM	3	0	16.37	16.29	16.26	
1.4	64QAM	3	1	16.41	16.29	16.17	
1.4	64QAM	3	3	16.36	16.27	16.23	
1.4	64QAM	6	0	15.12	15.22	15.10	15.5
1.4	256QAM	1	0	13.00	13.02	12.99	13.5
1.4	256QAM	1	3	13.01	13.05	12.97	
1.4	256QAM	1	5	12.98	13.05	12.98	
1.4	256QAM	3	0	13.06	12.98	13.00	
1.4	256QAM	3	1	13.03	13.06	12.97	
1.4	256QAM	3	3	13.00	13.00	13.04	
1.4	256QAM	6	0	13.00	13.06	13.02	13.5

<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)
Channel				20050	20175	20300	18.4
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	17.23	17.35	17.28	18.4
20	QPSK	1	49	16.87	16.97	17.04	
20	QPSK	1	99	17.06	17.00	16.95	
20	QPSK	50	0	15.96	16.21	16.12	17.4
20	QPSK	50	24	16.05	16.13	16.01	
20	QPSK	50	50	16.09	16.14	16.15	
20	QPSK	100	0	16.03	16.16	16.15	17.4
20	16QAM	1	0	16.08	16.29	16.37	
20	16QAM	1	49	16.22	16.23	16.19	
20	16QAM	1	99	16.26	16.17	16.21	16.4
20	16QAM	50	0	15.07	15.29	15.18	
20	16QAM	50	24	15.12	15.26	15.13	
20	16QAM	50	50	15.14	15.24	15.07	16.4
20	16QAM	100	0	15.05	15.22	15.07	
20	64QAM	1	0	15.21	15.50	15.33	
20	64QAM	1	49	15.31	15.28	15.14	16.4
20	64QAM	1	99	15.10	15.25	15.27	
20	64QAM	50	0	14.03	14.30	14.12	
20	64QAM	50	24	14.17	14.22	14.18	15.4
20	64QAM	50	50	14.04	14.19	14.23	
20	64QAM	100	0	14.19	14.27	14.16	
20	256QAM	1	0	12.20	12.06	12.13	13.4
20	256QAM	1	49	12.15	12.30	11.80	
20	256QAM	1	99	11.96	11.88	11.83	
20	256QAM	50	0	12.23	12.06	12.07	13.4
20	256QAM	50	24	12.10	12.05	12.03	
20	256QAM	50	50	12.07	12.17	11.96	
20	256QAM	100	0	11.93	12.05	12.13	13.4
Channel				20025	20175	20325	
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	17.25	17.31	17.29	18.4
15	QPSK	1	37	16.84	16.94	17.03	



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15	QPSK	1	74	17.09	16.99	16.98	
15	QPSK	36	0	15.98	16.14	16.06	17.4
15	QPSK	36	20	16.07	16.06	16.01	
15	QPSK	36	39	16.03	16.15	16.16	
15	QPSK	75	0	16.01	16.09	16.15	
15	16QAM	1	0	16.06	16.25	16.32	17.4
15	16QAM	1	37	16.15	16.17	16.22	
15	16QAM	1	74	16.28	16.14	16.20	
15	16QAM	36	0	15.10	15.24	15.15	16.4
15	16QAM	36	20	15.05	15.19	15.08	
15	16QAM	36	39	15.07	15.25	15.01	
15	16QAM	75	0	15.08	15.24	15.09	
15	64QAM	1	0	15.18	15.53	15.36	16.4
15	64QAM	1	37	15.26	15.31	15.07	
15	64QAM	1	74	15.10	15.28	15.20	
15	64QAM	36	0	13.98	14.28	14.07	15.4
15	64QAM	36	20	14.10	14.23	14.12	
15	64QAM	36	39	14.07	14.19	14.22	
15	64QAM	75	0	14.14	14.26	14.11	
15	256QAM	1	0	12.15	12.07	12.13	13.4
15	256QAM	1	37	12.11	12.28	11.78	
15	256QAM	1	74	11.95	11.89	11.86	
15	256QAM	36	0	12.24	12.06	12.07	13.4
15	256QAM	36	20	12.10	12.07	12.02	
15	256QAM	36	39	12.10	12.18	11.92	
15	256QAM	75	0	11.94	12.02	12.12	
Channel				20000	20175	20350	Tune-up limit (dBm)
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	17.23	17.25	17.32	18.4
10	QPSK	1	25	16.84	16.93	17.03	
10	QPSK	1	49	17.07	16.97	16.97	
10	QPSK	25	0	15.93	16.10	16.03	17.4
10	QPSK	25	12	16.06	16.02	15.98	
10	QPSK	25	25	16.00	16.08	16.17	
10	QPSK	50	0	15.96	16.11	16.10	
10	16QAM	1	0	16.07	16.25	16.34	17.4
10	16QAM	1	25	16.16	16.20	16.16	
10	16QAM	1	49	16.27	16.10	16.22	
10	16QAM	25	0	15.09	15.18	15.16	16.4
10	16QAM	25	12	15.02	15.18	15.07	
10	16QAM	25	25	15.01	15.19	15.02	
10	16QAM	50	0	15.09	15.20	15.07	
10	64QAM	1	0	15.12	15.48	15.37	16.4
10	64QAM	1	25	15.26	15.32	15.04	
10	64QAM	1	49	15.09	15.25	15.21	
10	64QAM	25	0	14.00	14.29	14.10	15.4
10	64QAM	25	12	14.13	14.21	14.07	
10	64QAM	25	25	14.03	14.18	14.18	
10	64QAM	50	0	14.11	14.20	14.05	
10	256QAM	1	0	12.11	12.03	12.09	13.4
10	256QAM	1	25	12.12	12.23	11.80	
10	256QAM	1	49	11.98	11.86	11.81	
10	256QAM	25	0	12.25	11.99	12.03	13.4
10	256QAM	25	12	12.04	12.03	11.97	
10	256QAM	25	25	12.03	12.18	11.94	
10	256QAM	50	0	11.87	12.04	12.11	



Channel				19975	20175	20375	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	17.22	17.22	17.27	18.4
5	QPSK	1	12	16.86	16.90	17.01	
5	QPSK	1	24	17.05	16.96	16.97	
5	QPSK	12	0	15.87	16.06	16.01	17.4
5	QPSK	12	7	16.07	16.03	15.97	
5	QPSK	12	13	15.94	16.10	16.16	
5	QPSK	25	0	15.94	16.08	16.11	
5	16QAM	1	0	16.10	16.24	16.37	17.4
5	16QAM	1	12	16.17	16.20	16.10	
5	16QAM	1	24	16.26	16.03	16.24	
5	16QAM	12	0	15.08	15.19	15.14	16.4
5	16QAM	12	7	14.95	15.12	15.10	
5	16QAM	12	13	14.95	15.15	15.04	
5	16QAM	25	0	15.05	15.18	15.06	
5	64QAM	1	0	15.15	15.51	15.35	
5	64QAM	1	12	15.27	15.33	15.05	16.4
5	64QAM	1	24	15.05	15.21	15.24	
5	64QAM	12	0	13.99	14.24	14.11	
5	64QAM	12	7	14.11	14.21	14.07	15.4
5	64QAM	12	13	13.96	14.16	14.15	
5	64QAM	25	0	14.13	14.16	14.04	
5	256QAM	1	0	12.13	11.98	12.09	
5	256QAM	1	12	12.10	12.22	11.77	13.4
5	256QAM	1	24	12.00	11.80	11.82	
5	256QAM	12	0	12.27	11.97	11.99	
5	256QAM	12	7	12.00	12.00	11.90	13.4
5	256QAM	12	13	11.97	12.20	11.92	
5	256QAM	25	0	11.81	12.00	12.13	
Channel				19965	20175	20385	
Frequency (MHz)				1711.5	1732.5	1753.5	
3	QPSK	1	0	17.24	17.24	17.23	18.4
3	QPSK	1	8	16.80	16.90	17.03	
3	QPSK	1	14	17.01	16.93	16.97	
3	QPSK	8	0	15.89	16.04	16.02	17.4
3	QPSK	8	4	16.09	16.03	15.98	
3	QPSK	8	7	15.88	16.05	16.19	
3	QPSK	15	0	15.93	16.01	16.11	
3	16QAM	1	0	16.13	16.18	16.40	17.4
3	16QAM	1	8	16.11	16.21	16.09	
3	16QAM	1	14	16.23	15.98	16.19	
3	16QAM	8	0	15.03	15.14	15.12	16.4
3	16QAM	8	4	14.94	15.05	15.08	
3	16QAM	8	7	14.88	15.11	15.05	
3	16QAM	15	0	15.01	15.14	14.99	
3	64QAM	1	0	15.17	15.46	15.33	
3	64QAM	1	8	15.27	15.27	14.98	16.4
3	64QAM	1	14	15.08	15.21	15.27	
3	64QAM	8	0	14.00	14.21	14.10	
3	64QAM	8	4	14.07	14.19	14.00	15.4
3	64QAM	8	7	13.94	14.16	14.12	
3	64QAM	15	0	14.16	14.10	14.02	
3	256QAM	1	0	12.12	11.93	12.11	
3	256QAM	1	8	12.03	12.23	11.72	13.4
3	256QAM	1	14	12.00	11.74	11.78	



3	256QAM	8	0	12.22	11.91	11.94	13.4
3	256QAM	8	4	11.95	12.00	11.84	
3	256QAM	8	7	11.91	12.20	11.93	
3	256QAM	15	0	11.83	11.98	12.12	
Channel				19957	20175	20393	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1732.5	1754.3	
1.4	QPSK	1	0	16.74	16.87	17.04	18.4
1.4	QPSK	1	3	16.81	16.91	17.00	
1.4	QPSK	1	5	16.76	16.89	17.02	
1.4	QPSK	3	0	16.77	16.88	17.02	
1.4	QPSK	3	1	16.81	16.86	17.06	
1.4	QPSK	3	3	16.78	16.85	16.99	
1.4	QPSK	6	0	16.02	16.00	15.96	17.4
1.4	16QAM	1	0	16.08	15.97	15.95	17.4
1.4	16QAM	1	3	16.08	15.98	15.99	
1.4	16QAM	1	5	16.08	16.04	15.95	
1.4	16QAM	3	0	16.09	15.97	15.97	
1.4	16QAM	3	1	16.10	15.98	15.93	
1.4	16QAM	3	3	16.02	15.99	15.98	
1.4	16QAM	6	0	15.22	15.25	14.91	16.4
1.4	64QAM	1	0	15.24	15.30	14.93	16.4
1.4	64QAM	1	3	15.30	15.30	15.01	
1.4	64QAM	1	5	15.29	15.25	14.93	
1.4	64QAM	3	0	15.28	15.26	14.92	
1.4	64QAM	3	1	15.20	15.28	14.98	
1.4	64QAM	3	3	15.10	15.10	15.15	
1.4	64QAM	6	0	14.09	14.12	14.03	15.4
1.4	256QAM	1	0	12.13	11.89	12.11	13.4
1.4	256QAM	1	3	12.08	11.94	12.06	
1.4	256QAM	1	5	12.14	11.96	12.04	
1.4	256QAM	3	0	12.10	11.94	12.14	
1.4	256QAM	3	1	12.07	11.95	12.14	
1.4	256QAM	3	3	12.11	11.88	12.09	
1.4	256QAM	6	0	12.14	11.86	12.04	13.4

<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)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	18.80	18.90	18.72	19.9
10	QPSK	1	25	18.57	18.58	18.42	
10	QPSK	1	49	18.57	18.27	18.33	
10	QPSK	25	0	17.66	17.72	17.53	18.9
10	QPSK	25	12	17.57	17.69	17.42	
10	QPSK	25	25	17.70	17.63	17.42	
10	QPSK	50	0	17.60	17.63	17.59	18.9
10	16QAM	1	0	17.89	17.81	17.71	
10	16QAM	1	25	18.01	17.95	17.74	
10	16QAM	1	49	18.02	17.94	17.59	17.9
10	16QAM	25	0	16.74	16.58	16.66	
10	16QAM	25	12	16.66	16.62	16.64	
10	16QAM	25	25	16.63	16.67	16.65	
10	16QAM	50	0	16.66	16.74	16.55	



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10	64QAM	1	0	16.68	16.54	16.61	17.9
10	64QAM	1	25	16.77	16.59	16.71	
10	64QAM	1	49	16.60	16.65	16.55	
10	64QAM	25	0	15.81	15.69	15.59	16.9
10	64QAM	25	12	15.72	15.66	15.56	
10	64QAM	25	25	15.59	15.62	15.60	
10	64QAM	50	0	15.60	15.70	15.47	14.9
10	256QAM	1	0	13.88	13.76	13.81	
10	256QAM	1	25	13.88	13.83	13.78	
10	256QAM	1	49	13.79	13.90	13.81	14.9
10	256QAM	25	0	13.79	13.95	13.71	
10	256QAM	25	12	13.91	13.77	13.80	
10	256QAM	25	25	13.97	13.76	13.94	Tune-up limit (dBm)
10	256QAM	50	0	13.81	13.78	13.74	
Channel				20425	20525	20625	
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	18.77	18.84	18.69	19.9
5	QPSK	1	12	18.55	18.60	18.43	
5	QPSK	1	24	18.53	18.24	18.34	
5	QPSK	12	0	17.69	17.56	17.52	18.9
5	QPSK	12	7	17.55	17.62	17.43	
5	QPSK	12	13	17.67	17.64	17.44	
5	QPSK	25	0	17.79	17.61	17.58	18.9
5	16QAM	1	0	17.83	17.76	17.71	
5	16QAM	1	12	18.04	17.98	17.76	
5	16QAM	1	24	17.99	17.94	17.60	17.9
5	16QAM	12	0	16.69	16.51	16.68	
5	16QAM	12	7	16.64	16.63	16.63	
5	16QAM	12	13	16.63	16.62	16.60	17.9
5	16QAM	25	0	16.66	16.74	16.56	
5	64QAM	1	0	16.71	16.57	16.54	
5	64QAM	1	12	16.70	16.62	16.68	17.9
5	64QAM	1	24	16.61	16.59	16.52	
5	64QAM	12	0	15.77	15.63	15.53	
5	64QAM	12	7	15.73	15.62	15.50	16.9
5	64QAM	12	13	15.55	15.65	15.63	
5	64QAM	25	0	15.58	15.70	15.48	
5	256QAM	1	0	13.91	13.77	13.84	14.9
5	256QAM	1	12	13.84	13.78	13.71	
5	256QAM	1	24	13.72	13.86	13.77	
5	256QAM	12	0	13.73	13.95	13.66	14.9
5	256QAM	12	7	13.85	13.78	13.80	
5	256QAM	12	13	14.00	13.76	13.91	
5	256QAM	25	0	13.83	13.80	13.71	Tune-up limit (dBm)
Channel				20415	20525	20635	
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	18.77	18.79	18.63	19.9
3	QPSK	1	8	18.50	18.54	18.36	
3	QPSK	1	14	18.51	18.19	18.31	
3	QPSK	8	0	17.71	17.50	17.45	18.9
3	QPSK	8	4	17.55	17.57	17.42	
3	QPSK	8	7	17.69	17.62	17.45	
3	QPSK	15	0	17.76	17.58	17.56	18.9
3	16QAM	1	0	17.86	17.79	17.71	
3	16QAM	1	8	18.07	17.97	17.72	
3	16QAM	1	14	18.00	17.87	17.59	



3	16QAM	8	0	16.62	16.51	16.65	17.9
3	16QAM	8	4	16.64	16.58	16.60	
3	16QAM	8	7	16.63	16.56	16.55	
3	16QAM	15	0	16.59	16.72	16.53	
3	64QAM	1	0	16.71	16.54	16.53	17.9
3	64QAM	1	8	16.63	16.59	16.65	
3	64QAM	1	14	16.63	16.61	16.48	
3	64QAM	8	0	15.73	15.66	15.55	16.9
3	64QAM	8	4	15.67	15.62	15.52	
3	64QAM	8	7	15.49	15.65	15.57	
3	64QAM	15	0	15.55	15.68	15.43	
3	256QAM	1	0	13.84	13.78	13.78	14.9
3	256QAM	1	8	13.81	13.72	13.68	
3	256QAM	1	14	13.67	13.79	13.74	
3	256QAM	8	0	13.66	13.98	13.65	14.9
3	256QAM	8	4	13.81	13.76	13.78	
3	256QAM	8	7	13.97	13.79	13.92	
3	256QAM	15	0	13.77	13.79	13.72	
Channel				20407	20525	20643	
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	18.54	18.20	18.31	19.9
1.4	QPSK	1	3	18.44	18.22	18.26	
1.4	QPSK	1	5	18.52	18.19	18.29	
1.4	QPSK	3	0	18.50	18.18	18.31	
1.4	QPSK	3	1	18.49	18.16	18.34	
1.4	QPSK	3	3	18.46	18.14	18.24	
1.4	QPSK	6	0	17.53	17.53	17.38	18.9
1.4	16QAM	1	0	17.57	17.55	17.43	18.9
1.4	16QAM	1	3	17.52	17.60	17.44	
1.4	16QAM	1	5	17.52	17.59	17.41	
1.4	16QAM	3	0	17.49	17.50	17.37	
1.4	16QAM	3	1	17.58	17.56	17.35	
1.4	16QAM	3	3	17.56	17.55	17.38	
1.4	16QAM	6	0	16.59	16.75	16.47	17.9
1.4	64QAM	1	0	16.56	16.72	16.56	17.9
1.4	64QAM	1	3	16.57	16.73	16.52	
1.4	64QAM	1	5	16.61	16.68	16.48	
1.4	64QAM	3	0	16.52	16.67	16.46	
1.4	64QAM	3	1	16.58	16.72	16.55	
1.4	64QAM	3	3	16.61	16.65	16.51	
1.4	64QAM	6	0	15.68	15.76	15.61	16.9
1.4	256QAM	1	0	13.84	13.75	13.81	14.9
1.4	256QAM	1	3	13.87	13.80	13.76	
1.4	256QAM	1	5	13.81	13.71	13.71	
1.4	256QAM	3	0	13.87	13.79	13.78	
1.4	256QAM	3	1	13.77	13.78	13.72	
1.4	256QAM	3	3	13.79	13.77	13.81	
1.4	256QAM	6	0	13.78	13.75	13.76	14.9



<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)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	15.48	15.49	15.44	15.5
20	QPSK	1	49	15.05	15.05	14.98	
20	QPSK	1	99	15.11	14.84	15.00	
20	QPSK	50	0	14.06	14.20	14.09	14.5
20	QPSK	50	24	14.18	14.16	13.99	
20	QPSK	50	50	14.10	14.13	14.08	
20	QPSK	100	0	14.14	14.16	14.00	14.5
20	16QAM	1	0	14.27	14.28	14.24	
20	16QAM	1	49	14.32	14.23	14.18	
20	16QAM	1	99	14.01	14.10	14.16	13.5
20	16QAM	50	0	13.26	13.01	13.08	
20	16QAM	50	24	13.15	13.02	13.06	
20	16QAM	50	50	13.10	13.09	13.19	13.5
20	16QAM	100	0	13.21	12.99	13.14	
20	64QAM	1	0	13.47	13.23	13.20	
20	64QAM	1	49	13.34	13.24	13.25	13.5
20	64QAM	1	99	13.24	13.12	13.20	
20	64QAM	50	0	12.27	11.99	12.14	
20	64QAM	50	24	12.15	12.06	12.10	12.5
20	64QAM	50	50	12.15	12.07	12.11	
20	64QAM	100	0	12.18	12.07	12.15	
20	256QAM	1	0	10.41	10.24	10.23	10.5
20	256QAM	1	49	10.35	10.22	10.20	
20	256QAM	1	99	10.33	10.32	10.41	
20	256QAM	50	0	10.43	10.15	10.29	10.5
20	256QAM	50	24	10.32	10.44	10.43	
20	256QAM	50	50	10.40	10.42	10.38	
20	256QAM	100	0	10.43	10.26	10.36	
Channel				20825	21100	21375	
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	15.23	15.31	15.26	15.5
15	QPSK	1	37	14.78	14.84	14.71	
15	QPSK	1	74	14.91	14.57	14.73	
15	QPSK	36	0	13.82	13.97	13.85	14.5
15	QPSK	36	20	13.98	13.91	13.76	
15	QPSK	36	39	13.91	13.94	13.83	
15	QPSK	75	0	13.93	13.89	13.81	14.5
15	16QAM	1	0	14.06	14.03	14.05	
15	16QAM	1	37	14.09	13.99	13.92	
15	16QAM	1	74	13.75	13.89	13.92	14.5
15	16QAM	36	0	13.02	12.82	12.91	
15	16QAM	36	20	12.97	12.75	12.88	
15	16QAM	36	39	12.90	12.90	13.00	13.5
15	16QAM	75	0	12.96	12.79	12.88	
15	64QAM	1	0	13.27	12.98	13.00	
15	64QAM	1	37	13.12	13.00	12.98	13.5
15	64QAM	1	74	13.05	12.88	13.02	
15	64QAM	36	0	12.02	11.72	11.93	
15	64QAM	36	20	11.91	11.83	11.90	12.5
15	64QAM	36	39	11.97	11.88	11.87	
15	64QAM	75	0	11.93	11.83	11.90	



15	256QAM	1	0	10.24	9.99	10.05	10.5
15	256QAM	1	37	10.09	10.05	9.93	
15	256QAM	1	74	10.08	10.14	10.21	
15	256QAM	36	0	10.25	9.95	10.05	10.5
15	256QAM	36	20	10.11	10.27	10.24	
15	256QAM	36	39	10.17	10.19	10.18	
15	256QAM	75	0	10.21	10.09	10.11	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	15.24	15.34	15.20	15.5
10	QPSK	1	25	14.77	14.81	14.70	
10	QPSK	1	49	14.93	14.54	14.75	
10	QPSK	25	0	13.81	13.95	13.86	14.5
10	QPSK	25	12	13.94	13.84	13.74	
10	QPSK	25	25	13.94	13.96	13.83	
10	QPSK	50	0	13.94	13.92	13.81	
10	16QAM	1	0	14.09	13.98	14.06	14.5
10	16QAM	1	25	14.03	13.98	13.87	
10	16QAM	1	49	13.75	13.92	13.87	
10	16QAM	25	0	12.96	12.78	12.89	13.5
10	16QAM	25	12	12.93	12.73	12.87	
10	16QAM	25	25	12.84	12.86	12.94	
10	16QAM	50	0	12.98	12.72	12.84	
10	64QAM	1	0	13.23	12.92	12.93	13.5
10	64QAM	1	25	13.14	12.97	12.91	
10	64QAM	1	49	12.98	12.84	12.97	
10	64QAM	25	0	11.95	11.72	11.92	12.5
10	64QAM	25	12	11.89	11.82	11.92	
10	64QAM	25	25	11.96	11.81	11.88	
10	64QAM	50	0	11.96	11.82	11.83	
10	256QAM	1	0	10.20	9.92	10.06	10.5
10	256QAM	1	25	10.10	10.00	9.86	
10	256QAM	1	49	10.05	10.16	10.19	
10	256QAM	25	0	10.19	9.94	10.02	10.5
10	256QAM	25	12	10.07	10.24	10.24	
10	256QAM	25	25	10.11	10.17	10.11	
10	256QAM	50	0	10.24	10.12	10.13	
Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	15.19	15.29	15.16	15.5
5	QPSK	1	12	14.75	14.77	14.65	
5	QPSK	1	24	14.96	14.52	14.77	
5	QPSK	12	0	13.83	13.93	13.85	14.5
5	QPSK	12	7	13.87	13.77	13.77	
5	QPSK	12	13	13.96	13.99	13.84	
5	QPSK	25	0	13.91	13.90	13.80	
5	16QAM	1	0	14.09	13.96	13.99	14.5
5	16QAM	1	12	14.05	13.98	13.82	
5	16QAM	1	24	13.73	13.92	13.81	
5	16QAM	12	0	12.95	12.74	12.83	13.5
5	16QAM	12	7	12.90	12.73	12.80	
5	16QAM	12	13	12.80	12.87	12.88	
5	16QAM	25	0	13.01	12.70	12.85	
5	64QAM	1	0	13.26	12.91	12.95	13.5
5	64QAM	1	12	13.07	12.95	12.94	
5	64QAM	1	24	12.93	12.85	12.96	



5	64QAM	12	0	11.94	11.65	11.91	12.5
5	64QAM	12	7	11.92	11.79	11.90	
5	64QAM	12	13	11.89	11.81	11.90	
5	64QAM	25	0	11.96	11.84	11.77	
5	256QAM	1	0	10.13	9.95	10.06	10.5
5	256QAM	1	12	10.10	9.94	9.88	
5	256QAM	1	24	10.04	10.13	10.17	
5	256QAM	12	0	10.22	9.90	10.05	10.5
5	256QAM	12	7	10.01	10.25	10.20	
5	256QAM	12	13	10.08	10.17	10.06	
5	256QAM	25	0	10.26	10.14	10.13	

<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)
Channel				23060	23095	23130	Tune-up limit (dBm)
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	21.35	21.42	21.34	21.8
10	QPSK	1	25	21.09	21.03	20.94	
10	QPSK	1	49	21.04	20.60	20.75	
10	QPSK	25	0	20.02	20.21	20.15	20.8
10	QPSK	25	12	20.11	20.16	19.86	
10	QPSK	25	25	20.20	20.12	19.83	
10	QPSK	50	0	20.23	20.22	19.99	20.8
10	16QAM	1	0	20.32	20.23	20.17	
10	16QAM	1	25	20.44	20.50	20.13	
10	16QAM	1	49	20.60	20.37	19.99	19.8
10	16QAM	25	0	19.30	19.15	19.16	
10	16QAM	25	12	19.15	19.04	19.20	
10	16QAM	25	25	19.13	19.16	18.99	19.8
10	16QAM	50	0	19.12	19.17	18.92	
10	64QAM	1	0	19.24	19.01	19.02	
10	64QAM	1	25	19.34	19.06	19.25	19.8
10	64QAM	1	49	19.12	19.04	19.00	
10	64QAM	25	0	18.25	18.25	18.08	
10	64QAM	25	12	18.27	18.09	18.14	18.8
10	64QAM	25	25	18.02	18.11	18.05	
10	64QAM	50	0	17.98	18.27	17.87	
10	256QAM	1	0	16.52	16.36	16.38	16.8
10	256QAM	1	25	16.33	16.27	16.38	
10	256QAM	1	49	16.33	16.29	16.16	
10	256QAM	25	0	16.33	16.35	16.09	16.8
10	256QAM	25	12	16.45	16.15	16.18	
10	256QAM	25	25	16.54	16.27	16.43	
10	256QAM	50	0	16.30	16.25	16.14	
Channel				23035	23095	23155	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	21.33	21.41	21.36	21.8
5	QPSK	1	12	21.07	21.03	20.96	
5	QPSK	1	24	20.97	20.61	20.78	
5	QPSK	12	0	19.97	19.96	20.17	20.8
5	QPSK	12	7	20.10	20.11	19.87	
5	QPSK	12	13	20.23	20.10	19.84	
5	QPSK	25	0	20.24	20.18	19.98	



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5	16QAM	1	0	20.34	20.22	20.13	20.8
5	16QAM	1	12	20.44	20.47	20.15	
5	16QAM	1	24	20.63	20.35	19.97	
5	16QAM	12	0	19.30	19.17	19.16	19.8
5	16QAM	12	7	19.17	19.03	19.19	
5	16QAM	12	13	19.07	19.10	18.99	
5	16QAM	25	0	19.08	19.12	18.91	19.8
5	64QAM	1	0	19.17	18.98	19.05	
5	64QAM	1	12	19.28	19.04	19.18	
5	64QAM	1	24	19.08	19.02	19.00	18.8
5	64QAM	12	0	18.18	18.19	18.02	
5	64QAM	12	7	18.25	18.05	18.10	
5	64QAM	12	13	18.02	18.12	18.04	16.8
5	64QAM	25	0	17.97	18.24	17.85	
5	256QAM	1	0	16.50	16.29	16.39	
5	256QAM	1	12	16.33	16.30	16.34	16.8
5	256QAM	1	24	16.35	16.29	16.17	
5	256QAM	12	0	16.35	16.34	16.11	
5	256QAM	12	7	16.44	16.08	16.20	16.8
5	256QAM	12	13	16.50	16.21	16.37	
5	256QAM	25	0	16.32	16.18	16.15	
Channel				23025	23095	23165	Tune-up limit (dBm)
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	21.32	21.40	21.35	21.8
3	QPSK	1	8	21.04	21.06	20.94	
3	QPSK	1	14	20.91	20.56	20.81	
3	QPSK	8	0	19.95	19.92	20.14	20.8
3	QPSK	8	4	20.04	20.06	19.89	
3	QPSK	8	7	20.24	20.05	19.80	
3	QPSK	15	0	20.24	20.11	19.93	20.8
3	16QAM	1	0	20.35	20.20	20.11	
3	16QAM	1	8	20.40	20.45	20.09	
3	16QAM	1	14	20.59	20.33	19.99	19.8
3	16QAM	8	0	19.25	19.12	19.18	
3	16QAM	8	4	19.13	19.03	19.15	
3	16QAM	8	7	19.02	19.12	18.96	19.8
3	16QAM	15	0	19.11	19.14	18.91	
3	64QAM	1	0	19.10	18.99	19.00	
3	64QAM	1	8	19.30	18.98	19.13	19.8
3	64QAM	1	14	19.02	19.03	18.96	
3	64QAM	8	0	18.11	18.19	17.97	
3	64QAM	8	4	18.22	17.98	18.04	18.8
3	64QAM	8	7	17.99	18.07	18.04	
3	64QAM	15	0	17.93	18.23	17.81	
3	256QAM	1	0	16.48	16.24	16.40	16.8
3	256QAM	1	8	16.36	16.33	16.31	
3	256QAM	1	14	16.29	16.30	16.13	
3	256QAM	8	0	16.34	16.31	16.09	16.8
3	256QAM	8	4	16.38	16.09	16.13	
3	256QAM	8	7	16.51	16.16	16.37	
3	256QAM	15	0	16.28	16.15	16.11	Tune-up limit (dBm)
Channel				23017	23095	23173	
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	21.07	21.02	20.94	21.8
1.4	QPSK	1	3	21.06	21.09	20.89	
1.4	QPSK	1	5	21.00	21.09	20.94	



1.4	QPSK	3	0	21.01	21.08	20.94	
1.4	QPSK	3	1	21.07	20.99	20.87	
1.4	QPSK	3	3	21.02	21.05	20.87	
1.4	QPSK	6	0	19.92	19.87	20.12	20.8
1.4	16QAM	1	0	19.93	19.85	20.12	20.8
1.4	16QAM	1	3	19.91	19.89	20.07	
1.4	16QAM	1	5	19.93	19.90	20.14	
1.4	16QAM	3	0	19.89	19.91	20.11	
1.4	16QAM	3	1	19.96	19.85	20.11	
1.4	16QAM	3	3	19.84	19.80	19.82	
1.4	16QAM	6	0	19.06	19.02	19.16	19.8
1.4	64QAM	1	0	19.16	18.96	19.15	19.8
1.4	64QAM	1	3	19.12	19.04	19.12	
1.4	64QAM	1	5	19.11	19.05	19.09	
1.4	64QAM	3	0	19.06	19.04	19.17	
1.4	64QAM	3	1	19.10	19.05	19.12	
1.4	64QAM	3	3	19.10	19.00	19.12	
1.4	64QAM	6	0	18.05	18.09	18.01	18.8
1.4	256QAM	1	0	16.31	16.28	16.06	16.8
1.4	256QAM	1	3	16.31	16.31	16.12	
1.4	256QAM	1	5	16.33	16.31	16.04	
1.4	256QAM	3	0	16.30	16.30	16.09	
1.4	256QAM	3	1	16.32	16.32	16.03	
1.4	256QAM	3	3	16.35	16.34	16.10	
1.4	256QAM	6	0	16.33	16.27	16.09	16.8

<LTE Band 13>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23230			
Frequency (MHz)				782			
10	QPSK	1	0		21.20		21.7
10	QPSK	1	25		21.18		
10	QPSK	1	49		20.76		
10	QPSK	25	0		20.39		20.7
10	QPSK	25	12		20.36		
10	QPSK	25	25		20.29		
10	QPSK	50	0		20.36		20.7
10	16QAM	1	0		20.34		
10	16QAM	1	25		20.67		
10	16QAM	1	49		20.56		19.7
10	16QAM	25	0		19.33		
10	16QAM	25	12		19.15		
10	16QAM	25	25		19.32		19.7
10	16QAM	50	0		19.31		
10	64QAM	1	0		19.14		
10	64QAM	1	25		19.26		18.7
10	64QAM	1	49		19.25		
10	64QAM	25	0		18.36		
10	64QAM	25	12		18.22		16.7
10	64QAM	25	25		18.23		
10	64QAM	50	0		18.42		
10	256QAM	1	0		16.55		16.7
10	256QAM	1	25		16.39		



10	256QAM	1	49		16.42		
10	256QAM	25	0		16.47		16.7
10	256QAM	25	12		16.30		
10	256QAM	25	25		16.44		
10	256QAM	50	0		16.46		
Channel				23205	23230	23255	
Frequency (MHz)				779.5	782	784.5	
5	QPSK	1	0	20.14	20.16	20.14	21.7
5	QPSK	1	12	20.19	20.17	20.18	
5	QPSK	1	24	19.75	19.75	19.78	
5	QPSK	12	0	19.40	19.36	19.41	20.7
5	QPSK	12	7	19.31	19.39	19.32	
5	QPSK	12	13	19.24	19.28	19.29	
5	QPSK	25	0	19.31	19.30	19.30	
5	16QAM	1	0	19.27	19.28	19.29	20.7
5	16QAM	1	12	19.64	19.70	19.68	
5	16QAM	1	24	19.50	19.58	19.49	
5	16QAM	12	0	18.36	18.29	18.26	19.7
5	16QAM	12	7	18.09	18.08	18.16	
5	16QAM	12	13	18.33	18.30	18.26	
5	16QAM	25	0	18.27	18.32	18.26	
5	64QAM	1	0	18.12	18.15	18.15	19.7
5	64QAM	1	12	18.29	18.20	18.24	
5	64QAM	1	24	18.28	18.26	18.28	
5	64QAM	12	0	17.37	17.36	17.30	18.7
5	64QAM	12	7	17.19	17.21	17.21	
5	64QAM	12	13	17.25	17.25	17.21	
5	64QAM	25	0	17.43	17.44	17.41	
5	256QAM	1	0	15.58	15.50	15.52	16.7
5	256QAM	1	12	15.42	15.34	15.41	
5	256QAM	1	24	15.41	15.37	15.42	
5	256QAM	12	0	15.48	15.44	15.47	16.7
5	256QAM	12	7	15.27	15.26	15.26	
5	256QAM	12	13	15.41	15.41	15.41	
5	256QAM	25	0	15.45	15.47	15.48	

<LTE Band 14>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				23330			Tune-up limit (dBm)
Frequency (MHz)				793			
10	QPSK	1	0		19.89		21.4
10	QPSK	1	25		19.73		
10	QPSK	1	49		19.72		
10	QPSK	25	0		18.95		20.4
10	QPSK	25	12		18.80		
10	QPSK	25	25		18.94		
10	QPSK	50	0		18.92		
10	16QAM	1	0		19.04		20.4
10	16QAM	1	25		19.09		
10	16QAM	1	49		18.87		
10	16QAM	25	0		17.93		19.4
10	16QAM	25	12		17.85		
10	16QAM	25	25		17.87		



10	16QAM	50	0		17.80		
10	64QAM	1	0		18.24		19.4
10	64QAM	1	25		18.42		
10	64QAM	1	49		18.07		
10	64QAM	25	0		16.93		18.4
10	64QAM	25	12		16.85		
10	64QAM	25	25		17.02		
10	64QAM	50	0		16.79		
10	256QAM	1	0		15.52		16.4
10	256QAM	1	25		15.56		
10	256QAM	1	49		15.77		
10	256QAM	25	0		15.62		16.4
10	256QAM	25	12		15.56		
10	256QAM	25	25		15.58		
10	256QAM	50	0		15.75		
Channel				23305	23330	23355	Tune-up limit (dBm)
Frequency (MHz)				790.5	793	795.5	
5	QPSK	1	0	19.81	19.87	19.82	21.4
5	QPSK	1	12	19.85	19.84	19.85	
5	QPSK	1	24	19.40	19.44	19.43	
5	QPSK	12	0	19.00	19.00	18.94	20.4
5	QPSK	12	7	19.11	19.12	19.08	
5	QPSK	12	13	19.03	19.08	19.09	
5	QPSK	25	0	19.08	19.12	19.12	
5	16QAM	1	0	19.15	19.16	19.11	20.4
5	16QAM	1	12	19.43	19.43	19.38	
5	16QAM	1	24	19.35	19.32	19.30	
5	16QAM	12	0	18.12	18.15	18.14	19.4
5	16QAM	12	7	18.19	18.21	18.18	
5	16QAM	12	13	18.27	18.26	18.25	
5	16QAM	25	0	18.06	18.13	18.10	
5	64QAM	1	0	18.04	18.04	18.06	19.4
5	64QAM	1	12	18.15	18.14	18.17	
5	64QAM	1	24	17.99	18.04	18.05	
5	64QAM	12	0	17.46	17.45	17.45	18.4
5	64QAM	12	7	17.38	17.36	17.34	
5	64QAM	12	13	17.31	17.30	17.31	
5	64QAM	25	0	17.37	17.40	17.40	
5	256QAM	1	0	15.50	15.54	15.57	16.4
5	256QAM	1	12	15.59	15.59	15.60	
5	256QAM	1	24	15.80	15.84	15.83	
5	256QAM	12	0	15.60	15.65	15.65	16.4
5	256QAM	12	7	15.54	15.57	15.59	
5	256QAM	12	13	15.62	15.66	15.65	
5	256QAM	25	0	15.81	15.79	15.78	

<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)
Channel				23780	23790	23800	
Frequency (MHz)				709	710	711	
10	QPSK	1	0	21.13	21.32	21.17	21.8
10	QPSK	1	25	21.30	21.31	21.16	
10	QPSK	1	49	21.09	21.10	21.06	



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10	QPSK	25	0	20.57	20.37	20.43	20.8
10	QPSK	25	12	20.27	20.39	20.28	
10	QPSK	25	25	20.40	20.25	20.40	
10	QPSK	50	0	20.39	20.45	20.18	
10	16QAM	1	0	20.70	20.63	20.47	20.8
10	16QAM	1	25	20.53	20.47	20.51	
10	16QAM	1	49	20.61	20.48	20.36	
10	16QAM	25	0	19.49	19.26	19.50	19.8
10	16QAM	25	12	19.49	19.36	19.44	
10	16QAM	25	25	19.33	19.37	19.28	
10	16QAM	50	0	19.43	19.44	19.30	
10	64QAM	1	0	19.63	19.34	19.44	19.8
10	64QAM	1	25	19.44	19.38	19.52	
10	64QAM	1	49	19.59	19.44	19.52	
10	64QAM	25	0	18.47	18.38	18.43	18.8
10	64QAM	25	12	18.64	18.68	18.34	
10	64QAM	25	25	18.53	18.62	18.52	
10	64QAM	50	0	18.66	18.56	18.48	
10	256QAM	1	0	16.66	16.67	16.72	16.8
10	256QAM	1	25	16.76	16.75	16.78	
10	256QAM	1	49	16.69	16.72	16.61	
10	256QAM	25	0	16.77	16.76	16.68	16.8
10	256QAM	25	12	16.78	16.72	16.59	
10	256QAM	25	25	16.63	16.72	16.72	
10	256QAM	50	0	16.70	16.66	16.74	
Channel				23755	23790	23825	Tune-up limit (dBm)
Frequency (MHz)				706.5	710	713.5	
5	QPSK	1	0	21.31	21.15	21.22	21.8
5	QPSK	1	12	21.16	21.19	20.96	
5	QPSK	1	24	20.99	21.01	20.86	
5	QPSK	12	0	20.56	20.22	20.26	20.8
5	QPSK	12	7	20.22	20.24	20.11	
5	QPSK	12	13	20.30	20.07	20.26	
5	QPSK	25	0	20.23	20.41	20.02	
5	16QAM	1	0	20.65	20.55	20.40	20.8
5	16QAM	1	12	20.35	20.44	20.35	
5	16QAM	1	24	20.49	20.34	20.21	
5	16QAM	12	0	19.39	19.15	19.50	19.8
5	16QAM	12	7	19.40	19.25	19.32	
5	16QAM	12	13	19.14	19.27	19.23	
5	16QAM	25	0	19.35	19.31	19.20	
5	64QAM	1	0	19.58	19.28	19.36	19.8
5	64QAM	1	12	19.44	19.38	19.32	
5	64QAM	1	24	19.53	19.38	19.46	
5	64QAM	12	0	18.34	18.36	18.33	18.8
5	64QAM	12	7	18.55	18.60	18.17	
5	64QAM	12	13	18.49	18.61	18.48	
5	64QAM	25	0	18.58	18.37	18.34	
5	256QAM	1	0	16.68	16.66	16.54	16.8
5	256QAM	1	12	16.75	16.70	16.60	
5	256QAM	1	24	16.64	16.72	16.53	
5	256QAM	12	0	16.67	16.70	16.48	16.8
5	256QAM	12	7	16.74	16.62	16.75	
5	256QAM	12	13	16.78	16.60	16.58	
5	256QAM	25	0	16.66	16.68	16.68	



<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)
Channel				26140	26340	26590	
Frequency (MHz)				1860	1880	1905	
20	QPSK	1	0	18.43	18.42	18.36	18.5
20	QPSK	1	49	18.40	18.25	18.11	
20	QPSK	1	99	18.34	18.20	18.15	
20	QPSK	50	0	17.72	17.58	17.30	18
20	QPSK	50	24	17.60	17.44	17.44	
20	QPSK	50	50	17.59	17.59	17.41	
20	QPSK	100	0	17.68	17.67	17.55	18
20	16QAM	1	0	17.48	17.65	17.54	
20	16QAM	1	49	17.68	17.40	17.56	
20	16QAM	1	99	17.57	17.62	17.37	17
20	16QAM	50	0	16.96	16.57	16.63	
20	16QAM	50	24	16.73	16.61	16.69	
20	16QAM	50	50	16.89	16.86	16.52	17
20	16QAM	100	0	16.98	16.83	16.61	
20	64QAM	1	0	16.79	16.83	16.52	
20	64QAM	1	49	16.80	16.56	16.60	17
20	64QAM	1	99	16.90	16.64	16.56	
20	64QAM	50	0	15.90	15.79	15.82	
20	64QAM	50	24	15.80	15.90	16.00	16
20	64QAM	50	50	15.70	15.95	16.00	
20	64QAM	100	0	15.60	15.80	15.76	
20	256QAM	1	0	14.70	14.36	14.39	15
20	256QAM	1	49	14.53	14.38	14.49	
20	256QAM	1	99	14.62	14.63	14.27	
20	256QAM	50	0	14.75	14.61	14.36	15
20	256QAM	50	24	14.59	14.60	14.24	
20	256QAM	50	50	14.54	14.36	14.37	
20	256QAM	100	0	14.64	14.40	14.36	
Channel				26115	26340	26615	
Frequency (MHz)				1857.5	1880	1907.5	
15	QPSK	1	0	18.27	18.20	18.17	18.5
15	QPSK	1	37	18.26	18.24	18.03	
15	QPSK	1	74	18.15	18.14	17.96	
15	QPSK	36	0	17.57	17.52	17.10	18
15	QPSK	36	20	17.56	17.36	17.41	
15	QPSK	36	39	17.44	17.47	17.29	
15	QPSK	75	0	17.65	17.64	17.44	18
15	16QAM	1	0	17.46	17.50	17.48	
15	16QAM	1	37	17.50	17.22	17.56	
15	16QAM	1	74	17.52	17.50	17.35	17
15	16QAM	36	0	16.78	16.45	16.57	
15	16QAM	36	20	16.62	16.51	16.59	
15	16QAM	36	39	16.87	16.74	16.40	17
15	16QAM	75	0	16.95	16.67	16.42	
15	64QAM	1	0	16.73	16.83	16.33	
15	64QAM	1	37	16.74	16.53	16.53	17
15	64QAM	1	74	16.74	16.61	16.44	
15	64QAM	36	0	15.81	15.76	15.73	
15	64QAM	36	20	16.00	15.96	15.88	16
15	64QAM	36	39	15.97	15.75	15.80	
15	64QAM	75	0	15.98	15.94	15.59	



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15	256QAM	1	0	14.54	14.36	14.37	15
15	256QAM	1	37	14.51	14.29	14.31	
15	256QAM	1	74	14.50	14.53	14.08	
15	256QAM	36	0	14.59	14.46	14.22	15
15	256QAM	36	20	14.39	14.41	14.05	
15	256QAM	36	39	14.36	14.29	14.28	
15	256QAM	75	0	14.63	14.40	14.31	
Channel				26090	26340	26640	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1910	
10	QPSK	1	0	18.37	18.25	18.13	18.5
10	QPSK	1	25	18.21	18.16	18.00	
10	QPSK	1	49	18.31	18.14	18.14	
10	QPSK	25	0	17.59	17.41	17.26	18
10	QPSK	25	12	17.57	17.38	17.42	
10	QPSK	25	25	17.56	17.47	17.23	
10	QPSK	50	0	17.55	17.62	17.37	
10	16QAM	1	0	17.46	17.48	17.49	18
10	16QAM	1	25	17.59	17.38	17.42	
10	16QAM	1	49	17.53	17.62	17.37	
10	16QAM	25	0	16.89	16.53	16.49	17
10	16QAM	25	12	16.58	16.44	16.56	
10	16QAM	25	25	16.77	16.78	16.32	
10	16QAM	50	0	16.81	16.68	16.47	
10	64QAM	1	0	16.65	16.83	16.46	17
10	64QAM	1	25	16.72	16.44	16.50	
10	64QAM	1	49	16.72	16.64	16.56	
10	64QAM	25	0	15.82	15.75	15.79	16
10	64QAM	25	12	15.87	16.00	15.82	
10	64QAM	25	25	15.89	15.88	15.89	
10	64QAM	50	0	16.00	15.99	15.58	
10	256QAM	1	0	14.67	14.34	14.37	15
10	256QAM	1	25	14.42	14.24	14.48	
10	256QAM	1	49	14.56	14.55	14.13	
10	256QAM	25	0	14.59	14.46	14.20	15
10	256QAM	25	12	14.42	14.60	14.09	
10	256QAM	25	25	14.53	14.36	14.30	
10	256QAM	50	0	14.53	14.34	14.19	
Channel				26065	26340	26665	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1912.5	
5	QPSK	1	0	18.39	18.13	18.12	18.5
5	QPSK	1	12	18.33	18.21	18.09	
5	QPSK	1	24	18.15	18.15	18.12	
5	QPSK	12	0	17.59	17.54	17.10	18
5	QPSK	12	7	17.49	17.29	17.42	
5	QPSK	12	13	17.54	17.40	17.26	
5	QPSK	25	0	17.57	17.57	17.35	
5	16QAM	1	0	17.28	17.64	17.43	18
5	16QAM	1	12	17.48	17.32	17.36	
5	16QAM	1	24	17.45	17.58	17.28	
5	16QAM	12	0	16.76	16.43	16.46	17
5	16QAM	12	7	16.61	16.49	16.52	
5	16QAM	12	13	16.89	16.68	16.43	
5	16QAM	25	0	16.97	16.66	16.50	
5	64QAM	1	0	16.69	16.68	16.52	17
5	64QAM	1	12	16.67	16.51	16.50	
5	64QAM	1	24	16.90	16.54	16.41	



5	64QAM	12	0	15.70	15.77	15.68	16
5	64QAM	12	7	15.93	15.92	15.95	
5	64QAM	12	13	16.00	15.75	15.86	
5	64QAM	25	0	15.88	15.96	15.69	
5	256QAM	1	0	14.61	14.16	14.32	15
5	256QAM	1	12	14.40	14.28	14.42	
5	256QAM	1	24	14.56	14.44	14.13	15
5	256QAM	12	0	14.66	14.44	14.33	
5	256QAM	12	7	14.58	14.46	14.21	
5	256QAM	12	13	14.41	14.19	14.21	
5	256QAM	25	0	14.45	14.23	14.22	
Channel				26055	26340	26675	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1913.5	
3	QPSK	1	0	18.34	18.27	18.08	18.5
3	QPSK	1	8	18.25	18.16	18.03	
3	QPSK	1	14	18.16	18.11	18.07	
3	QPSK	8	0	17.70	17.40	17.23	18
3	QPSK	8	4	17.52	17.38	17.44	
3	QPSK	8	7	17.47	17.58	17.35	
3	QPSK	15	0	17.59	17.65	17.55	
3	16QAM	1	0	17.46	17.50	17.46	18
3	16QAM	1	8	17.49	17.23	17.47	
3	16QAM	1	14	17.40	17.43	17.27	
3	16QAM	8	0	16.84	16.53	16.50	17
3	16QAM	8	4	16.63	16.42	16.56	
3	16QAM	8	7	16.77	16.84	16.48	
3	16QAM	15	0	16.91	16.63	16.43	
3	64QAM	1	0	16.67	16.66	16.36	17
3	64QAM	1	8	16.79	16.45	16.50	
3	64QAM	1	14	16.82	16.47	16.46	
3	64QAM	8	0	15.81	15.72	15.72	16
3	64QAM	8	4	15.80	15.95	15.91	
3	64QAM	8	7	15.60	15.86	15.93	
3	64QAM	15	0	15.99	15.96	15.64	
3	256QAM	1	0	14.50	14.20	14.24	15
3	256QAM	1	8	14.36	14.27	14.38	
3	256QAM	1	14	14.50	14.52	14.21	
3	256QAM	8	0	14.63	14.47	14.19	15
3	256QAM	8	4	14.52	14.51	14.13	
3	256QAM	8	7	14.38	14.16	14.19	
3	256QAM	15	0	14.54	14.35	14.22	
Channel				26047	26340	26683	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1914.3	
1.4	QPSK	1	0	18.29	18.30	18.24	18.5
1.4	QPSK	1	3	18.24	18.24	18.06	
1.4	QPSK	1	5	18.34	18.12	18.08	
1.4	QPSK	3	0	18.27	18.24	18.16	
1.4	QPSK	3	1	18.29	18.17	17.97	
1.4	QPSK	3	3	18.20	18.07	18.14	
1.4	QPSK	6	0	17.67	17.55	17.53	18
1.4	16QAM	1	0	17.33	17.61	17.45	18
1.4	16QAM	1	3	17.52	17.26	17.48	
1.4	16QAM	1	5	17.42	17.56	17.21	
1.4	16QAM	3	0	17.44	17.28	17.24	
1.4	16QAM	3	1	17.50	17.50	17.23	
1.4	16QAM	3	3	17.48	17.48	17.37	



1.4	16QAM	6	0	16.90	16.68	16.43	17
1.4	64QAM	1	0	16.64	16.74	16.34	17
1.4	64QAM	1	3	16.64	16.52	16.59	
1.4	64QAM	1	5	16.70	16.55	16.39	
1.4	64QAM	3	0	16.84	16.57	16.51	
1.4	64QAM	3	1	16.67	16.43	16.60	
1.4	64QAM	3	3	16.87	16.72	16.36	
1.4	64QAM	6	0	15.91	15.95	15.75	16
1.4	256QAM	1	0	14.66	14.33	14.29	15
1.4	256QAM	1	3	14.42	14.37	14.41	
1.4	256QAM	1	5	14.48	14.45	14.10	
1.4	256QAM	3	0	14.69	14.51	14.18	
1.4	256QAM	3	1	14.42	14.44	14.17	
1.4	256QAM	3	3	14.43	14.18	14.27	
1.4	256QAM	6	0	14.64	14.35	14.24	15

<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)
Channel				26765	26865	26965	19.9
Frequency (MHz)				821.5	831.5	841.5	
15	QPSK	1	0	18.96	18.95	18.94	19.9
15	QPSK	1	37	18.88	18.85	18.82	
15	QPSK	1	74	18.90	18.71	18.74	
15	QPSK	36	0	18.85	18.84	18.73	18.9
15	QPSK	36	20	18.02	17.86	18.03	
15	QPSK	36	39	17.98	17.92	17.86	
15	QPSK	75	0	18.08	17.90	18.13	18.9
15	16QAM	1	0	18.11	18.12	17.91	
15	16QAM	1	37	18.04	18.07	18.09	
15	16QAM	1	74	18.19	18.07	18.17	17.9
15	16QAM	36	0	17.80	17.89	17.77	
15	16QAM	36	20	17.18	17.24	17.21	
15	16QAM	36	39	17.34	17.24	17.06	17.9
15	16QAM	75	0	17.21	17.32	17.32	
15	64QAM	1	0	17.41	17.32	17.09	
15	64QAM	1	37	17.34	17.23	17.27	17.9
15	64QAM	1	74	17.24	17.11	17.37	
15	64QAM	36	0	16.90	16.88	16.87	
15	64QAM	36	20	16.61	16.29	16.52	16.9
15	64QAM	36	39	16.58	16.36	16.33	
15	64QAM	75	0	16.36	16.33	16.40	
15	256QAM	1	0	15.69	15.59	15.88	15.9
15	256QAM	1	37	14.86	14.91	14.85	
15	256QAM	1	74	15.00	14.92	14.69	
15	256QAM	36	0	14.86	15.03	15.02	15.9
15	256QAM	36	20	15.13	15.00	14.77	
15	256QAM	36	39	14.97	14.90	14.91	
15	256QAM	75	0	14.91	14.74	15.07	15.9
Channel				26740	26865	26990	
Frequency (MHz)				819	831.5	844	
10	QPSK	1	0	18.82	18.83	18.83	19.9
10	QPSK	1	25	18.71	18.72	18.79	
10	QPSK	1	49	18.85	18.51	18.74	



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10	QPSK	25	0	18.81	18.71	18.54	18.9
10	QPSK	25	12	17.85	17.73	17.99	
10	QPSK	25	25	17.81	17.75	17.71	
10	QPSK	50	0	18.05	17.86	17.99	
10	16QAM	1	0	18.07	18.00	17.85	18.9
10	16QAM	1	25	17.85	18.04	17.91	
10	16QAM	1	49	18.01	17.97	18.09	
10	16QAM	25	0	17.48	17.87	17.80	17.9
10	16QAM	25	12	17.00	17.14	17.15	
10	16QAM	25	25	17.25	17.23	16.94	
10	16QAM	50	0	17.02	17.32	17.25	
10	64QAM	1	0	17.21	17.14	16.92	17.9
10	64QAM	1	25	17.27	17.05	17.18	
10	64QAM	1	49	17.21	17.04	17.34	
10	64QAM	25	0	16.89	16.87	16.70	16.9
10	64QAM	25	12	16.46	16.17	16.42	
10	64QAM	25	25	16.57	16.16	16.27	
10	64QAM	50	0	16.16	16.23	16.22	
10	256QAM	1	0	15.80	15.42	15.69	15.9
10	256QAM	1	25	14.68	14.77	14.71	
10	256QAM	1	49	15.00	14.75	14.55	
10	256QAM	25	0	14.80	14.94	15.00	15.9
10	256QAM	25	12	15.01	14.82	14.68	
10	256QAM	25	25	14.89	14.83	14.82	
10	256QAM	50	0	14.76	14.57	15.04	
Channel				26715	26865	27015	Tune-up limit (dBm)
Frequency (MHz)				816.5	831.5	846.5	
5	QPSK	1	0	18.95	18.82	18.69	19.9
5	QPSK	1	12	18.84	18.83	18.65	
5	QPSK	1	24	18.90	18.53	18.61	
5	QPSK	12	0	18.65	18.84	18.69	18.9
5	QPSK	12	7	18.02	17.69	18.03	
5	QPSK	12	13	17.89	17.72	17.78	
5	QPSK	25	0	17.89	17.86	17.93	
5	16QAM	1	0	18.07	18.07	17.75	18.9
5	16QAM	1	12	18.04	17.91	17.89	
5	16QAM	1	24	18.17	18.01	18.17	
5	16QAM	12	0	17.89	17.72	17.80	17.9
5	16QAM	12	7	17.18	17.07	17.11	
5	16QAM	12	13	17.33	17.04	16.87	
5	16QAM	25	0	17.08	17.16	17.16	
5	64QAM	1	0	17.29	17.25	16.96	17.9
5	64QAM	1	12	17.30	17.17	17.11	
5	64QAM	1	24	17.11	17.01	17.31	
5	64QAM	12	0	16.80	16.81	16.75	16.9
5	64QAM	12	7	16.44	16.11	16.49	
5	64QAM	12	13	16.58	16.18	16.24	
5	64QAM	25	0	16.26	16.20	16.20	
5	256QAM	1	0	15.88	15.57	15.73	15.9
5	256QAM	1	12	14.78	14.80	14.80	
5	256QAM	1	24	14.97	14.84	14.68	
5	256QAM	12	0	14.78	15.02	14.95	15.9
5	256QAM	12	7	15.02	14.83	14.68	
5	256QAM	12	13	14.91	14.72	14.87	
5	256QAM	25	0	14.74	14.69	14.98	
Channel				26705	26865	27025	Tune-up limit



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Frequency (MHz)				815.5	831.5	847.5	(dBm)
3	QPSK	1	0	18.90	18.66	18.74	19.9
3	QPSK	1	8	18.79	18.67	18.62	
3	QPSK	1	14	18.86	18.59	18.55	
3	QPSK	8	0	18.68	18.74	18.64	18.9
3	QPSK	8	4	17.98	17.69	17.92	
3	QPSK	8	7	17.93	17.86	17.75	
3	QPSK	15	0	17.91	17.71	18.11	18.9
3	16QAM	1	0	17.91	18.12	17.85	
3	16QAM	1	8	17.91	18.06	18.03	
3	16QAM	1	14	18.11	17.92	18.08	17.9
3	16QAM	8	0	17.89	17.75	17.88	
3	16QAM	8	4	17.12	17.19	17.20	
3	16QAM	8	7	17.22	17.15	17.01	17.9
3	16QAM	15	0	17.10	17.16	17.30	
3	64QAM	1	0	17.21	17.26	17.04	
3	64QAM	1	8	17.22	17.04	17.13	17.9
3	64QAM	1	14	17.10	16.96	17.29	
3	64QAM	8	0	16.90	16.88	16.87	
3	64QAM	8	4	16.42	16.16	16.47	16.9
3	64QAM	8	7	16.55	16.34	16.25	
3	64QAM	15	0	16.31	16.24	16.29	
3	256QAM	1	0	15.79	15.43	15.77	15.9
3	256QAM	1	8	14.81	14.74	14.85	
3	256QAM	1	14	14.84	14.81	14.55	
3	256QAM	8	0	14.75	15.02	14.91	15.9
3	256QAM	8	4	15.07	14.88	14.70	
3	256QAM	8	7	14.83	14.79	14.87	
3	256QAM	15	0	14.81	14.71	14.93	Tune-up limit (dBm)
Channel				26697	26865	27033	
Frequency (MHz)				814.7	831.5	848.3	
1.4	QPSK	1	0	18.91	18.72	18.71	19.9
1.4	QPSK	1	3	18.88	18.85	18.70	
1.4	QPSK	1	5	18.71	18.64	18.72	
1.4	QPSK	3	0	18.84	18.78	18.78	18.9
1.4	QPSK	3	1	18.71	18.67	18.74	
1.4	QPSK	3	3	18.76	18.62	18.58	
1.4	QPSK	6	0	18.03	17.77	17.95	18.9
1.4	16QAM	1	0	18.11	18.03	17.80	18.9
1.4	16QAM	1	3	18.02	17.92	18.04	
1.4	16QAM	1	5	18.12	17.95	18.02	
1.4	16QAM	3	0	17.96	17.85	17.77	17.9
1.4	16QAM	3	1	17.88	17.84	18.03	
1.4	16QAM	3	3	18.09	18.05	17.89	
1.4	16QAM	6	0	17.16	17.31	17.14	17.9
1.4	64QAM	1	0	17.27	17.17	16.92	17.9
1.4	64QAM	1	3	17.15	17.23	17.21	
1.4	64QAM	1	5	17.22	17.11	17.22	
1.4	64QAM	3	0	17.01	17.14	17.04	16.9
1.4	64QAM	3	1	17.27	17.08	17.00	
1.4	64QAM	3	3	17.04	17.20	17.27	
1.4	64QAM	6	0	16.33	16.20	16.23	16.9
1.4	256QAM	1	0	15.78	15.59	15.82	15.9
1.4	256QAM	1	3	14.68	14.89	14.65	
1.4	256QAM	1	5	14.96	14.81	14.63	
1.4	256QAM	3	0	14.81	15.03	14.85	



1.4	256QAM	3	1	15.02	14.82	14.59	
1.4	256QAM	3	3	14.89	14.78	14.86	
1.4	256QAM	6	0	14.80	14.63	14.99	

<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)
Channel				27710			
Frequency (MHz)				2310			
10	QPSK	1	0		16.11		17
10	QPSK	1	25		15.84		
10	QPSK	1	49		15.82		
10	QPSK	25	0		15.28		16
10	QPSK	25	12		15.11		
10	QPSK	25	25		15.06		
10	QPSK	50	0		15.25		16
10	16QAM	1	0		15.06		
10	16QAM	1	25		15.03		
10	16QAM	1	49		15.24		16
10	16QAM	25	0		14.57		
10	16QAM	25	12		14.33		
10	16QAM	25	25		14.55		15
10	16QAM	50	0		14.50		
10	64QAM	1	0		14.36		
10	64QAM	1	25		14.56		15
10	64QAM	1	49		14.28		
10	64QAM	25	0		13.82		
10	64QAM	25	12		13.70		14
10	64QAM	25	25		13.60		
10	64QAM	50	0		13.79		
10	256QAM	1	0		12.51		13
10	256QAM	1	25		12.27		
10	256QAM	1	49		12.42		
10	256QAM	25	0		12.42		13
10	256QAM	25	12		12.27		
10	256QAM	25	25		12.50		
10	256QAM	50	0		12.16		
Channel				27685	27710	27735	
Frequency (MHz)				2307.5	2310	2312.5	Tune-up limit (dBm)
5	QPSK	1	0	15.91	15.97	15.96	17
5	QPSK	1	12	15.99	15.96	15.87	
5	QPSK	1	24	15.85	15.92	15.91	
5	QPSK	12	0	15.14	15.34	15.24	16
5	QPSK	12	7	15.37	15.23	15.12	
5	QPSK	12	13	15.13	15.13	15.23	
5	QPSK	25	0	15.15	15.32	15.36	16
5	16QAM	1	0	15.08	15.07	15.29	
5	16QAM	1	12	15.11	15.12	15.18	
5	16QAM	1	24	15.15	15.38	15.18	16
5	16QAM	12	0	14.31	14.70	14.46	
5	16QAM	12	7	14.53	14.46	14.57	
5	16QAM	12	13	14.44	14.61	14.39	15
5	16QAM	25	0	14.43	14.52	14.51	
5	64QAM	1	0	14.42	14.48	14.58	



5	64QAM	1	12	14.35	14.67	14.61	
5	64QAM	1	24	14.29	14.38	14.53	
5	64QAM	12	0	13.62	13.84	13.74	
5	64QAM	12	7	13.83	13.80	13.87	14
5	64QAM	12	13	13.65	13.74	13.67	
5	64QAM	25	0	13.60	13.90	13.90	13
5	256QAM	1	0	12.16	12.61	12.36	
5	256QAM	1	12	12.45	12.36	12.45	
5	256QAM	1	24	12.34	12.53	12.31	13
5	256QAM	12	0	12.35	12.39	12.41	
5	256QAM	12	7	12.27	12.37	12.45	
5	256QAM	12	13	12.25	12.54	12.51	
5	256QAM	25	0	12.18	12.28	12.45	

<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)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	18.19	18.25	18.22	18.4
20	QPSK	1	49	18.07	18.12	18.09	
20	QPSK	1	99	18.03	18.15	18.05	
20	QPSK	50	0	17.20	17.49	17.23	17.9
20	QPSK	50	24	17.16	17.48	17.22	
20	QPSK	50	50	17.34	17.30	17.29	
20	QPSK	100	0	17.39	17.50	17.36	17.9
20	16QAM	1	0	17.27	17.52	17.24	
20	16QAM	1	49	17.30	17.42	17.43	
20	16QAM	1	99	17.26	17.45	17.46	16.9
20	16QAM	50	0	16.33	16.43	16.45	
20	16QAM	50	24	16.60	16.54	16.68	
20	16QAM	50	50	16.59	16.48	16.52	
20	16QAM	100	0	16.35	16.74	16.49	
20	64QAM	1	0	16.40	16.68	16.47	16.9
20	64QAM	1	49	16.31	16.47	16.64	
20	64QAM	1	99	16.35	16.65	16.58	
20	64QAM	50	0	15.55	15.87	15.79	15.9
20	64QAM	50	24	15.69	15.87	15.79	
20	64QAM	50	50	15.71	15.80	15.71	
20	64QAM	100	0	15.51	15.70	15.60	
20	256QAM	1	0	14.09	14.20	14.19	14.4
20	256QAM	1	49	14.36	14.27	14.38	
20	256QAM	1	99	14.34	14.25	14.30	
20	256QAM	50	0	14.08	14.35	14.19	14.4
20	256QAM	50	24	14.14	14.40	14.21	
20	256QAM	50	50	14.07	14.22	14.34	
20	256QAM	100	0	14.11	14.40	14.30	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	18.03	17.99	17.97	18.4
15	QPSK	1	37	17.94	17.98	17.90	
15	QPSK	1	74	17.92	18.11	17.87	
15	QPSK	36	0	17.08	17.35	17.10	17.9
15	QPSK	36	20	17.02	17.34	17.03	



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15	QPSK	36	39	17.22	17.28	17.17		
15	QPSK	75	0	17.38	17.44	17.16		
15	16QAM	1	0	17.22	17.52	17.04		
15	16QAM	1	37	17.27	17.37	17.36	17.9	
15	16QAM	1	74	17.18	17.44	17.30		
15	16QAM	36	0	16.19	16.29	16.39		
15	16QAM	36	20	16.40	16.41	16.66	16.9	
15	16QAM	36	39	16.50	16.36	16.52		
15	16QAM	75	0	16.19	16.61	16.48		
15	64QAM	1	0	16.26	16.62	16.45	16.9	
15	64QAM	1	37	16.24	16.33	16.61		
15	64QAM	1	74	16.20	16.49	16.57		
15	64QAM	36	0	15.47	15.77	15.64	15.9	
15	64QAM	36	20	15.68	15.79	15.73		
15	64QAM	36	39	15.64	15.72	15.56		
15	64QAM	75	0	15.49	15.54	15.53	14.4	
15	256QAM	1	0	14.01	14.03	14.08		
15	256QAM	1	37	14.23	14.25	14.39		
15	256QAM	1	74	14.23	14.23	14.22	14.4	
15	256QAM	36	0	14.00	14.28	14.07		
15	256QAM	36	20	14.05	14.31	14.21		
15	256QAM	36	39	14.20	14.16	14.25	14.4	
15	256QAM	75	0	14.07	14.29	14.28		
Channel				132022	132322	132622		Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775		
10	QPSK	1	0	17.88	18.18	18.11	18.4	
10	QPSK	1	25	17.95	17.93	18.02		
10	QPSK	1	49	17.99	18.13	17.87		
10	QPSK	25	0	17.14	17.47	17.14	17.9	
10	QPSK	25	12	17.00	17.28	17.18		
10	QPSK	25	25	17.32	17.12	17.11		
10	QPSK	50	0	17.27	17.42	17.32	17.9	
10	16QAM	1	0	17.10	17.42	17.11		
10	16QAM	1	25	17.19	17.29	17.27		
10	16QAM	1	49	17.17	17.35	17.37	16.9	
10	16QAM	25	0	16.19	16.29	16.41		
10	16QAM	25	12	16.52	16.49	16.65		
10	16QAM	25	25	16.57	16.44	16.51	16.9	
10	16QAM	50	0	16.19	16.71	16.32		
10	64QAM	1	0	16.32	16.48	16.38		
10	64QAM	1	25	16.27	16.36	16.55	16.9	
10	64QAM	1	49	16.22	16.61	16.58		
10	64QAM	25	0	15.37	15.74	15.61		
10	64QAM	25	12	15.50	15.85	15.64	15.9	
10	64QAM	25	25	15.53	15.60	15.62		
10	64QAM	50	0	15.40	15.69	15.55		
10	256QAM	1	0	14.08	14.16	14.04	14.4	
10	256QAM	1	25	14.31	14.12	14.32		
10	256QAM	1	49	14.15	14.09	14.15		
10	256QAM	25	0	14.08	14.26	14.12	14.4	
10	256QAM	25	12	14.02	14.32	14.12		
10	256QAM	25	25	14.19	14.17	14.34		
10	256QAM	50	0	14.20	14.22	14.13	14.4	
Channel				131997	132322	132647		Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5		
5	QPSK	1	0	18.01	18.01	17.93	18.4	



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5	QPSK	1	12	18.06	18.05	18.08	
5	QPSK	1	24	17.91	18.08	17.92	
5	QPSK	12	0	17.04	17.39	17.10	
5	QPSK	12	7	17.07	17.33	17.21	17.9
5	QPSK	12	13	17.20	17.23	17.18	
5	QPSK	25	0	17.20	17.46	17.21	
5	16QAM	1	0	17.25	17.34	17.14	17.9
5	16QAM	1	12	17.28	17.28	17.40	
5	16QAM	1	24	17.06	17.26	17.41	
5	16QAM	12	0	16.19	16.26	16.32	16.9
5	16QAM	12	7	16.52	16.41	16.61	
5	16QAM	12	13	16.46	16.38	16.38	
5	16QAM	25	0	16.23	16.57	16.29	16.9
5	64QAM	1	0	16.24	16.65	16.38	
5	64QAM	1	12	16.21	16.37	16.63	
5	64QAM	1	24	16.34	16.48	16.44	15.9
5	64QAM	12	0	15.38	15.87	15.70	
5	64QAM	12	7	15.58	15.67	15.73	
5	64QAM	12	13	15.54	15.75	15.68	14.4
5	64QAM	25	0	15.41	15.64	15.46	
5	256QAM	1	0	14.02	14.13	14.11	
5	256QAM	1	12	14.28	14.17	14.40	14.4
5	256QAM	1	24	14.27	14.10	14.26	
5	256QAM	12	0	14.02	14.30	14.06	
5	256QAM	12	7	14.02	14.38	14.21	14.4
5	256QAM	12	13	14.01	14.05	14.24	
5	256QAM	25	0	14.03	14.29	14.11	
Channel				131987	132322	132657	Tune-up limit (dBm)
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	18.02	18.13	17.95	18.4
3	QPSK	1	8	17.88	18.12	18.00	
3	QPSK	1	14	17.83	18.10	17.91	
3	QPSK	8	0	17.06	17.41	17.20	17.9
3	QPSK	8	4	17.06	17.34	17.06	
3	QPSK	8	7	17.24	17.24	17.17	
3	QPSK	15	0	17.33	17.42	17.35	17.9
3	16QAM	1	0	17.17	17.51	17.09	
3	16QAM	1	8	17.11	17.22	17.36	
3	16QAM	1	14	17.26	17.29	17.32	16.9
3	16QAM	8	0	16.25	16.23	16.26	
3	16QAM	8	4	16.46	16.53	16.50	
3	16QAM	8	7	16.42	16.36	16.38	16.9
3	16QAM	15	0	16.20	16.57	16.34	
3	64QAM	1	0	16.27	16.59	16.30	
3	64QAM	1	8	16.15	16.45	16.58	16.9
3	64QAM	1	14	16.29	16.55	16.44	
3	64QAM	8	0	15.50	15.85	15.70	
3	64QAM	8	4	15.67	15.87	15.60	15.9
3	64QAM	8	7	15.63	15.77	15.67	
3	64QAM	15	0	15.38	15.61	15.59	
3	256QAM	1	0	14.02	14.10	14.03	14.4
3	256QAM	1	8	14.34	14.21	14.33	
3	256QAM	1	14	14.32	14.06	14.23	
3	256QAM	8	0	14.02	14.25	14.07	14.4
3	256QAM	8	4	14.05	14.25	14.18	
3	256QAM	8	7	14.06	14.17	14.34	



3	256QAM	15	0	14.05	14.27	14.15	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	17.95	18.04	17.94	18.4
1.4	QPSK	1	3	17.96	18.05	18.01	
1.4	QPSK	1	5	17.91	17.95	18.04	
1.4	QPSK	3	0	18.04	18.18	17.97	
1.4	QPSK	3	1	18.00	18.00	17.91	
1.4	QPSK	3	3	17.88	18.02	17.86	
1.4	QPSK	6	0	17.36	17.30	17.17	17.9
1.4	16QAM	1	0	17.13	17.37	17.19	17.9
1.4	16QAM	1	3	17.19	17.26	17.36	
1.4	16QAM	1	5	17.06	17.43	17.41	
1.4	16QAM	3	0	17.27	17.29	17.17	
1.4	16QAM	3	1	17.37	17.50	17.31	
1.4	16QAM	3	3	17.22	17.51	17.12	
1.4	16QAM	6	0	16.27	16.65	16.29	16.9
1.4	64QAM	1	0	16.29	16.58	16.47	16.9
1.4	64QAM	1	3	16.13	16.37	16.52	
1.4	64QAM	1	5	16.26	16.64	16.51	
1.4	64QAM	3	0	16.19	16.41	16.44	
1.4	64QAM	3	1	16.60	16.42	16.63	
1.4	64QAM	3	3	16.58	16.47	16.46	
1.4	64QAM	6	0	15.43	15.56	15.53	15.9
1.4	256QAM	1	0	14.31	14.07	14.27	14.4
1.4	256QAM	1	3	14.29	14.13	14.23	
1.4	256QAM	1	5	14.02	14.28	14.08	
1.4	256QAM	3	0	14.20	14.16	14.31	
1.4	256QAM	3	1	14.27	14.05	14.24	
1.4	256QAM	3	3	14.02	14.30	14.06	
1.4	256QAM	6	0	14.08	14.25	14.25	14.4

<LTE Band 71>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				133222	133297	133372	Tune-up limit (dBm)
Frequency (MHz)				673	680.5	688	
20	QPSK	1	0	22.34	22.27	22.10	22.6
20	QPSK	1	49	22.21	21.85	21.80	
20	QPSK	1	99	22.12	21.86	21.84	
20	QPSK	50	0	21.25	21.00	20.99	21.6
20	QPSK	50	24	21.17	21.13	21.14	
20	QPSK	50	50	21.15	20.91	20.87	
20	QPSK	100	0	21.25	20.88	21.04	21.6
20	16QAM	1	0	21.20	20.89	20.81	
20	16QAM	1	49	21.38	20.80	20.87	
20	16QAM	1	99	21.47	20.90	20.81	20.6
20	16QAM	50	0	20.24	19.93	20.02	
20	16QAM	50	24	20.37	20.04	20.05	
20	16QAM	50	50	20.26	20.06	20.02	20.6
20	16QAM	100	0	20.21	19.95	19.86	
20	64QAM	1	0	20.24	20.12	19.83	
20	64QAM	1	49	20.50	19.83	20.05	20.6
20	64QAM	1	99	20.27	20.07	19.90	



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20	64QAM	50	0	19.45	19.03	18.85	19.6
20	64QAM	50	24	19.35	19.06	19.17	
20	64QAM	50	50	19.54	18.87	18.92	
20	64QAM	100	0	19.46	18.98	19.07	
20	256QAM	1	0	17.53	17.16	17.26	17.6
20	256QAM	1	49	17.50	17.28	17.37	
20	256QAM	1	99	17.58	17.36	17.30	
20	256QAM	50	0	17.47	17.19	17.09	17.6
20	256QAM	50	24	17.53	17.44	17.07	
20	256QAM	50	50	17.30	17.10	17.36	
20	256QAM	100	0	17.60	17.31	17.17	
Channel				133197	133297	133397	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	QPSK	1	0	22.17	21.90	21.82	22.6
15	QPSK	1	37	22.02	21.76	21.60	
15	QPSK	1	74	22.08	21.66	21.66	
15	QPSK	36	0	21.07	20.81	20.86	21.6
15	QPSK	36	20	21.12	21.03	21.13	
15	QPSK	36	39	20.98	20.81	20.77	
15	QPSK	75	0	21.17	20.78	20.96	
15	16QAM	1	0	21.13	20.70	20.80	21.6
15	16QAM	1	37	21.29	20.77	20.68	
15	16QAM	1	74	21.27	20.77	20.64	
15	16QAM	36	0	20.11	19.75	19.90	20.6
15	16QAM	36	20	20.34	20.02	20.05	
15	16QAM	36	39	20.14	19.97	19.84	
15	16QAM	75	0	20.06	19.82	19.72	
15	64QAM	1	0	20.08	20.06	19.74	20.6
15	64QAM	1	37	20.46	19.67	19.86	
15	64QAM	1	74	20.18	19.92	19.81	
15	64QAM	36	0	19.28	18.91	18.81	19.6
15	64QAM	36	20	19.20	19.02	19.09	
15	64QAM	36	39	19.42	18.81	18.84	
15	64QAM	75	0	19.30	18.83	19.03	
15	256QAM	1	0	17.44	17.08	17.24	17.6
15	256QAM	1	37	17.60	17.10	17.31	
15	256QAM	1	74	17.58	17.23	17.17	
15	256QAM	36	0	17.32	17.17	17.00	17.6
15	256QAM	36	20	17.51	17.29	16.90	
15	256QAM	36	39	17.48	17.03	17.32	
15	256QAM	75	0	17.44	17.14	16.98	
Channel				133172	133297	133422	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	QPSK	1	0	22.26	21.85	21.80	22.6
10	QPSK	1	25	22.03	21.81	21.63	
10	QPSK	1	49	21.92	21.68	21.74	
10	QPSK	25	0	21.12	20.89	20.98	21.6
10	QPSK	25	12	21.09	20.93	20.96	
10	QPSK	25	25	21.04	20.85	20.86	
10	QPSK	50	0	21.17	20.77	20.90	
10	16QAM	1	0	21.09	20.83	20.65	21.6
10	16QAM	1	25	21.33	20.78	20.77	
10	16QAM	1	49	21.43	20.83	20.69	
10	16QAM	25	0	20.23	19.84	20.02	20.6
10	16QAM	25	12	20.17	20.01	19.99	
10	16QAM	25	25	20.14	20.03	19.94	



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10	16QAM	50	0	20.07	19.76	19.73	
10	64QAM	1	0	20.14	20.06	19.68	20.6
10	64QAM	1	25	20.46	19.77	20.01	
10	64QAM	1	49	20.27	19.91	19.80	
10	64QAM	25	0	19.30	19.02	18.83	19.6
10	64QAM	25	12	19.27	19.05	19.09	
10	64QAM	25	25	19.44	18.77	18.83	
10	64QAM	50	0	19.28	18.97	18.96	
10	256QAM	1	0	17.45	17.04	17.18	17.6
10	256QAM	1	25	17.58	17.11	17.18	
10	256QAM	1	49	17.54	17.21	17.27	
10	256QAM	25	0	17.44	17.07	17.00	17.6
10	256QAM	25	12	17.37	17.43	17.06	
10	256QAM	25	25	17.59	16.97	17.36	
10	256QAM	50	0	17.41	17.28	17.08	
Channel				133147	133297	133447	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	QPSK	1	0	22.15	21.87	21.71	22.6
5	QPSK	1	12	22.11	21.75	21.78	
5	QPSK	1	24	22.00	21.67	21.69	
5	QPSK	12	0	21.19	20.80	20.80	21.6
5	QPSK	12	7	21.12	20.98	20.97	
5	QPSK	12	13	21.15	20.84	20.71	
5	QPSK	25	0	21.16	20.71	20.95	
5	16QAM	1	0	21.10	20.77	20.70	21.6
5	16QAM	1	12	21.20	20.61	20.70	
5	16QAM	1	24	21.44	20.82	20.79	
5	16QAM	12	0	20.21	19.74	19.82	20.6
5	16QAM	12	7	20.34	19.90	20.03	
5	16QAM	12	13	20.16	20.01	19.83	
5	16QAM	25	0	20.04	19.88	19.71	
5	64QAM	1	0	20.15	20.03	19.66	20.6
5	64QAM	1	12	20.49	19.74	19.88	
5	64QAM	1	24	20.11	20.00	19.74	
5	64QAM	12	0	19.25	18.94	18.73	19.6
5	64QAM	12	7	19.35	18.91	19.00	
5	64QAM	12	13	19.34	18.67	18.72	
5	64QAM	25	0	19.31	18.81	18.87	
5	256QAM	1	0	17.50	17.14	17.09	17.6
5	256QAM	1	12	17.55	17.26	17.21	
5	256QAM	1	24	17.58	17.35	17.29	
5	256QAM	12	0	17.32	17.01	16.99	17.6
5	256QAM	12	7	17.53	17.42	16.99	
5	256QAM	12	13	17.60	17.10	17.30	
5	256QAM	25	0	17.53	17.22	17.06	



Reduced Power Mode (Ant 2)

<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)
Channel				18700	18900	19100	
Frequency (MHz)				1860	1880	1900	
20	QPSK	1	0	16.62	16.49	16.94	17.3
20	QPSK	1	49	16.40	16.24	16.25	
20	QPSK	1	99	16.45	16.28	16.33	
20	QPSK	50	0	15.78	15.70	15.79	16.3
20	QPSK	50	24	15.65	15.50	15.53	
20	QPSK	50	50	15.72	15.61	15.66	
20	QPSK	100	0	15.83	15.65	15.82	16.3
20	16QAM	1	0	15.83	15.61	15.60	
20	16QAM	1	49	15.62	15.49	15.73	
20	16QAM	1	99	15.91	15.62	15.55	15.3
20	16QAM	50	0	14.94	14.78	15.06	
20	16QAM	50	24	15.06	14.86	14.82	
20	16QAM	50	50	15.16	14.94	15.01	15.3
20	16QAM	100	0	15.01	15.03	14.90	
20	64QAM	1	0	15.17	14.83	14.82	
20	64QAM	1	49	15.00	14.92	14.85	15.3
20	64QAM	1	99	15.18	14.78	15.07	
20	64QAM	50	0	14.23	14.07	14.23	
20	64QAM	50	24	14.28	14.03	14.23	14.3
20	64QAM	50	50	14.28	14.28	14.30	
20	64QAM	100	0	14.23	14.28	14.28	
20	256QAM	1	0	12.91	12.74	13.04	13.3
20	256QAM	1	49	13.00	12.84	12.81	
20	256QAM	1	99	13.09	12.92	12.96	
20	256QAM	50	0	12.95	12.98	12.83	13.3
20	256QAM	50	24	13.17	12.77	12.78	
20	256QAM	50	50	12.96	12.91	12.81	
20	256QAM	100	0	13.14	12.72	13.07	
Channel				18675	18900	19125	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	16.30	16.20	16.21	17.3
15	QPSK	1	37	16.21	16.22	16.15	
15	QPSK	1	74	16.31	16.26	16.18	
15	QPSK	36	0	15.70	15.60	15.40	16.3
15	QPSK	36	20	15.58	15.44	15.41	
15	QPSK	36	39	15.72	15.60	15.55	
15	QPSK	75	0	15.83	15.46	15.74	16.3
15	16QAM	1	0	15.70	15.43	15.41	
15	16QAM	1	37	15.51	15.29	15.62	
15	16QAM	1	74	15.76	15.44	15.52	15.3
15	16QAM	36	0	14.78	14.78	14.99	
15	16QAM	36	20	15.04	14.84	14.72	
15	16QAM	36	39	15.12	14.75	14.95	15.3
15	16QAM	75	0	14.90	14.96	14.86	
15	64QAM	1	0	14.98	14.76	14.76	
15	64QAM	1	37	14.93	14.85	14.84	15.3
15	64QAM	1	74	14.98	14.72	14.87	
15	64QAM	36	0	14.25	14.04	14.06	
15	64QAM	36	20	14.30	13.95	14.14	14.3
15	64QAM	36	39	14.30	14.11	14.25	



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15	64QAM	75	0	14.08	14.14	14.18	
15	256QAM	1	0	12.91	12.56	12.96	13.3
15	256QAM	1	37	12.94	12.81	12.71	
15	256QAM	1	74	12.94	12.72	12.83	
15	256QAM	36	0	12.77	12.80	12.75	13.3
15	256QAM	36	20	12.97	12.63	12.72	
15	256QAM	36	39	12.88	12.74	12.77	
15	256QAM	75	0	13.12	12.65	12.96	
Channel				18650	18900	19150	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	16.30	16.34	16.40	17.3
10	QPSK	1	25	16.32	16.14	16.21	
10	QPSK	1	49	16.29	16.15	16.23	
10	QPSK	25	0	15.75	15.50	15.38	16.3
10	QPSK	25	12	15.48	15.36	15.35	
10	QPSK	25	25	15.66	15.42	15.65	
10	QPSK	50	0	15.69	15.52	15.64	
10	16QAM	1	0	15.71	15.47	15.45	16.3
10	16QAM	1	25	15.47	15.42	15.63	
10	16QAM	1	49	15.84	15.45	15.49	
10	16QAM	25	0	14.80	14.61	14.91	15.3
10	16QAM	25	12	14.97	14.66	14.65	
10	16QAM	25	25	15.03	14.89	14.99	
10	16QAM	50	0	14.96	14.93	14.71	
10	64QAM	1	0	15.02	14.70	14.72	15.3
10	64QAM	1	25	14.86	14.73	14.77	
10	64QAM	1	49	15.18	14.72	14.87	
10	64QAM	25	0	14.28	13.95	14.03	14.3
10	64QAM	25	12	14.30	13.90	14.24	
10	64QAM	25	25	14.29	14.14	14.20	
10	64QAM	50	0	14.10	14.18	14.21	
10	256QAM	1	0	12.82	12.64	13.00	13.3
10	256QAM	1	25	12.95	12.70	12.61	
10	256QAM	1	49	12.94	12.92	12.82	
10	256QAM	25	0	12.79	12.90	12.65	13.3
10	256QAM	25	12	13.06	12.65	12.74	
10	256QAM	25	25	12.90	12.86	12.72	
10	256QAM	50	0	13.09	12.64	12.92	
Channel				18625	18900	19175	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	16.41	16.18	16.33	17.3
5	QPSK	1	12	16.20	16.06	16.06	
5	QPSK	1	24	16.33	16.16	16.31	
5	QPSK	12	0	15.60	15.68	15.43	16.3
5	QPSK	12	7	15.62	15.41	15.49	
5	QPSK	12	13	15.69	15.57	15.52	
5	QPSK	25	0	15.76	15.45	15.76	
5	16QAM	1	0	15.83	15.59	15.56	16.3
5	16QAM	1	12	15.48	15.34	15.53	
5	16QAM	1	24	15.76	15.57	15.39	
5	16QAM	12	0	14.94	14.58	14.87	15.3
5	16QAM	12	7	15.04	14.81	14.77	
5	16QAM	12	13	15.10	14.93	15.01	
5	16QAM	25	0	14.93	14.88	14.79	
5	64QAM	1	0	15.08	14.70	14.66	15.3
5	64QAM	1	12	14.85	14.74	14.76	



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5	64QAM	1	24	15.15	14.59	14.89	
5	64QAM	12	0	14.24	14.07	14.14	14.3
5	64QAM	12	7	14.25	13.87	14.24	
5	64QAM	12	13	14.27	14.21	14.28	
5	64QAM	25	0	14.05	14.27	14.14	
5	256QAM	1	0	12.73	12.58	12.99	13.3
5	256QAM	1	12	12.93	12.78	12.72	
5	256QAM	1	24	13.03	12.90	12.94	
5	256QAM	12	0	12.84	12.81	12.65	13.3
5	256QAM	12	7	13.08	12.59	12.64	
5	256QAM	12	13	12.80	12.85	12.81	
5	256QAM	25	0	13.09	12.55	12.87	
Channel				18615	18900	19185	Tune-up limit (dBm)
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	16.43	16.34	16.27	17.3
3	QPSK	1	8	16.20	16.16	16.11	
3	QPSK	1	14	16.34	16.15	16.26	
3	QPSK	8	0	15.73	15.54	15.44	16.3
3	QPSK	8	4	15.46	15.47	15.43	
3	QPSK	8	7	15.66	15.48	15.55	
3	QPSK	15	0	15.77	15.63	15.74	
3	16QAM	1	0	15.67	15.43	15.46	16.3
3	16QAM	1	8	15.59	15.42	15.58	
3	16QAM	1	14	15.73	15.47	15.51	
3	16QAM	8	0	14.86	14.67	14.97	15.3
3	16QAM	8	4	14.89	14.72	14.82	
3	16QAM	8	7	15.10	14.92	14.90	
3	16QAM	15	0	14.92	14.96	14.78	
3	64QAM	1	0	15.08	14.71	14.62	15.3
3	64QAM	1	8	14.85	14.78	14.83	
3	64QAM	1	14	15.07	14.69	14.95	
3	64QAM	8	0	14.25	13.97	14.21	14.3
3	64QAM	8	4	14.26	13.86	14.15	
3	64QAM	8	7	14.24	14.21	14.30	
3	64QAM	15	0	14.18	14.13	14.25	
3	256QAM	1	0	12.75	12.59	12.92	13.3
3	256QAM	1	8	12.84	12.79	12.63	
3	256QAM	1	14	13.08	12.90	12.85	
3	256QAM	8	0	12.79	12.97	12.74	13.3
3	256QAM	8	4	13.04	12.72	12.77	
3	256QAM	8	7	12.89	12.89	12.66	
3	256QAM	15	0	12.95	12.68	12.91	
Channel				18607	18900	19193	Tune-up limit (dBm)
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	16.29	16.31	16.26	17.3
1.4	QPSK	1	3	16.24	16.21	16.06	
1.4	QPSK	1	5	16.42	16.13	16.19	
1.4	QPSK	3	0	16.29	16.14	16.26	
1.4	QPSK	3	1	16.30	16.10	16.15	
1.4	QPSK	6	0	15.73	15.53	15.65	
1.4	16QAM	1	0	15.70	15.41	15.51	16.3
1.4	16QAM	1	3	15.53	15.41	15.58	
1.4	16QAM	1	5	15.80	15.53	15.40	
1.4	16QAM	3	0	15.56	15.44	15.47	
1.4	16QAM	3	1	15.61	15.51	15.49	



1.4	16QAM	3	3	15.67	15.61	15.73	
1.4	16QAM	6	0	14.86	14.98	14.87	15.3
1.4	64QAM	1	0	14.99	14.63	14.78	15.3
1.4	64QAM	1	3	14.82	14.72	14.66	
1.4	64QAM	1	5	15.01	14.70	14.90	
1.4	64QAM	3	0	14.74	14.62	14.88	
1.4	64QAM	3	1	14.89	14.73	14.67	
1.4	64QAM	3	3	14.98	14.86	14.97	
1.4	64QAM	6	0	14.11	14.14	14.21	14.3
1.4	256QAM	1	0	12.81	12.56	12.92	13.3
1.4	256QAM	1	3	12.99	12.69	12.77	
1.4	256QAM	1	5	13.00	12.77	12.96	
1.4	256QAM	3	0	12.95	12.88	12.73	
1.4	256QAM	3	1	13.07	12.59	12.68	
1.4	256QAM	3	3	12.90	12.88	12.77	
1.4	256QAM	6	0	13.14	12.67	12.90	13.3

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				20850	21100	21350	
Frequency (MHz)				2510	2535	2560	
20	QPSK	1	0	18.05	18.20	18.27	18.5
20	QPSK	1	49	18.10	18.06	18.26	
20	QPSK	1	99	18.14	18.15	18.21	
20	QPSK	50	0	17.57	17.51	17.58	18
20	QPSK	50	24	17.56	17.37	17.55	
20	QPSK	50	50	17.53	17.50	17.53	
20	QPSK	100	0	17.48	17.47	17.49	18
20	16QAM	1	0	17.41	17.51	17.51	
20	16QAM	1	49	17.49	17.50	17.60	
20	16QAM	1	99	17.28	17.40	17.63	17
20	16QAM	50	0	16.53	16.65	16.82	
20	16QAM	50	24	16.65	16.72	16.57	
20	16QAM	50	50	16.65	16.67	16.63	
20	16QAM	100	0	16.59	16.46	16.51	17
20	64QAM	1	0	16.47	16.58	16.73	
20	64QAM	1	49	16.68	16.60	16.80	
20	64QAM	1	99	16.69	16.77	16.81	16
20	64QAM	50	0	15.97	15.97	15.87	
20	64QAM	50	24	15.65	15.69	15.86	
20	64QAM	50	50	15.67	15.72	16.00	
20	64QAM	100	0	15.95	15.82	15.99	14.5
20	256QAM	1	0	14.28	14.38	14.50	
20	256QAM	1	49	14.39	14.45	14.33	
20	256QAM	1	99	14.41	14.41	14.40	14.5
20	256QAM	50	0	14.36	14.21	14.25	
20	256QAM	50	24	14.25	14.34	14.00	
20	256QAM	50	50	14.40	14.34	14.40	
20	256QAM	100	0	14.43	14.50	14.48	
Channel				20825	21100	21375	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	QPSK	1	0	18.02	18.10	18.15	18.5
15	QPSK	1	37	18.09	18.05	18.23	



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15	QPSK	1	74	18.00	18.03	18.14	
15	QPSK	36	0	17.52	17.38	17.42	18
15	QPSK	36	20	17.47	17.24	17.37	
15	QPSK	36	39	17.34	17.46	17.39	
15	QPSK	75	0	17.38	17.44	17.30	
15	16QAM	1	0	17.29	17.43	17.38	18
15	16QAM	1	37	17.47	17.46	17.53	
15	16QAM	1	74	17.18	17.37	17.52	
15	16QAM	36	0	16.49	16.51	16.62	17
15	16QAM	36	20	16.61	16.60	16.48	
15	16QAM	36	39	16.51	16.63	16.54	
15	16QAM	75	0	16.55	16.33	16.50	
15	64QAM	1	0	16.35	16.51	16.62	17
15	64QAM	1	37	16.64	16.43	16.67	
15	64QAM	1	74	16.63	16.75	16.66	
15	64QAM	36	0	15.85	15.90	15.76	16
15	64QAM	36	20	15.54	15.65	15.70	
15	64QAM	36	39	15.52	15.63	15.98	
15	64QAM	75	0	15.85	15.69	15.97	
15	256QAM	1	0	14.14	14.35	14.36	14.5
15	256QAM	1	37	14.29	14.31	14.30	
15	256QAM	1	74	14.37	14.32	14.29	
15	256QAM	36	0	14.22	14.15	14.08	14.5
15	256QAM	36	20	14.22	14.25	14.48	
15	256QAM	36	39	14.27	14.34	14.36	
15	256QAM	75	0	14.25	14.41	14.43	
Channel				20800	21100	21400	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	QPSK	1	0	18.19	18.08	18.06	18.5
10	QPSK	1	25	17.90	17.86	18.11	
10	QPSK	1	49	18.11	18.04	18.03	
10	QPSK	25	0	17.49	17.37	17.40	18
10	QPSK	25	12	17.55	17.33	17.38	
10	QPSK	25	25	17.39	17.49	17.51	
10	QPSK	50	0	17.28	17.43	17.49	
10	16QAM	1	0	17.29	17.50	17.35	18
10	16QAM	1	25	17.42	17.39	17.53	
10	16QAM	1	49	17.11	17.20	17.60	
10	16QAM	25	0	16.35	16.47	16.82	17
10	16QAM	25	12	16.59	16.52	16.50	
10	16QAM	25	25	16.56	16.66	16.59	
10	16QAM	50	0	16.42	16.42	16.35	
10	64QAM	1	0	16.27	16.51	16.57	17
10	64QAM	1	25	16.50	16.44	16.71	
10	64QAM	1	49	16.58	16.58	16.76	
10	64QAM	25	0	15.95	15.82	15.69	16
10	64QAM	25	12	15.59	15.57	15.67	
10	64QAM	25	25	15.67	15.71	15.96	
10	64QAM	50	0	15.90	15.68	15.84	
10	256QAM	1	0	14.26	14.36	14.48	14.5
10	256QAM	1	25	14.39	14.38	14.18	
10	256QAM	1	49	14.40	14.30	14.38	
10	256QAM	25	0	14.25	14.03	14.21	14.5
10	256QAM	25	12	14.19	14.29	14.37	
10	256QAM	25	25	14.21	14.20	14.47	
10	256QAM	50	0	14.28	14.47	14.45	



Channel				20775	21100	21425	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	QPSK	1	0	18.18	18.17	18.22	18.5
5	QPSK	1	12	18.07	17.92	18.10	
5	QPSK	1	24	18.04	17.99	18.21	
5	QPSK	12	0	17.53	17.41	17.56	18
5	QPSK	12	7	17.54	17.28	17.49	
5	QPSK	12	13	17.39	17.32	17.50	
5	QPSK	25	0	17.43	17.44	17.44	18
5	16QAM	1	0	17.40	17.46	17.46	
5	16QAM	1	12	17.44	17.44	17.40	
5	16QAM	1	24	17.25	17.23	17.43	17
5	16QAM	12	0	16.48	16.48	16.68	
5	16QAM	12	7	16.49	16.66	16.45	
5	16QAM	12	13	16.59	16.52	16.60	17
5	16QAM	25	0	16.50	16.45	16.32	
5	64QAM	1	0	16.46	16.55	16.73	
5	64QAM	1	12	16.64	16.58	16.73	17
5	64QAM	1	24	16.60	16.59	16.75	
5	64QAM	12	0	15.84	15.77	15.75	
5	64QAM	12	7	15.45	15.63	15.82	16
5	64QAM	12	13	15.64	15.62	15.85	
5	64QAM	25	0	15.95	15.80	15.91	
5	256QAM	1	0	14.18	14.27	14.35	14.5
5	256QAM	1	12	14.20	14.43	14.13	
5	256QAM	1	24	14.32	14.26	14.32	
5	256QAM	12	0	14.36	14.03	14.19	14.5
5	256QAM	12	7	14.14	14.22	14.46	
5	256QAM	12	13	14.32	14.30	14.44	
5	256QAM	25	0	14.33	14.45	14.47	

<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)
Channel				132072	132322	132572	
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	18.05	18.24	18.06	18.3
20	QPSK	1	49	17.23	18.16	17.51	
20	QPSK	1	99	17.12	18.12	17.47	
20	QPSK	50	0	16.57	17.59	16.73	17.8
20	QPSK	50	24	16.57	17.46	16.71	
20	QPSK	50	50	16.51	17.52	16.70	
20	QPSK	100	0	16.34	17.58	16.85	17.8
20	16QAM	1	0	16.35	17.35	16.89	
20	16QAM	1	49	16.51	17.50	16.80	
20	16QAM	1	99	16.62	17.49	16.93	17.3
20	16QAM	50	0	15.68	16.61	15.89	
20	16QAM	50	24	15.81	16.64	15.94	
20	16QAM	50	50	15.58	16.83	15.94	17.3
20	16QAM	100	0	15.61	16.67	15.94	
20	64QAM	1	0	15.86	16.63	16.08	
20	64QAM	1	49	15.65	16.63	15.93	17.3
20	64QAM	1	99	15.77	16.62	15.99	
20	64QAM	50	0	15.09	16.01	15.41	



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20	64QAM	50	24	14.96	15.94	15.23	
20	64QAM	50	50	14.92	15.94	15.27	
20	64QAM	100	0	15.05	15.80	15.41	
20	256QAM	1	0	13.55	14.49	13.76	14.8
20	256QAM	1	49	13.63	14.44	13.81	
20	256QAM	1	99	13.44	14.36	13.81	
20	256QAM	50	0	13.44	14.49	13.79	14.8
20	256QAM	50	24	13.70	14.45	13.88	
20	256QAM	50	50	13.51	14.46	13.73	
20	256QAM	100	0	13.60	14.44	13.83	
Channel				132047	132322	132597	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	17.12	18.05	17.54	18.3
15	QPSK	1	37	17.23	18.00	17.49	
15	QPSK	1	74	16.94	18.01	17.44	
15	QPSK	36	0	16.42	17.50	16.66	17.8
15	QPSK	36	20	16.51	17.46	16.51	
15	QPSK	36	39	16.48	17.35	16.69	
15	QPSK	75	0	16.18	17.54	16.65	
15	16QAM	1	0	16.17	17.35	16.86	17.8
15	16QAM	1	37	16.46	17.34	16.78	
15	16QAM	1	74	16.47	17.49	16.90	
15	16QAM	36	0	15.48	16.50	15.77	17.3
15	16QAM	36	20	15.64	16.59	15.90	
15	16QAM	36	39	15.57	16.63	15.81	
15	16QAM	75	0	15.42	16.64	15.87	
15	64QAM	1	0	15.84	16.55	16.05	17.3
15	64QAM	1	37	15.46	16.49	15.79	
15	64QAM	1	74	15.66	16.57	15.96	
15	64QAM	36	0	15.02	15.96	15.33	16.3
15	64QAM	36	20	14.76	15.81	15.10	
15	64QAM	36	39	14.88	15.83	15.12	
15	64QAM	75	0	15.04	15.74	15.33	
15	256QAM	1	0	13.54	14.36	13.63	14.8
15	256QAM	1	37	13.56	14.42	13.65	
15	256QAM	1	74	13.31	14.16	13.76	
15	256QAM	36	0	13.38	14.34	13.65	14.8
15	256QAM	36	20	13.67	14.26	13.80	
15	256QAM	36	39	13.41	14.38	13.63	
15	256QAM	75	0	13.41	14.37	13.80	
Channel				132022	132322	132622	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	17.05	18.10	17.54	18.3
10	QPSK	1	25	17.21	18.12	17.45	
10	QPSK	1	49	17.11	17.99	17.41	
10	QPSK	25	0	16.56	17.50	16.73	17.8
10	QPSK	25	12	16.56	17.37	16.57	
10	QPSK	25	25	16.45	17.44	16.50	
10	QPSK	50	0	16.32	17.53	16.85	
10	16QAM	1	0	16.19	17.25	16.89	17.8
10	16QAM	1	25	16.43	17.43	16.70	
10	16QAM	1	49	16.57	17.44	16.80	
10	16QAM	25	0	15.53	16.49	15.89	17.3
10	16QAM	25	12	15.65	16.62	15.84	
10	16QAM	25	25	15.46	16.81	15.94	
10	16QAM	50	0	15.55	16.61	15.87	



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10	64QAM	1	0	15.77	16.52	16.04	17.3
10	64QAM	1	25	15.64	16.57	15.74	
10	64QAM	1	49	15.71	16.44	15.84	
10	64QAM	25	0	14.95	15.88	15.28	16.3
10	64QAM	25	12	14.90	15.92	15.06	
10	64QAM	25	25	14.73	15.91	15.25	
10	64QAM	50	0	14.94	15.68	15.37	14.8
10	256QAM	1	0	13.42	14.37	13.65	
10	256QAM	1	25	13.59	14.38	13.73	
10	256QAM	1	49	13.39	14.28	13.72	14.8
10	256QAM	25	0	13.29	14.35	13.78	
10	256QAM	25	12	13.56	14.30	13.78	
10	256QAM	25	25	13.43	14.27	13.53	Tune-up limit (dBm)
10	256QAM	50	0	13.46	14.29	13.63	
Channel				131997	132322	132647	
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	17.24	18.23	17.44	18.3
5	QPSK	1	12	17.17	18.13	17.47	
5	QPSK	1	24	16.95	18.00	17.35	
5	QPSK	12	0	16.40	17.52	16.73	17.8
5	QPSK	12	7	16.53	17.30	16.66	
5	QPSK	12	13	16.33	17.41	16.61	
5	QPSK	25	0	16.18	17.39	16.85	17.8
5	16QAM	1	0	16.19	17.32	16.70	
5	16QAM	1	12	16.37	17.31	16.76	
5	16QAM	1	24	16.42	17.33	16.83	17.3
5	16QAM	12	0	15.62	16.45	15.89	
5	16QAM	12	7	15.71	16.62	15.79	
5	16QAM	12	13	15.42	16.76	15.76	17.3
5	16QAM	25	0	15.44	16.65	15.74	
5	64QAM	1	0	15.70	16.48	15.90	
5	64QAM	1	12	15.58	16.59	15.75	17.3
5	64QAM	1	24	15.65	16.54	15.83	
5	64QAM	12	0	14.95	15.82	15.37	
5	64QAM	12	7	14.87	15.92	15.05	16.3
5	64QAM	12	13	14.88	15.79	15.13	
5	64QAM	25	0	14.98	15.73	15.37	
5	256QAM	1	0	13.53	14.39	13.58	14.8
5	256QAM	1	12	13.48	14.41	13.65	
5	256QAM	1	24	13.38	14.33	13.67	
5	256QAM	12	0	13.34	14.31	13.67	14.8
5	256QAM	12	7	13.70	14.36	13.83	
5	256QAM	12	13	13.39	14.26	13.59	
5	256QAM	25	0	13.51	14.29	13.71	Tune-up limit (dBm)
Channel				131987	132322	132657	
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	17.10	18.17	17.38	18.3
3	QPSK	1	8	17.08	17.98	17.45	
3	QPSK	1	14	16.92	17.92	17.42	
3	QPSK	8	0	16.49	17.55	16.67	17.8
3	QPSK	8	4	16.39	17.43	16.61	
3	QPSK	8	7	16.48	17.48	16.51	
3	QPSK	15	0	16.30	17.52	16.82	17.8
3	16QAM	1	0	16.17	17.33	16.73	
3	16QAM	1	8	16.38	17.40	16.72	
3	16QAM	1	14	16.58	17.42	16.93	



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3	16QAM	8	0	15.60	16.50	15.86	17.3
3	16QAM	8	4	15.74	16.50	15.77	
3	16QAM	8	7	15.47	16.78	15.82	
3	16QAM	15	0	15.54	16.49	15.83	
3	64QAM	1	0	15.66	16.56	16.04	17.3
3	64QAM	1	8	15.46	16.48	15.89	
3	64QAM	1	14	15.68	16.58	15.83	
3	64QAM	8	0	14.99	15.95	15.32	16.3
3	64QAM	8	4	14.80	15.78	15.23	
3	64QAM	8	7	14.82	15.79	15.09	
3	64QAM	15	0	14.87	15.75	15.40	
3	256QAM	1	0	13.45	14.37	13.58	14.8
3	256QAM	1	8	13.61	14.36	13.72	
3	256QAM	1	14	13.44	14.25	13.78	
3	256QAM	8	0	13.26	14.45	13.72	14.8
3	256QAM	8	4	13.69	14.32	13.72	
3	256QAM	8	7	13.49	14.34	13.55	
3	256QAM	8	7	13.49	14.34	13.55	
3	256QAM	15	0	13.59	14.43	13.64	
Channel				131979	132322	132665	Tune-up limit (dBm)
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	17.14	18.12	17.46	18.3
1.4	QPSK	1	3	17.05	17.99	17.46	
1.4	QPSK	1	5	17.08	18.04	17.33	
1.4	QPSK	3	0	17.14	18.17	17.55	
1.4	QPSK	3	1	17.13	18.12	17.38	
1.4	QPSK	3	3	17.05	17.95	17.39	
1.4	QPSK	6	0	16.26	17.45	16.69	17.8
1.4	16QAM	1	0	16.26	17.35	16.75	17.8
1.4	16QAM	1	3	16.34	17.49	16.69	
1.4	16QAM	1	5	16.52	17.32	16.54	
1.4	16QAM	3	0	16.32	17.38	16.59	
1.4	16QAM	3	1	16.34	17.38	16.84	
1.4	16QAM	3	3	15.57	16.76	15.85	
1.4	16QAM	6	0	15.60	16.55	15.94	17.3
1.4	64QAM	1	0	15.78	16.60	16.01	17.3
1.4	64QAM	1	3	15.63	16.57	15.79	
1.4	64QAM	1	5	15.67	16.42	15.90	
1.4	64QAM	3	0	15.67	16.57	15.70	
1.4	64QAM	3	1	15.77	16.62	15.90	
1.4	64QAM	3	3	15.45	16.77	15.82	
1.4	64QAM	6	0	14.89	15.80	15.33	16.3
1.4	256QAM	1	0	13.47	14.43	13.61	14.8
1.4	256QAM	1	3	13.50	14.43	13.61	
1.4	256QAM	1	5	13.27	14.32	13.64	
1.4	256QAM	3	0	13.41	14.30	13.66	
1.4	256QAM	3	1	13.61	14.38	13.70	
1.4	256QAM	3	3	13.41	14.29	13.58	
1.4	256QAM	6	0	13.59	14.25	13.74	14.8

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

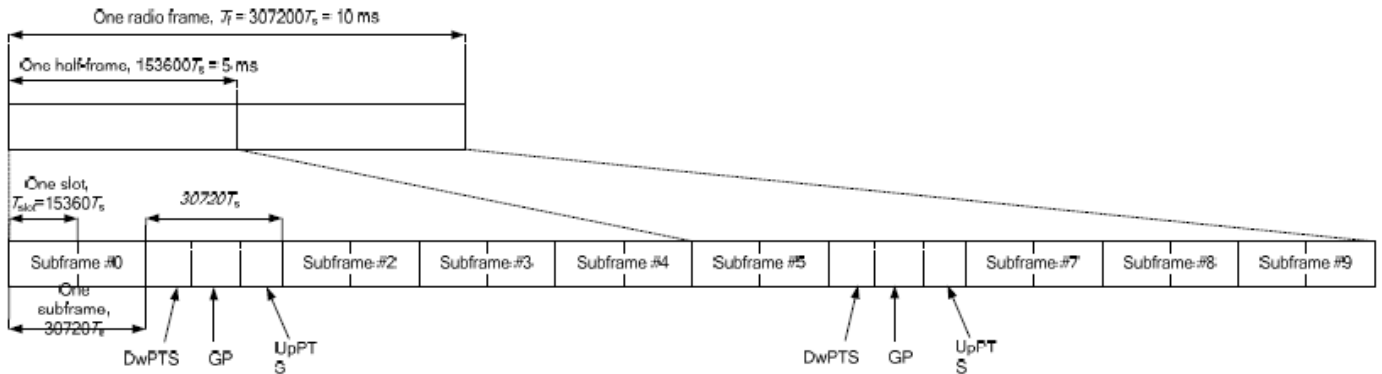


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

- i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subframes, uplink operation is in 3 uplink subframes and 1 special subframe.
- ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
- iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.167)/5 = 63.3\%$
- iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: $(3+0.143)/5 = 62.9\%$
- v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
- vi. The device supports Power Class 3 uplink-downlink configurations 0 and 6, and Power Class 2 uplink-downlink configurations 1 to 5 operations for LTE Band 41.
- vii. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1, for Power Class 3 operation is 63.3% using UL-DL configuration 0. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure condition.



Default Power Mode (Ant 0)

<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)
Channel				37850	38000	38150	
Frequency (MHz)				2580	2595	2610	
20	QPSK	1	0	22.82	22.96	22.93	24
20	QPSK	1	49	22.65	22.85	22.85	
20	QPSK	1	99	22.79	22.86	22.75	
20	QPSK	50	0	21.97	22.11	22.06	23
20	QPSK	50	24	21.81	21.89	21.85	
20	QPSK	50	50	21.69	21.97	22.03	
20	QPSK	100	0	21.70	21.92	22.10	23
20	16QAM	1	0	21.84	21.76	21.76	
20	16QAM	1	49	21.88	21.81	21.74	
20	16QAM	1	99	21.94	22.01	22.11	22
20	16QAM	50	0	20.93	20.92	20.73	
20	16QAM	50	24	20.81	20.82	21.00	
20	16QAM	50	50	20.86	21.08	21.04	22
20	16QAM	100	0	20.97	20.81	20.98	
20	64QAM	1	0	20.70	20.93	21.00	
20	64QAM	1	49	20.89	21.02	21.05	22
20	64QAM	1	99	20.73	20.97	20.97	
20	64QAM	50	0	19.72	19.98	19.87	
20	64QAM	50	24	20.01	19.78	20.00	21
20	64QAM	50	50	20.02	19.98	20.12	
20	64QAM	100	0	20.02	19.77	19.73	
20	256QAM	1	0	18.13	18.15	17.91	19
20	256QAM	1	49	18.03	18.01	18.17	
20	256QAM	1	99	18.04	18.29	18.18	
20	256QAM	50	0	18.17	18.03	18.19	19
20	256QAM	50	24	17.87	18.06	18.18	
20	256QAM	50	50	18.11	18.17	18.26	
20	256QAM	100	0	17.92	18.12	18.13	
Channel				37825	38000	38175	
Frequency (MHz)				2577.5	2595	2612.5	
15	QPSK	1	0	22.82	22.78	22.81	24
15	QPSK	1	37	22.54	22.75	22.69	
15	QPSK	1	74	22.76	22.84	22.63	
15	QPSK	36	0	21.97	22.09	21.94	23
15	QPSK	36	20	21.78	21.88	21.67	
15	QPSK	36	39	21.57	21.92	21.95	
15	QPSK	75	0	21.50	21.84	22.08	23
15	16QAM	1	0	21.74	21.61	21.61	
15	16QAM	1	37	21.70	21.70	21.61	
15	16QAM	1	74	21.85	22.01	21.93	22
15	16QAM	36	0	20.73	20.83	20.62	
15	16QAM	36	20	20.69	20.76	20.84	
15	16QAM	36	39	20.71	20.96	20.88	22
15	16QAM	75	0	20.90	20.76	20.80	
15	64QAM	1	0	20.60	20.93	20.86	
15	64QAM	1	37	20.82	20.90	21.02	22
15	64QAM	1	74	20.67	20.93	20.86	
15	64QAM	36	0	19.56	19.92	19.73	
15	64QAM	36	20	19.98	19.67	19.81	21
15	64QAM	36	39	20.02	19.85	20.00	



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15	64QAM	75	0	20.02	19.60	19.67	
15	256QAM	1	0	18.11	18.12	17.84	19
15	256QAM	1	37	18.02	18.03	18.15	
15	256QAM	1	74	17.97	18.25	18.20	
15	256QAM	36	0	18.18	18.02	18.17	19
15	256QAM	36	20	17.87	18.05	18.19	
15	256QAM	36	39	18.14	18.13	18.24	
15	256QAM	75	0	17.91	18.07	18.08	
Channel				37800	38000	38200	Tune-up limit (dBm)
Frequency (MHz)				2575	2595	2615	
10	QPSK	1	0	22.73	22.87	22.92	24
10	QPSK	1	25	22.51	22.72	22.78	
10	QPSK	1	49	22.72	22.75	22.58	
10	QPSK	25	0	21.81	22.09	21.89	23
10	QPSK	25	12	21.71	21.85	21.78	
10	QPSK	25	25	21.64	21.90	21.93	
10	QPSK	50	0	21.54	21.77	21.92	
10	16QAM	1	0	21.82	21.59	21.56	23
10	16QAM	1	25	21.84	21.81	21.58	
10	16QAM	1	49	21.75	21.88	22.03	
10	16QAM	25	0	20.83	20.75	20.69	22
10	16QAM	25	12	20.67	20.77	20.97	
10	16QAM	25	25	20.86	21.07	20.85	
10	16QAM	50	0	20.94	20.62	20.80	
10	64QAM	1	0	20.61	20.77	20.90	22
10	64QAM	1	25	20.76	20.83	20.90	
10	64QAM	1	49	20.54	20.88	20.81	
10	64QAM	25	0	19.58	19.98	19.73	21
10	64QAM	25	12	19.98	19.74	19.84	
10	64QAM	25	25	19.91	19.86	19.94	
10	64QAM	50	0	19.91	19.76	19.72	
10	256QAM	1	0	18.04	18.12	17.81	19
10	256QAM	1	25	17.97	18.05	18.13	
10	256QAM	1	49	17.96	18.23	18.23	
10	256QAM	25	0	18.14	18.05	18.13	19
10	256QAM	25	12	17.88	18.07	18.22	
10	256QAM	25	25	18.13	18.14	18.21	
10	256QAM	50	0	17.94	18.03	18.10	
Channel				37775	38000	38225	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	QPSK	1	0	22.66	22.79	22.87	24
5	QPSK	1	12	22.50	22.74	22.69	
5	QPSK	1	24	22.64	22.82	22.66	
5	QPSK	12	0	21.85	22.09	21.91	23
5	QPSK	12	7	21.65	21.69	21.79	
5	QPSK	12	13	21.54	21.91	21.91	
5	QPSK	25	0	21.66	21.79	22.09	
5	16QAM	1	0	21.73	21.70	21.68	23
5	16QAM	1	12	21.77	21.71	21.73	
5	16QAM	1	24	21.74	21.90	21.94	
5	16QAM	12	0	20.93	20.90	20.58	22
5	16QAM	12	7	20.79	20.80	20.93	
5	16QAM	12	13	20.69	20.93	20.92	
5	16QAM	25	0	20.88	20.76	20.97	
5	64QAM	1	0	20.51	20.78	20.92	22
5	64QAM	1	12	20.70	20.97	20.88	



5	64QAM	1	24	20.60	20.95	20.95	21
5	64QAM	12	0	19.52	19.78	19.76	
5	64QAM	12	7	19.81	19.72	19.87	
5	64QAM	12	13	19.98	19.92	19.96	
5	64QAM	25	0	20.01	19.75	19.55	
5	256QAM	1	0	18.02	18.06	17.77	19
5	256QAM	1	12	17.93	18.00	18.16	
5	256QAM	1	24	17.95	18.20	18.26	
5	256QAM	12	0	18.12	18.08	18.14	19
5	256QAM	12	7	17.87	18.08	18.24	
5	256QAM	12	13	18.08	18.13	18.19	
5	256QAM	25	0	17.92	18.03	18.13	

<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)
Channel				39750	40185	40620	41055	41490	Tune-up limit (dBm)
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	23.08	22.90	23.11	23.01	22.84	24
20	QPSK	1	49	23.00	22.74	22.81	22.86	22.74	
20	QPSK	1	99	22.93	22.74	22.77	22.99	22.75	
20	QPSK	50	0	22.18	21.97	22.20	21.94	21.99	23
20	QPSK	50	24	22.09	22.05	21.70	21.89	21.94	
20	QPSK	50	50	22.11	21.80	21.92	22.11	22.04	
20	QPSK	100	0	22.11	21.99	22.12	22.00	22.01	23
20	16QAM	1	0	22.13	21.72	22.04	21.94	22.01	
20	16QAM	1	49	22.05	21.87	21.91	22.09	21.81	
20	16QAM	1	99	22.20	21.87	21.71	22.04	21.67	22
20	16QAM	50	0	20.88	20.75	20.95	21.15	20.96	
20	16QAM	50	24	21.13	21.04	21.03	20.97	20.71	
20	16QAM	50	50	21.26	20.78	20.74	20.84	20.70	22
20	16QAM	100	0	20.93	20.93	20.96	21.15	20.91	
20	64QAM	1	0	21.26	20.84	20.81	21.00	20.91	
20	64QAM	1	49	21.18	20.94	20.99	20.84	20.75	22
20	64QAM	1	99	21.04	20.83	20.96	20.87	20.94	
20	64QAM	50	0	20.00	19.99	20.02	20.20	19.76	
20	64QAM	50	24	19.91	19.79	19.80	19.84	19.81	21
20	64QAM	50	50	19.94	19.79	19.90	20.11	19.79	
20	64QAM	100	0	20.14	19.94	19.78	19.90	20.01	
20	256QAM	1	0	18.05	17.88	18.12	18.30	18.19	19
20	256QAM	1	49	18.29	18.21	18.26	18.18	17.86	
20	256QAM	1	99	18.39	17.95	17.92	17.97	17.93	
20	256QAM	50	0	18.15	18.08	18.13	18.28	18.09	19
20	256QAM	50	24	18.49	18.02	18.04	18.16	18.07	
20	256QAM	50	50	18.41	18.17	18.20	18.04	17.97	
20	256QAM	100	0	18.19	18.02	18.11	18.05	18.17	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	23.00	22.82	22.68	22.85	22.80	24
15	QPSK	1	37	22.93	22.54	22.79	22.71	22.56	
15	QPSK	1	74	22.92	22.73	22.63	22.95	22.59	
15	QPSK	36	0	21.96	21.90	21.97	21.76	21.88	23
15	QPSK	36	20	21.97	22.02	21.67	21.86	21.82	
15	QPSK	36	39	21.92	21.79	21.80	21.92	22.04	



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15	QPSK	75	0	21.83	21.79	21.75	22.00	21.96	
15	16QAM	1	0	21.95	21.54	21.89	21.81	21.83	23
15	16QAM	1	37	22.05	21.77	21.91	21.94	21.64	
15	16QAM	1	74	22.02	21.73	21.69	21.92	21.52	
15	16QAM	36	0	20.78	20.60	20.75	21.05	20.96	22
15	16QAM	36	20	21.11	20.90	21.00	20.83	20.69	
15	16QAM	36	39	21.17	20.77	20.71	20.83	20.59	
15	16QAM	75	0	20.86	20.91	20.95	21.06	20.80	
15	64QAM	1	0	21.07	20.76	20.66	20.88	20.87	22
15	64QAM	1	37	21.17	20.81	20.91	20.76	20.59	
15	64QAM	1	74	20.88	20.80	20.76	20.80	20.87	
15	64QAM	36	0	19.97	19.79	20.02	20.08	19.74	21
15	64QAM	36	20	19.78	19.64	19.69	19.83	19.75	
15	64QAM	36	39	19.91	19.73	19.80	19.93	19.69	
15	64QAM	75	0	20.00	19.82	19.59	19.70	19.98	
15	256QAM	1	0	17.98	17.81	18.06	18.24	18.12	19
15	256QAM	1	37	18.22	18.20	18.23	18.21	17.80	
15	256QAM	1	74	18.32	17.94	17.87	17.91	17.91	
15	256QAM	36	0	18.12	18.07	18.09	18.21	18.04	19
15	256QAM	36	20	18.43	17.99	17.97	18.09	18.02	
15	256QAM	36	39	18.41	18.19	18.21	18.02	17.96	
15	256QAM	75	0	18.22	18.05	18.07	17.99	18.14	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	23.05	22.74	22.75	22.99	22.74	24
10	QPSK	1	25	22.97	22.72	22.76	22.78	22.57	
10	QPSK	1	49	22.73	22.73	22.66	22.86	22.59	
10	QPSK	25	0	21.89	21.87	21.86	21.84	21.86	23
10	QPSK	25	12	21.90	21.93	21.69	21.71	21.80	
10	QPSK	25	25	22.03	21.61	21.86	22.05	21.90	
10	QPSK	50	0	21.81	21.89	21.74	22.17	21.88	
10	16QAM	1	0	22.01	21.69	22.01	21.93	21.98	23
10	16QAM	1	25	21.92	21.79	21.81	22.04	21.68	
10	16QAM	1	49	22.13	21.71	21.70	21.91	21.51	
10	16QAM	25	0	20.82	20.55	20.79	21.04	20.87	22
10	16QAM	25	12	20.96	20.84	20.99	20.94	20.67	
10	16QAM	25	25	21.16	20.65	20.63	20.82	20.55	
10	16QAM	50	0	20.73	20.84	20.87	20.99	20.82	
10	64QAM	1	0	21.06	20.83	20.73	20.85	20.71	22
10	64QAM	1	25	21.00	20.85	20.89	20.72	20.63	
10	64QAM	1	49	20.92	20.79	20.78	20.84	20.78	
10	64QAM	25	0	19.80	19.90	19.95	20.09	19.70	21
10	64QAM	25	12	19.90	19.73	19.69	19.67	19.80	
10	64QAM	25	25	19.77	19.69	19.90	20.00	19.66	
10	64QAM	50	0	20.04	19.84	19.62	19.86	19.82	
10	256QAM	1	0	17.94	17.77	18.03	18.19	18.08	19
10	256QAM	1	25	18.15	18.18	18.23	18.15	17.81	
10	256QAM	1	49	18.25	17.96	17.81	17.91	17.90	
10	256QAM	25	0	18.13	18.09	18.08	18.20	18.05	19
10	256QAM	25	12	18.38	18.00	17.99	18.08	18.02	
10	256QAM	25	25	18.42	18.20	18.18	18.03	17.91	
10	256QAM	50	0	18.18	17.99	18.07	17.99	18.08	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	22.93	22.84	22.81	22.96	22.69	24.00
5	QPSK	1	12	22.99	22.63	22.75	22.74	22.66	



5	QPSK	1	24	22.75	22.54	22.61	22.93	22.66	
5	QPSK	12	0	21.91	21.92	21.85	21.86	21.82	23
5	QPSK	12	7	21.96	21.92	21.65	21.86	21.77	
5	QPSK	12	13	22.02	21.80	21.84	22.02	21.87	
5	QPSK	25	0	21.74	21.96	21.79	22.17	21.89	
5	16QAM	1	0	22.01	21.63	21.84	21.92	21.85	23
5	16QAM	1	12	22.01	21.86	21.75	21.91	21.73	
5	16QAM	1	24	22.09	21.80	21.55	21.96	21.56	
5	16QAM	12	0	20.78	20.56	20.86	21.15	20.82	22
5	16QAM	12	7	21.11	20.96	20.97	20.97	20.66	
5	16QAM	12	13	21.20	20.69	20.69	20.80	20.67	
5	16QAM	25	0	20.80	20.76	20.86	21.12	20.80	
5	64QAM	1	0	21.07	20.69	20.63	20.96	20.80	22
5	64QAM	1	12	21.01	20.89	20.90	20.79	20.68	
5	64QAM	1	24	21.03	20.81	20.90	20.67	20.92	
5	64QAM	12	0	19.96	19.86	19.84	20.19	19.72	21
5	64QAM	12	7	19.82	19.77	19.71	19.77	19.73	
5	64QAM	12	13	19.83	19.63	19.86	19.94	19.77	
5	64QAM	25	0	19.94	19.81	19.76	19.89	19.99	
5	256QAM	1	0	17.87	17.76	17.99	18.19	18.09	19
5	256QAM	1	12	18.17	18.20	18.21	18.15	17.77	
5	256QAM	1	24	18.27	17.92	17.79	17.91	17.90	
5	256QAM	12	0	18.09	18.06	18.04	18.22	18.02	19
5	256QAM	12	7	18.41	18.00	17.95	18.08	18.01	
5	256QAM	12	13	18.37	18.20	18.16	18.00	17.93	
5	256QAM	25	0	18.13	18.01	18.10	18.02	18.10	

<LTE Band 41 HPUE>

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)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	25.99	25.89	25.86	25.96	25.81	27
20	QPSK	1	49	25.80	25.67	25.80	25.82	25.69	
20	QPSK	1	99	25.93	25.74	25.71	25.94	25.70	
20	QPSK	50	0	25.21	24.93	24.98	24.97	24.94	26
20	QPSK	50	24	25.02	25.03	24.73	24.91	24.88	
20	QPSK	50	50	25.08	24.83	24.86	25.06	25.02	
20	QPSK	100	0	25.05	24.99	24.82	24.99	25.03	26
20	16QAM	1	0	25.06	24.70	24.98	24.90	24.98	
20	16QAM	1	49	25.06	24.80	24.85	25.04	24.75	
20	16QAM	1	99	25.22	24.89	24.70	25.04	24.69	25
20	16QAM	50	0	23.90	23.77	23.96	24.14	23.90	
20	16QAM	50	24	24.16	23.98	24.02	23.97	23.72	
20	16QAM	50	50	24.21	23.81	23.68	23.85	23.69	25
20	16QAM	100	0	23.89	23.91	23.98	24.15	23.87	
20	64QAM	1	0	24.19	23.79	23.77	23.94	23.84	
20	64QAM	1	49	24.12	23.88	23.92	23.84	23.72	25
20	64QAM	1	99	23.97	23.84	23.99	23.90	23.90	
20	64QAM	50	0	22.94	22.98	22.96	23.20	22.77	
20	64QAM	50	24	22.93	22.76	22.83	22.84	22.75	24
20	64QAM	50	50	22.97	22.75	22.87	23.08	22.81	
20	64QAM	100	0	23.07	22.91	22.73	22.88	23.03	
20	256QAM	1	0	20.98	20.85	21.05	21.27	21.12	22



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20	256QAM	1	49	21.26	21.17	21.26	21.14	20.88	22	
20	256QAM	1	99	21.36	20.94	20.91	20.97	20.90		
20	256QAM	50	0	21.14	21.11	21.16	21.23	21.12		
20	256QAM	50	24	21.50	21.05	20.98	21.10	21.08		
20	256QAM	50	50	21.42	21.19	21.13	21.04	20.99		
20	256QAM	100	0	21.22	20.96	21.05	21.02	21.20		
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5		
15	QPSK	1	0	25.89	25.83	25.89	25.99	25.81	27	
15	QPSK	1	37	25.97	25.60	25.76	25.82	25.66		
15	QPSK	1	74	25.95	25.67	25.70	25.88	25.65		
15	QPSK	36	0	25.19	24.87	25.00	24.93	24.90	26	
15	QPSK	36	20	24.97	25.03	24.67	24.90	24.88		
15	QPSK	36	39	25.10	24.86	24.88	25.08	24.99		
15	QPSK	75	0	25.06	24.97	24.78	25.01	25.03	26	
15	16QAM	1	0	25.07	24.66	24.99	24.91	24.91		
15	16QAM	1	37	25.09	24.79	24.87	24.99	24.68		
15	16QAM	1	74	25.20	24.86	24.69	24.99	24.70	25	
15	16QAM	36	0	23.92	23.77	23.89	24.08	23.88		
15	16QAM	36	20	24.16	23.93	23.95	23.93	23.65		
15	16QAM	36	39	24.21	23.82	23.67	23.78	23.65	25	
15	16QAM	75	0	23.83	23.88	23.96	24.08	23.89		
15	64QAM	1	0	24.13	23.80	23.80	23.89	23.85		
15	64QAM	1	37	24.08	23.89	23.94	23.84	23.67	25	
15	64QAM	1	74	24.00	23.86	24.02	23.89	23.92		
15	64QAM	36	0	22.89	22.97	22.93	23.16	22.72		
15	64QAM	36	20	22.92	22.72	22.82	22.80	22.78	24	
15	64QAM	36	39	22.99	22.76	22.88	23.01	22.79		
15	64QAM	75	0	23.07	22.89	22.76	22.81	23.04		
15	256QAM	1	0	20.91	20.87	21.05	21.21	21.11	22	
15	256QAM	1	37	21.23	21.16	21.25	21.07	20.89		
15	256QAM	1	74	21.31	20.91	20.92	20.91	20.86		
15	256QAM	36	0	21.15	21.06	21.17	21.17	21.11	22	
15	256QAM	36	20	21.44	21.07	20.97	21.09	21.05		
15	256QAM	36	39	21.41	21.14	21.07	20.97	20.98		
15	256QAM	75	0	21.20	20.92	21.06	21.02	21.22	22	
Channel				39700	40160	40620	41080	41540		Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685		
10	QPSK	1	0	26.09	25.77	25.89	26.02	25.84	27	
10	QPSK	1	25	25.98	25.57	25.72	25.78	25.66		
10	QPSK	1	49	25.93	25.70	25.71	25.82	25.63		
10	QPSK	25	0	25.21	24.82	24.94	24.89	24.92	26	
10	QPSK	25	12	24.92	24.99	24.67	24.92	24.91		
10	QPSK	25	25	25.06	24.84	24.81	25.09	24.98		
10	QPSK	50	0	25.00	24.94	24.79	24.97	24.97	26	
10	16QAM	1	0	25.00	24.62	24.97	24.85	24.89		
10	16QAM	1	25	25.08	24.72	24.83	24.95	24.71		
10	16QAM	1	49	25.13	24.79	24.65	24.96	24.72	25	
10	16QAM	25	0	23.88	23.78	23.82	24.03	23.91		
10	16QAM	25	12	24.15	23.93	23.94	23.90	23.67		
10	16QAM	25	25	24.15	23.81	23.66	23.79	23.60	25	
10	16QAM	50	0	23.84	23.88	23.90	24.05	23.86		
10	64QAM	1	0	24.15	23.78	23.80	23.92	23.82		
10	64QAM	1	25	24.04	23.83	23.90	23.82	23.68	25	
10	64QAM	1	49	23.96	23.83	23.98	23.87	23.87		
10	64QAM	25	0	22.90	22.94	22.96	23.10	22.70		24



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10	64QAM	25	12	22.88	22.68	22.81	22.82	22.71	
10	64QAM	25	25	22.96	22.70	22.81	23.03	22.75	
10	64QAM	50	0	23.02	22.90	22.79	22.77	22.99	
10	256QAM	1	0	20.84	20.87	21.07	21.14	21.11	22
10	256QAM	1	25	21.22	21.10	21.27	21.07	20.87	
10	256QAM	1	49	21.25	20.90	20.86	20.85	20.86	
10	256QAM	25	0	21.13	21.06	21.13	21.11	21.08	22
10	256QAM	25	12	21.41	21.05	20.96	21.09	20.99	
10	256QAM	25	25	21.40	21.09	21.03	20.90	20.92	
10	256QAM	50	0	21.16	20.86	21.01	20.95	21.24	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	26.12	25.77	25.86	25.95	25.79	27
5	QPSK	1	12	26.00	25.51	25.68	25.74	25.68	
5	QPSK	1	24	25.96	25.67	25.72	25.79	25.57	
5	QPSK	12	0	25.19	24.77	24.87	24.84	24.94	26
5	QPSK	12	7	24.87	24.96	24.62	24.91	24.84	
5	QPSK	12	13	25.03	24.78	24.77	25.08	24.95	
5	QPSK	25	0	25.03	24.97	24.78	24.92	24.98	
5	16QAM	1	0	24.95	24.65	24.95	24.80	24.89	26
5	16QAM	1	12	25.09	24.72	24.79	24.92	24.65	
5	16QAM	1	24	25.13	24.76	24.67	24.91	24.74	
5	16QAM	12	0	23.91	23.80	23.82	24.01	23.94	25
5	16QAM	12	7	24.09	23.91	23.88	23.93	23.70	
5	16QAM	12	13	24.09	23.75	23.67	23.73	23.60	
5	16QAM	25	0	23.81	23.87	23.92	24.03	23.82	
5	64QAM	1	0	24.16	23.79	23.83	23.94	23.79	25
5	64QAM	1	12	24.03	23.84	23.87	23.76	23.61	
5	64QAM	1	24	23.94	23.85	23.97	23.87	23.89	
5	64QAM	12	0	22.91	22.90	22.94	23.06	22.63	24
5	64QAM	12	7	22.87	22.68	22.81	22.76	22.72	
5	64QAM	12	13	22.89	22.66	22.74	23.05	22.68	
5	64QAM	25	0	22.99	22.86	22.72	22.73	22.92	
5	256QAM	1	0	20.81	20.85	21.03	21.17	21.10	22
5	256QAM	1	12	21.19	21.08	21.23	21.02	20.86	
5	256QAM	1	24	21.28	20.88	20.81	20.81	20.80	
5	256QAM	12	0	21.16	21.00	21.16	21.14	21.10	22
5	256QAM	12	7	21.44	20.98	20.90	21.03	20.94	
5	256QAM	12	13	21.40	21.03	20.98	20.93	20.95	
5	256QAM	25	0	21.14	20.82	20.98	20.98	21.26	



Default Power Mode (Ant 2)

<LTE Band 42>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				43190	43340	43490	
Frequency (MHz)				3560	3575	3590	
20	QPSK	1	0	21.42	21.46	21.45	22
20	QPSK	1	49	21.29	21.34	21.44	
20	QPSK	1	99	21.35	21.30	21.29	
20	QPSK	50	0	20.56	20.62	20.41	21
20	QPSK	50	24	20.36	20.42	20.38	
20	QPSK	50	50	20.42	20.50	20.25	
20	QPSK	100	0	20.49	20.59	20.58	21
20	16QAM	1	0	20.28	20.53	20.50	
20	16QAM	1	49	20.58	20.51	20.52	
20	16QAM	1	99	20.48	20.56	20.46	20
20	16QAM	50	0	19.24	19.65	19.44	
20	16QAM	50	24	19.46	19.46	19.34	
20	16QAM	50	50	19.44	19.48	19.38	20
20	16QAM	100	0	19.30	19.50	19.59	
20	64QAM	1	0	19.45	19.65	19.42	
20	64QAM	1	49	19.41	19.50	19.49	20
20	64QAM	1	99	19.36	19.60	19.34	
20	64QAM	50	0	18.39	18.61	18.38	
20	64QAM	50	24	18.30	18.52	18.49	19
20	64QAM	50	50	18.48	18.53	18.57	
20	64QAM	100	0	18.56	18.64	18.51	
20	256QAM	1	0	16.39	16.86	16.61	17
20	256QAM	1	49	16.59	16.66	16.53	
20	256QAM	1	99	16.65	16.61	16.52	
20	256QAM	50	0	16.49	16.69	16.78	17
20	256QAM	50	24	16.59	16.85	16.61	
20	256QAM	50	50	16.56	16.72	16.71	
20	256QAM	100	0	16.55	16.73	16.55	
Channel				43165	43340	43515	
Frequency (MHz)				3557.5	3575	3592.5	
15	QPSK	1	0	21.32	21.27	21.37	22
15	QPSK	1	37	21.14	21.24	21.36	
15	QPSK	1	74	21.16	21.17	21.29	
15	QPSK	36	0	20.49	20.48	20.22	21
15	QPSK	36	20	20.27	20.42	20.44	
15	QPSK	36	39	20.38	20.30	20.13	
15	QPSK	75	0	20.39	20.19	20.55	21
15	16QAM	1	0	20.27	20.43	20.48	
15	16QAM	1	37	20.39	20.46	20.51	
15	16QAM	1	74	20.47	20.50	20.42	20
15	16QAM	36	0	19.15	19.63	19.34	
15	16QAM	36	20	19.33	19.32	19.20	
15	16QAM	36	39	19.42	19.38	19.20	20
15	16QAM	75	0	19.12	19.33	19.59	
15	64QAM	1	0	19.36	19.46	19.39	
15	64QAM	1	37	19.36	19.47	19.30	20
15	64QAM	1	74	19.36	19.60	19.24	
15	64QAM	36	0	18.37	18.61	18.32	
15	64QAM	36	20	18.25	18.34	18.39	19
15	64QAM	36	39	18.41	18.44	18.46	



15	64QAM	75	0	18.48	18.51	18.49	
15	256QAM	1	0	16.40	16.79	16.57	17
15	256QAM	1	37	16.59	16.68	16.46	
15	256QAM	1	74	16.64	16.62	16.49	
15	256QAM	36	0	16.50	16.68	16.77	17
15	256QAM	36	20	16.61	16.81	16.58	
15	256QAM	36	39	16.49	16.65	16.65	
15	256QAM	75	0	16.58	16.69	16.48	
Channel				43140	43340	43540	Tune-up limit (dBm)
Frequency (MHz)				3555	3575	3595	
10	QPSK	1	0	21.33	21.37	21.38	22
10	QPSK	1	25	21.27	21.25	21.24	
10	QPSK	1	49	21.26	21.20	21.15	
10	QPSK	25	0	20.36	20.55	20.24	21
10	QPSK	25	12	20.16	20.29	20.41	
10	QPSK	25	25	20.27	20.32	20.08	
10	QPSK	50	0	20.47	20.21	20.40	
10	16QAM	1	0	20.08	20.38	20.36	21
10	16QAM	1	25	20.57	20.37	20.37	
10	16QAM	1	49	20.45	20.39	20.46	
10	16QAM	25	0	19.16	19.47	19.25	20
10	16QAM	25	12	19.30	19.30	19.34	
10	16QAM	25	25	19.36	19.47	19.36	
10	16QAM	50	0	19.26	19.50	19.57	
10	64QAM	1	0	19.38	19.52	19.34	20
10	64QAM	1	25	19.40	19.41	19.48	
10	64QAM	1	49	19.28	19.51	19.29	
10	64QAM	25	0	18.25	18.46	18.20	19
10	64QAM	25	12	18.16	18.44	18.39	
10	64QAM	25	25	18.34	18.47	18.49	
10	64QAM	50	0	18.54	18.46	18.45	
10	256QAM	1	0	16.36	16.81	16.55	17
10	256QAM	1	25	16.62	16.71	16.44	
10	256QAM	1	49	16.67	16.61	16.48	
10	256QAM	25	0	16.53	16.71	16.80	17
10	256QAM	25	12	16.57	16.82	16.59	
10	256QAM	25	25	16.52	16.61	16.65	
10	256QAM	50	0	16.51	16.70	16.42	
Channel				43115	43340	43565	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3575	3597.5	
5	QPSK	1	0	21.31	21.42	21.29	22
5	QPSK	1	12	21.22	21.23	21.36	
5	QPSK	1	24	21.31	21.10	21.19	
5	QPSK	12	0	20.52	20.50	20.35	21
5	QPSK	12	7	20.24	20.38	20.46	
5	QPSK	12	13	20.26	20.41	20.15	
5	QPSK	25	0	20.49	20.10	20.47	
5	16QAM	1	0	20.20	20.53	20.30	21
5	16QAM	1	12	20.44	20.43	20.36	
5	16QAM	1	24	20.44	20.47	20.37	
5	16QAM	12	0	19.16	19.64	19.26	20
5	16QAM	12	7	19.38	19.44	19.23	
5	16QAM	12	13	19.37	19.36	19.21	
5	16QAM	25	0	19.25	19.36	19.55	
5	64QAM	1	0	19.34	19.65	19.30	20
5	64QAM	1	12	19.30	19.34	19.33	



5	64QAM	1	24	19.19	19.53	19.27	19
5	64QAM	12	0	18.32	18.58	18.21	
5	64QAM	12	7	18.27	18.52	18.41	
5	64QAM	12	13	18.30	18.52	18.54	
5	64QAM	25	0	18.36	18.60	18.46	
5	256QAM	1	0	16.32	16.81	16.57	17
5	256QAM	1	12	16.59	16.74	16.39	
5	256QAM	1	24	16.62	16.64	16.43	
5	256QAM	12	0	16.55	16.71	16.82	17
5	256QAM	12	7	16.60	16.76	16.62	
5	256QAM	12	13	16.47	16.64	16.65	
5	256QAM	25	0	16.46	16.72	16.36	

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BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	21.35	21.27	21.20	21.10	22
20	QPSK	1	49	21.33	21.20	21.09	21.02	
20	QPSK	1	99	21.21	21.15	21.13	21.03	
20	QPSK	50	0	20.39	20.13	20.02	20.20	21
20	QPSK	50	24	20.29	20.31	20.32	20.38	
20	QPSK	50	50	20.38	20.19	20.31	20.11	
20	QPSK	100	0	20.32	20.31	20.26	20.18	21
20	16QAM	1	0	20.53	20.16	20.03	20.31	
20	16QAM	1	49	20.41	20.34	20.10	20.02	
20	16QAM	1	99	20.16	20.36	20.17	20.00	20
20	16QAM	50	0	19.30	19.44	19.24	19.40	
20	16QAM	50	24	19.46	19.27	19.26	19.01	
20	16QAM	50	50	19.39	19.08	19.19	19.40	20
20	16QAM	100	0	19.19	19.21	19.21	19.05	
20	64QAM	1	0	19.48	19.12	19.03	19.27	
20	64QAM	1	49	19.16	19.27	19.05	19.33	20
20	64QAM	1	99	19.21	19.31	19.03	19.09	
20	64QAM	50	0	18.30	18.35	18.28	18.01	
20	64QAM	50	24	18.30	18.38	18.18	18.40	19
20	64QAM	50	50	18.51	18.26	18.23	18.06	
20	64QAM	100	0	18.49	18.41	18.06	18.35	
20	256QAM	1	0	16.49	16.58	16.42	16.57	17
20	256QAM	1	49	16.63	16.40	16.44	16.20	
20	256QAM	1	99	16.59	16.24	16.35	16.57	
20	256QAM	50	0	16.39	16.39	16.35	16.22	17
20	256QAM	50	24	16.64	16.30	16.19	16.40	
20	256QAM	50	50	16.29	16.40	16.24	16.48	
20	256QAM	100	0	16.36	16.45	16.26	16.24	
Channel				55315	55820	56160	56665	Tune-up limit (dBm)
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	21.32	21.20	21.20	21.09	22
15	QPSK	1	37	21.15	21.14	21.09	21.01	
15	QPSK	1	74	21.02	21.05	21.12	20.94	
15	QPSK	36	0	20.06	20.08	19.90	20.07	21
15	QPSK	36	20	20.25	20.11	20.18	20.22	
15	QPSK	36	39	20.32	20.10	20.18	20.10	



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15	QPSK	75	0	20.15	20.15	20.13	19.99	
15	16QAM	1	0	20.40	20.06	19.88	20.18	21
15	16QAM	1	37	20.41	20.21	19.94	19.93	
15	16QAM	1	74	19.99	20.33	19.99	19.94	
15	16QAM	36	0	19.20	19.31	19.07	19.35	20
15	16QAM	36	20	19.44	19.10	19.17	19.00	
15	16QAM	36	39	19.32	19.03	19.01	19.32	
15	16QAM	75	0	19.14	19.11	19.19	19.02	20
15	64QAM	1	0	19.44	19.03	18.83	19.14	
15	64QAM	1	37	19.02	19.13	18.98	19.32	
15	64QAM	1	74	19.03	19.22	18.96	19.06	19
15	64QAM	36	0	18.28	18.34	18.18	17.82	
15	64QAM	36	20	18.26	18.24	18.08	18.25	
15	64QAM	36	39	18.44	18.25	18.07	18.06	17
15	64QAM	75	0	18.49	18.33	18.05	18.22	
15	256QAM	1	0	16.51	16.52	16.42	16.50	
15	256QAM	1	37	16.62	16.34	16.41	16.23	17
15	256QAM	1	74	16.62	16.17	16.31	16.57	
15	256QAM	36	0	16.39	16.33	16.31	16.15	
15	256QAM	36	20	16.57	16.23	16.14	16.40	17
15	256QAM	36	39	16.31	16.37	16.26	16.51	
15	256QAM	75	0	16.36	16.46	16.22	16.27	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	21.24	21.25	21.01	21.07	22
10	QPSK	1	25	21.17	21.05	21.08	20.89	
10	QPSK	1	49	21.14	20.97	21.09	20.88	
10	QPSK	25	0	20.18	20.13	19.86	20.04	21
10	QPSK	25	12	20.27	20.11	20.26	20.30	
10	QPSK	25	25	20.34	20.00	20.16	19.95	
10	QPSK	50	0	20.14	20.15	20.25	20.07	21
10	16QAM	1	0	20.43	20.15	19.92	20.19	
10	16QAM	1	25	20.37	20.23	20.01	19.86	
10	16QAM	1	49	20.07	20.35	20.16	19.86	20
10	16QAM	25	0	19.24	19.27	19.04	19.37	
10	16QAM	25	12	19.42	19.12	19.26	19.00	
10	16QAM	25	25	19.33	19.05	19.15	19.25	20
10	16QAM	50	0	19.11	19.20	19.19	18.97	
10	64QAM	1	0	19.31	19.10	18.93	19.11	
10	64QAM	1	25	19.03	19.13	19.05	19.30	20
10	64QAM	1	49	19.07	19.29	18.96	18.91	
10	64QAM	25	0	18.22	18.16	18.15	17.87	
10	64QAM	25	12	18.30	18.29	18.18	18.26	19
10	64QAM	25	25	18.48	18.19	18.20	17.99	
10	64QAM	50	0	18.30	18.28	17.92	18.19	
10	256QAM	1	0	16.50	16.51	16.41	16.48	17
10	256QAM	1	25	16.65	16.34	16.44	16.20	
10	256QAM	1	49	16.55	16.12	16.25	16.54	
10	256QAM	25	0	16.35	16.33	16.26	16.14	17
10	256QAM	25	12	16.54	16.26	16.10	16.37	
10	256QAM	25	25	16.26	16.30	16.28	16.51	
10	256QAM	50	0	16.31	16.47	16.23	16.24	Tune-up limit (dBm)
Channel				55265	55810	56170	56715	
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	21.19	21.23	21.05	21.08	22
5	QPSK	1	12	21.32	21.10	20.97	20.93	



5	QPSK	1	24	21.01	20.95	20.97	20.99	
5	QPSK	12	0	20.15	20.13	19.85	20.12	21
5	QPSK	12	7	20.09	20.27	20.19	20.31	
5	QPSK	12	13	20.29	20.08	20.22	20.11	
5	QPSK	25	0	20.09	20.31	20.08	20.13	
5	16QAM	1	0	20.53	20.15	20.01	20.17	21
5	16QAM	1	12	20.31	20.14	19.90	19.84	
5	16QAM	1	24	20.05	20.23	20.15	19.88	
5	16QAM	12	0	19.10	19.35	19.15	19.32	20
5	16QAM	12	7	19.34	19.22	19.10	18.92	
5	16QAM	12	13	19.35	18.90	19.08	19.25	
5	16QAM	25	0	19.09	19.19	19.15	18.98	
5	64QAM	1	0	19.47	19.00	18.84	19.09	20
5	64QAM	1	12	19.04	19.24	18.96	19.14	
5	64QAM	1	24	19.15	19.27	18.86	18.89	
5	64QAM	12	0	18.16	18.34	18.24	17.95	19
5	64QAM	12	7	18.14	18.25	18.11	18.33	
5	64QAM	12	13	18.38	18.19	18.16	17.88	
5	64QAM	25	0	18.43	18.37	18.05	18.24	
5	256QAM	1	0	16.44	16.53	16.37	16.48	17
5	256QAM	1	12	16.62	16.32	16.42	16.20	
5	256QAM	1	24	16.56	16.14	16.19	16.55	
5	256QAM	12	0	16.30	16.30	16.23	16.13	17
5	256QAM	12	7	16.53	16.27	16.06	16.40	
5	256QAM	12	13	16.29	16.23	16.24	16.51	
5	256QAM	25	0	16.34	16.47	16.24	16.26	



Reduced Power Mode (Ant 0)

<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)
Channel				37850	38000	38150	
Frequency (MHz)				2580	2595	2610	
20	QPSK	1	0	17.98	17.92	18.02	18.5
20	QPSK	1	49	17.79	17.94	17.94	
20	QPSK	1	99	17.90	17.95	17.87	
20	QPSK	50	0	17.25	17.36	17.40	17.5
20	QPSK	50	24	17.13	17.19	17.16	
20	QPSK	50	50	17.03	17.25	17.30	
20	QPSK	100	0	17.04	17.21	17.35	17.5
20	16QAM	1	0	17.15	17.09	17.09	
20	16QAM	1	49	17.18	17.13	17.07	
20	16QAM	1	99	17.23	17.28	17.36	16.5
20	16QAM	50	0	16.44	16.43	16.28	
20	16QAM	50	24	16.34	16.35	16.49	
20	16QAM	50	50	16.38	16.50	16.49	16.5
20	16QAM	100	0	16.47	16.34	16.48	
20	64QAM	1	0	16.26	16.44	16.49	
20	64QAM	1	49	16.40	16.49	16.50	16.5
20	64QAM	1	99	16.28	16.47	16.47	
20	64QAM	50	0	15.49	15.69	15.60	
20	64QAM	50	24	15.71	15.53	15.71	16
20	64QAM	50	50	15.72	15.69	15.80	
20	64QAM	100	0	15.72	15.52	15.49	
20	256QAM	1	0	14.24	14.25	14.06	14.5
20	256QAM	1	49	14.16	14.14	14.27	
20	256QAM	1	99	14.17	14.36	14.28	
20	256QAM	50	0	14.27	14.16	14.28	14.5
20	256QAM	50	24	14.03	14.18	14.28	
20	256QAM	50	50	14.22	14.27	14.34	
20	256QAM	100	0	14.07	14.23	14.24	
Channel				37825	38000	38175	
Frequency (MHz)				2577.5	2595	2612.5	
15	QPSK	1	0	17.73	17.91	17.85	18.5
15	QPSK	1	37	17.77	17.81	17.80	
15	QPSK	1	74	17.84	17.95	17.82	
15	QPSK	36	0	17.19	17.23	17.21	17.5
15	QPSK	36	20	17.03	17.17	17.15	
15	QPSK	36	39	16.90	17.09	17.18	
15	QPSK	75	0	16.97	17.02	17.15	17.5
15	16QAM	1	0	17.09	17.02	16.94	
15	16QAM	1	37	17.17	16.95	16.98	
15	16QAM	1	74	17.14	17.12	17.36	16.5
15	16QAM	36	0	16.30	16.33	16.28	
15	16QAM	36	20	16.29	16.30	16.39	
15	16QAM	36	39	16.36	16.47	16.50	16.5
15	16QAM	75	0	16.46	16.34	16.48	
15	64QAM	1	0	16.13	16.26	16.48	
15	64QAM	1	37	16.27	16.48	16.44	16.5
15	64QAM	1	74	16.19	16.34	16.40	
15	64QAM	36	0	15.38	15.56	15.60	
15	64QAM	36	20	15.71	15.43	15.52	16
15	64QAM	36	39	15.70	15.65	15.69	



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15	64QAM	75	0	15.65	15.33	15.40	
15	256QAM	1	0	14.20	14.22	14.11	14.5
15	256QAM	1	37	14.01	14.01	14.23	
15	256QAM	1	74	14.00	14.26	14.14	
15	256QAM	36	0	14.20	14.09	14.18	14.5
15	256QAM	36	20	14.02	14.09	14.27	
15	256QAM	36	39	14.11	14.21	14.26	
15	256QAM	75	39	14.03	14.08	14.18	
Channel				37800	38000	38200	
Frequency (MHz)				2575	2595	2615	
10	QPSK	1	0	17.88	17.88	17.96	18.5
10	QPSK	1	25	17.69	17.80	17.88	
10	QPSK	1	49	17.85	17.93	17.86	
10	QPSK	25	0	17.16	17.32	17.22	17.5
10	QPSK	25	12	17.07	16.99	17.13	
10	QPSK	25	25	17.02	17.16	17.23	
10	QPSK	50	0	17.04	17.06	17.30	
10	16QAM	1	0	17.08	16.95	17.09	17.5
10	16QAM	1	25	16.99	17.06	16.89	
10	16QAM	1	49	17.09	17.19	17.33	
10	16QAM	25	0	16.34	16.24	16.26	16.5
10	16QAM	25	12	16.34	16.25	16.42	
10	16QAM	25	25	16.19	16.48	16.39	
10	16QAM	50	0	16.44	16.33	16.35	
10	64QAM	1	0	16.10	16.29	16.38	16.5
10	64QAM	1	25	16.33	16.31	16.33	
10	64QAM	1	49	16.10	16.32	16.38	
10	64QAM	25	0	15.40	15.52	15.53	16
10	64QAM	25	12	15.59	15.41	15.64	
10	64QAM	25	25	15.61	15.68	15.64	
10	64QAM	50	0	15.57	15.46	15.33	
10	256QAM	1	0	14.16	14.24	13.99	14.5
10	256QAM	1	25	14.11	14.04	14.07	
10	256QAM	1	49	14.17	14.32	14.10	
10	256QAM	25	0	14.12	14.16	14.08	14.5
10	256QAM	25	12	14.01	13.99	14.23	
10	256QAM	25	25	14.07	14.27	14.28	
10	256QAM	50	0	14.03	14.04	14.17	
Channel				37775	38000	38225	Tune-up limit (dBm)
Frequency (MHz)				2572.5	2595	2617.5	
5	QPSK	1	0	17.75	17.98	18.01	18.5
5	QPSK	1	12	17.63	17.80	17.88	
5	QPSK	1	24	17.77	17.92	17.86	
5	QPSK	12	0	17.22	17.22	17.14	17.5
5	QPSK	12	7	17.08	17.05	17.14	
5	QPSK	12	13	16.85	17.11	17.23	
5	QPSK	25	0	16.89	17.13	17.30	
5	16QAM	1	0	17.05	16.96	17.09	17.5
5	16QAM	1	12	17.12	17.04	17.07	
5	16QAM	1	24	17.08	17.22	17.29	
5	16QAM	12	0	16.43	16.24	16.17	16.5
5	16QAM	12	7	16.22	16.34	16.42	
5	16QAM	12	13	16.26	16.46	16.36	
5	16QAM	25	0	16.42	16.20	16.28	
5	64QAM	1	0	16.08	16.32	16.39	16.5
5	64QAM	1	12	16.30	16.40	16.40	



5	64QAM	1	24	16.25	16.32	16.29	16
5	64QAM	12	0	15.42	15.56	15.40	
5	64QAM	12	7	15.57	15.44	15.65	
5	64QAM	12	13	15.71	15.49	15.66	
5	64QAM	25	0	15.65	15.39	15.42	
5	256QAM	1	0	14.23	14.18	14.05	14.5
5	256QAM	1	12	14.12	14.12	14.17	
5	256QAM	1	24	14.13	14.29	14.22	
5	256QAM	12	0	14.12	14.13	14.23	14.5
5	256QAM	12	7	14.00	14.12	14.14	
5	256QAM	12	13	14.13	14.23	14.18	
5	256QAM	25	0	14.05	14.05	14.16	

<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)
Channel				39750	40185	40620	41055	41490	Tune-up limit (dBm)
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	18.07	17.89	18.10	18.27	18.20	18.5
20	QPSK	1	49	18.05	17.84	17.90	17.94	17.84	
20	QPSK	1	99	17.99	17.84	17.87	18.04	17.85	
20	QPSK	50	0	17.40	17.24	17.27	17.42	17.25	17.5
20	QPSK	50	24	17.33	17.30	17.03	17.18	17.21	
20	QPSK	50	50	17.35	17.10	17.20	17.35	17.29	
20	QPSK	100	0	17.35	17.25	17.10	17.29	17.27	17.5
20	16QAM	1	0	17.36	17.04	17.29	17.21	17.27	
20	16QAM	1	49	17.30	17.16	17.19	17.33	17.11	
20	16QAM	1	99	17.42	17.16	17.03	17.29	17.00	16.5
20	16QAM	50	0	16.38	16.28	16.44	16.50	16.45	
20	16QAM	50	24	16.40	16.49	16.50	16.45	16.25	
20	16QAM	50	50	16.50	16.30	16.27	16.35	16.24	
20	16QAM	100	0	16.42	16.42	16.45	16.48	16.41	16.5
20	64QAM	1	0	16.30	16.35	16.33	16.48	16.41	
20	64QAM	1	49	16.42	16.43	16.47	16.35	16.28	
20	64QAM	1	99	16.43	16.34	16.45	16.38	16.43	16
20	64QAM	50	0	15.69	15.68	15.71	15.85	15.50	
20	64QAM	50	24	15.62	15.53	15.54	15.57	15.54	
20	64QAM	50	50	15.65	15.53	15.61	15.78	15.53	
20	64QAM	100	0	15.80	15.65	15.52	15.61	15.70	14.5
20	256QAM	1	0	14.16	14.03	14.22	14.36	14.27	
20	256QAM	1	49	14.35	14.29	14.33	14.26	14.01	
20	256QAM	1	99	14.43	14.08	14.06	14.10	14.07	14.5
20	256QAM	50	0	14.24	14.19	14.23	14.34	14.19	
20	256QAM	50	24	14.49	14.14	14.15	14.25	14.18	
20	256QAM	50	50	14.45	14.26	14.28	14.15	14.10	
20	256QAM	100	0	14.27	14.14	14.21	14.16	14.26	Tune-up limit (dBm)
Channel				39725	40173	40620	41068	41515	
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	18.04	17.92	17.93	17.94	17.90	18.50
15	QPSK	1	37	17.91	17.67	17.72	17.82	17.72	
15	QPSK	1	74	17.94	17.73	17.67	17.90	17.77	
15	QPSK	36	0	17.30	17.15	17.17	17.17	17.24	17.5
15	QPSK	36	20	17.22	17.23	16.86	17.11	17.18	
15	QPSK	36	39	17.29	17.05	17.11	17.27	17.20	



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15	QPSK	75	0	17.25	17.14	17.05	17.22	17.21	
15	16QAM	1	0	17.26	17.03	17.16	17.07	17.20	17.5
15	16QAM	1	37	17.21	17.00	17.11	17.19	17.04	
15	16QAM	1	74	17.41	17.12	16.87	17.22	16.86	
15	16QAM	36	0	16.30	16.17	16.37	16.40	16.26	16.5
15	16QAM	36	20	16.48	16.48	16.46	16.45	16.08	
15	16QAM	36	39	16.40	16.21	16.21	16.24	16.04	
15	16QAM	75	0	16.37	16.26	16.25	16.45	16.25	
15	64QAM	1	0	16.30	16.16	16.25	16.38	16.37	16.5
15	64QAM	1	37	16.45	16.40	16.30	16.32	16.09	
15	64QAM	1	74	16.40	16.21	16.41	16.33	16.26	
15	64QAM	36	0	15.68	15.65	15.69	15.67	15.35	16
15	64QAM	36	20	15.57	15.36	15.46	15.47	15.36	
15	64QAM	36	39	15.55	15.43	15.57	15.62	15.33	
15	64QAM	75	0	15.69	15.61	15.34	15.61	15.61	
15	256QAM	1	0	13.97	13.83	14.10	14.34	14.26	14.5
15	256QAM	1	37	14.21	14.17	14.29	14.09	13.92	
15	256QAM	1	74	14.24	14.04	13.94	14.10	13.92	
15	256QAM	36	0	14.17	14.00	14.03	14.26	14.17	14.5
15	256QAM	36	20	14.33	14.07	13.98	14.16	14.15	
15	256QAM	36	39	14.39	14.11	14.26	14.13	14.04	
15	256QAM	75	0	14.14	14.01	14.04	14.11	14.24	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	18.11	17.97	17.82	17.91	17.82	18.50
10	QPSK	1	25	17.86	17.74	17.89	17.81	17.84	
10	QPSK	1	49	17.86	17.71	17.79	17.90	17.84	
10	QPSK	25	0	17.21	17.13	17.09	17.12	17.08	17.5
10	QPSK	25	12	17.18	17.29	16.85	17.08	17.06	
10	QPSK	25	25	17.34	17.03	17.01	17.29	17.27	
10	QPSK	50	0	17.27	17.14	17.05	17.20	17.11	
10	16QAM	1	0	17.21	17.03	17.25	17.17	17.08	17.5
10	16QAM	1	25	17.10	17.10	17.01	17.14	17.00	
10	16QAM	1	49	17.37	17.09	16.88	17.18	16.90	
10	16QAM	25	0	16.29	16.20	16.40	16.48	16.43	16.5
10	16QAM	25	12	16.50	16.32	16.37	16.34	16.19	
10	16QAM	25	25	16.48	16.18	16.16	16.27	16.15	
10	16QAM	50	0	16.22	16.41	16.40	16.38	16.36	
10	64QAM	1	0	16.39	16.32	16.23	16.30	16.25	16.5
10	64QAM	1	25	16.48	16.27	16.35	16.23	16.13	
10	64QAM	1	49	16.46	16.31	16.38	16.19	16.24	
10	64QAM	25	0	15.55	15.65	15.71	15.83	15.31	16
10	64QAM	25	12	15.62	15.43	15.35	15.38	15.36	
10	64QAM	25	25	15.59	15.49	15.61	15.65	15.42	
10	64QAM	50	0	15.76	15.58	15.45	15.54	15.57	
10	256QAM	1	0	14.12	13.95	14.12	14.35	14.25	14.5
10	256QAM	1	25	14.16	14.24	14.29	14.23	13.94	
10	256QAM	1	49	14.34	13.90	13.96	14.05	13.90	
10	256QAM	25	0	14.09	13.99	14.14	14.24	14.03	14.5
10	256QAM	25	12	14.38	14.01	14.06	14.21	14.18	
10	256QAM	25	25	14.38	14.06	14.27	14.00	13.92	
10	256QAM	50	0	14.18	14.12	14.03	13.98	14.09	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	18.11	17.81	17.93	17.88	17.72	18.50
5	QPSK	1	12	17.87	17.65	17.85	17.82	17.68	



5	QPSK	1	24	17.95	17.69	17.81	17.86	17.71	
5	QPSK	12	0	17.38	17.12	17.26	17.03	17.20	17.5
5	QPSK	12	7	17.24	17.10	16.94	17.09	17.16	
5	QPSK	12	13	17.29	17.01	17.02	17.34	17.22	
5	QPSK	25	0	17.25	17.10	17.08	17.08	17.19	
5	16QAM	1	0	17.28	16.89	17.26	17.06	17.27	17.5
5	16QAM	1	12	17.27	17.15	17.09	17.30	16.93	
5	16QAM	1	24	17.35	17.02	16.88	17.28	16.91	
5	16QAM	12	0	16.33	16.16	16.39	16.44	16.37	16.5
5	16QAM	12	7	16.48	16.42	16.50	16.35	16.13	
5	16QAM	12	13	16.48	16.16	16.14	16.29	16.08	
5	16QAM	25	0	16.35	16.35	16.30	16.43	16.23	
5	64QAM	1	0	16.41	16.30	16.15	16.45	16.27	16.5
5	64QAM	1	12	16.42	16.30	16.34	16.34	16.12	
5	64QAM	1	24	16.31	16.25	16.41	16.37	16.34	
5	64QAM	12	0	15.67	15.53	15.54	15.78	15.42	16
5	64QAM	12	7	15.56	15.41	15.36	15.53	15.47	
5	64QAM	12	13	15.62	15.37	15.55	15.70	15.46	
5	64QAM	25	0	15.67	15.57	15.40	15.57	15.65	
5	256QAM	1	0	14.03	14.00	14.09	14.23	14.13	14.5
5	256QAM	1	12	14.25	14.19	14.23	14.26	14.00	
5	256QAM	1	24	14.39	14.07	13.93	14.02	13.92	
5	256QAM	12	0	14.20	14.13	14.19	14.18	14.08	14.5
5	256QAM	12	7	14.35	14.05	14.13	14.10	14.18	
5	256QAM	12	13	14.36	14.07	14.15	13.99	14.08	
5	256QAM	25	0	14.24	13.98	14.02	14.07	14.25	

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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)
Channel				39750	40185	40620	41055	41490	
Frequency (MHz)				2506	2549.5	2593	2636.5	2680	
20	QPSK	1	0	19.87	19.66	19.74	19.81	19.70	20.1
20	QPSK	1	49	19.11	19.62	19.72	19.74	19.64	
20	QPSK	1	99	19.82	19.68	19.65	19.83	19.65	
20	QPSK	50	0	19.27	19.06	19.10	19.09	19.06	19.6
20	QPSK	50	24	19.13	19.13	18.90	19.04	19.02	
20	QPSK	50	50	19.17	18.98	19.00	19.16	19.13	
20	QPSK	100	0	19.15	19.10	18.97	19.10	19.13	
20	16QAM	1	0	19.16	18.88	19.10	19.03	19.10	19.6
20	16QAM	1	49	19.16	18.96	19.00	19.14	18.92	
20	16QAM	1	99	19.28	19.03	18.88	19.14	18.87	
20	16QAM	50	0	18.27	18.17	18.32	18.45	18.27	18.6
20	16QAM	50	24	18.47	18.33	18.36	18.32	18.13	
20	16QAM	50	50	18.51	18.20	18.10	18.23	18.11	
20	16QAM	100	0	18.26	18.28	18.33	18.46	18.25	
20	64QAM	1	0	18.49	18.19	18.17	18.30	18.22	18.6
20	64QAM	1	49	18.44	18.25	18.29	18.22	18.13	
20	64QAM	1	99	18.32	18.22	18.34	18.27	18.27	
20	64QAM	50	0	17.54	17.57	17.55	17.60	17.41	17.6
20	64QAM	50	24	17.53	17.40	17.45	17.46	17.39	
20	64QAM	50	50	17.56	17.39	17.48	17.60	17.44	
20	64QAM	100	0	17.60	17.51	17.38	17.49	17.60	
20	256QAM	1	0	16.04	15.94	16.09	16.26	16.14	16.6



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20	256QAM	1	49	16.25	16.18	16.25	16.16	15.96	
20	256QAM	1	99	16.33	16.01	15.98	16.03	15.98	
20	256QAM	50	0	16.16	16.14	16.18	16.23	16.14	
20	256QAM	50	24	16.44	16.09	16.04	16.13	16.11	
20	256QAM	50	50	16.37	16.20	16.15	16.08	16.05	
20	256QAM	100	0	16.22	16.02	16.09	16.07	16.21	
Channel				39725	40173	40620	41068	41515	Tune-up limit (dBm)
Frequency (MHz)				2503.5	2548.3	2593	2637.8	2682.5	
15	QPSK	1	0	19.80	19.76	19.63	19.70	19.71	20.10
15	QPSK	1	37	18.96	19.47	19.66	19.59	19.46	
15	QPSK	1	74	19.81	19.54	19.64	19.69	19.58	
15	QPSK	36	0	19.27	18.87	18.90	19.05	18.87	19.6
15	QPSK	36	20	19.09	18.98	18.88	18.93	18.87	
15	QPSK	36	39	19.01	18.79	18.96	19.10	18.99	
15	QPSK	75	0	19.01	19.06	18.79	19.02	18.96	19.6
15	16QAM	1	0	19.03	18.83	18.93	19.02	19.02	
15	16QAM	1	37	18.99	18.91	18.96	19.00	18.84	
15	16QAM	1	74	19.18	18.89	18.68	19.13	18.86	18.6
15	16QAM	36	0	18.17	18.16	18.23	18.40	18.21	
15	16QAM	36	20	18.37	18.18	18.36	18.30	18.10	
15	16QAM	36	39	18.40	18.09	17.94	18.11	18.03	18.6
15	16QAM	75	0	18.13	18.23	18.30	18.26	18.18	
15	64QAM	1	0	18.31	18.14	18.14	18.30	18.08	
15	64QAM	1	37	18.30	18.22	18.13	18.20	18.00	18.6
15	64QAM	1	74	18.27	18.05	18.17	18.21	18.16	
15	64QAM	36	0	17.40	17.44	17.53	17.53	17.24	
15	64QAM	36	20	17.36	17.33	17.33	17.44	17.27	17.6
15	64QAM	36	39	17.43	17.35	17.28	17.56	17.31	
15	64QAM	75	0	17.52	17.39	17.21	17.46	17.42	
15	256QAM	1	0	15.89	15.93	16.06	16.07	15.99	16.6
15	256QAM	1	37	16.20	16.07	16.08	16.11	15.84	
15	256QAM	1	74	16.24	15.87	15.81	15.91	15.95	
15	256QAM	36	0	16.10	15.96	16.18	16.22	15.99	16.6
15	256QAM	36	20	16.36	16.01	15.89	15.98	15.91	
15	256QAM	36	39	16.26	16.07	16.12	16.05	15.86	
15	256QAM	75	0	16.14	16.01	15.93	16.03	16.12	
Channel				39700	40160	40620	41080	41540	Tune-up limit (dBm)
Frequency (MHz)				2501	2547	2593	2639	2685	
10	QPSK	1	0	19.83	19.66	19.69	19.67	19.55	20.10
10	QPSK	1	25	19.03	19.45	19.70	19.71	19.57	
10	QPSK	1	49	19.65	19.67	19.55	19.66	19.56	
10	QPSK	25	0	19.24	18.91	18.95	19.03	18.87	19.6
10	QPSK	25	12	19.00	19.07	18.90	18.92	19.01	
10	QPSK	25	25	19.11	18.90	18.92	19.01	18.93	
10	QPSK	50	0	19.00	18.96	18.91	19.03	19.01	19.6
10	16QAM	1	0	18.97	18.86	19.03	18.98	18.94	
10	16QAM	1	25	18.96	18.95	18.98	19.14	18.81	
10	16QAM	1	49	19.10	19.02	18.70	19.14	18.84	18.6
10	16QAM	25	0	18.27	17.97	18.14	18.42	18.20	
10	16QAM	25	12	18.46	18.20	18.24	18.25	17.97	
10	16QAM	25	25	18.39	18.03	17.94	18.03	18.05	18.6
10	16QAM	50	0	18.23	18.20	18.21	18.37	18.15	
10	64QAM	1	0	18.38	18.15	17.97	18.19	18.21	
10	64QAM	1	25	18.25	18.18	18.11	18.02	17.94	18.6
10	64QAM	1	49	18.17	18.11	18.17	18.16	18.15	
10	64QAM	25	0	17.47	17.56	17.47	17.58	17.31	



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10	64QAM	25	12	17.34	17.32	17.35	17.32	17.31	
10	64QAM	25	25	17.55	17.39	17.32	17.53	17.24	
10	64QAM	50	0	17.58	17.39	17.27	17.32	17.42	
10	256QAM	1	0	15.87	15.88	16.08	16.06	15.98	16.6
10	256QAM	1	25	16.19	16.13	16.24	16.01	15.92	
10	256QAM	1	49	16.17	15.83	15.91	15.88	15.96	
10	256QAM	25	0	16.09	16.04	16.17	16.08	16.00	16.6
10	256QAM	25	12	16.39	15.99	16.01	16.02	15.92	
10	256QAM	25	25	16.28	16.13	16.14	15.89	16.01	
10	256QAM	50	0	16.02	15.88	15.97	15.94	16.15	
Channel				39675	40148	40620	41093	41565	Tune-up limit (dBm)
Frequency (MHz)				2498.5	2545.8	2593	2640.30	2687.5	
5	QPSK	1	0	19.69	19.73	19.64	19.72	19.56	20.10
5	QPSK	1	12	19.09	19.57	19.65	19.65	19.45	
5	QPSK	1	24	19.82	19.50	19.49	19.71	19.57	
5	QPSK	12	0	19.16	19.03	18.98	19.03	18.87	19.6
5	QPSK	12	7	19.02	19.11	18.82	18.87	18.95	
5	QPSK	12	13	18.99	18.80	18.99	19.06	19.11	
5	QPSK	25	0	19.08	19.02	18.95	18.97	19.04	
5	16QAM	1	0	19.10	18.82	19.05	18.94	18.99	19.6
5	16QAM	1	12	19.14	18.84	18.80	19.07	18.82	
5	16QAM	1	24	19.17	18.90	18.77	19.11	18.70	
5	16QAM	12	0	18.16	18.04	18.31	18.34	18.24	18.6
5	16QAM	12	7	18.42	18.18	18.21	18.12	18.10	
5	16QAM	12	13	18.41	18.16	17.96	18.08	18.09	
5	16QAM	25	0	18.24	18.16	18.29	18.34	18.05	
5	64QAM	1	0	18.33	18.00	18.13	18.20	18.14	18.6
5	64QAM	1	12	18.30	18.07	18.27	18.19	18.13	
5	64QAM	1	24	18.30	18.09	18.34	18.21	18.10	
5	64QAM	12	0	17.35	17.47	17.49	17.67	17.38	17.6
5	64QAM	12	7	17.46	17.37	17.38	17.40	17.19	
5	64QAM	12	13	17.40	17.37	17.43	17.58	17.35	
5	64QAM	25	0	17.64	17.31	17.37	17.44	17.43	
5	256QAM	1	0	15.88	15.92	15.92	16.21	15.98	16.6
5	256QAM	1	12	16.06	16.00	16.06	16.05	15.80	
5	256QAM	1	24	16.20	15.99	15.92	15.89	15.92	
5	256QAM	12	0	15.98	16.10	16.10	16.21	16.08	16.6
5	256QAM	12	7	16.25	15.93	15.96	16.09	16.11	
5	256QAM	12	13	16.25	16.12	16.09	15.97	16.05	
5	256QAM	25	0	16.10	15.92	15.92	15.89	16.04	



Reduced Power Mode (Ant 2)

<LTE Band 42>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				43190	43340	43490	
Frequency (MHz)				3560	3575	3590	
20	QPSK	1	0	17.31	17.35	17.27	17.4
20	QPSK	1	49	17.22	17.26	17.34	
20	QPSK	1	99	17.27	17.23	17.22	
20	QPSK	50	0	16.68	16.73	16.57	16.9
20	QPSK	50	24	16.54	16.58	16.55	
20	QPSK	50	50	16.58	16.64	16.46	
20	QPSK	100	0	16.63	16.71	16.70	16.9
20	16QAM	1	0	16.48	16.66	16.64	
20	16QAM	1	49	16.70	16.65	16.65	
20	16QAM	1	99	16.63	16.68	16.61	16.4
20	16QAM	50	0	15.71	16.01	15.86	
20	16QAM	50	24	15.87	15.87	15.78	
20	16QAM	50	50	15.86	15.89	15.81	16.4
20	16QAM	100	0	15.75	15.90	15.97	
20	64QAM	1	0	15.86	16.01	15.84	
20	64QAM	1	49	15.83	15.90	15.89	16.4
20	64QAM	1	99	15.80	15.97	15.78	
20	64QAM	50	0	15.08	15.24	15.07	
20	64QAM	50	24	15.01	15.18	15.15	15.4
20	64QAM	50	50	15.15	15.18	15.21	
20	64QAM	100	0	15.21	15.26	15.17	
20	256QAM	1	0	13.60	13.95	13.76	13.9
20	256QAM	1	49	13.75	13.80	13.70	
20	256QAM	1	99	13.79	13.76	13.70	
20	256QAM	50	0	13.67	13.82	13.89	13.9
20	256QAM	50	24	13.75	13.94	13.76	
20	256QAM	50	50	13.73	13.84	13.84	
20	256QAM	100	0	13.72	13.85	13.72	
Channel				43165	43340	43515	
Frequency (MHz)				3557.5	3575	3592.5	
15	QPSK	1	0	17.20	17.30	17.30	17.4
15	QPSK	1	37	17.08	17.10	17.26	
15	QPSK	1	74	17.10	17.14	17.15	
15	QPSK	36	0	16.59	16.64	16.48	16.9
15	QPSK	36	20	16.34	16.47	16.38	
15	QPSK	36	39	16.46	16.54	16.34	
15	QPSK	75	0	16.51	16.64	16.56	16.9
15	16QAM	1	0	16.36	16.46	16.60	
15	16QAM	1	37	16.66	16.50	16.52	
15	16QAM	1	74	16.50	16.67	16.48	16.4
15	16QAM	36	0	15.70	15.86	15.86	
15	16QAM	36	20	15.73	15.77	15.69	
15	16QAM	36	39	15.76	15.70	15.73	16.4
15	16QAM	75	0	15.69	15.90	15.91	
15	64QAM	1	0	15.79	15.97	15.81	
15	64QAM	1	37	15.74	15.81	15.74	16.4
15	64QAM	1	74	15.63	15.88	15.68	
15	64QAM	36	0	14.90	15.17	14.89	
15	64QAM	36	20	14.88	15.10	15.04	15.4
15	64QAM	36	39	14.99	15.07	15.16	



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15	64QAM	75	0	15.19	15.23	15.00	
15	256QAM	1	0	13.59	13.91	13.69	13.9
15	256QAM	1	37	13.62	13.73	13.69	
15	256QAM	1	74	13.65	13.76	13.57	
15	256QAM	36	0	13.57	13.79	13.84	13.9
15	256QAM	36	20	13.56	13.75	13.59	
15	256QAM	36	39	13.69	13.84	13.65	
15	256QAM	75	0	13.62	13.84	13.72	
Channel				43140	43340	43540	Tune-up limit (dBm)
Frequency (MHz)				3555	3575	3595	
10	QPSK	1	0	17.18	17.26	17.22	17.4
10	QPSK	1	25	17.05	17.06	17.17	
10	QPSK	1	49	17.13	17.16	17.16	
10	QPSK	25	0	16.53	16.55	16.45	16.9
10	QPSK	25	12	16.37	16.52	16.47	
10	QPSK	25	25	16.53	16.47	16.43	
10	QPSK	50	0	16.46	16.66	16.67	
10	16QAM	1	0	16.44	16.56	16.64	16.9
10	16QAM	1	25	16.50	16.57	16.57	
10	16QAM	1	49	16.63	16.49	16.48	
10	16QAM	25	0	15.62	15.85	15.66	16.4
10	16QAM	25	12	15.69	15.78	15.71	
10	16QAM	25	25	15.68	15.87	15.74	
10	16QAM	50	0	15.65	15.79	15.94	
10	64QAM	1	0	15.81	15.88	15.64	16.4
10	64QAM	1	25	15.80	15.82	15.73	
10	64QAM	1	49	15.72	15.85	15.59	
10	64QAM	25	0	14.95	15.17	14.87	15.4
10	64QAM	25	12	14.94	15.02	15.14	
10	64QAM	25	25	14.96	14.99	15.04	
10	64QAM	50	0	15.16	15.06	14.99	
10	256QAM	1	0	13.53	13.77	13.57	13.9
10	256QAM	1	25	13.75	13.60	13.70	
10	256QAM	1	49	13.78	13.73	13.60	
10	256QAM	25	0	13.49	13.62	13.82	13.9
10	256QAM	25	12	13.62	13.75	13.73	
10	256QAM	25	25	13.72	13.78	13.69	
10	256QAM	50	0	13.56	13.69	13.53	
Channel				43115	43340	43565	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3575	3597.5	
5	QPSK	1	0	17.27	17.23	17.14	17.4
5	QPSK	1	12	17.07	17.18	17.34	
5	QPSK	1	24	17.11	17.14	17.18	
5	QPSK	12	0	16.61	16.55	16.46	16.9
5	QPSK	12	7	16.54	16.53	16.38	
5	QPSK	12	13	16.42	16.61	16.26	
5	QPSK	25	0	16.47	16.62	16.58	
5	16QAM	1	0	16.36	16.49	16.58	16.9
5	16QAM	1	12	16.52	16.56	16.64	
5	16QAM	1	24	16.54	16.51	16.56	
5	16QAM	12	0	15.51	15.89	15.85	16.4
5	16QAM	12	7	15.69	15.76	15.64	
5	16QAM	12	13	15.70	15.75	15.62	
5	16QAM	25	0	15.60	15.77	15.95	
5	64QAM	1	0	15.71	15.81	15.79	16.4
5	64QAM	1	12	15.81	15.76	15.83	



5	64QAM	1	24	15.70	15.96	15.70	15.4
5	64QAM	12	0	14.98	15.11	14.95	
5	64QAM	12	7	14.91	15.09	14.95	
5	64QAM	12	13	15.07	15.16	15.12	
5	64QAM	25	0	15.11	15.15	15.13	13.9
5	256QAM	1	0	13.58	13.88	13.58	
5	256QAM	1	12	13.58	13.62	13.52	
5	256QAM	1	24	13.79	13.68	13.66	13.9
5	256QAM	12	0	13.67	13.81	13.74	
5	256QAM	12	7	13.66	13.87	13.72	
5	256QAM	12	13	13.73	13.65	13.71	
5	256QAM	25	0	13.67	13.80	13.68	

<LTE Band 48>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Low Middle Ch. / Freq.	Power High Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				55340	55830	56150	56640	
Frequency (MHz)				3560	3609	3641	3690	
20	QPSK	1	0	18.38	18.32	18.20	18.26	18.6
20	QPSK	1	49	18.37	18.26	18.16	18.10	
20	QPSK	1	99	18.27	18.22	18.20	18.11	
20	QPSK	50	0	17.56	17.34	17.24	17.40	18.1
20	QPSK	50	24	17.48	17.49	17.50	17.55	
20	QPSK	50	50	17.55	17.39	17.49	17.32	
20	QPSK	100	0	17.50	17.49	17.45	17.38	
20	16QAM	1	0	17.68	17.36	17.25	17.49	18.1
20	16QAM	1	49	17.58	17.52	17.31	17.24	
20	16QAM	1	99	17.36	17.54	17.37	17.23	
20	16QAM	50	0	16.62	16.74	16.57	16.71	17.6
20	16QAM	50	24	16.76	16.60	16.59	16.37	
20	16QAM	50	50	16.70	16.43	16.53	16.71	
20	16QAM	100	0	16.53	16.55	16.55	16.41	
20	64QAM	1	0	16.78	16.47	16.39	16.60	17.6
20	64QAM	1	49	16.50	16.60	16.41	16.65	
20	64QAM	1	99	16.55	16.63	16.39	16.44	
20	64QAM	50	0	15.76	15.80	15.74	15.51	16.6
20	64QAM	50	24	15.76	15.83	15.66	15.85	
20	64QAM	50	50	15.94	15.73	15.70	15.56	
20	64QAM	100	0	15.93	15.86	15.56	15.80	
20	256QAM	1	0	14.20	14.28	14.14	14.27	14.6
20	256QAM	1	49	14.32	14.13	14.16	13.95	
20	256QAM	1	99	14.29	13.99	14.08	14.27	
20	256QAM	50	0	14.12	14.12	14.08	13.97	14.6
20	256QAM	50	24	14.33	14.04	13.94	14.13	
20	256QAM	50	50	14.03	14.13	13.99	14.19	
20	256QAM	100	0	14.09	14.17	14.00	13.99	
Channel				55315	55820	56160	56665	
Frequency (MHz)				3557.5	3608	3642	3692.5	
15	QPSK	1	0	18.27	18.12	18.16	18.14	18.6
15	QPSK	1	37	18.17	18.22	18.14	18.00	
15	QPSK	1	74	18.24	18.06	18.04	18.02	
15	QPSK	36	0	17.46	17.30	17.07	17.28	18.1
15	QPSK	36	20	17.46	17.40	17.38	17.36	
15	QPSK	36	39	17.46	17.25	17.31	17.28	



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15	QPSK	75	0	17.47	17.29	17.30	17.29	
15	16QAM	1	0	17.48	17.16	17.20	17.30	18.1
15	16QAM	1	37	17.42	17.34	17.28	17.22	
15	16QAM	1	74	17.27	17.47	17.29	17.06	
15	16QAM	36	0	16.50	16.62	16.56	16.56	17.6
15	16QAM	36	20	16.62	16.49	16.51	16.28	
15	16QAM	36	39	16.69	16.23	16.39	16.58	
15	16QAM	75	0	16.45	16.37	16.36	16.24	
15	64QAM	1	0	16.67	16.45	16.20	16.40	17.6
15	64QAM	1	37	16.37	16.57	16.24	16.61	
15	64QAM	1	74	16.54	16.49	16.32	16.38	
15	64QAM	36	0	15.59	15.65	15.56	15.47	16.6
15	64QAM	36	20	15.67	15.67	15.47	15.73	
15	64QAM	36	39	15.88	15.56	15.70	15.42	
15	64QAM	75	0	15.84	15.78	15.42	15.77	
15	256QAM	1	0	14.07	14.17	13.97	14.09	14.6
15	256QAM	1	37	14.13	14.02	13.98	13.77	
15	256QAM	1	74	14.18	13.94	14.06	14.19	
15	256QAM	36	0	14.12	13.99	13.96	13.95	14.6
15	256QAM	36	20	14.14	13.85	13.80	14.08	
15	256QAM	36	39	13.85	13.94	13.87	14.00	
15	256QAM	75	0	13.89	14.16	14.00	13.90	
Channel				55290	55815	56165	56690	Tune-up limit (dBm)
Frequency (MHz)				3555	3607.5	3642.5	3695	
10	QPSK	1	0	18.37	18.25	18.10	18.06	18.6
10	QPSK	1	25	18.28	18.15	17.96	17.91	
10	QPSK	1	49	18.13	18.03	18.12	18.05	
10	QPSK	25	0	17.36	17.24	17.18	17.22	18.1
10	QPSK	25	12	17.28	17.47	17.36	17.50	
10	QPSK	25	25	17.49	17.34	17.30	17.25	
10	QPSK	50	0	17.42	17.39	17.36	17.26	
10	16QAM	1	0	17.54	17.17	17.17	17.37	18.1
10	16QAM	1	25	17.39	17.32	17.25	17.06	
10	16QAM	1	49	17.35	17.47	17.36	17.08	
10	16QAM	25	0	16.44	16.54	16.46	16.67	17.6
10	16QAM	25	12	16.62	16.48	16.54	16.18	
10	16QAM	25	25	16.56	16.42	16.44	16.56	
10	16QAM	50	0	16.37	16.37	16.49	16.25	
10	64QAM	1	0	16.66	16.47	16.26	16.42	17.6
10	64QAM	1	25	16.40	16.55	16.40	16.50	
10	64QAM	1	49	16.54	16.55	16.32	16.38	
10	64QAM	25	0	15.61	15.67	15.57	15.32	16.6
10	64QAM	25	12	15.72	15.75	15.64	15.79	
10	64QAM	25	25	15.74	15.69	15.65	15.41	
10	64QAM	50	0	15.80	15.70	15.52	15.68	
10	256QAM	1	0	14.14	14.17	14.05	14.19	14.6
10	256QAM	1	25	14.26	13.95	14.12	13.84	
10	256QAM	1	49	14.29	13.95	13.98	14.14	
10	256QAM	25	0	13.99	13.96	14.05	13.96	14.6
10	256QAM	25	12	14.30	13.84	13.78	14.09	
10	256QAM	25	25	13.86	14.13	13.90	14.08	
10	256QAM	50	0	13.94	14.05	13.94	13.93	
Channel				55265	55810	56170	56715	Tune-up limit (dBm)
Frequency (MHz)				3552.5	3607	3643	3697.5	
5	QPSK	1	0	18.28	18.14	18.15	18.06	18.6
5	QPSK	1	12	18.33	18.21	18.14	17.90	



5	QPSK	1	24	18.26	18.19	18.11	17.99	
5	QPSK	12	0	17.46	17.31	17.05	17.29	18.1
5	QPSK	12	7	17.38	17.34	17.49	17.53	
5	QPSK	12	13	17.53	17.38	17.45	17.12	
5	QPSK	25	0	17.33	17.41	17.35	17.25	
5	16QAM	1	0	17.56	17.17	17.13	17.44	18.1
5	16QAM	1	12	17.39	17.39	17.31	17.15	
5	16QAM	1	24	17.27	17.34	17.18	17.06	
5	16QAM	12	0	16.51	16.61	16.50	16.63	17.6
5	16QAM	12	7	16.56	16.54	16.57	16.25	
5	16QAM	12	13	16.57	16.38	16.39	16.53	
5	16QAM	25	0	16.37	16.51	16.48	16.32	
5	64QAM	1	0	16.62	16.46	16.29	16.55	17.6
5	64QAM	1	12	16.50	16.42	16.23	16.48	
5	64QAM	1	24	16.41	16.54	16.36	16.35	
5	64QAM	12	0	15.66	15.75	15.74	15.47	16.6
5	64QAM	12	7	15.75	15.74	15.65	15.65	
5	64QAM	12	13	15.82	15.71	15.60	15.36	
5	64QAM	25	0	15.92	15.78	15.50	15.62	
5	256QAM	1	0	14.19	14.16	14.02	14.22	14.6
5	256QAM	1	12	14.30	14.00	14.09	13.87	
5	256QAM	1	24	14.19	13.97	13.92	14.25	
5	256QAM	12	0	13.99	14.05	14.05	13.94	14.6
5	256QAM	12	7	14.25	14.03	13.93	14.08	
5	256QAM	12	13	13.87	14.03	13.89	14.02	
5	256QAM	25	0	13.95	14.13	13.82	13.87	

<LTE Carrier Aggregation combinations>
General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation			4CC Downlink Carrier Aggregation			5CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset	Covered by Measurement Superset	Combination	Covered by Measurement Superset
1	12A-12A	3CC-87	69	12A-30A-66A	4CC-191	191	12A-30A-66A-66A	5CC-338	329	13A-48A-48C-66A	
2	12A-25A		70	12A-66A-66A	4CC-192	192	12B-66A-66A	5CC-402	330	13A-48A-48D	
3	12A-30A	3CC-69	71	12A-66C	4CC-210	193	13A-48A-48A-66A	5CC-339	331	13A-48C-48C	
4	12A-66A	3CC-70	72	12B-66A	4CC-192	194	13A-48A-48C	5CC-329	332	13A-48C-66B	
5	12B	3CC-72	73	13A-48A-48A	4CC-194	195	13A-48A-66B	5CC-329	333	13A-48C-66C	
6	13A-48A	3CC-73	74	13A-48A-66A	4CC-196	196	13A-48A-66C	5CC-329	334	13A-48D-66A	
7	13A-66A	3CC-76	75	13A-48C	4CC-197	197	13A-48C-66A	5CC-341	335	13A-48E	3
8	14A-30A	3CC-79	76	13A-66A-66A	4CC-199	198	13A-48D	5CC-334	336	25A-25A-41D	
9	14A-66A	3CC-80	77	13A-66B	4CC-195	199	13A-66A-66A-66A		337	25A-41E	
10	25A-25A	3CC-81	78	13A-66C	4CC-196	200	13A-66A-66B	5CC-343	338	2A-12A-30A-66A-66A	
11	25A-26A	3CC-82	79	14A-30A-66A	4CC-203	201	13A-66A-66C	5CC-344	339	2A-13A-48A-48A-66A	
12	25A-41A	3CC-83	80	14A-66A-66A	4CC-204	202	13A-66D	5CC-345	340	2A-13A-48A-48C	
13	26A-41A	3CC-86	81	25A-25A-25A		203	14A-30A-66A-66A	5CC-346	341	2A-13A-48C-66A	
14	2A-12A	3CC-87	82	25A-25A-26A		204	14A-66A-66A-66A	5CC-347	342	2A-13A-48D	
15	2A-13A	3CC-91	83	25A-25A-41A	4CC-205	205	25A-25A-41C	5CC-336	343	2A-13A-66A-66B	
16	2A-14A	3CC-93	84	25A-26A-41A	4CC-206	206	25A-26A-41C		344	2A-13A-66A-66C	
17	2A-2A	3CC-95	85	25A-41C	4CC-205	207	25A-41D	5CC-336	345	2A-13A-66D	
18	2A-30A	3CC-98	86	26A-41C	4CC-206	208	2A-12A-30A-66A	5CC-338	346	2A-14A-30A-66A-66A	
19	2A-48A	3CC-105	87	2A-12A-12A	4CC-219	209	2A-12A-66A-66A	5CC-349	347	2A-14A-66A-66A-66A	
20	2A-4A	3CC-108	88	2A-12A-30A	4CC-220	210	2A-12A-66C	5CC-402	348	2A-2A-12A-30A-66A	
21	2A-5A	3CC-115	89	2A-12A-66A	4CC-210	211	2A-13A-48A-48A	5CC-339	349	2A-2A-12A-66A-66A	
22	2A-66A	3CC-120	90	2A-12B	4CC-222	212	2A-13A-48A-66A	5CC-339	350	2A-2A-12B-66A	
23	2A-71A	3CC-102	91	2A-13A-48A	4CC-211	213	2A-13A-48C	5CC-341	351	2A-2A-13A-66A-66A	
24	2A-7A	3CC-126	92	2A-13A-66A	4CC-214	214	2A-13A-66A-66A	5CC-351	352	2A-2A-13A-66B	
25	2C	3CC-128	93	2A-14A-30A	4CC-217	215	2A-13A-66B	5CC-352	353	2A-2A-14A-30A-66A	
26	30A-66A	3CC-132	94	2A-14A-66A	4CC-218	216	2A-13A-66C	5CC-344	354	2A-2A-14A-66A-66A	
27	38A-40A	3CC-133	95	2A-2A-12A	4CC-219	217	2A-14A-30A-66A	5CC-346	355	2A-2A-5A-30A-66A	
28	38C	2CC-49	96	2A-2A-13A	4CC-223	218	2A-14A-66A-66A	5CC-347	356	2A-2A-5A-66A-66A	
29	41A-41A	3CC-134	97	2A-2A-14A	4CC-224	219	2A-2A-12A-12A		357	2A-2A-5A-66B	
30	41A-42A	3CC-137	98	2A-2A-30A	4CC-226	220	2A-2A-12A-30A	5CC-348	358	2A-2A-5A-66C	
31	41A-48A		99	2A-2A-4A	4CC-228	221	2A-2A-12A-66A	5CC-349	359	2A-2A-5B-66A	
32	41C	5CC-380	100	2A-2A-5A	4CC-231	222	2A-2A-12B	5CC-350	360	2A-2A-66A-66B	
33	42A-42A	3CC-136	101	2A-2A-66A	4CC-234	223	2A-2A-13A-66A	5CC-351	361	2A-2A-66A-66C	
34	42C	5CC-379	102	2A-2A-71A	4CC-235	224	2A-2A-14A-30A	5CC-353	362	2A-2A-7A-12A-66A	
35	48A-48A	3CC-142	103	2A-2A-7A	4CC-238	225	2A-2A-14A-66A	5CC-354	363	2A-48A-48C-66A	
36	48A-66A	3CC-142	104	2A-30A-66A	4CC-226	226	2A-2A-30A-66A	5CC-355	364	2A-48A-48D	
37	48A-71A	3CC-149	105	2A-48A-48A	4CC-240	227	2A-2A-4A-12A		365	2A-48C-48C	
38	48C	3CC-107	106	2A-48A-66A	4CC-240	228	2A-2A-4A-4A		366	2A-48D-66A	
39	4A-12A	3CC-108	107	2A-48C	4CC-242	229	2A-2A-4A-5A		367	2A-48E	5CC-405
40	4A-13A	3CC-109	108	2A-4A-12A	4CC-244	230	2A-2A-4A-71A		368	2A-4A-5B-30A	
41	4A-30A	3CC-110	109	2A-4A-13A		231	2A-2A-5A-30A	5CC-355	369	2A-5A-30A-66A-66A	
42	4A-48A	3CC-153	110	2A-4A-30A	4CC-249	232	2A-2A-5A-66A	5CC-356	370	2A-5A-48A-48A-66A	
43	4A-4A	3CC-111	111	2A-4A-4A	4CC-247	233	2A-2A-5B	5CC-359	371	2A-5A-48A-48C	
44	4A-5A	3CC-112	112	2A-4A-5A	4CC-249	234	2A-2A-66A-66A	5CC-349	372	2A-5A-48C-66A	
45	4A-71A	3CC-113	113	2A-4A-71A	4CC-230	235	2A-2A-66A-71A		373	2A-5A-48D	



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46	4A-7A	3CC-114	114	2A-4A-7A	4CC-251	236	2A-2A-66B	5CC-360	374	2A-5B-30A-66A	
47	5A-25A		115	2A-5A-30A	4CC-254	237	2A-2A-66C	5CC-361	375	2A-5B-66A-66A	
48	5A-30A	3CC-115	116	2A-5A-48A	4CC-255	238	2A-2A-7A-66A	5CC-362	376	2A-5B-66B	
49	5A-38A		117	2A-5A-66A	4CC-256	239	2A-30A-66A-66A	5CC-338	377	2A-5B-66C	
50	5A-40A	3CC-166	118	2A-5A-7A		240	2A-48A-48A-66A	5CC-370	378	2A-7A-12B-66A	
51	5A-41A		119	2A-5B	4CC-233	241	2A-48A-48C	5CC-363	379	2C-5B-30A	
52	5A-48A	3CC-116	120	2A-66A-66A	4CC-234	242	2A-48C-66A	5CC-363	380	41A-42C-42C	
53	5A-5A	3CC-169	121	2A-66A-71A	4CC-235	243	2A-48D	5CC-366	381	41C-41D	
54	5A-66A	3CC-170	122	2A-66B	4CC-236	244	2A-4A-12A-12A		382	41C-42A-42C	
55	5A-7A	3CC-173	123	2A-66C	4CC-237	245	2A-4A-12A-30A		383	41D-42C	
56	5B	3CC-119	124	2A-7A-12A	4CC-251	246	2A-4A-12B		384	48A-48C-66B	
57	66A-66A	3CC-132	125	2A-7A-66A	4CC-238	247	2A-4A-4A-12A		385	48A-48C-66C	
58	66A-71A	3CC-121	126	2A-7A-7A	4CC-252	248	2A-4A-4A-5A		386	48A-48D-66A	
59	66B	3CC-145	127	2A-7C	4CC-253	249	2A-4A-5A-30A		387	48C-48C-66A	
60	66C	3CC-146	128	2C-12A	4CC-272	250	2A-4A-5B	5CC-368	388	48C-48D	
61	7A-12A	3CC-124	129	2C-30A	4CC-261	251	2A-4A-7A-12A		389	48C-66A-66A-66A	
62	7A-42A		130	2C-5A	4CC-273	252	2A-4A-7A-7A		390	48E-66A	
63	7A-66A	3CC-125	131	2C-66A	4CC-274	253	2A-4A-7C		391	48F	
64	7A-7A	3CC-126	132	30A-66A-66A	4CC-239	254	2A-5A-30A-66A	5CC-369	392	4A-48E	
65	7B	3CC-103	133	41A-41A-41A	4CC-275	255	2A-5A-48A-48A	5CC-370	393	4A-4A-5B-30A	
66	7C	3CC-127	134	41A-41C	4CC-275	256	2A-5A-48A-66A	5CC-370	394	5A-48A-48C-66A	
67	4A-17A		135	41A-42A-42A	4CC-277	257	2A-5A-48C	5CC-372	395	5A-48C-48C	
68	2A-17A		136	41A-42C	4CC-277	258	2A-5A-66A-66A	5CC-356	396	5A-48E	
			137	41C-42A	4CC-280	259	2A-5A-66B	5CC-357	397	5B-30A-66A-66A	
			138	41D	4CC-276	260	2A-5A-66C	5CC-358	398	5B-66A-66B	
			139	42A-42C	4CC-277	261	2A-5B-30A	5CC-374	399	5B-66A-66C	
			140	42D	4CC-278	262	2A-5B-66A	5CC-375	400	5A-48A-48D	
			141	48A-48A-66A	4CC-286	263	2A-66A-66A-66A	5CC-347	401	5A-48D-66A	
			142	48A-48A-71A		264	2A-66A-66A-71A		402	2A-12B-66A-66A	
			143	48A-48C	4CC-289	265	2A-66A-66B	5CC-360	403	2A-7C-66A-66A	
			144	48A-66A-66A	4CC-286	266	2A-66A-66C	5CC-361	404	2A-7A-7A-66A-66A	
			145	48A-66B	4CC-287	267	2A-66C-71A				
			146	48A-66C	4CC-288	268	2A-66D	5CC-345			
			147	48C-66A	4CC-289	269	2A-7A-12A-66A	5CC-362			
			148	48C-71A		270	2A-7A-12B	5CC-378	6CC Downlink Carrier Aggregation		
			149	48D	4CC-290	271	2A-7A-66A-66A	5CC-404	Covered by	Covered by	Covered by Measurement Superset
			150	4A-12A-12A	4CC-299	272	2C-12A-30A	5CC-338			
			151	4A-12A-30A	4CC-300	273	2C-5A-30A	5CC-374	405	2A-48E-66A	
			152	4A-12B	4CC-301	274	2C-66A-66A	5CC-402	406	41C-42C-42C	
			153	4A-48C		275	41A-41A-41C		407	13A-48E-66A	
			154	4A-4A-12A	4CC-299	276	41A-41D	5CC-381			
			155	4A-4A-13A		277	41A-42A-42C	5CC-382			
			156	4A-4A-30A	4CC-300	278	41A-42D	5CC-382			
			157	4A-4A-5A	4CC-303	279	41C-41C	5CC-381			
			158	4A-4A-71A		280	41C-42C	5CC-382			
			159	4A-4A-7A		281	41D-42A	5CC-382			
			160	4A-5A-30A	4CC-302	282	41E	5CC-337			
			161	4A-5B	4CC-303	283	42A-42D	5CC-380			
			162	4A-7A-12A	4CC-251	284	42C-42C	5CC-380			
			163	4A-7A-7A	4CC-252	285	42E	5CC-380			
			164	4A-7C	4CC-253	286	48A-48A-66A-66A				
			165	5A-30A-66A	4CC-305	287	48A-48A-66B	5CC-384			
			166	5A-48A-48A	4CC-306	288	48A-48A-66C	5CC-384			
			167	5A-48A-66A	4CC-306	289	48A-48C-66A	5CC-394			
			168	5A-48C	4CC-308	290	48A-48D	5CC-400			
			169	5A-5A-66A	4CC-310	291	48A-66A-66A-66A	5CC-389			



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			170	5A-66A-66A	4CC-310	292	48C-48C	5CC-395			
			171	5A-66B	4CC-311	293	48C-66A-66A	5CC-389			
			172	5A-66C	4CC-312	294	48C-66B	5CC-384			
			173	5A-7A-7A		295	48C-66C	5CC-385			
			174	5A-7C		296	48D-66A	5CC-401			
			175	5B-30A	4CC-316	297	48E	5CC-396			
			176	5B-66A	4CC-317	298	4A-48D	5CC-392			
			177	66A-66A-66A	4CC-263	299	4A-4A-12A-12A				
			178	66A-66A-71A	4CC-264	300	4A-4A-12A-30A				
			179	66A-66B	4CC-313	301	4A-4A-12B				
			180	66A-66C	4CC-314	302	4A-4A-5A-30A	5CC-393			
			181	66C-71A	4CC-267	303	4A-4A-5B	5CC-393			
			182	66D	4CC-268	304	4A-5B-30A	5CC-393			
			183	7A-12A-66A	4CC-269	305	5A-30A-66A-66A	5CC-369			
			184	7A-12B	4CC-320	306	5A-48A-48A-66A	5CC-370			
			185	7A-66A-66A	4CC-326	307	5A-48A-48C	5CC-371			
			186	7C-66A	4CC-321	308	5A-48C-66A	5CC-372			
			187	2A-48A-66A	4CC-325	309	5A-48D	5CC-373			
			188	48A-66B	4CC-195	310	5A-5A-66A-66A				
			189	7A-7A-66A	4CC-326	311	5A-5A-66B				
			190	7A-7A-13A	4CC-328	312	5A-5A-66C				
						313	5A-66A-66B	5CC-398			
						314	5A-66A-66C	5CC-398			
						315	5A-66D	5CC-398			
						316	5B-30A-66A	5CC-397			
						317	5B-66A-66A	5CC-397			
						318	5B-66B	5CC-376			
						319	5B-66C	5CC-377			
						320	7A-12B-66A	5CC-378			
						321	7C-66A-66A	5CC-403			
						322	2A-12B-66A	5CC-350			
						323	2A-7A-7A-66A	5CC-404			
						324	2A-7C-66A	5CC-403			
						325	2A-48A-66A-66A				
						326	7A-7A-66A-66A	5CC-404			
						327	2A-2A-7A-12A	5CC-362			
						328	2A-7A-7A-13A				

<Power verification when LTE Carrier Aggregation Active>

General Note:

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

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

<Two Carrier power verification>

Configure	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1860	18700	QPSK	1	0	17	10	740	5790	23.16	23.22
	4	20	1732.5	20175	QPSK	1	0	17	10	740	5790	23.08	23.12
	5	10	836.5	20525	QPSK	1	0	25	20	1960	8340	23.01	23.05
	5	10	836.5	20525	QPSK	1	0	38	20	2595	38000	23.01	23.05
	5	10	836.5	20525	QPSK	1	0	41	20	2593	40620	23.01	23.05
	7	20	2560	21350	QPSK	1	0	42	20	3575	43340	23.11	23.16
	12	10	704	23060	QPSK	1	0	25	20	1960	8340	23.00	23.04
	41	20	2593	40620	QPSK	1	0	48	20	3609	55830	23.07	23.11

<Three Carrier power verification>

Configure	PCC							SCC1				SCC2				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1900	19100	QPSK	1	0	4	20	2132.5	2175	13	10	751	5230	23.16	23.22
	2	20	1900	19100	QPSK	1	0	5	10	881.5	2525	7	20	2655	3100	23.16	23.22
	4	20	1732.5	20175	QPSK	1	0	4	5	2112.5	1975	7	20	2655	3100	23.08	23.12
	4	20	1732.5	20175	QPSK	1	0	4	5	2112.5	1975	13	10	751	5230	23.08	23.12
	4	20	1732.5	20175	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	23.08	23.12
	5	10	836.5	20525	QPSK	1	0	7	20	2655	3100	7	5	2687.5	3425	23.01	23.05
	5	10	836.5	20525	QPSK	1	0	7	20	2655	3100	7	20	2674.8	3298	23.01	23.05
	25	20	1860	26140	QPSK	1	0	25	5	1992.5	8665	25	20	1985	8590	23.17	23.21
	25	20	1860	26140	QPSK	1	0	25	5	1992.5	8665	26	15	876.5	8865	23.17	23.21



<Four Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	4	20	2132.5	2175	12	10	737.5	5095	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	4	20	2132.5	2175	4	5	2112.5	1975	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	4	20	2132.5	2175	5	10	881.5	2525	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	12	5	737.5	5095	12	5	743.5	5155	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	4	5	2112.5	1975	5	10	881.5	2525	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	4	5	2112.5	1975	12	10	737.5	5095	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	30	10	2355	9820	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	7	20	2655	3100	7	5	2687.5	3425	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	7	20	2655	3100	12	10	737.5	5095	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	7	20	2655	3100	7	20	2674.8	3298	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	12	5	737.5	5095	12	5	743.5	5155	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	12	10	737.5	5095	30	10	2355	9820	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	12	5	737.5	5095	12	10	744.7	5167	23.16	23.22
	2	20	1860	18700	QPSK	1	0	7	20	2655	3100	7	5	2687.5	3425	13	10	751	5230	23.16	23.22
	2	20	1860	18700	QPSK	1	0	48	20	3609	55830	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	4	20	1732.5	20175	QPSK	1	0	4	5	2112.5	1975	12	5	737.5	5095	12	5	743.5	5155	23.08	23.12
	4	20	1732.5	20175	QPSK	1	0	4	5	2112.5	1975	12	10	737.5	5095	30	10	2355	9820	23.08	23.12
	4	20	1732.5	20175	QPSK	1	0	4	5	2112.5	1975	12	5	737.5	5095	12	10	744.7	5167	23.08	23.12
	5	10	836.5	20525	QPSK	1	0	5	5	871.5	2425	66	20	2155	66886	66	5	2197.5	67311	23.01	23.05
	5	10	836.5	20525	QPSK	1	0	5	5	871.5	2425	66	15	2155	66886	66	5	2164.3	66979	23.01	23.05
	5	10	836.5	20525	QPSK	1	0	5	5	871.5	2425	66	20	2155	66886	66	20	2174.8	67084	23.01	23.05
	13	10	782	23230	QPSK	1	0	48	20	3609	55830	66	15	2155	66886	66	5	2164.3	66979	22.71	22.79
	13	10	782	23230	QPSK	1	0	48	20	3609	55830	66	20	2155	66886	66	20	2174.8	67084	22.71	22.79
	13	10	782	23230	QPSK	1	0	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	22.71	22.79
	25	20	1860	26140	QPSK	1	0	26	15	876.5	8865	41	20	2593	40620	41	20	2612.8	40818	23.17	23.21
	41	20	2593	40620	QPSK	1	0	41	5	2687.5	41565	41	20	2506	39750	41	20	2525.8	39948	23.07	23.11
	48	20	3560	55340	QPSK	1	0	48	5	3697.5	56715	66	20	2155	66886	66	5	2197.5	67311	21.31	21.35



<Five Carrier power verification>

Configure	PCC							SCC1				SCC2				SCC3				SCC4				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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Pow (dBm)	W/O CA Tx.Pow (dBm)
Inter-Band	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	12	10	737.5	5095	30	10	2355	9820	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	12	10	737.5	5095	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	12	5	737.5	5095	12	10	744.7	5167	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	13	10	751	5230	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	13	10	751	5230	66	15	2155	66886	66	5	2164.3	66979	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	14	10	763	5330	30	10	2355	9820	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	14	10	763	5330	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	5	10	881.5	2525	30	10	2355	9820	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	5	10	881.5	2525	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	5	10	881.5	2525	66	15	2155	66886	66	5	2164.3	66979	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	5	10	881.5	2525	66	20	2155	66886	66	20	2174.8	67084	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	5	10	881.5	2525	5	10	891.4	2624	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	66	20	2155	66886	66	5	2197.5	67311	66	15	2206.8	67404	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	66	20	2155	66886	66	5	2197.5	67311	66	20	2209.2	67428	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	5	1987.5	1175	7	20	2655	3100	12	10	737.5	5095	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	2	20	1959.8	898	5	10	881.5	2525	5	10	891.4	2624	30	10	2355	9820	23.16	23.22
	2	20	1860	18700	QPSK	1	0	4	20	2132.5	2175	5	10	881.5	2525	5	10	891.4	2624	30	10	2355	9820	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	48	20	3609	55830	48	5	3697.5	56715	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	48	20	3609	55830	48	20	3628.8	56028	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.7	56227	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	5	10	891.4	2624	30	10	2355	9820	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	5	10	891.4	2624	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	5	10	891.4	2624	66	15	2155	66886	66	5	2164.3	66979	23.16	23.22
	2	20	1860	18700	QPSK	1	0	5	10	881.5	2525	5	10	891.4	2624	66	20	2155	66886	66	20	2174.8	67084	23.16	23.22
	2	20	1860	18700	QPSK	1	0	7	20	2655	3100	12	5	737.5	5095	12	10	744.7	5167	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	7	20	2655	3100	7	20	2674.8	3298	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	7	20	2655	3100	7	5	2687.5	3425	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	12	5	737.5	5095	12	10	744.7	5167	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	12	10	737.5	5095	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	48	20	3609	55830	48	5	3697.5	56715	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	48	20	3609	55830	48	20	3628.8	56028	66	20	2155	66886	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	5	2197.5	67311	66	15	2206.8	67404	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	5	2197.5	67311	66	20	2209.2	67428	23.16	23.22
	2	20	1860	18700	QPSK	1	0	13	10	751	5230	66	20	2155	66886	66	20	2174.8	67084	66	20	2194.6	67282	23.16	23.22
	2	20	1860	18700	QPSK	1	0	14	10	763	5330	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	23.16	23.22
	2	20	1860	18700	QPSK	1	0	14	10	763	5330	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	23.16	23.22
2	20	1860	18700	QPSK	1	0	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	66	20	2155	66886	23.16	23.22	
2	20	1860	18700	QPSK	1	0	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	48	20	3729	57030	23.16	23.22	



2	20	1860	18700	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	5	3697.5	56715	48	20	3709.2	56832	23.16	23.22
2	20	1860	18700	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	66	20	2155	66886	23.16	23.22
4	20	1732.5	20175	QPSK	1	0	4	5	2112.5	1975	5	10	881.5	2525	5	10	891.4	2624	30	10	2355	9820	23.08	23.12
4	20	1732.5	20175	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	48	20	3668.4	56424	23.08	23.12
5	10	836.5	20525	QPSK	1	0	5	10	843.7	20597	66	20	2155	66886	66	5	2197.5	67311	66	15	2206.8	67404	23.83	23.89
5	10	836.5	20525	QPSK	1	0	5	10	843.7	20597	66	20	2155	66886	66	5	2197.5	67311	66	20	2209.2	67428	23.01	23.05
5	10	836.5	20525	QPSK	1	0	5	10	843.7	20597	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	23.01	23.05
5	10	836.5	20525	QPSK	1	0	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	66	20	2155	66886	23.01	23.05
5	10	836.5	20525	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	5	3697.5	56715	48	20	3709.2	56832	23.01	23.05
5	10	836.5	20525	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	48	20	3668.4	56424	23.01	23.05
5	10	836.5	20525	QPSK	1	0	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	48	20	3729	57030	23.01	23.05
5	10	836.5	20525	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	66	20	2155	66886	23.01	23.05
13	10	782	23230	QPSK	1	0	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	66	20	2155	66886	22.71	22.79
13	10	782	23230	QPSK	1	0	48	20	3609	55830	48	5	3697.5	56715	48	20	3709.2	56832	48	20	3729	57030	22.71	22.79
13	10	782	23230	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	5	3697.5	56715	48	20	3709.2	56832	22.71	22.79
13	10	782	23230	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	66	15	2155	66886	66	5	2164.3	66979	22.71	22.79
25	20	1860	26140	QPSK	1	0	25	5	1992.5	8665	41	20	2593	40620	41	20	2612.8	40818	41	20	2632.6	41016	23.17	23.21
25	20	1860	26140	QPSK	1	0	41	20	2593	40620	41	20	2612.8	40818	41	20	2632.6	41016	41	20	2652.4	41214	23.17	23.21
41	20	2593	40620	QPSK	1	0	41	20	2612.8	40818	41	5	2498.5	39675	41	20	2478.7	39477	41	20	2458.9	39279	23.07	23.10
41	20	2593	40620	QPSK	1	0	41	20	2612.8	40818	42	20	3575	43340	42	5	3597.5	43565	42	20	3609.2	43682	23.07	23.10
41	20	2593	40620	QPSK	1	0	41	20	2612.8	40818	41	20	2632.6	41016	42	20	3575	43340	42	20	3594.8	43538	23.06	23.08
41	20	2593	40620	QPSK	1	0	42	20	3575	43340	42	20	3594.8	43538	42	5	3597.5	43565	42	20	3609.2	43682	23.07	23.11
48	20	3560	55340	QPSK	1	0	48	5	3697.5	56715	48	20	3709.2	56832	66	15	2155	66886	66	5	2164.3	66979	21.31	21.35
48	20	3560	55340	QPSK	1	0	48	5	3697.5	56715	48	20	3709.2	56832	66	20	2155	66886	66	20	2174.8	67084	21.31	21.35
48	20	3560	55340	QPSK	1	0	48	5	3697.5	56715	48	20	3709.2	56832	48	20	3729	57030	66	20	2155	66886	21.31	21.35
48	20	3560	55340	QPSK	1	0	48	20	3579.8	55538	48	5	3697.5	56715	48	20	3709.2	56832	66	20	2155	66886	21.31	21.35
48	20	3560	55340	QPSK	1	0	48	20	3579.8	55538	48	5	3697.5	56715	48	20	3709.2	56832	48	20	3729	57030	21.30	21.33
48	20	3560	55340	QPSK	1	0	48	20	3579.8	55538	66	20	2155	66886	66	5	2197.5	67311	66	20	2120	66536	21.30	21.33
48	20	3560	55340	QPSK	1	0	48	20	3579.8	55538	48	20	3599.6	55736	48	20	3619.4	55934	66	20	2155	66886	21.22	21.29
48	20	3560	55340	QPSK	1	0	48	20	3579.8	55538	48	20	3599.6	55736	48	20	3619.4	55934	48	20	3639.2	56132	21.30	21.31

<Six Carrier power verification>

Configure	PCC						SCC1				SCC2				SCC3				SCC4				SCC5		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	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	2	20	1860	18700	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	48	20	3668.4	56424	66	20	2155	66886	23.16	23.22
	13	10	782	23230	QPSK	1	0	48	20	3609	55830	48	20	3628.8	56028	48	20	3648.6	56226	48	20	3668.4	56424	66	20	2155	66886	22.71	22.79
	41	20	2593	40620	QPSK	1	0	41	20	2612.8	40818	42	20	3575	43340	42	20	3594.8	43538	42	5	3597.5	43565	42	20	3609.2	43682	23.07	23.10

<LTE Uplink carrier aggregation>

2CC Uplink Carrier Aggregation	
Number	Combination
1	5B
2	7C
3	66B
4	66C
5	38C
6	41C
7	48C

<Intra-band>**General Note:**

- i. The device supports intra-band uplink carrier aggregation for LTE B5/B7/B66/B38/B41/B48 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. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation 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. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- v. Additional SAR measurement for LTE UL CA with other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

Default Power Mode (Ant 0)

CA_5B										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	0	0	0	1	0	22.91	24.5
20575	20476	QPSK	1	0	1	49	2	0	22.89	24.5
20600	20501	QPSK	1	0	1	49	2	0	22.81	24.5

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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	0	0	0	1	0	23.12	24
21100	20902	QPSK	1	0	1	99	2	0	23.09	24
21350	21152	QPSK	1	0	1	99	2	0	23.01	24

CA_66B										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	0	0	0	1	0	23.1	24
132322	132229	QPSK	1	0	1	24	2	0	23.08	24
132597	132504	QPSK	1	0	1	24	2	0	23	24

CA_66C										
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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	0	0	0	1	0	23.11	24
132322	132124	QPSK	1	0	1	99	2	0	23.07	24
132572	132374	QPSK	1	0	1	99	2	0	23.02	24

CA_38C										
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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
37850	38048	QPSK	1	0	0	0	1	0	23.11	24
37901	38099	QPSK	1	0	0	0	1	0	23.1	24
38150	37952	QPSK	1	0	1	99	2	0	23.08	24

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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	0	0	0	1	0	23.2	24
40185	39987	QPSK	1	0	1	99	2	0	23.16	24
40620	40422	QPSK	1	0	1	99	2	0	23.15	24

Reduced Power Mode (Ant 0)

CA_5B										
Combination 10MHz+10MHz (50RB+50RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
20450	20549	QPSK	1	0	0	0	1	0	18.83	19.9
20575	20476	QPSK	1	0	1	49	2	0	18.76	19.9
20600	20501	QPSK	1	0	1	49	2	0	18.7	19.9

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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	0	0	0	1	0	15.22	15.5
21100	20902	QPSK	1	0	1	99	2	0	15.16	15.5
21350	21152	QPSK	1	0	1	99	2	0	15.11	15.5

CA_66B										
Combination 15MHz+5MHz (75RB+25RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
132047	132140	QPSK	1	0	0	0	1	0	18.31	18.4
132322	132229	QPSK	1	0	1	24	2	0	18.26	18.4
132597	132504	QPSK	1	0	1	24	2	0	18.22	18.4

CA_66C										
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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
132072	132270	QPSK	1	0	0	0	1	0	18.22	18.4
132322	132124	QPSK	1	0	1	99	2	0	18.16	18.4
132572	132374	QPSK	1	0	1	99	2	0	18.11	18.4

CA_38C										
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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
37850	38048	QPSK	1	0	0	0	1	0	18.09	18.5
37901	38099	QPSK	1	0	0	0	1	0	18.02	18.5
38150	37952	QPSK	1	0	1	99	2	0	17.89	18.5

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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	0	0	0	1	0	18.07	18.5
40185	39987	QPSK	1	0	1	99	2	0	18.04	18.5
40620	40422	QPSK	1	0	1	99	2	0	18.01	18.5



Default Power Mode (Ant 2)

CA_48C										
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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
55340	55538	QPSK	1	0	0	0	1	0	21.49	22
55830	55632	QPSK	1	0	1	99	2	0	21.46	22
56150	55952	QPSK	1	0	1	99	2	0	21.39	22

Reduced Power Mode (Ant 2)

CA_48C										
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) Typ. target power with tolerance: +1dbm
			RB Size	RB offset	RB Size	RB offset				
55340	55538	QPSK	1	0	0	0	1	0	18.31	18.6
55830	55632	QPSK	1	0	1	99	2	0	18.22	18.6
56150	55952	QPSK	1	0	1	99	2	0	18.21	18.6

14. 5G NR Output Power (Unit: dBm)

General Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below
 - a. For DFT-OFDM output power measurement, full measurement was done for Pi/2 BPSK and QPSK and for the largest supported bandwidth, repeat test for 16QAM/64QAM/256QAM under 1RB 1Offset configuration. For smaller bandwidth, measure conducted power for Pi/2 BPSK and 1RB 1Offset configuration.
 - b. According to the tune-up, CP-OFDM output power is not ½ dB higher than DFT-OFDM mode, and the reported SAR of DFT-OFDM mode reported SAR is ≤ 1.45 W/kg, SAR test and thus conducted power for CP-OFDM mode is not required.
 - c. To start SAR test for the largest channel bandwidth for Pi/2 BPSK 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. Also do SAR test for 50% RB allocation for Pi/2 BPSK SAR testing using 1RB Pi/2 BPSK allocation procedure
 - d. For Pi/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - e. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not ½ dB higher than the same configuration in Pi/2 BPSK, also reported SAR for the Pi/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - f. Smaller bandwidth output power for each RB allocation configuration for this device is not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
2. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission

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Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5 ¹	≤ 1.2 ¹	≤ 0.2 ¹
		≤ 0.5 ²	≤ 0.5 ²	0 ²
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM		≤ 2.5	
CP-OFDM	256 QAM		≤ 4.5	
	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5		≤ 2.5
	256 QAM		≤ 4.5	
CP-OFDM	QPSK	≤ 3.5	≤ 3	≤ 1.5
	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM		≤ 3.5	
	256 QAM		≤ 6.5	



Default Power Mode (Ant 0)

<n2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	23.54	23.42	23.24	
20	PI/2 BPSK	1	53	23.48	23.39	23.17	
20	PI/2 BPSK	1	104	23.45	23.40	23.17	
20	PI/2 BPSK	50	0	22.97	22.91	22.70	23.5
20	PI/2 BPSK	50	28	23.47	23.42	23.18	24.0
20	PI/2 BPSK	50	56	23.03	22.88	22.69	23.5
20	PI/2 BPSK	100	0	22.98	22.90	22.68	
20	QPSK	1	1	23.50	23.34	23.24	
20	QPSK	1	53	23.53	23.36	23.20	
20	QPSK	1	104	23.50	23.35	23.20	
20	QPSK	50	0	22.47	22.33	22.15	23.0
20	QPSK	50	28	23.49	23.32	23.15	24.0
20	QPSK	50	56	22.45	22.36	22.23	23.0
20	QPSK	100	0	22.53	22.33	22.20	
20	16QAM	1	1	22.51	22.32	22.18	
20	64QAM	1	1	19.98	19.84	19.68	21.5
20	256QAM	1	1	17.97	18.89	18.68	19.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	23.27	23.23	23.19	
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	23.27	23.15	23.14	
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.24	23.20	23.17	



<n5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				166800	167300	167800	Tune-up limit (dBm)
Frequency (MHz)				834	836.5	839	
20	PI/2 BPSK	1	1	23.28	23.25	23.21	24.0
20	PI/2 BPSK	1	53	23.21	23.20	23.17	
20	PI/2 BPSK	1	104	23.22	23.17	23.15	
20	PI/2 BPSK	50	0	22.78	22.69	22.69	23.5
20	PI/2 BPSK	50	28	23.23	23.16	23.16	24.0
20	PI/2 BPSK	50	56	22.68	22.75	22.67	23.5
20	PI/2 BPSK	100	0	22.69	22.67	22.64	
20	QPSK	1	1	23.19	23.25	23.14	24.0
20	QPSK	1	53	23.25	23.19	23.13	
20	QPSK	1	104	23.19	23.18	23.19	
20	QPSK	50	0	22.20	22.19	22.19	23.0
20	QPSK	50	28	23.27	23.24	23.15	24.0
20	QPSK	50	56	22.18	22.18	22.11	23.0
20	QPSK	100	0	22.26	22.16	22.21	
20	16QAM	1	1	22.26	22.23	22.14	23.0
20	64QAM	1	1	19.72	19.71	19.61	21.5
20	256QAM	1	1	17.77	18.67	18.66	19.5
Channel				166300	167300	168300	Tune-up limit (dBm)
Frequency (MHz)				831.5	836.5	841.5	
15	PI/2 BPSK	1	1	23.19	23.25	23.11	24.0
Channel				165800	167300	168800	Tune-up limit (dBm)
Frequency (MHz)				829	836.5	844	
10	PI/2 BPSK	1	1	23.22	23.23	23.18	24.0
Channel				165300	167300	169300	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	PI/2 BPSK	1	1	23.22	23.25	23.12	24.0



<n12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				141300	141500	141700	24.0
Frequency (MHz)				706.5	707.5	708.5	
15	PI/2 BPSK	1	1	23.36	23.29	23.26	
15	PI/2 BPSK	1	40	23.28	23.26	23.25	23.5
15	PI/2 BPSK	1	77	23.30	23.25	23.26	
15	PI/2 BPSK	36	0	22.84	22.74	22.72	24.0
15	PI/2 BPSK	36	22	23.27	23.28	23.26	23.5
15	PI/2 BPSK	36	43	22.82	22.71	22.72	
15	PI/2 BPSK	75	0	22.85	22.69	22.69	24.0
15	QPSK	1	1	23.27	23.21	23.17	
15	QPSK	1	40	23.31	23.26	23.19	
15	QPSK	1	77	23.27	23.22	23.21	23.0
15	QPSK	36	0	22.35	22.24	22.20	
15	QPSK	36	22	23.34	23.21	23.18	24.0
15	QPSK	36	43	22.29	22.28	22.18	23.0
15	QPSK	75	0	22.29	22.22	22.25	
15	16QAM	1	1	22.32	22.27	22.16	23.0
15	64QAM	1	1	19.81	19.74	19.76	21.5
	256QAM	1	1	17.77	18.77	18.72	19.5
Channel				140800	141500	142200	24.0
Frequency (MHz)				704	707.5	711	
10	PI/2 BPSK	1	1	23.35	23.23	23.17	24.0
Channel				140300	141500	142700	24.0
Frequency (MHz)				701.5	707.5	713.5	
5	PI/2 BPSK	1	1	23.33	23.24	23.16	24.0



<n66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	23.57	23.67	23.62	
20	PI/2 BPSK	1	53	23.48	23.61	23.57	24.0
20	PI/2 BPSK	1	104	23.52	23.62	23.56	23.5
20	PI/2 BPSK	50	0	23.04	23.13	23.05	
20	PI/2 BPSK	50	28	23.49	23.66	23.58	24.0
20	PI/2 BPSK	50	56	22.99	23.08	23.07	23.5
20	PI/2 BPSK	100	0	22.97	23.14	23.07	
20	QPSK	1	1	23.55	23.60	23.57	24.0
20	QPSK	1	53	23.53	23.59	23.55	
20	QPSK	1	104	23.49	23.65	23.58	
20	QPSK	50	0	22.50	22.66	22.55	23.0
20	QPSK	50	28	23.49	23.66	23.59	24.0
20	QPSK	50	56	22.48	22.59	22.59	23.0
20	QPSK	100	0	22.57	22.66	22.54	
20	16QAM	1	1	22.53	22.60	22.57	23.0
20	64QAM	1	1	20.00	20.16	20.08	21.5
20	256QAM	1	1	17.99	19.11	19.08	19.5
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	23.49	23.66	23.53	24.0
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	23.51	23.59	23.62	24.0
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	23.47	23.61	23.54	24.0



<n71>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				134600	136100	137600	Tune-up limit (dBm)
Frequency (MHz)				673	680.5	688	
20	PI/2 BPSK	1	1	23.24	23.38	23.04	24.0
20	PI/2 BPSK	1	53	23.15	23.24	22.96	
20	PI/2 BPSK	1	104	23.20	23.22	23.03	
20	PI/2 BPSK	50	0	22.72	22.72	22.47	23.5
20	PI/2 BPSK	50	28	23.20	23.28	22.94	24.0
20	PI/2 BPSK	50	56	22.67	22.76	22.48	23.5
20	PI/2 BPSK	100	0	22.69	22.74	22.45	
20	QPSK	1	1	23.15	23.18	23.03	24.0
20	QPSK	1	53	23.16	23.23	22.94	
20	QPSK	1	104	23.19	23.23	22.99	
20	QPSK	50	0	22.23	22.25	22.01	23.0
20	QPSK	50	28	23.16	23.26	23.04	24.0
20	QPSK	50	56	22.14	22.18	22.04	23.0
20	QPSK	100	0	22.15	22.26	22.04	
20	16QAM	1	1	22.16	22.25	21.95	23.0
20	64QAM	1	1	19.71	19.70	19.56	21.5
20	256QAM	1	1	17.70	18.70	18.48	19.5
Channel				134100	136100	138100	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	PI/2 BPSK	1	1	23.19	23.23	23.03	24.0
Channel				133600	136100	138600	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	PI/2 BPSK	1	1	23.24	23.22	23.00	24.0
Channel				133100	136100	139100	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	PI/2 BPSK	1	1	23.16	23.21	22.99	24.0



Default Power Mode (Ant 2)

<n2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	23.28	23.21	23.14	
20	PI/2 BPSK	1	53	23.20	23.13	23.10	24.0
20	PI/2 BPSK	1	104	23.21	23.20	23.12	
20	PI/2 BPSK	50	0	22.78	22.68	22.62	
20	PI/2 BPSK	50	28	23.19	23.13	23.04	24.0
20	PI/2 BPSK	50	56	22.68	22.67	22.61	23.5
20	PI/2 BPSK	100	0	22.69	22.63	22.61	
20	QPSK	1	1	23.19	23.15	23.10	
20	QPSK	1	53	23.22	23.13	23.14	24.0
20	QPSK	1	104	23.23	23.12	23.08	
20	QPSK	50	0	22.23	22.13	22.06	
20	QPSK	50	28	23.18	23.12	23.10	24.0
20	QPSK	50	56	22.20	22.14	22.12	23.0
20	QPSK	100	0	22.22	22.18	22.08	
20	16QAM	1	1	22.28	22.19	22.04	
20	64QAM	1	1	19.75	19.63	19.61	21.5
20	256QAM	1	1	17.72	18.69	18.60	19.5
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	23.26	23.20	23.07	
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	23.24	23.18	23.07	
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	23.26	23.12	23.08	



<n7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				502000	507000	512000	Tune-up limit (dBm)
Frequency (MHz)				2510	2535	2560	
20	PI/2 BPSK	1	1	23.55	23.48	23.47	24.0
20	PI/2 BPSK	1	53	23.54	23.40	23.39	
20	PI/2 BPSK	1	104	23.53	23.43	23.46	
20	PI/2 BPSK	50	0	22.98	22.93	22.97	23.5
20	PI/2 BPSK	50	28	23.49	23.45	23.47	24.0
20	PI/2 BPSK	50	56	22.98	22.94	22.90	23.5
20	PI/2 BPSK	100	0	23.00	22.92	22.97	
20	QPSK	1	1	23.50	23.46	23.41	24.0
20	QPSK	1	53	23.46	23.39	23.42	
20	QPSK	1	104	23.50	23.43	23.39	
20	QPSK	50	0	22.54	22.43	22.39	23.0
20	QPSK	50	28	23.45	23.42	23.39	24.0
20	QPSK	50	56	22.50	22.42	22.39	23.0
20	QPSK	100	0	22.53	22.43	22.39	
20	16QAM	1	1	22.50	22.42	22.45	23.0
20	64QAM	1	1	20.04	19.94	19.92	21.5
20	256QAM	1	1	17.97	18.92	18.96	19.5
Channel				501500	507000	512500	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	PI/2 BPSK	1	1	23.47	23.43	23.39	24.0
Channel				501000	507000	513000	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	PI/2 BPSK	1	1	23.45	23.46	23.42	24.0
Channel				500500	507000	513500	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	PI/2 BPSK	1	1	23.48	23.42	23.47	24.0



<n25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376500	381000	Tune-up limit (dBm)
Frequency (MHz)				1860	1882.5	1905	
20	PI/2 BPSK	1	1	23.26	23.40	23.15	24.0
20	PI/2 BPSK	1	53	23.14	23.28	23.03	
20	PI/2 BPSK	1	104	23.20	23.36	23.06	
20	PI/2 BPSK	50	0	22.72	22.89	22.55	23.5
20	PI/2 BPSK	50	28	23.19	23.32	23.06	24.0
20	PI/2 BPSK	50	56	22.67	22.90	22.58	23.5
20	PI/2 BPSK	100	0	22.71	22.84	22.61	
20	QPSK	1	1	23.18	23.29	23.05	24.0
20	QPSK	1	53	23.16	23.36	23.16	
20	QPSK	1	104	23.21	23.34	23.06	
20	QPSK	50	0	22.18	22.31	22.08	23.0
20	QPSK	50	28	23.11	23.30	23.11	24.0
20	QPSK	50	56	22.20	22.30	22.13	23.0
20	QPSK	100	0	22.24	22.39	22.01	
20	16QAM	1	1	22.28	22.38	22.07	23.0
20	64QAM	1	1	19.80	20.01	19.65	21.5
20	256QAM	1	1	17.89	18.22	17.81	19.5
Channel				371500	376500	381500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1882.5	1907.5	
15	PI/2 BPSK	1	1	23.11	23.14	23.09	24.0
Channel				371000	376500	382000	Tune-up limit (dBm)
Frequency (MHz)				1855	1882.5	1910	
10	PI/2 BPSK	1	1	23.06	23.10	23.05	24.0
Channel				370500	376500	382500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1882.5	1912.5	
5	PI/2 BPSK	1	1	23.03	23.09	23.02	24.0



<n38>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				516000	519000	522000	24.0
Frequency (MHz)				2580	2595	2610	
20	PI/2 BPSK	1	1	23.19	23.31	23.22	
20	PI/2 BPSK	1	26	23.20	23.23	23.30	24.0
20	PI/2 BPSK	1	49	23.14	23.20	23.30	
20	PI/2 BPSK	25	0	23.19	23.16	23.28	
20	PI/2 BPSK	25	13	23.23	23.90	23.28	24.0
20	PI/2 BPSK	25	26	23.14	23.20	23.13	23.5
20	PI/2 BPSK	50	0	22.91	22.89	22.90	
20	QPSK	1	1	23.17	23.19	23.17	
20	QPSK	1	26	22.77	22.76	22.74	24.0
20	QPSK	1	49	22.70	22.74	22.66	
20	QPSK	25	0	23.14	23.11	23.05	
20	QPSK	25	13	23.06	23.10	23.05	24.0
20	QPSK	25	26	22.97	23.02	23.03	
20	QPSK	50	0	22.08	22.10	22.11	
20	16QAM	1	1	22.00	22.02	22.03	23.0
20	64QAM	1	1	19.97	19.94	19.89	21.5
20	256QAM	1	1	18.05	18.12	18.13	19.5



<n41>

Channel	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel	509202	518598	528000	24.0
Frequency (MHz)	2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	24.0
100	PI/2 BPSK	1	137	
100	PI/2 BPSK	1	271	
100	PI/2 BPSK	135	0	23.5
100	PI/2 BPSK	135	69	24.0
100	PI/2 BPSK	135	138	23.5
100	PI/2 BPSK	270	0	
100	QPSK	1	1	24.0
100	QPSK	1	137	
100	QPSK	1	271	
100	QPSK	135	0	24.0
100	QPSK	135	69	
100	QPSK	135	138	
100	QPSK	270	0	23.0
100	16QAM	1	1	23.0
100	64QAM	1	1	21.5
100	256QAM	1	1	19.5
Channel	508200	518598	528996	24.0
Frequency (MHz)	2541	2592.99	2644.98	
90	PI/2 BPSK	1	1	24.0
Channel	507204	518598	529998	24.0
Frequency (MHz)	2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	24.0
Channel	505200	518598	531996	24.0
Frequency (MHz)	2526	2592.99	2659.98	
60	PI/2 BPSK	1	1	24.0
Channel	504204	518598	532998	24.0
Frequency (MHz)	2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	24.0
Channel	503202	518598	534000	24.0
Frequency (MHz)	2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	24.0
Channel	501204	518598	535998	24.0
Frequency (MHz)	2506.02	2592.99	2679.99	
20	PI/2 BPSK	1	1	24.0



<n66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	23.72	23.77	23.70	24.0
20	PI/2 BPSK	1	53	23.70	23.73	23.63	
20	PI/2 BPSK	1	104	23.66	23.74	23.65	
20	PI/2 BPSK	50	0	23.20	23.26	23.13	23.5
20	PI/2 BPSK	50	28	23.64	23.74	23.67	24.0
20	PI/2 BPSK	50	56	23.20	23.21	23.12	23.5
20	PI/2 BPSK	100	0	23.18	23.19	23.14	
20	QPSK	1	1	23.67	23.73	23.66	24.0
20	QPSK	1	53	23.70	23.76	23.69	
20	QPSK	1	104	23.72	23.69	23.65	
20	QPSK	50	0	22.64	22.77	22.70	23.0
20	QPSK	50	28	23.64	23.60	23.68	24.0
20	QPSK	50	56	22.63	22.73	22.64	23.0
20	QPSK	100	0	22.63	22.71	22.67	
20	16QAM	1	1	22.62	22.72	22.68	23.0
20	64QAM	1	1	20.22	20.19	20.17	21.5
20	256QAM	1	1	18.17	19.25	19.11	19.5
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	23.62	23.74	23.60	24.0
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	23.63	23.67	23.66	24.0
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	23.71	23.69	23.62	24.0



<Part 270 n77>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	Tune-up limit (dBm)
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	23.75	23.80	23.71	24.0
100	PI/2 BPSK	1	137	23.59	23.65	23.67	
100	PI/2 BPSK	1	271	23.61	23.61	23.61	
100	PI/2 BPSK	135	0	23.10	23.11	23.03	23.5
100	PI/2 BPSK	135	69	23.72	23.70	23.65	24.0
100	PI/2 BPSK	135	138	23.04	23.01	23.04	23.5
100	PI/2 BPSK	270	0	23.01	23.05	22.97	
100	QPSK	1	1	23.66	23.65	23.60	24.0
100	QPSK	1	137	23.57	23.60	23.58	
100	QPSK	1	271	23.53	23.59	23.59	
100	QPSK	135	0	23.61	23.60	23.60	24.0
100	QPSK	135	69	23.55	23.54	23.57	
100	QPSK	135	138	23.47	23.51	23.54	
100	QPSK	270	0	22.54	22.57	22.56	23.0
100	16QAM	1	1	22.44	22.51	22.54	23.0
100	64QAM	1	1	21.03	21.02	20.98	21.5
100	256QAM	1	1	19.01	18.99	18.94	19.5
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	23.51	23.66	23.55	24.0
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	23.48	23.59	23.50	24.0
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	23.51	23.54	23.41	24.0
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	23.46	23.50	23.42	24.0
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	23.41	23.58	23.40	24.0
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	23.45	23.59	23.42	24.0



<Part 270 n77 HPUE>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	27.0
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	26.88	26.87	26.81	27.0
100	PI/2 BPSK	1	137	26.62	26.68	26.77	
100	PI/2 BPSK	1	271	26.71	26.64	26.66	
100	PI/2 BPSK	135	0	26.16	26.21	26.11	26.5
100	PI/2 BPSK	135	69	26.82	26.80	26.71	27.0
100	PI/2 BPSK	135	138	26.17	26.09	26.15	26.5
100	PI/2 BPSK	270	0	26.13	26.16	26.02	
100	QPSK	1	1	26.78	26.74	26.71	27.0
100	QPSK	1	137	26.64	26.64	26.67	
100	QPSK	1	271	26.62	26.62	26.66	
100	QPSK	135	0	26.64	26.72	26.70	27.0
100	QPSK	135	69	26.61	26.60	26.66	
100	QPSK	135	138	26.57	26.63	26.64	
100	QPSK	270	0	25.58	25.64	25.60	26.0
100	16QAM	1	1	25.52	25.58	25.57	26.0
100	64QAM	1	1	24.08	24.12	24.08	24.5
100	256QAM	1	1	22.13	22.08	22.01	22.5
Channel				649668	656000	662332	27.0
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	26.79	26.66	26.59	27.0
Channel				649334	656000	662666	27.0
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	26.71	26.56	26.48	27.0
Channel				648668	656000	663332	27.0
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	26.77	26.60	26.49	27.0
Channel				648334	656000	663666	27.0
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	26.70	26.58	26.52	27.0
Channel				648000	656000	664000	27.0
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	26.65	26.61	26.48	27.0
Channel				647334	656000	664666	27.0
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	26.48	26.50	26.41	27.0



Reduced Power Mode (Ant 0)

<n2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	18.72	18.86	18.51	
20	PI/2 BPSK	1	53	18.46	18.62	18.48	19.1
20	PI/2 BPSK	1	104	18.35	18.55	18.45	
20	PI/2 BPSK	50	0	18.50	18.73	18.48	
20	PI/2 BPSK	50	28	18.65	18.73	18.64	19.1
20	PI/2 BPSK	50	56	18.40	18.53	18.34	19.1
20	PI/2 BPSK	100	0	18.42	18.53	18.52	
20	QPSK	1	1	18.54	18.67	18.60	
20	QPSK	1	53	18.44	18.58	18.43	19.1
20	QPSK	1	104	18.47	18.55	18.41	
20	QPSK	50	0	18.55	18.57	18.39	
20	QPSK	50	28	18.43	18.62	18.42	19.1
20	QPSK	50	56	18.44	18.53	18.41	19.1
20	QPSK	100	0	18.53	18.55	18.51	
20	16QAM	1	1	18.56	18.65	18.51	
20	64QAM	1	1	18.67	18.80	18.75	19.1
20	256QAM	1	1	18.56	18.72	18.67	19.1
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	18.72	18.85	18.38	19.1
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	18.68	18.71	18.47	19.1
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	18.69	18.85	18.39	19.1



<n5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				166800	167300	167800	Tune-up limit (dBm)
Frequency (MHz)				834	836.5	839	
20	PI/2 BPSK	1	1	20.27	20.23	20.21	20.4
20	PI/2 BPSK	1	53	20.20	20.19	20.16	
20	PI/2 BPSK	1	104	20.20	20.16	20.14	
20	PI/2 BPSK	50	0	19.82	19.74	19.74	19.9
20	PI/2 BPSK	50	28	20.21	20.15	20.15	20.4
20	PI/2 BPSK	50	56	19.73	19.79	19.73	19.9
20	PI/2 BPSK	100	0	19.74	19.73	19.70	
20	QPSK	1	1	20.18	20.23	20.13	20.4
20	QPSK	1	53	20.23	20.18	20.13	
20	QPSK	1	104	20.18	20.17	20.18	
20	QPSK	50	0	19.32	19.31	19.31	19.4
20	QPSK	50	28	20.25	20.22	20.14	20.4
20	QPSK	50	56	19.30	19.30	19.24	19.4
20	QPSK	100	0	19.37	19.28	19.33	
20	16QAM	1	1	19.37	19.34	19.26	19.4
20	64QAM	1	1	19.16	19.15	19.06	19.4
20	256QAM	1	1	19.24	19.24	19.24	19.4
Channel				166300	167300	168300	Tune-up limit (dBm)
Frequency (MHz)				831.5	836.5	841.5	
15	PI/2 BPSK	1	1	20.26	20.06	20.20	20.4
Channel				165800	167300	168800	Tune-up limit (dBm)
Frequency (MHz)				829	836.5	844	
10	PI/2 BPSK	1	1	20.26	20.23	20.18	20.4
Channel				165300	167300	169300	Tune-up limit (dBm)
Frequency (MHz)				826.5	836.5	846.5	
5	PI/2 BPSK	1	1	20.23	20.09	20.21	20.4



<n12>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				141300	141500	141700	
Frequency (MHz)				706.5	707.5	708.5	
15	PI/2 BPSK	1	1	22.72	22.66	22.57	23.0
15	PI/2 BPSK	1	40	22.65	22.63	22.62	
15	PI/2 BPSK	1	77	22.67	22.62	22.63	
15	PI/2 BPSK	36	0	22.22	22.12	22.11	23.0
15	PI/2 BPSK	36	22	22.66	22.65	22.63	23.0
15	PI/2 BPSK	36	43	22.20	22.10	22.11	23.0
15	PI/2 BPSK	75	0	22.23	22.08	22.08	
15	QPSK	1	1	22.64	22.58	22.54	23.0
15	QPSK	1	40	22.68	22.63	22.56	
15	QPSK	1	77	22.64	22.59	22.58	
15	QPSK	36	0	21.75	21.64	21.60	23.0
15	QPSK	36	22	22.71	22.58	22.55	23.0
15	QPSK	36	43	21.69	21.68	21.58	23.0
15	QPSK	75	0	21.69	21.62	21.65	
15	16QAM	1	1	21.72	21.67	21.56	23.0
15	64QAM	1	1	19.50	19.54	19.55	21.5
15	256QAM	1	1	17.90	18.26	18.21	19.5
Channel				140800	141500	142200	Tune-up limit (dBm)
Frequency (MHz)				704	707.5	711	
10	PI/2 BPSK	1	1	22.56	22.62	22.51	23.0
Channel				140300	141500	142700	Tune-up limit (dBm)
Frequency (MHz)				701.5	707.5	713.5	
5	PI/2 BPSK	1	1	22.70	22.63	22.54	23.0



<n66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				344000	349000	354000	Tune-up limit (dBm)
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	18.36	18.49	18.41	18.7
20	PI/2 BPSK	1	53	18.32	18.42	18.39	
20	PI/2 BPSK	1	104	18.35	18.43	18.38	
20	PI/2 BPSK	50	0	17.98	18.05	17.99	18.7
20	PI/2 BPSK	50	28	18.33	18.46	18.40	18.7
20	PI/2 BPSK	50	56	17.94	18.01	18.00	18.7
20	PI/2 BPSK	100	0	17.92	18.06	18.00	
20	QPSK	1	1	18.38	18.42	18.39	18.7
20	QPSK	1	53	18.36	18.41	18.38	
20	QPSK	1	104	18.33	18.45	18.40	
20	QPSK	50	0	18.36	18.48	18.40	18.7
20	QPSK	50	28	18.40	18.30	18.25	18.7
20	QPSK	50	56	18.34	18.43	18.43	18.7
20	QPSK	100	0	18.41	18.48	18.39	
20	16QAM	1	1	18.38	18.44	18.41	18.7
20	64QAM	1	1	18.41	18.30	18.47	18.7
20	256QAM	1	1	18.04	18.11	18.09	18.7
Channel				343500	349000	354500	Tune-up limit (dBm)
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	18.39	18.47	18.43	18.7
Channel				343000	349000	355000	Tune-up limit (dBm)
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	18.22	18.30	18.25	18.7
Channel				342500	349000	355500	Tune-up limit (dBm)
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	18.25	18.35	18.43	18.7



<n71>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				134600	136100	137600	Tune-up limit (dBm)
Frequency (MHz)				673	680.5	688	
20	PI/2 BPSK	1	1	21.43	21.23	21.17	21.7
20	PI/2 BPSK	1	53	21.20	21.18	21.03	
20	PI/2 BPSK	1	104	21.25	21.17	21.09	
20	PI/2 BPSK	50	0	20.81	20.81	20.58	21.2
20	PI/2 BPSK	50	28	21.25	21.11	21.01	21.7
20	PI/2 BPSK	50	56	20.76	20.84	20.59	21.2
20	PI/2 BPSK	100	0	20.78	20.83	20.56	
20	QPSK	1	1	21.20	21.23	21.09	21.7
20	QPSK	1	53	21.21	21.27	21.01	
20	QPSK	1	104	21.24	21.27	21.05	
20	QPSK	50	0	20.36	20.38	20.16	20.7
20	QPSK	50	28	21.21	21.30	21.10	21.7
20	QPSK	50	56	20.28	20.31	20.18	20.7
20	QPSK	100	0	20.29	20.39	20.18	
20	16QAM	1	1	20.29	20.38	20.10	20.7
20	64QAM	1	1	19.05	19.04	18.91	19.2
20	256QAM	1	1	19.01	19.13	18.92	19.2
Channel				134100	136100	138100	Tune-up limit (dBm)
Frequency (MHz)				670.5	680.5	690.5	
15	PI/2 BPSK	1	1	21.17	21.16	20.90	21.7
Channel				133600	136100	138600	Tune-up limit (dBm)
Frequency (MHz)				668	680.5	693	
10	PI/2 BPSK	1	1	21.19	21.18	20.98	21.7
Channel				133100	136100	139100	Tune-up limit (dBm)
Frequency (MHz)				665.5	680.5	695.5	
5	PI/2 BPSK	1	1	21.11	21.32	21.03	21.7



Reduced Power Mode (Ant 2)

<n2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376000	380000	16.4
Frequency (MHz)				1860	1880	1900	
20	PI/2 BPSK	1	1	15.71	15.89	15.61	
20	PI/2 BPSK	1	53	15.83	15.79	15.76	16.4
20	PI/2 BPSK	1	104	15.84	15.83	15.78	
20	PI/2 BPSK	50	0	15.55	15.48	15.44	
20	PI/2 BPSK	50	28	15.83	15.79	15.72	16.4
20	PI/2 BPSK	50	56	15.48	15.47	15.43	
20	PI/2 BPSK	100	0	15.49	15.44	15.43	
20	QPSK	1	1	15.83	15.80	15.76	16.4
20	QPSK	1	53	15.85	15.79	15.79	
20	QPSK	1	104	15.85	15.78	15.75	
20	QPSK	50	0	15.55	15.60	15.70	16.4
20	QPSK	50	28	15.82	15.78	15.76	
20	QPSK	50	56	15.75	15.71	15.70	
20	QPSK	100	0	15.76	15.74	15.67	16.4
20	16QAM	1	1	15.81	15.74	15.64	
20	64QAM	1	1	15.78	15.70	15.68	
20	256QAM	1	1	15.69	15.86	15.79	16.4
Channel				371500	376000	380500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1880	1902.5	
15	PI/2 BPSK	1	1	15.83	15.71	15.71	16.4
Channel				371000	376000	381000	Tune-up limit (dBm)
Frequency (MHz)				1855	1880	1905	
10	PI/2 BPSK	1	1	15.88	15.74	15.73	16.4
Channel				370500	376000	381500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1880	1907.5	
5	PI/2 BPSK	1	1	15.77	15.75	15.70	16.4



<n7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				502000	507000	512000	Tune-up limit (dBm)
Frequency (MHz)				2510	2535	2560	
20	PI/2 BPSK	1	1	16.91	16.87	16.76	17.4
20	PI/2 BPSK	1	53	16.85	16.80	16.66	
20	PI/2 BPSK	1	104	16.66	16.62	16.44	
20	PI/2 BPSK	50	0	16.61	16.54	16.46	17.4
20	PI/2 BPSK	50	28	16.68	16.55	16.51	17.4
20	PI/2 BPSK	50	56	16.67	16.55	16.50	17.4
20	PI/2 BPSK	100	0	16.68	16.63	16.47	
20	QPSK	1	1	16.66	16.43	16.26	17.4
20	QPSK	1	53	16.51	16.41	16.32	
20	QPSK	1	104	16.63	16.53	16.32	
20	QPSK	50	0	16.84	16.81	16.71	17.4
20	QPSK	50	28	16.65	16.75	16.47	17.4
20	QPSK	50	56	16.64	16.45	16.32	17.4
20	QPSK	100	0	16.59	16.45	16.38	
20	16QAM	1	1	16.51	16.48	16.42	17.4
20	64QAM	1	1	16.66	16.77	16.66	17.4
20	256QAM	1	1	16.51	16.44	16.38	17.4
Channel				501500	507000	512500	Tune-up limit (dBm)
Frequency (MHz)				2507.5	2535	2562.5	
15	PI/2 BPSK	1	1	16.85	16.75	16.61	17.4
Channel				501000	507000	513000	Tune-up limit (dBm)
Frequency (MHz)				2505	2535	2565	
10	PI/2 BPSK	1	1	16.72	16.79	16.59	17.4
Channel				500500	507000	513500	Tune-up limit (dBm)
Frequency (MHz)				2502.5	2535	2567.5	
5	PI/2 BPSK	1	1	16.73	16.71	16.58	17.4



<n25>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				372000	376500	381000	Tune-up limit (dBm)
Frequency (MHz)				1860	1882.5	1905	
20	PI/2 BPSK	1	1	15.99	16.01	15.97	16.4
20	PI/2 BPSK	1	53	15.83	15.93	15.76	
20	PI/2 BPSK	1	104	15.87	15.98	15.78	
20	PI/2 BPSK	50	0	15.54	15.66	15.43	16.4
20	PI/2 BPSK	50	28	15.87	15.96	15.78	16.4
20	PI/2 BPSK	50	56	15.51	15.67	15.45	16.4
20	PI/2 BPSK	100	0	15.54	15.63	15.47	
20	QPSK	1	1	15.86	15.93	15.77	16.4
20	QPSK	1	53	15.85	15.98	15.85	
20	QPSK	1	104	15.88	15.97	15.78	
20	QPSK	50	0	15.70	15.92	15.69	16.4
20	QPSK	50	28	15.80	15.85	15.58	16.4
20	QPSK	50	56	15.35	15.48	15.41	16.4
20	QPSK	100	0	15.83	15.76	15.68	
20	16QAM	1	1	15.44	15.54	15.25	16.4
20	64QAM	1	1	15.49	15.50	15.28	16.4
20	256QAM	1	1	15.84	15.83	15.77	16.4
Channel				371500	376500	381500	Tune-up limit (dBm)
Frequency (MHz)				1857.5	1882.5	1907.5	
15	PI/2 BPSK	1	1	15.66	15.76	15.71	16.4
Channel				371000	376500	382000	Tune-up limit (dBm)
Frequency (MHz)				1855	1882.5	1910	
10	PI/2 BPSK	1	1	15.69	15.81	15.65	16.4
Channel				370500	376500	382500	Tune-up limit (dBm)
Frequency (MHz)				1852.5	1882.5	1912.5	
5	PI/2 BPSK	1	1	15.82	15.81	15.75	16.4



<n38>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				516000	519000	522000	17.2
Frequency (MHz)				2580	2595	2610	
20	PI/2 BPSK	1	1	16.93	17.15	16.95	
20	PI/2 BPSK	1	26	16.94	16.96	17.01	17.2
20	PI/2 BPSK	1	49	16.90	16.94	17.01	
20	PI/2 BPSK	25	0	16.93	17.08	17.00	
20	PI/2 BPSK	25	13	16.96	17.00	17.00	17.2
20	PI/2 BPSK	25	26	16.90	16.94	16.89	17.2
20	PI/2 BPSK	50	0	16.73	16.71	16.72	
20	QPSK	1	1	16.92	16.93	16.92	
20	QPSK	1	26	16.63	16.62	16.60	17.2
20	QPSK	1	49	16.57	16.60	16.55	
20	QPSK	25	0	16.90	16.87	16.83	
20	QPSK	25	13	16.84	16.87	16.83	17.2
20	QPSK	25	26	16.77	16.81	16.82	
20	QPSK	50	0	16.72	16.74	16.74	
20	16QAM	1	1	16.66	16.68	16.69	17.2
20	64QAM	1	1	16.58	16.56	16.52	17.2
20	256QAM	1	1	16.30	16.23	16.24	17.2



<n41>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				509202	518598	528000	17.2
Frequency (MHz)				2546.01	2592.99	2640	
100	PI/2 BPSK	1	1	17.19	17.10	17.05	17.2
100	PI/2 BPSK	1	137	17.17	17.06	16.92	
100	PI/2 BPSK	1	271	17.13	17.06	16.89	
100	PI/2 BPSK	135	0	17.13	16.71	16.59	17.2
100	PI/2 BPSK	135	69	17.18	17.06	16.94	17.2
100	PI/2 BPSK	135	138	17.09	16.70	16.60	17.2
100	PI/2 BPSK	270	0	17.06	16.66	16.59	
100	QPSK	1	1	17.14	17.10	16.90	17.2
100	QPSK	1	137	17.13	17.07	16.92	
100	QPSK	1	271	17.18	17.05	16.97	
100	QPSK	135	0	17.14	17.04	16.90	17.2
100	QPSK	135	69	17.17	17.10	16.93	
100	QPSK	135	138	17.00	17.09	16.95	
100	QPSK	270	0	16.70	16.29	16.22	17.2
100	16QAM	1	1	16.71	16.33	16.21	17.2
100	64QAM	1	1	16.91	16.99	16.89	17.2
100	256QAM	1	1	16.97	16.99	17.11	17.2
Channel				508200	518598	528996	17.2
Frequency (MHz)				2541	2592.99	2644.98	
90	PI/2 BPSK	1	1	17.02	17.04	16.93	17.2
Channel				507204	518598	529998	17.2
Frequency (MHz)				2536.02	2592.99	2649.99	
80	PI/2 BPSK	1	1	17.15	17.00	16.99	17.2
Channel				505200	518598	531996	17.2
Frequency (MHz)				2526	2592.99	2659.98	
60	PI/2 BPSK	1	1	17.09	17.01	17.00	17.2
Channel				504204	518598	532998	17.2
Frequency (MHz)				2521.02	2592.99	2664.99	
50	PI/2 BPSK	1	1	17.04	17.07	16.89	17.2
Channel				503202	518598	534000	17.2
Frequency (MHz)				2516.01	2592.99	2670	
40	PI/2 BPSK	1	1	16.99	16.92	16.86	17.2
Channel				501204	518598	535998	17.2
Frequency (MHz)				2506.02	2592.99	2679.99	
20	PI/2 BPSK	1	1	17.06	16.91	16.92	17.2



<n66>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				344000	349000	354000	21.2
Frequency (MHz)				1720	1745	1770	
20	PI/2 BPSK	1	1	20.79	20.93	20.85	
20	PI/2 BPSK	1	53	20.68	20.80	20.49	21.2
20	PI/2 BPSK	1	104	20.69	20.77	20.64	
20	PI/2 BPSK	50	0	20.68	20.80	20.71	
20	PI/2 BPSK	50	28	20.75	20.84	20.75	21.2
20	PI/2 BPSK	50	56	20.73	20.82	20.73	21.2
20	PI/2 BPSK	100	0	20.73	20.76	20.69	
20	QPSK	1	1	20.75	20.91	20.59	
20	QPSK	1	53	20.80	20.86	20.62	21.2
20	QPSK	1	104	20.64	20.81	20.63	
20	QPSK	50	0	20.72	20.91	20.70	
20	QPSK	50	28	20.70	20.86	20.57	21.2
20	QPSK	50	56	20.78	20.87	20.58	21.2
20	QPSK	100	0	20.58	20.77	20.54	
20	16QAM	1	1	20.71	20.76	20.55	
20	64QAM	1	1	20.38	20.56	20.38	21.2
20	256QAM	1	1	18.28	18.48	18.23	19.5
Channel				343500	349000	354500	21.2
Frequency (MHz)				1717.5	1745	1772.5	
15	PI/2 BPSK	1	1	20.52	20.65	20.45	
Channel				343000	349000	355000	21.2
Frequency (MHz)				1715	1745	1775	
10	PI/2 BPSK	1	1	20.68	20.80	20.34	
Channel				342500	349000	355500	21.2
Frequency (MHz)				1712.5	1745	1777.5	
5	PI/2 BPSK	1	1	20.63	20.67	20.47	



<Part 270 n77>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	16.23	16.45	16.53	17.2
100	PI/2 BPSK	1	137	16.38	16.41	16.35	
100	PI/2 BPSK	1	271	16.27	16.31	16.32	
100	PI/2 BPSK	135	0	16.28	16.28	16.28	17.2
100	PI/2 BPSK	135	69	16.32	16.33	16.30	17.2
100	PI/2 BPSK	135	138	16.31	16.32	16.31	17.2
100	PI/2 BPSK	270	0	15.89	15.87	15.89	
100	QPSK	1	1	15.87	15.89	15.84	17.2
100	QPSK	1	137	16.31	16.31	16.27	
100	QPSK	1	271	16.25	16.27	16.26	
100	QPSK	135	0	16.22	16.27	16.27	17.2
100	QPSK	135	69	16.28	16.27	16.27	
100	QPSK	135	138	16.24	16.23	16.25	
100	QPSK	270	0	16.18	16.21	16.23	17.2
100	16QAM	1	1	16.40	16.40	16.20	17.2
100	64QAM	1	1	16.47	16.51	16.40	17.2
100	256QAM	1	1	16.20	16.22	16.22	17.2
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	16.21	16.40	16.48	17.2
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	16.04	16.44	16.49	17.2
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	16.15	16.29	16.44	17.2
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	16.09	16.35	16.44	17.2
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	16.12	16.44	16.50	17.2
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	16.05	16.25	16.52	17.2



<Part 270 n77 HPUE>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)
Channel				650000	656000	662000	Tune-up limit (dBm)
Frequency (MHz)				3750	3840	3930	
100	PI/2 BPSK	1	1	19.28	19.35	19.29	20.2
100	PI/2 BPSK	1	137	19.28	19.27	19.23	
100	PI/2 BPSK	1	271	19.09	19.14	19.20	
100	PI/2 BPSK	135	0	19.16	19.11	19.12	20.2
100	PI/2 BPSK	135	69	18.76	18.80	18.73	20.2
100	PI/2 BPSK	135	138	19.24	19.22	19.16	20.2
100	PI/2 BPSK	270	0	18.77	18.71	18.76	
100	QPSK	1	1	18.74	18.76	18.66	20.2
100	QPSK	1	137	19.21	19.18	19.16	
100	QPSK	1	271	19.11	19.11	19.13	
100	QPSK	135	0	19.09	19.09	19.12	20.2
100	QPSK	135	69	19.11	19.17	19.15	
100	QPSK	135	138	19.09	19.08	19.12	
100	QPSK	270	0	19.05	19.09	19.06	20.2
100	16QAM	1	1	19.00	19.05	19.04	20.2
100	64QAM	1	1	19.27	19.30	19.27	20.2
100	256QAM	1	1	19.00	19.05	19.06	20.2
Channel				649668	656000	662332	Tune-up limit (dBm)
Frequency (MHz)				3745.02	3840	3934.98	
90	PI/2 BPSK	1	1	19.12	19.09	19.19	20.2
Channel				649334	656000	662666	Tune-up limit (dBm)
Frequency (MHz)				3740.01	3840	3939.99	
80	PI/2 BPSK	1	1	19.26	19.14	19.11	20.2
Channel				648668	656000	663332	Tune-up limit (dBm)
Frequency (MHz)				3730.02	3840	3949.98	
60	PI/2 BPSK	1	1	19.14	19.26	19.10	20.2
Channel				648334	656000	663666	Tune-up limit (dBm)
Frequency (MHz)				3725.01	3840	3954.99	
50	PI/2 BPSK	1	1	19.15	19.14	19.17	20.2
Channel				648000	656000	664000	Tune-up limit (dBm)
Frequency (MHz)				3720	3840	3960	
40	PI/2 BPSK	1	1	19.21	19.19	19.07	20.2
Channel				647334	656000	664666	Tune-up limit (dBm)
Frequency (MHz)				3710.01	3840	3969.99	
20	PI/2 BPSK	1	1	19.27	19.25	19.22	20.2



15. WiFi/Bluetooth Output Power (Unit: dBm)

General Note:

1. For each antenna, transmit power in SISO operation is equal to the power in MIMO operation, RF exposure compliance of SISO mode can be deduced from the compliance of antennas operating in MIMO mode.
2. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, additional output power measurements were not necessary.
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 ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closest/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
7. Per 201904 TCBC workshops, General principles of FCC KDB Publication 248227 D01 can be applied to determine the SAR Initial Test Configurations and test reduction for 802.11ax SAR testing. For the table below the 802.11ax maximum power is SU (non-OFDMA), and the SU maximum power also higher than RU (OFDMA)
8. In applying the test guidance, the IEEE 802.11 mode with the maximum output power (out of all modes) should be considered for testing
9. For modes with the same maximum output power, the guidance from section 5.3.2 a) of FCC KDB Publication 248227 D01 should be applied, with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency bands
10. When SAR testing for 802.11ax is required
 - a. If the maximum output power is highest for OFDMA scenarios, choose the tone size with the maximum number of tones and the highest maximum output power
 - b. Otherwise, consider the fully allocated channel for SAR testing
 - c. When SAR testing is required on RU sizes less than the fully allocated channel, use the RU number closest to the middle of the channel, choosing the higher RU number when two RUs are equidistant to the middle of the channel



<2.4GHz WLAN>

2.4GHz WLAN				Ant 1		Ant 2		Ant 1+2					
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Ant 1+2(1)	Ant 1+2(1)	Ant 1+2(2)	Ant 1+2(2)	Ant 1+2	Ant 1+2	Duty Cycle %
							Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	
802.11b 1Mbps	1	2412	Not Required	14.00	Not Required	14.00	13.30	14.00	14.00	14.00	16.67	17.00	99.90
	6	2437		14.00		14.00	13.90	14.00	13.80	14.00	16.86	17.00	
	11	2462		14.00		14.00	13.40	14.00	13.90	14.00	16.67	17.00	
	12	2467		14.00		14.00	13.80	14.00	13.40	14.00	16.61	17.00	
	13	2472		14.00		14.00	14.00	14.00	13.50	14.00	16.77	17.00	
802.11g 6Mbps	1	2412		14.00		14.00	14.00	14.00	14.00	14.00	14.00	17.00	Not Required
	6	2437		14.00		14.00	14.00	14.00	14.00	14.00	17.00		
	11	2462		14.00		14.00	14.00	14.00	14.00	17.00			
	12	2467		14.00		14.00	14.00	14.00	14.00	17.00			
	13	2472		3.00		3.00	3.00	3.00	6.00				
802.11n-HT20 MCS0	1	2412		14.00		14.00	14.00	14.00	14.00	17.00			
	6	2437		14.00		14.00	14.00	14.00	17.00				
	11	2462		14.00		14.00	14.00	14.00	17.00				
	12	2467		14.00		14.00	14.00	14.00	17.00				
	13	2472		2.00		2.00	2.00	2.00	5.00				
802.11n-HT40 MCS0	3	2422		14.00		14.00	14.00	14.00	17.00				
	6	2437		14.00		14.00	14.00	14.00	17.00				
	9	2452		14.00		14.00	14.00	14.00	17.00				
	10	2457		10.50		10.50	10.50	10.50	13.50				
	11	2462		4.00		4.00	4.00	4.00	7.00				
802.11ac-VHT20 MCS0	1	2412		14.00		14.00	14.00	14.00	14.00	17.00			
	6	2437		14.00		14.00	14.00	14.00	17.00				
	11	2462		14.00		14.00	Not Required	14.00	Not Required	17.00			
	12	2467		14.00		14.00	14.00	14.00	17.00				
	13	2472		2.00		2.00	2.00	2.00	5.00				
802.11ac-VHT40 MCS0	3	2422	14.00	14.00	14.00	14.00	17.00						
	6	2437	14.00	14.00	14.00	14.00	17.00						
	9	2452	14.00	14.00	14.00	14.00	17.00						
	10	2457	10.50	10.50	10.50	10.50	13.50						
	11	2462	4.00	4.00	4.00	4.00	7.00						
802.11ax-HE20 MCS0	1	2412	14.00	14.00	14.00	14.00	17.00						
	6	2437	14.00	14.00	14.00	14.00	17.00						
	11	2462	14.00	14.00	14.00	14.00	17.00						
	12	2467	14.00	14.00	14.00	14.00	17.00						
	13	2472	2.00	2.00	2.00	2.00	5.00						
802.11ax-HE40 MCS0	3	2422	14.00	14.00	14.00	14.00	17.00						
	6	2437	14.00	14.00	14.00	14.00	17.00						
	9	2452	14.00	14.00	14.00	14.00	17.00						
	10	2457	10.50	10.50	10.50	10.50	13.50						
	11	2462	4.00	4.00	4.00	4.00	7.00						



<5GHz WLAN>

5.2GHz WLAN				Ant 1		Ant 2		Ant 1+2									
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Ant 1+2(1)	Ant 1+2(1)	Ant 1+2(2)	Ant 1+2(2)	Ant 1+2	Ant 1+2	Duty Cycle %				
							Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit					
802.11a 6Mbps	36	5180	Not required	13.00	Not required	13.00	Not Required	13.00	Not Required	13.00	Not Required	16.00	Not Required				
	40	5200		13.00		13.00		13.00		16.00							
	44	5220		13.00		13.00		13.00		16.00							
	48	5240		13.00		13.00		13.00		16.00							
802.11n-HT20 MCS0	36	5180		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	40	5200		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
	44	5220		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
	48	5240		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
802.11n-HT40 MCS0	38	5190		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	46	5230		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
802.11ac-VHT20 MCS0	36	5180		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	40	5200		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
	44	5220		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
802.11ac-VHT40 MCS0	38	5190		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	46	5230		13.00		13.00		13.00		13.00		13.00		13.00	13.00	16.00	
802.11ac-VHT80 MCS0	42	5210		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	14.50
802.11ax-HE20 MCS0	36	5180		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	40	5200		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	44	5220		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
	48	5240		13.00		13.00		13.00		13.00		13.00		13.00	13.00	13.00	16.00
802.11ax-HE40 MCS0	38	5190	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00						
	46	5230	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00						
802.11ax-HE80 MCS0	42	5210	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00						



5.3GHz WLAN				Ant 1		Ant 2		Ant 1+2						Duty Cycle %			
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Ant 1+2(1) Average power (dBm)	Ant 1+2(1) Tune-Up Limit	Ant 1+2(2) Average power (dBm)	Ant 1+2(2) Tune-Up Limit	Ant 1+2 Average power (dBm)	Ant 1+2 Tune-Up Limit					
5.3GHz WLAN	802.11a 6Mbps	52	5260	Not required	13.00	Not required	13.00	Not Required	13.00	Not Required	13.00	Not Required	16.00				
		56	5280		13.00		13.00		13.00		16.00						
		60	5300		13.00		13.00		13.00		16.00						
		64	5320		13.00		13.00		13.00		16.00						
	802.11n-HT20 MCS0	52	5260		13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	15.61	16.00	Not Required	
		56	5280		13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	15.91	16.00		
		60	5300		13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	15.91	16.00		
		64	5320		13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	15.91	16.00		
	802.11n-HT40 MCS0	54	5270		13.00		13.00	13.00	13.00	12.70	13.00	12.50	13.00	15.61	16.00	99.70	
		62	5310		13.00		13.00	13.00	13.00	12.80	13.00	13.00	13.00	15.91	16.00		
	802.11ac-VHT20 MCS0	52	5260		Not required		13.00	Not required	13.00	Not Required	13.00	Not Required	13.00	Not Required	16.00		
		56	5280				13.00		13.00		13.00		16.00				
		60	5300				13.00		13.00		13.00		16.00				
		64	5320				13.00		13.00		13.00		16.00				
	802.11ac-VHT40 MCS0	54	5270				13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00	16.00
		62	5310				13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00	
	802.11ac-VHT80 MCS0	58	5290				12.50		12.50	12.50	12.50	12.50	12.50	12.50	12.50	15.50	16.00
	802.11ac-VHT160 MCS0	50	5250				11.50		11.50	11.50	11.50	11.50	11.50	11.50	11.50	14.50	Not Required
	802.11ax-HE20 MCS0	52	5260				13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00	
		56	5280				13.00		13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00	
60		5300	13.00	13.00		13.00	13.00		13.00	13.00	13.00	13.00	16.00				
64		5320	13.00	13.00		13.00	13.00		13.00	13.00	13.00	13.00	16.00				
802.11ax-HE40 MCS0	54	5270	13.00	13.00		13.00	13.00		13.00	13.00	13.00	13.00	16.00	16.00			
	62	5310	13.00	13.00		13.00	13.00		13.00	13.00	13.00	13.00	16.00				
802.11ax-HE80 MCS0	58	5290	12.50	12.50		12.50	12.50		12.50	12.50	12.50	12.50	15.50	16.00			
802.11ax-HE160 MCS0	50	5250	11.50	11.50		11.50	11.50		11.50	11.50	11.50	11.50	14.50	16.00			



5.5GHz WLAN				Ant 1		Ant 2		Ant 1+2						Duty Cycle %
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Ant 1+2(1)	Ant 1+2(1)	Ant 1+2(2)	Ant 1+2(2)	Ant 1+2	Ant 1+2		
							Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit		
802.11a 6Mbps	100	5500		13.00		13.00		13.00		13.00		16.00		
	116	5580		13.00		13.00		13.00		16.00				
	124	5620		13.00		13.00		13.00		16.00				
	132	5660		13.00		13.00		13.00		16.00				
	144	5720		13.00		13.00		13.00		16.00				
802.11n-HT20 MCS0	100	5500		13.00		13.00		13.00		13.00		16.00		
	116	5580		13.00		13.00		13.00		16.00				
	124	5620		13.00		13.00		13.00		16.00				
	132	5660		13.00		13.00		13.00		16.00				
	144	5720		13.00		13.00		13.00		16.00				
802.11n-HT40 MCS0	102	5510		13.00		13.00	Not Required	13.00	Not Required	13.00	Not required	16.00	Not required	
	110	5550		13.00		13.00		13.00		16.00				
	126	5630		13.00		13.00		13.00		16.00				
	134	5670		13.00		13.00		13.00		16.00				
	142	5710		13.00		13.00		13.00		16.00				
802.11ac-VHT20 MCS0	100	5500		13.00		13.00		13.00		13.00		16.00		
	116	5580		13.00		13.00		13.00		16.00				
	124	5620		13.00		13.00		13.00		16.00				
	132	5660		13.00		13.00		13.00		16.00				
	144	5720		13.00		13.00		13.00		16.00				
802.11ac-VHT40 MCS0	102	5510	Not required	13.00	Not required	13.00		13.00		13.00		16.00		
	110	5550		13.00		13.00		13.00		16.00				
	126	5630		13.00		13.00		13.00		16.00				
	134	5670		13.00		13.00		13.00		16.00				
	142	5710		13.00		13.00		13.00		16.00				
802.11ac-VHT80 MCS0	106	5530		13.00		13.00	13.00	13.00	12.30	13.00	15.67	16.00	99.70	
	122	5610		13.00		13.00	13.00	12.30	13.00	15.67	16.00			
	138	5690		13.00		13.00	12.90	13.00	12.20	13.00	15.57	16.00		
802.11ac-VHT160 MCS0	114	5570		12.50		12.50		12.50		12.50		15.50		
802.11ax-HE20 MCS0	100	5500		13.00		13.00		13.00		13.00		16.00		
	116	5580		13.00		13.00		13.00		16.00				
	124	5620		13.00		13.00		13.00		16.00				
	132	5660		13.00		13.00		13.00		16.00				
	144	5720		13.00		13.00		13.00		16.00				
802.11ax-HE40 MCS0	102	5510		13.00		13.00	Not required	13.00	Not required	13.00	Not required	16.00	Not required	
	110	5550		13.00		13.00		13.00		16.00				
	126	5630		13.00		13.00		13.00		16.00				
	134	5670		13.00		13.00		13.00		16.00				
	142	5710		13.00		13.00		13.00		16.00				
802.11ax-HE80 MCS0	106	5530		13.00		13.00		13.00		13.00		16.00		
	122	5610		13.00		13.00		13.00		16.00				
	138	5690		13.00		13.00		13.00		16.00				
802.11ax-HE160 MCS0	114	5570		12.50		12.50		12.50		12.50		15.50		



5.8GHz WLAN				Ant 1		Ant 2		Ant 1+2						Duty Cycle %							
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Ant 1+2(1) Average power (dBm)	Ant 1+2(1) Tune-Up Limit	Ant 1+2(2) Average power (dBm)	Ant 1+2(2) Tune-Up Limit	Ant 1+2 Average power (dBm)	Ant 1+2 Tune-Up Limit									
5.8GHz WLAN	802.11a 6Mbps	149	5745	Not required	13.00	Not required	13.00	13.00	13.00	13.00	13.00	16.00									
		157	5785		13.00								13.00	16.00							
		165	5825		13.00								13.00	16.00							
	802.11n-HT20 MCS0	149	5745		13.00								13.00	13.00	16.00						
		157	5785		13.00								13.00	13.00	16.00						
		165	5825		13.00								13.00	13.00	16.00						
	802.11n-HT40 MCS0	151	5755		13.00								13.00	Not required	13.00	Not required	13.00	Not required	16.00	Not required	
		159	5795		13.00								13.00	13.00	16.00						
	802.11ac-VHT20 MCS0	149	5745		13.00								13.00	13.00	16.00						
		157	5785		13.00								13.00	13.00	16.00						
		165	5825		13.00								13.00	13.00	16.00						
	802.11ac-VHT40 MCS0	151	5755		13.00								13.00	13.00	16.00						
		159	5795		13.00								13.00	13.00	16.00						
	802.11ac-VHT80 MCS0	155	5775		13.00								13.00	12.90	13.00	12.60	13.00	15.76	16.00	99.70	
	802.11ax-HE20 MCS0	149	5745		13.00								13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00	
		157	5785		13.00								13.00								16.00
		165	5825		13.00								13.00								16.00
	802.11ax-HE40 MCS0	151	5755		13.00								13.00	13.00	13.00	Not required	13.00	Not required	13.00	Not required	16.00
159		5795	13.00	13.00	16.00																
802.11ax-HE80 MCS0	155	5775	13.00	13.00	13.00	13.00	13.00	13.00	13.00	16.00	16.00										



<6GHz WLAN>

WiFi 6E			Ant 1		Ant 2		Ant 1+2						Duty Cycle %
Mode	Channel	Frequency (MHz)	Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Ant 1+2(1) Average power (dBm)	Ant 1+2(1) Tune-Up Limit	Ant 1+2(2) Average power (dBm)	Ant 1+2(2) Tune-Up Limit	Ant 1+2 Average power (dBm)	Ant 1+2 Tune-Up Limit	
802.11a 6Mbps	1	5955		0.00		0.00		0.00		0.00		3.00	Not Required
	57	6235		0.00		0.00		0.00		0.00		3.00	
	113	6515		1.00		1.00		1.00		1.00		4.00	
	173	6815		-0.50		-0.50		-0.50		-0.50		2.50	
	233	7115		0.00		0.00		0.00		0.00		3.00	
802.11n-HT20 MCS0	1	5955		0.50		0.50		0.50		0.50		3.50	
	57	6235		0.50		0.50		0.50		0.50		3.50	
	113	6515		0.50		0.50		0.50		0.50		3.50	
	173	6815		0.50		0.50		0.50		0.50		3.50	
	233	7115		-10.00		-10.00		-10.00		-10.00		-7.00	
802.11n-HT40 MCS0	3	5965		3.50		3.50		3.50		3.50		6.50	
	59	6245		3.50		3.50		3.50		3.50		6.50	
	107	6485		4.50		4.50		4.50		4.50		7.50	
	171	6805		3.50		3.50		3.50		3.50		6.50	
	227	7085		1.50		1.50	Not required	1.50	Not required	1.50	Not required	4.50	
802.11ac-VHT20 MCS0	1	5955		0.50		0.50	Not required	0.50	Not required	0.50	Not required	3.50	
	57	6235		0.50		0.50		0.50		0.50		3.50	
	113	6515		0.50		0.50		0.50		0.50		3.50	
	173	6815		0.50		0.50		0.50		0.50		3.50	
	233	7115		-10.00		-10.00		-10.00		-10.00		-7.00	
802.11ac-VHT40 MCS0	3	5965		3.50		3.50		3.50		3.50		6.50	
	59	6245		3.50		3.50		3.50		3.50		6.50	
	107	6485		4.50		4.50		4.50		4.50		7.50	
	171	6805		3.50		3.50		3.50		3.50		6.50	
	227	7085		1.50		1.50		1.50		1.50		4.50	
802.11ac-VHT80 MCS0	7	5985		7.00		7.00		7.00		7.00		10.00	
	71	6305		7.00		7.00		7.00		7.00		10.00	
	119	6545	Not required	7.50	Not required	7.50		7.50		7.50		10.50	
	167	6785		6.50		6.50		6.50		6.50		9.50	
	215	7025		7.00		7.00		7.00		7.00		10.00	
802.11ac-VHT160 MCS0	15	6025		9.50		9.50	9.20	9.50	7.70	9.50	11.52	12.50	99.70
	47	6185		9.50		9.50	8.70	9.50	7.70	9.50	11.24	12.50	
	111	6505		9.50		9.50	9.50	9.50	8.80	9.50	12.17	12.50	
	175	6825		9.50		9.50	8.30	9.50	8.60	9.50	11.46	12.50	
	207	6985		9.50		9.50	8.20	9.50	8.40	9.50	11.31	12.50	
802.11ax-HE20 MCS0	1	5955		0.50		0.50		0.50		0.50		3.50	Not required
	57	6235		0.50		0.50		0.50		0.50		3.50	
	113	6515		0.50		0.50		0.50		0.50		3.50	
	173	6815		0.50		0.50		0.50		0.50		3.50	
	233	7115		-10.00		-10.00		-10.00		-10.00		-7.00	
802.11ax-HE40 MCS0	3	5965		3.50		3.50		3.50		3.50		6.50	
	59	6245		3.50		3.50		3.50		3.50		6.50	
	107	6485		4.50		4.50		4.50		4.50		7.50	
	171	6805		3.50		3.50		3.50		3.50		6.50	
	227	7085		-10.00		-10.00	Not required	-10.00	Not required	-10.00	Not required	-7.00	
802.11ax-HE80 MCS0	7	5985		7.00		7.00		7.00		7.00		10.00	
	71	6305		7.00		7.00		7.00		7.00		10.00	
	119	6545		7.50		7.50		7.50		7.50		10.50	
	167	6785		6.50		6.50		6.50		6.50		9.50	
	215	7025		7.00		7.00		7.00		7.00		10.00	
802.11ax-HE160 MCS0	15	6025		9.50		9.50		9.50		9.50		12.50	
	47	6185		9.50		9.50		9.50		9.50		12.50	
	111	6505		9.50		9.50		9.50		9.50		12.50	
	175	6825		9.50		9.50		9.50		9.50		12.50	
	207	6985		9.50		9.50		9.50		9.50		12.50	



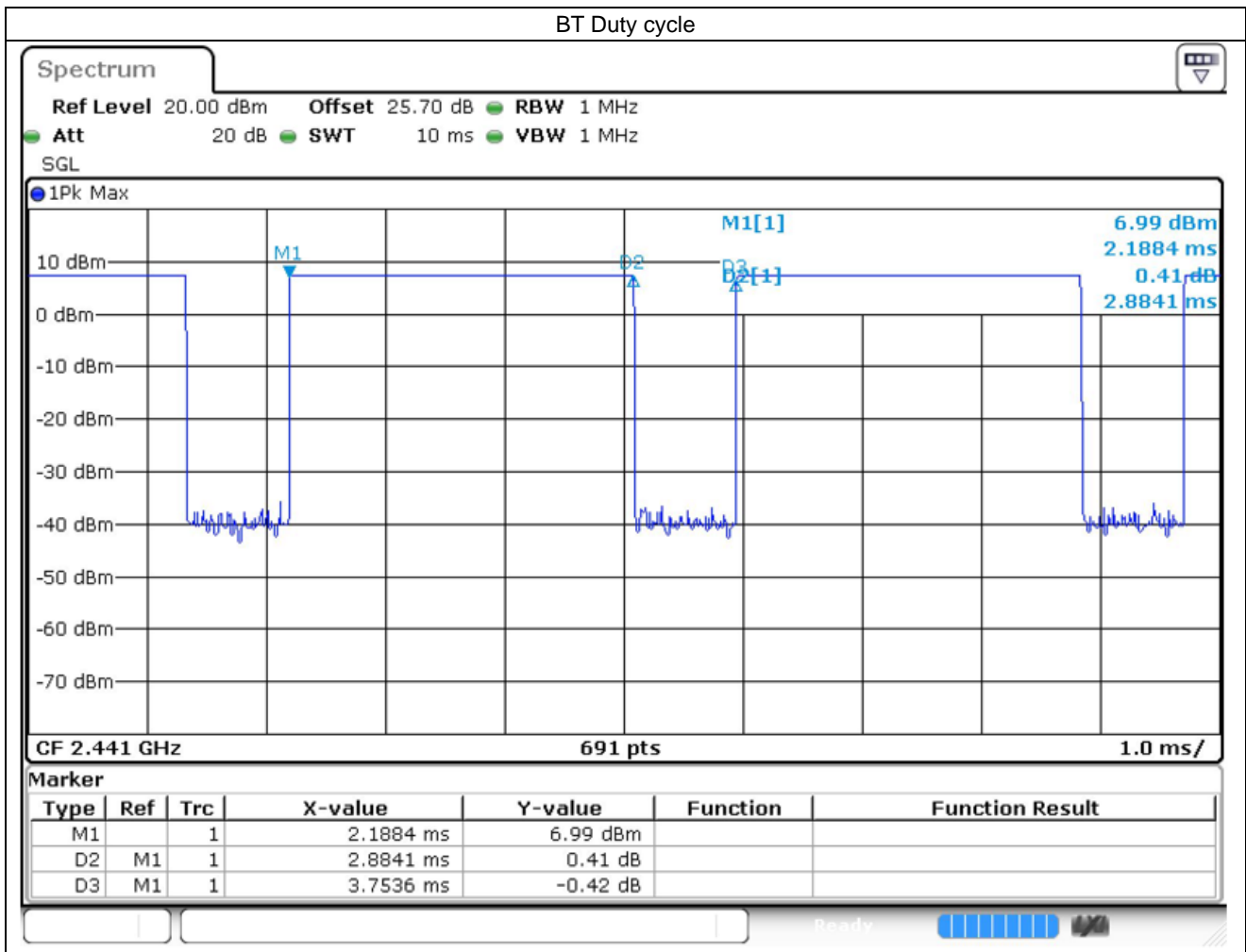
<2.4GHz Bluetooth>

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
BR / EDR	CH 00	2402	8.39	4.83	5.56
	CH 39	2441	8.27	5.35	5.38
	CH 78	2480	8.15	6.35	6.36
Tune-up Limit			9.00	7.00	7.00

Mode	Channel	Frequency (MHz)	Average power (dBm)	
			1Mbps	2Mbps
LE	CH 00	2402	5.00	5.20
	CH 19	2440	4.90	5.00
	CH 39	2480	5.30	5.40
Tune-up Limit			6.00	6.00

General Note:

- For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.83% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.





16. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix $63.3\%/62.9\% = 1.006$ is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥ 0.8 W/kg.
4. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in sensor trigger distance was performed according to section 4. The test results just verification the sensor trigger distance to meet KDB 616217 requirement, when in normal usage will not operate at trigger distance, therefore, these results were not using performed Sim-Tx analysis

UMTS Note:

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

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. The maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion.
 - b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

5G NR Note:

1. Referencing the procedure in KDB 941225, the test procedures are outlined as below:
 - a. To start SAR test for the largest channel bandwidth for PI/2 BPSK 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. Also do SAR test for 50% RB allocation for PI/2 BPSK SAR testing using 1RB PI/2 BPSK allocation procedure
 - b. For PI/2 BPSK with 100% RB allocation, SAR test is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - c. For higher modulation QPSK/16QAM/64QAM/256QAM, according to tune-up document the power level is not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - d. Smaller bandwidth output power for each RB allocation configuration for this device is not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
 - e. For 5G FR1 n5/n12/n41/n71/n77, the maximum channel bandwidth does not support three non-overlapping channels in the frequency band, the middle channel of the group of overlapping channels were selected for testing.
 - f. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission. And only for TDD power class2 was performed using Factory Test Mode software to establish the connection and perform SAR with 50% transmission
 - g. the 5G NR n38/78 SAR test was covered by n41/77; according to TCB workshop, SAR test for overlapping bands can be reduced when the maximum output power including tolerance for the smaller band is \leq the larger band and the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, WLAN5.2GHz SAR testing is not required when the WLAN5.3GHz band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for WLAN5.2GHz band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. For each antenna, transmit power in SISO operation is equal to the power in MIMO operation, RF exposure compliance of SISO mode can be deduced from the compliance of antennas operating in MIMO mode.
6. For determination of the scaling factor for report SAR of MIMO mode, if the hot spots are separated the scaling factors are individually determined from each transmit chain. If the hot spots are not spatially separated, the scaling factor is determined from the worst number of each transmit chain
7. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

WLAN PD Note:

1. The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
2. Absorbed power density (APD) using a 4cm² averaging area is reported based on SAR measurements.
3. Power density was calculated by repeated E-field measurements on two measurement planes separated by $\lambda/4$.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
5. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty $> 30\%$. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor.
6. The measurement procedure consists of measuring the PDinc at two different distances: 2 mm (compliance distance) and $\lambda/5$. The grid extents should be large enough to fully capture the transmitted energy. The grid step should be fine enough to demonstrate that the integrated Power Density iPDn fulfill the criterion described below. Since iPD ratio between the two distances is ≥ -1 dB, the grid step (0.0625) was sufficient for determining compliance at d=2mm.

$$10 \cdot \log_{10} \frac{iPD_n(2mm)}{iPD_n(\lambda/5)} \geq -1$$



16.1 Body SAR

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	20mm	AWAN	OFF	9262	1852.4	23.70	24.50	1.202	0.05	0.405	0.487
	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	9538	1907.6	18.50	18.50	1.000	0.1	0.842	0.842
	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	9262	1852.4	18.48	18.50	1.005	-0.16	0.811	0.815
	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	9400	1880	18.49	18.50	1.002	0.18	0.765	0.767
	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	9538	1907.6	18.50	18.50	1.000	0.06	0.910	0.910
	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	9262	1852.4	18.48	18.50	1.005	-0.01	0.896	0.900
01	WCDMA II_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	9400	1880	18.49	18.50	1.002	-0.06	0.932	0.934
	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom of Laptop	20mm	AWAN	OFF	1312	1712.4	23.39	24.50	1.291	-0.04	0.411	0.531
	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	1513	1752.6	18.30	18.50	1.047	0.19	0.841	0.881
02	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	1312	1712.4	18.25	18.50	1.059	-0.03	0.879	0.931
	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	1413	1732.6	18.24	18.50	1.062	-0.01	0.797	0.846
	WCDMA IV_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	1312	1712.4	18.25	18.50	1.059	0.04	0.720	0.763
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	20mm	AWAN	OFF	4132	826.4	23.29	24.50	1.321	-0.04	0.211	0.279
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	4132	826.4	21.38	21.80	1.102	-0.11	0.839	0.924
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	4182	836.4	21.26	21.80	1.132	-0.03	0.902	1.021
03	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	AWAN	ON	4233	846.6	21.13	21.80	1.167	-0.07	0.927	1.082
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	4233	846.6	21.13	21.80	1.167	-0.06	0.715	0.834
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	4132	826.4	21.38	21.80	1.102	-0.09	0.766	0.844
	WCDMA V_Ant 0	RMC 12.2Kbps	Bottom of Laptop	0mm	ICT	ON	4182	836.4	21.26	21.80	1.132	0.07	0.802	0.908

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	18700	1860	22.87	24.00	1.297	0.11	0.388	0.503
	LTE Band 2_Ant 2	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	18700	1860	21.88	23.00	1.294	0.15	0.361	0.467
	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	19100	1900	16.94	17.30	1.086	-0.07	0.808	0.878
	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	18700	1860	16.62	17.30	1.169	0.12	0.815	0.953
	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	18900	1880	16.49	17.30	1.205	0.13	0.765	0.922
	LTE Band 2_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	19100	1900	15.79	16.30	1.125	-0.06	0.689	0.775
	LTE Band 2_Ant 2	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	19100	1900	15.82	16.30	1.117	0	0.612	0.684
	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	18700	1860	16.62	17.30	1.169	0	0.841	0.984
	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	18900	1880	16.49	17.30	1.205	-0.14	0.770	0.928
04	LTE Band 2_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	19100	1900	16.94	17.30	1.086	-0.09	0.968	1.052



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	21350	2560	23.16	24.00	1.213	0.1	0.541	0.656
	LTE Band 7_Ant 0	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	21350	2560	22.28	23.00	1.180	0.15	0.502	0.593
	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	21100	2535	15.49	15.50	1.002	-0.12	0.819	0.821
	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	20850	2510	15.48	15.50	1.005	-0.02	0.882	0.886
	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	21350	2560	15.44	15.50	1.014	0.14	0.796	0.807
	LTE Band 7_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	21100	2535	14.20	14.50	1.072	-0.08	0.651	0.698
	LTE Band 7_Ant 0	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	21100	2535	14.16	14.50	1.081	0.18	0.601	0.650
	LTE Band 7C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	20850	2510	15.22	15.50	1.067	0.09	0.819	0.874
	LTE Band 7C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	21100	2535	15.16	15.50	1.081	0.07	0.801	0.866
	LTE Band 7C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	21350	2560	15.11	15.50	1.094	-0.01	0.795	0.870
	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	21100	2535	15.49	15.50	1.002	-0.08	0.961	0.963
05	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	20850	2510	15.48	15.50	1.005	-0.06	1.020	1.025
	LTE Band 7_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	21350	2560	15.44	15.50	1.014	-0.13	0.933	0.946
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	21350	2560	22.92	24.00	1.282	-0.09	0.261	0.335
	LTE Band 7_Ant 2	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	21350	2560	22.06	23.00	1.242	-0.07	0.255	0.317
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	21350	2560	18.27	18.50	1.054	0.16	0.762	0.803
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	20850	2510	18.05	18.50	1.109	0.02	0.719	0.797
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	21100	2535	18.20	18.50	1.072	-0.07	0.738	0.791
	LTE Band 7_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	21350	2560	17.58	18.00	1.102	-0.15	0.688	0.758
	LTE Band 7_Ant 2	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	21350	2560	17.49	18.00	1.125	0.07	0.671	0.755
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	21350	2560	18.27	18.50	1.054	0.16	0.764	0.806
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	20850	2510	18.05	18.50	1.109	0.06	0.711	0.789
	LTE Band 7_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	21100	2535	18.20	18.50	1.072	-0.12	0.759	0.813
	LTE Band 12_Ant 0	10M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	23095	707.5	22.85	24.50	1.462	0.08	0.166	0.243
	LTE Band 12_Ant 0	10M	QPSK	25	0	Bottom of Laptop	20mm	AWAN	OFF	23095	707.5	21.78	23.50	1.486	0.09	0.151	0.224
	LTE Band 12_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	23095	707.5	21.42	21.80	1.091	-0.07	0.802	0.875
	LTE Band 12_Ant 0	10M	QPSK	25	0	Bottom of Laptop	0mm	AWAN	ON	23095	707.5	20.21	20.80	1.146	0.16	0.711	0.814
	LTE Band 12_Ant 0	10M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	23095	707.5	20.22	20.80	1.143	-0.15	0.725	0.829
06	LTE Band 12_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	23095	707.5	21.42	21.80	1.091	-0.05	0.939	1.025
	LTE Band 13_Ant 0	10M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	23230	782	22.79	24.50	1.483	-0.05	0.165	0.245
	LTE Band 13_Ant 0	10M	QPSK	25	0	Bottom of Laptop	20mm	AWAN	OFF	23230	782	21.86	23.50	1.459	0.13	0.146	0.213
	LTE Band 13_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	23230	782	21.20	21.70	1.122	0.1	0.669	0.751
	LTE Band 13_Ant 0	10M	QPSK	25	0	Bottom of Laptop	0mm	AWAN	ON	23230	782	20.39	20.70	1.074	-0.09	0.655	0.703
07	LTE Band 13_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	23230	782	21.20	21.70	1.122	-0.09	1.010	1.133
	LTE Band 13_Ant 0	10M	QPSK	25	0	Bottom of Laptop	0mm	ICT	ON	23230	782	20.39	20.70	1.074	0.07	0.944	1.014
	LTE Band 13_Ant 0	10M	QPSK	50	0	Bottom of Laptop	0mm	ICT	ON	23230	782	20.36	20.70	1.081	0.14	0.971	1.050
	LTE Band 14_Ant 0	10M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	23330	793	22.81	24.50	1.476	-0.16	0.212	0.313
	LTE Band 14_Ant 0	10M	QPSK	25	0	Bottom of Laptop	20mm	AWAN	OFF	23330	793	21.93	23.50	1.435	-0.18	0.189	0.271
	LTE Band 14_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	23330	793	19.89	21.40	1.416	0.09	0.601	0.851
	LTE Band 14_Ant 0	10M	QPSK	25	0	Bottom of Laptop	0mm	AWAN	ON	23330	793	18.95	20.40	1.396	-0.01	0.554	0.774
	LTE Band 14_Ant 0	10M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	23330	793	18.92	20.40	1.406	-0.11	0.539	0.758
08	LTE Band 14_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	23330	793	19.89	21.40	1.416	-0.01	0.602	0.852
	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	26140	1860	23.21	24.00	1.199	-0.08	0.396	0.475
	LTE Band 25_Ant 0	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	26140	1860	22.33	23.00	1.167	0.13	0.384	0.448
	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	26140	1860	18.43	18.50	1.016	-0.13	0.811	0.824
	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	26340	1880	18.42	18.50	1.019	-0.09	0.791	0.806
	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	26590	1905	18.36	18.50	1.033	0.09	0.788	0.814
	LTE Band 25_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	26140	1860	17.72	18.00	1.067	0.15	0.719	0.767
	LTE Band 25_Ant 0	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	26140	1860	17.68	18.00	1.076	-0.09	0.680	0.732
	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	26140	1860	18.43	18.50	1.016	0.02	0.860	0.874
09	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	26590	1905	18.36	18.50	1.033	-0.09	1.010	1.043
	LTE Band 25_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	26340	1880	18.42	18.50	1.019	-0.05	0.965	0.983



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 26_Ant 0	15M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	26865	831.5	22.83	24.50	1.469	0.14	0.215	0.316
	LTE Band 26_Ant 0	15M	QPSK	36	0	Bottom of Laptop	20mm	AWAN	OFF	26865	831.5	22.83	23.50	1.167	-0.13	0.202	0.236
	LTE Band 26_Ant 0	15M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	26865	831.5	18.95	19.90	1.245	-0.02	0.766	0.953
	LTE Band 26_Ant 0	15M	QPSK	36	0	Bottom of Laptop	0mm	AWAN	ON	26865	831.5	18.84	18.90	1.014	-0.09	0.730	0.740
	LTE Band 26_Ant 0	15M	QPSK	75	0	Bottom of Laptop	0mm	AWAN	ON	26865	831.5	17.90	18.90	1.259	-0.08	0.699	0.880
	LTE Band 5B_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	20575	841.5	18.76	19.90	1.300	-0.12	0.719	0.935
10	LTE Band 26_Ant 0	15M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	26865	831.5	18.95	19.90	1.245	-0.01	0.921	1.146
	LTE Band 30_Ant 0	10M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	27710	2310	21.45	23.00	1.429	-0.08	0.400	0.572
	LTE Band 30_Ant 0	10M	QPSK	25	0	Bottom of Laptop	20mm	AWAN	OFF	27710	2310	20.60	22.00	1.380	-0.06	0.365	0.504
	LTE Band 30_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	27710	2310	16.11	17.00	1.227	-0.05	0.910	1.117
	LTE Band 30_Ant 0	10M	QPSK	25	0	Bottom of Laptop	0mm	AWAN	ON	27710	2310	15.28	16.00	1.180	0.19	0.832	0.982
	LTE Band 30_Ant 0	10M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	27710	2310	15.25	16.00	1.189	-0.02	0.844	1.003
11	LTE Band 30_Ant 0	10M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	27710	2310	16.11	17.00	1.227	-0.03	0.944	1.159
	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	132322	1745	23.07	24.00	1.239	-0.15	0.385	0.477
	LTE Band 66_Ant 0	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	132322	1745	22.20	23.00	1.202	0.13	0.366	0.440
	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	18.25	18.40	1.035	0	0.912	0.944
12	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132072	1720	18.19	18.40	1.050	-0.09	0.967	1.015
	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132572	1770	18.22	18.40	1.042	-0.13	0.880	0.917
	LTE Band 66_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	17.49	17.90	1.099	0.14	0.699	0.768
	LTE Band 66_Ant 0	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	17.50	17.90	1.096	0.12	0.611	0.670
	LTE Band 66B_Ant 0	15M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132047	1717.5	18.31	18.40	1.021	-0.08	0.924	0.943
	LTE Band 66B_Ant 0	15M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	18.26	18.40	1.033	0.09	0.909	0.939
	LTE Band 66B_Ant 0	15M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132597	1772.5	18.22	18.40	1.042	-0.04	0.902	0.940
	LTE Band 66C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132072	1720	18.22	18.40	1.042	0.11	0.911	0.950
	LTE Band 66C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	18.16	18.40	1.057	0.17	0.898	0.949
	LTE Band 66C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132572	1770	18.11	18.40	1.069	-0.13	0.880	0.941
	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	132072	1720	18.19	18.40	1.050	0.06	0.920	0.966
	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	132322	1745	18.25	18.40	1.035	0.12	0.889	0.920
	LTE Band 66_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	132572	1770	18.22	18.40	1.042	-0.16	0.864	0.901
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	132322	1745	23.76	24.00	1.057	-0.02	0.451	0.477
	LTE Band 66_Ant 2	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	132322	1745	22.91	23.00	1.021	-0.01	0.432	0.441
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	18.24	18.30	1.014	-0.11	0.822	0.833
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132072	1720	18.05	18.30	1.059	0.01	0.759	0.804
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	132572	1770	18.06	18.30	1.057	0.11	0.781	0.825
	LTE Band 66_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	17.59	17.80	1.050	0.01	0.694	0.728
	LTE Band 66_Ant 2	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	132322	1745	17.58	17.80	1.052	0.19	0.671	0.706
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	132322	1745	18.24	18.30	1.014	0.1	0.807	0.818
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	132072	1720	18.05	18.30	1.059	-0.02	0.851	0.901
	LTE Band 66_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	132572	1770	18.06	18.30	1.057	-0.15	0.802	0.848
	LTE Band 71_Ant 0	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	133297	680.5	22.71	24.50	1.510	-0.07	0.188	0.284
	LTE Band 71_Ant 0	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	133297	680.5	21.74	23.50	1.500	-0.11	0.162	0.243
13	LTE Band 71_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	133297	680.5	22.27	22.60	1.079	-0.05	1.010	1.090
	LTE Band 71_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	133297	680.5	21.00	21.60	1.148	-0.08	0.891	1.023
	LTE Band 71_Ant 0	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	133297	680.5	20.88	21.60	1.180	0.02	0.822	0.970
	LTE Band 71_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	133297	680.5	22.27	22.60	1.079	0.02	0.899	0.970



<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	40620	2593	23.11	24.00	1.227	62.9	1.006	-0.18	0.588	0.726
	LTE Band 41_Ant 0	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	40620	2593	22.20	23.00	1.202	62.9	1.006	-0.02	0.512	0.619
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	41055	2636.5	18.27	18.50	1.054	62.9	1.006	-0.19	0.811	0.860
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	39750	2506	18.07	18.50	1.104	62.9	1.006	0.07	0.902	1.002
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	40185	2549.5	17.89	18.50	1.151	62.9	1.006	0.17	0.765	0.886
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	40620	2593	18.10	18.50	1.096	62.9	1.006	0.05	0.611	0.674
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	41490	2680	18.20	18.50	1.072	62.9	1.006	0.1	0.496	0.535
	LTE Band 41_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	41055	2636.5	17.42	17.50	1.019	62.9	1.006	0	0.709	0.727
	LTE Band 41_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	39750	2506	17.40	17.50	1.023	62.9	1.006	0.18	0.681	0.701
	LTE Band 41_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	40185	2549.5	17.24	17.50	1.062	62.9	1.006	0.15	0.612	0.654
	LTE Band 41_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	40620	2593	17.27	17.50	1.054	62.9	1.006	-0.02	0.466	0.494
	LTE Band 41_Ant 0	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	41490	2680	17.25	17.50	1.059	62.9	1.006	-0.06	0.365	0.389
	LTE Band 41_Ant 0	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	39750	2506	17.35	17.50	1.035	62.9	1.006	-0.01	0.632	0.658
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	39750	2506	19.87	20.10	1.054	42.9	1.009	0.04	0.832	0.885
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	40185	2549.5	19.66	20.10	1.107	42.9	1.009	0.07	0.784	0.875
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	40620	2593	19.74	20.10	1.086	42.9	1.009	-0.14	0.763	0.836
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	41055	2636.5	19.81	20.10	1.069	42.9	1.009	0.09	0.801	0.864
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	41490	2680	19.70	20.10	1.096	42.9	1.009	-0.04	0.795	0.880
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	39750	2506	18.07	18.50	1.104	62.90	1.006	0.11	0.864	0.960
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	40185	2549.5	18.04	18.50	1.112	62.90	1.006	0.01	0.832	0.931
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	40620	2593	18.01	18.50	1.119	62.90	1.006	-0.14	0.821	0.925
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	39750	2506	18.07	18.50	1.104	62.9	1.006	-0.1	0.841	0.934
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	40185	2549.5	17.89	18.50	1.151	62.9	1.006	-0.08	0.939	1.087
14	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	40620	2593	18.10	18.50	1.096	62.9	1.006	-0.05	1.010	1.114
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	41055	2636.5	18.27	18.50	1.054	62.9	1.006	-0.02	0.868	0.921
	LTE Band 41_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	41490	2680	18.20	18.50	1.072	62.9	1.006	0.08	0.578	0.623
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	39750	2506	19.87	20.10	1.054	42.9	1.009	-0.08	0.922	0.981
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	40185	2549.5	19.66	20.10	1.107	42.9	1.009	0.09	0.859	0.959
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	40620	2593	19.74	20.10	1.086	42.9	1.009	-0.01	0.874	0.958
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	41055	2636.5	19.81	20.10	1.069	42.9	1.009	0.08	0.849	0.916
	LTE Band 41_HPUE_Ant 0	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	41490	2680	19.70	20.10	1.096	42.9	1.009	0.01	0.909	1.006
	LTE Band 42_Ant 2	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	43340	3575	21.46	22.00	1.132	62.9	1.006	0.15	0.202	0.230
	LTE Band 42_Ant 2	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	43340	3575	20.62	21.00	1.091	62.9	1.006	0.09	0.189	0.208
15	LTE Band 42_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	43340	3575	17.35	18.40	1.274	62.9	1.006	-0.07	0.665	0.852
	LTE Band 42_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	43190	3560	17.31	18.40	1.285	62.9	1.006	-0.01	0.591	0.764
	LTE Band 42_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	43490	3590	17.27	18.40	1.297	62.9	1.006	0.08	0.577	0.753
	LTE Band 42_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	43340	3575	16.73	17.90	1.309	62.9	1.006	0.16	0.480	0.632
	LTE Band 42_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	43190	3560	16.68	17.90	1.324	62.9	1.006	-0.05	0.466	0.621
	LTE Band 42_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	43490	3590	16.57	17.90	1.358	62.9	1.006	-0.15	0.470	0.642
	LTE Band 42_Ant 2	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	43340	3575	16.71	17.90	1.315	62.9	1.006	0.09	0.454	0.601
	LTE Band 42_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	43340	3575	17.35	18.40	1.274	62.9	1.006	0.16	0.511	0.655



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	20mm	AWAN	OFF	55340	3560	21.35	22.00	1.161	62.9	1.006	0.17	0.162	0.189
	LTE Band 48_Ant 2	20M	QPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	55340	3560	20.39	21.00	1.151	62.9	1.006	-0.09	0.155	0.179
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	55340	3560	18.38	18.60	1.052	62.9	1.006	0.08	0.824	0.872
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	55830	3609	18.32	18.60	1.067	62.9	1.006	-0.1	0.903	0.969
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	56150	3641	18.20	18.60	1.096	62.9	1.006	-0.18	0.811	0.895
16	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	56640	3690	18.26	18.60	1.081	62.9	1.006	-0.09	0.956	1.040
	LTE Band 48_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	55340	3560	17.56	18.10	1.132	62.9	1.006	0.03	0.713	0.812
	LTE Band 48_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	55830	3609	17.34	18.10	1.191	62.9	1.006	0.11	0.686	0.822
	LTE Band 48_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	56150	3641	17.24	18.10	1.219	62.9	1.006	0.11	0.725	0.889
	LTE Band 48_Ant 2	20M	QPSK	50	0	Bottom of Laptop	0mm	AWAN	ON	55340	3560	17.56	18.10	1.132	62.9	1.006	0.06	0.791	0.901
	LTE Band 48_Ant 2	20M	QPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	55340	3560	17.50	18.10	1.148	62.9	1.006	0	0.705	0.814
	LTE Band 48C_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	55340	3560	18.31	18.60	1.069	62.90	1.006	0.02	0.811	0.872
	LTE Band 48C_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	55830	3609	18.22	18.60	1.091	62.90	1.006	0.07	0.763	0.838
	LTE Band 48C_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	AWAN	ON	56150	3641	18.21	18.60	1.094	62.90	1.006	-0.01	0.782	0.861
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	56640	3690	18.26	18.60	1.081	62.9	1.006	-0.18	0.763	0.830
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	55340	3560	18.38	18.60	1.052	62.9	1.006	0.18	0.854	0.904
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	55830	3609	18.32	18.60	1.067	62.9	1.006	-0.1	0.755	0.810
	LTE Band 48_Ant 2	20M	QPSK	1	0	Bottom of Laptop	0mm	ICT	ON	56150	3641	18.20	18.60	1.096	62.9	1.006	-0.18	0.826	0.911

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	372000	1860	23.54	24.00	1.112	-0.13	0.340	0.378
	FR1 n2_Ant 0	20M	BPSK	50	28	Bottom of Laptop	20mm	AWAN	OFF	372000	1860	23.47	24.00	1.130	-0.08	0.332	0.375
	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	376000	1880	18.86	19.10	1.057	-0.15	0.842	0.890
	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	372000	1860	18.72	19.10	1.091	-0.07	0.901	0.983
	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	380000	1900	18.51	19.10	1.146	0.15	0.855	0.979
	FR1 n2_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	376000	1880	18.73	19.10	1.089	-0.19	0.811	0.883
	FR1 n2_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	372000	1860	18.65	19.10	1.109	-0.02	0.802	0.890
	FR1 n2_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	380000	1900	18.64	19.10	1.112	0.19	0.833	0.926
	FR1 n2_Ant 0	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	376000	1880	18.53	19.10	1.140	0.03	0.796	0.908
	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	372000	1860	18.72	19.10	1.091	0.18	0.951	1.038
	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	380000	1900	18.51	19.10	1.146	0.16	0.933	1.069
17	FR1 n2_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	376000	1880	18.86	19.10	1.057	-0.03	1.060	1.120
	FR1 n5_Ant 0	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	167300	836.5	23.25	24.00	1.189	-0.19	0.232	0.276
	FR1 n5_Ant 0	20M	BPSK	50	0	Bottom of Laptop	20mm	AWAN	OFF	167300	836.5	22.69	23.50	1.205	0.12	0.210	0.253
	FR1 n5_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	167300	836.5	20.23	20.40	1.040	0.16	0.861	0.895
	FR1 n5_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	167300	836.5	20.15	20.40	1.059	-0.16	0.899	0.952
	FR1 n5_Ant 0	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	167300	836.5	19.73	19.90	1.040	-0.02	0.860	0.894
18	FR1 n5_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	ICT	ON	167300	836.5	20.15	20.40	1.059	-0.07	1.040	1.102



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	502000	2510	23.55	24.00	1.109	-0.06	0.386	0.428
	FR1 n7_Ant 2	20M	BPSK	50	28	Bottom of Laptop	20mm	AWAN	OFF	502000	2510	23.49	24.00	1.125	0.1	0.311	0.350
19	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	502000	2510	16.91	17.40	1.119	-0.15	0.774	0.866
	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	507000	2535	16.87	17.40	1.130	-0.06	0.654	0.739
	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	512000	2560	16.76	17.40	1.159	-0.06	0.702	0.813
	FR1 n7_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	502000	2510	16.68	17.40	1.180	0.04	0.711	0.839
	FR1 n7_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	507000	2535	16.55	17.40	1.216	0.12	0.654	0.795
	FR1 n7_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	512000	2560	16.51	17.40	1.227	-0.15	0.688	0.844
	FR1 n7_Ant 2	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	502000	2510	16.68	17.40	1.180	0	0.654	0.772
	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	502000	2510	16.91	17.40	1.119	-0.16	0.719	0.805
	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	512000	2560	16.76	17.40	1.159	-0.07	0.711	0.824
	FR1 n7_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	507000	2535	16.87	17.40	1.130	-0.07	0.702	0.793
	FR1 n12_Ant 0	15M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	141500	707.5	23.29	24.00	1.178	-0.15	0.166	0.195
	FR1 n12_Ant 0	15M	BPSK	36	22	Bottom of Laptop	20mm	AWAN	OFF	141500	707.5	23.28	24.00	1.180	-0.11	0.150	0.177
	FR1 n12_Ant 0	15M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	141500	707.5	22.66	23.00	1.081	-0.13	0.719	0.778
	FR1 n12_Ant 0	15M	BPSK	36	22	Bottom of Laptop	0mm	AWAN	ON	141500	707.5	22.65	23.00	1.084	-0.05	0.702	0.761
	FR1 n12_Ant 0	15M	BPSK	75	0	Bottom of Laptop	0mm	AWAN	ON	141500	707.5	22.08	23.00	1.236	0.04	0.615	0.760
20	FR1 n12_Ant 0	15M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	141500	707.5	22.66	23.00	1.081	0.05	1.040	1.125
	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	376500	1882.5	23.40	24.00	1.148	-0.06	0.446	0.512
	FR1 n25_Ant 2	20M	BPSK	50	28	Bottom of Laptop	20mm	AWAN	OFF	376500	1882.5	23.32	24.00	1.169	0.06	0.402	0.470
	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	376500	1882.5	16.01	16.40	1.094	-0.05	0.741	0.811
	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	372000	1860	15.99	16.40	1.099	0.09	0.689	0.757
	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	381000	1905	15.97	16.40	1.104	-0.06	0.664	0.733
	FR1 n25_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	376500	1882.5	15.96	16.40	1.107	0.17	0.632	0.699
	FR1 n25_Ant 2	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	376500	1882.5	15.63	16.40	1.194	0.01	0.608	0.726
	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	376500	1882.5	16.01	16.40	1.094	0.05	0.986	1.079
	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	372000	1860	15.99	16.40	1.099	-0.19	0.967	1.063
21	FR1 n25_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	381000	1905	15.97	16.40	1.104	0.05	1.030	1.137
	FR1 n41_Ant 2	100M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	518598	2592.99	23.35	24.00	1.161	0.16	0.341	0.396
	FR1 n41_Ant 2	100M	BPSK	135	69	Bottom of Laptop	20mm	AWAN	OFF	518598	2592.99	23.30	24.00	1.175	0.05	0.302	0.355
22	FR1 n41_Ant 2	100M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	518598	2592.99	17.10	17.20	1.023	0.05	0.723	0.740
	FR1 n41_Ant 2	100M	BPSK	135	69	Bottom of Laptop	0mm	AWAN	ON	518598	2592.99	17.06	17.20	1.033	0.18	0.711	0.734
	FR1 n41_Ant 2	100M	BPSK	270	0	Bottom of Laptop	0mm	AWAN	ON	518598	2592.99	16.66	17.20	1.132	-0.1	0.654	0.741



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	349000	1745	23.67	24.00	1.079	-0.05	0.428	0.462
	FR1 n66_Ant 0	20M	BPSK	50	28	Bottom of Laptop	20mm	AWAN	OFF	349000	1745	23.66	24.00	1.081	0.11	0.411	0.444
	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	349000	1745	18.49	18.70	1.050	0.14	0.808	0.848
	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	344000	1720	18.36	18.70	1.081	0.03	0.830	0.898
	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	354000	1770	18.41	18.70	1.069	-0.17	0.799	0.854
	FR1 n66_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	349000	1745	18.46	18.70	1.057	0.19	0.765	0.808
	FR1 n66_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	344000	1720	18.33	18.70	1.089	0.13	0.741	0.807
	FR1 n66_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	354000	1770	18.40	18.70	1.072	-0.09	0.785	0.841
	FR1 n66_Ant 0	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	349000	1745	18.06	18.70	1.159	0.07	0.754	0.874
23	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	344000	1720	18.36	18.70	1.081	-0.01	1.030	1.114
	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	349000	1745	18.49	18.70	1.050	-0.15	1.000	1.050
	FR1 n66_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	354000	1770	18.41	18.70	1.069	0.07	0.984	1.052
	FR1 n66_Ant 2	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	349000	1745	23.77	24.00	1.054	0.13	0.256	0.270
	FR1 n66_Ant 2	20M	BPSK	50	28	Bottom of Laptop	20mm	AWAN	OFF	349000	1745	23.74	24.00	1.062	-0.14	0.244	0.259
	FR1 n66_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	349000	1745	20.93	21.20	1.064	-0.19	0.821	0.874
	FR1 n66_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	344000	1720	20.79	21.20	1.099	-0.15	0.909	0.999
	FR1 n66_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	354000	1770	20.85	21.20	1.084	0.11	0.770	0.835
	FR1 n66_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	349000	1745	20.84	21.20	1.086	-0.03	0.803	0.872
	FR1 n66_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	344000	1720	20.75	21.20	1.109	-0.05	0.821	0.911
	FR1 n66_Ant 2	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	354000	1770	20.75	21.20	1.109	-0.09	0.797	0.884
	FR1 n66_Ant 2	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	349000	1745	20.76	21.20	1.107	-0.11	0.821	0.909
	FR1 n66_Ant 2	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	344000	1720	20.79	21.20	1.099	-0.12	0.635	0.698
	FR1 n71_Ant 0	20M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	136100	680.5	23.38	24.00	1.153	0.09	0.165	0.190
	FR1 n71_Ant 0	20M	BPSK	50	28	Bottom of Laptop	20mm	AWAN	OFF	136100	680.5	23.28	24.00	1.180	0.03	0.154	0.182
24	FR1 n71_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	136100	680.5	21.23	21.70	1.114	-0.1	0.932	1.039
	FR1 n71_Ant 0	20M	BPSK	50	28	Bottom of Laptop	0mm	AWAN	ON	136100	680.5	21.11	21.70	1.146	0.14	0.851	0.975
	FR1 n71_Ant 0	20M	BPSK	100	0	Bottom of Laptop	0mm	AWAN	ON	136100	680.5	20.83	21.20	1.089	0.18	0.812	0.884
	FR1 n71_Ant 0	20M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	136100	680.5	21.23	21.70	1.114	-0.1	0.777	0.866
	FR1 n77_Ant 2	100M	BPSK	1	1	Bottom of Laptop	20mm	AWAN	OFF	656000	3840	23.80	24.00	1.047	0.19	0.462	0.484
	FR1 n77_Ant 2	100M	BPSK	135	69	Bottom of Laptop	20mm	AWAN	OFF	656000	3840	23.70	24.00	1.072	-0.09	0.411	0.440
	FR1 n77_Ant 2	100M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	656000	3840	16.45	17.20	1.189	0.13	0.731	0.869
	FR1 n77_Ant 2	100M	BPSK	135	69	Bottom of Laptop	0mm	AWAN	ON	656000	3840	16.33	17.20	1.222	-0.12	0.688	0.841
	FR1 n77_Ant 2	100M	BPSK	270	0	Bottom of Laptop	0mm	AWAN	ON	656000	3840	15.87	17.20	1.358	0.02	0.631	0.857
	FR1 n77_HPUE_Ant 2	100M	BPSK	1	1	Bottom of Laptop	0mm	AWAN	ON	656000	3840	19.35	20.20	1.216	-0.05	0.658	0.800
25	FR1 n77_Ant 2	100M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	656000	3840	16.45	17.20	1.189	-0.11	0.783	0.931
	FR1 n77_HPUE_Ant 2	100M	BPSK	1	1	Bottom of Laptop	0mm	ICT	ON	656000	3840	19.35	20.20	1.216	0.01	0.711	0.865



<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Vendor	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	1	2412	13.30	14.00	1.175	99.9	1.001	-0.02	0.325	0.382
					INPAQ	Ant 1+2(2)	1	2412	14.00	14.00	1.000	99.9	1.001	-0.02	0.130	0.131
26	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	6	2437	13.90	14.00	1.023	99.9	1.001	0.16	0.720	0.738
					INPAQ	Ant 1+2(2)	6	2437	13.80	14.00	1.047	99.9	1.001	0.16	0.045	0.047
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	11	2462	13.40	14.00	1.148	99.9	1.001	0.17	0.335	0.385
					INPAQ	Ant 1+2(2)	11	2462	13.90	14.00	1.023	99.9	1.001	0.17	0.153	0.156
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	12	2467	13.80	14.00	1.047	99.9	1.001	0.14	0.441	0.463
					INPAQ	Ant 1+2(2)	12	2467	13.40	14.00	1.148	99.9	1.001	0.14	0.079	0.090
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	13	2472	14.00	14.00	1.000	99.9	1.001	-0.01	0.001	0.001
					INPAQ	Ant 1+2(2)	13	2472	13.50	14.00	1.122	99.9	1.001	-0.01	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	1	2412	13.30	14.00	1.175	99.9	1.001	0.07	0.233	0.274
					WNC	Ant 1+2(2)	1	2412	14.00	14.00	1.000	99.9	1.001	0.07	0.507	0.507
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	6	2437	13.90	14.00	1.023	99.9	1.001	-0.13	0.421	0.432
					WNC	Ant 1+2(2)	6	2437	13.80	14.00	1.047	99.9	1.001	-0.13	0.307	0.322
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	11	2462	13.40	14.00	1.148	99.9	1.001	-0.18	0.376	0.432
					WNC	Ant 1+2(2)	11	2462	13.90	14.00	1.023	99.9	1.001	-0.18	0.511	0.523
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	12	2467	13.80	14.00	1.047	99.9	1.001	-0.06	0.327	0.343
					WNC	Ant 1+2(2)	12	2467	13.40	14.00	1.148	99.9	1.001	-0.06	0.421	0.484
	WLAN2.4GHz	802.11b 1Mbps	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	13	2472	14.00	14.00	1.000	99.9	1.001	-0.17	0.001	0.001
					WNC	Ant 1+2(2)	13	2472	13.50	14.00	1.122	99.9	1.001	-0.17	0.001	0.001
	WLAN5GHz	802.11n-HT40 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	54	5270	12.70	13.00	1.072	99.7	1.003	0	0.029	0.031
					INPAQ	Ant 1+2(2)	54	5270	12.50	13.00	1.122	99.7	1.003	0	0.153	0.172
	WLAN5GHz	802.11n-HT40 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	62	5310	12.80	13.00	1.047	99.7	1.003	0.18	0.025	0.026
					INPAQ	Ant 1+2(2)	62	5310	13.00	13.00	1.000	99.7	1.003	0.18	0.111	0.111
27	WLAN5GHz	802.11n-HT40 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	54	5270	12.70	13.00	1.072	99.7	1.003	0.1	0.309	0.332
					WNC	Ant 1+2(2)	54	5270	12.50	13.00	1.122	99.7	1.003	0.1	0.531	0.598
	WLAN5GHz	802.11n-HT40 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	62	5310	12.80	13.00	1.047	99.7	1.003	0.16	0.371	0.390
					WNC	Ant 1+2(2)	62	5310	13.00	13.00	1.000	99.7	1.003	0.16	0.542	0.544
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	106	5530	13.00	13.00	1.000	99.7	1.003	-0.1	0.098	0.098
					INPAQ	Ant 1+2(2)	106	5530	12.30	13.00	1.175	99.7	1.003	-0.1	0.061	0.072
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	122	5610	13.00	13.00	1.000	99.7	1.003	-0.08	0.103	0.103
					INPAQ	Ant 1+2(2)	122	5610	12.30	13.00	1.175	99.7	1.003	-0.08	0.043	0.050
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	138	5690	12.90	13.00	1.023	99.7	1.003	0.01	0.163	0.167
					INPAQ	Ant 1+2(2)	138	5690	12.20	13.00	1.202	99.7	1.003	0.01	0.034	0.041
28	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	106	5530	13.00	13.00	1.000	99.7	1.003	0.1	0.220	0.221
					WNC	Ant 1+2(2)	106	5530	12.30	13.00	1.175	99.7	1.003	0.1	0.503	0.593
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	122	5610	13.00	13.00	1.000	99.7	1.003	0.15	0.157	0.157
					WNC	Ant 1+2(2)	122	5610	12.30	13.00	1.175	99.7	1.003	0.15	0.411	0.484
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	138	5690	12.90	13.00	1.023	99.7	1.003	0.08	0.173	0.177
					WNC	Ant 1+2(2)	138	5690	12.20	13.00	1.202	99.7	1.003	0.08	0.155	0.188
	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	155	5775	12.90	13.00	1.023	99.7	1.003	-0.07	0.136	0.140
					INPAQ	Ant 1+2(2)	155	5775	12.60	13.00	1.096	99.7	1.003	-0.07	0.046	0.051
29	WLAN5GHz	802.11ac-VHT80 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	155	5775	12.90	13.00	1.023	99.7	1.003	0	0.074	0.076
					WNC	Ant 1+2(2)	155	5775	12.60	13.00	1.096	99.7	1.003	0	0.195	0.214



<6GHz WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Vendor	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	APD (W/m2)
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	15	6025	9.20	9.50	1.072	99.7	1.003	0.03	0.076	0.082	0.7
						Ant 1+2(2)	15	6025	7.70	9.50	1.514	99.7	1.003	0.03	0.001	0.002	0.025
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	47	6185	8.70	9.50	1.202	99.7	1.003	-0.03	0.080	0.096	0.75
						Ant 1+2(2)	47	6185	7.70	9.50	1.514	99.7	1.003	-0.03	0.001	0.002	0.025
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	111	6505	9.50	9.50	1.000	99.7	1.003	-0.07	0.320	0.321	3.925
						Ant 1+2(2)	111	6505	8.80	9.50	1.175	99.7	1.003	-0.07	0.041	0.048	0.15
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	175	6825	8.30	9.50	1.318	99.7	1.003	-0.18	0.320	0.423	4.7
						Ant 1+2(2)	175	6825	8.60	9.50	1.230	99.7	1.003	-0.18	0.050	0.061	0.2
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	INPAQ	Ant 1+2(1)	207	6985	8.20	9.50	1.349	99.7	1.003	-0.06	0.352	0.476	5.575
						Ant 1+2(2)	207	6985	8.40	9.50	1.288	99.7	1.003	-0.06	0.072	0.093	0.25
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	15	6025	9.20	9.50	1.072	99.7	1.003	0.07	0.133	0.143	1.125
						Ant 1+2(2)	15	6025	7.70	9.50	1.514	99.7	1.003	0.07	0.306	0.465	2.025
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	47	6185	8.70	9.50	1.202	99.7	1.003	0.18	0.244	0.294	1.95
						Ant 1+2(2)	47	6185	7.70	9.50	1.514	99.7	1.003	0.18	0.312	0.474	1.825
30	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	111	6505	9.50	9.50	1.000	99.7	1.003	-0.11	0.360	0.361	3.275
						Ant 1+2(2)	111	6505	8.80	9.50	1.175	99.7	1.003	-0.11	0.435	0.513	3.525
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	175	6825	8.30	9.50	1.318	99.7	1.003	0.08	0.206	0.272	1.975
						Ant 1+2(2)	175	6825	8.60	9.50	1.230	99.7	1.003	0.08	0.142	0.175	1.25
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	0mm	WNC	Ant 1+2(1)	207	6985	8.20	9.50	1.349	99.7	1.003	0.04	0.322	0.436	2.625
						Ant 1+2(2)	207	6985	8.40	9.50	1.288	99.7	1.003	0.04	0.162	0.209	1.1

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna Vendor	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 2	0	2402	8.39	9.00	1.151	76.83	1.084	0.06	0.034	0.042
	Bluetooth	1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 2	39	2441	8.27	9.00	1.183	76.83	1.084	-0.03	0.036	0.046
	Bluetooth	1Mbps	Bottom of Laptop	0mm	INPAQ	Ant 2	78	2480	8.15	9.00	1.216	76.83	1.084	0.1	0.043	0.057
31	Bluetooth	1Mbps	Bottom of Laptop	0mm	WNC	Ant 2	0	2402	8.39	9.00	1.151	76.83	1.084	0.11	0.092	0.115
	Bluetooth	1Mbps	Bottom of Laptop	0mm	WNC	Ant 2	39	2441	8.27	9.00	1.183	76.83	1.084	0.14	0.085	0.109
	Bluetooth	1Mbps	Bottom of Laptop	0mm	WNC	Ant 2	78	2480	8.15	9.00	1.216	76.83	1.084	-0.15	0.081	0.107

16.2 6GHz PD Test Result

Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Grid Step (λ)	iPDn	iPD ratio (≥ -1)	Normal psPD (W/m ²)	Total psPD (W/m ²)
WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	15	6025	9.30	0.0625	5.21	1.029959014	2	2.17
WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	10mm	Ant 1	15	6025	9.30	0.25	4.11		1.03	1.24
WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	207	6985	8.30	0.0625	2.89	0.392939159	2.33	2.48
WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	8.59mm	Ant 1	207	6985	8.30	0.25	2.64		1.76	1.8

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Grid Step (λ)	Scaling Factor for Measurement Uncertainty	Power Drift (dB)	Normal psPD (W/m ²)	Scaled Normal psPD (W/m ²)	Total psPD (W/m ²)	Scaled Total psPD (W/m ²)
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	15	6025	9.30	9.50	1.047	99.70	1.003	0.0625	1.5535	0.16	2	3.26	2.17	3.54
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	47	6185	8.80	9.50	1.175	99.70	1.003	0.0625	1.5535	0.02	2.55	4.67	2.85	5.22
01	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	111	6505	9.50	9.50	1.000	99.70	1.003	0.0625	1.5535	-0.08	4.12	6.42	4.28	6.67
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	175	6825	8.40	9.50	1.288	99.70	1.003	0.0625	1.5535	0.05	1.73	3.47	1.98	3.97
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 1	207	6985	8.30	9.50	1.318	99.70	1.003	0.0625	1.5535	-0.1	2.33	4.79	2.48	5.09
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 2	15	6025	8.30	9.50	1.318	99.70	1.003	0.0625	1.5535	0.06	0.795	1.63	0.844	1.73
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 2	47	6185	8.40	9.50	1.288	99.70	1.003	0.0625	1.5535	0.15	1	2.01	1.08	2.17
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 2	111	6505	9.40	9.50	1.023	99.70	1.003	0.0625	1.5535	0.11	3.22	5.13	3.55	5.66
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 2	175	6825	9.20	9.50	1.072	99.70	1.003	0.0625	1.5535	-0.17	1.4	2.34	1.47	2.45
	WLAN6GHz	802.11ac-VHT160 MCS0	Bottom of Laptop	2mm	Ant 2	207	6985	8.50	9.50	1.259	99.70	1.003	0.0625	1.5535	0.09	0.666	1.31	0.73	1.43

16.3 Repeated SAR Measurement

No.	Band	Modulation	Test Position	Gap (mm)	Antenna Vendor	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 7_Ant 0	20M_QPSK_1_0	Bottom of Laptop	0mm	ICT	ON	20850	2510	15.48	15.50	1.005			-0.06	1.020	-	1.025
2nd	LTE Band 7_Ant 0	20M_QPSK_1_0	Bottom of Laptop	0mm	ICT	ON	20850	2510	15.48	15.50	1.005			0.04	1.010	1.01	1.015
1st	LTE Band 30_Ant 0	10M_QPSK_1_0	Bottom of Laptop	0mm	ICT	ON	27710	2310	16.11	17.00	1.227			-0.03	0.944	-	1.159
2nd	LTE Band 30_Ant 0	10M_QPSK_1_0	Bottom of Laptop	0mm	ICT	ON	27710	2310	16.11	17.00	1.227			0.1	0.921	1.02	1.130
1st	LTE Band 48_Ant 2	20M_QPSK_1_0	Bottom of Laptop	0mm	AWAN	ON	56640	3690	18.26	18.60	1.081	62.9	1.006	-0.09	0.956	-	1.040
2nd	LTE Band 48_Ant 2	20M_QPSK_1_0	Bottom of Laptop	0mm	AWAN	ON	56640	3690	18.26	18.60	1.081	62.9	1.006	-0.14	0.944	1.02	1.027
1st	FR1 n2_Ant 0	20M_BPSK_1_1	Bottom of Laptop	0mm	ICT	ON	376000	1880	18.86	19.10	1.057			-0.03	1.060	-	1.120
2nd	FR1 n2_Ant 0	20M_BPSK_1_1	Bottom of Laptop	0mm	ICT	ON	376000	1880	18.86	19.10	1.057			0.13	1.020	1.04	1.078
1st	FR1 n5_Ant 0	20M_BPSK_50_28	Bottom of Laptop	0mm	ICT	ON	167300	836.5	20.15	20.40	1.059			-0.07	1.040	-	1.102
2nd	FR1 n5_Ant 0	20M_BPSK_50_28	Bottom of Laptop	0mm	ICT	ON	167300	836.5	20.15	20.40	1.059			0.03	1.020	1.02	1.080
1st	FR1 n12_Ant 0	15M_BPSK_1_1	Bottom of Laptop	0mm	ICT	ON	141500	707.5	22.66	23.00	1.081			0.05	1.040	-	1.125
2nd	FR1 n12_Ant 0	15M_BPSK_1_1	Bottom of Laptop	0mm	ICT	ON	141500	707.5	22.66	23.00	1.081			0.17	1.020	1.02	1.103
1st	FR1 n66_Ant 0	20M_BPSK_1_1	Bottom of Laptop	0mm	ICT	ON	344000	1720	18.36	18.70	1.081			-0.01	1.030	-	1.114
2nd	FR1 n66_Ant 0	20M_BPSK_1_1	Bottom of Laptop	0mm	ICT	ON	344000	1720	18.36	18.70	1.081			0.02	1.010	1.02	1.092

General Note:

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



16.4 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required
Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is <10%

Table with 3 columns: LTE Band 41_Ant 0, LTE Band 41 (Power Class 3), LTE Band 41 (Power Class 2). Rows include Maximum Tune up Power (dBm), Reported 1g SAR (W/kg), Duty Cycle, Frame Averaged (mW), Linearity SAR(W/kg), and % deviation from expected linearity.

16.5 FR1 n77 Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for FR1 n77. The highest available duty cycle for Power Class 2 operation is 50% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each FR1 configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required.
Use PC3 power level and SAR to estimated PC2 SAR linearly, and check if the deviation from the measured PC2 SAR is <10%

Table with 3 columns: FR1 n77_Ant 2, FR1 n77 (Power Class 3), FR1 n77 (Power Class 2). Rows include Maximum Tune up Power (dBm), Reported 1g SAR (W/kg), Duty Cycle, Frame Averaged (mW), Linearity SAR(W/kg), and % deviation from expected linearity.

17. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
1.	WWAN Ant 0 + WLAN2.4GHz Ant 1+2	Yes
2.	WWAN Ant 0 + WLAN5G/6GHz Ant 1+2 + Bluetooth Ant 2	Yes
3.	WWAN Ant 2 + WLAN2.4GHz Ant 1+2	Yes
4.	WWAN Ant 2 + WLAN5G/6GHz Ant 1+2 + Bluetooth Ant 2	Yes

General Note:

1. The worst case SAR from each transmit antenna was using for Sim-Tx analysis, the following summations represent the absolute worst cases for simultaneous transmission.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) Scalar SAR summation < 1.6W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
 - v) The SPLSR calculated results please refer to section 17.2.

17.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

$$x\% * A + (100-x)\% * B \leq 1.0,$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and $A \leq 1.0$; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for 5G FR2 or SAR exposure for 5G FR1), and $B \leq 1.0$.

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

$$x\% * A + (100-x)\% * B + C \leq 1.0 \quad (1)$$

$$x\% * A + (100-x)\% * B \leq x\% * \max(A, B) + (100-x)\% * \max(A, B) \leq \max(A, B)$$

$$x\% * A + (100-x)\% * B + C \leq \max(A, B) + C \leq 1.0 \quad (2)$$

if $A + C \leq 1.0$ and $B + C \leq 1.0$ can be proven, then “ $x\% * A + (100-x)\% * B + C \leq 1.0$ ”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

- Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1
- Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1



17.2 Body Exposure Conditions

Exposure Position	1	2	3	4	5	1+3 Summed 1g SAR (W/kg)	1+4+5 Summed 1g SAR (W/kg)	2+3 Summed 1g SAR (W/kg)	2+4+5 Summed 1g SAR (W/kg)	1+3 SPLSR	1+3 Case No	1+4+5 SPLSR	1+4+5 Case No	2+3 SPLSR	2+3 Case No	2+4+5 SPLSR	2+4+5 Case No
	Maximum WWAN Ant 0 1g SAR (W/kg)	Maximum WWAN Ant 2 1g SAR (W/kg)	WLAN2.4GHz Ant 1+2 1g SAR (W/kg)	WLAN5G/6GHz Ant 1+2 1g SAR (W/kg)	Bluetooth Ant 2 1g SAR (W/kg)												
Bottom of Laptop at 0mm	1.159	1.137	0.738	0.598	0.115	1.897	1.872	1.875	1.850	0.01	Case 1	0.01	Case 2	0.02	Case 3	0.02	Case 4

17.3 SPLSR Evaluation and Analysis

General Note:

- According to antenna location in appendix D the minimum distance between each transmit antenna is using for SPLSR analysis
- Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration. Therefore, the adjacent transmit antennas will be summed first, and then the SPLSR calculation will be evaluated with the farther transmitted antennas.
- $SPLSR = (SAR_1 + SAR_2)^{1.5} / (min. separation distance, mm)$. If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary

Case	Band	Position	SAR (W/kg)	Gap	Minimum distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)				
Case 1	Maximum WWAN Ant 0	Bottom of Laptop	1.159	0	210.0	1.90	0.01	Not required
	WLAN2.4G_Ant 1+2 (1)		0.738	0				
	Maximum WWAN Ant 0	Bottom of Laptop	1.159	0	170.9	1.68	0.01	Not required
	WLAN2.4G_Ant 1+2 (2)		0.523	0				
Case 2	Maximum WWAN Ant 0	Bottom of Laptop	1.159	0	210.0	1.64	0.01	Not required
	WLAN5/6G_Ant 1+2 (1)		0.476	0				
	Maximum WWAN Ant 0	Bottom of Laptop	1.159	0	170.9	1.87	0.01	Not required
	WLAN5/6G_Ant 1+2 (2) + BT Ant 2		0.713	0				
Case 3	Maximum WWAN Ant 2	Bottom of Laptop	1.137	0	134.7	1.88	0.02	Not required
	WLAN2.4G_Ant 1+2 (1)		0.738	0				
	Maximum WWAN Ant 2	Bottom of Laptop	1.137	0	217.1	1.66	0.01	Not required
	WLAN2.4G_Ant 1+2 (2)		0.523	0				
Case 4	Maximum WWAN Ant 2	Bottom of Laptop	1.137	0	134.7	1.61	0.02	Not required
	WLAN5/6G_Ant 1+2 (1)		0.476	0				
	Maximum WWAN Ant 2	Bottom of Laptop	1.137	0	217.1	1.85	0.01	Not required
	WLAN5/6G_Ant 1+2 (2) + BT Ant 2		0.713	0				

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18. Uncertainty Assessment

Declaration of Conformity:

The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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

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

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

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

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

(b) κ is the coverage factor

Standard Uncertainty for Assumed Distribution

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

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

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.



Applicable for SAR Measurements:

Uncertainty Budget (4 MHz - 10 GHz range)							
Error Description	Uncertainty Value (±%)	Probability	Divisor	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
Measurement System							
Probe Calibration	18.60	N	2	1	1	9.3	9.3
Axial Isotropy	4.70	R	1.732	0.7	0.7	1.9	1.9
Hemispherical Isotropy	9.60	R	1.732	0.7	0.7	3.9	3.9
Linearity	4.70	R	1.732	1	1	2.7	2.7
Modulation Response	4.68	R	1.732	1	1	2.7	2.7
System Detection Limits	1.00	R	1.732	1	1	0.6	0.6
Boundary Effects	2.00	R	1.732	1	1	1.2	1.2
Readout Electronics	0.30	N	1	1	1	0.3	0.3
Response Time	0.00	R	1.732	1	1	0.0	0.0
Integration Time	2.60	R	1.732	1	1	1.5	1.5
RF Ambient Noise	3.00	R	1.732	1	1	1.7	1.7
RF Ambient Reflections	3.00	R	1.732	1	1	1.7	1.7
Probe Positioner	0.40	R	1.732	1	1	0.2	0.2
Probe Positioning	6.70	R	1.732	1	1	3.9	3.9
Post-processing	4.00	R	1.732	1	1	2.3	2.3
Test Sample Related							
Device Holder	3.60	N	1	1	1	3.6	3.6
Test sample Positioning	3.03	N	1	1	1	3.0	3.0
Power Scaling	0.00	R	1.732	1	1	0.0	0.0
Power Drift	5.00	R	1.732	1	1	2.9	2.9
Phantom and Setup							
Phantom Uncertainty	7.60	R	1.732	1	1	4.4	4.4
SAR correction	0.00	R	1.732	1	0.84	0.0	0.0
Liquid Conductivity Repeatability	0.03	N	1	0.78	0.77	0.0	0.0
Liquid Conductivity (target)	5.00	R	1.732	0.78	0.77	2.3	2.2
Liquid Conductivity (mea.)	2.50	R	1.732	0.78	0.77	1.1	1.1
Temp. unc. - Conductivity	3.68	R	1.732	0.78	0.77	1.7	1.6
Liquid Permittivity Repeatability	0.02	N	1	0.23	0.26	0.0	0.0
Liquid Permittivity (target)	5.00	R	1.732	0.23	0.26	0.7	0.8
Liquid Permittivity (mea.)	2.50	R	1.732	0.23	0.26	0.3	0.4
Temp. unc. - Permittivity	0.84	R	1.732	0.23	0.26	0.1	0.1
Combined Std. Uncertainty						14.5%	14.2%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.4%



Applicable for Power Density Measurements:

Error Description	Uncertainty Value (±dB)	Probability	Divisor	(Ci)	Standard Uncertainty (±dB)
Probe Calibration	0.49	N	1	1	0.49
Probe correction	0.00	R	1.732	1	0.00
Frequency response (BW ≤ 1 GHz)	0.20	R	1.732	1	0.12
Sensor cross coupling	0.00	R	1.732	1	0.00
Isotropy	0.50	R	1.732	1	0.29
Linearity	0.20	R	1.732	1	0.12
Probe scattering	0.00	R	1.732	1	0.00
Probe positioning offset	0.30	R	1.732	1	0.17
Probe positioning repeatability	0.04	R	1.732	1	0.02
Sensor mechanical offset	0.00	R	1.732	1	0.00
Probe spatial resolution	0.00	R	1.732	1	0.00
Field impedance dependence	0.00	R	1.732	1	0.00
Amplitude and phase drift	0.00	R	1.732	1	0.00
Amplitude and phase noise	0.04	R	1.732	1	0.02
Measurement area truncation	0.00	R	1.732	1	0.00
Data acquisition	0.03	N	1	1	0.03
Sampling	0.00	R	1.732	1	0.00
Field reconstruction	2.00	R	1.732	1	1.15
Forward transformation	0.00	R	1.732	1	0.00
Power density scaling	0.00	R	1.732	1	0.00
Spatial averaging	0.10	R	1.732	1	0.06
System detection limit	0.04	R	1.732	1	0.02
Uncertainty terms dependent on the DUT and environmental factors					
Probe coupling with DUT	0.00	R	1.732	1	0.0
Modulation response	0.40	R	1.732	1	0.2
Integration time	0.00	R	1.732	1	0.0
Response time	0.00	R	1.732	1	0.0
Device holder influence	0.10	R	1.732	1	0.1
DUT alignment	0.00	R	1.732	1	0.0
RF ambient conditions	0.04	R	1.732	1	0.0
Ambient reflections	0.04	R	1.732	1	0.0
Immunity / secondary reception	0.00	R	1.732	1	0.0
Drift of the DUT		R	1.732	1	
Combined Std. Uncertainty					1.34
Expanded STD Uncertainty (95%)					2.68

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