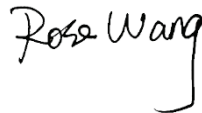


# FCC SAR Test Report

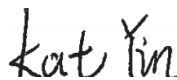
APPLICANT : Huawei Technologies Co., Ltd.  
EQUIPMENT : Smart Phone  
BRAND NAME : HUAWEI  
MODEL NAME : YAL-L41  
FCC ID : QISYAL-L41  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013

The product was received on May 10, 2019 and testing was started from May 13, 2019 and completed on May 24, 2019. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

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



Reviewed by: Rose Wang / Supervisor



Approved by: Kat Yin / Manager



**Sporton International (Kunshan) Inc.**

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



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### History of this test report

Report No.	Version	Description	Issued Date
FA951002-02	01	Initial issue of report	Apr, 09, 2020

### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Huawei Technologies Co., Ltd., Smart Phone, YAL-L41**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.80	0.56	0.23	1.45
		GSM1900	0.68	0.59	0.16	
	WCDMA	Band V	0.94	0.66	<b>0.37</b>	
		Band IV	1.05	1.03	0.29	
		Band II	0.90	<b>1.05</b>	0.31	
	LTE	Band 5	0.66	0.66	<b>0.37</b>	
		Band 26	0.76	0.55	0.30	
		Band 4	0.82	1.03	0.32	
		Band 2	0.99	0.98	0.30	
		Band 7	<b>1.06</b>	0.87	0.34	
		Band 38	1.05	0.61	0.26	
		Band 41	0.95	0.59	0.26	
DTS	WLAN	2.4GHz WLAN	0.35	0.62	0.15	1.45
NII		5GHz WLAN	0.12	0.39	0.16	1.45
DSS	Bluetooth	2.4GHz Bluetooth	0.10	<0.10	<0.10	1.45
Highest 10g SAR Summary						
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)			
NII	WLAN	5GHz WLAN	<b>1.10</b>			
Date of Testing:			2019/5/13~2019/5/24			

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



## **2. Administration Data**

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

<b>Testing Laboratory</b>		
<b>Test Firm</b>	Sporton International (Kunshan) Inc.	
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958	
<b>Test Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CN1257	314309

<b>Applicant</b>	
<b>Company Name</b>	Huawei Technologies Co., Ltd.
<b>Address</b>	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C



### **3. Guidance Applied**

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

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



## 4. Equipment Under Test (EUT) Information

### 4.1 General Information

Product Feature & Specification	
Equipment Name	Smart Phone
Brand Name	HUAWEI
Model Name	YAL-L41
FCC ID	QISYAL-L41
IMEI Code	Test Sample(With battery 1) SIM1: 869436040037828 SIM2: 869436040042323 Test Sample(With battery 2) SIM1: 869436040037802 SIM2: 869436040042307
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2547.5 MHz ~ 2652.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM(downlink only) WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 Bluetooth BR/EDR/LE NFC
HW Version	HL2YALEM04
SW Version	9.1.0.119(C900E119R1P2)
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
<b>Remark:</b> 1. This device supports VoIP in WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. 2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications. 3. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). 4. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12. 5. This device has two WWAN transmit antennas. WWAN bottom antenna is located at the bottom edge of the device, and WWAN top antenna is located at the top edge of the device which can refer to antenna location chapter. Top and Bottom antenna support the same WWAN frequency bands, and they can't transmit simultaneously. 6. When the phone is in talking mode and receiver worked, the EUT will invoke corresponding work scenarios power level.	

7. When the phone away from head and near to body and receiver not worked, the EUT will invoke corresponding work scenarios power level.
8. The device has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests, SIM2 only verified the worst case of SIM1 for each position.
9. There are two batteries which with the same capacity, they are only with different suppliers. We only chose battery 1 for full test, and battery 2 only verified the worst case of battery 1 for each position.
10. This is a variant report, added the BT UHD power via software. The change has no influence on the test results, all the test results are leveraged from original report (FA951002-01).

**4.2 Specification of Accessory**

Battery		
Battery NO.	Manufacture	Description
1	HuaweiTechnologies Co., Ltd. (Manufacturer: Desay)	Battery Model: HB436486ECW Rated capacity:3900mAh
2	HuaweiTechnologies Co., Ltd. (Manufacturer: Sunwoda)	Nominal Voltage:  +3.82V Charging Voltage:  +4.40V

Earphone				
Earphone 1	Brand Name	Boluo County Quancheng Electronic Co., Ltd.	Model Name	1331-3301-6001-TC-296
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Earphone 2	Brand Name	Goertek Inc.	Model Name	Windy-C
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Earphone 3	Brand Name	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	Model Name	MEND1632B729000
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		
Earphone 4	Brand Name	Foster Electric Co.,(GuangZhou) LTD.	Model Name	618017
	Signal Line	1.1 meter, non-shielded cable, with w/o ferrite core		



**4.3 General LTE SAR Test and Reporting Considerations**

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	QISYAL-L41																																																														
Equipment Name	Smart Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2547.5 MHz ~ 2652.5 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 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM(downlink only)																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R12, Cat6																																																														
CA Support	Yes, Downlink only																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6" style="text-align: center;">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						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 <sub>RB</sub> )						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																																																								
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, the detail please referred to section 16																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 16.																																																														
LTE Carrier Aggregation Additional Information	This device supports maximum of 2 carriers in the downlink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	40165	2547.5	40190	2550	40215	2552.5	40240	2555				
L	40515	2582.5	40520	2583	40525	2583.5	40540	2585				
M	40865	2617.5	40850	2616	40845	2615.5	40840	2615				
H	41215	2652.5	41190	2650	41165	2647.5	41140	2645				

## 5. RF Exposure Limits

### 5.1 Uncontrolled Environment

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

### 5.2 Controlled Environment

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

**Limits for Occupational/Controlled Exposure (W/kg)**

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

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

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

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

## **6. Specific Absorption Rate (SAR)**

### **6.1 Introduction**

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

### **6.2 SAR Definition**

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

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

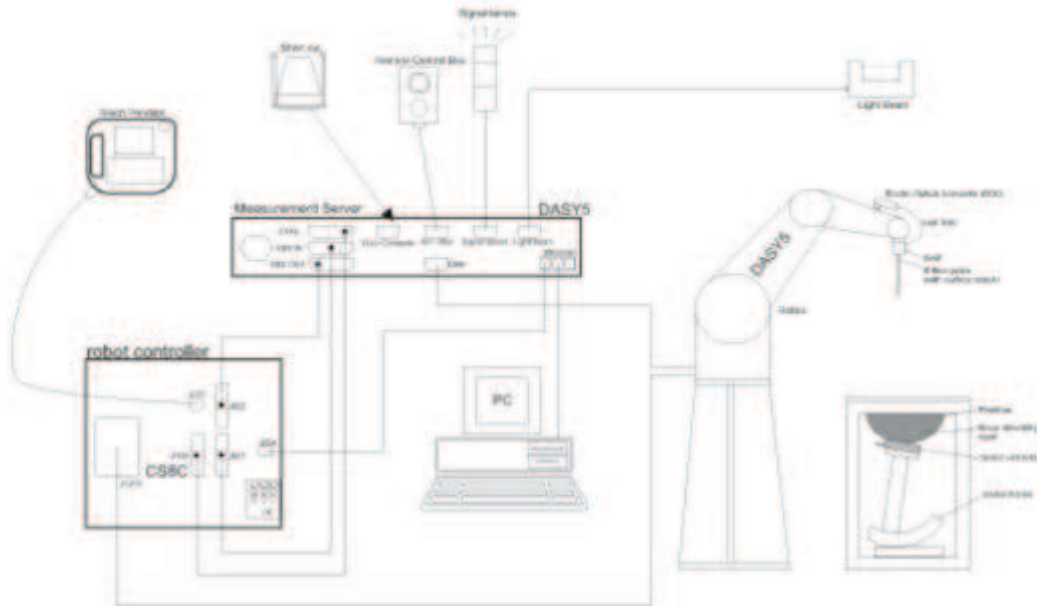
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

## **7. System Description and Setup**

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




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


**7.1 E-Field Probe**

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

**<ES3DV3 Probe>**

<b>Construction</b>	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
<b>Frequency</b>	10 MHz – 4 GHz; Linearity: $\pm 0.2$ dB (30 MHz – 4 GHz)	
<b>Directivity</b>	$\pm 0.2$ dB in TSL (rotation around probe axis) $\pm 0.3$ dB in TSL (rotation normal to probe axis)	
<b>Dynamic Range</b>	5 $\mu$ W/g – >100 mW/g; Linearity: $\pm 0.2$ dB	
<b>Dimensions</b>	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>**

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

**7.2 Data Acquisition Electronics (DAE)**

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

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

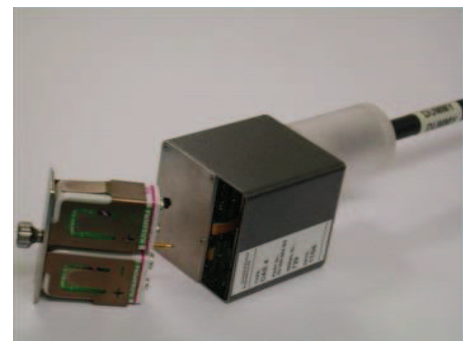



Photo of DAE


**7.3 Phantom**

**<SAM Twin Phantom>**

<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
<b>Filling Volume</b>	Approx. 25 liters	
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
<b>Measurement Areas</b>	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>**

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

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.



## 7.4 Device Holder

### <Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops



## **8. Measurement Procedures**

The measurement procedures are as follows:

### <Conducted power measurement>

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

### <SAR measurement>

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

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

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

### **8.1 Spatial Peak SAR Evaluation**

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

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

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

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

**8.2 Power Reference Measurement**

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

**8.3 Area Scan**

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

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

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

### 8.4 Zoom Scan

Zoom scans are used to 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 whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

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

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

### 8.5 Volume Scan Procedures

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

### 8.6 Power Drift Monitoring

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



### 9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2020/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2020/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2020/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2020/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2018/12/7	2019/12/6
SPEAG	5000MHz System Validation Kit	D5GHzV2	1006	2018/9/27	2019/9/26
SPEAG	Data Acquisition Electronics	DAE4	690	2019/1/23	2020/1/22
SPEAG	Data Acquisition Electronics	DAE4	1210	2019/1/25	2020/1/24
SPEAG	Dosimetric E-Field Probe	ES3DV3	3293	2018/10/25	2019/10/24
SPEAG	Dosimetric E-Field Probe	EX3DV4	3911	2019/1/22	2020/1/21
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1753	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1754	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1839	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1842	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201563814	2019/1/14	2020/1/13
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2019/4/17	2020/4/16
Agilent	Wireless Communication Test Set	E5515C	MY48367160	2019/1/14	2020/1/13
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	2018/8/3	2019/8/2
SPEAG	Dielectric Probe Kit	DAK-3.5	1138	2018/11/20	2019/11/19
Anritsu	Vector Signal Generator	MG3710A	6201682672	2019/1/14	2020/1/13
Rohde & Schwarz	Power Meter	NRVD	102081	2018/8/20	2019/8/19
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2018/8/20	2019/8/19
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2018/8/20	2019/8/19
R&S	CBT BLUETOOTH TESTER	CBT	101641	2019/1/14	2020/1/13
EXA	Spectrum Analyzer	FSV7	101631	2019/1/14	2020/1/13
Testo	Hygrometer	608-H1	1241332126	2018/8/21	2019/8/20
FLUKE	DIGITAC THERMOMETER	51II	97240029	2018/8/8	2019/8/7
ARRA	Power Divider	A3200-2	N/A	Note	
MCL	Attenuation1	BW-S10W5+	N/A	Note	
MCL	Attenuation2	BW-S10W5+	N/A	Note	
MCL	Attenuation3	BW-S10W5+	N/A	Note	
Agilent	Dual Directional Coupler	778D	20500	Note	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note	

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

## 10. System Verification

### 10.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 10.2.

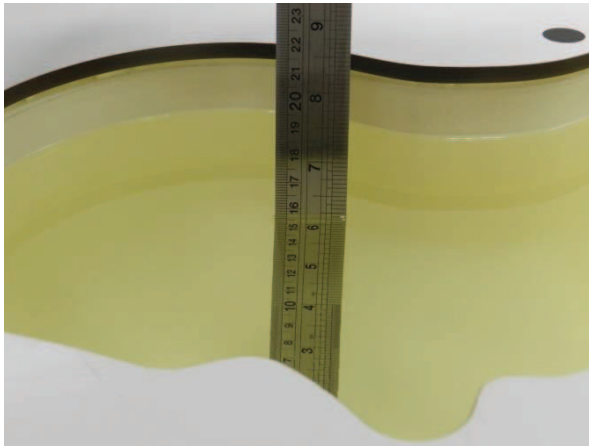


Fig 10.1 Photo of Liquid Height for Head SAR

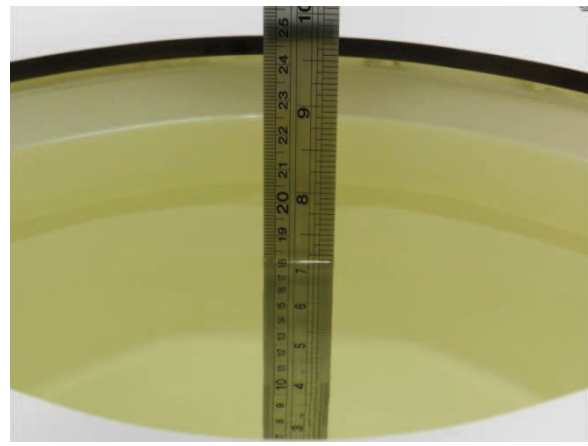


Fig 10.2 Photo of Liquid Height for Body SAR



### 10.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
<b>For Head</b>								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
<b>For Body</b>								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

#### Simulating Liquid for 5GHz, Manufactured by SPEAG

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

#### <Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Conductivity Target ( $\sigma$ )	Permittivity Target ( $\epsilon_r$ )	Delta ( $\sigma$ ) (%)	Delta ( $\epsilon_r$ ) (%)	Limit (%)	Date
835	Head	22.5	0.921	42.546	0.90	41.50	2.33	2.52	±5	2019/5/16
1750	Head	22.9	1.384	41.115	1.37	40.10	1.02	2.53	±5	2019/5/16
1900	Head	22.7	1.432	39.278	1.40	40.00	2.29	-1.81	±5	2019/5/16
2450	Head	22.7	1.845	38.195	1.80	39.20	2.50	-2.56	±5	2019/5/24
2600	Head	22.8	1.998	38.452	1.96	39.00	1.94	-1.41	±5	2019/5/17
5250	Head	22.7	4.787	35.795	4.71	35.90	1.63	-0.29	±5	2019/5/23
5600	Head	22.7	5.143	35.263	5.07	35.50	1.44	-0.67	±5	2019/5/23
5750	Head	22.7	5.302	35.036	5.22	35.40	1.57	-1.03	±5	2019/5/23
835	Body	22.6	0.976	55.067	0.97	55.20	0.62	-0.24	±5	2019/5/13
1750	Body	22.8	1.476	53.352	1.49	53.40	-0.94	-0.09	±5	2019/5/14
1900	Body	22.7	1.564	52.571	1.52	53.30	2.89	-1.37	±5	2019/5/14
2450	Body	22.7	2.009	53.445	1.95	52.70	3.03	1.41	±5	2019/5/24
2600	Body	22.8	2.217	51.708	2.16	52.50	2.64	-1.51	±5	2019/5/15
5250	Body	22.6	5.452	48.884	5.36	48.90	1.72	-0.03	±5	2019/5/23
5600	Body	22.6	5.909	48.311	5.77	48.50	2.41	-0.39	±5	2019/5/23
5750	Body	22.6	6.119	48.065	5.94	48.30	3.01	-0.49	±5	2019/5/23

### 10.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

#### <1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2019/5/16	835	Head	250	4d151	3293	1210	2.47	9.30	9.88	6.24
2019/5/16	1750	Head	250	1090	3293	1210	9.54	36.40	38.16	4.84
2019/5/16	1900	Head	250	5d170	3293	1210	9.89	39.00	39.56	1.44
2019/5/24	2450	Head	250	908	3911	690	13.30	52.80	53.2	0.76
2019/5/17	2600	Head	250	1061	3293	1210	13.80	57.70	55.2	-4.33
2019/5/23	5250	Head	100	1006	3911	690	8.30	80.70	83	2.85
2019/5/23	5600	Head	100	1006	3911	690	8.08	83.30	80.8	-3.00
2019/5/23	5750	Head	100	1006	3911	690	7.62	80.40	76.2	-5.22
2019/5/13	835	Body	250	4d151	3293	1210	2.52	9.53	10.08	5.77
2019/5/14	1750	Body	250	1090	3293	1210	9.22	37.70	36.88	-2.18
2019/5/14	1900	Body	250	5d170	3293	1210	10.00	40.00	40	0.00
2019/5/24	2450	Body	250	908	3911	690	12.40	50.80	49.6	-2.36
2019/5/15	2600	Body	250	1061	3293	1210	13.90	54.20	55.6	2.58
2019/5/23	5250	Body	100	1006	3911	690	7.41	78.30	74.1	-5.36
2019/5/23	5600	Body	100	1006	3911	690	8.32	81.00	83.2	2.72
2019/5/23	5750	Body	100	1006	3911	690	7.94	77.40	79.4	2.58

#### <10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2019/5/23	5250	Body	100	1006	3911	690	2.06	21.70	20.6	-5.07
2019/5/23	5600	Body	100	1006	3911	690	2.31	22.50	23.1	2.67

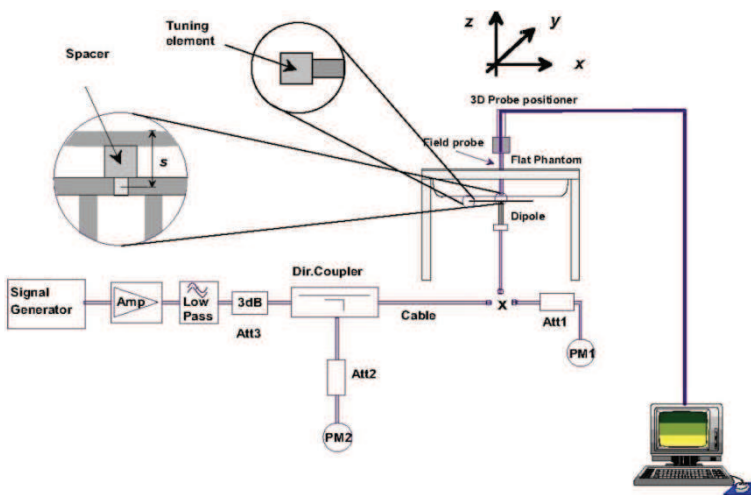


Fig 8.3.1 System Performance Check Setup



Fig 8.3.2 Setup Photo

## 11. RF Exposure Positions

### 11.1 Ear and handset reference point

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

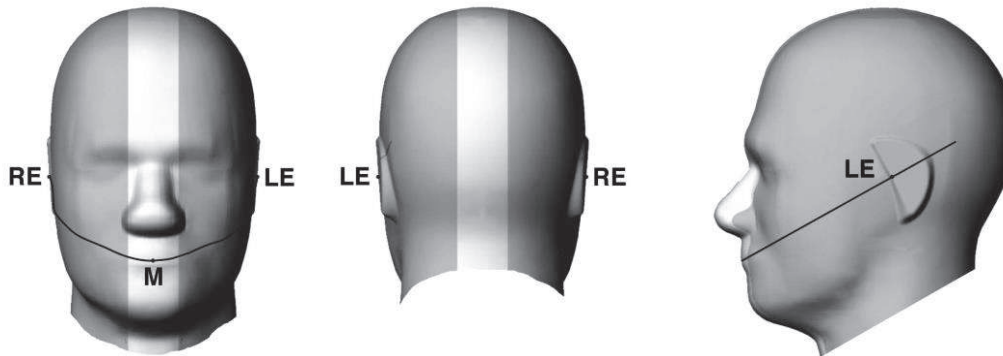


Fig 9.1.1 Front, back, and side views of SAM twin phantom

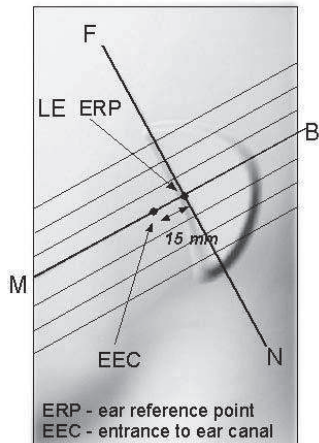


Fig 9.1.2 Close-up side view of phantom showing the ear region.

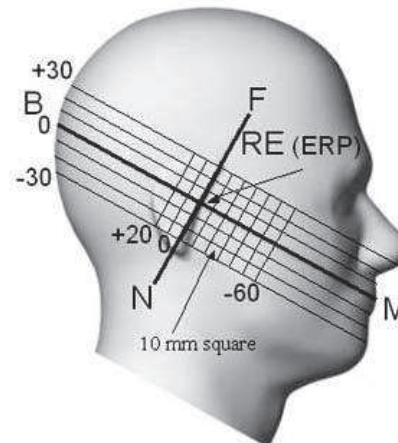


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations



### 11.2 Definition of the cheek position

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

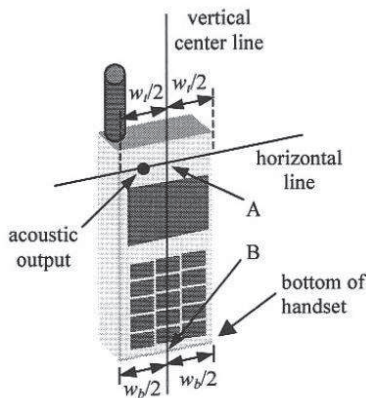


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case"

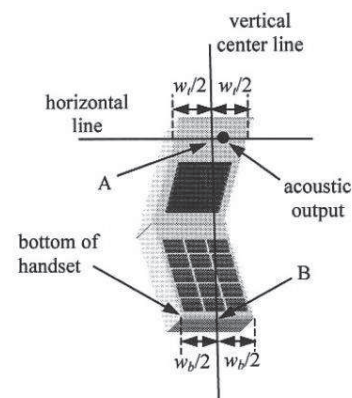


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

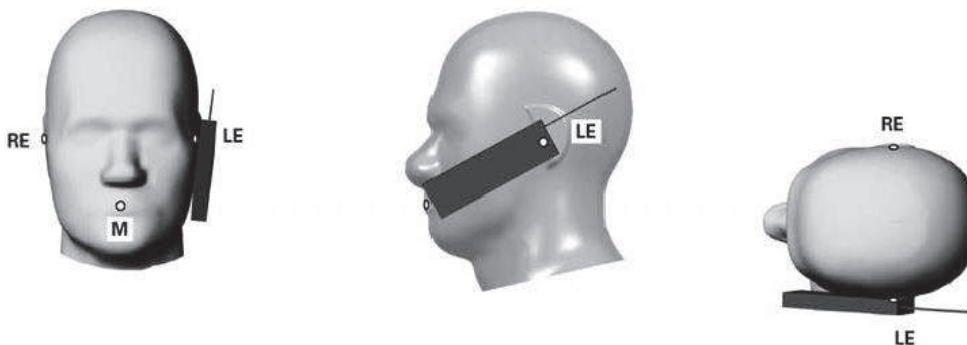


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

### 11.3 Definition of the tilt position

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

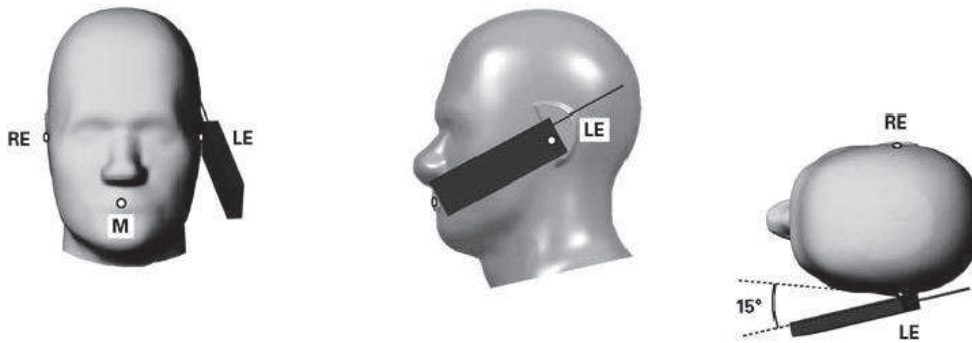
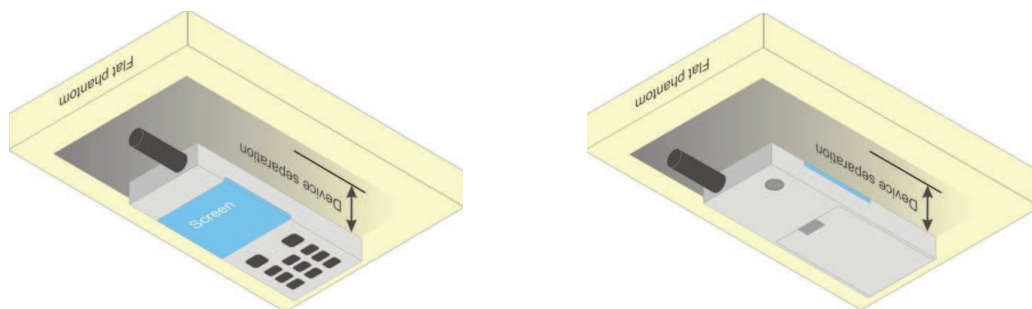


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

### **11.4 Body Worn Accessory**

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

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



**Fig 9.4 Body Worn Position**

### **11.5 Product Specific 10g SAR Exposure**

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

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



## **11.6 Wireless Router**

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

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

## 12. Audio Receiver Detection Mechanism

This mobile phone device supports the receiver detection mechanism. The main purpose is to minimize triggering associated with power reduction scenarios by receiver detection mechanisms and provide enhanced user experience.

This device uses the receiver to indicate whether the user is making a call in head scenario or not. The selection between head and body power levels is based on the receiver detection mechanism. It can determine proximity to head or body and set the relevant power level for 2G&3G&4G and WiFi antennas accordingly.

**Table: Summary of Receiver detection mechanism**

Antenna	Receiver on (head scenario)	Receiver off (Body/other scenario)
2G&3G&4G second ant	Power Level A1	Power Level B1
2G&3G&4G main ant	Power Level A2	Power Level B2
WiFi Ant	Power Level A3	Power Level B3

1) When there is a voice call (including VOIP) and the modem chip detects that the Headset is unconnected and speaker is off, then the receiver is triggered and it is considered as Held to ear scenario (Head). The power level A is applied.

2) When there is a voice call, but the headset is connected or speaker mode is on, the receiver will not work. It is considered as other scenarios (Body etc.). The power level B is applied.

3) When there is data service only (No voice call, including VOIP), the receiver will not work too. It is considered as other scenarios (Body etc.). The power level B is applied.

The following tables summarize the key power reduction information of 2G/3G/4G Main/second WWAN antenna and WLAN antenna triggered by specific use conditions.

Second antenna												
Power Reduction Scenario	GSM 850	GSM 1900	UMTS B2	UMTS B4	UMTS B5	LTE B2	LTE B4	LTE B5	LTE B7	LTE B26	LTE B38	LTE B41
Full Power Receiver off Receiver off+BT	34.2	30.2	24.5	24.0	25.0	24.0	24.0	25.0	24.7	24.5	24.2	24.2
Receiver on Receiver on+BT	31.5	30.2	22.0	21.5	22.5	22.0	20.5	21.5	21.2	22.5	23.2	22.7
Second antenna+WiFi 2.4G(Receiver off) Second antenna+WiFi 2.4G(Receiver off)+BT	33.7	30.2	23.5	23.0	24.0	23.0	23.0	24.5	23.7	23.5	23.2	23.7
Second antenna+WiFi 2.4G(Receiver on) Second antenna+WiFi 2.4G(Receiver on)+BT	31.0	30.2	21.0	20.5	21.5	21.0	19.5	21.0	20.2	21.5	22.2	22.2
Second antenna+WiFi 5G(Receiver off) Second antenna+WiFi 5G(Receiver off)+BT	33.7	30.2	23.5	23.0	24.0	23.0	23.0	24.5	23.7	23.5	23.2	23.7
Second antenna+WiFi 5G(Receiver on) Second antenna+WiFi 5G(Receiver on)+BT	31.0	30.2	21.0	20.5	21.5	21.0	19.5	21.0	20.2	21.5	22.2	22.2
Second antenna+WiFi 2.4G+5G(Receiver off) Second antenna+WiFi 2.4G+5G(Receiver off)+BT	32.7	30.2	22.5	22.0	23.0	22.0	22.0	24.0	22.7	22.5	22.2	23.2
Second antenna+WiFi 2.4G+5G(Receiver on) Second antenna+WiFi 2.4G+5G(Receiver on)+BT	30.0	30.2	20.0	19.5	20.5	20.0	18.5	20.5	19.2	20.5	21.2	21.7



Main antenna												
Power Reduction Scenario	GSM 850	GSM 1900	UMTS B2	UMTS B4	UMTS B5	LTE B2	LTE B4	LTE B5	LTE B7	LTE B26	LTE B38	LTE B41
Full Power Receiver on Receiver on+BT	33.2	31.2	24.5	24.0	25.0	24.0	24.0	25.0	24.7	24.5	24.2	24.2
Receiver off Receiver off+BT	33.2	31.2	24.5	24.0	25.0	24.0	24.0	25.0	23.2	24.5	24.2	24.2
Main antenna+WiFi 2.4G(Receiver off) Main antenna+WiFi 2.4G(Receiver off)+BT	33.2	31.2	23.5	23.5	25.0	24.0	24.0	25.0	24.7	24.5	24.2	24.2
Main antenna+WiFi 2.4G(Receiver on) Main antenna+WiFi 2.4G(Receiver on)+BT	33.2	31.2	23.5	23.5	25.0	24.0	24.0	25.0	23.2	24.5	24.2	24.2
Main antenna+WiFi 5G(Receiver off) Main antenna+WiFi 5G(Receiver off)+BT	33.2	31.2	23.5	23.5	25.0	24.0	24.0	25.0	24.7	24.5	24.2	24.2
Main antenna+WiFi 5G(Receiver on) Main antenna+WiFi 5G(Receiver on)+BT	33.2	31.2	23.5	23.5	25.0	24.0	24.0	25.0	23.2	24.5	24.2	24.2
Main antenna+WiFi 2.4G+5G(Receiver off) Main antenna+WiFi 2.4G+5G(Receiver off)+BT	33.2	31.2	23.5	23.5	25.0	24.0	24.0	25.0	24.7	24.5	24.2	24.2
Main antenna+WiFi 2.4G+5G(Receiver on) Main antenna+WiFi 2.4G+5G(Receiver on)+BT	33.2	31.2	23.5	23.5	25.0	24.0	24.0	25.0	23.2	24.5	24.2	24.2

WiFi antenna		
Power Reduction Scenario	WiFi 2.4G	WiFi 5G
wifi only(Receiver off)	19.0	18.0
1、wifi only(Receiver on) 2、Second antenna +WiFi 2.4G/5G station/WiFi (Receiver on)orSecond antenna+2.4G/5G Hotspot (Receiver on) orSecond antenna+ 2.4G/5G P2P (Receiver on)	12.1	12.1



### **13. Dynamic Antenna Switching Mechanism**

The device supports the dynamic antenna switching function to optimize transmission efficiency for wide range frequency operations. It has two 2G/3G/4G Tx antennas (Main Antenna and Secondary Antenna). It can transmit from either Main Antenna or Secondary Antenna.

Summary test plan: For Dynamic antenna switching SAR test, we will set the Main Antenna / Secondary Antenna to the MAX transmit power level respectively and test the SAR respectively in all applicable RF exposure conditions. Some AT commands or test scripts are supplied to fix the DPDT operation state and choose the antenna, so that only one TX antenna (the Main Antenna or Secondary Antenna) is chosen at a time. All independent antennas and modems will be completely covered by the appropriate SAR measurements and all simultaneous transmission possibilities will be fully considered.



**14. Country Code Detection Mechanism**

**General description:**

This device supports the countries detection mechanism. The main purpose is to distinguish CE countries and FCC countries and apply the relevant power levels accordingly. The main purpose is to provide enhanced user experience while meeting the SAR compliance for different countries.

This device uses the mobile country code (MCC) to indicate whether the users in CE countries or FCC countries. The selection between CE countries and FCC countries power levels is based on the country code detection mechanism. It can determine the countries where users are and set the relevant power level for 4G and WiFi antennas accordingly.

**Summary of country code detection mechanism**

<b>Antenna</b>	<b>MCC OF CE COUNTRY (CE standard)</b>	<b>MCC OF FCC COUNTRY (FCC standard)</b>
4G second ant (WCDMA B5 / LTE B5/B7/B38)	Power Level A1	Power Level B1
WiFi 2.4G/5G	Power Level A2	Power Level B2

**Summary SAR test Plan:**

- 1) Standalone FCC SAR of 4G second ant is evaluated at power level B1;(FCC mobile country code)
- 2) Standalone FCC SAR of Wifi 2.4G/5G ant is evaluated at power level B2;(FCC mobile country code)



Band				Max Power Level(dBm)							
				FCC Code				CE Code			
				WCDMA B5	LTE Band 5	LTE Band7	LTE Band38	WCDMA B5	LTE Band 5	LTE Band7	LTE Band38
Second Antenna only	/	Receiver OFF	Full Power	25.00	25.00	24.70	24.20	25.00	25.00	24.70	24.20
	/	Receiver On	Reduced Power Level D1	22.50	21.50	21.20	23.20	24.50	22.50	21.90	24.20
Second Antenna+ WiFi Antenna simultaneous transmission	WiFi Station/ P2P	Receiver OFF	Reduced Power Level D2	24.00	24.50	23.70	23.20	24.00	24.50	23.70	24.20
		Receiver On	Reduced Power Level D3	21.50	21.00	20.20	22.20	23.50	22.00	20.90	24.20
	WiFi Station +P2P	Receiver OFF	Reduced Power Level D4	23.00	24.00	22.70	22.20	23.00	24.00	22.70	24.20
		Receiver On	Reduced Power Level D5	20.50	20.50	19.20	21.20	22.50	21.50	19.90	24.20

Band				Conducted Power Validation results(dBm)							
				FCC Code				CE Code			
				WCDMA B5	LTE Band 5	LTE Band7	LTE Band38	WCDMA B5	LTE Band 5	LTE Band7	LTE Band38
Second Antenna only	/	Receiver OFF	Full Power	23.82	23.85	23.49	23.27	23.94	23.85	23.42	23.02
	/	Receiver On	Reduced Power Level D1	21.43	20.56	20.33	22.20	23.45	21.66	20.77	23.02
Second Antenna +WiFi Antenna simultaneous transmission	WiFi Station/ P2P	Receiver OFF	Reduced Power Level D2	23.14	23.35	22.46	22.23	22.67	23.07	21.98	23.02
		Receiver On	Reduced Power Level D3	20.31	19.86	18.96	21.13	22.21	20.59	19.30	23.02
	WiFi Station +P2P	Receiver OFF	Reduced Power Level D4	22.15	22.91	21.53	21.23	21.52	22.72	21.00	23.02
		Receiver On	Reduced Power Level D5	19.41	19.50	17.95	20.21	21.21	20.21	18.41	23.02



Config.			Tune-up(dB)				WiFi conducted power validation results(dBm)			
Band	Antenna	Mode	FCC Code		CE Code		FCC Code		CE Code	
			Receiver ON	Receiver OFF	Receiver ON	Receiver OFF	Receiver ON	Receiver OFF	Receiver ON	Receiver OFF
WiFi 2.4G	Core0 (Ant1)	802.11b 1M/2M	12.10	18.00	17.10	18.00	10.60	16.70	15.93	16.66
		802.11b 5.5M/11M	12.10	19.00	17.10	19.00	/	17.20	/	17.39
		802.11g ch1&ch11	12.00	14.00	17.00	18.50	10.70	12.90	15.53	17.10
		802.11g ch2~ch10	12.00	18.50	17.00	18.50	/	17.20	/	/
		802.11n HT20 ch1&ch11	12.00	14.00	17.00	18.00	10.60	12.70	15.02	15.68
		802.11n HT20 ch2~ch10	12.00	18.00	17.00	18.00	/	16.60	/	/
		802.11n HT40 ch3&ch8&ch9	12.00	12.00	17.00	18.00	10.30	10.30	15.12	15.96
		802.11n HT40 ch7	12.00	14.00	17.00	18.00	/	12.40	/	/
		802.11n HT40 ch4&ch6	12.00	16.00	17.00	18.00	/	14.60	/	/
		802.11n HT40 ch5	12.00	18.00	17.00	18.00	/	16.20	/	/
	Core1 (Ant4)	802.11b 1M/2M	12.10	18.00	17.10	18.00	10.40	16.40	15.53	16.14
		802.11b 5.5M/11M	12.00	19.00	17.10	19.00	/	17.00	/	17.27
		802.11g ch1&ch11	12.00	14.00	17.00	18.50	10.80	12.80	15.91	17.21
		802.11g ch2~ch10	12.00	18.50	17.00	18.50	/	16.50	/	/
		802.11n HT20 ch1&ch11	12.00	14.00	17.00	18.00	10.60	12.60	15.17	16.01
		802.11n HT20 ch2~ch10	12.00	18.00	17.00	18.00	/	16.50	/	/
		802.11n HT40 ch3&ch8&ch9	12.00	12.00	17.00	18.00	10.20	10.30	14.63	15.42
		802.11n HT40 ch7	12.00	14.00	17.00	18.00	/	12.10	/	/
		802.11n HT40 ch4&ch6	12.00	16.00	17.00	18.00	/	14.00	/	/
		802.11n HT40 ch5	12.00	18.00	17.00	18.00	/	16.00	/	/
	CDD/MI MO	802.11g ch1&ch11	15.00	17.00	20.00	21.50	13.86	15.96	18.73	19.42
		802.11g ch2~ch10	15.00	21.50	20.00	21.50	/	19.66	/	/
		802.11n HT20 ch1&ch11	15.00	17.00	20.00	21.00	13.71	15.81	18.11	18.91
		802.11n HT20 ch2~ch10	15.00	21.00	20.00	21.00	/	19.66	/	/
		802.11n HT40 ch3&ch8&ch9	15.00	15.00	20.00	21.00	13.21	13.21	17.89	18.60
		802.11n HT40 ch7	15.00	17.00	20.00	21.00	/	15.31	17.88	18.68
		802.11n HT40 ch4&ch6	15.00	19.00	20.00	21.00	/	17.33	/	/
		802.11n HT40 ch5	15.00	21.00	20.00	21.00	/	19.06	/	/



Config.			Tune-up(dB)				WiFi conducted power validation results(dBm)					
Band	Antenna	Mode	FCC Code		CE Code		FCC Code		CE Code			
			Receiver ON	Receiver OFF	Receiver ON	Receiver OFF	Receiver ON	Receiver OFF	Receiver ON	Receiver OFF		
U-NII-1 & U-NII-2A	Ant4	802.11a (ch36&ch64)	12.1	12	15.1	18	9.85	9.87	13.32	16.46		
		802.11a (other channels)	12.1	18	15.1	18	9.85	16.42	13.27	16.16		
		802.11n(20M) (ch36&ch64)	12	12	15	17	8.89	8.95	12.86	15.21		
		802.11n(20M) (other channels)	12	17	15	17	9.16	15.01	12.65	14.99		
		802.11n(40M) (ch38&ch62)	12	12	15	17	9.68	9.72	13.38	15.5		
		802.11n(40M) (other channels)	12	17	15	17	10.03	15.32	13.15	15.24		
		802.11ac(20M) (ch36&ch64)	12	12	15	17	8.84	8.43	12.85	15.17		
		802.11ac(20M) (other channels)	12	17	15	17	9.09	14.91	12.71	14.98		
		802.11ac(40M) (ch38&ch62)	12	12	15	17	9.62	9.23	13.4	15.51		
		802.11ac(40M) (other channels)	12	17	15	17	9.99	15.29	13.12	15.26		
		802.11ac(80M) (ch42&ch58)	12	12	15	17	10.48	9.47	13.27	15.46		
		802.11ac(80M) (other channels)	12	17	15	17	/	/	/	15.45		
		U-NII-1 & U-NII-2A	Ant4	802.11ac (160M)	12	12	12	12	9.15	9.15	9.61	9.55
		U-NII-2C	Ant4	802.11a (ch100&ch140)	12.1	12	15.1	18	10.11	10.27	13.59	16.12
				802.11a (other channels)	12.1	18	15.1	18	10.12	16.68	/	/
				802.11n(20M) (ch100&ch140)	12	12	15	17	9.27	9.23	12.84	15.19
				802.11n(20M) (other channels)	12	17	15	17	8.69	15.2	/	/
				802.11n(40M) (ch102&ch134)	12	12	15	17	8.73	8.73	13.39	15.51
802.11n(40M) (other channels)	12			17	15	17	8.46	14.79	/	/		



U-NII-2C	Ant4	802.11ac(20M)	12	12	15	17	9.19	9.19	12.88	15.19
		(ch100&ch140)								
		802.11ac(20M)	12	17	15	17	8.64	15.16	/	/
		(other channels)								
		802.11ac(40M)	12	12	15	17	8.71	8.71	13.35	15.53
		(ch102&ch134)								
		802.11ac(40M)	12	17	15	17	8.42	14.74	/	/
		(other channels)								
		802.11ac(80M)	12	12	15	17	9.77	8.73	13.27	15.45
		(ch106&ch122)								
		802.11ac(80M)	12	17	15	17	9.3	13.89	/	/
(other channels)										
802.11ac	12	12	12	12	8	8	9.53	9.51		
(160M)										
U-NII-3	Ant4	802.11a	11.1	12	12	12	9.1	9.24	9.31	9.31
		(ch149&165)								
		802.11a	11.1	18	12	12	9.12	16.12	9.1	9.1
		(other channels)								
		802.11n(20M)	11	12	12	12	9.15	8.6	9.24	9.24
		(ch149&165)								
		802.11 n(20M)	11	17	12	12	9.09	15.02	9.02	9.02
		(other channels)								
		802.11n(40M)	11	12	12	12	8.97	8.97	9.36	9.36
		(ch151&159)								
		802.11n(40M)	11	17	12	12	/	/	/	/
		(other channels)								
		802.11ac(20M)	11	12	12	12	9.09	8.79	9.27	9.27
		(ch149&165)								
		802.11ac(20M)	11	17	12	12	9.04	15.01	9.02	9.02
		(other channels)								
		802.11ac(40M)	11	12	12	12	8.93	8.93	9.33	9.33
		(ch151&159)								
		802.11ac(40M)	11	17	12	12	/	/	/	/
(other channels)										
802.11ac(80M)	11	12	12	12	9.09	9.09	9.22	9.22		
(ch155)										
802.11ac	11	17	12	12	/	/	/	/		
(other channels)										

## 15. Bluetooth High Power and Low Power Mechanism

BT specific wireless modes and SAR test:

The device is a mobile phone. It supports a BT high power feature in specific wireless modes and operating configurations. The maximum power of BT is different on different scenarios.

The BT of this device has two different operating modes:

- 1) Low power level mode (power level B, maximum duty cycle 100%) as default mode;
- 2) High power level mode (power level A, maximum duty cycle 100%) in specific wireless modes and operating configurations when the mobile phone is connected to an external audio device;

Note: For this device, power level B is  $\leq$  power level A.

Based on the BT high power mode detection technique description above, the different exposure conditions related to BT high power mode(Power level A) are listed as below table:

NO.	mode	Power level	head(reciever on)	other scenarios(body etc.)	
			BT data transmission(non_audio)	BT data transmission (non_audio)	BT audio device calling or play music etc.
1	high power level mode	power A	-	-	√
2	low power level mode	power B	√	√	√

Note 1: The BT SAR results at low power level B is still required because the simultaneous transmission possibilities for BT at lower power level B and high power level A are different. The BT SAR results at low power level B should be used to evaluation the simultaneous transmission SAR conditions not supported by BT higher power level A.

Note 2:High power level mode (power level A, maximum duty cycle 100%) is not applicable for Head exposure condition (Audio Receiver on) by design.

Note 3: Both the power level A and B results will be tested and provided in the SAR report to validate the power reduction function works. For Hotspot/body worn Bluetooth SAR testing, high power level A can represent low power level B conservatively, so only perform high power level A SAR.

## 16. Conducted RF Output Power (Unit: dBm)

### <GSM Conducted Power>

**General Note:**

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

### <WWAN Top Antenna>

Power Level	Full Power / Receiver off / Receiver off+BT							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.85	33.26	33.06	34.20	23.85	24.26	24.06	25.20
GPRS 1 Tx slot (GMSK)	32.83	33.24	33.03	34.20	23.83	24.24	24.03	25.20
GPRS 2 Tx slots (GMSK)	29.34	29.40	29.40	31.00	23.34	23.40	23.40	25.00
GPRS 3 Tx slots (GMSK)	27.40	27.45	27.41	29.20	23.14	23.19	23.15	24.94
GPRS 4 Tx slots (GMSK)	25.90	26.00	25.97	27.50	22.90	23.00	22.97	24.50
EDGE 1 Tx slot (GMSK)	32.78	33.02	33.01	34.00	23.78	24.02	24.01	25.00
EDGE 2 Tx slots (GMSK)	29.29	29.36	29.35	31.00	23.29	23.36	23.35	25.00
EDGE 3 Tx slots (GMSK)	27.39	27.46	27.41	29.20	23.13	23.20	23.15	24.94
EDGE 4 Tx slots (GMSK)	25.70	25.83	25.76	27.50	22.70	22.83	22.76	24.50
EDGE 1 Tx slot (8PSK)	25.28	25.45	25.30	28.00	16.28	16.45	16.30	19.00
EDGE 2 Tx slots (8PSK)	22.66	22.80	22.70	25.00	16.66	16.80	16.70	19.00
EDGE 3 Tx slots (8PSK)	20.91	21.10	21.06	23.20	16.65	16.84	16.80	18.94
EDGE 4 Tx slots (8PSK)	19.92	20.03	19.96	22.00	16.92	17.03	16.96	19.00

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

The calculated method are shown as below:

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



Power Level	Receiver on / Receiver on+BT							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	30.05	30.19	30.16	31.50	21.05	21.19	21.16	22.50
GPRS 1 Tx slot (GMSK)	30.04	30.17	30.14	31.50	21.04	21.17	21.14	22.50
GPRS 2 Tx slots (GMSK)	26.81	26.92	26.87	28.50	20.81	20.92	20.87	22.50
GPRS 3 Tx slots (GMSK)	24.76	24.90	24.86	26.70	20.50	20.64	20.60	22.44
GPRS 4 Tx slots (GMSK)	23.50	23.56	23.54	25.00	20.50	20.56	20.54	22.00
EDGE 1 Tx slot (GMSK)	30.02	30.16	30.12	31.50	21.02	21.16	21.12	22.50
EDGE 2 Tx slots (GMSK)	26.69	26.80	26.74	28.50	20.69	20.80	20.74	22.50
EDGE 3 Tx slots (GMSK)	24.77	24.83	24.79	26.70	20.51	20.57	20.53	22.44
EDGE 4 Tx slots (GMSK)	23.50	23.52	23.50	25.00	20.50	20.52	20.50	22.00
EDGE 1 Tx slot (8PSK)	23.36	23.40	23.37	25.50	14.36	14.40	14.37	16.50
EDGE 2 Tx slots (8PSK)	20.47	20.57	20.52	22.50	14.47	14.57	14.52	16.50
EDGE 3 Tx slots (8PSK)	18.60	18.68	18.65	20.70	14.34	14.42	14.39	16.44
EDGE 4 Tx slots (8PSK)	17.40	17.43	17.40	19.50	14.40	14.43	14.40	16.50

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

Power Level	Top Antenna + WiFi 2.4G(Receiver off) / Top Antenna +WiFi 2.4G(Receiver off)+BT / Top Antenna +WiFi 5G(Receiver off) / Top Antenna +WiFi 5G(Receiver off)+BT							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.26	32.35	32.31	33.70	23.26	23.35	23.31	24.70
GPRS 1 Tx slot (GMSK)	32.24	32.34	32.30	33.70	23.24	23.34	23.30	24.70
GPRS 2 Tx slots (GMSK)	28.72	28.77	28.75	30.50	22.72	22.77	22.75	24.50
GPRS 3 Tx slots (GMSK)	26.75	26.85	26.79	28.70	22.49	22.59	22.53	24.44
GPRS 4 Tx slots (GMSK)	25.39	25.43	25.41	27.00	22.39	22.43	22.41	24.00
EDGE 1 Tx slot (GMSK)	32.01	32.33	32.23	33.50	23.01	23.33	23.23	24.50
EDGE 2 Tx slots (GMSK)	28.70	28.71	28.70	30.50	22.70	22.71	22.70	24.50
EDGE 3 Tx slots (GMSK)	26.52	26.74	26.71	28.70	22.26	22.48	22.45	24.44
EDGE 4 Tx slots (GMSK)	25.15	25.37	25.34	27.00	22.15	22.37	22.34	24.00
EDGE 1 Tx slot (8PSK)	24.93	25.01	24.97	27.50	15.93	16.01	15.97	18.50
EDGE 2 Tx slots (8PSK)	22.14	22.38	22.31	24.50	16.14	16.38	16.31	18.50
EDGE 3 Tx slots (8PSK)	20.55	20.60	20.56	22.70	16.29	16.34	16.30	18.44
EDGE 4 Tx slots (8PSK)	19.30	19.37	19.36	21.50	16.30	16.37	16.36	18.50

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





Power Level	Top Antenna+WiFi 2.4G(Receiver on) / Top Antenna+WiFi 2.4G(Receiver on)+BT / Top Antenna+WiFi 5G(Receiver on) / Top Antenna+WiFi 5G(Receiver on)+BT							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	29.50	29.72	29.58	31.00	20.50	20.72	20.58	22.00
GPRS 1 Tx slot (GMSK)	29.48	29.71	29.57	31.00	20.48	20.71	20.57	22.00
GPRS 2 Tx slots (GMSK)	26.31	26.50	26.39	28.00	20.31	20.50	20.39	22.00
GPRS 3 Tx slots (GMSK)	24.39	24.53	24.46	26.20	20.13	20.27	20.20	21.94
GPRS 4 Tx slots (GMSK)	23.10	23.19	23.12	24.50	20.10	20.19	20.12	21.50
EDGE 1 Tx slot (GMSK)	29.30	29.56	29.34	31.00	20.30	20.56	20.34	22.00
EDGE 2 Tx slots (GMSK)	26.12	26.34	26.15	28.00	20.12	20.34	20.15	22.00
EDGE 3 Tx slots (GMSK)	24.27	24.40	24.30	26.20	20.01	20.14	20.04	21.94
EDGE 4 Tx slots (GMSK)	23.01	23.10	23.05	24.50	20.01	20.10	20.05	21.50
EDGE 1 Tx slot (8PSK)	22.90	23.02	22.95	25.00	13.90	14.02	13.95	16.00
EDGE 2 Tx slots (8PSK)	20.04	20.14	20.10	22.00	14.04	14.14	14.10	16.00
EDGE 3 Tx slots (8PSK)	18.29	18.37	18.34	20.20	14.03	14.11	14.08	15.94
EDGE 4 Tx slots (8PSK)	16.96	17.01	17.00	19.00	13.96	14.01	14.00	16.00

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

The calculated method are shown as below:

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



Power Level	Top Antenna+WiFi 2.4G+5G(Receiver off) / Top Antenna+WiFi 2.4G+5G(Receiver off)+BT							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	30.98	31.19	31.08	32.70	21.98	22.19	22.08	23.70
GPRS 1 Tx slot (GMSK)	30.95	31.17	31.07	32.70	21.95	22.17	22.07	23.70
GPRS 2 Tx slots (GMSK)	27.70	27.77	27.76	29.50	21.70	21.77	21.76	23.50
GPRS 3 Tx slots (GMSK)	26.43	26.75	26.74	27.70	22.17	22.49	22.48	23.44
GPRS 4 Tx slots (GMSK)	25.01	25.17	25.23	26.00	22.01	22.17	22.23	23.00
EDGE 1 Tx slot (GMSK)	30.99	31.10	31.08	32.50	21.99	22.10	22.08	23.50
EDGE 2 Tx slots (GMSK)	27.70	27.75	27.74	29.50	21.70	21.75	21.74	23.50
EDGE 3 Tx slots (GMSK)	25.71	25.80	25.79	27.70	21.45	21.54	21.53	23.44
EDGE 4 Tx slots (GMSK)	24.24	24.31	24.27	26.00	21.24	21.31	21.27	23.00
EDGE 1 Tx slot (8PSK)	24.04	24.12	24.10	26.50	15.04	15.12	15.10	17.50
EDGE 2 Tx slots (8PSK)	21.27	21.34	21.33	23.50	15.27	15.34	15.33	17.50
EDGE 3 Tx slots (8PSK)	19.57	19.69	19.64	21.70	15.31	15.43	15.38	17.44
EDGE 4 Tx slots (8PSK)	18.26	18.35	18.28	20.50	15.26	15.35	15.28	17.50

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

Power Level	Top Antenna+WiFi 2.4G+5G(Receiver on) / Top Antenna+WiFi 2.4G+5G(Receiver on)+BT							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	28.15	28.55	28.41	30.00	19.15	19.55	19.41	21.00
GPRS 1 Tx slot (GMSK)	28.13	28.52	28.42	30.00	19.13	19.52	19.42	21.00
GPRS 2 Tx slots (GMSK)	25.07	25.36	25.20	27.00	19.07	19.36	19.20	21.00
GPRS 3 Tx slots (GMSK)	23.23	23.50	23.30	25.20	18.97	19.24	19.04	20.94
GPRS 4 Tx slots (GMSK)	21.66	21.93	21.76	23.50	18.66	18.93	18.76	20.50
EDGE 1 Tx slot (GMSK)	28.29	28.50	28.43	30.00	19.29	19.50	19.43	21.00
EDGE 2 Tx slots (GMSK)	25.17	25.37	25.30	27.00	19.17	19.37	19.30	21.00
EDGE 3 Tx slots (GMSK)	23.32	23.51	23.47	25.20	19.06	19.25	19.21	20.94
EDGE 4 Tx slots (GMSK)	21.72	21.95	21.85	23.50	18.72	18.95	18.85	20.50
EDGE 1 Tx slot (8PSK)	22.01	22.10	22.07	24.00	13.01	13.10	13.07	15.00
EDGE 2 Tx slots (8PSK)	19.04	19.15	19.14	21.00	13.04	13.15	13.14	15.00
EDGE 3 Tx slots (8PSK)	17.19	17.24	17.23	19.20	12.93	12.98	12.97	14.94
EDGE 4 Tx slots (8PSK)	15.29	15.30	15.29	18.00	12.29	12.30	12.29	15.00

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



Power Level	Full Power							
	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
GSM1900	512	661	810		512	661	810	
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	29.35	29.36	29.34	30.20	20.35	20.36	20.34	21.20
GPRS 1 Tx slot (GMSK)	29.33	29.34	29.33	30.20	20.33	20.34	20.33	21.20
GPRS 2 Tx slots (GMSK)	26.07	26.08	26.04	27.20	20.07	20.08	20.04	21.20
GPRS 3 Tx slots (GMSK)	24.24	24.30	24.25	25.40	19.98	20.04	19.99	21.14
GPRS 4 Tx slots (GMSK)	22.71	22.74	22.69	24.20	19.71	19.74	19.69	21.20
EDGE 1 Tx slot (GMSK)	29.31	29.27	29.20	30.20	20.31	20.27	20.20	21.20
EDGE 2 Tx slots (GMSK)	26.03	26.05	26.00	27.20	20.03	20.05	20.00	21.20
EDGE 3 Tx slots (GMSK)	24.20	24.25	24.17	25.40	19.94	19.99	19.91	21.14
EDGE 4 Tx slots (GMSK)	22.92	22.97	22.90	24.20	19.92	19.97	19.90	21.20
EDGE 1 Tx slot (8PSK)	24.56	24.64	24.38	26.50	15.56	15.64	15.38	17.50
EDGE 2 Tx slots (8PSK)	21.80	21.49	21.40	23.50	15.80	15.49	15.40	17.50
EDGE 3 Tx slots (8PSK)	19.87	19.51	19.58	21.70	15.61	15.25	15.32	17.44
EDGE 4 Tx slots (8PSK)	18.29	18.30	18.13	20.50	15.29	15.30	15.13	17.50

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

<WWAN Bottom Antenna>

Power Level	Full Power							
GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM 1 Tx slot	32.02	32.10	32.12	33.20	23.02	23.10	23.12	24.20
GPRS 1 Tx slot (GMSK)	32.00	32.08	32.11	33.20	23.00	23.08	23.11	24.20
GPRS 2 Tx slots (GMSK)	28.59	28.72	28.79	30.00	22.59	22.72	22.79	24.00
GPRS 3 Tx slots (GMSK)	26.70	26.78	26.86	28.20	22.44	22.52	22.60	23.94
GPRS 4 Tx slots (GMSK)	25.37	25.46	25.66	26.50	22.37	22.46	22.66	23.50
EDGE 1 Tx slot (GMSK)	31.99	32.01	32.09	33.00	22.99	23.01	23.09	24.00
EDGE 2 Tx slots (GMSK)	28.54	28.68	28.68	30.00	22.54	22.68	22.68	24.00
EDGE 3 Tx slots (GMSK)	26.66	26.65	26.85	28.20	22.40	22.39	22.59	23.94
EDGE 4 Tx slots (GMSK)	25.33	25.31	25.44	26.50	22.33	22.31	22.44	23.50
EDGE 1 Tx slot (8PSK)	25.05	25.14	25.12	27.00	16.05	16.14	16.12	18.00
EDGE 2 Tx slots (8PSK)	22.30	22.40	22.28	24.00	16.30	16.40	16.28	18.00
EDGE 3 Tx slots (8PSK)	20.54	20.57	20.58	22.20	16.28	16.31	16.32	17.94
EDGE 4 Tx slots (8PSK)	19.30	19.34	19.34	21.00	16.30	16.34	16.34	18.00

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

The calculated method are shown as below:

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

Power Level	Full Power							
GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM 1 Tx slot	30.09	30.12	30.25	31.20	21.09	21.12	21.25	22.20
GPRS 1 Tx slot (GMSK)	30.08	30.10	30.24	31.20	21.08	21.10	21.24	22.20
GPRS 2 Tx slots (GMSK)	27.10	27.01	26.88	28.20	21.10	21.01	20.88	22.20
GPRS 3 Tx slots (GMSK)	25.20	25.05	24.99	26.40	20.94	20.79	20.73	22.14
GPRS 4 Tx slots (GMSK)	23.49	23.78	23.79	25.20	20.49	20.78	20.79	22.20
EDGE 1 Tx slot (GMSK)	30.05	29.95	30.22	31.20	21.05	20.95	21.22	22.20
EDGE 2 Tx slots (GMSK)	27.02	26.95	26.77	28.20	21.02	20.95	20.77	22.20
EDGE 3 Tx slots (GMSK)	25.04	24.99	24.89	26.40	20.78	20.73	20.63	22.14
EDGE 4 Tx slots (GMSK)	23.46	23.69	23.75	25.20	20.46	20.69	20.75	22.20
EDGE 1 Tx slot (8PSK)	25.70	25.62	25.51	27.50	16.70	16.62	16.51	18.50
EDGE 2 Tx slots (8PSK)	22.76	22.70	22.61	24.50	16.76	16.70	16.61	18.50
EDGE 3 Tx slots (8PSK)	20.90	20.85	20.78	22.70	16.64	16.59	16.52	18.44
EDGE 4 Tx slots (8PSK)	19.51	19.60	19.50	21.50	16.51	16.60	16.50	18.50

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

The calculated method are shown as below:

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

**<WCDMA Conducted Power>**

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

A summary of these settings are illustrated below:

**HSDPA Setup Configuration:**

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

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

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

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

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

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

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

**Setup Configuration**



**HSUPA Setup Configuration:**

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

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

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

Note 1: For sub-test 1 to 4,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{HS} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  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  $\beta_c/\beta_d$  ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to  $\beta_c = 10/15$  and  $\beta_d = 15/15$ .

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

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

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

**Setup Configuration**

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

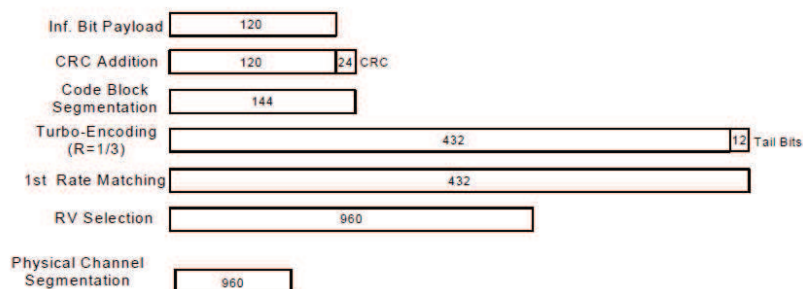
- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power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

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

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

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

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



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

**Setup Configuration**





**<WCDMA Conducted Power>**

**General Note:**

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

**<WWAN Top Antenna>**

Power Level		Full Power / Receiver off Receiver off+BT				Receiver on Receiver on+BT				
Band		WCDMA II			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)	
TX Channel		9262	9400	9538		9262		9400		9538
Rx Channel		9662	9800	9938		9662	9800	9938		
Frequency (MHz)		1852.4	1880	1907.6	1852.4	1880	1907.6			
3GPP Rel 99	AMR 12.2Kbps	23.30	23.27	23.29	24.50	21.02	20.95	20.96	22.00	
3GPP Rel 99	RMC 12.2Kbps	23.31	23.29	23.30	24.50	21.03	20.96	20.98	22.00	
3GPP Rel 6	HSDPA Subtest-1	22.89	22.87	22.88	24.00	20.13	20.37	20.22	21.50	
3GPP Rel 6	HSDPA Subtest-2	22.08	22.03	22.08	23.20	19.79	19.62	19.59	20.70	
3GPP Rel 6	HSDPA Subtest-3	21.59	21.54	21.60	22.70	19.24	19.13	19.07	20.20	
3GPP Rel 6	HSDPA Subtest-4	21.59	21.58	21.61	22.70	19.13	19.06	18.93	20.20	
3GPP Rel 8	DC-HSDPA Subtest-1	22.85	22.84	22.82	24.00	20.10	20.33	20.20	21.50	
3GPP Rel 8	DC-HSDPA Subtest-2	22.02	22.00	22.03	23.20	19.75	19.63	19.56	20.70	
3GPP Rel 8	DC-HSDPA Subtest-3	21.56	21.50	21.63	22.70	19.20	19.11	19.02	20.20	
3GPP Rel 8	DC-HSDPA Subtest-4	21.55	21.51	21.58	22.70	19.11	19.01	19.00	20.20	
3GPP Rel 6	HSUPA Subtest-1	21.57	21.60	21.48	23.00	19.38	19.42	19.31	20.50	
3GPP Rel 6	HSUPA Subtest-2	19.39	19.33	19.33	21.00	17.24	17.03	16.96	18.50	
3GPP Rel 6	HSUPA Subtest-3	20.15	20.17	20.25	22.00	18.43	18.23	18.17	19.50	
3GPP Rel 6	HSUPA Subtest-4	19.26	19.44	19.27	21.00	17.39	17.20	17.13	18.50	
3GPP Rel 6	HSUPA Subtest-5	22.40	22.40	22.40	23.50	20.03	19.86	19.82	21.00	



Power Level		Top antenna+WiFi 2.4G(Receiver off) Top antenna+WiFi 2.4G(Receiver off)+BT Top antenna+WiFi 5G(Receiver off) Top antenna+WiFi 5G(Receiver off)+BT				Top antenna+WiFi 2.4G(Receiver on) Top antenna+WiFi 2.4G(Receiver on)+BT Top antenna+WiFi 5G(Receiver on) Top antenna+WiFi 5G(Receiver on)+BT			
Band		WCDMA II			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		9262	9400	9538	
Rx Channel		9662	9800	9938		9662	9800	9938	
Frequency (MHz)		1852.4	1880	1907.6		1852.4	1880	1907.6	
3GPP Rel 99	AMR 12.2Kbps	22.37	22.22	22.28	23.50	20.05	19.94	19.96	21.00
3GPP Rel 99	RMC 12.2Kbps	22.39	22.23	22.30	23.50	20.06	19.96	19.97	21.00
3GPP Rel 6	HSDPA Subtest-1	22.00	21.90	21.89	23.00	19.49	19.32	19.37	20.50
3GPP Rel 6	HSDPA Subtest-2	21.17	21.13	21.09	22.20	18.63	18.53	18.59	19.70
3GPP Rel 6	HSDPA Subtest-3	20.69	20.64	20.59	21.70	18.29	18.14	18.20	19.20
3GPP Rel 6	HSDPA Subtest-4	20.71	20.59	20.61	21.70	18.21	18.06	18.31	19.20
3GPP Rel 8	DC-HSDPA Subtest-1	22.03	21.86	21.84	23.00	19.41	19.30	19.32	20.50
3GPP Rel 8	DC-HSDPA Subtest-2	21.16	21.10	21.02	22.20	18.62	18.51	18.52	19.70
3GPP Rel 8	DC-HSDPA Subtest-3	20.66	20.60	20.55	21.70	18.23	18.10	18.17	19.20
3GPP Rel 8	DC-HSDPA Subtest-4	20.72	20.52	20.63	21.70	18.24	18.00	18.33	19.20
3GPP Rel 6	HSUPA Subtest-1	20.56	20.60	20.40	22.00	18.63	18.47	18.53	19.50
3GPP Rel 6	HSUPA Subtest-2	18.15	18.13	18.39	20.00	16.73	16.52	16.39	17.50
3GPP Rel 6	HSUPA Subtest-3	19.31	19.17	19.17	21.00	17.36	17.30	17.55	18.50
3GPP Rel 6	HSUPA Subtest-4	18.42	18.18	18.08	20.00	16.72	16.56	16.29	17.50
3GPP Rel 6	HSUPA Subtest-5	21.40	21.30	21.30	22.50	19.21	19.06	18.89	20.00

Power Level		Top antenna+WiFi 2.4G+5G(Receiver off) Top antenna+WiFi 2.4G+5G(Receiver off)+BT				Top antenna+WiFi 2.4G+5G(Receiver on) Top antenna+WiFi 2.4G+5G(Receiver on)+BT			
Band		WCDMA II			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		9262	9400	9538	
Rx Channel		9662	9800	9938		9662	9800	9938	
Frequency (MHz)		1852.4	1880	1907.6		1852.4	1880	1907.6	
3GPP Rel 99	AMR 12.2Kbps	21.68	21.51	21.48	22.50	19.18	19.12	18.95	20.00
3GPP Rel 99	RMC 12.2Kbps	21.69	21.52	21.49	22.50	19.20	19.13	18.96	20.00
3GPP Rel 6	HSDPA Subtest-1	21.08	20.99	20.99	22.00	18.58	18.50	18.48	19.50
3GPP Rel 6	HSDPA Subtest-2	20.34	20.25	20.26	21.20	17.77	17.63	17.68	18.70
3GPP Rel 6	HSDPA Subtest-3	19.81	19.73	19.72	20.70	17.27	17.16	17.18	18.20
3GPP Rel 6	HSDPA Subtest-4	19.78	19.68	19.70	20.70	17.28	17.17	17.18	18.20
3GPP Rel 8	DC-HSDPA Subtest-1	21.02	20.96	20.93	22.00	18.55	18.45	18.45	19.50
3GPP Rel 8	DC-HSDPA Subtest-2	20.30	20.21	20.21	21.20	17.74	17.62	17.65	18.70
3GPP Rel 8	DC-HSDPA Subtest-3	19.80	19.70	19.68	20.70	17.25	17.12	17.15	18.20
3GPP Rel 8	DC-HSDPA Subtest-4	19.72	19.71	19.66	20.70	17.23	17.10	17.16	18.20
3GPP Rel 6	HSUPA Subtest-1	19.75	19.78	19.63	21.00	17.34	17.33	17.33	18.50
3GPP Rel 6	HSUPA Subtest-2	17.81	17.98	17.32	19.00	15.45	15.32	15.37	16.50
3GPP Rel 6	HSUPA Subtest-3	18.55	18.74	18.75	20.00	16.21	16.19	16.14	17.50
3GPP Rel 6	HSUPA Subtest-4	17.56	17.68	17.79	19.00	15.28	15.13	15.21	16.50
3GPP Rel 6	HSUPA Subtest-5	20.50	20.50	20.40	21.50	18.00	17.76	17.86	19.00



Power Level		Full Power / Receiver off Receiver off+BT				Receiver on Receiver on+BT			
Band		WCDMA IV			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel	1312	1413	1513	1312		1413	1513		
Rx Channel	1537	1638	1738	1537		1638	1738		
Frequency (MHz)	1712.4	1732.6	1752.6	1712.4		1732.6	1752.6		
3GPP Rel 99	AMR 12.2Kbps	22.67	22.72	22.52	24.00	20.41	20.62	20.46	21.50
3GPP Rel 99	RMC 12.2Kbps	22.68	22.74	22.53	24.00	20.42	20.63	20.47	21.50
3GPP Rel 6	HSDPA Subtest-1	22.30	22.43	22.37	23.50	20.10	20.12	20.07	21.00
3GPP Rel 6	HSDPA Subtest-2	21.59	21.64	21.59	22.70	19.31	19.34	19.24	20.20
3GPP Rel 6	HSDPA Subtest-3	21.10	21.13	20.98	22.20	18.88	18.91	18.83	19.70
3GPP Rel 6	HSDPA Subtest-4	21.12	21.14	21.05	22.20	18.74	18.83	18.71	19.70
3GPP Rel 8	DC-HSDPA Subtest-1	22.24	22.40	22.32	23.50	20.12	20.08	20.01	21.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.52	21.58	21.55	22.70	19.30	19.30	19.20	20.20
3GPP Rel 8	DC-HSDPA Subtest-3	21.01	21.10	20.97	22.20	18.85	18.93	18.81	19.70
3GPP Rel 8	DC-HSDPA Subtest-4	21.10	21.04	21.01	22.20	18.70	18.82	18.65	19.70
3GPP Rel 6	HSUPA Subtest-1	21.37	21.43	21.33	22.50	18.77	18.78	18.77	20.00
3GPP Rel 6	HSUPA Subtest-2	18.86	18.90	18.84	20.50	16.26	16.32	16.28	18.00
3GPP Rel 6	HSUPA Subtest-3	20.09	20.15	20.06	21.50	17.41	17.47	17.39	19.00
3GPP Rel 6	HSUPA Subtest-4	18.97	18.97	18.90	20.50	16.40	16.41	16.38	18.00
3GPP Rel 6	HSUPA Subtest-5	21.90	22.00	21.80	23.00	19.54	19.57	19.38	20.50

Power Level		Top antenna+WiFi 2.4G(Receiver off) Top antenna+WiFi 2.4G(Receiver off)+BT Top antenna+WiFi 5G(Receiver off) Top antenna+WiFi 5G(Receiver off)+BT				Top antenna+WiFi 2.4G(Receiver on) Top antenna+WiFi 2.4G(Receiver on)+BT Top antenna+WiFi 5G(Receiver on) Top antenna+WiFi 5G(Receiver on)+BT			
Band		WCDMA IV			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel	1312	1413	1513	1312		1413	1513		
Rx Channel	1537	1638	1738	1537		1638	1738		
Frequency (MHz)	1712.4	1732.6	1752.6	1712.4		1732.6	1752.6		
3GPP Rel 99	AMR 12.2Kbps	22.09	22.21	22.06	23.00	19.52	19.66	19.45	20.50
3GPP Rel 99	RMC 12.2Kbps	22.10	22.23	22.07	23.00	19.53	19.67	19.47	20.50
3GPP Rel 6	HSDPA Subtest-1	21.45	21.48	21.38	22.50	19.11	19.21	19.12	20.00
3GPP Rel 6	HSDPA Subtest-2	20.63	20.68	20.63	21.70	18.09	18.14	18.24	19.20
3GPP Rel 6	HSDPA Subtest-3	20.12	20.19	20.04	21.20	17.63	17.83	17.70	18.70
3GPP Rel 6	HSDPA Subtest-4	20.13	20.19	20.06	21.20	17.49	17.61	17.53	18.70
3GPP Rel 8	DC-HSDPA Subtest-1	21.40	21.47	21.35	22.50	19.10	19.18	19.10	20.00
3GPP Rel 8	DC-HSDPA Subtest-2	20.62	20.66	20.60	21.70	18.07	18.11	18.21	19.20
3GPP Rel 8	DC-HSDPA Subtest-3	20.10	20.13	20.00	21.20	17.61	17.80	17.69	18.70
3GPP Rel 8	DC-HSDPA Subtest-4	20.11	20.14	20.03	21.20	17.47	17.58	17.50	18.70
3GPP Rel 6	HSUPA Subtest-1	19.95	20.19	20.33	21.50	18.01	18.16	18.10	19.00
3GPP Rel 6	HSUPA Subtest-2	17.58	17.74	17.60	19.50	15.83	15.84	15.73	17.00
3GPP Rel 6	HSUPA Subtest-3	19.37	19.15	19.23	20.50	17.09	17.14	17.07	18.00
3GPP Rel 6	HSUPA Subtest-4	17.86	17.94	17.78	19.50	15.86	16.02	16.14	17.00
3GPP Rel 6	HSUPA Subtest-5	20.80	20.90	20.80	22.00	18.12	18.34	18.09	19.50



Power Level		Top antenna+WiFi 2.4G+5G(Receiver off) Top antenna+WiFi 2.4G+5G(Receiver off)+BT				Top antenna+WiFi 2.4G+5G(Receiver on) Top antenna+WiFi 2.4G+5G(Receiver on)+BT			
Band		WCDMA IV			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513		1312	1413	1513	
Rx Channel		1537	1638	1738		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	20.72	20.94	20.75	22.00	18.20	18.38	18.24	19.50
3GPP Rel 99	RMC 12.2Kbps	20.73	20.96	20.76	22.00	18.21	18.39	18.25	19.50
3GPP Rel 6	HSDPA Subtest-1	20.51	20.55	20.49	21.50	17.99	18.06	17.93	19.00
3GPP Rel 6	HSDPA Subtest-2	19.78	19.86	19.76	20.70	17.21	17.24	17.18	18.20
3GPP Rel 6	HSDPA Subtest-3	19.22	19.31	19.24	20.20	16.70	16.71	16.66	17.70
3GPP Rel 6	HSDPA Subtest-4	19.24	19.32	19.25	20.20	16.73	16.63	16.65	17.70
3GPP Rel 8	DC-HSDPA Subtest-1	20.48	20.50	20.45	21.50	17.95	17.00	17.91	19.00
3GPP Rel 8	DC-HSDPA Subtest-2	19.75	19.82	19.73	20.70	17.20	17.23	17.12	18.20
3GPP Rel 8	DC-HSDPA Subtest-3	19.20	19.28	19.20	20.20	16.68	16.65	16.61	17.70
3GPP Rel 8	DC-HSDPA Subtest-4	19.21	19.31	19.22	20.20	16.70	16.60	16.62	17.70
3GPP Rel 6	HSUPA Subtest-1	18.99	19.33	19.51	20.50	17.03	17.16	17.15	18.00
3GPP Rel 6	HSUPA Subtest-2	17.34	17.42	17.37	18.50	14.97	15.07	15.04	16.00
3GPP Rel 6	HSUPA Subtest-3	18.46	18.27	18.39	19.50	16.16	16.30	16.29	17.00
3GPP Rel 6	HSUPA Subtest-4	17.53	17.39	17.42	18.50	15.20	15.23	15.30	16.00
3GPP Rel 6	HSUPA Subtest-5	19.90	20.00	20.00	21.00	17.52	17.61	17.55	18.50

Power Level		Full Power / Receiver off Receiver off+BT				Receiver on Receiver on+BT			
Band		WCDMA V			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233		4132	4182	4233	
Rx Channel		4357	4407	4458		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	23.74	23.81	23.70	25.00	21.30	21.42	21.27	22.50
3GPP Rel 99	RMC 12.2Kbps	23.75	23.82	23.72	25.00	21.32	21.43	21.29	22.50
3GPP Rel 6	HSDPA Subtest-1	23.34	23.41	23.28	24.50	20.95	21.01	20.91	22.00
3GPP Rel 6	HSDPA Subtest-2	22.84	22.85	22.82	23.70	20.24	20.31	20.19	21.20
3GPP Rel 6	HSDPA Subtest-3	22.43	22.47	22.39	23.20	19.83	19.89	19.72	20.70
3GPP Rel 6	HSDPA Subtest-4	22.41	22.50	22.39	23.20	19.79	19.83	19.76	20.70
3GPP Rel 8	DC-HSDPA Subtest-1	23.30	23.38	23.27	24.50	21.33	21.02	20.89	22.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.81	22.82	22.80	23.70	20.96	20.29	20.15	21.20
3GPP Rel 8	DC-HSDPA Subtest-3	22.42	22.45	22.37	23.20	20.23	19.88	19.70	20.70
3GPP Rel 8	DC-HSDPA Subtest-4	22.40	22.51	22.36	23.20	19.80	19.80	19.77	20.70
3GPP Rel 6	HSUPA Subtest-1	22.19	22.27	22.32	23.50	19.74	20.30	20.20	21.00
3GPP Rel 6	HSUPA Subtest-2	20.34	20.07	20.12	21.50	18.06	18.12	18.03	19.00
3GPP Rel 6	HSUPA Subtest-3	21.12	21.43	21.25	22.50	19.16	19.20	19.10	20.00
3GPP Rel 6	HSUPA Subtest-4	20.41	20.63	20.29	21.50	18.10	18.14	18.02	19.00
3GPP Rel 6	HSUPA Subtest-5	22.97	23.06	22.90	24.00	20.28	20.34	20.23	21.50



Power Level		Top antenna+WiFi 2.4G(Receiver off) Top antenna+WiFi 2.4G(Receiver off)+BT Top antenna+WiFi 5G(Receiver off) Top antenna+WiFi 5G(Receiver off)+BT				Top antenna+WiFi 2.4G(Receiver on) Top antenna+WiFi 2.4G(Receiver on)+BT Top antenna+WiFi 5G(Receiver on) Top antenna+WiFi 5G(Receiver on)+BT			
Band		WCDMA V			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233		4132	4182	4233	
Rx Channel		4357	4407	4458		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.90	23.13	22.82	24.00	20.12	20.30	20.17	21.50
3GPP Rel 99	RMC 12.2Kbps	22.91	23.14	22.83	24.00	20.13	20.31	20.19	21.50
3GPP Rel 6	HSDPA Subtest-1	22.19	22.25	22.19	23.50	20.19	20.27	20.20	21.00
3GPP Rel 6	HSDPA Subtest-2	21.71	21.78	21.71	22.70	19.20	19.31	19.23	20.20
3GPP Rel 6	HSDPA Subtest-3	21.33	21.39	21.29	22.20	18.96	19.03	18.83	19.70
3GPP Rel 6	HSDPA Subtest-4	21.34	21.33	21.31	22.20	18.61	18.86	18.55	19.70
3GPP Rel 8	DC-HSDPA Subtest-1	22.18	22.21	22.10	23.50	20.14	20.23	20.14	21.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.72	21.72	21.68	22.70	19.14	19.32	19.20	20.20
3GPP Rel 8	DC-HSDPA Subtest-3	21.30	21.33	21.26	22.20	18.94	19.00	18.80	19.70
3GPP Rel 8	DC-HSDPA Subtest-4	21.31	21.28	21.27	22.20	18.55	18.82	18.49	19.70
3GPP Rel 6	HSUPA Subtest-1	21.96	21.71	21.76	22.50	18.96	19.24	19.10	20.00
3GPP Rel 6	HSUPA Subtest-2	19.21	19.40	19.11	20.50	17.03	17.19	17.06	18.00
3GPP Rel 6	HSUPA Subtest-3	20.41	20.46	20.23	21.50	18.12	18.20	17.96	19.00
3GPP Rel 6	HSUPA Subtest-4	19.39	19.49	19.22	20.50	16.73	17.16	17.09	18.00
3GPP Rel 6	HSUPA Subtest-5	21.70	21.80	21.60	23.00	19.19	19.37	19.20	20.50

Power Level		Top antenna+WiFi 2.4G+5G(Receiver off) Top antenna+WiFi 2.4G+5G(Receiver off)+BT				Top antenna+WiFi 2.4G+5G(Receiver on) Top antenna+WiFi 2.4G+5G(Receiver on)+BT			
Band		WCDMA V			Tune-up Limit (dBm)	WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233		4132	4182	4233	
Rx Channel		4357	4407	4458		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	22.02	22.12	22.06	23.00	19.28	19.40	19.21	20.50
3GPP Rel 99	RMC 12.2Kbps	22.03	22.15	22.07	23.00	19.29	19.41	19.23	20.50
3GPP Rel 6	HSDPA Subtest-1	21.33	21.42	21.30	22.50	18.97	19.03	18.93	20.00
3GPP Rel 6	HSDPA Subtest-2	20.83	20.90	20.77	21.70	18.51	18.55	18.50	19.20
3GPP Rel 6	HSDPA Subtest-3	20.39	20.41	20.39	21.20	18.14	18.12	18.10	18.70
3GPP Rel 6	HSDPA Subtest-4	20.41	20.39	20.41	21.20	18.09	18.14	18.11	18.70
3GPP Rel 8	DC-HSDPA Subtest-1	21.30	21.40	21.24	22.50	18.95	19.00	18.91	20.00
3GPP Rel 8	DC-HSDPA Subtest-2	20.78	20.89	20.70	21.70	18.50	18.52	18.47	19.20
3GPP Rel 8	DC-HSDPA Subtest-3	20.33	20.42	20.35	21.20	18.10	18.11	18.11	18.70
3GPP Rel 8	DC-HSDPA Subtest-4	20.38	20.36	20.38	21.20	18.05	18.00	18.08	18.70
3GPP Rel 6	HSUPA Subtest-1	20.79	20.67	20.79	21.50	18.10	18.16	18.06	19.00
3GPP Rel 6	HSUPA Subtest-2	17.99	17.97	17.99	19.50	15.73	15.94	15.73	17.00
3GPP Rel 6	HSUPA Subtest-3	19.64	19.35	19.41	20.50	17.12	17.32	17.01	18.00
3GPP Rel 6	HSUPA Subtest-4	17.79	18.52	18.43	19.50	16.01	16.13	16.24	17.00
3GPP Rel 6	HSUPA Subtest-5	20.80	20.80	20.70	22.00	18.29	18.46	18.37	19.50



<WWAN Bottom Antenna>

Power Level		Full Power				Bottom antenna+WiFi 2.4G Bottom antenna+WiFi 2.4G+BT Bottom antenna+WiFi 5G Bottom antenna+WiFi 5G+BT Bottom antenna+WiFi 2.4G+5G Bottom antenna+WiFi 2.4G+5G+BT			
Band		WCDMA II			Tune-up Limit (dBm)	WCDMA II			Tune-up Limit (dBm)
TX Channel		9262	9400	9538		9262	9400	9538	
Rx Channel		9662	9800	9938		9662	9800	9938	
Frequency (MHz)		1852.4	1880	1907.6		1852.4	1880	1907.6	
3GPP Rel 99	AMR 12.2Kbps	23.53	23.52	23.50	24.50	22.33	22.38	22.29	23.50
3GPP Rel 99	RMC 12.2Kbps	23.54	23.53	23.52	24.50	22.35	22.39	22.31	23.50
3GPP Rel 6	HSDPA Subtest-1	22.93	22.78	22.76	24.00	22.01	21.96	21.92	23.00
3GPP Rel 6	HSDPA Subtest-2	22.12	22.08	22.04	23.20	21.23	21.16	21.15	22.20
3GPP Rel 6	HSDPA Subtest-3	21.62	21.50	21.45	22.70	20.76	20.66	20.69	21.70
3GPP Rel 6	HSDPA Subtest-4	21.61	21.51	21.47	22.70	20.77	20.65	20.69	21.70
3GPP Rel 8	DC-HSDPA Subtest-1	22.91	22.74	22.70	24.00	22.00	21.94	21.90	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	22.10	22.07	22.00	23.20	21.24	21.10	21.10	22.20
3GPP Rel 8	DC-HSDPA Subtest-3	21.58	21.45	21.41	22.70	20.75	20.62	20.62	21.70
3GPP Rel 8	DC-HSDPA Subtest-4	21.55	21.47	21.44	22.70	20.74	20.61	20.60	21.70
3GPP Rel 6	HSUPA Subtest-1	21.71	21.62	21.50	23.00	20.63	20.63	20.50	22.00
3GPP Rel 6	HSUPA Subtest-2	19.44	19.52	19.44	21.00	18.40	18.46	18.52	20.00
3GPP Rel 6	HSUPA Subtest-3	20.25	20.39	20.26	22.00	19.23	19.31	19.34	21.00
3GPP Rel 6	HSUPA Subtest-4	19.21	19.41	19.29	21.00	18.23	18.39	18.27	20.00
3GPP Rel 6	HSUPA Subtest-5	22.40	22.30	22.40	23.50	21.50	21.50	21.40	22.50

Power Level		Full Power				Bottom antenna+WiFi 2.4G Bottom antenna+WiFi 2.4G+BT Bottom antenna+WiFi 5G Bottom antenna+WiFi 5G+BT Bottom antenna+WiFi 2.4G+5G Bottom antenna+WiFi 2.4G+5G+BT			
Band		WCDMA IV			Tune-up Limit (dBm)	WCDMA IV			Tune-up Limit (dBm)
TX Channel		1312	1413	1513		1312	1413	1513	
Rx Channel		1537	1638	1738		1537	1638	1738	
Frequency (MHz)		1712.4	1732.6	1752.6		1712.4	1732.6	1752.6	
3GPP Rel 99	AMR 12.2Kbps	23.03	23.07	22.87	24.00	22.36	22.41	22.39	23.50
3GPP Rel 99	RMC 12.2Kbps	23.05	23.08	22.88	24.00	22.38	22.42	22.40	23.50
3GPP Rel 6	HSDPA Subtest-1	22.47	22.53	22.40	23.50	22.03	22.04	21.95	23.00
3GPP Rel 6	HSDPA Subtest-2	21.56	21.66	21.61	22.70	21.17	21.27	21.20	22.20
3GPP Rel 6	HSDPA Subtest-3	21.20	21.23	21.18	22.20	20.71	20.70	20.70	21.70
3GPP Rel 6	HSDPA Subtest-4	21.13	21.17	21.12	22.20	20.70	20.75	20.66	21.70
3GPP Rel 8	DC-HSDPA Subtest-1	22.46	22.51	22.37	23.50	22.00	22.01	21.96	23.00
3GPP Rel 8	DC-HSDPA Subtest-2	21.51	21.60	21.58	22.70	21.14	21.25	21.15	22.20
3GPP Rel 8	DC-HSDPA Subtest-3	21.18	21.20	21.14	22.20	20.67	20.71	20.65	21.70
3GPP Rel 8	DC-HSDPA Subtest-4	21.10	21.12	21.09	22.20	20.63	20.72	20.63	21.70
3GPP Rel 6	HSUPA Subtest-1	21.38	21.13	21.28	22.50	20.81	20.69	20.84	22.00
3GPP Rel 6	HSUPA Subtest-2	18.73	18.81	18.78	20.50	18.19	18.27	18.08	20.00
3GPP Rel 6	HSUPA Subtest-3	19.99	19.94	19.87	21.50	19.59	19.33	19.11	21.00
3GPP Rel 6	HSUPA Subtest-4	19.14	18.79	18.64	20.50	18.37	18.34	18.25	20.00
3GPP Rel 6	HSUPA Subtest-5	21.90	21.90	21.80	23.00	21.40	21.50	21.40	22.50



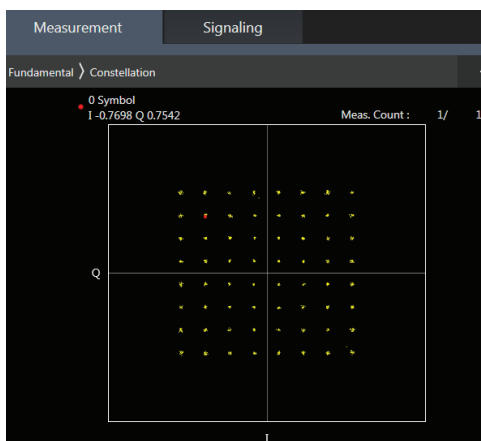
Power Level		Full Power			
Band		WCDMA V			Tune-up Limit (dBm)
TX Channel		4132	4182	4233	
Rx Channel		4357	4407	4458	
Frequency (MHz)		826.4	836.4	846.6	
3GPP Rel 99	AMR 12.2Kbps	24.01	24.07	23.93	25.00
3GPP Rel 99	RMC 12.2Kbps	24.03	24.08	23.95	25.00
3GPP Rel 6	HSDPA Subtest-1	23.65	23.81	23.85	24.50
3GPP Rel 6	HSDPA Subtest-2	23.20	23.33	23.36	23.70
3GPP Rel 6	HSDPA Subtest-3	22.75	22.92	22.92	23.20
3GPP Rel 6	HSDPA Subtest-4	22.77	22.95	22.94	23.20
3GPP Rel 8	DC-HSDPA Subtest-1	23.63	23.78	23.81	24.50
3GPP Rel 8	DC-HSDPA Subtest-2	23.17	23.30	23.31	23.70
3GPP Rel 8	DC-HSDPA Subtest-3	22.74	22.90	22.91	23.20
3GPP Rel 8	DC-HSDPA Subtest-4	22.75	22.93	22.91	23.20
3GPP Rel 6	HSUPA Subtest-1	22.60	22.65	22.80	23.50
3GPP Rel 6	HSUPA Subtest-2	19.70	20.57	19.94	21.50
3GPP Rel 6	HSUPA Subtest-3	21.48	21.37	20.63	22.50
3GPP Rel 6	HSUPA Subtest-4	20.54	20.40	19.66	21.50
3GPP Rel 6	HSUPA Subtest-5	22.70	22.70	22.60	24.00



**<LTE Conducted Power>**

**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



**64QAM**



**16QAM**



<WWAN Top Antenna>

<LTE Band 2>

Full Power / Receiver off / Receiver off+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			18700	18900	19100			
Frequency (MHz)			1860	1880	1900			
20	QPSK	1	0	23.02	23.07	23.15	24	0
20	QPSK	1	49	22.72	22.83	22.89		
20	QPSK	1	99	23.11	23.14	23.06		
20	QPSK	50	0	21.94	22.07	22.14	23	1
20	QPSK	50	24	21.83	21.98	21.91		
20	QPSK	50	50	22.06	21.94	22.00		
20	QPSK	100	0	21.89	22.09	22.15	23.3	0.7
20	16QAM	1	0	22.49	22.33	22.48		
20	16QAM	1	49	22.21	22.25	22.44		
20	16QAM	1	99	22.25	22.56	22.35	22.3	1.7
20	16QAM	50	0	20.93	21.05	21.15		
20	16QAM	50	24	20.90	21.00	21.10		
20	16QAM	50	50	20.96	20.88	21.20	22.3	1.7
20	16QAM	100	0	20.88	21.07	21.13		
20	64QAM	1	0	21.48	21.22	21.13		
20	64QAM	1	49	21.25	21.02	21.05	22.3	1.7
20	64QAM	1	99	21.35	21.13	21.28		
20	64QAM	50	0	20.09	19.99	20.02		
20	64QAM	50	24	20.01	19.89	20.04	21.3	2.7
20	64QAM	50	50	20.23	19.93	20.09		
20	64QAM	100	0	20.18	19.95	19.99		



Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.97	22.75	22.88	24	0
15	QPSK	1	37	22.72	22.74	22.75		
15	QPSK	1	74	22.93	22.94	22.91		
15	QPSK	36	0	21.94	21.76	21.90	23	1
15	QPSK	36	20	21.85	21.79	21.89		
15	QPSK	36	39	21.94	21.87	21.91		
15	QPSK	75	0	22.02	22.00	22.06	23.3	0.7
15	16QAM	1	0	22.42	22.01	22.34		
15	16QAM	1	37	22.05	21.99	21.99		
15	16QAM	1	74	22.29	22.27	22.25	22.3	1.7
15	16QAM	36	0	20.87	20.78	20.85		
15	16QAM	36	20	20.82	20.74	20.79		
15	16QAM	36	39	20.68	20.81	21.07	21.3	2.7
15	16QAM	75	0	20.98	20.94	21.02		
15	64QAM	1	0	21.35	21.15	21.26		
15	64QAM	1	37	20.85	20.87	21.00	22.3	1.7
15	64QAM	1	74	21.09	21.18	21.30		
15	64QAM	36	0	19.98	19.77	19.87		
15	64QAM	36	20	19.88	19.95	19.86	21.3	2.7
15	64QAM	36	39	19.74	19.87	19.82		
15	64QAM	75	0	19.90	19.87	20.02		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.00	22.73	22.87	24	0
10	QPSK	1	25	23.14	23.02	23.07		
10	QPSK	1	49	22.81	22.96	23.02		
10	QPSK	25	0	21.96	21.72	21.87	23	1
10	QPSK	25	12	21.97	21.74	21.82		
10	QPSK	25	25	21.82	21.92	21.98		
10	QPSK	50	0	21.96	21.71	21.81	23.3	0.7
10	16QAM	1	0	22.29	22.02	22.18		
10	16QAM	1	25	22.19	22.25	22.27		
10	16QAM	1	49	21.98	22.19	22.27	22.3	1.7
10	16QAM	25	0	20.93	20.72	20.81		
10	16QAM	25	12	20.95	20.70	21.01		
10	16QAM	25	25	20.73	20.89	20.98	22.3	1.7
10	16QAM	50	0	20.90	20.90	20.98		
10	64QAM	1	0	21.10	20.86	20.95		
10	64QAM	1	25	21.24	21.19	21.29	22.3	1.7
10	64QAM	1	49	20.99	21.04	21.13		
10	64QAM	25	0	19.97	19.78	19.83		
10	64QAM	25	12	19.96	19.75	19.99	21.3	2.7
10	64QAM	25	25	19.75	19.84	19.78		
10	64QAM	50	0	19.89	19.73	19.96		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.01	22.82	22.87	24	0
5	QPSK	1	12	22.83	22.52	22.84		
5	QPSK	1	24	22.88	22.90	23.01		
5	QPSK	12	0	21.91	21.92	21.87	23	1
5	QPSK	12	7	21.85	21.92	22.09		
5	QPSK	12	13	21.77	21.93	22.04		
5	QPSK	25	0	21.83	21.92	22.01	23.3	0.7
5	16QAM	1	0	22.13	22.20	22.19		
5	16QAM	1	12	22.03	21.84	22.00		
5	16QAM	1	24	22.00	22.24	22.16	22.3	1.7
5	16QAM	12	0	20.93	20.79	21.09		
5	16QAM	12	7	20.89	20.70	21.01		
5	16QAM	12	13	21.01	20.78	21.19	21.3	2.7
5	16QAM	25	0	20.97	20.90	20.97		
5	64QAM	1	0	21.07	20.88	20.95		
5	64QAM	1	12	20.89	20.90	20.98	22.3	1.7
5	64QAM	1	24	20.97	20.97	21.02		
5	64QAM	12	0	20.01	19.80	19.94		
5	64QAM	12	7	19.93	19.77	19.86	21.3	2.7
5	64QAM	12	13	19.86	19.80	20.02		
5	64QAM	25	0	19.91	19.84	19.95		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.00	22.93	22.93	24	0
3	QPSK	1	8	23.10	22.99	23.12		
3	QPSK	1	14	22.84	22.78	23.00		
3	QPSK	8	0	22.11	22.04	22.16	23	1
3	QPSK	8	4	22.07	21.86	22.00		
3	QPSK	8	7	22.03	21.98	22.22		
3	QPSK	15	0	22.06	22.03	22.13	23.3	0.7
3	16QAM	1	0	22.56	22.38	22.61		
3	16QAM	1	8	22.24	22.26	22.31		
3	16QAM	1	14	22.44	22.47	22.57	22.3	1.7
3	16QAM	8	0	21.06	21.07	21.21		
3	16QAM	8	4	20.97	20.96	21.10		
3	16QAM	8	7	21.02	21.09	21.06	22.3	1.7
3	16QAM	15	0	21.04	21.08	21.00		
3	64QAM	1	0	21.42	21.23	21.62		
3	64QAM	1	8	21.25	21.20	21.37	22.3	1.7
3	64QAM	1	14	21.49	21.37	21.54		
3	64QAM	8	0	20.09	19.97	20.15		
3	64QAM	8	4	19.94	20.01	19.97	21.3	2.7
3	64QAM	8	7	19.92	20.13	19.92		
3	64QAM	15	0	20.05	19.90	20.13		



Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	23.09	22.85	22.90	24	0
1.4	QPSK	1	3	23.08	22.66	22.88		
1.4	QPSK	1	5	23.09	23.01	23.05		
1.4	QPSK	3	0	22.95	22.68	23.01		
1.4	QPSK	3	1	22.85	22.73	22.99		
1.4	QPSK	3	3	22.95	22.86	22.99		
1.4	QPSK	6	0	22.48	22.32	22.25	23	1
1.4	16QAM	1	0	22.72	22.67	22.81	23.3	0.7
1.4	16QAM	1	3	22.66	22.65	22.65		
1.4	16QAM	1	5	22.70	22.52	22.99		
1.4	16QAM	3	0	22.38	22.34	22.42		
1.4	16QAM	3	1	22.28	22.19	22.36		
1.4	16QAM	3	3	22.52	22.42	22.55		
1.4	16QAM	6	0	21.47	21.18	21.28	22.3	1.7
1.4	64QAM	1	0	21.18	21.16	21.38	22.3	1.7
1.4	64QAM	1	3	21.13	21.01	21.34		
1.4	64QAM	1	5	21.33	21.31	21.49		
1.4	64QAM	3	0	21.14	20.98	21.29		
1.4	64QAM	3	1	21.19	20.90	21.06		
1.4	64QAM	3	3	21.25	21.07	21.38		
1.4	64QAM	6	0	20.09	19.94	20.03	21.3	2.7



Receiver on / Receiver on+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	21.00	20.91	21.03	22	0
20	QPSK	1	49	20.91	20.85	20.88		
20	QPSK	1	99	20.83	20.79	20.93		
20	QPSK	50	0	20.83	20.82	21.01	22	0
20	QPSK	50	24	20.69	20.76	20.89		
20	QPSK	50	50	20.79	20.71	20.91		
20	QPSK	100	0	20.85	20.88	20.98		
20	16QAM	1	0	21.24	21.16	21.29	22	0
20	16QAM	1	49	21.06	20.97	21.07		
20	16QAM	1	99	21.01	21.10	21.24		
20	16QAM	50	0	20.96	20.87	21.00	22	0
20	16QAM	50	24	20.84	20.81	20.87		
20	16QAM	50	50	20.83	20.76	20.75		
20	16QAM	100	0	20.95	20.93	20.97		
20	64QAM	1	0	21.02	20.96	20.95	22	0
20	64QAM	1	49	20.97	20.95	21.00		
20	64QAM	1	99	20.86	20.84	20.83		
20	64QAM	50	0	20.09	20.07	19.99	21	1
20	64QAM	50	24	19.99	19.99	20.03		
20	64QAM	50	50	19.78	19.94	19.88		
20	64QAM	100	0	19.98	19.95	19.94		



Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.76	20.76	20.71	22	0
15	QPSK	1	37	20.66	20.68	20.63		
15	QPSK	1	74	20.73	20.64	20.70		
15	QPSK	36	0	20.76	20.62	20.87	22	0
15	QPSK	36	20	20.64	20.68	20.76		
15	QPSK	36	39	20.69	20.59	20.81		
15	QPSK	75	0	20.87	20.74	20.78	22	0
15	16QAM	1	0	21.14	21.16	21.17		
15	16QAM	1	37	21.04	20.95	20.92		
15	16QAM	1	74	21.08	20.91	21.08	22	0
15	16QAM	36	0	20.73	20.68	20.87		
15	16QAM	36	20	20.62	20.72	20.73		
15	16QAM	36	39	20.79	20.70	20.61	22	0
15	16QAM	75	0	20.84	20.78	20.85		
15	64QAM	1	0	20.90	20.87	20.90		
15	64QAM	1	37	20.96	20.81	20.99	22	0
15	64QAM	1	74	20.79	20.66	20.82		
15	64QAM	36	0	19.86	19.78	19.84		
15	64QAM	36	20	19.88	19.74	19.82	21	1
15	64QAM	36	39	19.97	19.85	19.95		
15	64QAM	75	0	19.93	19.97	19.96		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.90	20.74	20.85	22	0
10	QPSK	1	25	20.65	20.65	20.68		
10	QPSK	1	49	20.71	20.72	20.71		
10	QPSK	25	0	20.68	20.55	20.70	22	0
10	QPSK	25	12	20.66	20.67	20.69		
10	QPSK	25	25	20.77	20.62	20.79		
10	QPSK	50	0	20.81	20.69	20.64	22	0
10	16QAM	1	0	21.04	20.96	21.10		
10	16QAM	1	25	21.06	21.07	21.20		
10	16QAM	1	49	20.95	20.83	21.05	22	0
10	16QAM	25	0	20.66	20.71	20.79		
10	16QAM	25	12	20.65	20.72	20.83		
10	16QAM	25	25	20.81	20.66	20.84	22	0
10	16QAM	50	0	20.59	20.67	20.79		
10	64QAM	1	0	20.75	20.78	20.85		
10	64QAM	1	25	20.96	20.96	21.00	22	0
10	64QAM	1	49	20.63	20.56	20.80		
10	64QAM	25	0	19.80	19.73	19.98		
10	64QAM	25	12	19.78	19.74	19.84	21	1
10	64QAM	25	25	19.93	19.88	19.79		
10	64QAM	50	0	19.94	19.90	19.95		





Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	20.93	20.76	20.74	22	0
5	QPSK	1	12	20.63	20.53	20.65		
5	QPSK	1	24	20.83	20.61	20.75		
5	QPSK	12	0	20.75	20.63	20.87	22	0
5	QPSK	12	7	20.70	20.59	20.81		
5	QPSK	12	13	20.76	20.69	20.82		
5	QPSK	25	0	20.75	20.68	20.82		
5	16QAM	1	0	21.06	20.97	21.09	22	0
5	16QAM	1	12	20.99	20.82	21.00		
5	16QAM	1	24	20.97	20.91	21.14		
5	16QAM	12	0	20.76	20.66	20.87	22	0
5	16QAM	12	7	20.76	20.62	20.88		
5	16QAM	12	13	20.81	20.65	20.64		
5	16QAM	25	0	20.79	20.74	20.85		
5	64QAM	1	0	20.92	20.72	20.76	22	0
5	64QAM	1	12	21.02	20.99	20.99		
5	64QAM	1	24	20.81	20.76	20.81		
5	64QAM	12	0	19.89	19.88	20.02	21	1
5	64QAM	12	7	19.83	19.77	19.74		
5	64QAM	12	13	19.98	19.95	20.05		
5	64QAM	25	0	19.98	19.94	20.04		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.17	20.97	21.21	22	0
3	QPSK	1	8	20.87	20.90	20.88		
3	QPSK	1	14	21.20	20.99	21.14		
3	QPSK	8	0	20.99	20.80	20.94	22	0
3	QPSK	8	4	20.90	20.71	20.71		
3	QPSK	8	7	20.85	20.66	20.89		
3	QPSK	15	0	20.88	20.75	20.99		
3	16QAM	1	0	20.90	20.84	21.10	22	0
3	16QAM	1	8	21.08	21.11	21.13		
3	16QAM	1	14	20.90	20.99	21.09		
3	16QAM	8	0	20.89	20.88	21.02	22	0
3	16QAM	8	4	20.83	20.77	20.74		
3	16QAM	8	7	20.98	20.95	21.05		
3	16QAM	15	0	20.98	20.94	21.04		
3	64QAM	1	0	21.07	20.96	20.99	22	0
3	64QAM	1	8	20.78	20.60	20.78		
3	64QAM	1	14	20.96	20.86	21.03		
3	64QAM	8	0	19.96	19.86	20.07	21	1
3	64QAM	8	4	19.96	19.82	20.08		
3	64QAM	8	7	19.92	19.85	19.84		
3	64QAM	15	0	19.99	19.94	19.96		



Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.86	20.76	20.87	22	0
1.4	QPSK	1	3	20.84	20.75	20.91		
1.4	QPSK	1	5	20.86	20.65	20.91		
1.4	QPSK	3	0	20.86	20.85	20.79		
1.4	QPSK	3	1	20.67	20.70	20.64		
1.4	QPSK	3	3	20.86	20.70	20.81		
1.4	QPSK	6	0	20.90	20.77	21.01	22	0
1.4	16QAM	1	0	20.82	20.76	21.02	22	0
1.4	16QAM	1	3	20.60	20.63	20.82		
1.4	16QAM	1	5	20.82	20.91	21.01		
1.4	16QAM	3	0	20.91	20.90	21.04		
1.4	16QAM	3	1	20.85	20.79	20.76		
1.4	16QAM	3	3	21.00	20.97	21.07		
1.4	16QAM	6	0	21.00	20.96	21.06	22	0
1.4	64QAM	1	0	21.09	20.98	20.81	22	0
1.4	64QAM	1	3	20.80	20.62	20.80		
1.4	64QAM	1	5	20.98	20.88	21.05		
1.4	64QAM	3	0	20.91	20.90	20.98		
1.4	64QAM	3	1	20.85	20.79	20.76		
1.4	64QAM	3	3	20.91	20.97	20.94		
1.4	64QAM	6	0	19.90	19.96	19.96	21	1



Top antenna+WiFi 2.4G(Receiver off) / Top antenna+WiFi 2.4G(Receiver off)+BT / Top antenna+WiFi 5G(Receiver off) / Top antenna+WiFi 5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.33	22.10	22.36	23	0
20	QPSK	1	49	21.95	21.93	22.14		
20	QPSK	1	99	22.08	22.22	22.32		
20	QPSK	50	0	22.26	22.07	22.31	23	0
20	QPSK	50	24	22.17	22.11	22.26		
20	QPSK	50	50	22.16	22.26	22.35		
20	QPSK	100	0	22.17	22.11	22.28	23	0
20	16QAM	1	0	22.64	22.44	22.64		
20	16QAM	1	49	22.18	22.16	22.38		
20	16QAM	1	99	22.41	22.57	22.55	22	1
20	16QAM	50	0	21.27	21.16	21.27		
20	16QAM	50	24	21.20	21.02	21.20		
20	16QAM	50	50	21.13	21.11	21.25	22	1
20	16QAM	100	0	21.27	21.18	21.27		
20	64QAM	1	0	21.08	21.10	21.01		
20	64QAM	1	49	20.83	20.70	20.93	22	1
20	64QAM	1	99	21.05	20.90	21.02		
20	64QAM	50	0	20.04	19.91	20.03		
20	64QAM	50	24	19.94	19.91	19.98	21	2
20	64QAM	50	50	20.02	19.92	20.04		
20	64QAM	100	0	20.05	19.92	20.01		



Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.18	22.01	22.18	23	0
15	QPSK	1	37	22.04	22.06	22.07		
15	QPSK	1	74	22.01	21.95	22.13		
15	QPSK	36	0	22.01	22.00	22.17	23	0
15	QPSK	36	20	21.95	22.02	22.15		
15	QPSK	36	39	22.09	22.00	22.04		
15	QPSK	75	0	22.22	22.12	22.18	23	0
15	16QAM	1	0	22.51	22.41	22.50		
15	16QAM	1	37	22.20	22.14	22.36		
15	16QAM	1	74	22.37	22.41	22.52	22	1
15	16QAM	36	0	20.98	21.06	21.15		
15	16QAM	36	20	20.88	20.93	21.16		
15	16QAM	36	39	21.01	21.07	21.18	21	2
15	16QAM	75	0	21.10	21.08	21.18		
15	64QAM	1	0	20.92	21.05	20.84		
15	64QAM	1	37	20.81	20.72	20.64	22	1
15	64QAM	1	74	20.94	20.75	20.87		
15	64QAM	36	0	19.81	19.83	19.83		
15	64QAM	36	20	19.94	19.77	19.94	21	2
15	64QAM	36	39	19.78	19.70	19.84		
15	64QAM	75	0	19.90	19.87	19.96		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.23	22.02	22.00	23	0
10	QPSK	1	25	21.84	21.73	22.01		
10	QPSK	1	49	21.97	21.97	22.12		
10	QPSK	25	0	22.00	21.79	22.13	23	0
10	QPSK	25	12	22.00	21.93	22.18		
10	QPSK	25	25	21.99	21.76	22.00		
10	QPSK	50	0	22.09	21.90	22.16	23	0
10	16QAM	1	0	22.28	22.17	22.54		
10	16QAM	1	25	22.38	22.21	22.35		
10	16QAM	1	49	22.17	22.40	22.43	22	1
10	16QAM	25	0	21.13	21.00	21.14		
10	16QAM	25	12	21.08	21.03	21.18		
10	16QAM	25	25	21.05	21.05	21.00	22	1
10	16QAM	50	0	21.12	21.03	21.13		
10	64QAM	1	0	21.11	20.78	20.88		
10	64QAM	1	25	20.79	20.72	20.72	21	2
10	64QAM	1	49	20.93	20.75	20.80		
10	64QAM	25	0	19.78	19.85	19.83		
10	64QAM	25	12	19.96	19.71	19.87	21	2
10	64QAM	25	25	19.84	19.79	19.78		
10	64QAM	50	0	19.94	19.74	19.88		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.22	22.02	22.19	23	0
5	QPSK	1	12	22.03	21.96	21.93		
5	QPSK	1	24	21.97	21.97	22.17		
5	QPSK	12	0	22.07	22.01	22.17	23	0
5	QPSK	12	7	22.03	22.03	22.22		
5	QPSK	12	13	22.21	21.90	22.23		
5	QPSK	25	0	22.14	22.02	22.12	23	0
5	16QAM	1	0	22.30	22.30	22.48		
5	16QAM	1	12	22.15	22.17	22.47		
5	16QAM	1	24	22.22	22.32	22.48	22	1
5	16QAM	12	0	21.07	21.08	21.22		
5	16QAM	12	7	21.03	21.02	21.24		
5	16QAM	12	13	21.13	20.98	21.27	22	1
5	16QAM	25	0	21.10	21.01	21.16		
5	64QAM	1	0	20.86	20.87	20.92		
5	64QAM	1	12	20.78	20.64	20.94	22	1
5	64QAM	1	24	20.99	20.79	20.90		
5	64QAM	12	0	20.06	19.81	19.91		
5	64QAM	12	7	20.05	19.90	20.03	21	2
5	64QAM	12	13	20.02	19.81	20.01		
5	64QAM	25	0	19.96	19.87	19.89		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.47	22.32	22.53	23	0
3	QPSK	1	8	22.19	22.17	22.25		
3	QPSK	1	14	22.37	22.33	22.45		
3	QPSK	8	0	22.28	22.12	22.32	23	0
3	QPSK	8	4	22.25	22.06	22.25		
3	QPSK	8	7	22.25	22.08	22.27		
3	QPSK	15	0	22.27	22.09	22.34	23	0
3	16QAM	1	0	22.37	22.37	22.58		
3	16QAM	1	8	22.22	22.37	22.44		
3	16QAM	1	14	22.46	22.27	22.62	22	1
3	16QAM	8	0	21.16	21.22	21.42		
3	16QAM	8	4	21.14	21.19	21.34		
3	16QAM	8	7	21.29	21.10	21.29	22	1
3	16QAM	15	0	21.24	21.13	21.33		
3	64QAM	1	0	20.94	20.84	20.92		
3	64QAM	1	8	21.09	20.98	20.86	22	1
3	64QAM	1	14	21.15	20.85	21.17		
3	64QAM	8	0	19.99	19.80	19.87		
3	64QAM	8	4	20.00	19.82	19.95	21	2
3	64QAM	8	7	19.99	19.81	19.95		
3	64QAM	15	0	19.79	19.84	19.87		



Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.28	22.08	22.13	23	0
1.4	QPSK	1	3	22.14	21.92	22.25		
1.4	QPSK	1	5	22.14	22.05	22.37		
1.4	QPSK	3	0	21.97	21.87	22.01		
1.4	QPSK	3	1	22.16	21.86	21.99		
1.4	QPSK	3	3	22.29	22.08	22.15		
1.4	QPSK	6	0	21.88	21.70	21.83	23	0
1.4	16QAM	1	0	22.18	22.16	22.19	23	0
1.4	16QAM	1	3	22.23	21.85	22.11		
1.4	16QAM	1	5	22.17	22.03	22.27		
1.4	16QAM	3	0	21.88	21.68	21.93		
1.4	16QAM	3	1	21.70	21.67	21.70		
1.4	16QAM	3	3	21.94	21.90	21.99		
1.4	16QAM	6	0	21.91	21.69	21.88	22	1
1.4	64QAM	1	0	21.05	21.09	20.89	22	1
1.4	64QAM	1	3	20.87	20.96	21.02		
1.4	64QAM	1	5	20.99	21.11	21.13		
1.4	64QAM	3	0	20.98	20.85	21.05		
1.4	64QAM	3	1	21.09	20.87	20.94		
1.4	64QAM	3	3	21.17	20.96	21.26		
1.4	64QAM	6	0	19.80	19.77	19.84	21	2



Top antenna+WiFi 2.4G(Receiver on) / Top antenna+WiFi 2.4G(Receiver on)+BT / Top antenna+WiFi 5G(Receiver on) / Top antenna+WiFi 5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	20.33	20.12	20.12	21	0
20	QPSK	1	49	19.90	19.88	19.96		
20	QPSK	1	99	20.04	20.06	20.11		
20	QPSK	50	0	20.03	20.08	20.22	21	0
20	QPSK	50	24	20.17	19.98	20.09		
20	QPSK	50	50	20.06	20.07	20.14		
20	QPSK	100	0	20.21	20.11	20.11	21	0
20	16QAM	1	0	20.52	20.40	20.52		
20	16QAM	1	49	20.34	20.24	20.25		
20	16QAM	1	99	20.35	20.41	20.32	21	0
20	16QAM	50	0	20.21	20.11	20.24		
20	16QAM	50	24	20.04	20.02	20.15		
20	16QAM	50	50	20.08	20.10	20.14	21	0
20	16QAM	100	0	20.09	20.15	20.25		
20	64QAM	1	0	20.28	20.30	20.21		
20	64QAM	1	49	20.03	19.90	20.13	21	0
20	64QAM	1	99	20.25	20.10	20.22		
20	64QAM	50	0	20.04	19.91	20.03		
20	64QAM	50	24	19.94	19.91	19.98	21	0
20	64QAM	50	50	20.02	19.92	20.04		
20	64QAM	100	0	20.05	19.92	20.01		





Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.99	19.85	19.91	21	0
15	QPSK	1	37	19.77	19.72	19.79		
15	QPSK	1	74	19.92	19.93	19.94		
15	QPSK	36	0	19.97	19.84	20.12	21	0
15	QPSK	36	20	19.90	19.78	19.93		
15	QPSK	36	39	20.02	19.90	19.94		
15	QPSK	75	0	20.11	20.01	20.06	21	0
15	16QAM	1	0	20.34	20.44	20.42		
15	16QAM	1	37	20.30	20.27	20.33		
15	16QAM	1	74	20.31	20.19	20.32	21	0
15	16QAM	36	0	19.94	20.00	19.98		
15	16QAM	36	20	19.85	19.88	20.04		
15	16QAM	36	39	19.94	19.86	20.01	21	0
15	16QAM	75	0	20.08	19.90	20.11		
15	64QAM	1	0	20.12	20.25	20.04		
15	64QAM	1	37	20.01	19.92	19.84	21	0
15	64QAM	1	74	20.14	19.95	20.07		
15	64QAM	36	0	19.81	19.83	19.83		
15	64QAM	36	20	19.94	19.77	19.94	21	0
15	64QAM	36	39	19.78	19.70	19.84		
15	64QAM	75	0	19.90	19.87	19.96		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.01	20.02	19.91	21	0
10	QPSK	1	25	19.95	19.93	19.99		
10	QPSK	1	49	19.98	19.95	19.95		
10	QPSK	25	0	19.93	19.81	19.84	21	0
10	QPSK	25	12	19.95	19.79	19.95		
10	QPSK	25	25	20.06	19.90	19.90		
10	QPSK	50	0	20.10	19.95	20.00	21	0
10	16QAM	1	0	20.36	20.17	20.28		
10	16QAM	1	25	20.29	20.33	20.40		
10	16QAM	1	49	20.37	20.24	20.44	21	0
10	16QAM	25	0	19.94	19.78	20.04		
10	16QAM	25	12	19.91	19.93	20.08		
10	16QAM	25	25	19.97	19.87	19.98	21	0
10	16QAM	50	0	20.04	19.93	20.06		
10	64QAM	1	0	20.31	19.98	20.08		
10	64QAM	1	25	19.99	19.92	19.92	21	0
10	64QAM	1	49	20.13	19.95	20.00		
10	64QAM	25	0	19.78	19.85	19.83		
10	64QAM	25	12	19.96	19.71	19.87	21	0
10	64QAM	25	25	19.84	19.79	19.78		
10	64QAM	50	0	19.94	19.74	19.88		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	20.02	20.07	19.96	21	0
5	QPSK	1	12	19.74	19.76	19.87		
5	QPSK	1	24	20.10	20.06	20.02		
5	QPSK	12	0	19.99	19.83	20.03	21	0
5	QPSK	12	7	19.97	19.84	20.08		
5	QPSK	12	13	20.07	19.95	20.05		
5	QPSK	25	0	20.06	19.98	20.09	21	0
5	16QAM	1	0	20.25	20.26	20.20		
5	16QAM	1	12	20.28	20.29	20.29		
5	16QAM	1	24	20.30	20.21	20.27	21	0
5	16QAM	12	0	20.04	20.06	20.12		
5	16QAM	12	7	20.00	19.99	20.05		
5	16QAM	12	13	19.94	19.85	20.14	21	0
5	16QAM	25	0	19.97	19.89	20.12		
5	64QAM	1	0	20.06	20.07	20.12		
5	64QAM	1	12	19.98	19.84	20.14	21	0
5	64QAM	1	24	20.19	19.99	20.10		
5	64QAM	12	0	20.06	19.81	19.91		
5	64QAM	12	7	20.05	19.90	20.03	21	0
5	64QAM	12	13	20.02	19.81	20.01		
5	64QAM	25	0	19.96	19.87	19.89		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	20.04	20.08	20.00	21	0
3	QPSK	1	8	20.07	20.09	20.14		
3	QPSK	1	14	20.20	20.04	20.09		
3	QPSK	8	0	20.14	20.01	20.05	21	0
3	QPSK	8	4	20.15	20.02	20.06		
3	QPSK	8	7	20.12	20.00	20.08		
3	QPSK	15	0	20.15	19.98	20.10	21	0
3	16QAM	1	0	20.41	20.13	20.35		
3	16QAM	1	8	20.31	20.34	20.30		
3	16QAM	1	14	20.37	20.39	20.47	21	0
3	16QAM	8	0	20.17	20.04	20.16		
3	16QAM	8	4	20.17	20.06	20.03		
3	16QAM	8	7	20.15	19.96	20.11	21	0
3	16QAM	15	0	20.10	19.99	19.96		
3	64QAM	1	0	20.14	20.04	20.12		
3	64QAM	1	8	20.29	20.18	20.06	21	0
3	64QAM	1	14	20.35	20.05	20.37		
3	64QAM	8	0	19.99	19.80	19.87		
3	64QAM	8	4	20.00	19.82	19.95	21	0
3	64QAM	8	7	19.99	19.81	19.95		
3	64QAM	15	0	19.79	19.84	19.87		



Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	20.11	20.03	20.14	21	0
1.4	QPSK	1	3	20.09	19.99	20.16		
1.4	QPSK	1	5	20.08	19.99	20.12		
1.4	QPSK	3	0	19.98	19.89	19.91		
1.4	QPSK	3	1	19.96	20.01	20.15		
1.4	QPSK	3	3	19.96	20.01	20.04		
1.4	QPSK	6	0	20.18	20.00	20.13	21	0
1.4	16QAM	1	0	20.48	20.46	20.49	21	0
1.4	16QAM	1	3	20.43	20.15	20.41		
1.4	16QAM	1	5	20.47	20.33	20.50		
1.4	16QAM	3	0	20.18	19.98	20.23		
1.4	16QAM	3	1	20.00	19.97	20.00		
1.4	16QAM	3	3	20.24	20.20	20.29		
1.4	16QAM	6	0	20.21	19.99	20.18	21	0
1.4	64QAM	1	0	20.45	20.51	20.39	21	0
1.4	64QAM	1	3	20.37	20.46	20.51		
1.4	64QAM	1	5	20.49	20.51	20.43		
1.4	64QAM	3	0	20.28	20.15	20.35		
1.4	64QAM	3	1	20.39	20.17	20.24		
1.4	64QAM	3	3	20.47	20.26	20.51		
1.4	64QAM	6	0	19.83	19.98	19.94	21	0



Top antenna+WiFi 2.4G+5G(Receiver off) / Top antenna+WiFi 2.4G+5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			18700	18900	19100			
Frequency (MHz)			1860	1880	1900			
20	QPSK	1	0	21.11	21.09	21.22	22	0
20	QPSK	1	49	20.88	20.87	21.00		
20	QPSK	1	99	21.05	21.08	21.20		
20	QPSK	50	0	21.00	21.05	21.24	22	0
20	QPSK	50	24	21.16	21.00	21.11		
20	QPSK	50	50	21.17	21.03	21.20		
20	QPSK	100	0	21.19	21.09	21.23	22	0
20	16QAM	1	0	21.34	21.44	21.54		
20	16QAM	1	49	21.17	21.08	21.29		
20	16QAM	1	99	21.28	21.49	21.46	22	0
20	16QAM	50	0	21.17	21.07	21.21		
20	16QAM	50	24	21.02	20.97	21.18		
20	16QAM	50	50	21.21	20.91	21.22	22	0
20	16QAM	100	0	21.21	21.10	21.23		
20	64QAM	1	0	20.76	21.02	20.96		
20	64QAM	1	49	20.56	20.72	20.64	22	0
20	64QAM	1	99	20.66	20.94	20.97		
20	64QAM	50	0	19.93	20.00	20.06		
20	64QAM	50	24	19.87	19.96	20.03	21	1
20	64QAM	50	50	19.92	19.89	20.14		
20	64QAM	100	0	19.81	19.94	20.08		



Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	20.97	20.95	20.95	22	0
15	QPSK	1	37	20.81	20.85	20.88		
15	QPSK	1	74	20.90	20.83	21.11		
15	QPSK	36	0	20.97	20.78	21.08	22	0
15	QPSK	36	20	20.88	20.90	21.06		
15	QPSK	36	39	20.88	20.85	21.12		
15	QPSK	75	0	21.03	20.87	21.05	22	0
15	16QAM	1	0	21.35	21.41	21.44		
15	16QAM	1	37	21.22	21.36	21.31		
15	16QAM	1	74	21.37	21.29	21.45	22	0
15	16QAM	36	0	20.92	20.95	21.10		
15	16QAM	36	20	20.87	20.94	21.07		
15	16QAM	36	39	20.98	20.88	21.16	22	0
15	16QAM	75	0	21.07	20.91	21.11		
15	64QAM	1	0	21.03	20.89	21.06		
15	64QAM	1	37	20.67	20.69	20.60	22	0
15	64QAM	1	74	20.95	20.77	20.85		
15	64QAM	36	0	20.02	19.84	19.95		
15	64QAM	36	20	19.93	19.77	19.96	21	1
15	64QAM	36	39	19.81	19.86	19.98		
15	64QAM	75	0	19.96	19.82	19.98		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	20.93	20.92	20.99	22	0
10	QPSK	1	25	20.97	20.77	21.00		
10	QPSK	1	49	20.93	20.82	21.08		
10	QPSK	25	0	20.94	20.78	21.05	22	0
10	QPSK	25	12	20.92	20.78	21.08		
10	QPSK	25	25	20.99	20.82	21.08		
10	QPSK	50	0	21.07	20.95	21.09	22	0
10	16QAM	1	0	21.26	21.18	21.20		
10	16QAM	1	25	21.21	21.02	21.17		
10	16QAM	1	49	21.29	21.14	21.38	22	0
10	16QAM	25	0	20.91	20.77	21.08		
10	16QAM	25	12	20.93	20.98	21.12		
10	16QAM	25	25	21.02	20.87	21.14	22	0
10	16QAM	50	0	21.07	20.87	21.02		
10	64QAM	1	0	20.95	20.67	20.84		
10	64QAM	1	25	20.76	20.76	20.73	22	0
10	64QAM	1	49	20.76	20.76	20.90		
10	64QAM	25	0	19.73	19.81	19.91		
10	64QAM	25	12	19.95	19.82	19.75	21	1
10	64QAM	25	25	19.93	19.82	19.90		
10	64QAM	50	0	19.90	19.85	19.93		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	21.13	20.99	20.98	22	0
5	QPSK	1	12	20.96	20.78	20.85		
5	QPSK	1	24	21.02	20.85	21.11		
5	QPSK	12	0	21.09	20.93	21.03	22	0
5	QPSK	12	7	21.08	20.86	21.08		
5	QPSK	12	13	21.04	20.98	21.12		
5	QPSK	25	0	21.04	20.97	21.09		
5	16QAM	1	0	21.16	21.24	21.24	22	0
5	16QAM	1	12	21.18	20.99	21.24		
5	16QAM	1	24	21.13	21.06	21.40		
5	16QAM	12	0	21.03	21.00	21.22	22	0
5	16QAM	12	7	20.99	20.98	21.20		
5	16QAM	12	13	21.08	21.00	21.03		
5	16QAM	25	0	21.08	20.99	21.17		
5	64QAM	1	0	21.00	20.75	20.94	22	0
5	64QAM	1	12	20.81	20.55	20.69		
5	64QAM	1	24	20.94	20.75	21.04		
5	64QAM	12	0	20.06	19.88	19.97	21	1
5	64QAM	12	7	20.03	19.88	20.07		
5	64QAM	12	13	19.87	19.86	19.93		
5	64QAM	25	0	19.98	19.79	19.98		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	21.44	21.26	21.36	22	0
3	QPSK	1	8	21.14	21.15	21.14		
3	QPSK	1	14	21.36	21.27	21.46		
3	QPSK	8	0	21.28	21.06	21.15	22	0
3	QPSK	8	4	21.06	21.03	21.30		
3	QPSK	8	7	21.21	21.14	21.25		
3	QPSK	15	0	21.23	21.16	21.29		
3	16QAM	1	0	21.51	21.49	21.52	22	0
3	16QAM	1	8	21.23	21.46	21.38		
3	16QAM	1	14	21.49	21.51	21.49		
3	16QAM	8	0	21.19	21.14	21.37	22	0
3	16QAM	8	4	21.23	21.08	21.34		
3	16QAM	8	7	21.09	21.20	21.27		
3	16QAM	15	0	21.14	21.11	21.28		
3	64QAM	1	0	21.12	21.28	21.31	22	0
3	64QAM	1	8	20.98	21.13	21.01		
3	64QAM	1	14	21.18	21.12	21.30		
3	64QAM	8	0	20.10	19.97	20.19	21	1
3	64QAM	8	4	20.00	19.87	19.97		
3	64QAM	8	7	20.04	20.02	20.05		
3	64QAM	15	0	20.04	19.91	20.10		



Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	21.12	21.02	21.14	22	0
1.4	QPSK	1	3	21.11	20.99	21.12		
1.4	QPSK	1	5	21.11	20.99	21.26		
1.4	QPSK	3	0	21.13	21.01	21.22		
1.4	QPSK	3	1	21.05	21.01	21.07		
1.4	QPSK	3	3	21.13	20.96	21.26		
1.4	QPSK	6	0	21.06	21.01	21.21	22	0
1.4	16QAM	1	0	21.43	21.40	21.40	22	0
1.4	16QAM	1	3	21.49	21.42	21.49		
1.4	16QAM	1	5	21.50	21.25	21.42		
1.4	16QAM	3	0	21.20	20.96	21.04		
1.4	16QAM	3	1	21.21	20.96	21.19		
1.4	16QAM	3	3	21.15	21.00	21.36		
1.4	16QAM	6	0	21.18	21.07	21.03	22	0
1.4	64QAM	1	0	21.26	20.82	21.22	22	0
1.4	64QAM	1	3	20.98	20.76	21.03		
1.4	64QAM	1	5	21.08	20.80	21.12		
1.4	64QAM	3	0	20.95	20.68	20.85		
1.4	64QAM	3	1	20.84	20.73	20.71		
1.4	64QAM	3	3	20.96	20.73	21.01		
1.4	64QAM	6	0	20.08	19.77	20.01	21	1





Top antenna+WiFi 2.4G+5G(Receiver on) / Top antenna+WiFi 2.4G+5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			18700	18900	19100			
Frequency (MHz)			1860	1880	1900			
20	QPSK	1	0	19.35	19.14	19.22	20	0
20	QPSK	1	49	19.04	18.86	19.11		
20	QPSK	1	99	19.17	19.18	19.14		
20	QPSK	50	0	19.07	18.96	19.24	20	0
20	QPSK	50	24	18.97	19.12	19.15		
20	QPSK	50	50	19.23	19.11	19.22		
20	QPSK	100	0	19.23	19.14	19.27	20	0
20	16QAM	1	0	19.49	19.43	19.51		
20	16QAM	1	49	19.39	19.23	19.40		
20	16QAM	1	99	19.41	19.44	19.41	20	0
20	16QAM	50	0	19.24	19.05	19.19		
20	16QAM	50	24	19.09	19.07	19.17		
20	16QAM	50	50	19.17	19.07	19.16	20	0
20	16QAM	100	0	19.19	19.15	19.20		
20	64QAM	1	0	19.52	19.54	19.59		
20	64QAM	1	49	19.39	19.43	19.47	20	0
20	64QAM	1	99	19.59	19.58	19.66		
20	64QAM	50	0	19.36	19.32	19.46		
20	64QAM	50	24	19.31	19.32	19.35	20	0
20	64QAM	50	50	19.36	19.19	19.27		
20	64QAM	100	0	19.29	19.27	19.31		



Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	19.03	18.93	18.96	20	0
15	QPSK	1	37	18.82	18.75	18.85		
15	QPSK	1	74	18.94	19.01	18.99		
15	QPSK	36	0	19.03	18.92	18.94	20	0
15	QPSK	36	20	18.97	18.85	19.05		
15	QPSK	36	39	19.04	18.95	19.07		
15	QPSK	75	0	19.18	18.98	19.05	20	0
15	16QAM	1	0	19.46	19.31	19.41		
15	16QAM	1	37	19.38	19.24	19.23		
15	16QAM	1	74	19.22	19.39	19.34	20	0
15	16QAM	36	0	18.99	18.87	19.10		
15	16QAM	36	20	18.91	19.01	19.04		
15	16QAM	36	39	18.99	18.93	19.07	20	0
15	16QAM	75	0	19.20	19.10	19.05		
15	64QAM	1	0	19.56	19.56	19.50		
15	64QAM	1	37	19.41	19.48	19.32	20	0
15	64QAM	1	74	19.55	19.44	19.37		
15	64QAM	36	0	19.18	19.22	19.31		
15	64QAM	36	20	19.12	19.09	19.11	20	0
15	64QAM	36	39	19.13	19.18	19.20		
15	64QAM	75	0	19.30	19.12	19.11		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	19.04	18.92	18.99	20	0
10	QPSK	1	25	19.01	18.96	18.97		
10	QPSK	1	49	19.08	19.05	19.04		
10	QPSK	25	0	18.95	18.85	18.93	20	0
10	QPSK	25	12	18.96	18.83	19.04		
10	QPSK	25	25	19.02	18.88	19.03		
10	QPSK	50	0	19.08	18.89	19.06	20	0
10	16QAM	1	0	19.32	19.04	19.38		
10	16QAM	1	25	19.34	19.14	19.22		
10	16QAM	1	49	19.32	19.05	19.35	20	0
10	16QAM	25	0	18.95	19.04	19.03		
10	16QAM	25	12	18.98	18.90	19.02		
10	16QAM	25	25	19.06	19.01	19.07	20	0
10	16QAM	50	0	19.09	19.02	19.00		
10	64QAM	1	0	19.55	19.45	19.51		
10	64QAM	1	25	19.49	19.53	19.40	20	0
10	64QAM	1	49	19.40	19.51	19.39		
10	64QAM	25	0	19.09	19.18	19.13		
10	64QAM	25	12	19.09	19.07	19.14	20	0
10	64QAM	25	25	19.12	19.11	19.14		
10	64QAM	50	0	19.31	19.16	19.24		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	19.08	19.11	19.13	20	0
5	QPSK	1	12	18.87	18.78	18.97		
5	QPSK	1	24	19.10	19.07	19.09		
5	QPSK	12	0	19.20	19.03	19.05	20	0
5	QPSK	12	7	19.15	19.05	19.14		
5	QPSK	12	13	19.17	18.93	19.00		
5	QPSK	25	0	19.13	18.93	19.06		
5	16QAM	1	0	19.29	19.23	19.29	20	0
5	16QAM	1	12	19.26	19.18	19.31		
5	16QAM	1	24	19.19	19.18	19.36		
5	16QAM	12	0	19.08	19.02	19.22	20	0
5	16QAM	12	7	19.04	18.93	19.18		
5	16QAM	12	13	19.00	19.07	19.07		
5	16QAM	25	0	19.02	19.06	19.13		
5	64QAM	1	0	19.53	19.45	19.55	20	0
5	64QAM	1	12	19.33	19.36	19.40		
5	64QAM	1	24	19.58	19.42	19.55		
5	64QAM	12	0	19.39	19.22	19.31	20	0
5	64QAM	12	7	19.33	19.12	19.27		
5	64QAM	12	13	19.26	19.18	19.29		
5	64QAM	25	0	19.32	19.15	19.21		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	19.54	19.40	19.38	20	0
3	QPSK	1	8	19.20	19.23	19.25		
3	QPSK	1	14	19.37	19.40	19.47		
3	QPSK	8	0	19.22	18.99	19.12	20	0
3	QPSK	8	4	19.18	18.96	19.20		
3	QPSK	8	7	19.29	19.14	19.35		
3	QPSK	15	0	19.29	19.16	19.28		
3	16QAM	1	0	19.52	19.56	19.53	20	0
3	16QAM	1	8	19.28	19.34	19.51		
3	16QAM	1	14	19.55	19.65	19.61		
3	16QAM	8	0	19.22	19.19	19.29	20	0
3	16QAM	8	4	19.02	18.96	19.20		
3	16QAM	8	7	19.34	19.10	19.31		
3	16QAM	15	0	19.06	19.11	19.23		
3	64QAM	1	0	19.53	19.52	19.59	20	0
3	64QAM	1	8	19.42	19.41	19.43		
3	64QAM	1	14	19.52	19.34	19.41		
3	64QAM	8	0	19.46	19.28	19.43	20	0
3	64QAM	8	4	19.40	19.34	19.46		
3	64QAM	8	7	19.43	19.36	19.40		
3	64QAM	15	0	19.38	19.36	19.36		



Channel				18607	18900	19193	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	19.20	18.97	19.11	20	0
1.4	QPSK	1	3	19.14	18.93	19.10		
1.4	QPSK	1	5	19.12	19.07	19.10		
1.4	QPSK	3	0	19.06	18.97	19.11		
1.4	QPSK	3	1	19.03	19.13	19.08		
1.4	QPSK	3	3	19.23	19.09	19.11		
1.4	QPSK	6	0	19.01	19.11	19.08	20	0
1.4	16QAM	1	0	19.46	19.55	19.57	20	0
1.4	16QAM	1	3	19.34	19.26	19.50		
1.4	16QAM	1	5	19.50	19.38	19.53		
1.4	16QAM	3	0	19.15	18.99	19.18		
1.4	16QAM	3	1	19.05	18.86	19.00		
1.4	16QAM	3	3	19.28	19.11	19.12		
1.4	16QAM	6	0	19.13	18.98	19.13	20	0
1.4	64QAM	1	0	19.63	19.56	19.55	20	0
1.4	64QAM	1	3	19.64	19.59	19.56		
1.4	64QAM	1	5	19.62	19.53	19.61		
1.4	64QAM	3	0	19.45	19.31	19.35		
1.4	64QAM	3	1	19.33	19.14	19.51		
1.4	64QAM	3	3	19.41	19.37	19.38		
1.4	64QAM	6	0	19.28	19.35	19.34	20	0



<LTE Band 4>

Full Power / Receiver off / Receiver off+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20050	20175	20300			
Frequency (MHz)			1720	1732.5	1745			
20	QPSK	1	0	23.39	23.25	23.17	24	0
20	QPSK	1	49	23.05	22.97	23.11		
20	QPSK	1	99	23.30	23.21	23.13		
20	QPSK	50	0	22.31	22.25	22.35	23	1
20	QPSK	50	24	22.22	22.25	22.23		
20	QPSK	50	50	22.30	22.24	22.21		
20	QPSK	100	0	22.27	22.30	22.33	23.3	0.7
20	16QAM	1	0	22.53	22.52	22.40		
20	16QAM	1	49	22.09	22.20	22.18		
20	16QAM	1	99	22.52	22.47	22.39	22.3	1.7
20	16QAM	50	0	21.23	21.24	21.26		
20	16QAM	50	24	21.15	21.18	21.18		
20	16QAM	50	50	21.28	21.25	21.19	22.3	1.7
20	16QAM	100	0	21.22	21.22	21.21		
20	64QAM	1	0	21.07	21.33	20.94		
20	64QAM	1	49	20.89	20.93	20.95	22.3	1.7
20	64QAM	1	99	21.17	21.14	21.10		
20	64QAM	50	0	19.86	19.96	19.84		
20	64QAM	50	24	19.82	19.85	19.85	21.3	2.7
20	64QAM	50	50	19.86	20.02	19.90		
20	64QAM	100	0	19.87	19.94	19.74		



Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	23.25	23.18	23.17	24	0
15	QPSK	1	37	22.98	23.10	23.14		
15	QPSK	1	74	23.18	23.17	23.04		
15	QPSK	36	0	22.28	22.26	22.31	23	1
15	QPSK	36	20	22.21	22.27	22.24		
15	QPSK	36	39	22.29	22.18	22.21		
15	QPSK	75	0	22.26	22.28	22.24	23.3	0.7
15	16QAM	1	0	22.50	22.40	22.52		
15	16QAM	1	37	22.29	22.25	22.32		
15	16QAM	1	74	22.47	22.41	22.47	22.3	1.7
15	16QAM	36	0	21.22	21.24	21.23		
15	16QAM	36	20	21.20	21.05	21.09		
15	16QAM	36	39	21.22	21.19	21.18	21.3	2.7
15	16QAM	75	0	21.18	21.21	21.19		
15	64QAM	1	0	21.02	21.03	20.90		
15	64QAM	1	37	20.90	20.72	20.98	22.3	1.7
15	64QAM	1	74	21.04	20.85	21.03		
15	64QAM	36	0	19.75	19.95	19.73		
15	64QAM	36	20	19.81	19.89	19.85	21.3	2.7
15	64QAM	36	39	20.01	20.00	19.83		
15	64QAM	75	0	19.81	19.88	19.82		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	23.26	23.16	23.24	24	0
10	QPSK	1	25	23.14	23.30	23.14		
10	QPSK	1	49	23.15	23.16	23.11		
10	QPSK	25	0	22.26	22.16	22.26	23	1
10	QPSK	25	12	22.22	22.26	22.15		
10	QPSK	25	25	22.27	22.25	22.23		
10	QPSK	50	0	22.22	22.25	22.23	23.3	0.7
10	16QAM	1	0	22.43	22.48	22.55		
10	16QAM	1	25	22.35	22.54	22.25		
10	16QAM	1	49	22.39	22.35	22.29	22.3	1.7
10	16QAM	25	0	21.21	21.05	21.23		
10	16QAM	25	12	21.17	21.08	21.12		
10	16QAM	25	25	21.20	21.16	21.16	22.3	1.7
10	16QAM	50	0	21.16	21.21	21.16		
10	64QAM	1	0	21.02	21.15	20.97		
10	64QAM	1	25	20.89	21.09	21.04	22.3	1.7
10	64QAM	1	49	20.82	20.96	20.95		
10	64QAM	25	0	19.85	19.86	19.87		
10	64QAM	25	12	19.73	19.87	19.81	21.3	2.7
10	64QAM	25	25	19.75	19.96	19.81		
10	64QAM	50	0	19.67	19.84	19.83		



Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	23.18	23.09	23.13	24	0
5	QPSK	1	12	23.03	23.08	23.07		
5	QPSK	1	24	23.01	23.16	23.15		
5	QPSK	12	0	22.04	22.11	22.22	23	1
5	QPSK	12	7	22.22	22.10	22.24		
5	QPSK	12	13	22.33	22.28	22.24		
5	QPSK	25	0	22.20	22.11	22.24	23.3	0.7
5	16QAM	1	0	22.40	22.57	22.35		
5	16QAM	1	12	22.40	22.23	22.41		
5	16QAM	1	24	22.37	22.35	22.20	22.3	1.7
5	16QAM	12	0	21.20	21.09	21.19		
5	16QAM	12	7	21.21	21.09	21.24		
5	16QAM	12	13	21.28	21.33	21.23	21.3	2.7
5	16QAM	25	0	21.17	21.22	21.18		
5	16QAM	12	0	19.91	19.93	19.93		
5	64QAM	1	0	20.87	21.06	21.00	22.3	1.7
5	64QAM	1	12	21.02	20.93	21.05		
5	64QAM	1	24	20.82	21.07	20.90		
5	64QAM	12	0	19.87	19.90	19.95	21.3	2.7
5	64QAM	12	7	19.87	19.90	19.95		
5	64QAM	12	13	19.81	20.02	19.90		
5	64QAM	25	0	19.85	19.86	19.81		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	23.05	23.20	23.24	24	0
3	QPSK	1	8	23.16	23.20	23.33		
3	QPSK	1	14	23.01	23.18	23.13		
3	QPSK	8	0	21.99	22.23	22.22	23	1
3	QPSK	8	4	22.09	22.29	22.25		
3	QPSK	8	7	22.07	22.23	22.27		
3	QPSK	15	0	22.11	22.26	22.23	23.3	0.7
3	16QAM	1	0	22.29	22.24	22.36		
3	16QAM	1	8	22.33	22.55	22.54		
3	16QAM	1	14	22.27	22.33	22.29	22.3	1.7
3	16QAM	8	0	21.00	21.02	21.17		
3	16QAM	8	4	21.03	21.00	21.22		
3	16QAM	8	7	20.98	21.12	21.23	21.3	2.7
3	16QAM	15	0	21.03	21.20	21.18		
3	16QAM	8	0	19.79	19.85	19.89		
3	64QAM	1	0	20.97	20.85	20.94	22.3	1.7
3	64QAM	1	8	20.86	21.06	21.15		
3	64QAM	1	14	21.07	20.99	21.09		
3	64QAM	8	0	19.79	19.85	19.89	21.3	2.7
3	64QAM	8	4	19.83	19.73	19.98		
3	64QAM	8	7	19.79	19.97	19.88		
3	64QAM	15	0	19.79	19.90	19.88		





Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	23.02	23.19	23.34	24	0
1.4	QPSK	1	3	23.05	23.20	23.20		
1.4	QPSK	1	5	23.01	23.13	23.27		
1.4	QPSK	3	0	23.07	23.22	23.04		
1.4	QPSK	3	1	23.09	23.26	23.05		
1.4	QPSK	3	3	23.02	23.18	23.28		
1.4	QPSK	6	0	22.06	22.34	22.26	23	1
1.4	16QAM	1	0	22.25	22.47	22.51	23.3	0.7
1.4	16QAM	1	3	22.23	22.49	22.46		
1.4	16QAM	1	5	22.34	22.36	22.54		
1.4	16QAM	3	0	22.04	22.15	22.18		
1.4	16QAM	3	1	22.09	22.03	22.23		
1.4	16QAM	3	3	22.09	22.37	22.09		
1.4	16QAM	6	0	21.04	21.02	21.12	22.3	1.7
1.4	64QAM	1	0	20.90	20.73	20.83	22.3	1.7
1.4	64QAM	1	3	20.79	20.96	20.90		
1.4	64QAM	1	5	20.84	21.11	20.75		
1.4	64QAM	3	0	20.79	20.79	20.74		
1.4	64QAM	3	1	20.84	20.72	20.73		
1.4	64QAM	3	3	20.81	20.77	20.71		
1.4	64QAM	6	0	19.71	19.71	19.70	21.3	2.7



Receiver on / Receiver on+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20050	20175	20300			
Frequency (MHz)			1720	1732.5	1745			
20	QPSK	1	0	19.89	19.65	19.60	20.5	0
20	QPSK	1	49	19.47	19.57	19.42		
20	QPSK	1	99	19.61	19.62	19.56		
20	QPSK	50	0	19.64	19.79	19.66	20.5	0
20	QPSK	50	24	19.55	19.72	19.59		
20	QPSK	50	50	19.69	19.59	19.45		
20	QPSK	100	0	19.68	19.77	19.65	20.5	0
20	16QAM	1	0	19.60	19.72	19.56		
20	16QAM	1	49	19.41	19.41	19.34		
20	16QAM	1	99	19.64	19.51	19.40	20.5	0
20	16QAM	50	0	19.56	19.60	19.59		
20	16QAM	50	24	19.51	19.50	19.49		
20	16QAM	50	50	19.50	19.44	19.57	20.5	0
20	16QAM	100	0	19.56	19.58	19.54		
20	64QAM	1	0	19.83	19.83	19.82		
20	64QAM	1	49	19.66	19.63	19.60	20.5	0
20	64QAM	1	99	19.88	19.72	19.69		
20	64QAM	50	0	19.56	19.62	19.59		
20	64QAM	50	24	19.51	19.51	19.48	20.5	0
20	64QAM	50	50	19.50	19.46	19.57		
20	64QAM	100	0	19.55	19.57	19.52		



Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	19.66	19.62	19.67	20.5	0
15	QPSK	1	37	19.55	19.61	19.75		
15	QPSK	1	74	19.57	19.53	19.53		
15	QPSK	36	0	19.65	19.70	19.66	20.5	0
15	QPSK	36	20	19.65	19.74	19.59		
15	QPSK	36	39	19.69	19.58	19.44		
15	QPSK	75	0	19.60	19.74	19.62	20.5	0
15	16QAM	1	0	19.47	19.73	19.56		
15	16QAM	1	37	19.37	19.49	19.42		
15	16QAM	1	74	19.54	19.45	19.38	20.5	0
15	16QAM	36	0	19.57	19.59	19.56		
15	16QAM	36	20	19.51	19.53	19.58		
15	16QAM	36	39	19.51	19.39	19.42	20.5	0
15	16QAM	75	0	19.53	19.56	19.51		
15	64QAM	1	0	19.69	19.87	19.67		
15	64QAM	1	37	19.44	19.53	19.42	20.5	0
15	64QAM	1	74	19.70	19.57	19.55		
15	64QAM	36	0	19.59	19.60	19.56		
15	64QAM	36	20	19.54	19.52	19.59	20.5	0
15	64QAM	36	39	19.43	19.41	19.44		
15	64QAM	75	0	19.53	19.57	19.51		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	19.72	19.63	19.51	20.5	0
10	QPSK	1	25	19.57	19.54	19.45		
10	QPSK	1	49	19.52	19.52	19.50		
10	QPSK	25	0	19.60	19.74	19.63	20.5	0
10	QPSK	25	12	19.58	19.67	19.58		
10	QPSK	25	25	19.51	19.69	19.47		
10	QPSK	50	0	19.59	19.65	19.60	20.5	0
10	16QAM	1	0	19.43	19.68	19.55		
10	16QAM	1	25	19.40	19.56	19.30		
10	16QAM	1	49	19.41	19.36	19.40	20.5	0
10	16QAM	25	0	19.50	19.54	19.53		
10	16QAM	25	12	19.52	19.55	19.57		
10	16QAM	25	25	19.52	19.50	19.46	20.5	0
10	16QAM	50	0	19.49	19.52	19.58		
10	64QAM	1	0	19.69	19.88	19.72		
10	64QAM	1	25	19.52	19.72	19.55	20.5	0
10	64QAM	1	49	19.68	19.58	19.61		
10	64QAM	25	0	19.62	19.53	19.54		
10	64QAM	25	12	19.52	19.57	19.56	20.5	0
10	64QAM	25	25	19.51	19.51	19.45		
10	64QAM	50	0	19.51	19.54	19.58		



Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	19.60	19.62	19.47	20.5	0
5	QPSK	1	12	19.45	19.53	19.43		
5	QPSK	1	24	19.61	19.53	19.56		
5	QPSK	12	0	19.57	19.75	19.61	20.5	0
5	QPSK	12	7	19.59	19.76	19.59		
5	QPSK	12	13	19.55	19.75	19.67		
5	QPSK	25	0	19.56	19.65	19.56	20.5	0
5	16QAM	1	0	19.47	19.58	19.48		
5	16QAM	1	12	19.37	19.46	19.36		
5	16QAM	1	24	19.43	19.56	19.41	20.5	0
5	16QAM	12	0	19.70	19.60	19.64		
5	16QAM	12	7	19.59	19.60	19.73		
5	16QAM	12	13	19.69	19.53	19.54	20.5	0
5	16QAM	25	0	19.55	19.54	19.54		
5	64QAM	1	0	19.63	19.77	19.66		
5	64QAM	1	12	19.43	19.53	19.51	20.5	0
5	64QAM	1	24	19.62	19.68	19.51		
5	64QAM	12	0	19.70	19.59	19.63		
5	64QAM	12	7	19.56	19.57	19.59	20.5	0
5	64QAM	12	13	19.61	19.50	19.54		
5	64QAM	25	0	19.68	19.54	19.54		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	19.66	19.56	19.68	20.5	0
3	QPSK	1	8	19.67	19.51	19.68		
3	QPSK	1	14	19.54	19.57	19.50		
3	QPSK	8	0	19.56	19.65	19.60	20.5	0
3	QPSK	8	4	19.52	19.63	19.68		
3	QPSK	8	7	19.62	19.69	19.49		
3	QPSK	15	0	19.59	19.74	19.55	20.5	0
3	16QAM	1	0	19.40	19.67	19.52		
3	16QAM	1	8	19.38	19.68	19.62		
3	16QAM	1	14	19.47	19.61	19.38	20.5	0
3	16QAM	8	0	19.56	19.51	19.68		
3	16QAM	8	4	19.63	19.56	19.58		
3	16QAM	8	7	19.57	19.67	19.66	20.5	0
3	16QAM	15	0	19.55	19.53	19.53		
3	64QAM	1	0	19.61	19.74	19.71		
3	64QAM	1	8	19.63	19.85	19.67	20.5	0
3	64QAM	1	14	19.62	19.77	19.61		
3	64QAM	8	0	19.59	19.54	19.66		
3	64QAM	8	4	19.64	19.54	19.52	20.5	0
3	64QAM	8	7	19.61	19.52	19.60		
3	64QAM	15	0	19.52	19.52	19.51		



Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	19.70	19.60	19.69	20.5	0
1.4	QPSK	1	3	19.64	19.59	19.58		
1.4	QPSK	1	5	19.56	19.56	19.64		
1.4	QPSK	3	0	19.60	19.61	19.58		
1.4	QPSK	3	1	19.47	19.62	19.46		
1.4	QPSK	3	3	19.58	19.54	19.56		
1.4	QPSK	6	0	19.45	19.63	19.43	20.5	0
1.4	16QAM	1	0	19.64	19.56	19.59	20.5	0
1.4	16QAM	1	3	19.50	19.61	19.47		
1.4	16QAM	1	5	19.59	19.62	19.61		
1.4	16QAM	3	0	19.63	19.64	19.64		
1.4	16QAM	3	1	19.52	19.69	19.51		
1.4	16QAM	3	3	19.72	19.81	19.75		
1.4	16QAM	6	0	19.53	19.62	19.72	20.5	0
1.4	64QAM	1	0	19.67	19.73	19.64	20.5	0
1.4	64QAM	1	3	19.54	19.72	19.75		
1.4	64QAM	1	5	19.62	19.78	19.76		
1.4	64QAM	3	0	19.60	19.78	19.53		
1.4	64QAM	3	1	19.61	19.61	19.52		
1.4	64QAM	3	3	19.59	19.58	19.74		
1.4	64QAM	6	0	19.58	19.55	19.68	20.5	0



Top antenna+WiFi 2.4G(Receiver off) / Top antenna+WiFi 2.4G(Receiver off)+BT / Top antenna+WiFi 5G(Receiver off) / Top antenna+WiFi 5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	22.00	21.90	21.86	23	0
20	QPSK	1	49	22.00	21.89	21.84		
20	QPSK	1	99	22.02	21.95	21.86		
20	QPSK	50	0	22.01	21.92	21.82	23	0
20	QPSK	50	24	22.04	21.94	21.83		
20	QPSK	50	50	22.03	21.90	21.87		
20	QPSK	100	0	21.97	21.93	21.89	23	0
20	16QAM	1	0	22.24	22.20	22.19		
20	16QAM	1	49	22.22	22.13	22.22		
20	16QAM	1	99	22.16	22.12	22.22	22	1
20	16QAM	50	0	20.95	20.92	20.99		
20	16QAM	50	24	20.99	20.98	21.04		
20	16QAM	50	50	21.01	20.88	20.98	22	1
20	16QAM	100	0	20.94	20.99	20.93		
20	64QAM	1	0	20.95	21.03	21.12		
20	64QAM	1	49	21.02	21.00	21.05	22	1
20	64QAM	1	99	21.06	20.95	21.00		
20	64QAM	50	0	19.89	19.96	19.93		
20	64QAM	50	24	19.89	19.84	19.98	21	2
20	64QAM	50	50	19.88	19.92	19.86		
20	64QAM	100	0	19.88	19.90	19.95		



Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.95	21.98	21.84	23	0
15	QPSK	1	37	22.06	21.91	21.78		
15	QPSK	1	74	21.94	21.81	21.97		
15	QPSK	36	0	21.96	21.86	21.91	23	0
15	QPSK	36	20	21.73	22.02	21.91		
15	QPSK	36	39	22.11	21.94	21.86		
15	QPSK	75	0	21.97	21.99	21.88	23	0
15	16QAM	1	0	22.22	22.11	22.03		
15	16QAM	1	37	22.23	22.21	22.18		
15	16QAM	1	74	22.20	22.06	22.18	22	1
15	16QAM	36	0	20.91	20.94	20.88		
15	16QAM	36	20	20.99	20.95	20.89		
15	16QAM	36	39	21.10	20.96	20.83	22	1
15	16QAM	75	0	20.90	20.91	20.84		
15	64QAM	1	0	20.95	20.95	20.94		
15	64QAM	1	37	20.79	21.01	21.01	22	1
15	64QAM	1	74	20.81	20.95	21.16		
15	64QAM	36	0	19.89	19.89	19.80		
15	64QAM	36	20	19.66	19.94	19.87	21	2
15	64QAM	36	39	19.95	19.89	19.82		
15	64QAM	75	0	19.76	19.91	19.83		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.94	21.77	21.83	23	0
10	QPSK	1	25	21.74	21.90	21.84		
10	QPSK	1	49	21.78	21.75	21.74		
10	QPSK	25	0	21.85	22.02	21.98	23	0
10	QPSK	25	12	21.87	21.95	21.93		
10	QPSK	25	25	21.89	21.97	21.89		
10	QPSK	50	0	21.83	22.01	21.90	23	0
10	16QAM	1	0	22.15	22.18	22.22		
10	16QAM	1	25	22.06	22.11	22.21		
10	16QAM	1	49	22.11	22.02	22.22	22	1
10	16QAM	25	0	20.80	20.97	20.92		
10	16QAM	25	12	20.84	20.95	20.89		
10	16QAM	25	25	20.82	21.01	20.86	22	1
10	16QAM	50	0	20.81	20.90	20.85		
10	64QAM	1	0	20.92	21.06	20.91		
10	64QAM	1	25	20.69	20.76	20.86	22	1
10	64QAM	1	49	20.92	20.82	20.88		
10	64QAM	25	0	19.83	19.96	19.94		
10	64QAM	25	12	19.83	19.98	19.90	21	2
10	64QAM	25	25	19.83	19.92	19.85		
10	64QAM	50	0	19.76	19.93	19.86		





Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	21.82	21.81	21.82	23	0
5	QPSK	1	12	21.75	21.77	21.76		
5	QPSK	1	24	21.86	21.80	21.76		
5	QPSK	12	0	21.92	21.86	21.85	23	0
5	QPSK	12	7	21.96	22.00	21.89		
5	QPSK	12	13	22.04	22.01	22.09		
5	QPSK	25	0	21.83	21.98	21.90	23	0
5	16QAM	1	0	22.11	22.18	22.08		
5	16QAM	1	12	21.98	21.88	21.96		
5	16QAM	1	24	22.11	22.23	22.08	22	1
5	16QAM	12	0	20.84	20.96	20.91		
5	16QAM	12	7	20.91	20.90	20.84		
5	16QAM	12	13	20.98	20.92	21.04	22	1
5	16QAM	25	0	20.77	20.95	20.86		
5	64QAM	1	0	20.88	20.77	20.87		
5	64QAM	1	12	20.63	20.86	20.70	22	1
5	64QAM	1	24	20.98	21.08	20.95		
5	64QAM	12	0	19.83	19.78	19.78		
5	64QAM	12	7	19.88	19.93	19.85	21	2
5	64QAM	12	13	19.98	19.94	19.79		
5	64QAM	25	0	19.77	19.91	19.82		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.86	21.84	21.89	23	0
3	QPSK	1	8	21.69	21.78	21.72		
3	QPSK	1	14	21.88	21.82	21.98		
3	QPSK	8	0	22.03	22.05	22.07	23	0
3	QPSK	8	4	22.01	21.96	21.86		
3	QPSK	8	7	22.17	21.93	22.04		
3	QPSK	15	0	22.01	21.98	21.90	23	0
3	16QAM	1	0	22.19	22.24	22.21		
3	16QAM	1	8	22.04	22.04	22.12		
3	16QAM	1	14	22.18	22.09	22.20	22	1
3	16QAM	8	0	20.94	20.99	20.83		
3	16QAM	8	4	20.94	20.95	20.79		
3	16QAM	8	7	21.12	21.05	21.00	22	1
3	16QAM	15	0	20.94	20.96	20.86		
3	64QAM	1	0	20.85	20.90	20.93		
3	64QAM	1	8	20.90	20.73	20.87	22	1
3	64QAM	1	14	21.00	21.07	20.85		
3	64QAM	8	0	19.95	19.99	19.99		
3	64QAM	8	4	19.95	19.95	19.82	21	2
3	64QAM	8	7	19.89	19.96	20.01		
3	64QAM	15	0	19.95	19.95	19.90		



Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	21.92	21.88	21.84	23	0
1.4	QPSK	1	3	21.80	21.75	21.70		
1.4	QPSK	1	5	21.89	22.08	21.82		
1.4	QPSK	3	0	21.92	22.05	22.06		
1.4	QPSK	3	1	21.99	22.00	21.87		
1.4	QPSK	3	3	22.08	22.03	21.80		
1.4	QPSK	6	0	22.07	22.08	22.05	23	0
1.4	16QAM	1	0	22.20	22.12	22.21	23	0
1.4	16QAM	1	3	21.97	22.02	21.96		
1.4	16QAM	1	5	21.96	22.20	22.09		
1.4	16QAM	3	0	21.83	21.97	22.00		
1.4	16QAM	3	1	21.93	21.94	21.83		
1.4	16QAM	3	3	21.95	21.92	21.75		
1.4	16QAM	6	0	21.01	21.00	20.98	22	1
1.4	64QAM	1	0	21.02	21.09	20.91	22	1
1.4	64QAM	1	3	20.73	20.82	20.74		
1.4	64QAM	1	5	21.20	20.95	20.93		
1.4	64QAM	3	0	20.83	20.96	20.98		
1.4	64QAM	3	1	20.94	20.94	20.78		
1.4	64QAM	3	3	20.93	20.95	20.77		
1.4	64QAM	6	0	19.96	19.99	19.99	21	2



Top antenna+WiFi 2.4G(Receiver on) / Top antenna+WiFi 2.4G(Receiver on)+BT / Top antenna+WiFi 5G(Receiver on) / Top antenna+WiFi 5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	18.43	18.38	18.35	19.5	0
20	QPSK	1	49	18.26	18.30	18.31		
20	QPSK	1	99	18.47	18.38	18.49		
20	QPSK	50	0	18.40	18.37	18.38	19.5	0
20	QPSK	50	24	18.27	18.24	18.34		
20	QPSK	50	50	18.23	18.36	18.38		
20	QPSK	100	0	18.38	18.39	18.45	19.5	0
20	16QAM	1	0	18.78	18.74	18.81		
20	16QAM	1	49	18.47	18.47	18.45		
20	16QAM	1	99	18.70	18.68	18.80	19.5	0
20	16QAM	50	0	18.35	18.45	18.30		
20	16QAM	50	24	18.38	18.37	18.25		
20	16QAM	50	50	18.44	18.36	18.17	19.5	0
20	16QAM	100	0	18.44	18.45	18.26		
20	64QAM	1	0	18.48	18.54	18.40		
20	64QAM	1	49	18.16	18.42	18.31	19.5	0
20	64QAM	1	99	18.44	18.61	18.46		
20	64QAM	50	0	18.35	18.45	18.31		
20	64QAM	50	24	18.35	18.39	18.21	19.5	0
20	64QAM	50	50	18.45	18.33	18.19		
20	64QAM	100	0	18.44	18.42	18.28		



Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	18.36	18.34	18.34	19.5	0
15	QPSK	1	37	18.39	18.49	18.42		
15	QPSK	1	74	18.40	18.32	18.42		
15	QPSK	36	0	18.50	18.34	18.45	19.5	0
15	QPSK	36	20	18.37	18.35	18.41		
15	QPSK	36	39	18.29	18.23	18.41		
15	QPSK	75	0	18.38	18.31	18.35	19.5	0
15	16QAM	1	0	18.63	18.68	18.60		
15	16QAM	1	37	18.48	18.62	18.67		
15	16QAM	1	74	18.59	18.61	18.50	19.5	0
15	16QAM	36	0	18.30	18.44	18.38		
15	16QAM	36	20	18.33	18.34	18.28		
15	16QAM	36	39	18.41	18.41	18.34	19.5	0
15	16QAM	75	0	18.33	18.44	18.25		
15	64QAM	1	0	18.46	18.47	18.48		
15	64QAM	1	37	18.13	18.38	18.35	19.5	0
15	64QAM	1	74	18.47	18.50	18.29		
15	64QAM	36	0	18.26	18.42	18.28		
15	64QAM	36	20	18.36	18.36	18.23	19.5	0
15	64QAM	36	39	18.42	18.44	18.36		
15	64QAM	75	0	18.23	18.33	18.28		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	18.20	18.37	18.34	19.5	0
10	QPSK	1	25	18.33	18.33	18.44		
10	QPSK	1	49	18.27	18.24	18.41		
10	QPSK	25	0	18.43	18.32	18.46	19.5	0
10	QPSK	25	12	18.47	18.34	18.49		
10	QPSK	25	25	18.43	18.22	18.40		
10	QPSK	50	0	18.44	18.33	18.45	19.5	0
10	16QAM	1	0	18.66	18.56	18.69		
10	16QAM	1	25	18.61	18.45	18.45		
10	16QAM	1	49	18.62	18.60	18.58	19.5	0
10	16QAM	25	0	18.26	18.43	18.28		
10	16QAM	25	12	18.29	18.42	18.26		
10	16QAM	25	25	18.18	18.43	18.28	19.5	0
10	16QAM	50	0	18.29	18.39	18.27		
10	64QAM	1	0	18.40	18.42	18.41		
10	64QAM	1	25	18.34	18.43	18.31	19.5	0
10	64QAM	1	49	18.45	18.52	18.41		
10	64QAM	25	0	18.22	18.41	18.24		
10	64QAM	25	12	18.28	18.41	18.25	19.5	0
10	64QAM	25	25	18.16	18.44	18.15		
10	64QAM	50	0	18.22	18.40	18.27		



Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	18.30	18.27	18.29	19.5	0
5	QPSK	1	12	18.28	18.25	18.17		
5	QPSK	1	24	18.24	18.48	18.25		
5	QPSK	12	0	18.34	18.36	18.50	19.5	0
5	QPSK	12	7	18.49	18.36	18.51		
5	QPSK	12	13	18.37	18.28	18.47		
5	QPSK	25	0	18.46	18.32	18.42		
5	16QAM	1	0	18.68	18.64	18.76	19.5	0
5	16QAM	1	12	18.56	18.61	18.69		
5	16QAM	1	24	18.73	18.63	18.68		
5	16QAM	12	0	18.29	18.38	18.33	19.5	0
5	16QAM	12	7	18.31	18.45	18.32		
5	16QAM	12	13	18.25	18.41	18.23		
5	16QAM	25	0	18.28	18.42	18.31		
5	64QAM	1	0	18.48	18.43	18.47	19.5	0
5	64QAM	1	12	18.21	18.24	18.23		
5	64QAM	1	24	18.52	18.37	18.36		
5	64QAM	12	0	18.27	18.40	18.32	19.5	0
5	64QAM	12	7	18.28	18.44	18.29		
5	64QAM	12	13	18.27	18.41	18.25		
5	64QAM	25	0	18.24	18.42	18.27		
5	64QAM	25	0	18.24	18.42	18.27		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	18.23	18.45	18.31	19.5	0
3	QPSK	1	8	18.26	18.51	18.43		
3	QPSK	1	14	18.27	18.50	18.30		
3	QPSK	8	0	18.46	18.35	18.43	19.5	0
3	QPSK	8	4	18.37	18.43	18.42		
3	QPSK	8	7	18.35	18.49	18.36		
3	QPSK	15	0	18.34	18.36	18.39		
3	16QAM	1	0	18.62	18.67	18.72	19.5	0
3	16QAM	1	8	18.75	18.61	18.70		
3	16QAM	1	14	18.57	18.62	18.63		
3	16QAM	8	0	18.30	18.39	18.40	19.5	0
3	16QAM	8	4	18.19	18.44	18.24		
3	16QAM	8	7	18.20	18.36	18.31		
3	16QAM	15	0	18.27	18.39	18.28		
3	16QAM	15	0	18.27	18.39	18.28		
3	64QAM	1	0	18.34	18.43	18.51	19.5	0
3	64QAM	1	8	18.42	18.37	18.58		
3	64QAM	1	14	18.50	18.30	18.42		
3	64QAM	8	0	18.26	18.33	18.29	19.5	0
3	64QAM	8	4	18.17	18.44	18.26		
3	64QAM	8	7	18.44	18.38	18.33		
3	64QAM	8	7	18.44	18.38	18.33		
3	64QAM	15	0	18.29	18.43	18.27		



Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	18.38	18.53	18.31	19.5	0
1.4	QPSK	1	3	18.29	18.49	18.33		
1.4	QPSK	1	5	18.38	18.45	18.39		
1.4	QPSK	3	0	18.29	18.55	18.33		
1.4	QPSK	3	1	18.43	18.35	18.33		
1.4	QPSK	3	3	18.29	18.51	18.30		
1.4	QPSK	6	0	18.43	18.43	18.44	19.5	0
1.4	16QAM	1	0	18.58	18.55	18.67	19.5	0
1.4	16QAM	1	3	18.78	18.77	18.53		
1.4	16QAM	1	5	18.72	18.53	18.59		
1.4	16QAM	3	0	18.43	18.34	18.35		
1.4	16QAM	3	1	18.37	18.26	18.54		
1.4	16QAM	3	3	18.44	18.44	18.30		
1.4	16QAM	6	0	18.41	18.45	18.43	19.5	0
1.4	64QAM	1	0	18.59	18.36	18.40	19.5	0
1.4	64QAM	1	3	18.37	18.27	18.47		
1.4	64QAM	1	5	18.42	18.29	18.34		
1.4	64QAM	3	0	18.41	18.41	18.47		
1.4	64QAM	3	1	18.32	18.35	18.20		
1.4	64QAM	3	3	18.50	18.28	18.34		
1.4	64QAM	6	0	18.38	18.33	18.42	19.5	0



Top antenna+WiFi 2.4G+5G(Receiver off) / Top antenna+WiFi 2.4G+5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20050	20175	20300			
Frequency (MHz)			1720	1732.5	1745			
20	QPSK	1	0	20.93	20.94	20.87	22	0
20	QPSK	1	49	20.71	20.68	20.73		
20	QPSK	1	99	20.94	20.98	20.95		
20	QPSK	50	0	20.93	20.94	21.02	22	0
20	QPSK	50	24	20.97	20.94	20.87		
20	QPSK	50	50	20.97	20.95	20.77		
20	QPSK	100	0	20.97	21.06	21.00	22	0
20	16QAM	1	0	21.17	21.07	21.18		
20	16QAM	1	49	20.90	20.80	20.85		
20	16QAM	1	99	21.18	21.15	21.03	22	0
20	16QAM	50	0	20.87	20.83	20.99		
20	16QAM	50	24	20.90	20.92	20.80		
20	16QAM	50	50	20.96	20.97	20.82	22	0
20	16QAM	100	0	20.95	20.96	20.97		
20	64QAM	1	0	20.97	21.00	20.88		
20	64QAM	1	49	20.90	20.83	20.82	22	0
20	64QAM	1	99	21.04	21.10	21.29		
20	64QAM	50	0	19.96	19.83	19.83		
20	64QAM	50	24	19.91	19.92	19.92	21	1
20	64QAM	50	50	19.98	19.97	19.86		
20	64QAM	100	0	19.95	19.94	19.95		





Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	20.83	20.96	20.90	22	0
15	QPSK	1	37	20.80	20.96	20.91		
15	QPSK	1	74	20.88	20.83	21.01		
15	QPSK	36	0	20.94	20.92	20.98	22	0
15	QPSK	36	20	20.96	21.03	20.92		
15	QPSK	36	39	20.99	20.95	21.17		
15	QPSK	75	0	20.93	21.04	20.92	22	0
15	16QAM	1	0	21.11	21.16	21.11		
15	16QAM	1	37	20.96	21.26	21.15		
15	16QAM	1	74	21.16	21.21	21.21	22	0
15	16QAM	36	0	20.83	20.90	20.99		
15	16QAM	36	20	20.94	20.99	20.97		
15	16QAM	36	39	21.00	20.95	20.87	22	0
15	16QAM	75	0	20.96	20.98	20.96		
15	64QAM	1	0	20.94	20.89	20.96		
15	64QAM	1	37	20.83	20.93	21.03	22	0
15	64QAM	1	74	20.99	21.06	21.14		
15	64QAM	36	0	19.85	19.92	20.02		
15	64QAM	36	20	19.92	19.96	19.97	21	1
15	64QAM	36	39	19.92	19.88	19.89		
15	64QAM	75	0	19.95	19.97	19.96		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	20.90	20.83	20.93	22	0
10	QPSK	1	25	20.81	20.80	20.91		
10	QPSK	1	49	20.89	20.81	20.79		
10	QPSK	25	0	20.84	20.90	21.03	22	0
10	QPSK	25	12	20.89	20.88	20.89		
10	QPSK	25	25	20.97	20.88	20.87		
10	QPSK	50	0	21.02	20.85	20.97	22	0
10	16QAM	1	0	21.08	21.06	21.21		
10	16QAM	1	25	20.91	21.01	20.93		
10	16QAM	1	49	21.21	21.05	20.99	22	0
10	16QAM	25	0	20.90	20.82	20.96		
10	16QAM	25	12	20.81	20.99	20.82		
10	16QAM	25	25	21.01	20.97	20.93	22	0
10	16QAM	50	0	20.92	20.95	20.97		
10	64QAM	1	0	20.98	21.03	21.07		
10	64QAM	1	25	20.89	20.87	20.89	22	0
10	64QAM	1	49	20.93	20.95	21.04		
10	64QAM	25	0	19.87	19.85	19.98		
10	64QAM	25	12	19.80	19.96	19.81	21	1
10	64QAM	25	25	19.93	19.85	19.92		
10	64QAM	50	0	19.97	19.96	19.95		



Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.86	20.92	20.86	22	0
5	QPSK	1	12	20.89	20.81	20.85		
5	QPSK	1	24	20.89	20.87	20.83		
5	QPSK	12	0	20.90	20.91	20.99	22	0
5	QPSK	12	7	20.91	20.94	20.96		
5	QPSK	12	13	20.86	20.97	20.98		
5	QPSK	25	0	20.88	20.89	20.99	22	0
5	16QAM	1	0	21.04	21.20	21.17		
5	16QAM	1	12	21.15	21.23	21.28		
5	16QAM	1	24	21.19	21.01	21.10	22	0
5	16QAM	12	0	20.93	20.84	20.93		
5	16QAM	12	7	21.00	21.03	21.00		
5	16QAM	12	13	20.96	21.01	21.05	22	0
5	16QAM	25	0	20.88	20.97	21.01		
5	64QAM	1	0	21.06	21.02	21.02		
5	64QAM	1	12	20.94	20.89	21.12	22	0
5	64QAM	1	24	21.05	21.11	20.97		
5	64QAM	12	0	19.92	19.86	19.95		
5	64QAM	12	7	19.93	19.86	19.92	21	1
5	64QAM	12	13	19.82	19.88	19.89		
5	64QAM	25	0	19.86	19.94	19.97		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	21.02	20.86	20.82	22	0
3	QPSK	1	8	20.84	20.84	20.82		
3	QPSK	1	14	20.96	20.87	20.97		
3	QPSK	8	0	21.01	20.88	20.96	22	0
3	QPSK	8	4	21.13	21.12	20.91		
3	QPSK	8	7	21.17	20.93	20.91		
3	QPSK	15	0	21.05	20.89	20.88	22	0
3	16QAM	1	0	21.19	21.18	21.13		
3	16QAM	1	8	21.22	21.17	21.17		
3	16QAM	1	14	21.22	21.06	21.20	22	0
3	16QAM	8	0	20.88	20.97	21.01		
3	16QAM	8	4	20.82	20.99	20.96		
3	16QAM	8	7	20.81	20.96	20.96	22	0
3	16QAM	15	0	20.84	21.01	20.91		
3	64QAM	1	0	21.12	21.14	21.04		
3	64QAM	1	8	21.02	20.96	21.10	22	0
3	64QAM	1	14	21.17	21.05	21.23		
3	64QAM	8	0	19.79	19.79	19.95		
3	64QAM	8	4	19.80	19.70	19.93	21	1
3	64QAM	8	7	19.77	19.97	19.95		
3	64QAM	15	0	19.84	19.99	19.92		



Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.95	20.78	20.82	22	0
1.4	QPSK	1	3	20.98	20.84	20.98		
1.4	QPSK	1	5	20.93	20.77	20.93		
1.4	QPSK	3	0	20.96	20.85	20.96		
1.4	QPSK	3	1	20.98	20.80	20.97		
1.4	QPSK	3	3	20.96	20.83	20.83		
1.4	QPSK	6	0	21.11	21.11	20.94	22	0
1.4	16QAM	1	0	21.22	21.22	21.24	22	0
1.4	16QAM	1	3	21.24	21.23	21.06		
1.4	16QAM	1	5	21.25	21.23	21.11		
1.4	16QAM	3	0	21.07	20.94	20.83		
1.4	16QAM	3	1	21.11	20.99	20.81		
1.4	16QAM	3	3	21.06	20.70	20.91		
1.4	16QAM	6	0	20.72	20.77	21.06	22	0
1.4	64QAM	1	0	20.86	20.87	20.83	22	0
1.4	64QAM	1	3	20.87	20.98	20.84		
1.4	64QAM	1	5	20.82	20.85	20.82		
1.4	64QAM	3	0	20.91	20.81	20.89		
1.4	64QAM	3	1	20.92	20.78	20.97		
1.4	64QAM	3	3	20.85	20.77	20.94		
1.4	64QAM	6	0	19.97	20.00	19.90	21	1



Top antenna+WiFi 2.4G+5G(Receiver on) / Top antenna+WiFi 2.4G+5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20050	20175	20300			
Frequency (MHz)			1720	1732.5	1745			
20	QPSK	1	0	17.46	17.47	17.40	18.5	0
20	QPSK	1	49	17.29	17.46	17.31		
20	QPSK	1	99	17.60	17.45	17.44		
20	QPSK	50	0	17.41	17.36	17.39	18.5	0
20	QPSK	50	24	17.43	17.50	17.28		
20	QPSK	50	50	17.60	17.54	17.46		
20	QPSK	100	0	17.57	17.50	17.38	18.5	0
20	16QAM	1	0	17.55	17.56	17.60		
20	16QAM	1	49	17.46	17.42	17.50		
20	16QAM	1	99	17.81	17.65	17.70	18.5	0
20	16QAM	50	0	17.47	17.31	17.33		
20	16QAM	50	24	17.41	17.29	17.37		
20	16QAM	50	50	17.36	17.43	17.46	18.5	0
20	16QAM	100	0	17.46	17.38	17.34		
20	64QAM	1	0	17.53	17.47	17.49		
20	64QAM	1	49	17.25	17.22	17.41	18.5	0
20	64QAM	1	99	17.61	17.59	17.54		
20	64QAM	50	0	17.45	17.34	17.33		
20	64QAM	50	24	17.38	17.31	17.37	18.5	0
20	64QAM	50	50	17.36	17.46	17.42		
20	64QAM	100	0	17.46	17.34	17.36		



Channel				20025	20175	20325	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	17.37	17.43	17.51	18.5	0
15	QPSK	1	37	17.40	17.44	17.47		
15	QPSK	1	74	17.47	17.34	17.37		
15	QPSK	36	0	17.40	17.40	17.39	18.5	0
15	QPSK	36	20	17.35	17.37	17.31		
15	QPSK	36	39	17.55	17.50	17.27		
15	QPSK	75	0	17.35	17.54	17.37	18.5	0
15	16QAM	1	0	17.72	17.65	17.60		
15	16QAM	1	37	17.50	17.47	17.55		
15	16QAM	1	74	17.80	17.44	17.53	18.5	0
15	16QAM	36	0	17.45	17.23	17.48		
15	16QAM	36	20	17.48	17.32	17.47		
15	16QAM	36	39	17.32	17.33	17.41	18.5	0
15	16QAM	75	0	17.32	17.29	17.42		
15	64QAM	1	0	17.48	17.46	17.48		
15	64QAM	1	37	17.47	17.43	17.59	18.5	0
15	64QAM	1	74	17.68	17.46	17.38		
15	64QAM	36	0	17.49	17.37	17.41		
15	64QAM	36	20	17.47	17.32	17.47	18.5	0
15	64QAM	36	39	17.33	17.38	17.43		
15	64QAM	75	0	17.45	17.30	17.44		
Channel				20000	20175	20350	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	17.36	17.48	17.49	18.5	0
10	QPSK	1	25	17.33	17.34	17.25		
10	QPSK	1	49	17.31	17.32	17.37		
10	QPSK	25	0	17.29	17.38	17.41	18.5	0
10	QPSK	25	12	17.36	17.36	17.32		
10	QPSK	25	25	17.27	17.60	17.30		
10	QPSK	50	0	17.36	17.52	17.36	18.5	0
10	16QAM	1	0	17.55	17.62	17.58		
10	16QAM	1	25	17.53	17.48	17.52		
10	16QAM	1	49	17.64	17.56	17.54	18.5	0
10	16QAM	25	0	17.44	17.29	17.49		
10	16QAM	25	12	17.42	17.34	17.46		
10	16QAM	25	25	17.47	17.40	17.46	18.5	0
10	16QAM	50	0	17.36	17.33	17.47		
10	64QAM	1	0	17.49	17.45	17.47		
10	64QAM	1	25	17.32	17.13	17.33	18.5	0
10	64QAM	1	49	17.41	17.47	17.35		
10	64QAM	25	0	17.44	17.35	17.30		
10	64QAM	25	12	17.44	17.34	17.46	18.5	0
10	64QAM	25	25	17.46	17.39	17.44		
10	64QAM	50	0	17.39	17.29	17.35		



Channel				19975	20175	20375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	17.37	17.38	17.50	18.5	0
5	QPSK	1	12	17.23	17.29	17.29		
5	QPSK	1	24	17.29	17.33	17.35		
5	QPSK	12	0	17.40	17.38	17.37	18.5	0
5	QPSK	12	7	17.37	17.41	17.35		
5	QPSK	12	13	17.32	17.44	17.49		
5	QPSK	25	0	17.35	17.46	17.38	18.5	0
5	16QAM	1	0	17.64	17.66	17.56		
5	16QAM	1	12	17.68	17.52	17.67		
5	16QAM	1	24	17.59	17.73	17.65	18.5	0
5	16QAM	12	0	17.49	17.34	17.54		
5	16QAM	12	7	17.51	17.37	17.53		
5	16QAM	12	13	17.50	17.31	17.53	18.5	0
5	16QAM	25	0	17.48	17.32	17.47		
5	64QAM	1	0	17.40	17.63	17.39		
5	64QAM	1	12	17.36	17.38	17.32	18.5	0
5	64QAM	1	24	17.45	17.50	17.51		
5	64QAM	12	0	17.48	17.37	17.51		
5	64QAM	12	7	17.50	17.33	17.47	18.5	0
5	64QAM	12	13	17.51	17.32	17.47		
5	64QAM	25	0	17.44	17.32	17.46		
Channel				19965	20175	20385	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	17.48	17.36	17.40	18.5	0
3	QPSK	1	8	17.50	17.67	17.46		
3	QPSK	1	14	17.35	17.50	17.39		
3	QPSK	8	0	17.46	17.48	17.39	18.5	0
3	QPSK	8	4	17.44	17.54	17.45		
3	QPSK	8	7	17.42	17.47	17.32		
3	QPSK	15	0	17.47	17.51	17.34	18.5	0
3	16QAM	1	0	17.65	17.81	17.67		
3	16QAM	1	8	17.65	17.77	17.68		
3	16QAM	1	14	17.66	17.80	17.61	18.5	0
3	16QAM	8	0	17.35	17.37	17.48		
3	16QAM	8	4	17.45	17.50	17.40		
3	16QAM	8	7	17.40	17.26	17.38	18.5	0
3	16QAM	15	0	17.43	17.41	17.45		
3	64QAM	1	0	17.48	17.66	17.46		
3	64QAM	1	8	17.55	17.64	17.65	18.5	0
3	64QAM	1	14	17.49	17.65	17.51		
3	64QAM	8	0	17.35	17.34	17.48		
3	64QAM	8	4	17.44	17.35	17.35	18.5	0
3	64QAM	8	7	17.39	17.40	17.37		
3	64QAM	15	0	17.36	17.32	17.46		



Channel				19957	20175	20393	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	17.46	17.65	17.45	18.5	0
1.4	QPSK	1	3	17.37	17.63	17.47		
1.4	QPSK	1	5	17.46	17.60	17.41		
1.4	QPSK	3	0	17.37	17.56	17.35		
1.4	QPSK	3	1	17.39	17.30	17.35		
1.4	QPSK	3	3	17.37	17.65	17.33		
1.4	QPSK	6	0	17.41	17.55	17.40	18.5	0
1.4	16QAM	1	0	17.67	17.78	17.71	18.5	0
1.4	16QAM	1	3	17.63	17.73	17.58		
1.4	16QAM	1	5	17.59	17.74	17.66		
1.4	16QAM	3	0	17.47	17.54	17.28		
1.4	16QAM	3	1	17.49	17.50	17.29		
1.4	16QAM	3	3	17.41	17.48	17.40		
1.4	16QAM	6	0	17.43	17.40	17.43	18.5	0
1.4	64QAM	1	0	17.51	17.40	17.58	18.5	0
1.4	64QAM	1	3	17.60	17.59	17.62		
1.4	64QAM	1	5	17.51	17.80	17.59		
1.4	64QAM	3	0	17.49	17.39	17.37		
1.4	64QAM	3	1	17.50	17.54	17.35		
1.4	64QAM	3	3	17.50	17.51	17.31		
1.4	64QAM	6	0	17.38	17.34	17.38	18.5	0



<LTE Band 5>

Receiver off / Receiver off+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20450	20525	20600			
Frequency (MHz)			829	836.5	844			
10	QPSK	1	0	24.03	23.85	23.87	25	0
10	QPSK	1	25	23.77	23.72	23.61		
10	QPSK	1	49	23.83	23.74	23.69		
10	QPSK	25	0	22.92	22.89	22.89	24	1
10	QPSK	25	12	22.84	22.87	22.84		
10	QPSK	25	25	22.91	22.84	22.89		
10	QPSK	50	0	22.84	22.89	22.91	24.3	0.7
10	16QAM	1	0	23.07	23.11	23.19		
10	16QAM	1	25	22.83	22.79	23.26		
10	16QAM	1	49	22.84	22.98	22.90	23.3	1.7
10	16QAM	25	0	21.88	21.86	21.87		
10	16QAM	25	12	21.81	21.83	21.82		
10	16QAM	25	25	21.75	21.97	21.79	23.3	1.7
10	16QAM	50	0	21.81	21.88	21.83		
10	64QAM	1	0	21.99	22.03	22.06		
10	64QAM	1	25	21.79	21.84	21.81	22.3	2.7
10	64QAM	1	49	21.83	21.88	21.82		
10	64QAM	25	0	20.83	20.83	20.81		
10	64QAM	25	12	20.79	20.80	20.80	22.3	2.7
10	64QAM	25	25	20.90	20.86	20.81		
10	64QAM	50	0	20.80	20.84	20.81		





Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.86	23.81	23.82	25	0
5	QPSK	1	12	23.69	23.68	23.60		
5	QPSK	1	24	23.91	23.85	23.83		
5	QPSK	12	0	22.89	22.86	22.85	24	1
5	QPSK	12	7	22.91	22.90	22.82		
5	QPSK	12	13	22.95	22.94	22.87		
5	QPSK	25	0	22.87	22.88	22.81	24.3	0.7
5	16QAM	1	0	23.10	23.10	23.20		
5	16QAM	1	12	23.22	23.24	23.06		
5	16QAM	1	24	23.26	23.15	23.10	23.3	1.7
5	16QAM	12	0	21.93	21.88	21.86		
5	16QAM	12	7	21.90	21.93	21.85		
5	16QAM	12	13	21.77	21.82	21.88	23.3	1.7
5	16QAM	25	0	21.81	21.82	21.81		
5	64QAM	1	0	22.01	22.03	22.11		
5	64QAM	1	12	21.82	21.98	21.91	23.3	1.7
5	64QAM	1	24	21.94	22.06	21.98		
5	64QAM	12	0	20.92	20.83	20.79		
5	64QAM	12	7	20.82	20.86	20.89	22.3	2.7
5	64QAM	12	13	20.77	20.78	20.73		
5	64QAM	25	0	20.82	20.78	20.81		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.83	23.81	23.86	25	0
3	QPSK	1	8	23.95	23.81	23.82		
3	QPSK	1	14	23.79	23.87	23.82		
3	QPSK	8	0	22.86	22.86	22.81	24	1
3	QPSK	8	4	23.00	23.02	22.89		
3	QPSK	8	7	22.99	23.01	22.81		
3	QPSK	15	0	22.87	22.89	22.84	24.3	0.7
3	16QAM	1	0	23.04	23.17	23.07		
3	16QAM	1	8	23.24	23.24	23.19		
3	16QAM	1	14	23.07	23.17	23.10	23.3	1.7
3	16QAM	8	0	21.81	21.82	21.84		
3	16QAM	8	4	21.83	21.80	21.91		
3	16QAM	8	7	21.82	21.76	21.95	23.3	1.7
3	16QAM	15	0	21.81	21.84	21.89		
3	64QAM	1	0	21.98	21.94	21.97		
3	64QAM	1	8	21.97	22.08	22.11	23.3	1.7
3	64QAM	1	14	22.00	22.05	22.05		
3	64QAM	8	0	20.82	20.82	20.79		
3	64QAM	8	4	20.81	20.78	20.73	22.3	2.7
3	64QAM	8	7	20.80	20.77	20.79		
3	64QAM	15	0	20.82	20.85	20.79		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.83	23.78	23.74	25	0
1.4	QPSK	1	3	23.79	23.80	23.89		
1.4	QPSK	1	5	23.77	23.90	23.85		
1.4	QPSK	3	0	23.83	23.91	23.71		
1.4	QPSK	3	1	23.93	23.78	23.97		
1.4	QPSK	3	3	23.79	23.77	23.73		
1.4	QPSK	6	0	22.86	22.87	22.93	24	1
1.4	16QAM	1	0	23.21	23.30	23.23	24.3	0.7
1.4	16QAM	1	3	23.17	23.25	23.10		
1.4	16QAM	1	5	23.15	23.33	23.02		
1.4	16QAM	3	0	22.79	23.01	22.86		
1.4	16QAM	3	1	22.80	22.81	22.87		
1.4	16QAM	3	3	22.99	22.97	22.99		
1.4	16QAM	6	0	21.90	21.92	21.95	23.3	1.7
1.4	64QAM	1	0	22.11	21.93	22.13	23.3	1.7
1.4	64QAM	1	3	21.95	21.94	22.02		
1.4	64QAM	1	5	22.13	22.19	21.99		
1.4	64QAM	3	0	21.86	21.85	22.05		
1.4	64QAM	3	1	21.86	21.85	21.89		
1.4	64QAM	3	3	21.82	21.83	21.87		
1.4	64QAM	6	0	20.81	21.01	20.92	22.3	2.7



Receiver on / Receiver on+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	20.63	20.56	20.58	21.5	0
10	QPSK	1	25	20.49	20.47	20.45		
10	QPSK	1	49	20.53	20.58	20.55		
10	QPSK	25	0	20.78	20.62	20.74	21.5	0
10	QPSK	25	12	20.72	20.72	20.65		
10	QPSK	25	25	20.60	20.73	20.53		
10	16QAM	1	0	20.82	20.77	20.88	21.5	0
10	16QAM	1	25	20.65	20.73	20.80		
10	16QAM	1	49	20.93	20.80	20.81		
10	16QAM	25	0	20.68	20.50	20.61	21.5	0
10	16QAM	25	12	20.52	20.51	20.53		
10	16QAM	25	25	20.41	20.59	20.64		
10	16QAM	50	0	20.50	20.52	20.61	21.5	0
10	64QAM	1	0	20.74	20.68	20.73		
10	64QAM	1	25	20.54	20.46	20.51		
10	64QAM	1	49	20.79	20.66	20.67	21.5	0
10	64QAM	25	0	20.67	20.49	20.53		
10	64QAM	25	12	20.49	20.47	20.51		
10	64QAM	25	25	20.39	20.57	20.37	21.5	0
10	64QAM	25	25	20.39	20.57	20.37		
10	64QAM	50	0	20.50	20.51	20.49	21.5	0



Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	20.53	20.65	20.65	21.5	0
5	QPSK	1	12	20.26	20.35	20.31		
5	QPSK	1	24	20.62	20.69	20.54		
5	QPSK	12	0	20.73	20.74	20.69	21.5	0
5	QPSK	12	7	20.70	20.71	20.58		
5	QPSK	12	13	20.56	20.71	20.52		
5	QPSK	25	0	20.64	20.58	20.51	21.5	0
5	16QAM	1	0	20.90	20.92	20.92		
5	16QAM	1	12	20.69	20.79	20.79		
5	16QAM	1	24	20.91	20.93	20.80	21.5	0
5	16QAM	12	0	20.68	20.53	20.53		
5	16QAM	12	7	20.65	20.61	20.52		
5	16QAM	12	13	20.62	20.61	20.68	21.5	0
5	16QAM	25	0	20.61	20.51	20.45		
5	64QAM	1	0	20.80	20.75	20.77		
5	64QAM	1	12	20.57	20.65	20.61	21.5	0
5	64QAM	1	24	20.77	20.81	20.60		
5	64QAM	12	0	20.66	20.51	20.50		
5	64QAM	12	7	20.62	20.57	20.29	21.5	0
5	64QAM	12	13	20.61	20.58	20.51		
5	64QAM	25	0	20.59	20.55	20.44		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	20.53	20.56	20.59	21.5	0
3	QPSK	1	8	20.54	20.68	20.63		
3	QPSK	1	14	20.52	20.63	20.63		
3	QPSK	8	0	20.63	20.55	20.51	21.5	0
3	QPSK	8	4	20.57	20.67	20.62		
3	QPSK	8	7	20.62	20.66	20.53		
3	QPSK	15	0	20.63	20.66	20.53	21.5	0
3	16QAM	1	0	20.88	20.83	20.80		
3	16QAM	1	8	20.91	20.92	20.73		
3	16QAM	1	14	20.92	20.91	20.77	21.5	0
3	16QAM	8	0	20.63	20.59	20.49		
3	16QAM	8	4	20.64	20.57	20.51		
3	16QAM	8	7	20.55	20.56	20.43	21.5	0
3	16QAM	15	0	20.61	20.54	20.50		
3	64QAM	1	0	20.81	20.81	20.60		
3	64QAM	1	8	20.74	20.86	20.69	21.5	0
3	64QAM	1	14	20.72	20.77	20.61		
3	64QAM	8	0	20.59	20.51	20.43		
3	64QAM	8	4	20.60	20.51	20.46	21.5	0
3	64QAM	8	7	20.59	20.50	20.47		
3	64QAM	15	0	20.60	20.51	20.46		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	20.53	20.65	20.61	21.5	0
1.4	QPSK	1	3	20.53	20.68	20.71		
1.4	QPSK	1	5	20.49	20.64	20.61		
1.4	QPSK	3	0	20.50	20.54	20.58		
1.4	QPSK	3	1	20.56	20.67	20.40		
1.4	QPSK	3	3	20.52	20.66	20.59		
1.4	QPSK	6	0	20.58	20.78	20.54	21.5	0
1.4	16QAM	1	0	20.83	20.90	20.88	21.5	0
1.4	16QAM	1	3	20.83	20.86	20.63		
1.4	16QAM	1	5	20.92	20.91	20.85		
1.4	16QAM	3	0	20.65	20.70	20.54		
1.4	16QAM	3	1	20.62	20.72	20.63		
1.4	16QAM	3	3	20.63	20.70	20.56		
1.4	16QAM	6	0	20.61	20.58	20.60	21.5	0
1.4	64QAM	1	0	20.68	20.74	20.60	21.5	0
1.4	64QAM	1	3	20.66	20.75	20.63		
1.4	64QAM	1	5	20.85	20.69	20.71		
1.4	64QAM	3	0	20.65	20.70	20.55		
1.4	64QAM	3	1	20.68	20.70	20.45		
1.4	64QAM	3	3	20.59	20.71	20.57		
1.4	64QAM	6	0	20.57	20.53	20.40	21.5	0



Top antenna+WiFi 2.4G(Receiver off) / Top antenna+WiFi 2.4G(Receiver off)+BT / Top antenna+WiFi 5G(Receiver off) / Top antenna+WiFi 5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	23.34	23.35	23.36	24.5	0
10	QPSK	1	25	23.26	23.09	23.07		
10	QPSK	1	49	23.12	23.18	23.11		
10	QPSK	25	0	22.83	22.84	22.87	24	0.5
10	QPSK	25	12	22.84	22.81	22.81		
10	QPSK	25	25	22.93	23.06	22.91		
10	QPSK	50	0	22.77	22.88	22.84	24	0.5
10	16QAM	1	0	22.99	23.11	23.02		
10	16QAM	1	25	22.75	22.76	22.96		
10	16QAM	1	49	22.73	22.77	22.81	23	1.5
10	16QAM	25	0	21.85	21.87	21.85		
10	16QAM	25	12	21.73	21.80	21.81		
10	16QAM	25	25	21.83	21.92	21.92	23	1.5
10	16QAM	50	0	21.75	21.81	21.81		
10	64QAM	1	0	21.84	21.75	21.94		
10	64QAM	1	25	21.71	21.61	21.75	22	2.5
10	64QAM	1	49	21.77	21.64	21.81		
10	64QAM	25	0	20.77	20.74	20.87		
10	64QAM	25	12	20.76	20.72	20.78	22	2.5
10	64QAM	25	25	20.74	20.93	20.67		
10	64QAM	50	0	20.68	20.83	20.78		



Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	23.30	23.33	23.24	24.5	0
5	QPSK	1	12	23.24	23.18	23.18		
5	QPSK	1	24	23.27	23.30	23.22		
5	QPSK	12	0	22.86	22.86	22.79	24	0.5
5	QPSK	12	7	22.84	22.84	22.98		
5	QPSK	12	13	22.85	23.07	22.78		
5	QPSK	25	0	22.82	22.82	22.84	24	0.5
5	16QAM	1	0	23.05	23.05	23.20		
5	16QAM	1	12	23.10	23.06	23.03		
5	16QAM	1	24	23.16	23.08	23.02	23	1.5
5	16QAM	12	0	21.83	21.85	21.78		
5	16QAM	12	7	21.83	21.88	21.79		
5	16QAM	12	13	21.77	21.81	21.85	23	1.5
5	16QAM	25	0	21.76	21.81	21.79		
5	64QAM	1	0	22.00	21.92	21.94		
5	64QAM	1	12	21.86	21.97	21.98	23	1.5
5	64QAM	1	24	21.95	22.09	21.85		
5	64QAM	12	0	20.82	20.98	20.81		
5	64QAM	12	7	20.82	20.99	20.86	22	2.5
5	64QAM	12	13	20.74	20.96	20.78		
5	64QAM	25	0	20.70	20.74	20.87		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	23.32	23.28	23.31	24.5	0
3	QPSK	1	8	23.33	23.33	23.28		
3	QPSK	1	14	23.30	23.30	23.22		
3	QPSK	8	0	22.83	22.86	22.94	24	0.5
3	QPSK	8	4	22.79	23.07	22.83		
3	QPSK	8	7	22.87	22.91	22.76		
3	QPSK	15	0	22.84	22.93	22.85	24	0.5
3	16QAM	1	0	23.07	23.10	23.01		
3	16QAM	1	8	23.14	23.07	23.02		
3	16QAM	1	14	23.05	23.11	23.00	23	1.5
3	16QAM	8	0	21.79	21.82	21.89		
3	16QAM	8	4	21.79	21.93	21.78		
3	16QAM	8	7	21.79	21.92	21.75	23	1.5
3	16QAM	15	0	21.78	21.89	21.84		
3	64QAM	1	0	21.92	22.04	21.97		
3	64QAM	1	8	21.85	22.02	21.93	22	2.5
3	64QAM	1	14	21.92	21.92	21.85		
3	64QAM	8	0	20.77	20.77	20.76		
3	64QAM	8	4	20.80	20.94	20.81	22	2.5
3	64QAM	8	7	20.79	20.93	20.75		
3	64QAM	15	0	20.80	20.77	20.74		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	23.34	23.30	23.32	24.5	0
1.4	QPSK	1	3	23.20	23.31	23.29		
1.4	QPSK	1	5	23.33	23.31	23.24		
1.4	QPSK	3	0	23.35	23.31	23.35		
1.4	QPSK	3	1	23.30	23.31	23.24		
1.4	QPSK	3	3	23.34	23.30	23.26		
1.4	QPSK	6	0	22.77	23.03	22.76	24	0.5
1.4	16QAM	1	0	23.15	23.13	23.06	24	0.5
1.4	16QAM	1	3	22.99	23.17	22.99		
1.4	16QAM	1	5	23.01	23.20	23.05		
1.4	16QAM	3	0	22.76	22.86	22.84		
1.4	16QAM	3	1	22.97	22.87	22.83		
1.4	16QAM	3	3	22.96	22.97	22.86		
1.4	16QAM	6	0	21.76	21.89	21.77	23	1.5
1.4	64QAM	1	0	22.02	21.89	21.94	23	1.5
1.4	64QAM	1	3	21.94	21.91	21.98		
1.4	64QAM	1	5	21.88	22.10	21.91		
1.4	64QAM	3	0	21.81	21.92	21.91		
1.4	64QAM	3	1	21.78	21.93	21.88		
1.4	64QAM	3	3	21.92	22.04	21.81		
1.4	64QAM	6	0	20.74	20.88	20.75	22	2.5





Top antenna+WiFi 2.4G(Receiver on) / Top antenna+WiFi 2.4G(Receiver on)+BT / Top antenna+WiFi 5G(Receiver on) / Top antenna+WiFi 5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	19.92	19.86	20.06	21	0
10	QPSK	1	25	19.74	19.92	19.81		
10	QPSK	1	49	19.82	19.79	19.77		
10	QPSK	25	0	20.00	19.92	19.89	21	0
10	QPSK	25	12	19.94	19.97	19.90		
10	QPSK	25	25	19.88	19.98	19.88		
10	QPSK	50	0	19.91	19.98	19.95	21	0
10	16QAM	1	0	20.15	20.15	20.34		
10	16QAM	1	25	19.93	19.96	20.08		
10	16QAM	1	49	19.95	20.06	20.34	21	0
10	16QAM	25	0	19.91	19.87	19.84		
10	16QAM	25	12	19.89	19.91	19.75		
10	16QAM	25	25	19.85	19.89	19.69	21	0
10	16QAM	50	0	19.86	19.80	19.79		
10	64QAM	1	0	19.91	20.17	19.96		
10	64QAM	1	25	19.85	19.84	19.73	21	0
10	64QAM	1	49	19.88	20.00	20.12		
10	64QAM	25	0	19.83	19.80	19.81		
10	64QAM	25	12	19.90	19.91	19.76	21	0
10	64QAM	25	25	19.86	19.89	19.69		
10	64QAM	50	0	19.87	19.77	19.78		



Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	19.90	19.83	19.83	21	0
5	QPSK	1	12	19.79	19.67	19.67		
5	QPSK	1	24	19.80	19.95	19.93		
5	QPSK	12	0	19.98	19.99	19.98	21	0
5	QPSK	12	7	19.98	19.99	19.81		
5	QPSK	12	13	20.03	19.96	19.85		
5	QPSK	25	0	19.96	19.98	19.95		
5	16QAM	1	0	20.23	20.12	20.24	21	0
5	16QAM	1	12	20.01	20.32	20.08		
5	16QAM	1	24	20.23	20.31	20.10		
5	16QAM	12	0	19.96	19.84	19.83	21	0
5	16QAM	12	7	19.94	19.91	19.77		
5	16QAM	12	13	20.01	19.92	19.97		
5	16QAM	25	0	19.88	19.89	19.76		
5	64QAM	1	0	20.09	19.84	19.89	21	0
5	64QAM	1	12	19.91	20.03	19.78		
5	64QAM	1	24	20.07	20.02	19.89		
5	64QAM	12	0	19.87	19.81	19.79	21	0
5	64QAM	12	7	19.84	19.93	19.81		
5	64QAM	12	13	19.91	19.89	19.97		
5	64QAM	25	0	19.90	19.75	19.73		
5	64QAM	25	0	19.90	19.75	19.73		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	19.82	19.82	19.78	21	0
3	QPSK	1	8	19.87	19.89	19.89		
3	QPSK	1	14	19.82	19.89	19.92		
3	QPSK	8	0	19.99	19.90	19.79	21	0
3	QPSK	8	4	19.89	19.93	19.80		
3	QPSK	8	7	19.90	19.90	19.70		
3	QPSK	15	0	20.01	19.93	19.81		
3	16QAM	1	0	20.33	20.26	20.23	21	0
3	16QAM	1	8	20.34	20.11	20.30		
3	16QAM	1	14	20.26	20.23	20.08		
3	16QAM	8	0	19.86	19.78	19.78	21	0
3	16QAM	8	4	19.91	19.87	19.74		
3	16QAM	8	7	19.91	19.87	19.78		
3	16QAM	15	0	19.91	19.86	19.76		
3	16QAM	15	0	19.91	19.86	19.76		
3	64QAM	1	0	19.96	19.96	19.98	21	0
3	64QAM	1	8	20.03	19.99	19.90		
3	64QAM	1	14	19.97	19.88	19.86		
3	64QAM	8	0	19.87	19.76	19.78	21	0
3	64QAM	8	4	19.86	19.86	19.89		
3	64QAM	8	7	19.88	19.87	19.76		
3	64QAM	15	0	19.90	19.85	19.76		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	19.79	19.88	19.89	21	0
1.4	QPSK	1	3	19.91	19.90	19.86		
1.4	QPSK	1	5	19.74	19.92	20.00		
1.4	QPSK	3	0	19.81	19.89	19.85		
1.4	QPSK	3	1	19.75	19.95	19.74		
1.4	QPSK	3	3	19.78	19.88	19.85		
1.4	QPSK	6	0	19.94	19.93	19.92	21	0
1.4	16QAM	1	0	20.23	20.16	20.16	21	0
1.4	16QAM	1	3	20.02	20.12	20.29		
1.4	16QAM	1	5	20.32	20.31	20.07		
1.4	16QAM	3	0	20.00	19.93	19.89		
1.4	16QAM	3	1	20.02	19.98	19.85		
1.4	16QAM	3	3	19.95	20.04	19.84		
1.4	16QAM	6	0	19.82	19.96	19.95	21	0
1.4	64QAM	1	0	19.98	20.01	19.95	21	0
1.4	64QAM	1	3	19.89	20.00	19.92		
1.4	64QAM	1	5	19.99	20.05	19.98		
1.4	64QAM	3	0	20.06	19.97	19.88		
1.4	64QAM	3	1	19.93	19.93	19.78		
1.4	64QAM	3	3	19.98	20.12	19.81		
1.4	64QAM	6	0	19.86	19.90	19.66	21	0



Top antenna+WiFi 2.4G+5G(Receiver off) / Top antenna+WiFi 2.4G+5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20450	20525	20600			
Frequency (MHz)			829	836.5	844			
10	QPSK	1	0	22.88	22.91	22.94	24	0
10	QPSK	1	25	22.84	22.91	22.78		
10	QPSK	1	49	22.84	22.87	22.71		
10	QPSK	25	0	22.89	22.85	23.03	24	0
10	QPSK	25	12	22.86	22.88	22.82		
10	QPSK	25	25	22.91	22.85	22.96		
10	QPSK	50	0	22.79	22.83	22.87	24	0
10	16QAM	1	0	22.97	22.71	22.79		
10	16QAM	1	25	22.80	22.64	22.69		
10	16QAM	1	49	22.59	22.65	22.65	23	1
10	16QAM	25	0	21.80	21.81	21.88		
10	16QAM	25	12	21.81	21.80	21.77		
10	16QAM	25	25	21.70	21.95	21.71	23	1
10	16QAM	50	0	21.70	21.82	21.82		
10	64QAM	1	0	21.99	21.93	21.91		
10	64QAM	1	25	21.71	21.74	21.95	23	1
10	64QAM	1	49	21.54	21.68	21.74		
10	64QAM	25	0	20.78	20.82	20.91		
10	64QAM	25	12	20.72	20.75	20.78	22	2
10	64QAM	25	25	20.82	20.87	20.72		
10	64QAM	50	0	20.70	20.79	20.81		



Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.85	22.78	23.00	24	0
5	QPSK	1	12	22.86	22.81	23.03		
5	QPSK	1	24	22.77	22.69	23.00		
5	QPSK	12	0	22.86	22.89	22.52	24	0
5	QPSK	12	7	22.89	22.92	22.68		
5	QPSK	12	13	22.82	22.90	22.49		
5	QPSK	25	0	22.85	22.90	22.53	24	0
5	16QAM	1	0	22.99	23.01	22.83		
5	16QAM	1	12	22.96	23.02	22.91		
5	16QAM	1	24	22.98	23.00	22.77	23	1
5	16QAM	12	0	21.89	21.86	21.54		
5	16QAM	12	7	21.88	21.86	21.53		
5	16QAM	12	13	21.87	21.78	21.63	23	1
5	16QAM	25	0	21.79	21.80	21.50		
5	64QAM	1	0	21.94	21.93	22.07		
5	64QAM	1	12	21.88	21.93	22.03	23	1
5	64QAM	1	24	21.84	22.09	21.90		
5	64QAM	12	0	20.84	20.80	20.82		
5	64QAM	12	7	20.82	20.85	20.88	22	2
5	64QAM	12	13	20.84	20.94	20.84		
5	64QAM	25	0	20.80	20.80	20.80		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.84	22.83	22.84	24	0
3	QPSK	1	8	22.81	22.87	22.84		
3	QPSK	1	14	22.81	22.91	22.94		
3	QPSK	8	0	22.83	22.84	22.82	24	0
3	QPSK	8	4	22.86	22.87	22.82		
3	QPSK	8	7	22.77	22.83	22.82		
3	QPSK	15	0	22.88	22.90	22.86	24	0
3	16QAM	1	0	23.01	23.02	23.02		
3	16QAM	1	8	23.02	23.01	23.00		
3	16QAM	1	14	23.01	22.96	23.01	23	1
3	16QAM	8	0	21.85	21.81	21.77		
3	16QAM	8	4	21.88	21.84	21.89		
3	16QAM	8	7	21.88	21.86	21.78	23	1
3	16QAM	15	0	21.82	21.86	21.88		
3	64QAM	1	0	22.27	21.86	22.00		
3	64QAM	1	8	21.95	22.13	22.10	23	1
3	64QAM	1	14	21.95	22.11	21.92		
3	64QAM	8	0	20.90	20.79	20.80		
3	64QAM	8	4	20.82	20.87	20.88	22	2
3	64QAM	8	7	20.81	20.85	20.76		
3	64QAM	15	0	20.86	20.76	20.78		



Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.79	22.79	22.87	24	0
1.4	QPSK	1	3	22.77	22.80	23.02		
1.4	QPSK	1	5	22.77	22.89	23.03		
1.4	QPSK	3	0	22.87	23.01	22.84		
1.4	QPSK	3	1	22.87	22.98	22.86		
1.4	QPSK	3	3	22.80	22.91	22.88		
1.4	QPSK	6	0	22.85	23.00	22.79	24	0
1.4	16QAM	1	0	23.01	23.03	23.02	24	0
1.4	16QAM	1	3	23.01	22.97	23.01		
1.4	16QAM	1	5	22.99	22.98	23.01		
1.4	16QAM	3	0	22.91	22.88	22.84		
1.4	16QAM	3	1	22.91	22.84	22.85		
1.4	16QAM	3	3	22.85	23.00	22.89		
1.4	16QAM	6	0	21.76	21.98	21.77	23	1
1.4	64QAM	1	0	21.88	21.99	21.87	23	1
1.4	64QAM	1	3	21.90	21.92	22.05		
1.4	64QAM	1	5	21.93	22.11	21.94		
1.4	64QAM	3	0	21.80	21.79	21.90		
1.4	64QAM	3	1	21.85	21.94	21.89		
1.4	64QAM	3	3	21.82	21.91	21.90		
1.4	64QAM	6	0	20.80	20.84	20.79	22	2



Top antenna+WiFi 2.4G+5G(Receiver on) / Top antenna+WiFi 2.4G+5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	19.45	19.50	19.51	20.5	0
10	QPSK	1	25	19.47	19.41	19.39		
10	QPSK	1	49	19.29	19.36	19.34		
10	QPSK	25	0	19.39	19.53	19.54	20.5	0
10	QPSK	25	12	19.43	19.50	19.41		
10	QPSK	25	25	19.49	19.53	19.39		
10	QPSK	50	0	19.41	19.52	19.38	20.5	0
10	16QAM	1	0	19.70	19.67	19.89		
10	16QAM	1	25	19.76	19.51	19.63		
10	16QAM	1	49	19.59	19.64	19.54	20.5	0
10	16QAM	25	0	19.49	19.49	19.50		
10	16QAM	25	12	19.41	19.39	19.38		
10	16QAM	25	25	19.23	19.51	19.26	20.5	0
10	16QAM	50	0	19.39	19.48	19.28		
10	64QAM	1	0	19.47	19.44	19.54		
10	64QAM	1	25	19.30	19.38	19.27	20.5	0
10	64QAM	1	49	19.47	19.49	19.57		
10	64QAM	25	0	19.41	19.38	19.38		
10	64QAM	25	12	19.41	19.40	19.38	20.5	0
10	64QAM	25	25	19.29	19.39	19.39		
10	64QAM	50	0	19.38	19.38	19.29		



Channel				20425	20525	20625	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	19.38	19.34	19.38	20.5	0
5	QPSK	1	12	19.08	19.13	19.03		
5	QPSK	1	24	19.36	19.39	19.31		
5	QPSK	12	0	19.38	19.41	19.46	20.5	0
5	QPSK	12	7	19.38	19.56	19.46		
5	QPSK	12	13	19.58	19.55	19.49		
5	QPSK	25	0	19.52	19.50	19.47	20.5	0
5	16QAM	1	0	19.70	19.76	19.72		
5	16QAM	1	12	19.61	19.76	19.48		
5	16QAM	1	24	19.76	19.86	19.59	20.5	0
5	16QAM	12	0	19.52	19.48	19.30		
5	16QAM	12	7	19.48	19.48	19.36		
5	16QAM	12	13	19.55	19.42	19.25	20.5	0
5	16QAM	25	0	19.42	19.41	19.35		
5	64QAM	1	0	19.33	19.43	19.40		
5	64QAM	1	12	19.53	19.28	19.27	20.5	0
5	64QAM	1	24	19.44	19.70	19.51		
5	64QAM	12	0	19.40	19.38	19.25		
5	64QAM	12	7	19.40	19.43	19.32	20.5	0
5	64QAM	12	13	19.29	19.41	19.25		
5	64QAM	25	0	19.41	19.42	19.28		
Channel				20415	20525	20635	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	19.37	19.37	19.40	20.5	0
3	QPSK	1	8	19.42	19.31	19.48		
3	QPSK	1	14	19.37	19.35	19.36		
3	QPSK	8	0	19.37	19.45	19.45	20.5	0
3	QPSK	8	4	19.56	19.55	19.47		
3	QPSK	8	7	19.29	19.52	19.36		
3	QPSK	15	0	19.53	19.54	19.46	20.5	0
3	16QAM	1	0	19.74	19.78	19.67		
3	16QAM	1	8	19.55	19.65	19.58		
3	16QAM	1	14	19.70	19.80	19.63	20.5	0
3	16QAM	8	0	19.41	19.46	19.36		
3	16QAM	8	4	19.53	19.42	19.35		
3	16QAM	8	7	19.26	19.52	19.37	20.5	0
3	16QAM	15	0	19.52	19.49	19.35		
3	64QAM	1	0	19.50	19.57	19.50		
3	64QAM	1	8	19.48	19.55	19.49	20.5	0
3	64QAM	1	14	19.37	19.64	19.55		
3	64QAM	8	0	19.31	19.41	19.29		
3	64QAM	8	4	19.26	19.39	19.20	20.5	0
3	64QAM	8	7	19.27	19.37	19.23		
3	64QAM	15	0	19.43	19.40	19.33		





Channel				20407	20525	20643	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	19.34	19.29	19.49	20.5	0
1.4	QPSK	1	3	19.36	19.32	19.39		
1.4	QPSK	1	5	19.31	19.40	19.41		
1.4	QPSK	3	0	19.38	19.31	19.47		
1.4	QPSK	3	1	19.27	19.43	19.41		
1.4	QPSK	3	3	19.35	19.29	19.40		
1.4	QPSK	6	0	19.52	19.56	19.45	20.5	0
1.4	16QAM	1	0	19.80	19.70	19.52	20.5	0
1.4	16QAM	1	3	19.72	19.69	19.66		
1.4	16QAM	1	5	19.86	19.77	19.58		
1.4	16QAM	3	0	19.27	19.48	19.51		
1.4	16QAM	3	1	19.30	19.44	19.39		
1.4	16QAM	3	3	19.50	19.42	19.49		
1.4	16QAM	6	0	19.28	19.56	19.29	20.5	0
1.4	64QAM	1	0	19.48	19.48	19.58	20.5	0
1.4	64QAM	1	3	19.42	19.69	19.57		
1.4	64QAM	1	5	19.42	19.67	19.61		
1.4	64QAM	3	0	19.33	19.52	19.48		
1.4	64QAM	3	1	19.33	19.52	19.41		
1.4	64QAM	3	3	19.32	19.49	19.41		
1.4	64QAM	6	0	19.29	19.33	19.28	20.5	0



<LTE Band 7>

Full Power / Receiver off / Receiver off+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20850	21100	21350			
Frequency (MHz)			2510	2535	2560			
20	QPSK	1	0	23.06	23.13	23.19	24.7	0
20	QPSK	1	49	23.28	23.26	23.26		
20	QPSK	1	99	23.42	23.49	23.28		
20	QPSK	50	0	22.51	22.57	22.62	23.7	1
20	QPSK	50	24	22.49	22.53	22.56		
20	QPSK	50	50	22.62	22.67	22.57		
20	QPSK	100	0	22.55	22.61	22.63	23.7	1
20	16QAM	1	0	22.23	22.32	22.44		
20	16QAM	1	49	22.51	22.71	22.49		
20	16QAM	1	99	22.61	22.65	22.45	22.7	2
20	16QAM	50	0	21.33	21.50	21.55		
20	16QAM	50	24	21.33	21.45	21.47		
20	16QAM	50	50	21.47	21.57	21.60	22.7	2
20	16QAM	100	0	21.44	21.52	21.57		
20	64QAM	1	0	21.18	21.11	21.19		
20	64QAM	1	49	21.09	21.23	21.29	22.7	2
20	64QAM	1	99	21.40	21.52	21.43		
20	64QAM	50	0	20.34	20.48	20.53		
20	64QAM	50	24	20.32	20.46	20.45	21.7	3
20	64QAM	50	50	20.48	20.56	20.57		
20	64QAM	100	0	20.42	20.51	20.55		



Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	23.16	23.32	23.42	24.7	0
15	QPSK	1	37	23.31	23.39	23.36		
15	QPSK	1	74	23.19	23.23	23.06		
15	QPSK	36	0	22.47	22.58	22.62	23.7	1
15	QPSK	36	20	22.49	22.55	22.56		
15	QPSK	36	39	22.60	22.59	22.58		
15	QPSK	75	0	22.48	22.56	22.58	23.7	1
15	16QAM	1	0	22.34	22.50	22.49		
15	16QAM	1	37	22.48	22.64	22.62		
15	16QAM	1	74	22.43	22.65	22.33	22.7	2
15	16QAM	36	0	21.39	21.51	21.52		
15	16QAM	36	20	21.36	21.50	21.46		
15	16QAM	36	39	21.47	21.61	21.46	22.7	2
15	16QAM	75	0	21.35	21.49	21.52		
15	64QAM	1	0	21.17	21.28	21.34		
15	64QAM	1	37	21.21	21.44	21.32	22.7	2
15	64QAM	1	74	21.26	21.38	21.18		
15	64QAM	36	0	20.40	20.50	20.51		
15	64QAM	36	20	20.36	20.50	20.50	21.7	3
15	64QAM	36	39	20.46	20.61	20.44		
15	64QAM	75	0	20.35	20.50	20.52		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	23.16	23.24	23.26	24.7	0
10	QPSK	1	25	23.41	23.45	23.31		
10	QPSK	1	49	23.13	23.21	23.08		
10	QPSK	25	0	22.45	22.52	22.50	23.7	1
10	QPSK	25	12	22.47	22.58	22.53		
10	QPSK	25	25	22.56	22.53	22.43		
10	QPSK	50	0	22.41	22.54	22.55	23.7	1
10	16QAM	1	0	22.32	22.49	22.51		
10	16QAM	1	25	22.56	22.53	22.51		
10	16QAM	1	49	22.41	22.55	22.39	22.7	2
10	16QAM	25	0	21.38	21.44	21.46		
10	16QAM	25	12	21.39	21.52	21.49		
10	16QAM	25	25	21.35	21.56	21.51	22.7	2
10	16QAM	50	0	21.32	21.43	21.45		
10	64QAM	1	0	21.16	21.28	21.26		
10	64QAM	1	25	21.48	21.37	21.49	22.7	2
10	64QAM	1	49	21.25	21.31	21.12		
10	64QAM	25	0	20.34	20.45	20.45		
10	64QAM	25	12	20.39	20.44	20.47	21.7	3
10	64QAM	25	25	20.33	20.56	20.48		
10	64QAM	50	0	20.29	20.49	20.45		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	23.17	23.25	23.18	24.7	0
5	QPSK	1	12	23.16	23.37	23.17		
5	QPSK	1	24	23.10	23.24	23.06		
5	QPSK	12	0	22.45	22.56	22.58	23.7	1
5	QPSK	12	7	22.46	22.58	22.49		
5	QPSK	12	13	22.46	22.49	22.58		
5	QPSK	25	0	22.46	22.56	22.49	23.7	1
5	16QAM	1	0	22.37	22.51	22.48		
5	16QAM	1	12	22.45	22.64	22.55		
5	16QAM	1	24	22.35	22.49	22.34	22.7	2
5	16QAM	12	0	21.34	21.50	21.54		
5	16QAM	12	7	21.31	21.49	21.49		
5	16QAM	12	13	21.37	21.54	21.45	22.7	2
5	16QAM	25	0	21.37	21.50	21.44		
5	64QAM	1	0	21.04	21.32	21.32		
5	64QAM	1	12	21.16	21.46	21.25	22.7	2
5	64QAM	1	24	21.19	21.35	21.19		
5	64QAM	12	0	20.35	20.44	20.52		
5	64QAM	12	7	20.31	20.46	20.48	21.7	3
5	64QAM	12	13	20.40	20.54	20.46		
5	64QAM	25	0	20.36	20.50	20.43		



Receiver on / Receiver on+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20850	21100	21350			
Frequency (MHz)			2510	2535	2560			
20	QPSK	1	0	20.18	20.22	20.20	21.2	0
20	QPSK	1	49	20.24	20.29	20.19		
20	QPSK	1	99	20.31	20.33	20.24		
20	QPSK	50	0	20.20	20.28	20.14	21.2	0
20	QPSK	50	24	20.19	20.29	20.26		
20	QPSK	50	50	20.42	20.44	20.31		
20	QPSK	100	0	20.32	20.30	20.17	21.2	0
20	16QAM	1	0	20.14	20.10	20.03		
20	16QAM	1	49	20.37	20.40	20.33		
20	16QAM	1	99	20.29	20.43	20.27	21.2	0
20	16QAM	50	0	20.48	20.28	20.14		
20	16QAM	50	24	20.35	20.23	20.07		
20	16QAM	50	50	20.37	20.31	20.19	21.2	0
20	16QAM	100	0	20.19	20.28	20.11		
20	64QAM	1	0	20.12	20.03	20.07		
20	64QAM	1	49	20.21	20.27	20.34	21.2	0
20	64QAM	1	99	20.41	20.34	20.29		
20	64QAM	50	0	20.31	20.29	20.30		
20	64QAM	50	24	20.16	20.24	20.22	21.2	0
20	64QAM	50	50	20.29	20.19	20.31		
20	64QAM	100	0	20.22	20.31	20.40		



Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	20.17	20.24	20.13	21.2	0
15	QPSK	1	37	20.09	20.19	20.11		
15	QPSK	1	74	20.13	20.24	20.20		
15	QPSK	36	0	20.29	20.31	20.27	21.2	0
15	QPSK	36	20	20.21	20.30	20.26		
15	QPSK	36	39	20.27	20.34	20.18		
15	QPSK	75	0	20.19	20.31	20.22	21.2	0
15	16QAM	1	0	20.00	20.27	20.17		
15	16QAM	1	37	20.36	20.41	20.26		
15	16QAM	1	74	20.27	20.33	20.30	21.2	0
15	16QAM	36	0	20.19	20.29	20.23		
15	16QAM	36	20	20.25	20.28	20.19		
15	16QAM	36	39	20.09	20.13	20.21	21.2	0
15	16QAM	75	0	20.16	20.10	20.31		
15	64QAM	1	0	20.19	20.11	20.26		
15	64QAM	1	37	20.31	20.26	20.17	21.2	0
15	64QAM	1	74	20.27	20.15	20.30		
15	64QAM	36	0	20.34	20.26	20.34		
15	64QAM	36	20	20.32	20.30	20.42	21.2	0
15	64QAM	36	39	20.21	20.10	20.35		
15	64QAM	75	0	20.23	20.19	20.22		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	20.20	20.22	20.16	21.2	0
10	QPSK	1	25	20.18	20.26	20.20		
10	QPSK	1	49	20.27	20.29	20.21		
10	QPSK	25	0	20.31	20.32	20.16	21.2	0
10	QPSK	25	12	20.24	20.31	20.22		
10	QPSK	25	25	20.25	20.39	20.27		
10	QPSK	50	0	20.19	20.27	20.13	21.2	0
10	16QAM	1	0	20.24	20.26	20.19		
10	16QAM	1	25	20.33	20.17	20.29		
10	16QAM	1	49	20.37	20.14	20.23	21.2	0
10	16QAM	25	0	20.35	20.30	20.10		
10	16QAM	25	12	20.14	20.32	20.23		
10	16QAM	25	25	20.19	20.24	20.15	21.2	0
10	16QAM	50	0	20.34	20.25	20.40		
10	64QAM	1	0	20.16	20.26	20.29		
10	64QAM	1	25	20.20	20.14	20.30	21.2	0
10	64QAM	1	49	20.16	20.29	20.25		
10	64QAM	25	0	20.23	20.19	20.26		
10	64QAM	25	12	20.21	20.23	20.18	21.2	0
10	64QAM	25	25	20.31	20.23	20.27		
10	64QAM	50	0	20.24	20.22	20.21		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	20.15	20.21	20.18	21.2	0
5	QPSK	1	12	20.13	20.14	20.16		
5	QPSK	1	24	20.12	20.09	20.25		
5	QPSK	12	0	20.30	20.36	20.32	21.2	0
5	QPSK	12	7	20.31	20.32	20.31		
5	QPSK	12	13	20.32	20.38	20.23		
5	QPSK	25	0	20.25	20.31	20.22	21.2	0
5	16QAM	1	0	20.19	20.19	20.20		
5	16QAM	1	12	20.40	20.28	20.31		
5	16QAM	1	24	20.34	20.30	20.35	21.2	0
5	16QAM	12	0	20.25	20.31	20.28		
5	16QAM	12	7	20.16	20.14	20.24		
5	16QAM	12	13	20.13	20.09	20.26	21.2	0
5	16QAM	25	0	20.26	20.22	20.36		
5	64QAM	1	0	20.20	20.16	20.31		
5	64QAM	1	12	20.13	20.07	20.22	21.2	0
5	64QAM	1	24	20.11	20.17	20.35		
5	64QAM	12	0	20.34	20.31	20.39		
5	64QAM	12	7	20.26	20.22	20.37	21.2	0
5	64QAM	12	13	20.14	20.12	20.22		
5	64QAM	25	0	20.12	20.15	20.16		



Top antenna+WiFi 2.4G(Receiver off) / Top antenna+WiFi 2.4G(Receiver off)+BT / Top antenna+WiFi 5G(Receiver off) / Top antenna+WiFi 5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	22.32	22.44	22.52	23.7	0
20	QPSK	1	49	22.57	22.57	22.36		
20	QPSK	1	99	22.36	22.46	22.10		
20	QPSK	50	0	22.63	22.82	22.67	23.7	0
20	QPSK	50	24	22.64	22.75	22.53		
20	QPSK	50	50	22.65	22.70	22.55		
20	QPSK	100	0	22.66	22.78	22.67	23.7	0
20	16QAM	1	0	22.65	22.84	22.61		
20	16QAM	1	49	22.73	22.80	22.81		
20	16QAM	1	99	22.54	22.63	22.63	22.7	1
20	16QAM	50	0	21.57	21.69	21.64		
20	16QAM	50	24	21.67	21.69	21.56		
20	16QAM	50	50	21.68	21.67	21.45	22.7	1
20	16QAM	100	0	21.60	21.68	21.56		
20	64QAM	1	0	21.42	21.44	21.49		
20	64QAM	1	49	21.49	21.59	21.37	22.7	1
20	64QAM	1	99	21.38	21.44	21.12		
20	64QAM	50	0	20.62	20.68	20.66		
20	64QAM	50	24	20.67	20.70	20.51	21.7	2
20	64QAM	50	50	20.72	20.60	20.48		
20	64QAM	100	0	20.62	20.68	20.59		





Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	22.20	22.30	22.51	23.7	0
15	QPSK	1	37	22.60	22.54	22.36		
15	QPSK	1	74	22.57	22.56	22.27		
15	QPSK	36	0	22.75	22.83	22.78	23.7	0
15	QPSK	36	20	22.67	22.76	22.65		
15	QPSK	36	39	22.76	22.81	22.61		
15	QPSK	75	0	21.78	21.80	21.71	23.7	0
15	16QAM	1	0	22.66	22.59	22.65		
15	16QAM	1	37	22.73	22.78	22.56		
15	16QAM	1	74	22.67	22.84	22.41	22.7	1
15	16QAM	36	0	21.73	21.78	21.75		
15	16QAM	36	20	21.63	21.69	21.57		
15	16QAM	36	39	21.69	21.80	21.50	22.7	1
15	16QAM	75	0	21.68	21.71	21.69		
15	64QAM	1	0	21.26	21.32	21.59		
15	64QAM	1	37	21.64	21.64	21.46	22.7	1
15	64QAM	1	74	21.56	21.58	21.31		
15	64QAM	36	0	20.71	20.73	20.68		
15	64QAM	36	20	20.65	20.66	20.44	21.7	2
15	64QAM	36	39	20.72	20.68	20.53		
15	64QAM	75	0	20.70	20.73	20.66		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	22.27	22.40	22.37	23.7	0
10	QPSK	1	25	22.50	22.46	22.53		
10	QPSK	1	49	22.32	22.40	22.07		
10	QPSK	25	0	22.69	22.77	22.50	23.7	0
10	QPSK	25	12	22.65	22.79	22.62		
10	QPSK	25	25	22.74	22.74	22.37		
10	QPSK	50	0	22.64	22.76	22.58	23.7	0
10	16QAM	1	0	22.59	22.81	22.57		
10	16QAM	1	25	22.81	22.84	22.58		
10	16QAM	1	49	22.37	22.61	22.41	22.7	1
10	16QAM	25	0	21.63	21.70	21.51		
10	16QAM	25	12	21.66	21.70	21.49		
10	16QAM	25	25	21.64	21.75	21.42	22.7	1
10	16QAM	50	0	21.59	21.69	21.50		
10	64QAM	1	0	21.29	21.57	21.44		
10	64QAM	1	25	21.59	21.56	21.47	22.7	1
10	64QAM	1	49	21.41	21.39	21.35		
10	64QAM	25	0	20.57	20.67	20.46		
10	64QAM	25	12	20.60	20.70	20.43	21.7	2
10	64QAM	25	25	20.67	20.63	20.33		
10	64QAM	50	0	20.57	20.67	20.52		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	22.17	22.48	22.42	23.7	0
5	QPSK	1	12	22.32	22.50	22.27		
5	QPSK	1	24	22.26	22.35	22.09		
5	QPSK	12	0	22.57	22.79	22.59	23.7	0
5	QPSK	12	7	22.63	22.80	22.60		
5	QPSK	12	13	22.57	22.79	22.48		
5	QPSK	25	0	22.60	22.76	22.56	23.7	0
5	16QAM	1	0	22.49	22.68	22.51		
5	16QAM	1	12	22.65	22.81	22.53		
5	16QAM	1	24	22.57	22.62	22.55	22.7	1
5	16QAM	12	0	21.65	21.75	21.52		
5	16QAM	12	7	21.64	21.75	21.48		
5	16QAM	12	13	21.63	21.75	21.57	22.7	1
5	16QAM	25	0	21.63	21.72	21.44		
5	64QAM	1	0	21.26	21.48	21.39		
5	64QAM	1	12	21.31	21.67	21.26	22.7	1
5	64QAM	1	24	21.31	21.45	21.31		
5	64QAM	12	0	20.68	20.71	20.50		
5	64QAM	12	7	20.62	20.74	20.41	21.7	2
5	64QAM	12	13	20.69	20.78	20.41		
5	64QAM	25	0	20.57	20.70	20.46		



Top antenna+WiFi 2.4G(Receiver on) / Top antenna+WiFi 2.4G(Receiver on)+BT / Top antenna+WiFi 5G(Receiver on) / Top antenna+WiFi 5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	18.88	18.75	18.84	20.2	0
20	QPSK	1	49	19.09	19.14	18.92		
20	QPSK	1	99	19.01	18.96	18.80		
20	QPSK	50	0	19.16	19.22	19.17	20.2	0
20	QPSK	50	24	19.21	19.21	19.09		
20	QPSK	50	50	19.28	19.11	19.03		
20	QPSK	100	0	19.26	19.20	19.19	20.2	0
20	16QAM	1	0	19.09	19.19	19.15		
20	16QAM	1	49	19.24	19.11	19.09		
20	16QAM	1	99	19.40	19.20	19.10	20.2	0
20	16QAM	50	0	19.03	19.10	19.07		
20	16QAM	50	24	19.07	19.10	18.90		
20	16QAM	50	50	19.13	19.26	18.86	20.2	0
20	16QAM	100	0	19.12	19.07	18.98		
20	64QAM	1	0	18.92	18.92	18.85		
20	64QAM	1	49	18.95	18.96	18.73	20.2	0
20	64QAM	1	99	19.15	19.03	18.76		
20	64QAM	50	0	19.03	19.11	19.02		
20	64QAM	50	24	18.97	19.09	18.86	20.2	0
20	64QAM	50	50	19.00	19.26	18.76		
20	64QAM	100	0	19.02	19.08	18.97		



Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	18.82	18.89	18.83	20.2	0
15	QPSK	1	37	19.00	18.95	18.98		
15	QPSK	1	74	18.84	18.76	18.60		
15	QPSK	36	0	19.16	19.16	19.14	20.2	0
15	QPSK	36	20	19.24	19.19	19.10		
15	QPSK	36	39	19.25	19.08	19.00		
15	QPSK	75	0	19.12	19.25	19.06	20.2	0
15	16QAM	1	0	19.21	19.29	19.22		
15	16QAM	1	37	19.22	19.30	19.19		
15	16QAM	1	74	19.27	19.05	19.05	20.2	0
15	16QAM	36	0	19.05	19.06	19.07		
15	16QAM	36	20	19.00	19.16	18.87		
15	16QAM	36	39	19.15	18.98	18.84	20.2	0
15	16QAM	75	0	19.00	19.15	18.95		
15	64QAM	1	0	18.81	19.13	18.87		
15	64QAM	1	37	18.92	18.97	19.08	20.2	0
15	64QAM	1	74	19.03	18.75	18.68		
15	64QAM	36	0	19.08	19.05	18.95		
15	64QAM	36	20	19.02	19.07	18.88	20.2	0
15	64QAM	36	39	19.18	19.01	18.86		
15	64QAM	75	0	19.04	19.07	18.89		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	18.82	18.76	18.84	20.2	0
10	QPSK	1	25	19.12	19.05	18.83		
10	QPSK	1	49	18.82	18.80	18.68		
10	QPSK	25	0	19.12	19.14	18.98	20.2	0
10	QPSK	25	12	19.11	19.17	19.03		
10	QPSK	25	25	19.24	19.10	19.06		
10	QPSK	50	0	19.09	19.17	19.00	20.2	0
10	16QAM	1	0	19.26	19.01	19.18		
10	16QAM	1	25	19.16	19.39	19.33		
10	16QAM	1	49	19.18	19.19	19.07	20.2	0
10	16QAM	25	0	19.05	19.04	18.92		
10	16QAM	25	12	19.03	19.08	18.90		
10	16QAM	25	25	19.03	19.07	18.79	20.2	0
10	16QAM	50	0	19.01	19.06	18.88		
10	64QAM	1	0	18.89	19.07	18.88		
10	64QAM	1	25	18.97	19.00	18.95	20.2	0
10	64QAM	1	49	19.04	18.90	18.71		
10	64QAM	25	0	18.96	19.05	18.90		
10	64QAM	25	12	19.03	19.09	18.89	20.2	0
10	64QAM	25	25	18.91	19.03	18.78		
10	64QAM	50	0	18.94	19.10	18.88		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	18.87	18.85	18.69	20.2	0
5	QPSK	1	12	19.05	19.07	18.92		
5	QPSK	1	24	18.80	18.76	18.69		
5	QPSK	12	0	19.22	19.26	19.09	20.2	0
5	QPSK	12	7	19.19	19.26	19.08		
5	QPSK	12	13	19.15	19.22	19.09		
5	QPSK	25	0	19.15	19.23	19.06	20.2	0
5	16QAM	1	0	19.12	19.09	19.23		
5	16QAM	1	12	19.25	19.27	19.28		
5	16QAM	1	24	19.26	19.25	19.00	20.2	0
5	16QAM	12	0	19.03	19.18	18.93		
5	16QAM	12	7	19.14	19.23	18.91		
5	16QAM	12	13	19.10	19.12	18.83	20.2	0
5	16QAM	25	0	19.08	19.19	18.87		
5	64QAM	1	0	18.80	18.94	18.86		
5	64QAM	1	12	19.01	19.05	18.91	20.2	0
5	64QAM	1	24	19.07	18.98	18.82		
5	64QAM	12	0	19.01	19.09	18.95		
5	64QAM	12	7	19.04	19.15	18.91	20.2	0
5	64QAM	12	13	18.98	19.05	18.85		
5	64QAM	25	0	18.97	19.07	18.83		



Top antenna+WiFi 2.4G+5G(Receiver off) / Top antenna+WiFi 2.4G+5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			20850	21100	21350			
Frequency (MHz)			2510	2535	2560			
20	QPSK	1	0	21.45	21.31	21.33	22.7	0
20	QPSK	1	49	21.58	21.73	21.49		
20	QPSK	1	99	21.61	21.53	21.38		
20	QPSK	50	0	21.67	21.72	21.81	22.7	0
20	QPSK	50	24	21.62	21.64	21.69		
20	QPSK	50	50	21.64	21.68	21.78		
20	QPSK	100	0	21.71	21.84	21.75	22.7	0
20	16QAM	1	0	21.52	21.51	21.70		
20	16QAM	1	49	21.64	21.88	21.91		
20	16QAM	1	99	21.70	21.87	21.68	22.7	0
20	16QAM	50	0	21.72	21.76	21.72		
20	16QAM	50	24	21.61	21.65	21.58		
20	16QAM	50	50	21.75	21.77	21.62	22.7	0
20	16QAM	100	0	21.70	21.76	21.69		
20	64QAM	1	0	21.34	21.42	21.46		
20	64QAM	1	49	21.74	21.61	21.65	22.7	0
20	64QAM	1	99	21.65	21.51	21.64		
20	64QAM	50	0	20.74	20.68	20.71		
20	64QAM	50	24	20.63	20.67	20.60	21.7	1
20	64QAM	50	50	20.76	20.68	20.52		
20	64QAM	100	0	20.72	20.74	20.69		



Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	21.29	21.52	21.36	22.7	0
15	QPSK	1	37	21.56	21.53	21.42		
15	QPSK	1	74	21.41	21.34	21.14		
15	QPSK	36	0	21.60	21.71	21.76	22.7	0
15	QPSK	36	20	21.64	21.63	21.66		
15	QPSK	36	39	21.64	21.73	21.66		
15	QPSK	75	0	21.61	21.73	21.70	22.7	0
15	16QAM	1	0	21.48	21.54	21.78		
15	16QAM	1	37	21.54	21.78	21.48		
15	16QAM	1	74	21.48	21.74	21.42	22.7	0
15	16QAM	36	0	21.64	21.69	21.69		
15	16QAM	36	20	21.69	21.73	21.59		
15	16QAM	36	39	21.70	21.71	21.55	22.7	0
15	16QAM	75	0	21.57	21.72	21.63		
15	64QAM	1	0	21.40	21.51	21.44		
15	64QAM	1	37	21.54	21.50	21.44	22.7	0
15	64QAM	1	74	21.36	21.57	21.27		
15	64QAM	36	0	20.56	20.73	20.68		
15	64QAM	36	20	20.57	20.61	20.53	21.7	1
15	64QAM	36	39	20.64	20.64	20.41		
15	64QAM	75	0	20.60	20.59	20.49		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.37	21.50	21.43	22.7	0
10	QPSK	1	25	21.57	21.50	21.57		
10	QPSK	1	49	21.50	21.43	21.13		
10	QPSK	25	0	21.56	21.63	21.62	22.7	0
10	QPSK	25	12	21.57	21.65	21.68		
10	QPSK	25	25	21.60	21.67	21.54		
10	QPSK	50	0	21.52	21.60	21.66	22.7	0
10	16QAM	1	0	21.41	21.60	21.62		
10	16QAM	1	25	21.60	21.64	21.53		
10	16QAM	1	49	21.56	21.71	21.45	22.7	0
10	16QAM	25	0	21.61	21.66	21.58		
10	16QAM	25	12	21.70	21.73	21.53		
10	16QAM	25	25	21.69	21.68	21.44	22.7	0
10	16QAM	50	0	21.52	21.68	21.47		
10	64QAM	1	0	21.42	21.42	21.62		
10	64QAM	1	25	21.66	21.75	21.72	22.7	0
10	64QAM	1	49	21.41	21.46	21.28		
10	64QAM	25	0	20.53	20.58	20.55		
10	64QAM	25	12	20.60	20.62	20.54	21.7	1
10	64QAM	25	25	20.63	20.58	20.48		
10	64QAM	50	0	20.48	20.59	20.40		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.42	21.37	21.38	22.7	0
5	QPSK	1	12	21.45	21.40	21.16		
5	QPSK	1	24	21.40	21.46	21.21		
5	QPSK	12	0	21.58	21.66	21.68	22.7	0
5	QPSK	12	7	21.60	21.63	21.63		
5	QPSK	12	13	21.54	21.70	21.63		
5	QPSK	25	0	21.59	21.64	21.59	22.7	0
5	16QAM	1	0	21.48	21.66	21.54		
5	16QAM	1	12	21.64	21.77	21.52		
5	16QAM	1	24	21.52	21.56	21.40	22.7	0
5	16QAM	12	0	21.63	21.75	21.60		
5	16QAM	12	7	21.59	21.66	21.56		
5	16QAM	12	13	21.69	21.72	21.47	22.7	0
5	16QAM	25	0	21.66	21.74	21.49		
5	64QAM	1	0	21.28	21.45	21.45		
5	64QAM	1	12	21.40	21.64	21.29	22.7	0
5	64QAM	1	24	21.42	21.47	21.31		
5	64QAM	12	0	20.55	20.66	20.49		
5	64QAM	12	7	20.63	20.65	20.57	21.7	1
5	64QAM	12	13	20.61	20.62	20.39		
5	64QAM	25	0	20.57	20.62	20.36		





Top antenna+WiFi 2.4G+5G(Receiver on) / Top antenna+WiFi 2.4G+5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	17.97	17.78	17.84	19.2	0
20	QPSK	1	49	18.21	18.04	18.11		
20	QPSK	1	99	18.18	17.95	17.89		
20	QPSK	50	0	18.25	18.20	18.08	19.2	0
20	QPSK	50	24	18.10	18.09	18.05		
20	QPSK	50	50	18.14	18.18	17.98		
20	QPSK	100	0	18.15	18.22	18.10	19.2	0
20	16QAM	1	0	18.12	18.09	18.22		
20	16QAM	1	49	18.38	18.20	18.20		
20	16QAM	1	99	18.40	18.31	18.11	19.2	0
20	16QAM	50	0	18.19	18.03	17.96		
20	16QAM	50	24	18.18	18.14	17.92		
20	16QAM	50	50	18.16	18.10	17.92	19.2	0
20	16QAM	100	0	18.17	18.14	17.96		
20	64QAM	1	0	18.02	17.83	17.86		
20	64QAM	1	49	17.94	17.93	17.89	19.2	0
20	64QAM	1	99	18.21	18.14	18.00		
20	64QAM	50	0	18.20	18.01	18.15		
20	64QAM	50	24	18.14	17.91	17.91	19.2	0
20	64QAM	50	50	18.17	18.01	17.93		
20	64QAM	100	0	18.19	18.17	17.99		



Channel				20825	21100	21375	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	18.05	17.89	17.81	19.2	0
15	QPSK	1	37	18.04	18.13	18.04		
15	QPSK	1	74	18.04	17.82	17.69		
15	QPSK	36	0	18.02	18.20	18.04	19.2	0
15	QPSK	36	20	18.13	18.14	17.95		
15	QPSK	36	39	18.25	18.15	17.93		
15	QPSK	75	0	18.15	18.18	18.03	19.2	0
15	16QAM	1	0	18.22	18.30	18.00		
15	16QAM	1	37	18.19	18.37	18.06		
15	16QAM	1	74	18.27	18.09	17.98	19.2	0
15	16QAM	36	0	17.93	18.25	17.93		
15	16QAM	36	20	18.18	18.12	18.07		
15	16QAM	36	39	18.18	18.10	18.00	19.2	0
15	16QAM	75	0	18.18	18.11	18.10		
15	64QAM	1	0	18.07	17.93	17.90		
15	64QAM	1	37	18.08	17.89	17.83	19.2	0
15	64QAM	1	74	18.09	17.88	17.76		
15	64QAM	36	0	18.15	17.99	17.98		
15	64QAM	36	20	18.22	18.14	17.90	19.2	0
15	64QAM	36	39	18.21	18.12	18.01		
15	64QAM	75	0	18.11	18.12	18.06		
Channel				20800	21100	21400	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	17.72	17.88	17.79	19.2	0
10	QPSK	1	25	18.04	18.05	17.88		
10	QPSK	1	49	18.05	17.92	17.96		
10	QPSK	25	0	18.04	18.10	17.91	19.2	0
10	QPSK	25	12	18.13	18.21	17.95		
10	QPSK	25	25	18.14	18.14	17.98		
10	QPSK	50	0	18.13	18.21	18.05	19.2	0
10	16QAM	1	0	18.22	18.09	18.08		
10	16QAM	1	25	18.31	18.38	18.28		
10	16QAM	1	49	18.19	18.17	17.95	19.2	0
10	16QAM	25	0	17.93	17.95	18.02		
10	16QAM	25	12	18.10	18.17	18.02		
10	16QAM	25	25	18.10	18.10	18.07	19.2	0
10	16QAM	50	0	18.07	18.14	17.97		
10	64QAM	1	0	17.86	17.90	17.88		
10	64QAM	1	25	18.12	18.03	17.95	19.2	0
10	64QAM	1	49	18.00	17.94	17.75		
10	64QAM	25	0	18.11	17.96	18.00		
10	64QAM	25	12	18.11	18.06	17.94	19.2	0
10	64QAM	25	25	18.10	18.10	17.92		
10	64QAM	50	0	18.11	18.17	17.99		



Channel				20775	21100	21425	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	17.93	18.06	17.75	19.2	0
5	QPSK	1	12	17.87	18.12	17.92		
5	QPSK	1	24	18.02	18.02	17.70		
5	QPSK	12	0	18.14	18.18	18.02	19.2	0
5	QPSK	12	7	18.10	18.22	17.96		
5	QPSK	12	13	18.18	18.27	18.03		
5	QPSK	25	0	18.20	18.19	18.01	19.2	0
5	16QAM	1	0	18.16	18.27	18.03		
5	16QAM	1	12	18.26	18.28	18.23		
5	16QAM	1	24	18.26	18.33	17.93	19.2	0
5	16QAM	12	0	18.11	18.14	18.10		
5	16QAM	12	7	18.08	18.21	18.04		
5	16QAM	12	13	18.17	18.11	18.11	19.2	0
5	16QAM	25	0	18.03	18.17	17.98		
5	64QAM	1	0	18.10	18.13	18.02		
5	64QAM	1	12	18.00	17.93	18.00	19.2	0
5	64QAM	1	24	18.10	17.93	17.77		
5	64QAM	12	0	18.04	18.18	18.09		
5	64QAM	12	7	18.07	18.22	18.03	19.2	0
5	64QAM	12	13	18.18	18.14	18.09		
5	64QAM	25	0	18.17	18.17	17.95		



<LTE Band 26>

Full Power / Receiver off / Receiver off+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel			26765	26865	26965			
Frequency (MHz)			821.5	831.5	841.5			
15	QPSK	1	0	23.35	23.44	23.37	24.5	0
15	QPSK	1	37	23.36	23.48	23.41		
15	QPSK	1	74	23.33	23.31	23.45		
15	QPSK	36	0	22.45	22.50	22.42	23.5	1
15	QPSK	36	20	22.48	22.36	22.43		
15	QPSK	36	39	22.46	22.46	22.42		
15	QPSK	75	0	22.44	22.36	22.44	23.8	0.7
15	16QAM	1	0	22.73	22.71	22.56		
15	16QAM	1	37	22.56	22.57	22.66		
15	16QAM	1	74	22.58	22.61	22.56	22.8	1.7
15	16QAM	36	0	21.34	21.38	21.41		
15	16QAM	36	20	21.47	21.31	21.34		
15	16QAM	36	39	21.51	21.21	21.29	22.8	1.7
15	16QAM	75	0	21.45	21.38	21.32		
15	64QAM	1	0	21.35	21.44	21.34		
15	64QAM	1	37	21.36	21.43	21.51	22.8	1.7
15	64QAM	1	74	21.37	21.36	21.39		
15	64QAM	36	0	20.34	20.38	20.40		
15	64QAM	36	20	20.47	20.31	20.35	21.8	2.7
15	64QAM	36	39	20.40	20.22	20.29		
15	64QAM	75	0	20.45	20.32	20.31		



Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	23.53	23.41	23.36	24.5	0
10	QPSK	1	25	23.39	23.27	23.36		
10	QPSK	1	49	23.36	23.49	23.29		
10	QPSK	25	0	22.44	22.47	22.40	23.5	1
10	QPSK	25	12	22.39	22.33	22.37		
10	QPSK	25	25	22.52	22.35	22.34		
10	QPSK	50	0	22.48	22.34	22.33	23.8	0.7
10	16QAM	1	0	22.62	22.67	22.68		
10	16QAM	1	25	22.60	22.64	22.69		
10	16QAM	1	49	22.63	22.61	22.54	22.8	1.7
10	16QAM	25	0	21.44	21.43	21.40		
10	16QAM	25	12	21.34	21.29	21.33		
10	16QAM	25	25	21.38	21.38	21.36	21.8	2.7
10	16QAM	50	0	21.36	21.24	21.29		
10	64QAM	1	0	21.55	21.49	21.47		
10	64QAM	1	25	21.44	21.46	21.72	22.8	1.7
10	64QAM	1	49	21.51	21.42	21.49		
10	64QAM	25	0	20.45	20.39	20.29		
10	64QAM	25	12	20.33	20.27	20.34	21.8	2.7
10	64QAM	25	25	20.38	20.37	20.23		
10	64QAM	50	0	20.36	20.24	20.31		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	23.35	23.37	23.33	24.5	0
5	QPSK	1	12	23.26	23.17	23.21		
5	QPSK	1	24	23.48	23.36	23.46		
5	QPSK	12	0	22.48	22.37	22.46	23.5	1
5	QPSK	12	7	22.45	22.31	22.56		
5	QPSK	12	13	22.41	22.41	22.62		
5	QPSK	25	0	22.42	22.36	22.45	23.8	0.7
5	16QAM	1	0	22.67	22.68	22.66		
5	16QAM	1	12	22.63	22.63	22.64		
5	16QAM	1	24	22.67	22.76	22.74	22.8	1.7
5	16QAM	12	0	21.52	21.34	21.35		
5	16QAM	12	7	21.42	21.32	21.44		
5	16QAM	12	13	21.33	21.35	21.51	21.8	2.7
5	16QAM	25	0	21.44	21.33	21.45		
5	64QAM	1	0	21.52	21.51	21.45		
5	64QAM	1	12	21.53	21.33	21.39	22.8	1.7
5	64QAM	1	24	21.51	21.45	21.53		
5	64QAM	12	0	20.48	20.37	20.35		
5	64QAM	12	7	20.47	20.29	20.53	21.8	2.7
5	64QAM	12	13	20.43	20.35	20.37		
5	64QAM	25	0	20.43	20.33	20.44		



Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	23.38	23.31	23.41	24.5	0
3	QPSK	1	8	23.40	23.33	23.47		
3	QPSK	1	14	23.49	23.33	23.38		
3	QPSK	8	0	22.44	22.39	22.54	23.5	1
3	QPSK	8	4	22.50	22.46	22.50		
3	QPSK	8	7	22.37	22.37	22.53		
3	QPSK	15	0	22.44	22.34	22.47	23.8	0.7
3	16QAM	1	0	22.73	22.61	22.68		
3	16QAM	1	8	22.70	22.74	22.86		
3	16QAM	1	14	22.69	22.61	22.76	22.8	1.7
3	16QAM	8	0	21.48	21.33	21.51		
3	16QAM	8	4	21.40	21.38	21.53		
3	16QAM	8	7	21.39	21.43	21.41	21.8	2.7
3	16QAM	15	0	21.37	21.29	21.34		
3	64QAM	1	0	21.47	21.42	21.53		
3	64QAM	1	8	21.58	21.39	21.57	22.8	1.7
3	64QAM	1	14	21.53	21.44	21.46		
3	64QAM	8	0	20.36	20.33	20.40		
3	64QAM	8	4	20.40	20.29	20.36	21.8	2.7
3	64QAM	8	7	20.37	20.31	20.38		
3	64QAM	15	0	20.34	20.24	20.31		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	23.51	23.32	23.44	24.5	0
1.4	QPSK	1	3	23.36	23.29	23.36		
1.4	QPSK	1	5	23.50	23.47	23.38		
1.4	QPSK	3	0	23.40	23.32	23.54	23.5	1
1.4	QPSK	3	1	23.42	23.31	23.44		
1.4	QPSK	3	3	23.41	23.50	23.45		
1.4	QPSK	6	0	22.54	22.43	22.53	23.8	0.7
1.4	16QAM	1	0	22.72	22.72	22.75		
1.4	16QAM	1	3	22.73	22.66	22.66		
1.4	16QAM	1	5	22.68	22.79	22.85	22.8	1.7
1.4	16QAM	3	0	22.39	22.31	22.48		
1.4	16QAM	3	1	22.43	22.32	22.48		
1.4	16QAM	3	3	22.67	22.50	22.54	22.8	1.7
1.4	16QAM	6	0	21.49	21.38	21.43		
1.4	64QAM	1	0	21.63	21.41	21.45		
1.4	64QAM	1	3	21.55	21.37	21.49	21.8	2.7
1.4	64QAM	1	5	21.60	21.55	21.68		
1.4	64QAM	3	0	21.51	21.31	21.50		
1.4	64QAM	3	1	21.39	21.36	21.34	21.8	2.7
1.4	64QAM	3	3	21.40	21.52	21.52		
1.4	64QAM	6	0	20.46	20.24	20.38		



Receiver on / Receiver on+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	21.30	21.23	21.24	22.5	0
15	QPSK	1	37	21.28	21.37	21.52		
15	QPSK	1	74	21.19	21.33	21.24		
15	QPSK	36	0	21.52	21.45	21.52	22.5	0
15	QPSK	36	20	21.51	21.30	21.49		
15	QPSK	36	39	21.50	21.32	21.35		
15	QPSK	75	0	21.47	21.38	21.45	22.5	0
15	16QAM	1	0	21.51	21.75	21.71		
15	16QAM	1	37	21.66	21.55	21.57		
15	16QAM	1	74	21.49	21.64	21.49	22.5	0
15	16QAM	36	0	21.33	21.32	21.35		
15	16QAM	36	20	21.33	21.25	21.31		
15	16QAM	36	39	21.36	21.17	21.25	22.5	0
15	16QAM	75	0	21.39	21.26	21.27		
15	64QAM	1	0	21.37	21.51	21.39		
15	64QAM	1	37	21.54	21.31	21.37	22.5	0
15	64QAM	1	74	21.31	21.37	21.35		
15	64QAM	36	0	20.33	20.31	20.31		
15	64QAM	36	20	20.33	20.26	20.32	21.5	1
15	64QAM	36	39	20.37	20.16	20.25		
15	64QAM	75	0	20.39	20.26	20.28		



Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	21.30	21.20	21.23	22.5	0
10	QPSK	1	25	21.38	21.35	21.39		
10	QPSK	1	49	21.46	21.28	21.24		
10	QPSK	25	0	21.38	21.37	21.40	22.5	0
10	QPSK	25	12	21.50	21.32	21.48		
10	QPSK	25	25	21.64	21.47	21.32		
10	QPSK	50	0	21.46	21.29	21.43	22.5	0
10	16QAM	1	0	21.60	21.60	21.57		
10	16QAM	1	25	21.69	21.39	21.43		
10	16QAM	1	49	21.74	21.52	21.56	22.5	0
10	16QAM	25	0	21.29	21.37	21.31		
10	16QAM	25	12	21.32	21.25	21.30		
10	16QAM	25	25	21.31	21.32	21.33	22.5	0
10	16QAM	50	0	21.26	21.25	21.26		
10	64QAM	1	0	21.42	21.42	21.38		
10	64QAM	1	25	21.30	21.28	21.26	22.5	0
10	64QAM	1	49	21.49	21.38	21.43		
10	64QAM	25	0	20.28	20.37	20.27		
10	64QAM	25	12	20.28	20.24	20.29	21.5	1
10	64QAM	25	25	20.30	20.32	20.19		
10	64QAM	50	0	20.27	20.23	20.26		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	21.28	21.27	21.31	22.5	0
5	QPSK	1	12	21.25	21.09	21.05		
5	QPSK	1	24	21.43	21.25	21.35		
5	QPSK	12	0	21.52	21.32	21.32	22.5	0
5	QPSK	12	7	21.53	21.28	21.37		
5	QPSK	12	13	21.49	21.44	21.33		
5	QPSK	25	0	21.41	21.41	21.39	22.5	0
5	16QAM	1	0	21.61	21.60	21.71		
5	16QAM	1	12	21.69	21.59	21.58		
5	16QAM	1	24	21.71	21.59	21.59	22.5	0
5	16QAM	12	0	21.45	21.29	21.31		
5	16QAM	12	7	21.36	21.26	21.43		
5	16QAM	12	13	21.49	21.30	21.52	22.5	0
5	16QAM	25	0	21.36	21.26	21.40		
5	64QAM	1	0	21.50	21.43	21.57		
5	64QAM	1	12	21.36	21.23	21.47	22.5	0
5	64QAM	1	24	21.52	21.39	21.35		
5	64QAM	12	0	20.42	20.27	20.30		
5	64QAM	12	7	20.35	20.25	20.41	21.5	1
5	64QAM	12	13	20.30	20.32	20.24		
5	64QAM	25	0	20.32	20.23	20.27		





Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	21.49	21.27	21.35	22.5	0
3	QPSK	1	8	21.52	21.20	21.54		
3	QPSK	1	14	21.46	21.22	21.42		
3	QPSK	8	0	21.37	21.29	21.35	22.5	0
3	QPSK	8	4	21.51	21.23	21.46		
3	QPSK	8	7	21.49	21.38	21.22		
3	QPSK	15	0	21.52	21.34	21.31	22.5	0
3	16QAM	1	0	21.82	21.61	21.77		
3	16QAM	1	8	21.70	21.63	21.60		
3	16QAM	1	14	21.75	21.56	21.64	22.5	0
3	16QAM	8	0	21.33	21.24	21.41		
3	16QAM	8	4	21.50	21.35	21.36		
3	16QAM	8	7	21.36	21.27	21.26	22.5	0
3	16QAM	15	0	21.43	21.25	21.29		
3	64QAM	1	0	21.62	21.47	21.63		
3	64QAM	1	8	21.64	21.53	21.42	22.5	0
3	64QAM	1	14	21.63	21.37	21.54		
3	64QAM	8	0	20.30	20.22	20.48		
3	64QAM	8	4	20.45	20.18	20.47	21.5	1
3	64QAM	8	7	20.34	20.36	20.37		
3	64QAM	15	0	20.33	20.23	20.30		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	21.33	21.25	21.38	22.5	0
1.4	QPSK	1	3	21.36	21.23	21.40		
1.4	QPSK	1	5	21.30	21.16	21.41		
1.4	QPSK	3	0	21.36	21.28	21.33	22.5	0
1.4	QPSK	3	1	21.37	21.27	21.42		
1.4	QPSK	3	3	21.35	21.33	21.43		
1.4	QPSK	6	0	21.36	21.25	21.27	22.5	0
1.4	16QAM	1	0	21.65	21.55	21.57	22.5	0
1.4	16QAM	1	3	21.67	21.61	21.66		
1.4	16QAM	1	5	21.70	21.72	21.70		
1.4	16QAM	3	0	21.42	21.47	21.27	22.5	0
1.4	16QAM	3	1	21.45	21.49	21.37		
1.4	16QAM	3	3	21.46	21.43	21.35		
1.4	16QAM	6	0	21.48	21.27	21.34	22.5	0
1.4	64QAM	1	0	21.68	21.56	21.35	22.5	0
1.4	64QAM	1	3	21.58	21.44	21.51		
1.4	64QAM	1	5	21.45	21.52	21.34		
1.4	64QAM	3	0	21.44	21.51	21.53	22.5	0
1.4	64QAM	3	1	21.46	21.38	21.39		
1.4	64QAM	3	3	21.56	21.57	21.37		
1.4	64QAM	6	0	20.36	20.22	20.42	21.5	1



Top antenna+WiFi 2.4G(Receiver off) / Top antenna+WiFi 2.4G(Receiver off)+BT / Top antenna+WiFi 5G(Receiver off) / Top antenna+WiFi 5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	22.34	22.30	22.33	23.5	0
15	QPSK	1	37	22.40	22.54	22.50		
15	QPSK	1	74	22.37	22.24	22.38		
15	QPSK	36	0	22.40	22.36	22.44	23.5	0
15	QPSK	36	20	22.43	22.50	22.41		
15	QPSK	36	39	22.33	22.34	22.60		
15	QPSK	75	0	22.33	22.31	22.37	23.5	0
15	16QAM	1	0	22.49	22.55	22.56		
15	16QAM	1	37	22.47	22.45	22.58		
15	16QAM	1	74	22.62	22.49	22.58	22.5	1
15	16QAM	36	0	21.34	21.24	21.44		
15	16QAM	36	20	21.32	21.19	21.32		
15	16QAM	36	39	21.23	21.36	21.34	22.5	1
15	16QAM	75	0	21.25	21.27	21.35		
15	64QAM	1	0	21.50	21.43	21.43		
15	64QAM	1	37	21.38	21.34	21.46	22.5	1
15	64QAM	1	74	21.33	21.33	21.39		
15	64QAM	36	0	20.34	20.30	20.34		
15	64QAM	36	20	20.31	20.28	20.32	21.5	2
15	64QAM	36	39	20.27	20.14	20.36		
15	64QAM	75	0	20.30	20.23	20.28		



Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	22.35	22.32	22.48	23.5	0
10	QPSK	1	25	22.54	22.26	22.36		
10	QPSK	1	49	22.43	22.22	22.20		
10	QPSK	25	0	22.37	22.32	22.34	23.5	0
10	QPSK	25	12	22.39	22.26	22.34		
10	QPSK	25	25	22.26	22.21	22.46		
10	QPSK	50	0	22.36	22.49	22.32	23.5	0
10	16QAM	1	0	22.84	22.63	22.59		
10	16QAM	1	25	22.50	22.48	22.59		
10	16QAM	1	49	22.56	22.67	22.50	22.5	1
10	16QAM	25	0	21.30	21.25	21.35		
10	16QAM	25	12	21.32	21.23	21.32		
10	16QAM	25	25	21.37	21.22	21.20	22.5	1
10	16QAM	50	0	21.27	21.21	21.27		
10	64QAM	1	0	21.50	21.53	21.41		
10	64QAM	1	25	21.40	21.35	21.40	22.5	1
10	64QAM	1	49	21.37	21.25	21.43		
10	64QAM	25	0	20.43	20.28	20.26		
10	64QAM	25	12	20.21	20.22	20.27	21.5	2
10	64QAM	25	25	20.21	20.26	20.21		
10	64QAM	50	0	20.14	20.17	20.28		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	22.38	22.50	22.37	23.5	0
5	QPSK	1	12	22.27	22.09	22.24		
5	QPSK	1	24	22.47	22.34	22.33		
5	QPSK	12	0	22.53	22.32	22.32	23.5	0
5	QPSK	12	7	22.38	22.25	22.40		
5	QPSK	12	13	22.53	22.31	22.57		
5	QPSK	25	0	22.38	22.34	22.50	23.5	0
5	16QAM	1	0	22.64	22.56	22.60		
5	16QAM	1	12	22.48	22.56	22.65		
5	16QAM	1	24	22.62	22.70	22.55	22.5	1
5	16QAM	12	0	21.41	21.33	21.34		
5	16QAM	12	7	21.37	21.28	21.51		
5	16QAM	12	13	21.27	21.19	21.56	22.5	1
5	16QAM	25	0	21.30	21.31	21.49		
5	64QAM	1	0	21.53	21.36	21.56		
5	64QAM	1	12	21.41	21.44	21.50	22.5	1
5	64QAM	1	24	21.49	21.31	21.46		
5	64QAM	12	0	20.38	20.28	20.33		
5	64QAM	12	7	20.34	20.24	20.40	21.5	2
5	64QAM	12	13	20.29	20.37	20.46		
5	64QAM	25	0	20.32	20.27	20.31		



Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	22.38	22.25	22.36	23.5	0
3	QPSK	1	8	22.47	22.50	22.32		
3	QPSK	1	14	22.48	22.31	22.34		
3	QPSK	8	0	22.36	22.32	22.38	23.5	0
3	QPSK	8	4	22.54	22.45	22.62		
3	QPSK	8	7	22.28	22.35	22.52		
3	QPSK	15	0	22.37	22.32	22.47		
3	16QAM	1	0	22.48	22.56	22.70	23.5	0
3	16QAM	1	8	22.83	22.56	22.84		
3	16QAM	1	14	22.63	22.48	22.72		
3	16QAM	8	0	21.35	21.42	21.51	22.5	1
3	16QAM	8	4	21.45	21.34	21.35		
3	16QAM	8	7	21.43	21.41	21.40		
3	16QAM	15	0	21.40	21.26	21.34		
3	64QAM	1	0	21.62	21.57	21.51	22.5	1
3	64QAM	1	8	21.40	21.37	21.61		
3	64QAM	1	14	21.49	21.28	21.51		
3	64QAM	8	0	20.39	20.32	20.43	21.5	2
3	64QAM	8	4	20.32	20.36	20.36		
3	64QAM	8	7	20.32	20.28	20.49		
3	64QAM	15	0	20.31	20.26	20.30		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	22.39	22.59	22.42	23.5	0
1.4	QPSK	1	3	22.42	22.57	22.47		
1.4	QPSK	1	5	22.36	22.48	22.46		
1.4	QPSK	3	0	22.42	22.36	22.40		
1.4	QPSK	3	1	22.43	22.35	22.28		
1.4	QPSK	3	3	22.40	22.53	22.32		
1.4	QPSK	6	0	22.57	22.41	22.41	23.5	0
1.4	16QAM	1	0	22.79	22.50	22.70	23.5	0
1.4	16QAM	1	3	22.61	22.50	22.56		
1.4	16QAM	1	5	22.84	22.68	22.64		
1.4	16QAM	3	0	22.42	22.33	22.42		
1.4	16QAM	3	1	22.41	22.39	22.49		
1.4	16QAM	3	3	22.54	22.29	22.52		
1.4	16QAM	6	0	21.39	21.43	21.43	22.5	1
1.4	64QAM	1	0	21.53	21.30	21.56	22.5	1
1.4	64QAM	1	3	21.53	21.46	21.55		
1.4	64QAM	1	5	21.64	21.42	21.49		
1.4	64QAM	3	0	21.53	21.30	21.46		
1.4	64QAM	3	1	21.40	21.31	21.51		
1.4	64QAM	3	3	21.50	21.34	21.52		
1.4	64QAM	6	0	20.53	20.38	20.39	21.5	2



Top antenna+WiFi 2.4G(Receiver on) / Top antenna+WiFi 2.4G(Receiver on)+BT / Top antenna+WiFi 5G(Receiver on) / Top antenna+WiFi 5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	20.30	20.23	20.27	21.5	0
15	QPSK	1	37	20.25	20.21	20.44		
15	QPSK	1	74	20.13	20.23	20.13		
15	QPSK	36	0	20.35	20.26	20.49	21.5	0
15	QPSK	36	20	20.34	20.23	20.35		
15	QPSK	36	39	20.33	20.16	20.40		
15	QPSK	75	0	20.34	20.26	20.40	21.5	0
15	16QAM	1	0	20.47	20.39	20.47		
15	16QAM	1	37	20.61	20.31	20.37		
15	16QAM	1	74	20.43	20.46	20.47	21.5	0
15	16QAM	36	0	20.31	20.25	20.46		
15	16QAM	36	20	20.43	20.20	20.45		
15	16QAM	36	39	20.31	20.15	20.37	21.5	0
15	16QAM	75	0	20.32	20.26	20.37		
15	64QAM	1	0	20.49	20.28	20.33		
15	64QAM	1	37	20.32	20.29	20.33	21.5	0
15	64QAM	1	74	20.25	20.34	20.28		
15	64QAM	36	0	20.31	20.26	20.47		
15	64QAM	36	20	20.38	20.21	20.34	21.5	0
15	64QAM	36	39	20.32	20.17	20.40		
15	64QAM	75	0	20.34	20.27	20.40		



Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	20.41	20.20	20.31	21.5	0
10	QPSK	1	25	20.37	20.20	20.40		
10	QPSK	1	49	20.28	20.17	20.23		
10	QPSK	25	0	20.34	20.30	20.38	21.5	0
10	QPSK	25	12	20.50	20.29	20.37		
10	QPSK	25	25	20.33	20.33	20.24		
10	QPSK	50	0	20.31	20.24	20.39	21.5	0
10	16QAM	1	0	20.58	20.49	20.49		
10	16QAM	1	25	20.60	20.33	20.56		
10	16QAM	1	49	20.59	20.63	20.52	21.5	0
10	16QAM	25	0	20.32	20.29	20.45		
10	16QAM	25	12	20.42	20.26	20.35		
10	16QAM	25	25	20.35	20.31	20.23	21.5	0
10	16QAM	50	0	20.41	20.21	20.35		
10	64QAM	1	0	20.51	20.32	20.36		
10	64QAM	1	25	20.19	20.11	20.20	21.5	0
10	64QAM	1	49	20.28	20.24	20.23		
10	64QAM	25	0	20.45	20.20	20.40		
10	64QAM	25	12	20.42	20.23	20.35	21.5	0
10	64QAM	25	25	20.34	20.35	20.25		
10	64QAM	50	0	20.39	20.21	20.25		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	20.29	20.29	20.27	21.5	0
5	QPSK	1	12	20.35	20.17	20.29		
5	QPSK	1	24	20.29	20.23	20.21		
5	QPSK	12	0	20.30	20.31	20.35	21.5	0
5	QPSK	12	7	20.36	20.27	20.47		
5	QPSK	12	13	20.36	20.45	20.51		
5	QPSK	25	0	20.34	20.29	20.47	21.5	0
5	16QAM	1	0	20.67	20.58	20.70		
5	16QAM	1	12	20.52	20.44	20.60		
5	16QAM	1	24	20.72	20.56	20.59	21.5	0
5	16QAM	12	0	20.26	20.35	20.31		
5	16QAM	12	7	20.32	20.28	20.34		
5	16QAM	12	13	20.23	20.47	20.37	21.5	0
5	16QAM	25	0	20.31	20.24	20.31		
5	64QAM	1	0	20.66	20.36	20.61		
5	64QAM	1	12	20.44	20.43	20.46	21.5	0
5	64QAM	1	24	20.41	20.55	20.35		
5	64QAM	12	0	20.34	20.25	20.31		
5	64QAM	12	7	20.45	20.22	20.35	21.5	0
5	64QAM	12	13	20.38	20.35	20.37		
5	64QAM	25	0	20.30	20.25	20.27		



Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	20.28	20.29	20.33	21.5	0
3	QPSK	1	8	20.38	20.17	20.38		
3	QPSK	1	14	20.33	20.36	20.33		
3	QPSK	8	0	20.30	20.29	20.43	21.5	0
3	QPSK	8	4	20.40	20.37	20.59		
3	QPSK	8	7	20.38	20.26	20.47		
3	QPSK	15	0	20.39	20.31	20.43	21.5	0
3	16QAM	1	0	20.65	20.55	20.67		
3	16QAM	1	8	20.71	20.43	20.91		
3	16QAM	1	14	20.75	20.76	20.74	21.5	0
3	16QAM	8	0	20.34	20.27	20.41		
3	16QAM	8	4	20.28	20.19	20.33		
3	16QAM	8	7	20.30	20.41	20.47	21.5	0
3	16QAM	15	0	20.26	20.22	20.34		
3	64QAM	1	0	20.41	20.39	20.45		
3	64QAM	1	8	20.52	20.22	20.58	21.5	0
3	64QAM	1	14	20.42	20.60	20.32		
3	64QAM	8	0	20.26	20.20	20.30		
3	64QAM	8	4	20.26	20.14	20.41	21.5	0
3	64QAM	8	7	20.26	20.28	20.29		
3	64QAM	15	0	20.28	20.20	20.20		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	20.26	20.16	20.49	21.5	0
1.4	QPSK	1	3	20.30	20.18	20.34		
1.4	QPSK	1	5	20.23	20.33	20.36		
1.4	QPSK	3	0	20.28	20.35	20.45		
1.4	QPSK	3	1	20.29	20.34	20.38		
1.4	QPSK	3	3	20.27	20.39	20.34		
1.4	QPSK	6	0	20.48	20.39	20.38	21.5	0
1.4	16QAM	1	0	20.65	20.41	20.85	21.5	0
1.4	16QAM	1	3	20.55	20.52	20.64		
1.4	16QAM	1	5	20.51	20.53	20.81		
1.4	16QAM	3	0	20.36	20.21	20.53		
1.4	16QAM	3	1	20.49	20.48	20.48		
1.4	16QAM	3	3	20.44	20.41	20.42		
1.4	16QAM	6	0	20.40	20.41	20.23	21.5	0
1.4	64QAM	1	0	20.37	20.42	20.60	21.5	0
1.4	64QAM	1	3	20.35	20.23	20.31		
1.4	64QAM	1	5	20.37	20.45	20.64		
1.4	64QAM	3	0	20.38	20.29	20.40		
1.4	64QAM	3	1	20.40	20.36	20.38		
1.4	64QAM	3	3	20.37	20.47	20.58		
1.4	64QAM	6	0	20.23	20.24	20.37	21.5	0



Top antenna+WiFi 2.4G+5G(Receiver off) / Top antenna+WiFi 2.4G+5G(Receiver off)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	21.30	21.28	21.29	22.5	0
15	QPSK	1	37	21.43	21.49	21.48		
15	QPSK	1	74	21.41	21.26	21.25		
15	QPSK	36	0	21.53	21.36	21.48	22.5	0
15	QPSK	36	20	21.55	21.37	21.46		
15	QPSK	36	39	21.47	21.33	21.34		
15	QPSK	75	0	21.52	21.44	21.51	22.5	0
15	16QAM	1	0	21.68	21.67	21.54		
15	16QAM	1	37	21.65	21.61	21.49		
15	16QAM	1	74	21.50	21.65	21.64	22.5	0
15	16QAM	36	0	21.36	21.33	21.34		
15	16QAM	36	20	21.31	21.47	21.35		
15	16QAM	36	39	21.22	21.30	21.33	22.5	0
15	16QAM	75	0	21.28	21.28	21.30		
15	64QAM	1	0	21.62	21.43	21.58		
15	64QAM	1	37	21.59	21.39	21.51	22.5	0
15	64QAM	1	74	21.35	21.34	21.58		
15	64QAM	36	0	20.37	20.34	20.33		
15	64QAM	36	20	20.34	20.22	20.32	21.5	1
15	64QAM	36	39	20.29	20.36	20.25		
15	64QAM	75	0	20.34	20.30	20.30		





Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	21.34	21.32	21.31	22.5	0
10	QPSK	1	25	21.48	21.24	21.48		
10	QPSK	1	49	21.39	21.30	21.29		
10	QPSK	25	0	21.38	21.39	21.43	22.5	0
10	QPSK	25	12	21.51	21.39	21.53		
10	QPSK	25	25	21.46	21.24	21.45		
10	QPSK	50	0	21.47	21.31	21.45	22.5	0
10	16QAM	1	0	21.58	21.67	21.73		
10	16QAM	1	25	21.52	21.59	21.57		
10	16QAM	1	49	21.67	21.45	21.56	22.5	0
10	16QAM	25	0	21.31	21.38	21.31		
10	16QAM	25	12	21.30	21.33	21.32		
10	16QAM	25	25	21.28	21.32	21.33	22.5	0
10	16QAM	50	0	21.29	21.22	21.29		
10	64QAM	1	0	21.38	21.55	21.38		
10	64QAM	1	25	21.39	21.28	21.45	22.5	0
10	64QAM	1	49	21.62	21.41	21.40		
10	64QAM	25	0	20.31	20.36	20.28		
10	64QAM	25	12	20.29	20.24	20.29	21.5	1
10	64QAM	25	25	20.43	20.24	20.36		
10	64QAM	50	0	20.29	20.22	20.26		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	21.39	21.36	21.33	22.5	0
5	QPSK	1	12	21.15	21.27	21.30		
5	QPSK	1	24	21.35	21.35	21.35		
5	QPSK	12	0	21.39	21.45	21.39	22.5	0
5	QPSK	12	7	21.42	21.37	21.39		
5	QPSK	12	13	21.58	21.54	21.48		
5	QPSK	25	0	21.51	21.39	21.41	22.5	0
5	16QAM	1	0	21.73	21.61	21.75		
5	16QAM	1	12	21.72	21.57	21.50		
5	16QAM	1	24	21.71	21.62	21.52	22.5	0
5	16QAM	12	0	21.56	21.34	21.36		
5	16QAM	12	7	21.38	21.32	21.45		
5	16QAM	12	13	21.30	21.38	21.49	22.5	0
5	16QAM	25	0	21.32	21.34	21.42		
5	64QAM	1	0	21.46	21.60	21.46		
5	64QAM	1	12	21.59	21.49	21.34	22.5	0
5	64QAM	1	24	21.51	21.48	21.47		
5	64QAM	12	0	20.43	20.31	20.35		
5	64QAM	12	7	20.41	20.27	20.46	21.5	1
5	64QAM	12	13	20.46	20.29	20.27		
5	64QAM	25	0	20.31	20.24	20.32		



Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	21.57	21.31	21.38	22.5	0
3	QPSK	1	8	21.45	21.39	21.46		
3	QPSK	1	14	21.39	21.35	21.33		
3	QPSK	8	0	21.41	21.46	21.39	22.5	0
3	QPSK	8	4	21.32	21.39	21.49		
3	QPSK	8	7	21.43	21.53	21.37		
3	QPSK	15	0	21.41	21.50	21.39	22.5	0
3	16QAM	1	0	21.64	21.82	21.80		
3	16QAM	1	8	21.83	21.79	21.76		
3	16QAM	1	14	21.67	21.55	21.69	22.5	0
3	16QAM	8	0	21.37	21.31	21.43		
3	16QAM	8	4	21.42	21.24	21.39		
3	16QAM	8	7	21.30	21.42	21.41	22.5	0
3	16QAM	15	0	21.30	21.35	21.35		
3	64QAM	1	0	21.53	21.44	21.55		
3	64QAM	1	8	21.57	21.60	21.58	22.5	0
3	64QAM	1	14	21.45	21.53	21.51		
3	64QAM	8	0	20.38	20.29	20.38		
3	64QAM	8	4	20.28	20.39	20.50	21.5	1
3	64QAM	8	7	20.28	20.26	20.50		
3	64QAM	15	0	20.34	20.25	20.34		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	21.42	21.31	21.60	22.5	0
1.4	QPSK	1	3	21.46	21.29	21.52		
1.4	QPSK	1	5	21.40	21.44	21.54		
1.4	QPSK	3	0	21.40	21.33	21.52	21.5	1
1.4	QPSK	3	1	21.42	21.45	21.37		
1.4	QPSK	3	3	21.39	21.27	21.53		
1.4	QPSK	6	0	21.40	21.32	21.35	21.8	0.7
1.4	16QAM	1	0	21.68	21.76	21.84		
1.4	16QAM	1	3	21.76	21.56	21.53		
1.4	16QAM	1	5	21.63	21.78	21.82	20.8	1.7
1.4	16QAM	3	0	21.46	21.41	21.37		
1.4	16QAM	3	1	21.47	21.38	21.56		
1.4	16QAM	3	3	21.48	21.59	21.43	20.8	1.7
1.4	16QAM	6	0	21.54	21.32	21.38		
1.4	64QAM	1	0	21.38	21.48	21.60		
1.4	64QAM	1	3	21.54	21.54	21.51	20.8	1.7
1.4	64QAM	1	5	21.44	21.59	21.58		
1.4	64QAM	3	0	21.49	21.52	21.40		
1.4	64QAM	3	1	21.40	21.32	21.44	19.8	2.7
1.4	64QAM	3	3	21.33	21.28	21.37		
1.4	64QAM	6	0	20.28	20.32	20.53		



Top antenna+WiFi 2.4G+5G(Receiver on) / Top antenna+WiFi 2.4G+5G(Receiver on)+BT								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				26765	26865	26965		
Frequency (MHz)				821.5	831.5	841.5		
15	QPSK	1	0	19.26	19.42	19.46	20.5	0
15	QPSK	1	37	19.27	19.29	19.44		
15	QPSK	1	74	19.19	19.24	19.20		
15	QPSK	36	0	19.37	19.28	19.40	20.5	0
15	QPSK	36	20	19.47	19.30	19.39		
15	QPSK	36	39	19.35	19.20	19.37		
15	QPSK	75	0	19.36	19.33	19.38	20.5	0
15	16QAM	1	0	19.64	19.32	19.47		
15	16QAM	1	37	19.60	19.65	19.73		
15	16QAM	1	74	19.49	19.48	19.60	20.5	0
15	16QAM	36	0	19.30	19.22	19.29		
15	16QAM	36	20	19.34	19.23	19.43		
15	16QAM	36	39	19.28	19.23	19.34	20.5	0
15	16QAM	75	0	19.29	19.22	19.42		
15	64QAM	1	0	19.35	19.29	19.32		
15	64QAM	1	37	19.23	19.31	19.26	20.5	0
15	64QAM	1	74	19.25	19.35	19.36		
15	64QAM	36	0	19.26	19.25	19.34		
15	64QAM	36	20	19.36	19.28	19.32	20.5	0
15	64QAM	36	39	19.31	19.27	19.36		
15	64QAM	75	0	19.31	19.24	19.37		



Channel				26740	26865	26990	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				819	831.5	844		
10	QPSK	1	0	19.38	19.47	19.44	20.5	0
10	QPSK	1	25	19.26	19.28	19.25		
10	QPSK	1	49	19.28	19.27	19.23		
10	QPSK	25	0	19.36	19.31	19.44	20.5	0
10	QPSK	25	12	19.38	19.31	19.37		
10	QPSK	25	25	19.34	19.25	19.55		
10	QPSK	50	0	19.35	19.30	19.33	20.5	0
10	16QAM	1	0	19.63	19.56	19.62		
10	16QAM	1	25	19.80	19.51	19.64		
10	16QAM	1	49	19.52	19.53	19.64	20.5	0
10	16QAM	25	0	19.29	19.24	19.34		
10	16QAM	25	12	19.41	19.23	19.46		
10	16QAM	25	25	19.29	19.30	19.41	20.5	0
10	16QAM	50	0	19.39	19.22	19.36		
10	64QAM	1	0	19.45	19.28	19.26		
10	64QAM	1	25	19.30	19.27	19.28	20.5	0
10	64QAM	1	49	19.30	19.32	19.29		
10	64QAM	25	0	19.30	19.21	19.24		
10	64QAM	25	12	19.26	19.22	19.35	20.5	0
10	64QAM	25	25	19.32	19.17	19.41		
10	64QAM	50	0	19.26	19.23	19.24		
Channel				26715	26865	27015	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				816.5	831.5	846.5		
5	QPSK	1	0	19.34	19.28	19.31	20.5	0
5	QPSK	1	12	19.21	19.08	19.22		
5	QPSK	1	24	19.28	19.25	19.29		
5	QPSK	12	0	19.38	19.38	19.37	20.5	0
5	QPSK	12	7	19.37	19.30	19.47		
5	QPSK	12	13	19.28	19.28	19.38		
5	QPSK	25	0	19.34	19.30	19.35	20.5	0
5	16QAM	1	0	19.59	19.66	19.64		
5	16QAM	1	12	19.63	19.58	19.70		
5	16QAM	1	24	19.59	19.52	19.49	20.5	0
5	16QAM	12	0	19.33	19.27	19.40		
5	16QAM	12	7	19.34	19.28	19.48		
5	16QAM	12	13	19.35	19.33	19.39	20.5	0
5	16QAM	25	0	19.30	19.25	19.45		
5	64QAM	1	0	19.43	19.38	19.43		
5	64QAM	1	12	19.37	19.34	19.35	20.5	0
5	64QAM	1	24	19.41	19.34	19.39		
5	64QAM	12	0	19.38	19.27	19.43		
5	64QAM	12	7	19.43	19.21	19.50	20.5	0
5	64QAM	12	13	19.32	19.15	19.37		
5	64QAM	25	0	19.28	19.24	19.45		



Channel				26705	26865	27025	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				815.5	831.5	847.5		
3	QPSK	1	0	19.38	19.30	19.30	20.5	0
3	QPSK	1	8	19.33	19.26	19.26		
3	QPSK	1	14	19.32	19.24	19.27		
3	QPSK	8	0	19.31	19.30	19.40	20.5	0
3	QPSK	8	4	19.39	19.28	19.31		
3	QPSK	8	7	19.37	19.41	19.31		
3	QPSK	15	0	19.32	19.29	19.34	20.5	0
3	16QAM	1	0	19.55	19.62	19.59		
3	16QAM	1	8	19.58	19.50	19.72		
3	16QAM	1	14	19.53	19.54	19.58	20.5	0
3	16QAM	8	0	19.33	19.29	19.41		
3	16QAM	8	4	19.46	19.23	19.35		
3	16QAM	8	7	19.42	19.37	19.34	20.5	0
3	16QAM	15	0	19.33	19.22	19.30		
3	64QAM	1	0	19.45	19.32	19.35		
3	64QAM	1	8	19.40	19.39	19.43	20.5	0
3	64QAM	1	14	19.45	19.33	19.33		
3	64QAM	8	0	19.31	19.19	19.40		
3	64QAM	8	4	19.20	19.23	19.32	20.5	0
3	64QAM	8	7	19.20	19.13	19.32		
3	64QAM	15	0	19.33	19.24	19.29		
Channel				26697	26865	27033	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				814.7	831.5	848.3		
1.4	QPSK	1	0	19.29	19.36	19.30	20.5	0
1.4	QPSK	1	3	19.33	19.31	19.42		
1.4	QPSK	1	5	19.27	19.28	19.38		
1.4	QPSK	3	0	19.32	19.24	19.52	20.5	0
1.4	QPSK	3	1	19.33	19.24	19.23		
1.4	QPSK	3	3	19.31	19.33	19.26		
1.4	QPSK	6	0	19.43	19.30	19.28	20.5	0
1.4	16QAM	1	0	19.62	19.57	19.60	20.5	0
1.4	16QAM	1	3	19.71	19.65	19.74		
1.4	16QAM	1	5	19.59	19.54	19.73		
1.4	16QAM	3	0	19.29	19.26	19.53	20.5	0
1.4	16QAM	3	1	19.37	19.40	19.45		
1.4	16QAM	3	3	19.39	19.32	19.36		
1.4	16QAM	6	0	19.31	19.20	19.43	20.5	0
1.4	64QAM	1	0	19.51	19.44	19.33	20.5	0
1.4	64QAM	1	3	19.40	19.35	19.41		
1.4	64QAM	1	5	19.50	19.27	19.49		
1.4	64QAM	3	0	19.57	19.27	19.45	20.5	0
1.4	64QAM	3	1	19.38	19.43	19.55		
1.4	64QAM	3	3	19.43	19.42	19.42		
1.4	64QAM	6	0	19.44	19.24	19.29	20.5	0



<WWAN Bottom Antenna>

<LTE Band 2>

Full Power								
BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune-up limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	23.22	23.17	23.24	24	0
20	QPSK	1	49	22.91	22.94	22.94		
20	QPSK	1	99	23.09	23.16	23.09		
20	QPSK	50	0	22.18	22.06	22.25	23	1
20	QPSK	50	24	22.09	22.00	22.11		
20	QPSK	50	50	22.07	22.20	22.30		
20	16QAM	1	0	22.48	22.43	22.62	23.3	0.7
20	16QAM	1	49	22.15	22.12	22.35		
20	16QAM	1	99	22.23	22.36	22.39		
20	16QAM	50	0	21.19	21.13	21.25	22.3	1.7
20	16QAM	50	24	21.08	21.03	21.15		
20	16QAM	50	50	21.14	21.03	21.01		
20	16QAM	100	0	21.14	21.11	21.22	22.3	1.7
20	64QAM	1	0	21.21	21.15	21.10		
20	64QAM	1	49	20.86	20.83	20.89		
20	64QAM	1	99	20.95	21.09	21.15	21.3	2.7
20	64QAM	50	0	19.95	19.95	19.98		
20	64QAM	50	24	19.87	19.75	19.91		
20	64QAM	50	50	19.86	19.88	20.01	21.3	2.7
20	64QAM	100	0	19.94	19.86	19.96		



Channel				18675	18900	19125	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	23.18	23.02	23.15	24	0
15	QPSK	1	37	22.88	22.68	22.85		
15	QPSK	1	74	22.80	22.98	23.00		
15	QPSK	36	0	22.06	22.01	22.13	23	1
15	QPSK	36	20	21.96	21.92	22.09		
15	QPSK	36	39	21.97	22.01	22.15		
15	QPSK	75	0	21.99	22.02	22.11	23.3	0.7
15	16QAM	1	0	22.49	22.24	22.52		
15	16QAM	1	37	22.10	22.12	22.34		
15	16QAM	1	74	22.27	22.42	22.39	22.3	1.7
15	16QAM	36	0	21.11	21.02	21.07		
15	16QAM	36	20	21.02	20.96	21.00		
15	16QAM	36	39	20.98	20.90	21.18	22.3	1.7
15	16QAM	75	0	21.12	21.03	21.10		
15	64QAM	1	0	21.00	21.14	21.16		
15	64QAM	1	37	20.79	20.82	20.90	22.3	1.7
15	64QAM	1	74	20.94	20.87	21.22		
15	64QAM	36	0	19.89	19.83	19.86		
15	64QAM	36	20	19.71	19.76	19.81	21.3	2.7
15	64QAM	36	39	19.70	19.65	19.85		
15	64QAM	75	0	19.78	19.81	19.79		
Channel				18650	18900	19150	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	23.17	22.97	23.08	24	0
10	QPSK	1	25	23.01	23.04	23.09		
10	QPSK	1	49	23.00	22.96	22.97		
10	QPSK	25	0	21.87	21.95	22.07	23	1
10	QPSK	25	12	21.84	21.86	22.09		
10	QPSK	25	25	21.91	21.78	22.10		
10	QPSK	50	0	22.01	21.95	22.06	23.3	0.7
10	16QAM	1	0	22.35	22.26	22.44		
10	16QAM	1	25	22.35	22.17	22.30		
10	16QAM	1	49	22.18	22.22	22.44	22.3	1.7
10	16QAM	25	0	21.05	20.98	21.04		
10	16QAM	25	12	21.03	20.93	21.08		
10	16QAM	25	25	21.01	20.93	21.15	22.3	1.7
10	16QAM	50	0	21.01	20.98	21.04		
10	64QAM	1	0	21.06	20.96	21.04		
10	64QAM	1	25	20.94	20.94	21.00	22.3	1.7
10	64QAM	1	49	20.91	20.87	21.10		
10	64QAM	25	0	19.78	19.74	19.81		
10	64QAM	25	12	19.73	19.76	19.79	21.3	2.7
10	64QAM	25	25	19.85	19.71	19.94		
10	64QAM	50	0	19.81	19.75	19.83		



Channel				18625	18900	19175	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	23.14	23.01	23.14	24	0
5	QPSK	1	12	22.98	22.89	23.01		
5	QPSK	1	24	22.91	22.99	23.17		
5	QPSK	12	0	21.98	22.02	22.11	23	1
5	QPSK	12	7	21.92	21.87	22.16		
5	QPSK	12	13	22.02	21.91	22.17		
5	QPSK	25	0	22.04	21.92	22.10	23.3	0.7
5	16QAM	1	0	22.25	22.23	22.43		
5	16QAM	1	12	22.20	22.00	22.25		
5	16QAM	1	24	22.14	22.25	22.46	22.3	1.7
5	16QAM	12	0	21.00	21.05	21.19		
5	16QAM	12	7	20.96	20.96	21.16		
5	16QAM	12	13	21.13	21.06	21.08	21.3	2.7
5	16QAM	25	0	21.07	21.00	21.14		
5	64QAM	1	0	21.02	20.98	21.08		
5	64QAM	1	12	20.88	20.79	20.96	22.3	1.7
5	64QAM	1	24	21.01	20.84	21.06		
5	64QAM	12	0	19.92	19.83	19.90		
5	64QAM	12	7	19.83	19.79	19.91	21.3	2.7
5	64QAM	12	13	19.80	19.88	19.99		
5	64QAM	25	0	19.78	19.73	19.83		
Channel				18615	18900	19185	Tune-up limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	23.18	23.11	23.09	24	0
3	QPSK	1	8	22.87	22.88	23.04		
3	QPSK	1	14	23.15	23.10	23.12		
3	QPSK	8	0	22.03	21.92	22.08	23	1
3	QPSK	8	4	21.91	21.79	21.93		
3	QPSK	8	7	21.93	21.90	22.01		
3	QPSK	15	0	22.00	21.80	22.08	23.3	0.7
3	16QAM	1	0	22.53	22.27	22.58		
3	16QAM	1	8	22.25	22.12	22.27		
3	16QAM	1	14	22.43	22.51	22.56	22.3	1.7
3	16QAM	8	0	21.03	20.94	21.10		
3	16QAM	8	4	20.82	20.87	20.95		
3	16QAM	8	7	20.87	20.79	21.05	21.3	2.7
3	16QAM	15	0	20.92	20.81	21.08		
3	64QAM	1	0	21.19	21.18	21.25		
3	64QAM	1	8	20.90	20.91	21.14	22.3	1.7
3	64QAM	1	14	21.28	21.08	21.28		
3	64QAM	8	0	19.81	19.68	19.88		
3	64QAM	8	4	19.54	19.74	19.73	21.3	2.7
3	64QAM	8	7	19.78	19.74	19.80		
3	64QAM	15	0	19.70	19.64	19.80		