FCC Test Report

Report No.: AGC08464170601FE07

FCC ID	:	2AMWETK1000
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Smart Phone
BRAND NAME	:	TOKIE, TeamVOX
MODEL NAME	:	TK1000, TVX887
CLIENT	:	Shenzhen Ruishi Innovation & Technology Co., Ltd.
DATE OF ISSUE	:	July 11, 2017
STANDARD(S)	:	FCC Part 22 Rules FCC Part 24 Rules FCC Part 27 Rules
REPORT VERSION	:	V1.0

Attestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd.

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	July 11, 2017	Valid	Original Report

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1.VERIFICATION OF COMPLIANCE

Applicant	Shenzhen Ruishi Innovation & Technology Co., Ltd.
Address	B407, Wanhai Building, No. 1031 NanHai Blvd, Nanshan District, Shenzhen
Manufacturer	Shenzhen Ruishi Innovation & Technology Co., Ltd.
Address	B407, Wanhai Building, No. 1031 NanHai Blvd, Nanshan District, Shenzhen
Product Designation	Smart Phone
Brand Name	TOKIE, TeamVOX
Test Model	TK1000
Series Model	TVX887
Difference Description	a) All the same except for brand name and model name, the corresponding relationship are as follow: b) **TOKIE** is corresponding **TK1000**; **TeamVOX** s corresponding **TVX887**;
Date of test	June 16, 2017~July 10, 2017
Deviation	None
Condition of Test Sample	Normal

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI/TIA- 603-D-2010. The sample tested as described in this report is in compliance with the FCC Rules Part22, Part24 and Pant27.

The test results of this report relate only to the tested sample identified in this report.

Tested By	Dota Zhang(Zhang Jianfeng)	July 10, 2017
Reviewed By	Bart Xie(Xie Xiaobin)	July 11, 2017
Approved By	Solger Zhang(Zhang Hongyi) Authorized Officer	July 11, 2017

2. GENERAL INFORMATION

2.1 Product Description

A major technical description of EUT is described as following:

Radio System Type:	LTE	
Hardware version:	R887-MB-V2.3	
Software version:	R887b-V002-US-20160309	
Frequency Bands:	☒FDD Band 2 ☒FDD Band 4 ☒FDD Band 5 ☒FDD Band 7 ☒FDD Band 12 ☒FDD Band 17 ☐FDD Band 26 ☐TDD Band 41 (U.S. Bands) ☐FDD Band 1 ☐FDD Band 3 ☐FDD Band 7 ☐FDD Band 8 ☐FDD Band 20 ☐TDD Band 33 ☐TDD Band 34 ☐TDD Band 38 ☐FDD Band 40 ☐FDD Band 42 ☐FDD Band 43 (Non-U.S. Bands)	
Frequency Range	LTE Band 2	Transmission (TX): 1850 to 1909.9 MHz
		Receiving (RX): 1930 to 1989.9 MHz
	LTE Band 4	Transmission (TX): 1710 to 1754.9 MHz
		Receiving (RX): 2110 to 2154.9 MHz
	LTE Band 5	Transmission (TX): 824 to 848.9 MHz
		Receiving (RX): 869 to 893.9 MHz
	LTE Band 7	Transmission (TX): 2500 to 2569.9 MHz
		Receiving (RX): 2620to 2689.9 MHz
	LTE Band 12	Transmission (TX): 699 to 715.9 MHz
		Receiving (RX): 729to 745.9 MHz
	LTE Band 17	Transmission (TX): 704 to 715.9 MHz
		Receiving (RX): 734 ~ 745.9 MHz
Supported Channel Bandwidth	LTE Band 2	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz ☒ 15 MHz ☒ 20 MHz
	LTE Band 4	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz ☒ 15 MHz ☒ 20 MHz
	LTE Band 5	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz
	LTE Band 7	☒ 5 MHz ☒ 10 MHz ☒ 15 MHz ☒ 20 MHz
	LTE Band 12	☒ 1.4 MHz ☒ 3 MHz ☒ 5 MHz ☒ 10 MHz
	LTE Band 17	☒ 5 MHz ☒ 10 MHz
Antenna:	PIFA Antenna	

Type of Modulation	QPSK/16QAM
Antenna gain:	-1.5dBi(LTE band 2),-1.3dBi(LTE band 4), -0.9dBi(LTE band 5), 0.3dBi(LTE band 7), -1.0dBi(LTE band 12),-1.0dBi(LTE band 17)
Diversity Antenna Gain	-1.7dBi(LTE band 2),-1.5dBi(LTE band 4), -1.0dBi(LTE band 5), 0.2dBi(LTE band 7), -1.1dBi(LTE band 12),-1.1dBi(LTE band 17)
Power Supply:	DC 3.8V by battery
Battery parameter:	DC3.8V/3600mAh
Single Card:	WCDMA/GSM/LTE Card Slot
Power Class	3
Voltage range	DC3.4 V to 4.35 V (Normal: DC3.8 V)
Temperature range	-10℃ to +50℃
*** Note: The High Voltage DC4.35V and Low Voltage DC3.4V were declared by manufacturer, The EUT couldn't be operating normally with higher or lower voltage.	

2.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2AMWETK1000**, filing to comply with the FCC Part22, Part24 Pant27 requirements

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2.3 Test Methodology

The radiated emission testing was performed according to the procedures of ANSI/TIA-603-D-2010, and FCC CFR 47 Rules of 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057.
KDB 971168 D01 Power Meas License Digital Systems v02r02

2.4 Test Facility

Site	Dongguan Precise Testing Service Co., Ltd.
Location	Building D,Baoding Technology Park,Guangming Road2,Dongcheng District, Dongguan, Guangdong, China,
FCC Registration No.	371540
Description	The test site is constructed and calibrated to meet the FCC requirements in documents of ANSI/TIA-603-D-2010.

2.5 Measurement Instruments

Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 2, 2017	July 1, 2018

Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9168	D69250	Mar 1, 2016	Feb 28, 2018
Trilog Broadband Antenna(substituted antenna) (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 3, 2016	July 2, 2018
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 3, 2016	July 2, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 2, 2017	July 1, 2018
RF Cable	SCHWARZBECK	AK9515E	96221	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 2, 2017	July 1, 2018
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 2, 2017	June 1, 2018
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 5, 2016	June 4, 2018
Spectrum analyzer	Agilent	E4407B	MY46185649	June 2, 2017	June 1, 2018
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 10, 2016	July 9, 2018
Horn Antenna(substituted antenna) (1G-18GHz)	ETS LINDGREN	3117	00034609	Mar 1, 2016	Feb 28, 2018
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 3, 2016	July 2, 2017
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 2, 2017	July 1, 2018
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 6, 2016	July 5, 2017
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 2, 2017	July 1, 2018
RF Cable	SCHWARZBECK	AK9515H	96220	July 7, 2016	July 6, 2017
RF Cable	SCHWARZBECK	AK9515H	96220	July 2, 2017	July 1, 2018
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 5, 2016	June 4, 2018
Artificial Mains Network	Narda	L2-16B	000WX31025	July 7, 2016	July 6, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 2, 2017	July 1, 2018
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 7, 2016	July 6, 2017
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 2, 2017	July 1, 2018
RF Cable	SCHWARZBECK	AK9515E	96222	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 2, 2017	July 1, 2018
Shielded Room	CHENGYU	843	PTS-002	June 5, 2016	June 4, 2017
Shielded Room	CHENGYU	843	PTS-002	July 2, 2017	July 1, 2018
COMMUNICATION TESTER	AGILENT	8960	GB46490550	July 24,2016	July 23, 2017

COMMUNICATION TESTER	AGILENT	8960	GB46490550	July 2, 2017	July 1, 2018
RF attenuator	N/A	RFA20db	68	N/A	N/A
Signal Generator	AGILENT	N5182A	MY50140530	Oct 16,2015	Oct 15,2016
Signal Generator(substituted equipment)	AGILENT	E8257D	MY45141029	Oct 16,2015	Oct 15,2016

2.6 Special Accessories

The battery was supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

2.7 Equipment Modifications

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

3.3 GENERAL TECHNICAL REQUIREMENTS

Item Number	Item Description		FCC Rules
1	Output Power	Conducted output power	2.1046/27.50(d)/ 27.50(c)
		Radiated output power	
2	Peak-to-Average Ratio	Peak-to-Average Ratio	27.50(d)
3	Spurious Emission	Conducted spurious emission	2.1051 / 27.53(h)/ 27.53(g)
		Radiated spurious emission	
4	Frequency Stability		2.1055/27.54
5	Occupied Bandwidth		2.1049 (h)(i)
6	Emission Bandwidth		2.1049/27.53(h)/ 27.53(g)
7	Band Edge		27.53(h)/ 27.53(g)

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different.

3.4 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System

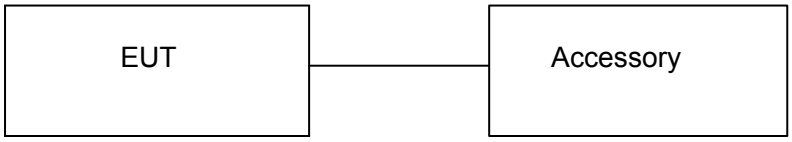

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Remark
1	Smart Phone	TK1000	FCC ID: 2AMWETK1000	EUT
2	Adapter	D31-01052000	DC 5.0V/2	Accessory
3	Battery	TK1000,TVX887	DC3.8V/ 3600mAh	Accessory
4	USB Cable	N/A	N/A	Accessory

****Note: All the accessories have been used during the test. The following "EUT" in setup diagram means EUT system.*

4. SUMMARY OF TEST RESULTS

Item Number	Item Description		FCC Rules	Result
1	Output Power	Conducted Output Power	2.1046/27.50(d)/ 27.50(c)	Pass
		Radiated Output Power		
2	Peak-to-Average Ratio	Peak-to-Average Ratio	27.50(d)	Pass
3	Spurious Emission	Conducted Spurious Emission	2.1051 / 27.53(h)/ 27.53(g)	Pass
		Radiated Spurious Emission		
4	Frequency Stability		2.1055/27.54	Pass
5	Occupied Bandwidth		2.1049 (h)(i)	Pass
6	Emission Bandwidth		2.1049/27.53(h)/ 27.53(g)	Pass
7	Band Edge		27.53(h)/ 27.53(g)	Pass

5. DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMW 500) to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both LTE frequency band.

*****Note:** LTE band 2, LTE band 4, LTE band 5, LTE band 7,and LTE band 17 mode have been tested during the test.

The worst condition was recorded in the test report if no other modes test data.

Test Mode	Test Modes Description
LTE	LTE system, QPSK modulation
LTE	LTE system, 16QAM modulation

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 2	TX (1.4M)	Channel 18607	Channel 18900	Channel 19193
		1850.7 MHz	1880 MHz	1909.3 MHz
	TX (3M)	Channel 18615	Channel 18900	Channel 19185
		1851.5 MHz	1880 MHz	1908.5 MHz
	TX (5M)	Channel 18625	Channel 18900	Channel 19175
		1852.5 MHz	1880 MHz	1907.5 MHz
	TX (10M)	Channel 18650	Channel 18900	Channel 19150
		1855.0 MHz	1880 MHz	1905.0 MHz
	TX (15M)	Channel 18675	Channel 18900	Channel 19125
		1857.5 MHz	1880 MHz	1902.5 MHz
	TX (20M)	Channel 18700	Channel 18900	Channel 19100
		1860.0 MHz	1880 MHz	1900.0 MHz
	RX (1.4M)	Channel 607	Channel 900	Channel 1193
		1930.7 MHz	1960 MHz	1989.3 MHz
	RX (3M)	Channel 615	Channel 900	Channel 1185
		1931.5 MHz	1960 MHz	1988.5 MHz
	RX (5M)	Channel 625	Channel 900	Channel 1175
		1932.5 MHz	1960 MHz	1987.5 MHz
	RX (10M)	Channel 650	Channel 900	Channel 1150
		1935 MHz	1960 MHz	1985 MHz
	RX (15M)	Channel 675	Channel 900	Channel 1125
		1937.5 MHz	1960 MHz	1982.5 MHz
	RX (20M)	Channel 700	Channel 900	Channel 1100
		1940 MHz	1960 MHz	1980 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 4	TX (1.4M)	Channel 19957	Channel 20175	Channel 20393
		1710.7 MHz	1732.5 MHz	1754.3 MHz
	TX (3M)	Channel 19965	Channel 20175	Channel 20385
		1711.5 MHz	1732.5 MHz	1753.5 MHz
	TX (5M)	Channel 19975	Channel 20175	Channel 20375
		1712.5 MHz	1732.5 MHz	1752.5 MHz
	TX (10M)	Channel 20000	Channel 20175	Channel 20350
		1715 MHz	1732.5 MHz	1750 MHz
	TX (15M)	Channel 20025	Channel 20175	Channel 20325
		1717.5 MHz	1732.5 MHz	1747.5 MHz
	TX (20M)	Channel 20050	Channel 20175	Channel 20300
		1720 MHz	1732.5 MHz	1745 MHz
	RX (1.4M)	Channel 1957	Channel 2175	Channel 2393
		2110.7 MHz	2132.5 MHz	2154.3 MHz
	RX (3M)	Channel 1965	Channel 2175	Channel 2385
		2111.5 MHz	2132.5 MHz	2153.5 MHz
	RX (5M)	Channel 1975	Channel 2175	Channel 2375
		2112.5 MHz	2132.5 MHz	2152.5 MHz
	RX (10M)	Channel 2000	Channel 2175	Channel 2350
		2115 MHz	2132.5 MHz	2150 MHz
	RX (15M)	Channel 2025	Channel 2175	Channel 2325
		2117.5 MHz	2132.5 MHz	2147.5 MHz
	RX (20M)	Channel 2050	Channel 2175	Channel 2300
		2120 MHz	2132.5 MHz	2145 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 5	TX (1.4M)	Channel 20407	Channel 20525	Channel 20643
		824.7 MHz	836.5 MHz	848.3 MHz
	TX (3M)	Channel 20415	Channel 20525	Channel 20635
		825.5 MHz	836.5 MHz	847.5 MHz
	TX (5M)	Channel 20425	Channel 20525	Channel 20625
		826.5 MHz	836.5 MHz	846.5 MHz
	TX (10M)	Channel 20450	Channel 20525	Channel 20600
		829 MHz	836.5 MHz	844 MHz
	RX (1.4M)	Channel 2404	Channel 2525	Channel 2463
		869.4 MHz	881.5 MHz	893.3 MHz

	RX (3M)	Channel 2415	Channel 2525	Channel 2635
		870.5 MHz	881.5 MHz	892.5 MHz
	RX (5M)	Channel 2425	Channel 2525	Channel 2625
		871.5 MHz	881.5 MHz	891.5 MHz
	RX (10M)	Channel 2450	Channel 2525	Channel 2600
		874 MHz	881.5 MHz	889 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 7	TX (5M)	Channel 20775	Channel 21100	Channel 21425
		2502.5 MHz	2535 MHz	2567.5 MHz
	TX (10M)	Channel 20800	Channel 21100	Channel 21400
		2505 MHz	2535 MHz	2565 MHz
	TX (15M)	Channel 20825	Channel 21100	Channel 21375
		2507.5 MHz	2535 MHz	2562.5 MHz
	TX (20M)	Channel 20850	Channel 21100	Channel 21350
		2510 MHz	2535 MHz	2560 MHz
	RX (5M)	Channel 2775	Channel 3100	Channel 3425
		2622.5 MHz	2655 MHz	2687.5 MHz
	RX (10M)	Channel 2800	Channel 3100	Channel 3400
		2625 MHz	2655 MHz	2685 MHz
	RX (15M)	Channel 2825	Channel 3100	Channel 3375
		2627.5 MHz	2655 MHz	2682.5 MHz
	RX (20M)	Channel 2850	Channel 3100	Channel 3350
		2630 MHz	2655 MHz	2680 MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 12	TX (1.4M)	Channel 23017	Channel 23095	Channel 23173
		699.7MHz	707.5MHz	715.3MHz
	TX (3M)	Channel 23025	Channel 23095	Channel 23165
		700.5MHz	707.5MHz	714.5MHz
	TX (5M)	Channel 23035	Channel 23095	Channel 23155
		701.5MHz	707.5MHz	713.5MHz
	TX (10M)	Channel 23060	Channel 23095	Channel 23130
		704 MHz	707.5 MHz	711 MHz
	RX (1.4M)	Channel 5017	Channel 5095	Channel 5173
		729.7MHz	737.5MHz	745.3MHz
	RX (3M)	Channel 5025	Channel 5095	Channel 5165
		730.5MHz	737.5MHz	744.5MHz

	RX (5M)	Channel 5035	Channel 5095	Channel 5155
		731.5MHz	737.5MHz	743.5MHz
	RX (10M)	Channel 5060	Channel 5095	Channel 5130
		734MHz	737.5MHz	741MHz

Test Mode	TX / RX	RF Channel		
		Low (B)	Middle (M)	High (T)
LTE Band 17	TX (5M)	Channel 23755	Channel 23790	Channel 23825
		706.5 MHz	710 MHz	713.5 MHz
	TX (10M)	Channel 23780	Channel 23790	Channel 23800
		709 MHz	710 MHz	711 MHz
	RX (5M)	Channel 5755	Channel 5790	Channel 5825
		736.5 MHz	740 MHz	743.5 MHz
	RX (10M)	Channel 5780	Channel 5790	Channel 5800
		739 MHz	740 MHz	743.5 MHz

6. OUTPUT POWER

6.1 Conducted Output Power

6.1.1 Procedures: (According with KDB 971168)

The transmitter output port was connected to base station.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Measure the maximum burst average power and average power for other modulation signal.

The EUT was setup for the max output power with pseudo random data modulation. Power was measured with Spectrum Analyzer. The measurements were performed on all modes (LTE Band 4) at 3 typical channels (the Top Channel, the Middle Channel and the Bottom Channel) for each band.

The instrument must have an available measurement/resolution bandwidth that is equal to or exceeds the OBW. If this capability is available, then the following procedure can be used to determine the total peak output power.

a) Set the RBW ≥ OBW.

b) Set VBW ≥ 3 × RBW. c)

Set span ≥ 2 x RBW

d) Sweep time = auto couple.

e) Detector = peak.

f) Ensure that the number of measurement points ≥ span/RBW.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

1) Use the peak marker function to determine the peak amplitude level.

6.1.2 MEASUREMENT RESULT

Conducted Output Power Limits		
Mode	**Average Power**	**Tolerance(dB)**
LTE	23 dBm (0.2W)	± 2.7

LTE Band 2

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	18700	1860.0	QPSK	1	0	0	22.42
				1	49	0	22.71
				1	99	0	22.47
				50	0	1	22.19
				50	25	1	22.85
				50	49	1	22.54
				100	0	1	22.24
			16QAM	1	0	1	21.98
				1	49	1	22.65
				1	99	1	22.71
				50	0	2	22.15

				50	25	2	22.10
				50	49	2	21.65
				100	0	2	21.88
	18900	1880.0	QPSK	1	0	0	22.31
				1	49	0	22.87
				1	99	0	22.27
				50	0	1	21.75
				50	25	1	22.87
				50	49	1	22.38
				100	0	1	21.79
			16QAM	1	0	1	22.53
				1	49	1	21.79
				1	99	1	21.85
				50	0	2	22.43
				50	25	2	22.87
				50	49	2	22.34
				100	0	2	22.32
	19100	1900.0	QPSK	1	0	0	22.83
				1	49	0	22.93
				1	99	0	22.62
				50	0	1	22.69
				50	25	1	22.62
				50	49	1	22.16
				100	0	1	22.12
			16QAM	1	0	1	22.48
				1	49	1	22.56
				1	99	1	21.92
				50	0	2	22.84
				50	25	2	22.68
				50	49	2	22.64
				100	0	2	22.66

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	18675	1857.5	QPSK	1	0	0	22.13
				1	37	0	22.39
				1	74	0	22.45
				36	0	1	21.98
				36	16	1	22.32
				36	35	1	22.02
				75	0	1	22.13
			16QAM	1	0	1	22.03
				1	37	1	21.87
				1	74	1	22.92
				36	0	2	22.26
				36	16	2	21.94
				36	35	2	22.42
				75	0	2	22.77

	18900	1880.0	QPSK	1	0	0	22.64
				1	37	0	21.96
				1	74	0	22.24
				36	0	1	22.92
				36	16	1	22.81
				36	35	1	22.01
				75	0	1	22.13
			16QAM	1	0	1	22.19
				1	37	1	22.16
				1	74	1	22.28
				36	0	2	21.96
				36	16	2	22.17
				36	35	2	22.41
				75	0	2	22.07
	19125	1902.5	QPSK	1	0	0	22.07
				1	37	0	21.97
				1	74	0	22.37
				36	0	1	22.23
				36	16	1	22.06
				36	35	1	22.38
				75	0	1	22.41
			16QAM	1	0	1	22.65
				1	37	1	22.88
				1	74	1	22.44
				36	0	2	22.28
				36	16	2	21.83
				36	35	2	22.64
				75	0	2	22.24

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	18650	1855.0	QPSK	1	0	0	22.75
				1	24	0	22.16
				1	49	0	22.38
				25	0	1	22.21
				25	12	1	22.29
				25	25	1	22.51
				50	0	1	22.15
			16QAM	1	0	1	22.23
				1	24	1	22.11
				1	49	1	22.29
				25	0	2	22.24
				25	12	2	22.58
				25	25	2	22.66
				50	0	2	22.03
	18900	1880.0	QPSK	1	0	0	22.52
				1	24	0	21.95
				1	49	0	22.75
				25	0	1	22.39
				25	12	1	22.36

				25	25	1	22.30
				50	0	1	22.50
			16QAM	1	0	1	22.35
				1	24	1	22.00
				1	49	1	22.36
				25	0	2	22.58
				25	12	2	21.91
				25	25	2	22.58
				50	0	2	22.56
	19150	1905.0	QPSK	1	0	0	22.21
				1	24	0	21.94
				1	49	0	22.35
				25	0	1	22.29
				25	12	1	22.34
				25	25	1	22.92
				50	0	1	22.50
			16QAM	1	0	1	22.28
				1	24	1	22.86
				1	49	1	22.66
				25	0	2	22.45
				25	12	2	22.82
				25	25	2	22.65
				50	0	2	21.92

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	18625	1852.5	QPSK	1	0	0	22.84
				1	12	0	21.99
				1	24	0	22.58
				12	0	1	22.54
				12	6	1	22.68
				12	11	1	22.76
				25	0	1	22.17
			16QAM	1	0	1	22.37
				1	12	1	22.69
				1	24	1	22.71
				12	0	2	21.93
				12	6	2	22.18
				12	11	2	22.67
				25	0	2	22.08
	18900	1880.0	QPSK	1	0	0	22.38
				1	12	0	21.93
				1	24	0	21.86
				12	0	1	22.33
				12	6	1	22.13
				12	11	1	22.23
				25	0	1	21.98

			16QAM	1	0	1	22.19
				1	12	1	22.45
				1	24	1	22.34
				12	0	2	22.53
				12	6	2	22.77
				12	11	2	22.61
				25	0	2	22.85
	19175	1907.5	QPSK	1	0	0	22.48
				1	12	0	22.04
				1	24	0	22.07
				12	0	1	22.77
				12	6	1	22.19
				12	11	1	22.21
				25	0	1	22.69
			16QAM	1	0	1	22.09
				1	12	1	22.54
				1	24	1	22.64
				12	0	2	22.61
				12	6	2	22.03
				12	11	2	22.11
				25	0	2	22.00

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	18615	1851.5	QPSK	1	0	0	22.60
				1	7	0	22.69
				1	14	0	22.39
				8	0	1	22.44
				8	4	1	22.09
				8	7	1	22.19
				15	0	1	22.36
			16QAM	1	0	1	22.48
				1	7	1	22.30
				1	14	1	22.40
				8	0	2	22.09
				8	4	2	22.34
				8	7	2	22.36
				15	0	2	22.13
	18900	1880.0	QPSK	1	0	0	22.75
				1	7	0	22.25
				1	14	0	22.20
				8	0	1	22.62
				8	4	1	22.85
				8	7	1	22.52

				15	0	1	22.44
			16QAM	1	0	1	22.09
				1	7	1	22.53
				1	14	1	22.45
				8	0	2	21.91
				8	4	2	21.93
				8	7	2	22.14
				15	0	2	22.41
	19185	1908.5	QPSK	1	0	0	22.36
				1	7	0	22.95
				1	14	0	21.80
				8	0	1	21.84
				8	4	1	22.17
				8	7	1	21.89
				15	0	1	21.93
			16QAM	1	0	1	22.39
				1	7	1	22.87
				1	14	1	22.14
				8	0	2	22.37
				8	4	2	22.00
				8	7	2	22.10
				15	0	2	21.89

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	18607	1850.7	QPSK	1	0	0	22.01
				1	3	0	22.26
				1	5	0	22.52
				3	0	0	22.67
				3	2	0	21.89
				3	3	0	22.05
				6	0	1	22.87
			16QAM	1	0	1	22.11
				1	2	1	22.22
				1	5	1	22.64
				3	0	1	22.24
				3	1	1	22.83
				3	2	1	22.75
				6	0	2	22.76
	18900	1880.0	QPSK	1	0	0	22.00
				1	2	0	22.07
				1	5	0	22.13
				3	0	0	22.11
				3	1	0	22.79

				3	2	0	22.70
				6	0	1	22.01
			16QAM	1	0	1	22.76
				1	2	1	22.68
				1	5	1	22.31
				3	0	1	22.70
				3	1	1	22.02
				3	2	1	22.43
				6	0	2	22.39
	19193	1909.3	QPSK	1	0	0	22.02
				1	2	0	22.42
				1	5	0	22.28
				3	0	0	22.42
				3	1	0	22.52
				3	2	0	21.80
				6	0	1	21.93
			16QAM	1	0	1	22.69
				1	2	1	22.16
				1	5	1	22.32
				3	0	1	22.49
				3	1	1	22.72
				3	2	1	22.88
				6	0	2	22.03

LTE Band 4

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	20050	1720.0	QPSK	1	0	0	21.92
				1	49	0	22.25
				1	99	0	22.41
				50	0	1	21.96
				50	25	1	21.95
				50	49	1	22.61
				100	0	1	22.41
			16QAM	1	0	1	22.24
				1	49	1	22.78
				1	99	1	22.53
				50	0	2	22.02
				50	25	2	22.05
				50	49	2	22.73
				100	0	2	22.49
	20175	1732.5	QPSK	1	0	0	22.86
				1	49	0	22.47
				1	99	0	22.35
				50	0	1	22.74
				50	25	1	21.99
				50	49	1	22.84
				100	0	1	22.60
			16QAM	1	0	1	22.64
				1	49	1	22.40
				1	99	1	22.65
				50	0	2	22.81
				50	25	2	22.64
				50	49	2	22.12
				100	0	2	22.65
	20300	1745.0	QPSK	1	0	0	22.57
				1	49	0	22.46
				1	99	0	22.02
				50	0	1	21.80
				50	25	1	22.25
				50	49	1	22.38
				100	0	1	21.98
			16QAM	1	0	1	22.04
				1	49	1	22.45
				1	99	1	22.29
				50	0	2	22.56
				50	25	2	22.68
				50	49	2	22.24
				100	0	2	22.18

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	20025	1717.5	QPSK	1	0	0	22.29
				1	37	0	21.90
				1	74	0	22.16
				36	0	1	22.06
				36	16	1	22.21
				36	35	1	21.83
				75	0	1	21.92
			16QAM	1	0	1	21.91
				1	37	1	22.00
				1	74	1	22.60
				36	0	2	22.35
				36	16	2	22.35
				36	35	2	22.31
				75	0	2	21.91
	20175	1732.5	QPSK	1	0	0	22.82
				1	37	0	22.87
				1	74	0	22.09
				36	0	1	22.38
				36	16	1	22.61
				36	35	1	21.83
				75	0	1	22.32
			16QAM	1	0	1	21.97
				1	37	1	22.09
				1	74	1	22.21
				36	0	2	22.69
				36	16	2	22.55
				36	35	2	22.12
				75	0	2	21.80
	20325	1747.5	QPSK	1	0	0	22.54
				1	37	0	22.05
				1	74	0	22.40
				36	0	1	22.72
				36	16	1	22.05
				36	35	1	22.76
				75	0	1	21.92
			16QAM	1	0	1	22.79
				1	37	1	22.63
				1	74	1	22.02
				36	0	2	22.77
				36	16	2	21.95
				36	35	2	22.38
				75	0	2	21.87

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20000	1715.0	QPSK	1	0	0	22.27
				1	24	0	22.17
				1	49	0	22.65
				25	0	1	22.68
				25	12	1	22.01
				25	25	1	22.70
				50	0	1	22.74
			16QAM	1	0	1	22.54
				1	24	1	22.00
				1	49	1	22.17
				25	0	2	22.47
				25	12	2	21.90
				25	25	2	22.02
				50	0	2	22.40
	20175	1732.5	QPSK	1	0	0	22.61
				1	24	0	22.58
				1	49	0	22.53
				25	0	1	22.05
				25	12	1	22.34
				25	25	1	22.03
				50	0	1	22.55
			16QAM	1	0	1	22.48
				1	24	1	22.88
				1	49	1	22.48
				25	0	2	22.30
				25	12	2	22.04
				25	25	2	21.95
				50	0	2	22.29
	20350	1750.0	QPSK	1	0	0	22.34
				1	24	0	22.24
				1	49	0	22.44
				25	0	1	22.04
				25	12	1	22.51
				25	25	1	22.50
				50	0	1	22.13
			16QAM	1	0	1	22.60
				1	24	1	21.97
				1	49	1	22.39
				25	0	2	22.38
				25	12	2	23.02
				25	25	2	22.54
				50	0	2	22.56

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	19975	1712.5	QPSK	1	0	0	22.49
				1	12	0	21.84
				1	24	0	22.58
				12	0	1	22.06
				12	6	1	21.99
				12	11	1	21.90
				25	0	1	22.34
			16QAM	1	0	1	22.22
				1	12	1	22.31
				1	24	1	21.92
				12	0	2	22.63
				12	6	2	22.25
				12	11	2	22.62
				25	0	2	22.44
	20175	1732.5	QPSK	1	0	0	22.60
				1	12	0	22.11
				1	24	0	21.84
				12	0	1	22.05
				12	6	1	22.89
				12	11	1	22.65
				25	0	1	22.21
			16QAM	1	0	1	22.46
				1	12	1	22.58
				1	24	1	22.50
				12	0	2	21.87
				12	6	2	22.35
				12	11	2	22.11
				25	0	2	22.17
	20375	1752.5	QPSK	1	0	0	22.70
				1	12	0	21.89
				1	24	0	21.92
				12	0	1	22.45
				12	6	1	21.91
				12	11	1	22.19
				25	0	1	22.20
			16QAM	1	0	1	21.94
				1	12	1	22.35
				1	24	1	22.21
				12	0	2	22.54
				12	6	2	21.98
				12	11	2	22.18
				25	0	2	22.50

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	19965	1711.5	QPSK	1	0	0	21.82
				1	7	0	22.45
				1	14	0	22.24
				8	0	1	22.11
				8	4	1	22.08
				8	7	1	21.85
				15	0	1	22.11
			16QAM	1	0	1	22.64
				1	7	1	22.11
				1	14	1	21.95
				8	0	2	22.34
				8	4	2	21.79
				8	7	2	22.01
				15	0	2	22.00
	20175	1732.5	QPSK	1	0	0	22.20
				1	7	0	22.27
				1	14	0	22.63
				8	0	1	21.91
				8	4	1	22.45
				8	7	1	22.53
				15	0	1	22.34
			16QAM	1	0	1	22.85
				1	7	1	22.06
				1	14	1	22.56
				8	0	2	21.90
				8	4	2	22.07
				8	7	2	23.02
				15	0	2	22.60
	20385	1753.5	QPSK	1	0	0	21.94
				1	7	0	21.74
				1	14	0	22.20
				8	0	1	22.23
				8	4	1	22.56
				8	7	1	22.66
				15	0	1	22.17
			16QAM	1	0	1	22.81
				1	7	1	22.13
				1	14	1	22.52
				8	0	2	22.41
				8	4	2	21.85
				8	7	2	22.11

				15	0	2	22.64

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	19957	1710.7	QPSK	1	0	0	22.77
				1	2	0	21.97
				1	5	0	22.48
				3	0	0	22.78
				3	1	0	22.56
				3	2	0	22.29
				6	0	1	22.12
			16QAM	1	0	1	22.23
				1	2	1	22.62
				1	5	1	22.36
				3	0	1	22.25
				3	1	1	22.33
				3	2	1	22.13
				6	0	2	22.63
	20175	1732.5	QPSK	1	0	0	22.13
				1	2	0	22.76
				1	5	0	22.07
				3	0	0	21.93
				3	1	0	22.71
				3	2	0	22.60
				6	0	1	22.77
			16QAM	1	0	1	22.94
				1	2	1	21.81
				1	5	1	22.78
				3	0	1	22.65
				3	1	1	22.31
				3	2	1	22.08
				6	0	2	22.63
	20393	1754.3	QPSK	1	0	0	21.99
				1	2	0	21.89
				1	5	0	22.63
				3	0	0	21.88
				3	1	0	22.46
				3	2	0	21.78
				6	0	1	22.12
			16QAM	1	0	1	22.48
				1	2	1	22.06
				1	5	1	22.47
				3	0	1	22.55
				3	1	1	22.48

				3	2	1	22.08
				6	0	2	22.08

LTE Band 5

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20450	829	QPSK	1	0	0	22.40
				1	24	0	21.74
				1	49	0	22.07
				25	0	1	22.17
				25	12	1	22.36
				25	25	1	22.55
				50	0	1	22.04
			16QAM	1	0	1	21.72
				1	24	1	21.86
				1	49	1	21.57
				25	0	2	21.88
				25	12	2	22.49
				25	25	2	22.41
				50	0	2	22.07
	20525	836.5	QPSK	1	0	0	22.21
				1	24	0	21.95
				1	49	0	21.96
				25	0	1	22.23
				25	12	1	22.65
				25	25	1	22.26
				50	0	1	22.51
			16QAM	1	0	1	22.16
				1	24	1	22.31
				1	49	1	22.42
				25	0	2	22.15
				25	12	2	22.78
				25	25	2	22.42
				50	0	2	21.83
	20600	844	QPSK	1	0	0	22.50
				1	24	0	22.01
				1	49	0	22.71
				25	0	1	22.40
				25	12	1	22.79
				25	25	1	22.69
				50	0	1	22.18
			16QAM	1	0	1	22.49
				1	24	1	21.80
				1	49	1	22.63
				25	0	2	22.94
				25	12	2	22.53
				25	25	2	22.85
				50	0	2	22.58

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	20425	826.5	QPSK	1	0	0	22.34
				1	12	0	22.14
				1	24	0	22.35
				12	0	1	22.23
				12	6	1	22.16
				12	11	1	22.71
				25	0	1	22.22
			16QAM	1	0	1	22.40
				1	12	1	21.95
				1	24	1	21.86
				12	0	2	22.35
				12	6	2	22.77
				12	11	2	22.23
				25	0	2	21.96
	20525	836.5	QPSK	1	0	0	22.66
				1	12	0	22.62
				1	24	0	22.24
				12	0	1	22.77
				12	6	1	22.48
				12	11	1	21.79
				25	0	1	22.27
			16QAM	1	0	1	22.28
				1	12	1	22.83
				1	24	1	21.96
				12	0	2	22.78
				12	6	2	21.97
				12	11	2	22.72
				25	0	2	22.24
	20625	846.5	QPSK	1	0	0	22.36
				1	12	0	22.63
				1	24	0	22.62
				12	0	1	21.94
				12	6	1	22.35
				12	11	1	22.48
				25	0	1	22.77
			16QAM	1	0	1	22.22
				1	12	1	22.34
				1	24	1	22.29
				12	0	2	22.44
				12	6	2	21.82

				12	11	2	22.26
				25	0	2	22.35

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	20415	825.5	QPSK	1	0	0	22.55
				1	7	0	22.09
				1	14	0	22.10
				8	0	1	22.71
				8	4	1	22.41
				8	7	1	22.08
				15	0	1	22.30
			16QAM	1	0	1	22.18
				1	7	1	21.95
				1	14	1	22.05
				8	0	2	21.77
				8	4	2	22.11
				8	7	2	21.93
				15	0	2	22.12
	20525	836.5	QPSK	1	0	0	22.15
				1	7	0	22.62
				1	14	0	22.66
				8	0	1	22.56
				8	4	1	22.49
				8	7	1	22.40
				15	0	1	22.06
			16QAM	1	0	1	22.36
				1	7	1	22.27
				1	14	1	22.78
				8	0	2	22.30
				8	4	2	22.47
				8	7	2	22.14
				15	0	2	21.82
	20635	847.5	QPSK	1	0	0	22.24
				1	7	0	22.39
				1	14	0	21.95
				8	0	1	22.69
				8	4	1	22.54
				8	7	1	22.41
				15	0	1	22.38
			16QAM	1	0	1	22.42
				1	7	1	22.58
				1	14	1	22.31
				8	0	2	22.61

				8	4	2	21.93
				8	7	2	22.68
				15	0	2	22.72

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	20407	824.7	QPSK	1	0	0	21.98
				1	2	0	22.05
				1	5	0	22.79
				3	0	0	22.36
				3	1	0	22.61
				3	2	0	22.04
				6	0	1	22.67
			16QAM	1	0	1	22.41
				1	2	1	22.03
				1	5	1	22.60
				3	0	1	22.76
				3	1	1	21.85
				3	2	1	21.84
				6	0	2	22.63
	20525	836.5	QPSK	1	0	0	21.92
				1	2	0	22.33
				1	5	0	22.02
				3	0	0	21.87
				3	1	0	22.48
				3	2	0	22.47
				6	0	1	21.83
			16QAM	1	0	1	22.36
				1	2	1	22.01
				1	5	1	22.86
				3	0	1	21.98
				3	1	1	22.15
				3	2	1	22.34
				6	0	2	22.81
	20643	848.3	QPSK	1	0	0	22.54
				1	2	0	22.31
				1	5	0	22.67
				3	0	0	22.78
				3	1	0	22.27
				3	2	0	21.86
				6	0	1	21.85
			16QAM	1	0	1	22.25
				1	2	1	21.99
				1	5	1	22.20

				3	0	1	22.66
				3	1	1	21.90
				3	2	1	22.31
				6	0	2	22.33

LTE Band 7

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
20MHz	20850	2510	QPSK	1	0	0	22.08
				1	49	0	22.24
				1	99	0	22.02
				50	0	1	21.97
				50	25	1	22.12
				50	49	1	22.46
				100	0	1	21.97
			16QAM	1	0	1	22.22
				1	49	1	22.79
				1	99	1	21.90
				50	0	2	22.60
				50	25	2	22.62
				50	49	2	22.16
				100	0	2	22.81
	21100	2535	QPSK	1	0	0	22.77
				1	49	0	22.32
				1	99	0	22.33
				50	0	1	21.96
				50	25	1	22.58
				50	49	1	22.33
				100	0	1	21.86
			16QAM	1	0	1	22.76
				1	49	1	22.57
				1	99	1	22.63
				50	0	2	22.46
				50	25	2	22.59
				50	49	2	21.97
				100	0	2	22.39
	21350	2560	QPSK	1	0	0	22.72
				1	49	0	21.97
				1	99	0	21.98
				50	0	1	22.54
				50	25	1	22.61
				50	49	1	22.27
				100	0	1	21.97
			16QAM	1	0	1	21.99
				1	49	1	22.06
				1	99	1	21.88
				50	0	2	22.50
				50	25	2	22.75
				50	49	2	22.12
				100	0	2	22.35

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	20825	2507.5	QPSK	1	0	0	22.40
				1	37	0	22.72
				1	74	0	22.39
				36	0	1	22.33
				36	16	1	22.22
				36	35	1	22.15
				75	0	1	22.29
			16QAM	1	0	1	22.21
				1	37	1	22.44
				1	74	1	22.54
				36	0	2	22.55
				36	16	2	22.26
				36	35	2	22.15
				75	0	2	22.45
	21100	2535	QPSK	1	0	0	22.12
				1	37	0	22.02
				1	74	0	22.06
				36	0	1	22.84
				36	16	1	21.87
				36	35	1	22.16
				75	0	1	21.94
			16QAM	1	0	1	22.39
				1	37	1	21.83
				1	74	1	22.59
				36	0	2	22.01
				36	16	2	22.90
				36	35	2	22.62
				75	0	2	22.33
	21375	2562.5	QPSK	1	0	0	21.77
				1	37	0	22.80
				1	74	0	22.55
				36	0	1	22.76
				36	16	1	22.20
				36	35	1	22.90
				75	0	1	22.58
			16QAM	1	0	1	22.29
				1	37	1	22.40
				1	74	1	22.36
				36	0	2	21.98
				36	16	2	22.66
				36	35	2	22.57
				75	0	2	21.86

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20800	2505	QPSK	1	0	0	22.58
				1	24	0	22.34
				1	49	0	22.92
				25	0	1	22.18
				25	12	1	21.91
				25	25	1	22.05
				50	0	1	22.12
			16QAM	1	0	1	21.91
				1	24	1	22.66
				1	49	1	22.31
				25	0	2	22.84
				25	12	2	21.93
				25	25	2	21.98
				50	0	2	22.56
	21100	2535	QPSK	1	0	0	22.88
				1	24	0	22.53
				1	49	0	22.36
				25	0	1	22.06
				25	12	1	22.73
				25	25	1	22.19
				50	0	1	22.28
			16QAM	1	0	1	22.17
				1	24	1	22.10
				1	49	1	22.04
				25	0	2	22.53
				25	12	2	22.15
				25	25	2	22.30
				50	0	2	22.51
	21400	2565	QPSK	1	0	0	22.03
				1	24	0	22.09
				1	49	0	22.53
				25	0	1	22.21
				25	12	1	22.69
				25	25	1	22.25
				50	0	1	22.81
			16QAM	1	0	1	22.03
				1	24	1	22.04
				1	49	1	22.03
				25	0	2	22.27
				25	12	2	22.51
				25	25	2	22.83
				50	0	2	22.64

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)

5MHz	20775	2502.5	QPSK	1	0	0	21.90
				1	12	0	22.02
				1	24	0	22.06
				12	0	1	22.34
				12	6	1	21.95
				12	13	1	22.36
				25	0	1	22.47
			16QAM	1	0	1	22.09
				1	12	1	22.04
				1	24	1	21.85
				12	0	2	22.15
				12	6	2	22.40
				12	13	2	22.57
				25	0	2	22.70
	21100	2535	QPSK	1	0	0	22.82
				1	12	0	22.31
				1	24	0	22.76
				12	0	1	21.85
				12	6	1	22.45
				12	13	1	22.06
				25	0	1	22.09
			16QAM	1	0	1	21.87
				1	12	1	22.42
				1	24	1	22.04
				12	0	2	22.13
				12	6	2	21.89
				12	13	2	22.51
				25	0	2	21.98
	21425	2567.5	QPSK	1	0	0	22.10
				1	12	0	21.99
				1	24	0	22.70
				12	0	1	22.56
				12	6	1	22.20
				12	13	1	21.99
				25	0	1	22.08
			16QAM	1	0	1	21.89
				1	12	1	21.85
				1	24	1	22.30
				12	0	2	22.14
				12	6	2	22.15
				12	13	2	22.09
				25	0	2	22.06

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	23060	704	QPSK	1	0	0	22.04
				1	24	0	21.91
				1	49	0	21.85
				25	0	1	21.83
				25	12	1	22.41
				25	25	1	22.12
				50	0	1	22.51
			16QAM	1	0	1	22.77
				1	24	1	22.14
				1	49	1	22.62
				25	0	2	22.04
				25	12	2	21.89
				25	25	2	21.93
				50	0	2	22.65
	23095	707.5	QPSK	1	0	0	22.07
				1	24	0	22.56
				1	49	0	22.66
				25	0	1	22.79
				25	12	1	22.40
				25	25	1	22.63
				50	0	1	22.54
			16QAM	1	0	1	22.31
				1	24	1	22.97
				1	49	1	22.83
				25	0	2	22.86
				25	12	2	21.97
				25	25	2	22.52
				50	0	2	22.74
	23130	711	QPSK	1	0	0	22.48
				1	24	0	22.75
				1	49	0	22.31
				25	0	1	22.05
				25	12	1	22.39
				25	25	1	22.48
				50	0	1	22.13
			16QAM	1	0	1	22.34
				1	24	1	22.52
				1	49	1	22.61
				25	0	2	22.79
				25	12	2	22.70
				25	25	2	21.97
				50	0	2	21.88

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)

5MHz	23035	701.5	QPSK	1	0	0	22.62
				1	12	0	22.52
				1	24	0	22.51
				12	0	1	22.63
				12	6	1	22.67
				12	11	1	22.49
				25	0	1	22.02
			16QAM	1	0	1	22.22
				1	12	1	22.53
				1	24	1	22.19
				12	0	2	22.75
				12	6	2	22..07
				12	11	2	22.77
				25	0	2	22.26
	23095	707.5	QPSK	1	0	0	22.63
				1	12	0	22.45
				1	24	0	22.82
				12	0	1	22.22
				12	6	1	22.61
				12	11	1	22.35
				25	0	1	22.68
			16QAM	1	0	1	22.12
				1	12	1	22.11
				1	24	1	22.77
				12	0	2	22.61
				12	6	2	22.31
				12	11	2	22.50
				25	0	2	21.97
	23155	713.5	QPSK	1	0	0	22.60
				1	12	0	22.67
				1	24	0	22.18
				12	0	1	22.74
				12	6	1	22.30
				12	11	1	22.81
				25	0	1	22.41
			16QAM	1	0	1	22.04
				1	12	1	22.51
				1	24	1	22.64
				12	0	2	22.66
				12	6	2	22.42
				12	11	2	22.63
				25	0	2	22.14

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	23025	700.5	QPSK	1	0	0	22.69
				1	7	0	21.89
				1	14	0	22.17
				8	0	1	22.09
				8	4	1	21.89
				8	7	1	22.01
				15	0	1	22.32
			16QAM	1	0	1	22.04
				1	7	1	22.46
				1	14	1	22.53
				8	0	2	22.43
				8	4	2	22.43
				8	7	2	22.73
				15	0	2	21.86
	23095	707.5	QPSK	1	0	0	22.40
				1	7	0	22.62
				1	14	0	22.43
				8	0	1	22.44
				8	4	1	22.04
				8	7	1	22.51
				15	0	1	22.25
			16QAM	1	0	1	22.71
				1	7	1	21.84
				1	14	1	22.51
				8	0	2	22.53
				8	4	2	22.02
				8	7	2	22.27
				15	0	2	22.64
	23165	714.5	QPSK	1	0	0	22.65
				1	7	0	22.15
				1	14	0	22.10
				8	0	1	22.10
				8	4	1	22.59
				8	7	1	22.17
				15	0	1	22.69
			16QAM	1	0	1	22.18
				1	7	1	22.80
				1	14	1	22.20
				8	0	2	22.65
				8	4	2	22.66
				8	7	2	22.17
				15	0	2	22.17

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
1.4MHz	23017	699.7	QPSK	1	0	0	22.62
				1	2	0	22.53
				1	5	0	22.30
				3	0	0	22.64
				3	1	0	22.19
				3	2	0	22.08
				6	0	1	22.48
			16QAM	1	0	1	21.91
				1	2	1	21.82
				1	5	1	22.48
				3	0	1	22.08
				3	1	1	22.21
				3	2	1	22.50
				6	0	2	22.35
	23095	707.5	QPSK	1	0	0	22.46
				1	2	0	21.93
				1	5	0	22.46
				3	0	0	22.61
				3	1	0	22.72
				3	2	0	22.18
				6	0	1	22.56
			16QAM	1	0	1	21.98
				1	2	1	22.57
				1	5	1	22.86
				3	0	1	21.88
				3	1	1	22.68
				3	2	1	22.21
				6	0	2	22.78
	23173	715.3	QPSK	1	0	0	22.70
				1	2	0	22.34
				1	5	0	21.96
				3	0	0	22.55
				3	1	0	22.01
				3	2	0	22.67
				6	0	1	22.52
			16QAM	1	0	1	22.42
				1	2	1	22.62
				1	5	1	22.48
				3	0	1	22.42
				3	1	1	22.66
				3	2	1	22.21

				6	0	2	22.56

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	23780	709	QPSK	1	0	0	21.91
				1	24	0	22.41
				1	49	0	22.30
				25	0	1	21.99
				25	12	1	22.33
				25	25	1	22.73
				50	0	1	22.62
			16QAM	1	0	1	22.52
				1	24	1	22.20
				1	49	1	21.86
				25	0	2	22.68
				25	12	2	22.11
				25	25	2	22.78
				50	0	2	22.34
	23790	710	QPSK	1	0	0	22.72
				1	24	0	22.36
				1	49	0	22.43
				25	0	1	22.63
				25	12	1	22.80
				25	25	1	22.62
				50	0	1	22.68
			16QAM	1	0	1	22.72
				1	24	1	21.95
				1	49	1	22.61
				25	0	2	22.41
				25	12	2	22.56
				25	25	2	22.47
				50	0	2	22.10
	23800	711	QPSK	1	0	0	22.66
				1	24	0	22.27
				1	49	0	22.84
				25	0	1	22.08
				25	12	1	22.19
				25	25	1	21.81
				50	0	1	22.29
			16QAM	1	0	1	22.68
				1	24	1	22.37
				1	49	1	22.60
				25	0	2	21.90
				25	12	2	22.22
				25	25	2	22.52
				50	0	2	22.20

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	23755	706.5	QPSK	1	0	0	22.66
				1	12	0	22.75
				1	24	0	21.97
				12	0	1	22.52
				12	6	1	22.30
				12	11	1	22.55
				25	0	1	22.39
			16QAM	1	0	1	22.12
				1	12	1	22.67
				1	24	1	22.35
				12	0	2	22.24
				12	6	2	22.66
				12	11	2	22.59
				25	0	2	22.33
	23790	710	QPSK	1	0	0	22.04
				1	12	0	21.86
				1	24	0	22.68
				12	0	1	22.42
				12	6	1	22.34
				12	11	1	22.36
				25	0	1	22.78
			16QAM	1	0	1	22.52
				1	12	1	22.71
				1	24	1	22.56
				12	0	2	22.78
				12	6	2	21.94
				12	11	2	22.35
				25	0	2	22.69
	23825	713.5	QPSK	1	0	0	22.40
				1	12	0	22.04
				1	24	0	22.24
				12	0	1	22.15
				12	6	1	22.19
				12	11	1	22.76
				25	0	1	22.68
			16QAM	1	0	1	22.36
				1	12	1	22.22
				1	24	1	22.47
				12	0	2	22.61
				12	6	2	22.75
				12	11	2	21.98

				25	0	2	22.08

According to 3GPP 36.521 sub-clause 6.2.3.3, the maximum output power is allowed to be reduced by following the table.

Table 6.2.3.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	**Channel bandwidth / Transmission bandwidth configuration [RB]**						**MPR (dB)**
	1.4 MHz	**3.0 MHz**	**5 MHz**	**10 MHz**	**15 MHz**	**20 MHz**	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (For PRACH, PUCCH and SRS transmission, the allowed MPR is according to that specified for PUSCH QPSK modulation for the corresponding transmission bandwidth.).

When PRACH, PUCCH are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

For each subframe, the MPR is evaluated per slot and given by the maximum value taken over the transmission(s) within the slot, the maximum MPR over the two slots is then applied for the entire subframe.

For the UE maximum output power modified by MPR, the power limits specified in subclause 6.2.5.3 apply. The normative reference for this requirement is TS 36.101 clause 6.2.3.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

6.2 RADIATED OUTPUT POWER

6.2.1 MEASUREMENT METHOD

The measurements procedures specified in ANSI/TIA-603-D-2010 were applied.

1 In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.

2 The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. The ARpl is the attenuation of “reference path loss”, and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl

3 The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.

4 From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.

5 The EUT is then put into continuously transmitting mode at its maximum power level.

6 Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 27.50(d)(4). The "reference path loss" from Step1 is added to this result.

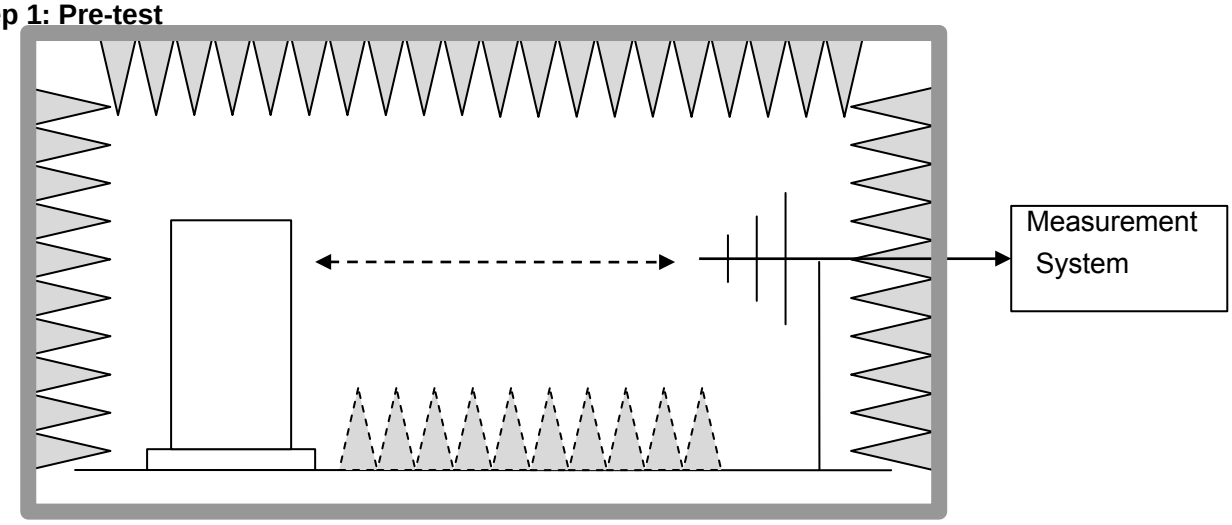
7 This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).

8 ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi..

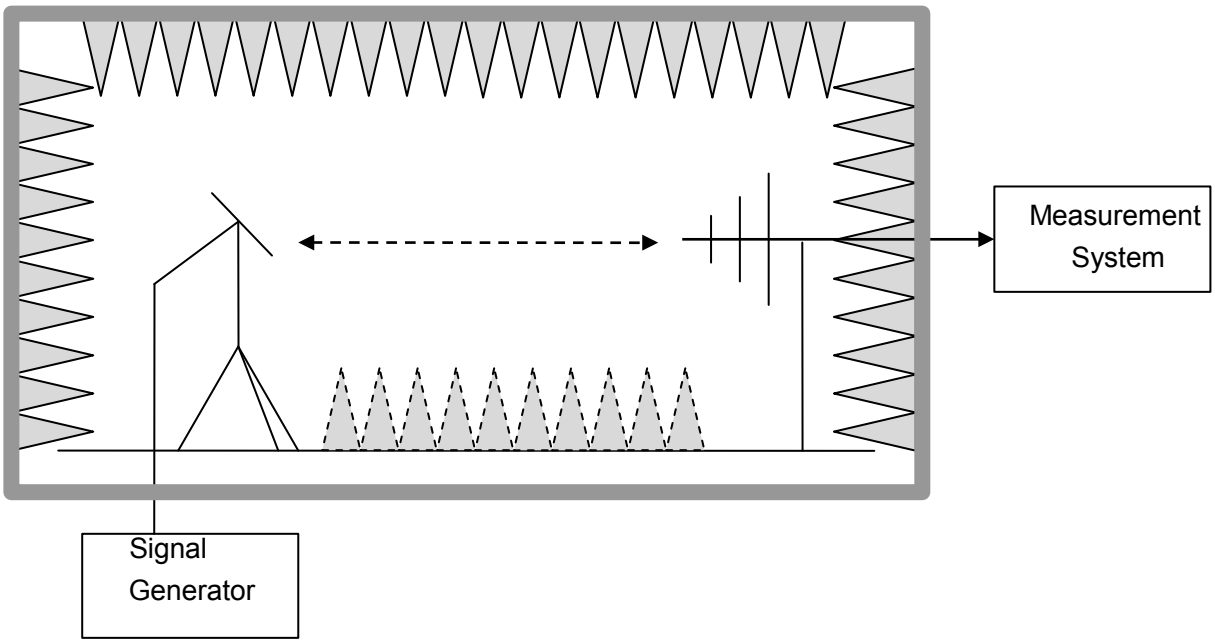
Test Setup

NOTE: Effective radiated power (ERP) refers to the radiation power output of the EUT, assuming all emissions are radiated from half-wave dipole antennas.

Step 1: Pre-test



Step 2: Substitution method to verify the maximum ERP



6.2.2 PROVISIONS APPLICABLE

This is the test for the maximum radiated power from the EUT. Rule Part 27.50(d) specifies, "Mobile/portable stations are limited to 1 watts e.i.r.p.

Rule Part 27.50(c)(10) specifies "Portable stations (hand-held devices) are limited to 3 watts ERP".

Mode	Nominal Peak Power
LTE Band 2	<=30 dBm (1W)
LTE Band 4	<=30 dBm (1W)
LTE Band 5	<=34.77dBm(3W)
LTE Band 7	<=30 dBm (1W)
LTE Band 12	<=34.77dBm(3W)
LTE Band 17	<=34.77dBm(3W)