

FCC Test Report

Report No.: AGC02931210801FE07

FCC ID : POD-POC2

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : POC Radio

BRAND NAME : TYT, Tytpilot

MODEL NAME : IP-398, IP-398A, IP-818, IP-229

APPLICANT : TYT Electronics Co., Ltd.

DATE OF ISSUE : Sep. 07, 2021

STANDARD(S) : FCC Part 22 Rules
FCC Part 24 Rules
FCC Part 27 Rules
FCC Part 90 Rules

REPORT VERSION : V1.0



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 07, 2021	Valid	Initial Release

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1. GENERAL INFORMATION

Applicant	TYT Electronics Co., Ltd.
Address	Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China.
Manufacturer	TYT Electronics Co., Ltd.
Address	Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China.
Factory	TYT Electronics Co., Ltd.
Address	Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China.
Product Designation	POC Radio
Brand Name	TYT, Tytpilot
Test Model	IP-398
Series Model	IP-398A, IP-818, IP-229
Difference Description	The same PCB board & specifications, only the model & shell line design are different
Date of test	Aug. 12, 2021~Sep. 03, 2021
Deviation	No any deviation from the test method.
Condition of Test Sample	Normal

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance(Shenzhen) 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-E-2016. The sample tested as described in this report is in compliance with the FCC Rules Part 22, 24, 27 and 90. The test results of this report relate only to the tested sample identified in this report.

Prepared By

*Bibo Zhang*Bibo Zhang
(Project Engineer)

Sep. 03, 2021

Reviewed By

*Calvin Liu*Calvin Liu
(Reviewer)

Sep. 07, 2021

Approved By

*Forrest Lei*Forrest Lei
Authorized Officer

Sep. 07, 2021

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2. PRODUCT INFORMATION

2.1 PRODUCT TECHNICAL DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	POC Radio		
Hardware Version:	V1.2		
Software Version:	EC25AFFAR07A08M4G		
Radio System Type:	LTE FUNCTION		
Frequency Bands:	☒ FDD Band 2 ☒ FDD Band 4 ☒ FDD Band 5 ☐ FDD Band 7 ☒ FDD Band 12 ☒ FDD Band 13 ☒ FDD Band 14 ☐ FDD Band 17 ☐ FDD Band 30 ☐ TDD Band 40 ☐ TDD Band 41 ☒ TDD Band 66 ☒ FDD Band 71 (U.S. Bands) ☐ FDD Band 1 ☐ FDD Band 3 ☐ FDD Band 8 ☐ FDD Band 19 ☐ FDD Band 20 ☐ FDD Band 28 ☐ TDD Band 38 ☐ TDD Band 39 (Non-U.S. Bands)		
Transmission Frequency Range:	LTE-Band 2	1850.7 MHz – 1909.3 MHz---(1.4MHz)	
		1851.5 MHz – 1908.5 MHz---(3.0MHz)	
		1852.5 MHz – 1907.5 MHz---(5.0MHz)	
		1855.0 MHz – 1905.0 MHz---(10.0MHz)	
		1857.5 MHz – 1902.5 MHz---(15.0MHz)	
		1860.0 MHz – 1900.0 MHz---(20.0MHz)	
	LTE-Band 4	1710.7 MHz – 1754.3 MHz---(1.4MHz)	
		1711.5 MHz – 1753.5 MHz---(3.0MHz)	
		1712.5 MHz – 1752.5 MHz---(5.0MHz)	
		1715.0 MHz – 1750.0 MHz---(10.0MHz)	
		1717.5 MHz – 1747.5 MHz---(15.0MHz)	
		1720.0 MHz – 1745.0 MHz---(20.0MHz)	
	LTE-Band 5	824.7 MHz – 848.3 MHz---(1.4MHz)	
		825.5 MHz – 847.7 MHz---(3.0MHz)	
		826.5 MHz – 846.5 MHz---(5.0MHz)	
		829.0 MHz – 844.0 MHz---(10.0MHz)	
	LTE-Band 12	699.7 MHz – 715.3 MHz---(1.4MHz)	
		700.5 MHz – 714.5 MHz---(3.0MHz)	
		701.5 MHz – 713.5 MHz---(5.0MHz)	
		704.0 MHz – 711.0 MHz---(10.0MHz)	
	LTE-Band 13	779.5 MHz – 784.5 MHz---(5.0MHz)	

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		782.0 MHz – 782.0 MHz---(10.0MHz)			
	LTE-Band 14	790.5 MHz – 795.5 MHz---(5.0MHz)			
		793.0 MHz – 793.0 MHz---(10.0MHz)			
	LTE-Band 66	1710.7 MHz – 1779.3 MHz---(1.4MHz)			
		1711.5 MHz – 1778.5 MHz---(3.0MHz)			
		1712.5 MHz – 1777.5 MHz---(5.0MHz)			
		1715.0 MHz – 1775.0 MHz---(10.0MHz)			
		1717.5 MHz – 1772.5 MHz---(15.0MHz)			
		1720.0 MHz – 1770.0 MHz---(20.0MHz)			
	LTE-Band 71	665.5 MHz – 695.5 MHz---(5.0MHz)			
		668.0 MHz – 693.0 MHz---(10.0MHz)			
		670.5 MHz – 690.5 MHz---(15.0MHz)			
		673.0 MHz – 688.0 MHz---(20.0MHz)			
Antenna Type:	PIFA Antenna				
Type of Modulation:	QPSK/16QAM				
Antenna gain:	Band 2: -3dBi	Band 4: -2dBi	Band 5: -4dBi	Band 12: -5dBi	
	Band 13: -3dBi	Band 14: -4dBi	Band 66: -3dBi	Band 71: -4dBi	
Power Supply:	DC 3.7V by battery, 4000mAh				
Category	NB1				
Deployment	Stand-alone				
Sub-carrier spacing	3.75KHz, 15KHz				
Ntones	Single, Multi-tone				
Single Card:	WCDMA/LTE Card Slot				
Power Class:	3				
Extreme Vol. Limits:	DC3.15V to 4.2V (Normal: 3.7V)				
Temperature range:	-20℃ to +50℃				
Note1: The High Voltage DC4.2V and Low Voltage DC3.15V were declared by manufacturer, The EUT couldn't be operating normally with higher or lower voltage..					

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2.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID:POD-POC2** , filing to comply with the FCC Part 22, Part 24 Part 27 and Part 90 requirements.

2.3 TEST METHODOLOGY

The tests were performed according to following standards:

No.	Identity	Document Title
1	47 CFR FCC Part 2	Frequency allocations and radio treaty matters, general rules and regulations.
2	47 CFR FCC Part 22	Public Mobile Services.
3	47 CFR FCC Part 24	Personal Communications Services.
4	47 CFR FCC Part 27	Miscellaneous Wireless Communications Services.
5	47 CFR FCC Part 90	Private Land Mobile Radio Services.
6	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
7	ANSI/TIA-603-E-2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
8	KDB 971168	D01 v03r01 Measurement Guidance For Certification Of Licensed Digital Transmitters.

2.4 DEVICE CAPABILITIES

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-Band LTE,GPS.

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space"condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

LTE Band 12 (698 - 716 MHz) overlaps the entire frequency range of LTE Band 17 (704 - 716 MHz).

Therefore,test data provided in this report covers Band 17 as well as Band 12.

LTE Band 26 (814.7-849 MHz) overlaps the entire frequency range of LTE Band 5 (824 – 849 MHz).

Therefore,test data provided in this report covers Band 5 and the portion of Band 26 subject to Part 22.

LTE Band 66 (1710-1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 - 1755 MHz).

Therefore,test data provided in this report covers Band 4 as well as Band 66.

LTE Band 25 (1850-1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 - 1910 MHz).

Therefore, test data provided in this report covers Band 2 as well as Band 25.

The above inclusion relationship is only a statement of the frequency coverage between the LTE working bands, and the actual supported frequency bands are subject to the reported data.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration.

The emissions below 1GHz and above 18GHz were tested with the highest transmitting power channel and

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the worst case configuration.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

2.5 SPECIAL ACCESSORIES

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

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7 EMISSION DESIGNATOR

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

EDGE Emission Designator

Emission Designator = 249KG7W

GSM BW = 249 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

3. TEST ENVIRONMENT

3.1 ADDRESS OF THE TEST LABORATORY

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

IC-Registration No.: 24842

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842



3.3 ENVIRONMENTAL CONDITIONS

	NORMAL CONDITIONS	EXTREME CONDITIONS
Temperature range	15~35℃	-20℃~50℃
Humidity range	20 % to 75 %.	20 % to 75 %.
Pressure range	86-106kPa	86-106kPa
Power supply	DC 3.7V	DC3.15V or 4.2V
Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.		

3.4 MEASUREMENT UNCERTAINTY

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)
Radio Frequency	± 6.5 x 10-8	(1)
RF Power, Conducted	± 0.9 dB	(1)

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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3.5 LIST OF TEST EQUIPMENT

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 11, 2021	May 10, 2022
LISN	R&S	ESH2-Z5	100086	Jun. 09, 2021	Jun. 08, 2022
TEST RECEIVER	R&S	ESCI	10096	Apr. 14, 2021	Apr. 13, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 07, 2020	Dec. 06, 2021
EXA Signal Analyzer	Aglient	N9020B	MY56101792	Jun. 09, 2021	Jun. 08, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 20, 2019	Oct. 19, 2022
preamplifier	ChengYi	EMC184045SE	980508	Sep. 21, 2020	Sep. 20, 2021
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2023
Broadband Preamplifier	SCHWARZBECK	00073	BBHA 9120 J	Sep. 27, 2019	Sep. 26, 2021
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.20, 2019	Sep.19, 2021
SIGNAL ANALYZER	Agilent	N9020A	MY52090123	Sep. 03, 2020	Sep. 02, 2021
SIGNAL ANALYZER	Agilent	N9020A	MY52090123	Sep. 01, 2021	Aug. 31, 2022
USB Wideband Power Sensor	Agilent	U2021XA	MY54110007	May 11, 2021	May 10, 2025
Wireless communicationtest	R&S	CMW500	120909	Oct. 24, 2020	Oct. 23, 2021
Power Splitter	Agilent	11636A	34	Jun.08, 2021	Jun.07, 2022
Attenuator	JFW	50FHC-006-50	N/A	Jun.08, 2021	Jun.07, 2022

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4. SYSTEM TEST CONFIGURATION

4.1 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.

4.2 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.

4.3 CONFIGURATION OF EUT SYSTEM

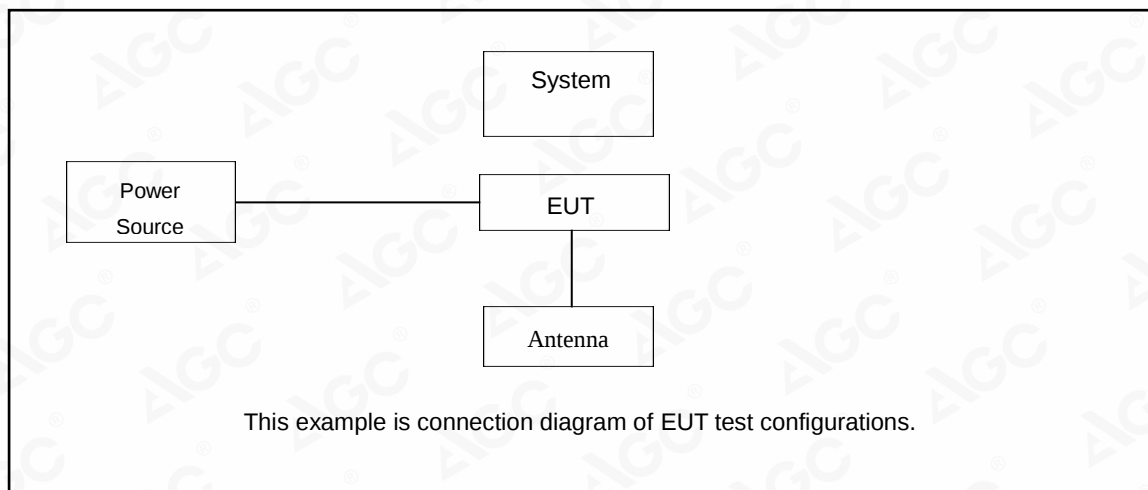


Table 2-1 Equipment Used in EUT System

4.4 EQUIPMENT USED IN TESTED SYSTEM

The Following Peripheral Devices And Interface Cables Were Connected During The Measurement:

- ☐ Test Accessories Come From The Laboratory
☒ Test Accessories Come From The Manufacturer

Item	Equipment	Model No.	Identifier	Note
1	POC Radio	IP-398	FCC ID: POD-POC2	EUT
2	Battery	IP-398	DC 3.7V 4000mAh	Accessories
3	Back clip	N/A	N/A	Accessories
4	Adapter	C501	Input: 100-240V, 50/60Hz, 0.2A Output: DC 5V 1.2A	Accessories
5	USB Cable	N/A	N/A	Accessories

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5. SUMMARY OF TEST RESULTS

5.1 TEST CONDITION : CONDUCTED TEST

Item	Test Description	FCC Rules	Result
1	Occupied Bandwidth	§2.1049	Pass
2	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal	§2.1051, §22.917(a), §90.543(e), §22.917(a)§27.53(g), §27.53(c) §27.53(h) §24.238(a) §27.53(m) (4)	Pass
3	On all frequencies between 763-775 MHz and 793-805 MHz	§27.53(c)(4)	Pass*
4	On all frequencies between 769-775 MHz and 799-805 MHz	§90.543(e)	Pass*
5	Conducted Output Power	§2.1046	Pass
6	Frequency stability / variation of ambient temperature	§2.1055, §90.539(e), §22.355, §27.54§24.235	Pass
7	Peak- to- Average Ratio	27.50(d)(5) §24.232(d)	Pass

Note:

*Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10kHz was used instead to show compliance.

5.2 TEST CONDITION : RADIATED TEST

Item	Test Description	FCC Rules	Result
1	Effective Radiated Power Equivalent Isotropic Radiated Power	§90.542(a)(7), §22.913(a)(5), §27.50(c)(10) §27.50(h)(2) §27.50(b), 27.50(d)(4), §24.232(c)	Pass
2	Radiated Spurious and Harmonic Emissions	§2.1053, §90.543(e), §22.917(a), §27.53(g) §27.53(m) (4) §27.53(c), §27.53(h), §24.238(a)	Pass
3	Undesirable Emissions in the 1559-1610 MHz band	§2.1053, §90.543(f), 27.53(f)	Pass

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6. 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.

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

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 4 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
20	Channel	20050	20175	20300
	Frequency	1720	1732.5	1745
15	Channel	20025	20175	20325
	Frequency	1717.5	1732.5	1747.5
10	Channel	20000	20175	20350
	Frequency	1715	1732.5	1750
5	Channel	19975	20175	20375
	Frequency	1712.5	1732.5	1752.5
3	Channel	19965	20175	20385
	Frequency	1711.5	1732.5	1753.5
1.4	Channel	19957	20175	20393
	Frequency	1710.7	1732.5	1754.3

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LTE Band 5 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
5	Channel	20425	20525	20625
	Frequency	826.5	836.5	846.5
3	Channel	20415	20525	20635
	Frequency	825.5	836.5	847.5
1.4	Channel	20407	20525	20643
	Frequency	824.7	836.5	848.3

LTE Band 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3

LTE Band 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

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LTE Band 14 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	793	-
5	Channel	23305	23330	23355
	Frequency	790.5	793	795.5

LTE Band 66 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
20	Channel	132072	132322	132572
	Frequency	1720	1745	1770
15	Channel	132047	132322	132597
	Frequency	1717.5	1745	1772.5
10	Channel	132022	132322	132622
	Frequency	1715	1745	1775
5	Channel	131997	132322	132647
	Frequency	1712.5	1745	1777.5
3	Channel	131987	132322	132657
	Frequency	1711.5	1745	1778.5
1.4	Channel	131979	132322	132665
	Frequency	1710.7	1745	1779.3

LTE Band 71 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
20	Channel	133222	133322	133372
	Frequency	673	680.5	688
15	Channel	133197	133322	133397
	Frequency	670.5	680.5	690.5
10	Channel	133172	133322	133422
	Frequency	668	680.5	693
5	Channel	133147	133322	133447
	Frequency	665.5	680.5	695.5

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Test Mode	Test Modes Description
LTE BAND 2	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 4	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 5	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 12	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 13	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 14	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 66	LTE system, QPSK modulation
	LTE system, 16QAM modulation
LTE BAND 71	LTE system, QPSK modulation
	LTE system, 16QAM modulation

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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.

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7. CONDUCTED OUTPUT POWER

7.1 PROVISIONS APPLICABLE

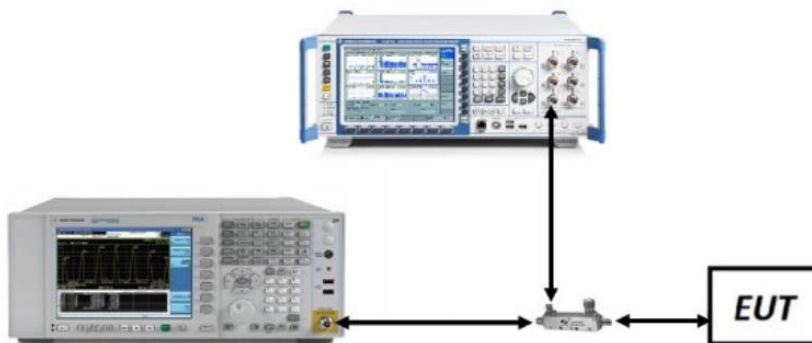
The conduction test is carried out in a shielded room.

According to the test, connect the device under test to the antenna port on the non-conductive platform directly to the test device for evaluation and measurement (ANSI-C63.26-2015 Clause 5.4)

7.2 MEASUREMENT METHOD

- The transmitter output port was connected to base station.
- Set EUT at maximum power through base station.
- Select lowest, middle, and highest channels for each band and different test mode.

7.3 MEASUREMENT SETUP



7.4 MEASUREMENT RESULT

Please refer to the next page for test result data.

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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	22.63
				1	49	0	22.74
				1	99	0	22.64
				50	0	1	21.41
				50	25	1	21.40
				50	49	1	21.39
				100	0	1	21.30
			16QAM	1	0	1	21.51
				1	49	1	21.69
				1	99	1	21.60
				50	0	2	20.45
				50	25	2	20.44
				50	49	2	20.42
				100	0	2	20.35
	18900	1880.0	QPSK	1	0	0	22.86
				1	49	0	22.92
				1	99	0	22.15
				50	0	1	21.86
				50	25	1	21.82
				50	49	1	21.38
				100	0	1	21.77
			16QAM	1	0	1	22.31
				1	49	1	22.43
				1	99	1	21.73
				50	0	2	20.91
				50	25	2	20.91
				50	49	2	20.56
				100	0	2	20.74
	19100	1900.0	QPSK	1	0	0	22.31
				1	49	0	22.43
				1	99	0	22.30
				50	0	1	21.31
				50	25	1	21.36
				50	49	1	21.60
				100	0	1	21.39
			16QAM	1	0	1	21.14
				1	49	1	21.36
				1	99	1	21.27
				50	0	2	20.59
				50	25	2	20.59
				50	49	2	20.65
				100	0	2	20.50

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	18675	1857.5	QPSK	1	0	0	22.41
				1	38	0	22.55
				1	74	0	22.51
				38	0	1	21.56
				38	18	1	21.43
				38	37	1	21.32
				75	0	1	21.46
			16QAM	1	0	1	21.57
				1	38	1	21.72
				1	74	1	21.51
				38	0	2	21.56
				38	18	2	21.43
				38	37	2	21.41
				75	0	2	20.39
	18900	1880.0	QPSK	1	0	0	22.79
				1	38	0	22.66
				1	74	0	22.32
				38	0	1	21.91
				38	18	1	21.80
				38	37	1	20.98
				75	0	1	21.80
			16QAM	1	0	1	21.93
				1	38	1	21.89
				1	74	1	20.97
				38	0	2	21.92
				38	18	2	21.78
				38	37	2	20.79
				75	0	2	20.88
	19125	1902.5	QPSK	1	0	0	22.54
				1	38	0	22.79
				1	74	0	22.31
				38	0	1	22.26
				38	18	1	22.35
				38	37	1	21.38
				75	0	1	21.53
			16QAM	1	0	1	21.54
				1	38	1	21.66
				1	74	1	21.38
				38	0	2	22.25
				38	18	2	22.27
				38	37	2	21.37
				75	0	2	20.54

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	18650	1855.0	QPSK	1	0	0	22.88
				1	24	0	22.52
				1	49	0	22.53
				25	0	1	21.70
				25	12	1	21.58
				25	25	1	21.49
				50	0	1	21.54
			16QAM	1	0	1	21.73
				1	24	1	21.83
				1	49	1	21.60
				25	0	2	20.62
				25	12	2	20.61
				25	25	2	20.52
				50	0	2	20.60
	18900	1880.0	QPSK	1	0	0	22.99
				1	24	0	22.84
				1	49	0	22.61
				25	0	1	22.02
				25	12	1	21.93
				25	25	1	21.76
				50	0	1	21.85
			16QAM	1	0	1	21.74
				1	24	1	21.77
				1	49	1	21.60
				25	0	2	21.07
				25	12	2	21.10
				25	25	2	20.85
				50	0	2	20.93
	19150	1905.0	QPSK	1	0	0	22.60
				1	24	0	23.04
				1	49	0	22.48
				25	0	1	21.81
				25	12	1	21.73
				25	25	1	21.63
				50	0	1	21.79
			16QAM	1	0	1	21.70
				1	24	1	21.93
				1	49	1	21.49
				25	0	2	20.73
				25	12	2	20.92
				25	25	2	20.85
				50	0	2	20.81

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	18625	1852.5	QPSK	1	0	0	22.60
				1	12	0	22.53
				1	24	0	22.53
				12	0	1	21.52
				12	6	1	21.52
				12	13	1	21.57
				25	0	1	21.55
			16QAM	1	0	1	21.48
				1	12	1	21.51
				1	24	1	21.40
				12	0	2	20.45
				12	6	2	20.66
				12	13	2	20.51
				25	0	2	20.62
	18900	1880.0	QPSK	1	0	0	23.09
				1	12	0	22.87
				1	24	0	22.78
				12	0	1	22.06
				12	6	1	21.96
				12	13	1	21.88
				25	0	1	21.98
			16QAM	1	0	1	22.13
				1	12	1	21.90
				1	24	1	21.61
				12	0	2	20.89
				12	6	2	21.00
				12	13	2	21.01
				25	0	2	20.92
	19175	1907.5	QPSK	1	0	0	22.78
				1	12	0	22.64
				1	24	0	22.52
				12	0	1	21.70
				12	6	1	21.64
				12	13	1	21.68
				25	0	1	21.58
			16QAM	1	0	1	21.68
				1	12	1	21.57
				1	24	1	21.56
				12	0	2	20.66
				12	6	2	20.67
				12	13	2	20.63
				25	0	2	20.72

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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	8	0	22.57
				1	14	0	22.43
				8	0	1	21.69
				8	4	1	21.61
				8	8	1	21.62
				15	0	1	21.69
			16QAM	1	0	1	21.67
				1	8	1	21.56
				1	14	1	21.68
				8	0	2	20.68
				8	4	2	20.69
				8	8	2	20.60
				15	0	2	20.69
	18900	1880.0	QPSK	1	0	0	23.10
				1	8	0	22.78
				1	14	0	22.76
				8	0	1	22.07
				8	4	1	22.04
				8	7	1	21.98
				15	0	1	22.04
			16QAM	1	0	1	22.02
				1	8	1	21.68
				1	14	1	21.64
				8	0	2	21.19
				8	4	2	21.12
				8	8	2	20.83
				15	0	2	21.01
	19185	1908.5	QPSK	1	0	0	22.70
				1	8	0	22.62
				1	14	0	22.62
				8	0	1	21.78
				8	4	1	21.79
				8	8	1	21.64
				15	0	1	21.63
			16QAM	1	0	1	21.74
				1	8	1	21.62
				1	14	1	21.54
				8	0	2	20.91
				8	4	2	20.89
				8	8	2	20.84
				15	0	2	20.59

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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	22.85
				1	2	0	22.95
				1	5	0	22.67
				3	0	0	22.88
				3	1	0	22.75
				3	2	0	22.62
				6	0	1	21.80
			16QAM	1	0	1	21.76
				1	2	1	22.28
				1	5	1	21.89
				3	0	1	21.44
				3	1	1	21.43
				3	2	1	21.59
				6	0	2	20.79
	18900	1880.0	QPSK	1	0	0	22.95
				1	2	0	23.02
				1	5	0	23.15
				3	0	0	23.05
				3	1	0	23.05
				3	2	0	23.11
				6	0	1	22.04
			16QAM	1	0	1	21.82
				1	2	1	21.95
				1	5	1	22.07
				3	0	1	21.97
				3	1	1	21.98
				3	2	1	22.22
				6	0	2	20.98
	19193	1909.3	QPSK	1	0	0	22.63
				1	2	0	22.72
				1	5	0	22.71
				3	0	0	22.57
				3	1	0	22.64
				3	2	0	22.58
				6	0	1	21.67
			16QAM	1	0	1	21.55
				1	2	1	22.41
				1	5	1	21.69
				3	0	1	21.32
				3	1	1	21.41
				3	2	1	21.20
				6	0	2	20.88

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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	24.01
				1	49	0	23.67
				1	99	0	24.03
				50	0	1	22.53
				50	25	1	22.53
				50	49	1	22.54
				100	0	1	22.68
			16QAM	1	0	1	23.22
				1	49	1	22.81
				1	99	1	22.67
				50	0	2	21.60
				50	25	2	21.69
				50	49	2	21.72
				100	0	2	21.64
	20175	1732.5	QPSK	1	0	0	22.94
				1	49	0	23.58
				1	99	0	23.56
				50	0	1	21.99
				50	25	1	22.09
				50	49	1	22.41
				100	0	1	22.16
			16QAM	1	0	1	21.90
				1	49	1	22.96
				1	99	1	22.30
				50	0	2	21.16
				50	25	2	21.16
				50	49	2	21.49
				100	0	2	21.14
	20300	1745.0	QPSK	1	0	0	23.48
				1	49	0	23.22
				1	99	0	23.15
				50	0	1	22.43
				50	25	1	22.35
				50	49	1	22.07
				100	0	1	22.11
			16QAM	1	0	1	22.97
				1	49	1	22.72
				1	99	1	22.83
				50	0	2	21.54
				50	25	2	21.45
				50	49	2	21.08
				100	0	2	21.19

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BW (MHz)	Ch	Freq. (MHz)	Mode	ULRB Allocation	UL RB Offset	MPR	Average power (dBm)
15MHz	20025	1717.5	QPSK	1	0	0	24.22
				1	37	0	23.62
				1	74	0	23.55
				36	0	1	23.05
				36	16	1	22.47
				36	35	1	22.63
			75	0	1	22.66	
			16QAM	1	0	1	23.39
				1	37	1	22.57
				1	74	1	22.74
				36	0	2	22.89
				36	16	2	22.55
	36	35		2	22.62		
	75	0	2	21.69			
	20175	1732.5	QPSK	1	0	0	22.99
				1	37	0	23.49
				1	74	0	23.30
				36	0	1	21.55
				36	16	1	22.32
				36	35	1	22.29
			75	0	1	22.29	
			16QAM	1	0	1	22.05
				1	37	1	22.73
				1	74	1	22.40
				36	0	2	21.93
				36	16	2	22.32
36	35	2		22.28			
75	0	2	21.34				
20325	1747.5	QPSK	1	0	0	23.35	
			1	37	0	22.96	
			1	74	0	23.05	
			36	0	1	22.19	
			36	16	1	21.91	
			36	35	1	21.49	
		75	0	1	22.12		
		16QAM	1	0	1	22.20	
			1	37	1	22.11	
			1	74	1	22.21	
			36	0	2	22.19	
			36	16	2	21.91	
36	35		2	21.50			
75	0	2	21.12				

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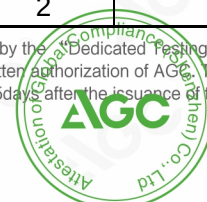
BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20000	1715.0	QPSK	1	0	0	24.09
				1	24	0	24.01
				1	49	0	23.56
				25	0	1	23.04
				25	12	1	23.04
				25	25	1	22.63
				50	0	1	22.74
			16QAM	1	0	1	23.10
				1	24	1	23.02
				1	49	1	22.55
				25	0	2	22.08
				25	12	2	21.89
				25	25	2	21.68
				50	0	2	21.72
	20175	1732.5	QPSK	1	0	0	22.99
				1	24	0	23.58
				1	49	0	23.64
				25	0	1	22.22
				25	12	1	22.22
				25	25	1	22.48
				50	0	1	22.35
			16QAM	1	0	1	22.17
				1	24	1	22.67
				1	49	1	22.50
				25	0	2	21.27
				25	12	2	21.27
				25	25	2	21.26
				50	0	2	21.51
	20350	1750.0	QPSK	1	0	0	23.15
				1	24	0	23.10
				1	49	0	23.31
				25	0	1	22.14
				25	12	1	22.14
				25	25	1	22.13
				50	0	1	22.12
			16QAM	1	0	1	22.02
				1	24	1	22.06
				1	49	1	22.15
				25	0	2	21.13
				25	12	2	21.21
				25	25	2	21.43
				50	0	2	21.13

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	19975	1712.5	QPSK	1	0	0	24.01
				1	12	0	24.06
				1	24	0	23.92
				12	0	1	22.98
				12	6	1	22.97
				12	11	1	22.82
				25	0	1	23.04
			16QAM	1	0	1	23.03
				1	12	1	22.92
				1	24	1	22.71
				12	0	2	21.93
				12	6	2	22.02
				12	11	2	21.97
				25	0	2	22.02
	20175	1732.5	QPSK	1	0	0	23.57
				1	12	0	23.53
				1	24	0	23.53
				12	0	1	22.28
				12	6	1	22.40
				12	11	1	22.44
				25	0	1	22.41
			16QAM	1	0	1	22.75
				1	12	1	22.42
				1	24	1	22.35
				12	0	2	21.46
				12	6	2	21.46
				12	11	2	21.40
				25	0	2	21.68
	20375	1752.5	QPSK	1	0	0	23.21
				1	12	0	23.39
				1	24	0	23.42
				12	0	1	22.06
				12	6	1	22.06
				12	11	1	22.30
				25	0	1	22.15
			16QAM	1	0	1	22.26
				1	12	1	22.24
				1	24	1	22.09
				12	0	2	21.11
				12	6	2	21.20
				12	11	2	21.36
				25	0	2	21.11

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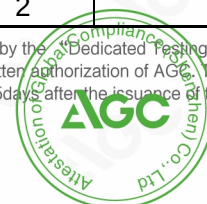
BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	19965	1711.5	QPSK	1	0	0	23.97
				1	7	0	23.77
				1	14	0	23.79
				8	0	1	23.09
				8	4	1	22.96
				8	7	1	22.95
				15	0	1	23.08
			16QAM	1	0	1	23.07
				1	7	1	22.87
				1	14	1	22.86
				8	0	2	22.03
				8	4	2	22.03
				8	7	2	22.10
				15	0	2	22.03
	20175	1732.5	QPSK	1	0	0	23.39
				1	7	0	23.55
				1	14	0	23.51
				8	0	1	22.42
				8	4	1	22.52
				8	7	1	22.64
				15	0	1	22.52
			16QAM	1	0	1	22.65
				1	7	1	22.64
				1	14	1	22.49
				8	0	2	21.51
				8	4	2	21.51
				8	7	2	21.63
				15	0	2	21.41
	20385	1753.5	QPSK	1	0	0	23.12
				1	7	0	23.08
				1	14	0	23.15
				8	0	1	22.05
				8	4	1	22.14
				8	7	1	22.32
				15	0	1	22.18
			16QAM	1	0	1	21.88
				1	7	1	21.82
				1	14	1	22.07
				8	0	2	21.21
				8	4	2	21.03
				8	7	2	21.40
				15	0	2	21.17

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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	24.03
				1	2	0	24.07
				1	5	0	24.02
				3	0	0	24.11
				3	1	0	24.11
				3	2	0	24.07
				6	0	1	22.97
			16QAM	1	0	1	23.06
				1	2	1	23.30
				1	5	1	23.11
				3	0	1	22.63
				3	1	1	22.82
				3	2	1	22.52
				6	0	2	22.03
	20175	1732.5	QPSK	1	0	0	23.42
				1	2	0	23.44
				1	5	0	23.69
				3	0	0	23.49
				3	1	0	23.48
				3	2	0	23.34
				6	0	1	22.43
			16QAM	1	0	1	22.56
				1	2	1	22.70
				1	5	1	22.59
				3	0	1	22.19
				3	1	1	22.19
				3	2	1	22.26
				6	0	2	21.78
	20393	1754.3	QPSK	1	0	0	23.15
				1	2	0	23.37
				1	5	0	23.25
				3	0	0	23.28
				3	1	0	23.15
				3	2	0	23.28
				6	0	1	22.18
			16QAM	1	0	1	21.96
				1	2	1	22.34
				1	5	1	22.00
				3	0	1	22.08
				3	1	1	22.11
				3	2	1	22.11
				6	0	2	20.86

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LTE Band 5

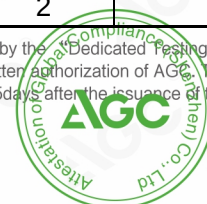
BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
10MHz	20450	829	QPSK	1	0	0	23.13
				1	24	0	23.41
				1	49	0	23.96
				25	0	1	22.35
				25	12	1	22.28
				25	25	1	22.82
				50	0	1	22.51
			16QAM	1	0	1	22.11
				1	24	1	22.43
				1	49	1	23.15
				25	0	2	21.23
				25	12	2	21.34
				25	25	2	21.87
				50	0	2	21.47
	20525	836.5	QPSK	1	0	0	23.88
				1	24	0	24.55
				1	49	0	24.56
				25	0	1	23.14
				25	12	1	23.13
				25	25	1	23.37
				50	0	1	23.25
			16QAM	1	0	1	22.72
				1	24	1	23.68
				1	49	1	23.15
				25	0	2	22.11
				25	12	2	22.10
				25	25	2	22.39
				50	0	2	22.17
	20600	844	QPSK	1	0	0	24.41
				1	24	0	24.78
				1	49	0	24.42
				25	0	1	23.53
				25	12	1	23.40
				25	25	1	23.47
				50	0	1	23.47
			16QAM	1	0	1	23.55
				1	24	1	24.21
				1	49	1	23.38
				25	0	2	22.54
				25	12	2	22.55
				25	25	2	22.64
				50	0	2	22.55

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
5MHz	20425	826.5	QPSK	1	0	0	24.04
				1	12	0	24.16
				1	24	0	24.05
				12	0	1	23.15
				12	6	1	23.06
				12	11	1	23.11
				25	0	1	23.12
			16QAM	1	0	1	23.00
				1	12	1	22.95
				1	24	1	22.94
				12	0	2	21.96
				12	6	2	21.87
				12	11	2	22.07
				25	0	2	22.21
	20525	836.5	QPSK	1	0	0	23.94
				1	12	0	24.33
				1	24	0	24.13
				12	0	1	23.15
				12	6	1	23.15
				12	11	1	23.18
				25	0	1	23.13
			16QAM	1	0	1	22.91
				1	12	1	23.24
				1	24	1	23.17
				12	0	2	22.02
				12	6	2	21.83
				12	11	2	22.24
				25	0	2	22.22
	20625	846.5	QPSK	1	0	0	24.33
				1	12	0	24.45
				1	24	0	24.26
				12	0	1	23.45
				12	6	1	23.46
				12	11	1	23.37
				25	0	1	23.42
			16QAM	1	0	1	23.22
				1	12	1	23.47
				1	24	1	23.38
				12	0	2	22.57
				12	6	2	22.48
				12	11	2	22.38
				25	0	2	22.36

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BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average power (dBm)
3MHz	20415	825.5	QPSK	1	0	0	23.83
				1	7	0	24.00
				1	14	0	24.00
				8	0	1	23.19
				8	4	1	23.10
				8	7	1	23.07
				15	0	1	23.17
			16QAM	1	0	1	23.16
				1	7	1	23.15
				1	14	1	23.14
				8	0	2	22.11
				8	4	2	22.10
				8	7	2	22.17
				15	0	2	21.93
	20525	836.5	QPSK	1	0	0	23.99
				1	7	0	24.42
				1	14	0	23.99
				8	0	1	23.18
				8	4	1	23.18
				8	7	1	23.34
				15	0	1	23.22
			16QAM	1	0	1	23.08
				1	7	1	23.15
				1	14	1	23.17
				8	0	2	22.18
				8	4	2	22.18
				8	7	2	22.35
				15	0	2	22.13
	20635	847.5	QPSK	1	0	0	24.45
				1	7	0	24.46
				1	14	0	24.58
				8	0	1	23.46
				8	4	1	23.48
				8	7	1	23.44
				15	0	1	23.43
			16QAM	1	0	1	23.25
				1	7	1	23.43
				1	14	1	23.11
				8	0	2	22.52
				8	4	2	22.25
				8	7	2	22.21
				15	0	2	22.20

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