TESTING (OR CALIBRATION)
NVLAP LAB CODE 600141-0

Registration
No.788871

.

TEST REPORT FOR RF TESTING

Report No.: SRTC2019-9004(F)-19031203(C)

Product Name: LTE/WCDMA/GSM（GPRS） Multi-Mode Digital Mobile Phone

Product Model: ZTE Blade A7 2019

Applicant: ZTE Corporation

Manufacturer: ZTE Corporation

Specification: FCC CFR47 PART 2, 22, 24, 27 (2019)

FCC ID: SRQ-ZTEA72019

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30, Shixing Street, Shijingshan District,

Beijing, P.R.China

Tel: 86-10-57996183 Fax: 86-10-57996388

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1. GENERAL INFORMATION

1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio_monitoring_center Testing Center (SRTC).
The test results relate only to individual items of the samples which have been tested.
The certification and accreditation identifiers used in this report shall not be applicable to the tested or calibrated samples thereof. The manufacturer shall not mark the tested samples or items (or a separate part of the item) with the identifiers of certification and accreditation to mislead relevant parties about the tested samples or items.

1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District, P.R.China
City:	Beijing
Country or Region:	P.R.China
Contacted person:	Liu Jia
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Fax:	+86 10 57996388
Email:	liujiaf@srtc.org.cn

1.3 Applicant's details

Company:	ZTE Corporation
Address:	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District,Guangdong
City:	Shenzhen
Country or Region:	China
Contacted person:	Yang Zhao
Tel:	029-83600770
Fax:	---
Email:	zhao.yangxa@zte.com.cn

1.4 Manufacturer's details

Company:	ZTE Corporation
Address:	ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District,Guangdong
City:	Shenzhen
Country or Region:	China
Contacted person:	Yang Zhao
Tel:	029-83600770
Fax:	---
Email:	zhao.yangxa@zte.com.cn

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2019-03-12
Testing Start Date:	2019-03-18
Testing End Date:	2019-04-09

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	30
Maximum Extreme	55	---
Minimum Extreme	-10	---

Normal Supply Voltage (V d.c.):	3.85
Maximum Extreme Supply Voltage (V d.c.):	4.40
Minimum Extreme Supply Voltage (V d.c.):	3.46

2 DESCRIPTION OF THE EQUIPMENT UNDER TEST

2.1 Final Equipment Build Status

Frequency Range	LTE Band 2: Tx:1850~1910MHz Rx:1930~1990MHz LTE Band 4: Tx:1710~1755MHz Rx:2110~2155MHz LTE Band 5: Tx:824~849 MHz Rx:869 ~894MHz LTE Band 7: Tx:2500~2570MHz Rx:2620~2690MHz
Modulation Type	QPSK 16QAM 64QAM
Duplex Mode	FDD
Antenna Type	IFA Antenna
Power Supply	Battery/Charger
HW Version	ukhB
SW Version	TEL_MX_ZTE_Blade_A7_2019V1.0
IMEI	864432040006454

2.2 Summary table

FCC Rule Part	Frequency Range(MHz)	EIRP/ERP (W)	Frequency Tolerance (ppm)	Emission Designator	Emission Bandwidth (MHz)	Measured 26dBC Bandwidth (MHz)	Communication Type
LTE BAND2							
24E	1850.7-1909.3	0.298	0.014	1M10G7D	1.4M	1.366	QPSK
	1850.7-1909.3	0.268	0.014	1M10D7W	1.4M	1.418	16QAM
	1850.7-1909.3	0.248	0.014	1M10W7D	1.4M	1.379	64QAM
	1851.5-1908.5	0.307	0.015	2M69G7D	3M	3.121	QPSK
	1851.5-1908.5	0.276	0.015	2M69D7W	3M	3.086	16QAM
	1851.5-1908.5	0.251	0.015	2M69W7D	3M	3.100	64QAM
	1852.5-1907.5	0.308	0.017	4M47G7D	5M	4.973	QPSK
	1852.5-1907.5	0.275	0.017	4M47D7W	5M	4.958	16QAM
	1852.5-1907.5	0.254	0.017	4M47W7D	5M	4.969	64QAM
	1855-1905	0.318	0.011	9M11G7D	10M	10.730	QPSK
	1855-1905	0.277	0.011	9M09D7W	10M	10.740	16QAM
	1855-1905	0.261	0.011	9M08W7D	10M	10.520	64QAM
	1857.5-1902.5	0.325	0.014	13M5G7D	15M	15.120	QPSK
	1857.5-1902.5	0.282	0.014	13M5D7W	15M	14.920	16QAM
	1857.5-1902.5	0.265	0.014	13M5W7D	15M	15.230	64QAM
	1860-1900	0.338	0.018	18M0G7D	20M	20.270	QPSK
	1860-1900	0.299	0.018	18M0D7W	20M	20.050	16QAM
	1860-1900	0.280	0.018	17M9W7D	20M	19.870	64QAM

LTE BAND4							
27L	1710.7-1754.3	0.204	0.017	1M11G7D	1.4M	1.331	QPSK
	1710.7-1754.3	0.174	0.017	1M10D7W	1.4M	1.326	16QAM
	1710.7-1754.3	0.182	0.017	1M10W7D	1.4M	1.313	64QAM
	1711.5-1753.5	0.207	0.019	2M77G7D	3M	3.508	QPSK
	1711.5-1753.5	0.178	0.019	2M77D7W	3M	3.527	16QAM
	1711.5-1753.5	0.186	0.019	2M76W7D	3M	3.429	64QAM
	1712.5-1752.5	0. 211	0.017	4M52G7D	5M	5.302	QPSK
	1712.5-1752.5	0.182	0.017	4M52D7W	5M	5.269	16QAM
	1712.5-1752.5	0.187	0.017	4M52W7D	5M	5.268	64QAM
	1715-1750	0.215	0.018	9M09G7D	10M	10.840	QPSK
	1715-1750	0.184	0.018	9M09D7W	10M	10.680	16QAM
	1715-1750	0.191	0.018	9M08W7D	10M	10.630	64QAM
	1717.5-1747.5	0.219	0.015	13M5G7D	15M	15.140	QPSK
	1717.5-1747.5	0.186	0.015	13M5D7W	15M	15.350	16QAM
	1717.5-1747.5	0.195	0.015	13M5W7D	15M	15.110	64QAM
	1720-1745	0.233	0.013	18M0G7D	20M	20.040	QPSK
	1720-1745	0.196	0.013	18M0D7W	20M	20.120	16QAM
	1720-1745	0.203	0.013	18M0W7D	20M	20.000	64QAM
LTE BAND5							
22H	824.7-848.3	0.066	0.018	1M10G7D	1.4M	1.328	QPSK
	824.7-848.3	0.061	0.018	1M10D7W	1.4M	1.333	16QAM
	824.7-848.3	0.060	0.018	1M10W7D	1.4M	1.357	64QAM
	825.5-847.5	0.064	0.015	2M77G7D	3M	3.540	QPSK
	825.5-847.5	0.059	0.015	2M77D7W	3M	3.546	16QAM
	825.5-847.5	0.058	0.015	2M77W7D	3M	3.572	64QAM
	826.5-846.5	0.066	0.015	4M52G7D	5M	5.292	QPSK
	826.5-846.5	0.060	0.015	4M52D7W	5M	5.262	16QAM
	826.5-846.5	0.059	0.015	4M52W7D	5M	5.247	64QAM
	829-844	0.069	0.013	9M10G7D	10M	10.650	QPSK
	829-844	0.062	0.013	9M07D7W	10M	10.500	16QAM
	829-844	0.061	0.013	9M09W7D	10M	10.730	64QAM
LTE BAND7							
27M	2502.5-2567.5	0.222	0.014	4M53G7D	5M	5.263	QPSK
	2502.5-2567.5	0.203	0.014	4M52D7W	5M	5.342	16QAM
	2502.5-2567.5	0.195	0.014	4M52W7D	5M	5.181	64QAM
	2505-2565	0.228	0.017	9M12G7D	10M	10.770	QPSK
	2505-2565	0.207	0.017	9M10D7W	10M	10.810	16QAM
	2505-2565	0.200	0.017	9M10W7D	10M	10.700	64QAM
	2507.5-2562.5	0.232	0.015	13M6G7D	15M	15.480	QPSK
	2507.5-2562.5	0.211	0.015	13M6D7W	15M	15.600	16QAM
	2507.5-2562.5	0.204	0.015	13M6W7D	15M	15.430	64QAM
	2510-2560	0.245	0.018	18M1G7D	20M	20.790	QPSK
	2510-2560	0.220	0.018	18M1D7W	20M	20.480	16QAM
	2510-2560	0.211	0.018	18M1W7D	20M	20.200	64QAM

2.3 Support Equipment

The following support equipment was used to exercise the EUT during testing:

Equipment	Battery
Manufacturer	Ningbo Veken Battery Co., Ltd.
Model Number	Li3931T44P8h806139
Serial Number	---

Equipment	Battery
Manufacturer	Zhongshan Tianmao Battery Co., Ltd.
Model Number	Li3931T44P8h806139
Serial Number	---

Equipment	Charger
Manufacturer	RUIJING
Model Number	STC-A515A-Z
Serial Number	---

Equipment	Charger
Manufacturer	CHENYANG
Model Number	STC-A515A-Z
Serial Number	---

Equipment	Charger
Manufacturer	DOKOCOM
Model Number	STC-A515A-A
Serial Number	---

Equipment	Charger
Manufacturer	RUIJING
Model Number	STC-A515A-A
Serial Number	---

Equipment	Charger
Manufacturer	CHENYANG
Model Number	STC-A515A-A
Serial Number	---

Equipment	Headset
Manufacturer	JUWEI ELECTRONICS CO.,LTD
Model Number	JWEP1036-Z01R
Serial Number	---

Equipment	Headset
Manufacturer	ShenZhen FDC Electronic Co.,Ltd
Model Number	DEM-66
Serial Number	---

Equipment	USB Cable
Manufacturer	Dongguan Guojun Plastic Electronic Co.,Ltd
Model Number	USB-MU5-W-70-M-L
Serial Number	---

Equipment	USB Cable
Manufacturer	Shen Zhen Shi Yi HUA XING Electron Co.,Ltd
Model Number	USB-MU5-W-70-M-L
Serial Number	---

2.3 Conducted measurement Path Loss

LTE B2 Offset 7.0dB = Power Divider 6dB+ Temporary antenna connector loss 0.2dB+ Cable loss 0.8dB
LTE B4 Offset 7.0dB = Power Divider 6dB+ Temporary antenna connector loss 0.2dB+ Cable loss 0.8dB
LTE B5 Offset 6.5dB = Power Divider 6dB+ Temporary antenna connector loss 0.2dB+ Cable loss 0.3dB
LTE B7 Offset 7.2dB = Power Divider 6dB+ Temporary antenna connector loss 0.2dB+ Cable loss 1.0dB

3 REFERENCE SPECIFICATION

The tests documented in this report were performed in accordance with ANSI C63.26:2015, FCC CFR 47 Part 2, FCC KDB 971168 D01 v02r02, KDB 971168 D02 v01, Part 22, Part 24, Part 27.

Specification	Version	Title
ANSI C63.26:2015	11 December 2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
FCC CFR 47 Part 2	2019	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS
FCC CFR 47 Part 22	2019	PUBLIC MOBILE SERVICES
FCC CFR 47 Part 24	2019	PERSONAL COMMUNICATIONS SERVICES
FCC CFR 47 Part 27	2019	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES
KDB 971168 D01	v03r01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS
KDB 971168 D02	v02r01	MISCELLANEOUS AND BASIC REVIEW AND APPROVAL ITEMS FOR TRANSMITTING EQUIPMENT USED IN LICENSED RADIO SERVICES
ANSI C63.26	2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
KDB 971168 D01	April 9, 2018	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

4 KEY TO NOTES AND RESULT CODES

The following are the definition of the test result.

Code	Meaning
PASS	Test result shows that the requirements of the relevant specification have been met.
FAIL	Test result shows that the requirements of the relevant specification have not been met.
N/T	Test case is not tested.
NTNV	Nominal voltage, Normal Temperature
HV	High voltage, Normal Temperature
LV	Low voltage, Normal Temperature
HTHV	high voltage, High Temperature
LTHV	High voltage, Low Temperature
HTLV	Low voltage, High Temperature
LTLV	Low voltage, Low Temperature

5 RESULT SUMMARY

The following table summarizes the test results obtained.

No.	Test case	FCC reference	Verdict
1	RF Power Output	2.1046	Pass
2	Effective Radiated Power and Effective Isotropic Radiated Power	22.913, 24.232, 27.50	Pass
3	Occupied Bandwidth	2.1049	Pass
4	Peak-Average Ratio	22.913, 24.232, 27.50	Pass
5	Emission Bandwidth	2.1049	Pass
6	Spurious Emissions at antenna terminals	2.1051, 22.901, 22.917, 24.238, 27.53	Pass
7	Band Edges Compliance	2.1051, 22.359, 22.917, 24.238, 27.53	Pass
8	Frequency Stability	2.1055, 22.355, 24.235, 27.54	Pass
9	Radiated Spurious Emissions	2.1053, 22.917, 24.238, 27.53	Pass

This Test Report Is Issued by: Mr. Peng Zhen	Checked by: Mr. Li Bin
Tested by: Tong Daocheng	Issued date: 20190409

6 TEST RESULT

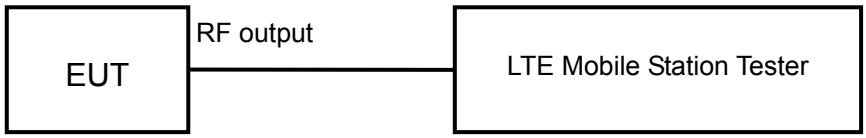
6.1 RF Power Output

Rule Part(s)
FCC: 2.1046

Ambient condition:

Temperature	Relative humidity	Pressure
23°C	42%	101.9kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. Then the test data can be read at the tester screen. The loss between RF output port of the EUT and the input port of the tester will be taken into consideration.

Limits	≤30dBm

Test result:
The test results are shown in Appendix A.

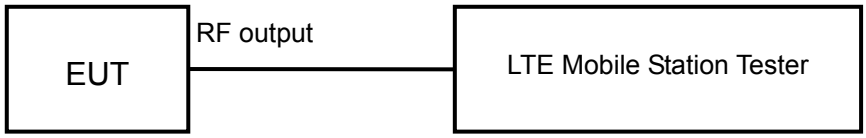
6.2 Effective Radiated Power

Rule Part(s)
FCC: 22.913, 24.232, 27.50

Ambient condition:

Temperature	Relative humidity	Pressure
20.8°C	36.5%	100.9kPa

Test setup:



ERP/EIRP LIMIT
This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP – 2.15 (dB).
22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7Watts.
24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.
27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.
27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.
27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP
27.50 (h) The following power limits shall apply in the BRS and EBS: (2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

Test result:
The test results are shown in Appendix A.

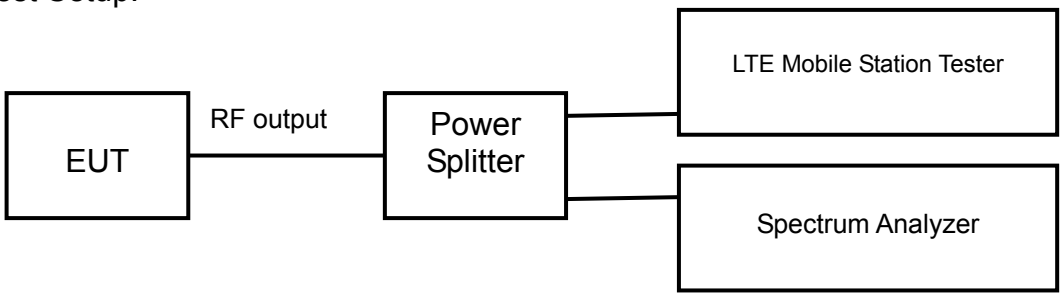
6.3 Occupied Bandwidth

Rule Part(s)
FCC: 2.1049

Ambient condition:

Temperature	Relative humidity	Pressure
23°C	42%	101.9kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The occupied bandwidth is measured using spectrum analyzer. RBW is set to 30kHz on spectrum analyzer. The bandwidth of 99% power can be read on spectrum analyzer.

The measurement will be conducted at three channels (Bottom, middle and top channels of LTE band)

Limits: No specific occupied bandwidth requirements in part 2.1049

Test result:
The test results are shown in Appendix A.

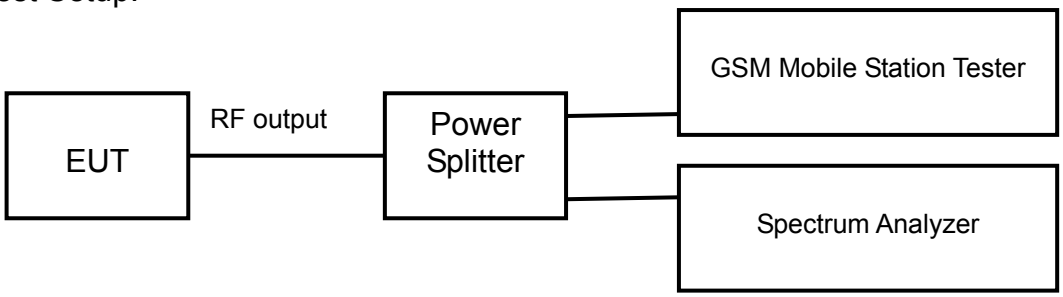
6.4 Emission Bandwidth

Rule Part(s)
FCC: 2.1049

Ambient condition:

Temperature	Relative humidity	Pressure
23℃	42%	101.9kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The emission bandwidth is measured using spectrum analyzer. RBW is set to 3 kHz on spectrum analyzer. The bandwidth of -26dB transmitter power can be read on spectrum analyzer.

Limits: No specific emission bandwidth requirements in part 22.917(b)

Test result:
The test results are shown in Appendix A.

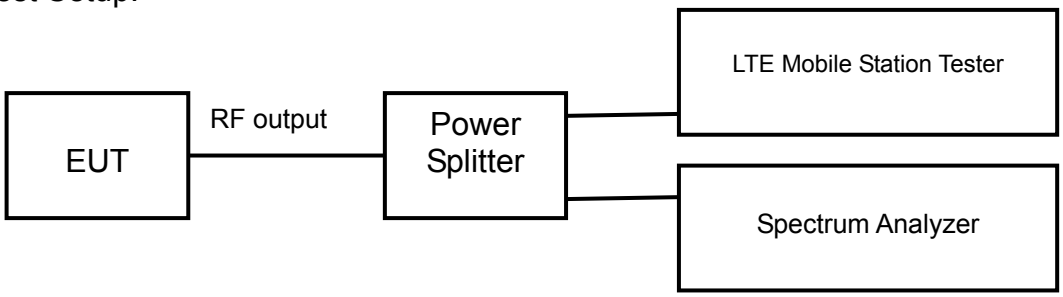
6.5 Peak-Average Ratio

Rule Part(s)
FCC: 22.913, 24.232, 27.50

Ambient condition:

Temperature	Relative humidity	Pressure
23°C	42%	101.9kPa

Test Setup:



Test procedure:
After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The Peak-Average Ratio is measured using spectrum analyzer. RBW is set to 30 kHz on spectrum analyzer. The Peak-Average Ratio can be read on spectrum analyzer.

Limits	≤13dB

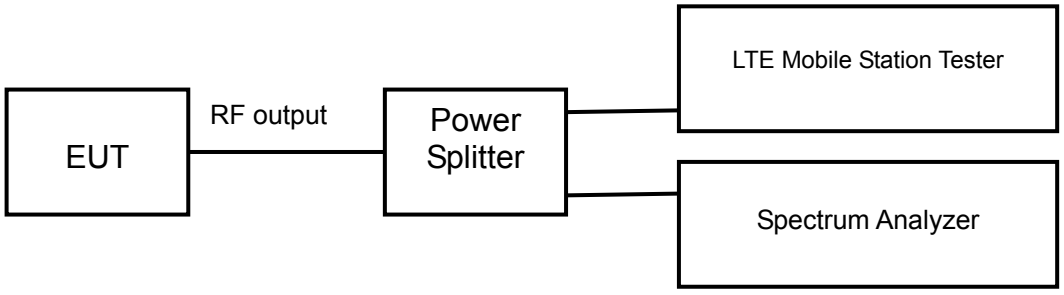
Test result:
The test results are shown in Appendix A.

6.6 Spurious Emissions at antenna terminal

Ambient condition:

Temperature	Relative humidity	Pressure
23°C	42%	101.9kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to 20GHz (higher than the 10th harmonic of the carrier). The peak detector is used and RBW is set to 1MHz on spectrum analyzer.

Limits	≤-13dBm

Test result:
The test results are shown in Appendix A.

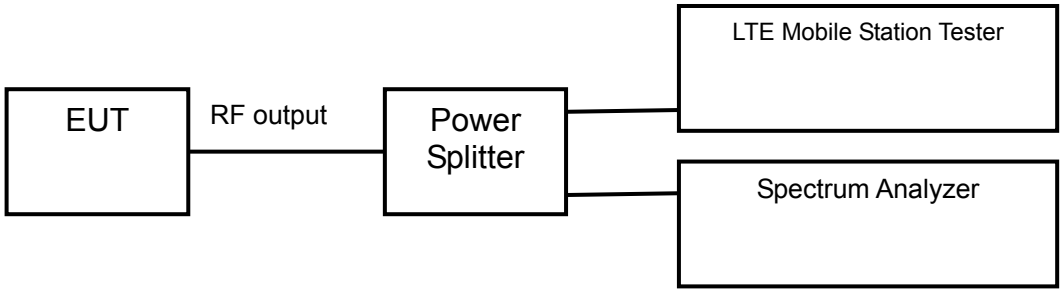
6.7 Band Edges Compliance

Rule Part(s)
FCC: 2.1051, 22.359, 22.917, 24.238, 27.53

Ambient condition:

Temperature	Relative humidity	Pressure
23°C	42%	101.9kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. The measurement is carried out using a spectrum analyzer. The peak detector is used and RBW is set to at least 1% of the emission bandwidth on spectrum analyzer.

Limits	≤-13dBm

Test result:
The test results are shown in Appendix A.

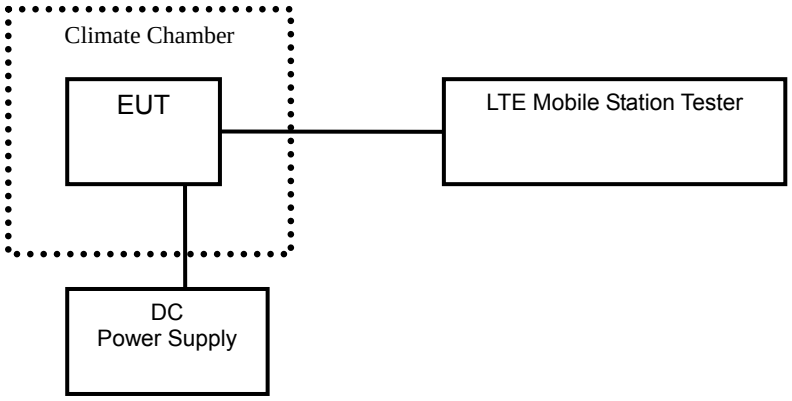
6.8 Frequency Stability

Rule Part(s)
FCC: 2.1055, 22.355, 24.235, 27.54

Ambient condition:

Temperature	Relative humidity	Pressure
23°C	42%	101.9kPa

Test setup:



Test Procedure:
A radio link shall be established between EUT and Tester. The tester will sample the transmitter RF output signal and measure its frequency. The temperature inside the climate chamber is varied from -30 to +50°C in 10°C step size, and also the DC power supply voltage to the EUT is varied from LV to HV. The measurement will be conducted at three channels No18100, No18300 and No18500 (Bottom, middle and top channels of LTE band I).

Limits: No specific frequency stability requirements in part 2.1055 and part 22.355.

Test result:
The test results are shown in Appendix A.

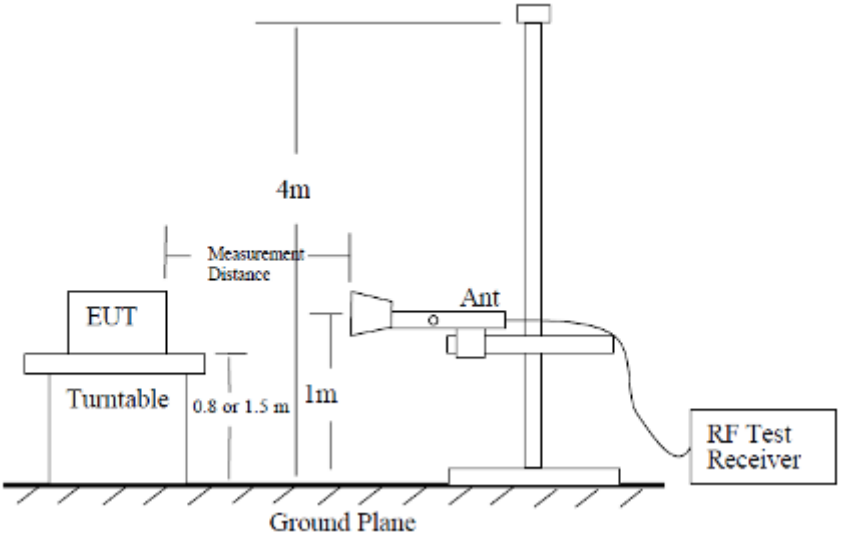
6.9 Radiated Spurious Emissions

Rule Part(s)
FCC: 2.1053, 22.917, 24.238, 27.53

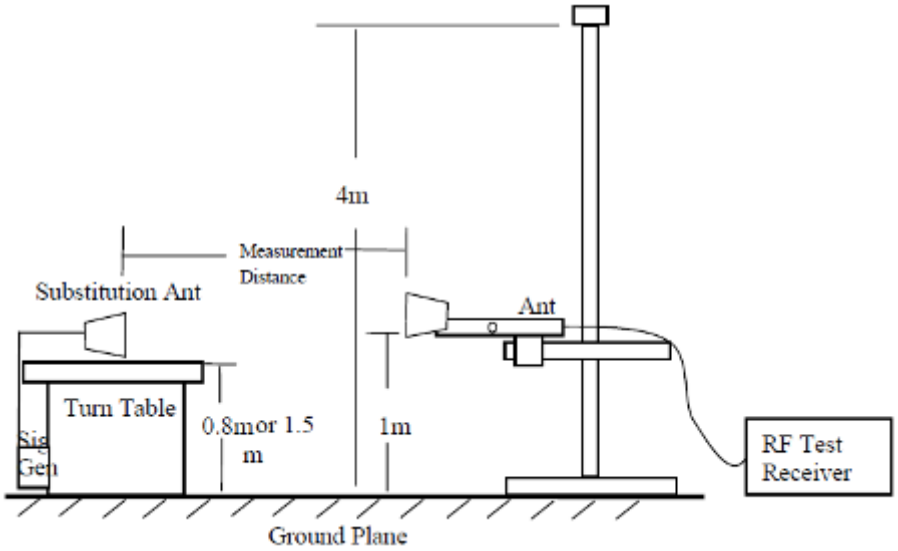
Ambient condition:

Temperature	Relative humidity	Pressure
20.8°C	36.5%	100.9kPa

Test Setup:



Step 1



Step 2

Test procedure:
The measurements procedures in TIA-603C-2004 are used.
The spectrum was scanned from 30MHz to the 10th harmonic of the highest frequency generated within the equipment.

Step 1:
The measurement is carried out in the fully anechoic chamber. EUT was placed on a 2.4 meter high non-conductive table at a 3 meter test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna is 2.4m and varies in certain range to find the maximum power value. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. The measurement is carried out using a spectrum analyzer or receiver. The spectrum analyzer scans from 30MHz to 20GHz (higher than the 10th harmonic of the carrier). The peak detector is used and RBW is set to 1MHz on spectrum analyzer. Then the antenna height and turn table rotation is adjusted till the maximum power value is founded on spectrum analyzer or receiver. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.

Step 2:
A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
A power (Pmea) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (Pmea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
A “reference path loss” should be calculated after test. The attenuation of “reference path loss” is the cable loss between the Signal Source with the Substitution Antenna (Pca) and the Substitution Antenna Gain (Ga).

Calculation procedure:
The data of cable loss and antenna gain has been calibrated in full testing frequency range before the testing.

The power of the Radiated Spurious Emissions is calculated by adding the cable loss and antenna gain. The basic equation with a sample calculation is as followed:
Power(EIRP) = Pmea+ Pca + Ga
This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15dB) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP – 2.15 (dB).

Assumed the power of signal source record is -20dBm. A cable loss of -30dB, and an antenna gain of 11dB are added.
P=Pmea+Pca+Ga=(-20dBm)+(-30dB)+(11dB)= -39dBm

Test result:
The test results are shown in Appendix B.

7 MEASUREMENT UNCERTAINTIES

Items	Uncertainty	
RF Power Output	0.6 dB	
Occupied Bandwidth	3 kHz	
Spurious Emissions	30MHz～1GHz	2.83 dB
	1GHz～12.75GHz	2.50 dB
	12.75GHz～25GHz	2.75 dB
Band Edges Compliance	1.2dB	
Frequency Stability	4 Hz	

8 TEST EQUIPMENTS

No.	Name/Model	Manufacturer	S/N	Calibration Date	Calibration Due Date
1	MT8820C Mobile Station Tester	Anritsu	6201300660	2018.08.20	2019.08.19
2	FSV40 Spectrum Analyzer	R&S	101065	2018.08.20	2019.08.19
2	N9020A Spectrum Analyzer	Agilent	MY48010771	2018.08.20	2019.08.19
3	6007 Power Divider	Weinschel	6007-GJ-1	2018.08.20	2019.08.19
4	DC Power Supply E3645A	Agilent	MY40000741	2019.03.01	2020.02.28
5	Temperature chamber SH241	ESPEC	92013758	2018.08.20	2019.08.19
6	12.65m×8.03m×7.50m Fully-Anechoic Chamber	FRANKONIA	-----	-----	-----
7	23.18m×16.88m×9.60m Semi-Anechoic Chamber	FRANKONIA	---	-----	-----
8	Turn table Diameter:1m	FRANKONIA	-----	-----	-----
9	Turn table Diameter:5m	FRANKONIA	-----	-----	-----
10	Antenna master FAC(MA4.0)	MATURO	-----	-----	-----
11	Antenna master SAC(MA4.0)	MATURO	-----	-----	-----
12	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	-----	-----
13	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	2018.08.20	2019.08.19
14	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100513	2018.08.20	2019.08.19
15	HL562 Ultra log antenna	R&S	100016	2018.08.20	2019.08.19
16	3160-09 Receive antenna	SCHWARZ-BECK	002058-002	2018.08.20	2019.08.19
17	ESI 40 EMI test receiver	R&S	100015	2018.08.20	2019.08.19
18	ESCS30 EMI test receiver	R&S	100029	2018.08.20	2019.08.19
19	HL562 Receive antenna	R&S	100167	2018.08.20	2019.08.19
20	ENV216 AMN	R&S	3560.6550.12	2018.08.20	2019.08.19

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

Please refer to the attachment.

APPENDIX B – TEST DATA OF RADIATED EMISSION

Please refer to the attachment.

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

LTE Band 2

1 RF Power Output

Antenna Gain=1.42dBi

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1850.7	18607	1.4	1	0	23.30	0.296
				1	5	23.22	0.291
				3	2	22.29	0.235
				6	0	22.25	0.233
	1880	18900		1	0	23.32	0.298
				1	5	23.23	0.292
				3	2	22.29	0.235
				6	0	22.17	0.229
	1909.3	19193		1	0	23.16	0.287
				1	5	23.09	0.282
				3	2	22.17	0.229
				6	0	22.13	0.226
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1850.7	18607	1.4	1	0	22.42	0.242
				1	5	22.42	0.242
				3	2	21.27	0.186
				6	0	21.24	0.185
	1880	18900		1	0	22.48	0.245
				1	5	22.42	0.242
				3	2	21.39	0.191
				6	0	21.33	0.188
	1909.3	19193		1	0	22.86	0.268
				1	5	22.71	0.259
				3	2	21.33	0.188
				6	0	21.29	0.187
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1850.7	18607	1.4	1	0	22.53	0.248
				1	5	22.45	0.244
				3	2	21.35	0.189
				6	0	21.32	0.188
	1880	18900		1	0	22.26	0.233
				1	5	22.23	0.232
				3	2	21.38	0.191
				6	0	21.17	0.182
	1909.3	19193		1	0	22.45	0.244
				1	5	22.41	0.242
				3	2	21.30	0.187
				6	0	21.24	0.185

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1851.5	18615	3	1	0	23.35	0.300
				1	14	23.27	0.294
				8	4	22.34	0.238
				15	0	22.30	0.236
	1880	18900		1	0	23.45	0.307
				1	14	23.36	0.301
				8	4	22.42	0.242
				15	0	22.30	0.236
	1908.5	19185		1	0	23.29	0.296
				1	14	23.22	0.291
				8	4	22.30	0.236
				15	0	22.26	0.233
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1851.5	18615	3	1	0	22.47	0.245
				1	14	22.47	0.245
				8	4	21.32	0.188
				15	0	21.29	0.187
	1880	18900		1	0	22.61	0.253
				1	14	22.55	0.249
				8	4	21.52	0.197
				15	0	21.46	0.194
	1908.5	19185		1	0	22.99	0.276
				1	14	22.84	0.267
				8	4	21.46	0.194
				15	0	21.42	0.192
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1851.5	18615	3	1	0	22.58	0.251
				1	14	22.50	0.247
				8	4	21.40	0.191
				15	0	21.37	0.190
	1880	18900		1	0	22.39	0.240
				1	14	22.36	0.239
				8	4	21.51	0.196
				15	0	21.30	0.187
	1908.5	19185		1	0	22.58	0.251
				1	14	22.54	0.249
				8	4	21.43	0.193
				15	0	21.37	0.190

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1852.5	18625	5	1	0	23.39	0.303
				1	24	23.31	0.297
				12	6	22.38	0.240
				25	0	22.34	0.238
	1880	18900		1	0	23.55	0.314
				1	24	23.46	0.308
				12	6	22.52	0.248
				25	0	22.40	0.241
	1907.5	19175		1	0	23.27	0.294
				1	24	23.20	0.290
				12	6	22.28	0.234
				25	0	22.24	0.232
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1852.5	18625	5	1	0	22.51	0.247
				1	24	22.51	0.247
				12	6	21.36	0.190
				25	0	21.33	0.188
	1880	18900		1	0	22.71	0.259
				1	24	22.65	0.255
				12	6	21.62	0.201
				25	0	21.56	0.199
	1907.5	19175		1	0	22.97	0.275
				1	24	22.82	0.265
				12	6	21.44	0.193
				25	0	21.40	0.191
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1852.5	18625	5	1	0	22.62	0.254
				1	24	22.54	0.249
				12	6	21.44	0.193
				25	0	21.41	0.192
	1880	18900		1	0	22.49	0.246
				1	24	22.46	0.244
				12	6	21.61	0.201
				25	0	21.4	0.191
	1907.5	19175		1	0	22.56	0.250
				1	24	22.52	0.248
				12	6	21.41	0.192
				25	0	21.35	0.189

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1855	18650	10	1	0	23.51	0.311
				1	49	23.43	0.305
				24	12	22.50	0.247
				50	0	22.46	0.244
	1880	18900		1	0	23.60	0.318
				1	49	23.51	0.311
				24	12	22.57	0.251
				50	0	22.45	0.244
	1905	19150		1	0	23.31	0.297
				1	49	23.24	0.292
				24	12	22.32	0.237
				50	0	22.28	0.234
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1855	18650	10	1	0	22.63	0.254
				1	49	22.63	0.254
				24	12	21.48	0.195
				50	0	21.45	0.194
	1880	18900		1	0	22.76	0.262
				1	49	22.70	0.258
				24	12	21.67	0.204
				50	0	21.61	0.201
	1905	19150		1	0	23.01	0.277
				1	49	22.86	0.268
				24	12	21.48	0.195
				50	0	21.44	0.193
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1855	18650	10	1	0	22.74	0.261
				1	49	22.66	0.256
				24	12	21.56	0.199
				50	0	21.53	0.197
	1880	18900		1	0	22.54	0.249
				1	49	22.51	0.247
				24	12	21.66	0.203
				50	0	21.45	0.194
	1905	19150		1	0	22.60	0.252
				1	49	22.56	0.250
				24	12	21.45	0.194
				50	0	21.39	0.191

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1857.5	18675	15	1	0	23.59	0.317
				1	74	23.51	0.311
				40	18	22.58	0.251
				75	0	22.54	0.249
	1880	18900		1	0	23.70	0.325
				1	74	23.61	0.318
				40	18	22.67	0.256
				75	0	22.55	0.249
	1902.5	19125		1	0	23.39	0.303
				1	74	23.32	0.298
				40	18	22.40	0.241
				75	0	22.36	0.239
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1857.5	18675	15	1	0	22.71	0.259
				1	74	22.71	0.259
				40	18	21.56	0.199
				75	0	21.53	0.197
	1880	18900		1	0	22.86	0.268
				1	74	22.80	0.264
				40	18	21.77	0.208
				75	0	21.71	0.206
	1902.5	19125		1	0	23.09	0.282
				1	74	22.94	0.273
				40	18	21.56	0.199
				75	0	21.52	0.197
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1857.5	18675	15	1	0	22.82	0.265
				1	74	22.74	0.261
				40	18	21.64	0.202
				75	0	21.61	0.201
	1880	18900		1	0	22.64	0.255
				1	74	22.61	0.253
				40	18	21.76	0.208
				75	0	21.55	0.198
	1902.5	19125		1	0	22.68	0.257
				1	74	22.64	0.255
				40	18	21.53	0.197
				75	0	21.47	0.195

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1860	18700	20	1	0	23.82	0.334
				1	99	23.74	0.328
				50	25	22.81	0.265
				100	0	22.77	0.262
	1880	18900		1	0	23.87	0.338
				1	99	23.78	0.331
				50	25	22.84	0.267
				100	0	22.72	0.259
	1900	19100		1	0	23.64	0.321
				1	99	23.57	0.316
				50	25	22.65	0.255
				100	0	22.61	0.253
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1860	18700	20	1	0	22.94	0.273
				1	99	22.94	0.273
				50	25	21.79	0.209
				100	0	21.76	0.208
	1880	18900		1	0	23.03	0.279
				1	99	22.97	0.275
				50	25	21.94	0.217
				100	0	21.88	0.214
	1900	19100		1	0	23.34	0.299
				1	99	23.19	0.289
				50	25	21.81	0.210
				100	0	21.77	0.208
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1860	18700	20	1	0	23.05	0.280
				1	99	22.97	0.275
				50	25	21.87	0.213
				100	0	21.84	0.212
	1880	18900		1	0	22.81	0.265
				1	99	22.78	0.263
				50	25	21.93	0.216
				100	0	21.72	0.206
	1900	19100		1	0	22.93	0.272
				1	99	22.89	0.270
				50	25	21.78	0.209
				100	0	21.72	0.206

2 Occupied Bandwidth

Test result

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1850.7	18607	1.4	6	0	1.1020	Fig.1	1.1013	Fig.2	1.1023	Fig.3
2	1880.0	18900	1.4	6	0	1.1014	Fig.4	1.0960	Fig.5	1.1006	Fig.6
2	1909.3	19193	1.4	6	0	1.1019	Fig.7	1.1017	Fig.8	1.1022	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1850.7	18607	1.4	6	0	1.358	Fig.1	1.352	Fig.2	1.379	Fig.3
2	1880.0	18900	1.4	6	0	1.359	Fig.4	1.357	Fig.5	1.326	Fig.6
2	1909.3	19193	1.4	6	0	1.366	Fig.7	1.418	Fig.8	1.294	Fig.9

Fig.1

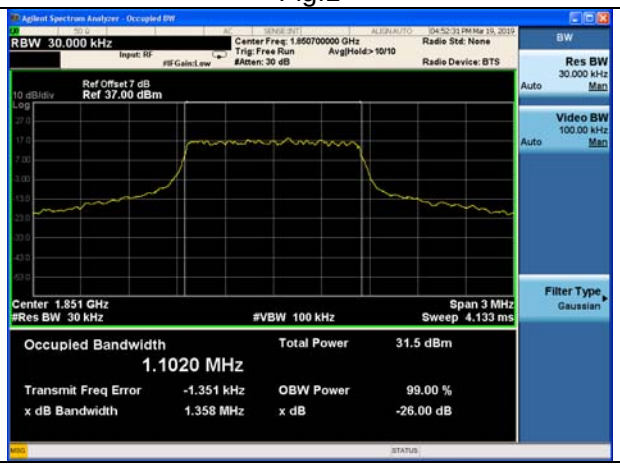


Fig.2

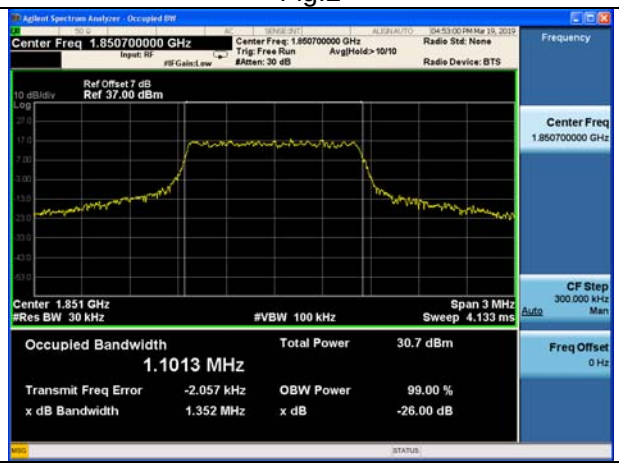


Fig.3

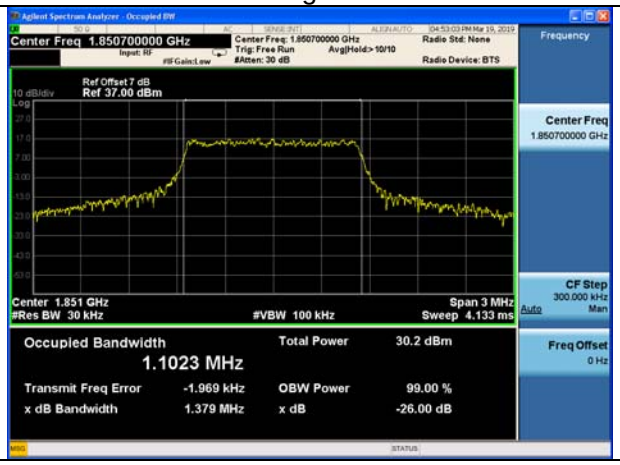


Fig.4

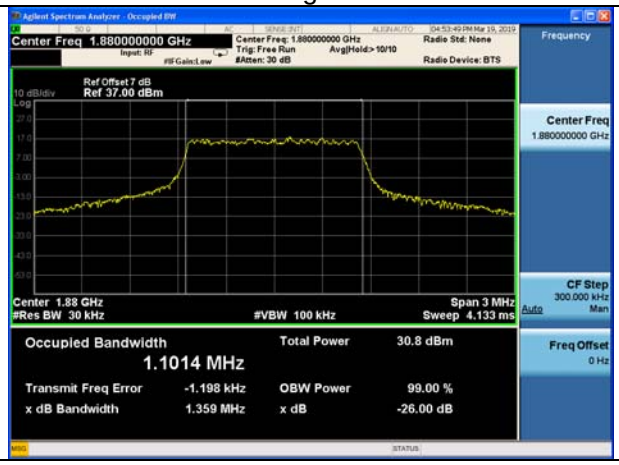


Fig.5

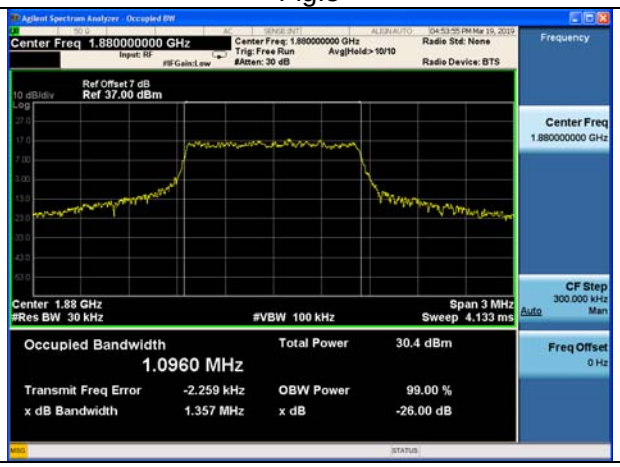


Fig.6

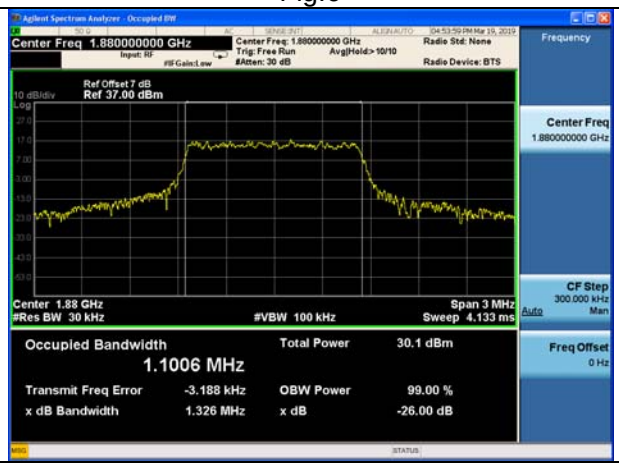


Fig.7

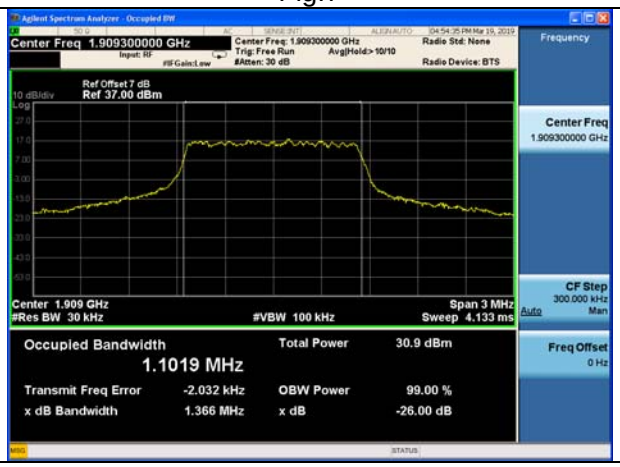


Fig.8

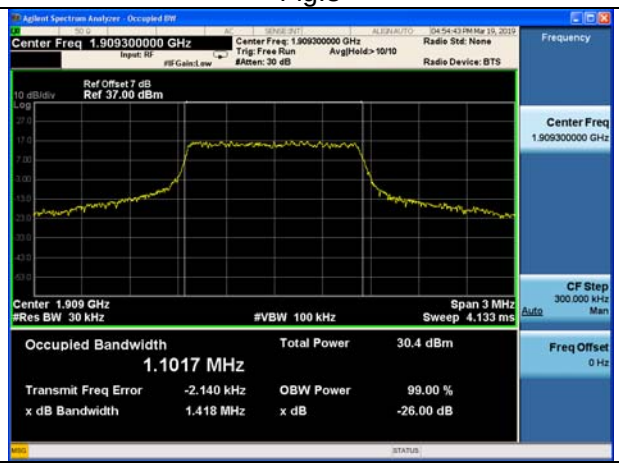
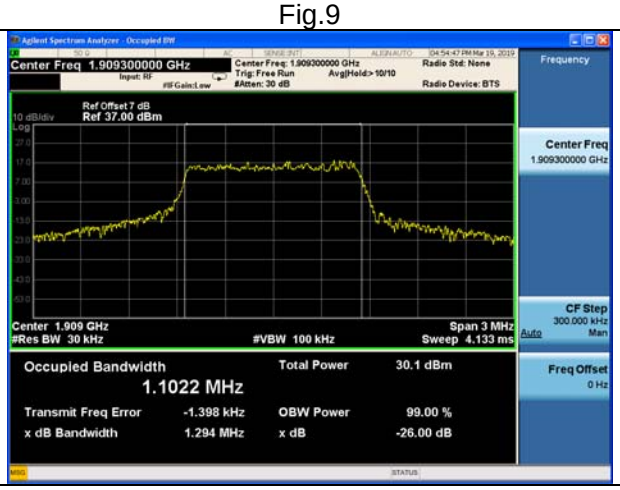


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1851.5	18615	3	15	0	2.6914	Fig.1	2.6870	Fig.2	2.6876	Fig.3
2	1880.0	18900	3	15	0	2.6887	Fig.4	2.6915	Fig.5	2.6929	Fig.6
2	1908.5	19185	3	15	0	2.6902	Fig.7	2.6931	Fig.8	2.6887	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1851.5	18615	3	15	0	3.104	Fig.1	3.047	Fig.2	3.092	Fig.3
2	1880.0	18900	3	15	0	3.121	Fig.4	3.086	Fig.5	3.100	Fig.6
2	1908.5	19185	3	15	0	3.092	Fig.7	3.071	Fig.8	3.097	Fig.9

Fig.1

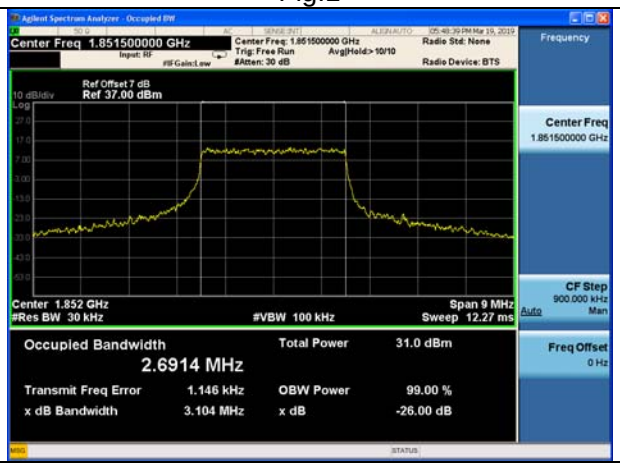


Fig.2

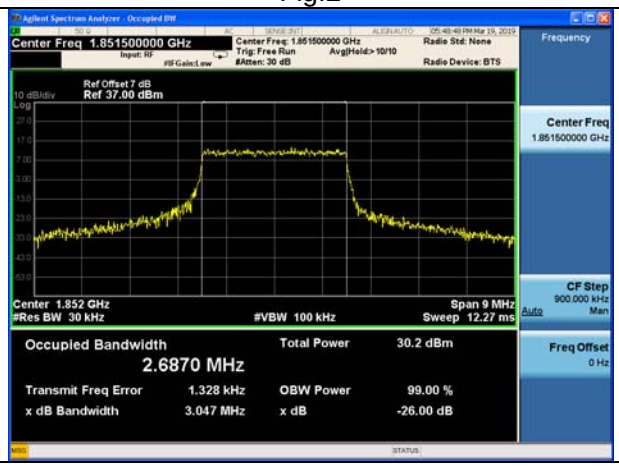


Fig.3

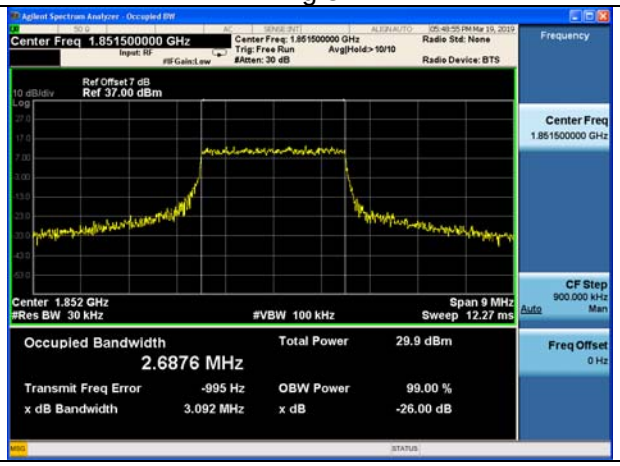


Fig.4

Fig.5

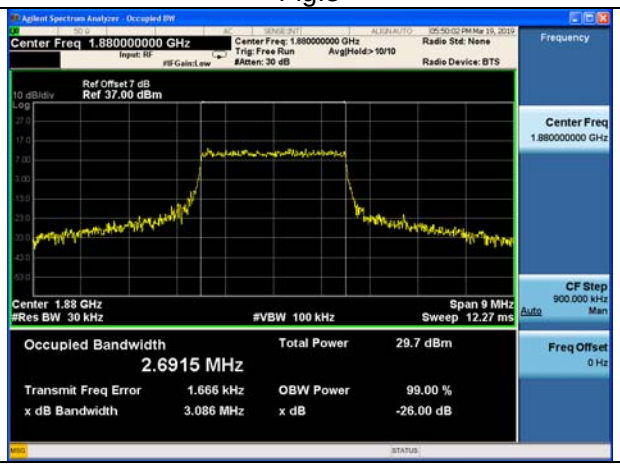


Fig.6

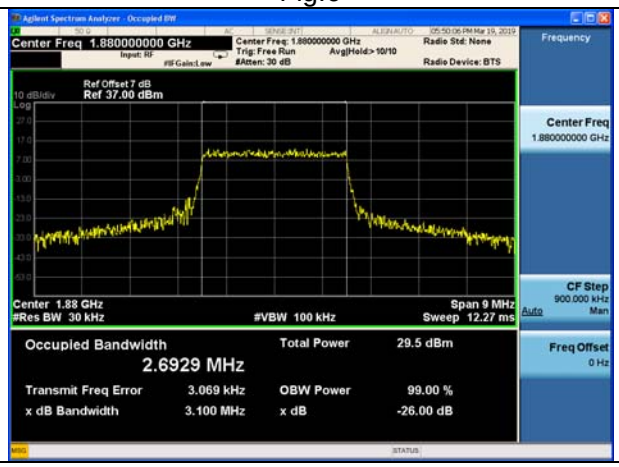


Fig.7

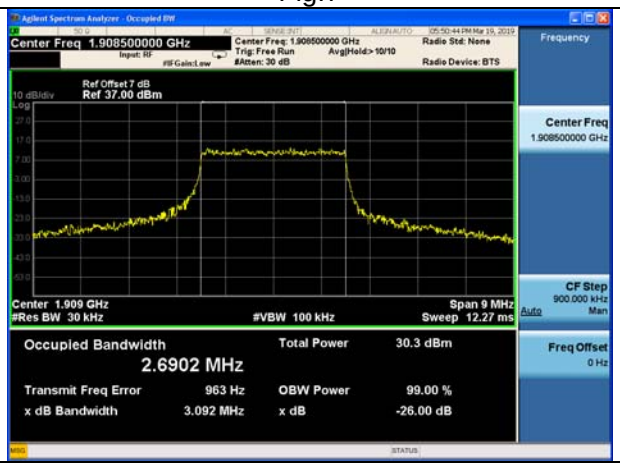


Fig.8

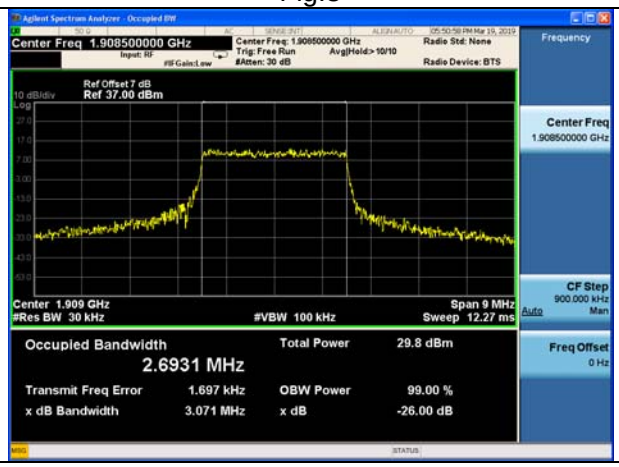
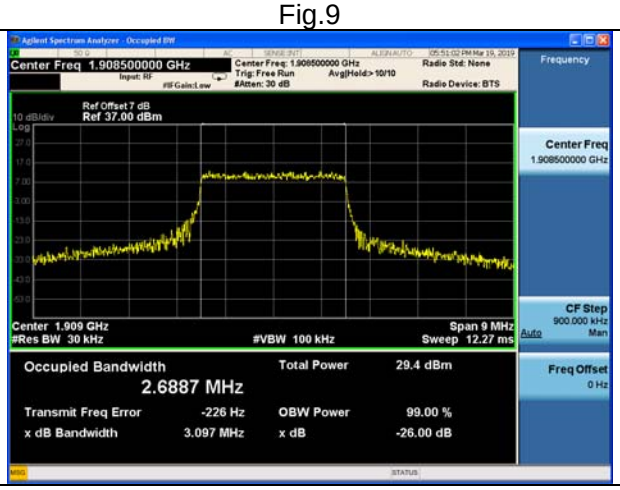


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1852.5	18625	5	25	0	4.4646	Fig.1	4.4636	Fig.2	4.4608	Fig.3
2	1880.0	18900	5	25	0	4.4678	Fig.4	4.4656	Fig.5	4.4509	Fig.6
2	1907.5	19175	5	25	0	4.4643	Fig.7	4.4526	Fig.8	4.4685	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1852.5	18625	5	25	0	4.954	Fig.1	4.840	Fig.2	4.873	Fig.3
2	1880.0	18900	5	25	0	4.890	Fig.4	4.958	Fig.5	4.969	Fig.6
2	1907.5	19175	5	25	0	4.973	Fig.7	4.919	Fig.8	4.788	Fig.9

Fig.1

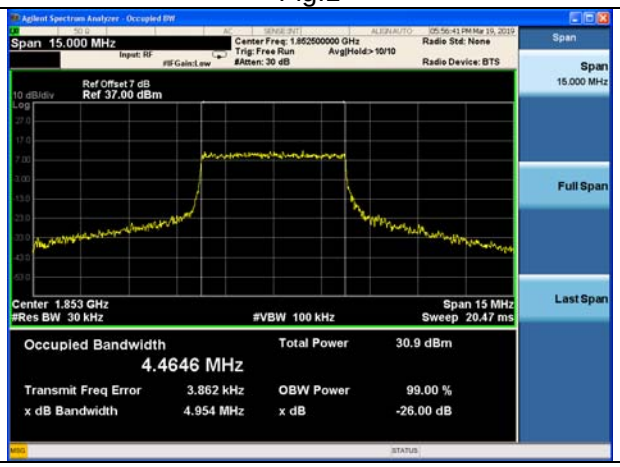


Fig.2

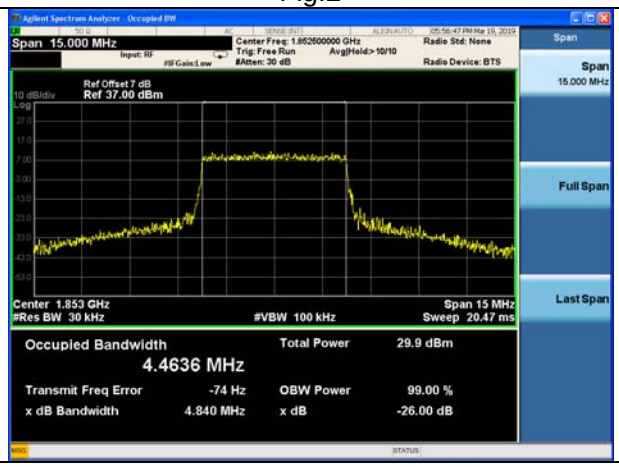


Fig.3

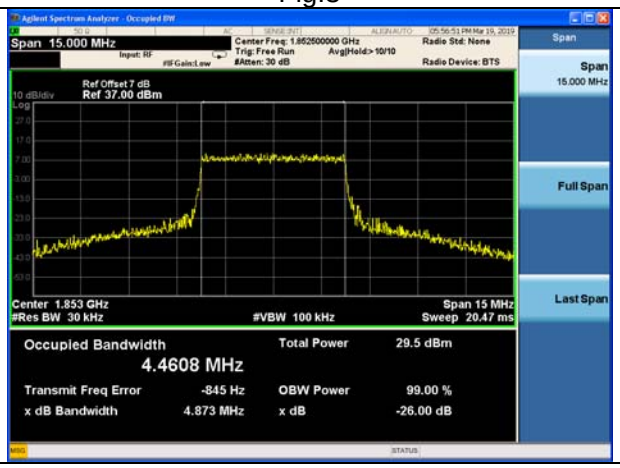


Fig.4

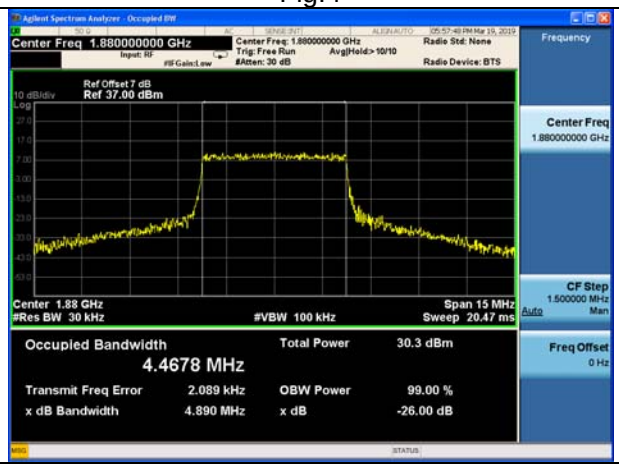


Fig.5

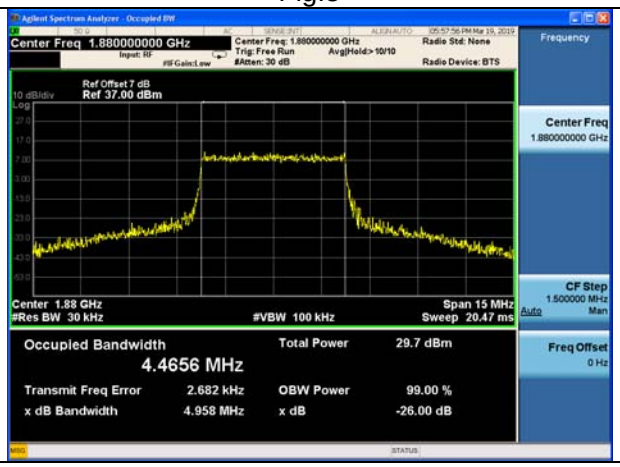


Fig.6

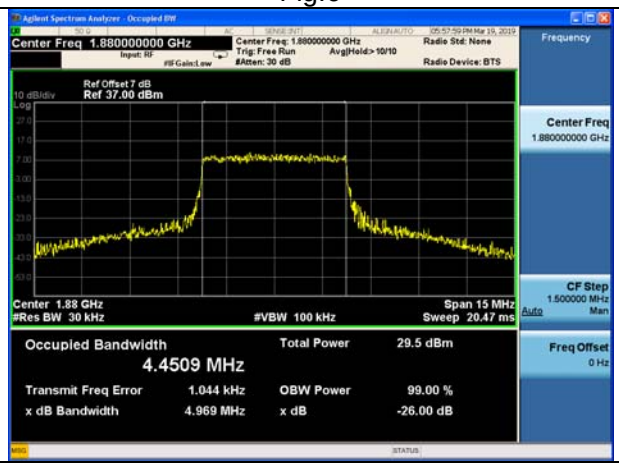


Fig.7

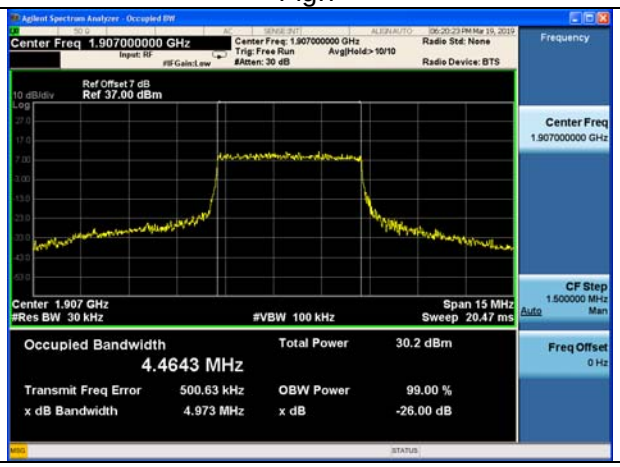


Fig.8

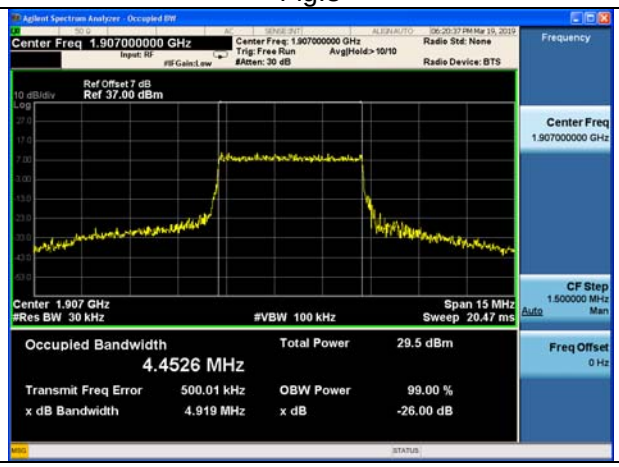
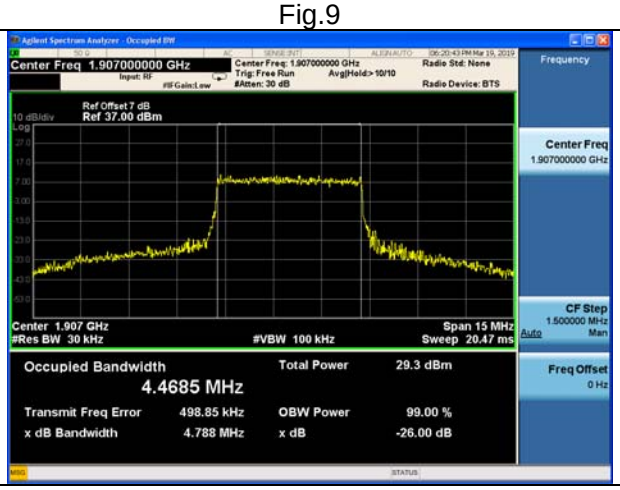


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1855	18650	10	50	0	9.1064	Fig.1	9.0677	Fig.2	9.0828	Fig.3
2	1880	18900	10	50	0	9.0909	Fig.4	9.0924	Fig.5	9.0536	Fig.6
2	1905	19150	10	50	0	9.0578	Fig.7	9.0455	Fig.8	9.0361	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1855	18650	10	50	0	10.63	Fig.1	10.74	Fig.2	10.40	Fig.3
2	1880	18900	10	50	0	10.73	Fig.4	10.59	Fig.5	10.47	Fig.6
2	1905	19150	10	50	0	10.24	Fig.7	10.64	Fig.8	10.52	Fig.9

Fig.1

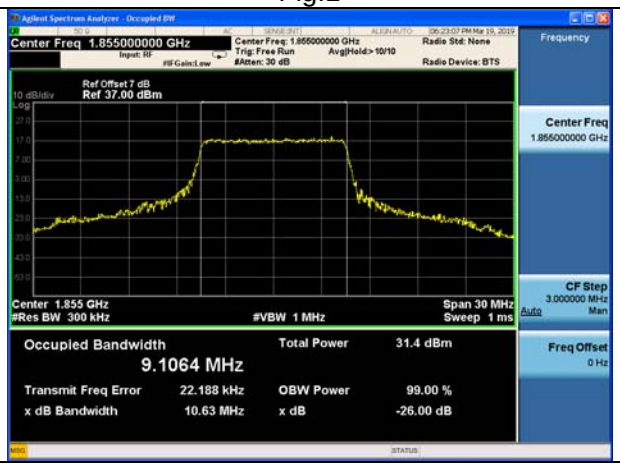


Fig.2

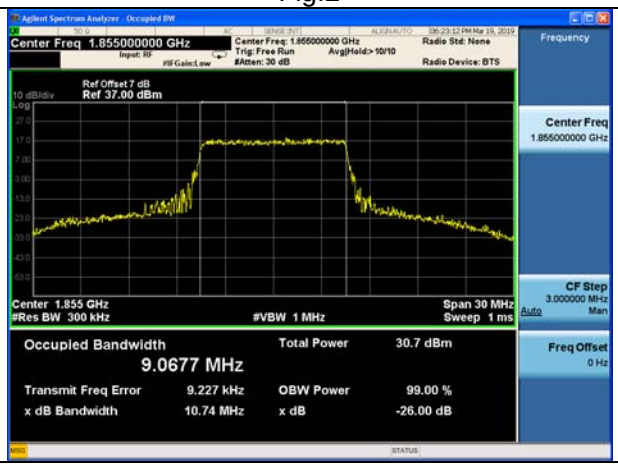


Fig.3

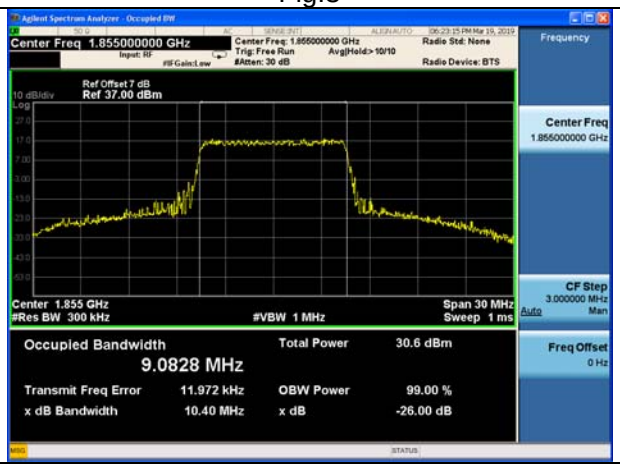


Fig.4

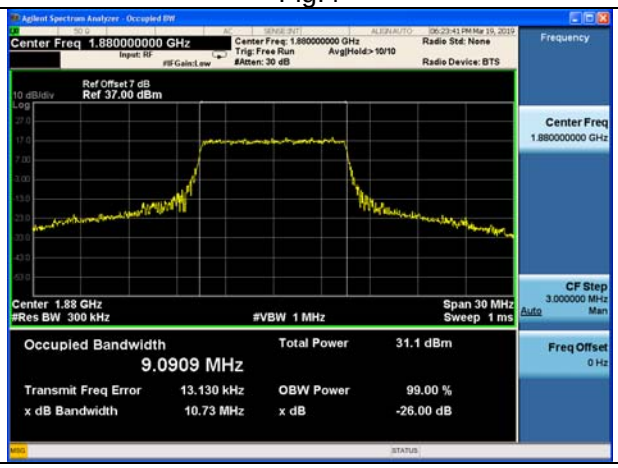


Fig.5

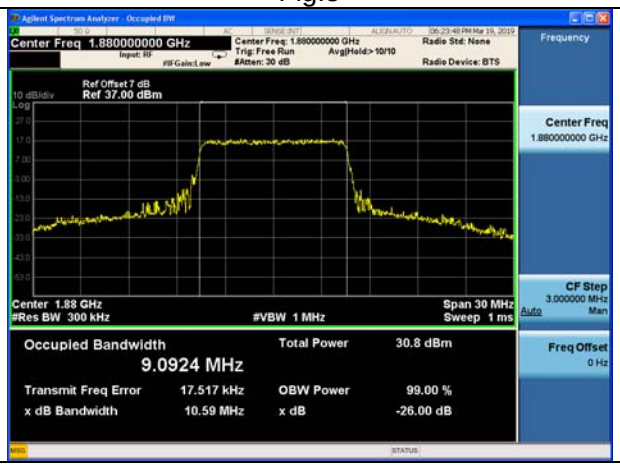


Fig.6

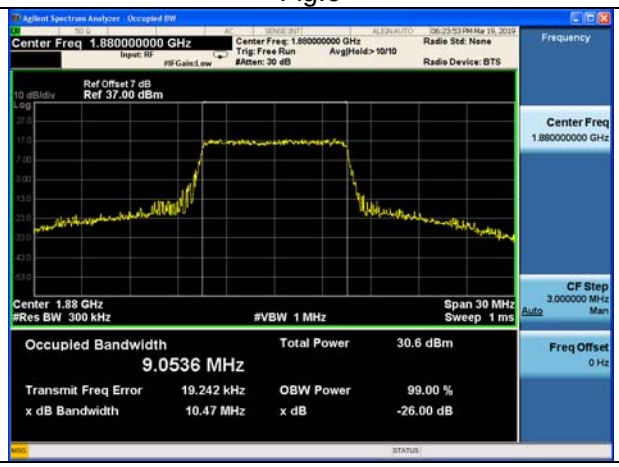


Fig.7

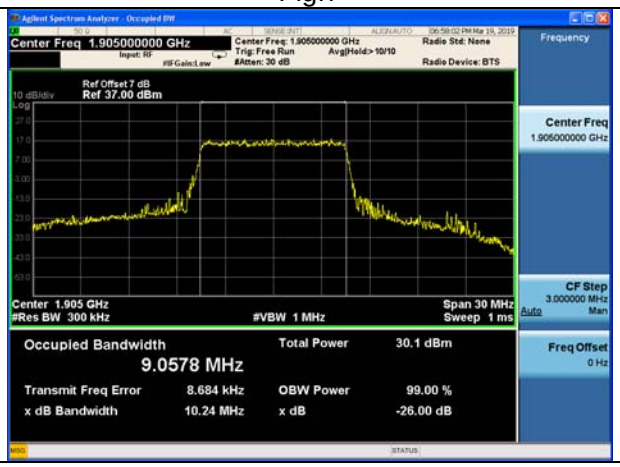


Fig.8

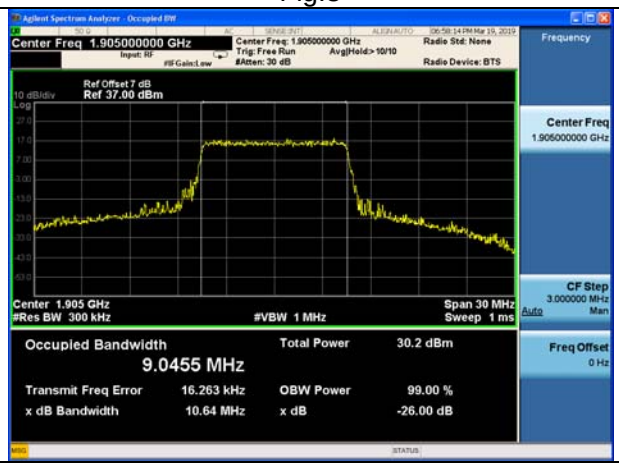
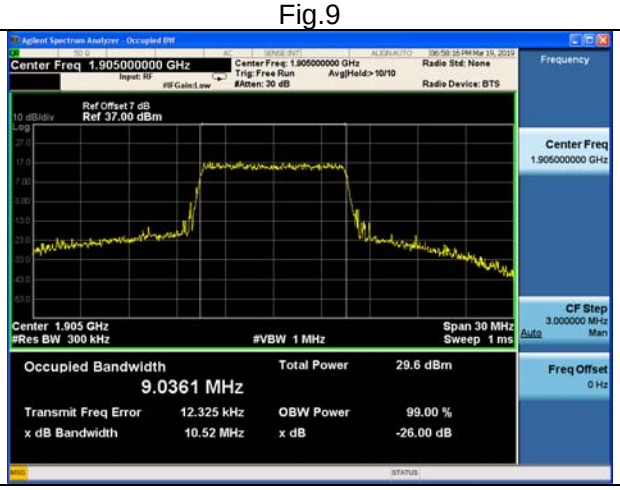


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1857.5	18675	15	75	0	13.505	Fig.1	13.474	Fig.2	13.533	Fig.3
2	1880.0	18900	15	75	0	13.495	Fig.4	13.467	Fig.5	13.495	Fig.6
2	1902.5	19125	15	75	0	13.491	Fig.7	13.484	Fig.8	13.458	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1857.5	18675	15	75	0	15.12	Fig.1	14.90	Fig.2	15.09	Fig.3
2	1880.0	18900	15	75	0	15.06	Fig.4	14.83	Fig.5	15.04	Fig.6
2	1902.5	19125	15	75	0	15.09	Fig.7	14.92	Fig.8	15.23	Fig.9

Fig.1

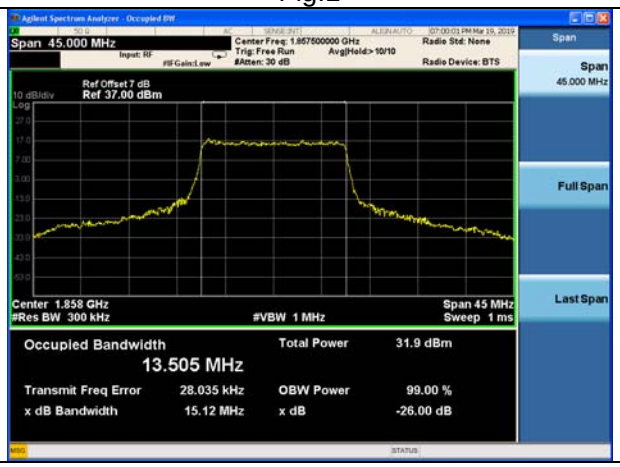


Fig.2

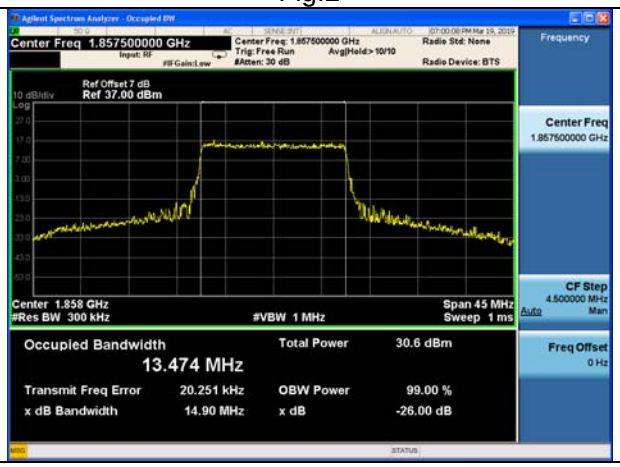


Fig.3

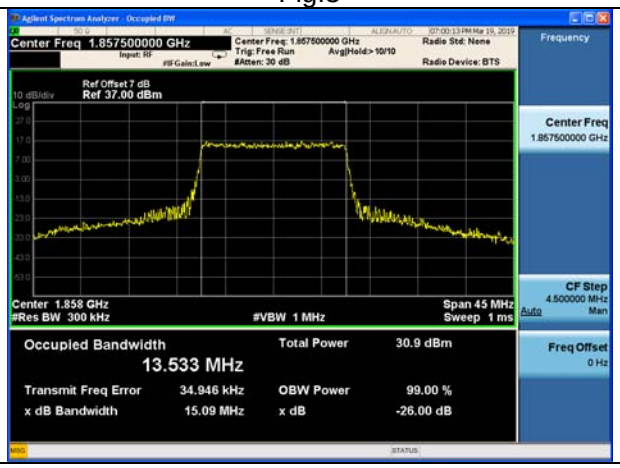


Fig.4

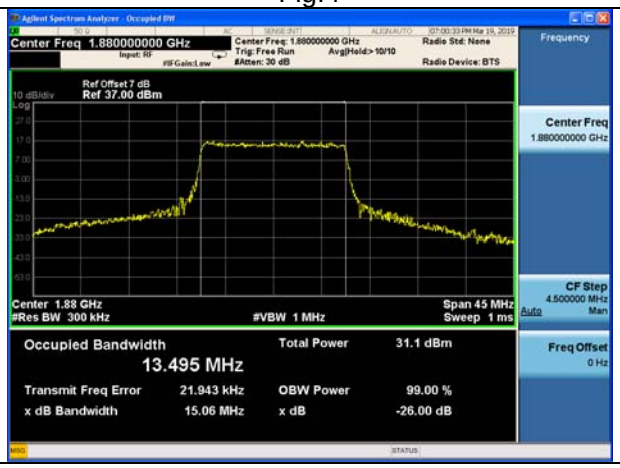


Fig.5

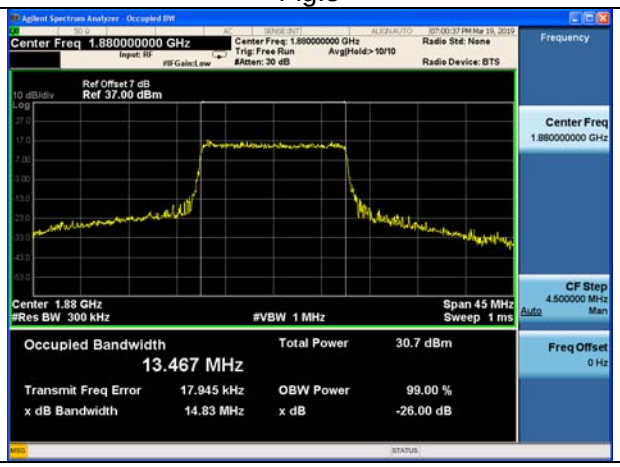


Fig.6

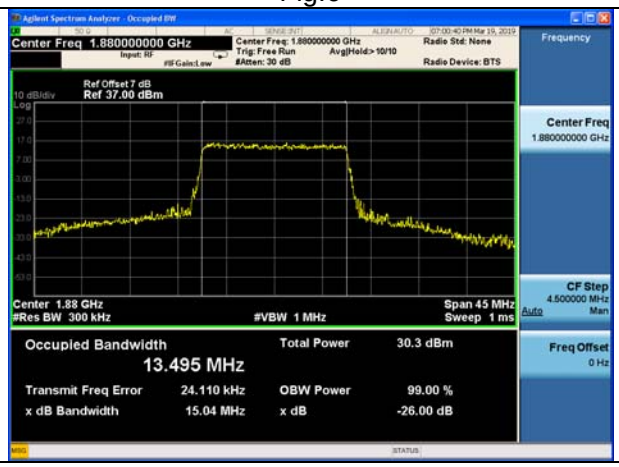


Fig.7

Fig.8

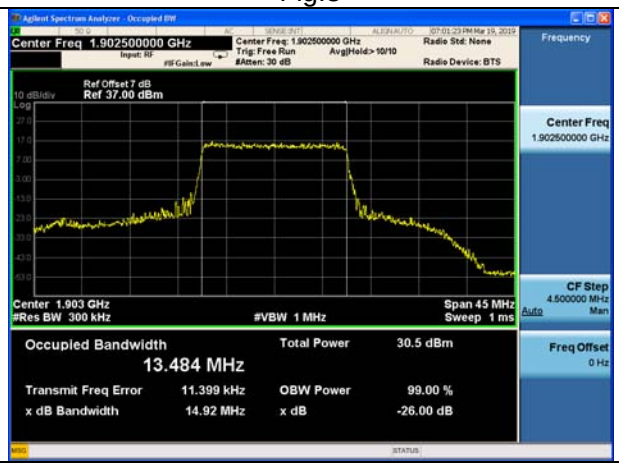
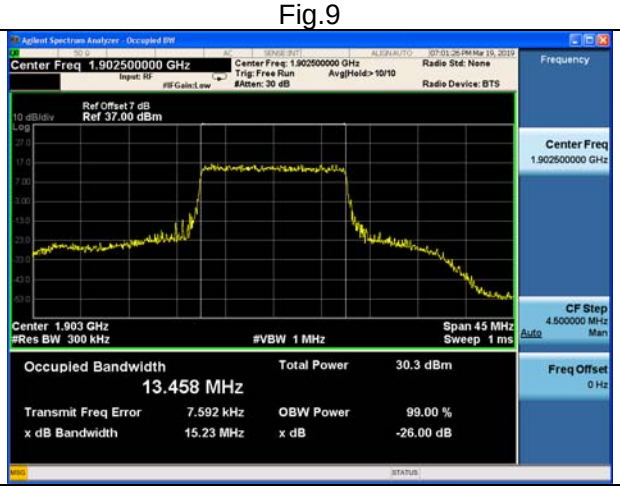


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1860	18700	20	100	0	17.966	Fig.1	17.939	Fig.2	17.940	Fig.3
2	1880	18900	20	100	0	17.970	Fig.4	17.951	Fig.5	17.940	Fig.6
2	1900	19100	20	100	0	17.940	Fig.7	17.943	Fig.8	17.942	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
2	1860	18700	20	100	0	20.25	Fig.1	20.05	Fig.2	19.83	Fig.3
2	1880	18900	20	100	0	20.27	Fig.4	19.64	Fig.5	19.63	Fig.6
2	1900	19100	20	100	0	19.74	Fig.7	19.84	Fig.8	19.87	Fig.9

Fig.1

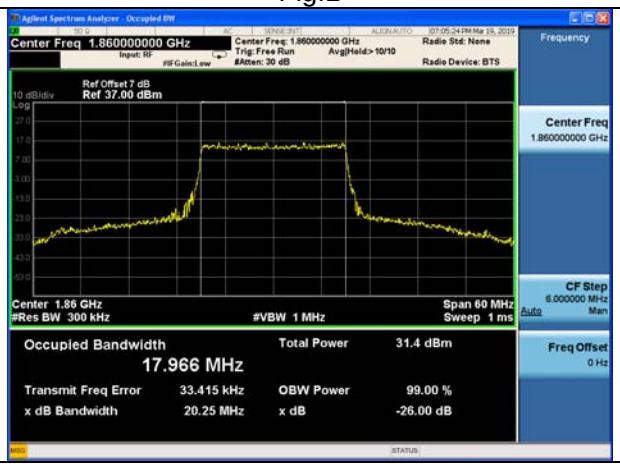


Fig.2

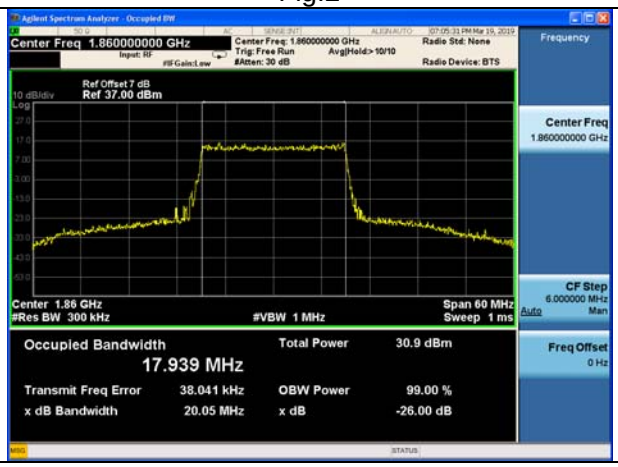


Fig.3

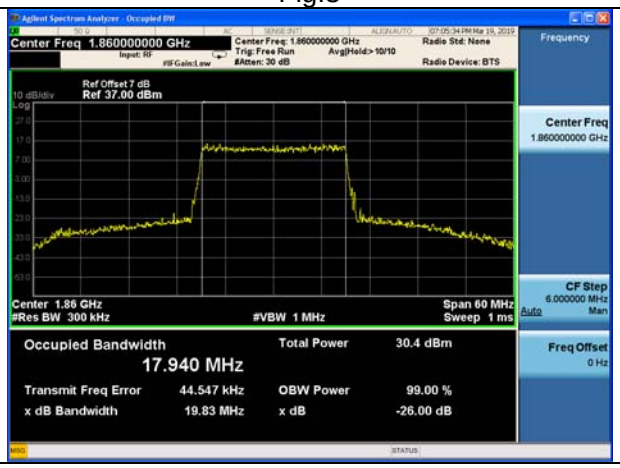


Fig.4

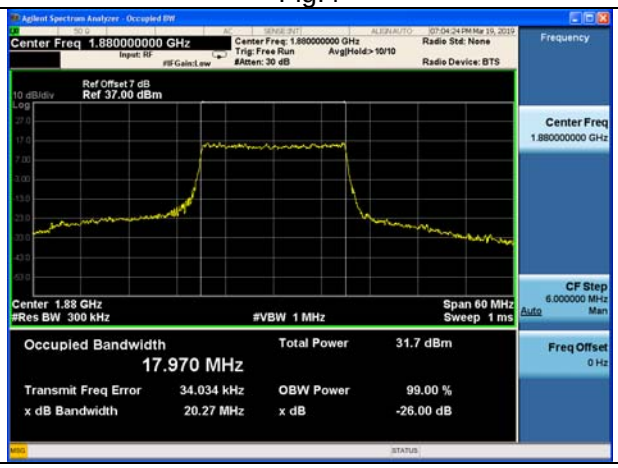


Fig.5

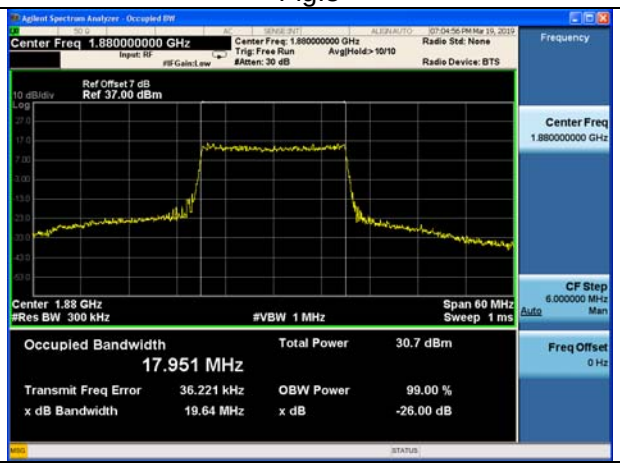


Fig.6

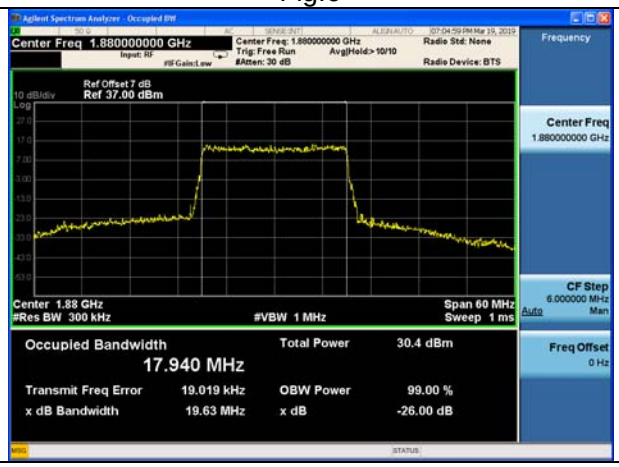


Fig.7

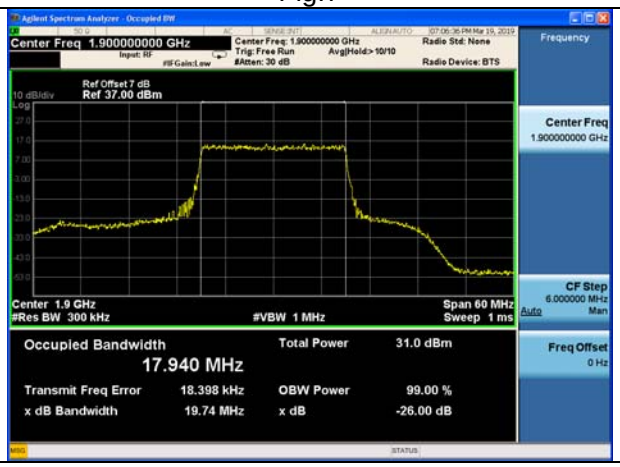


Fig.8

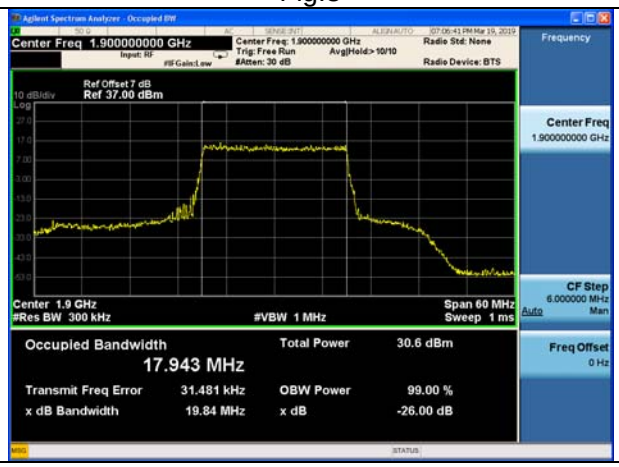
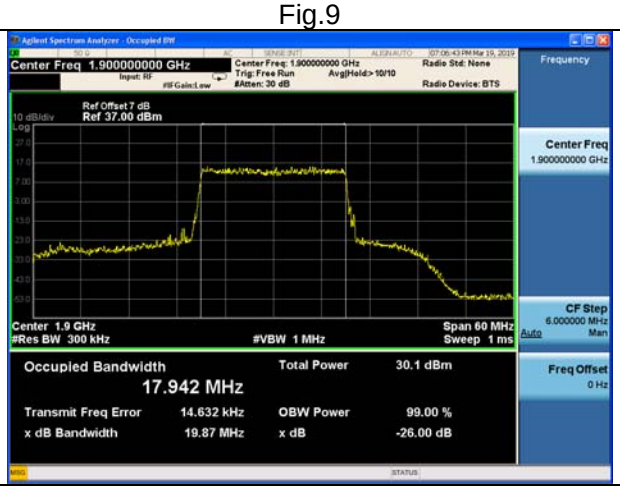
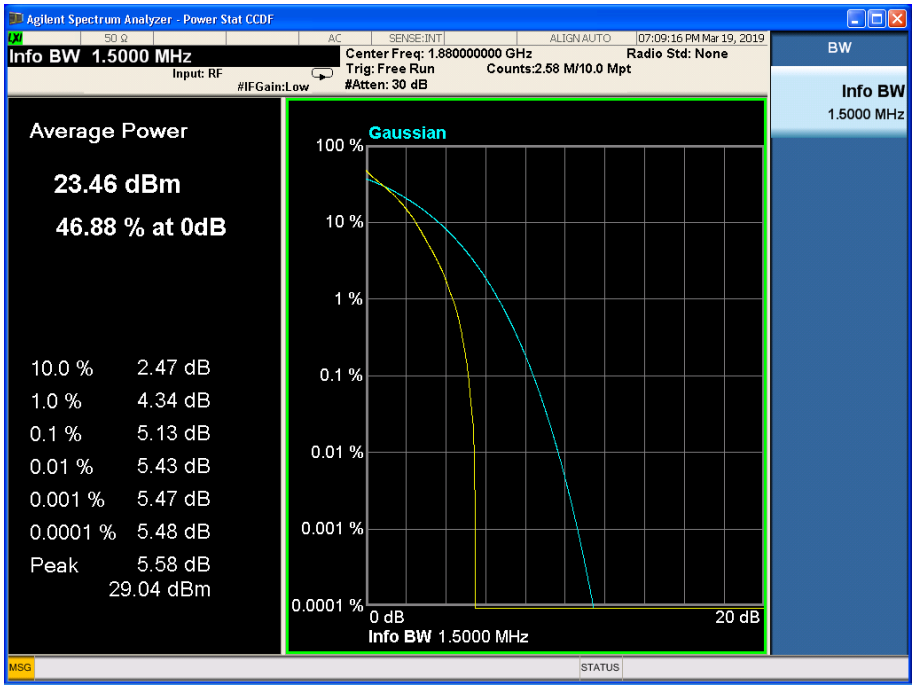


Fig.9

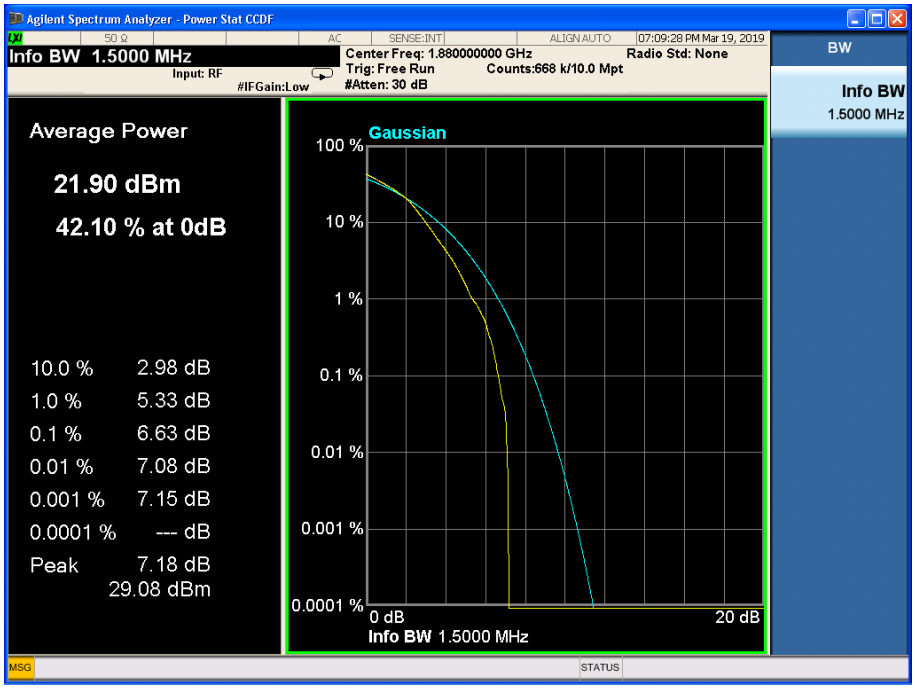


3 Peak-Average Ratio

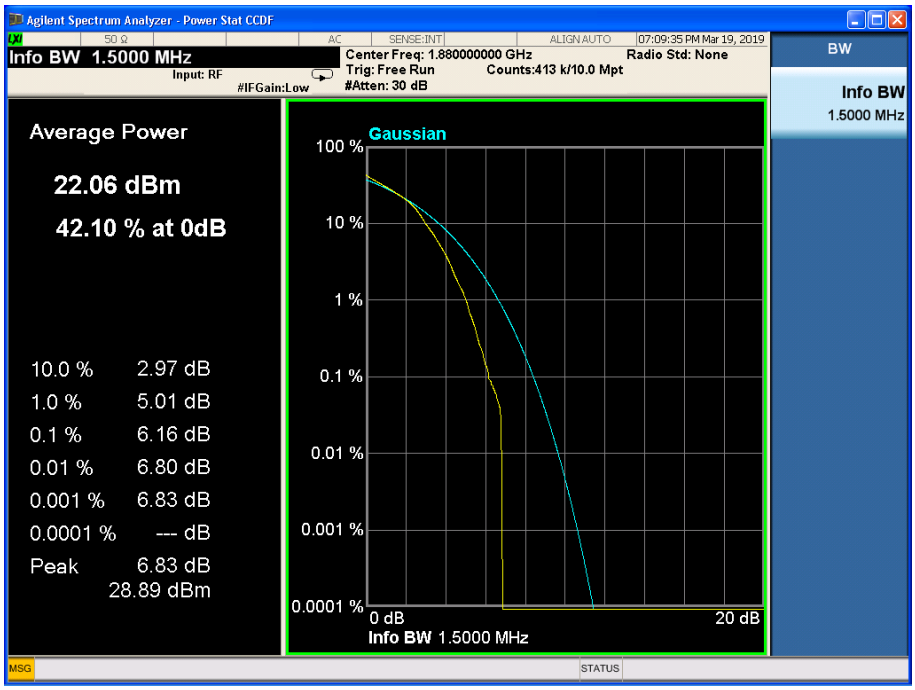
Test result:



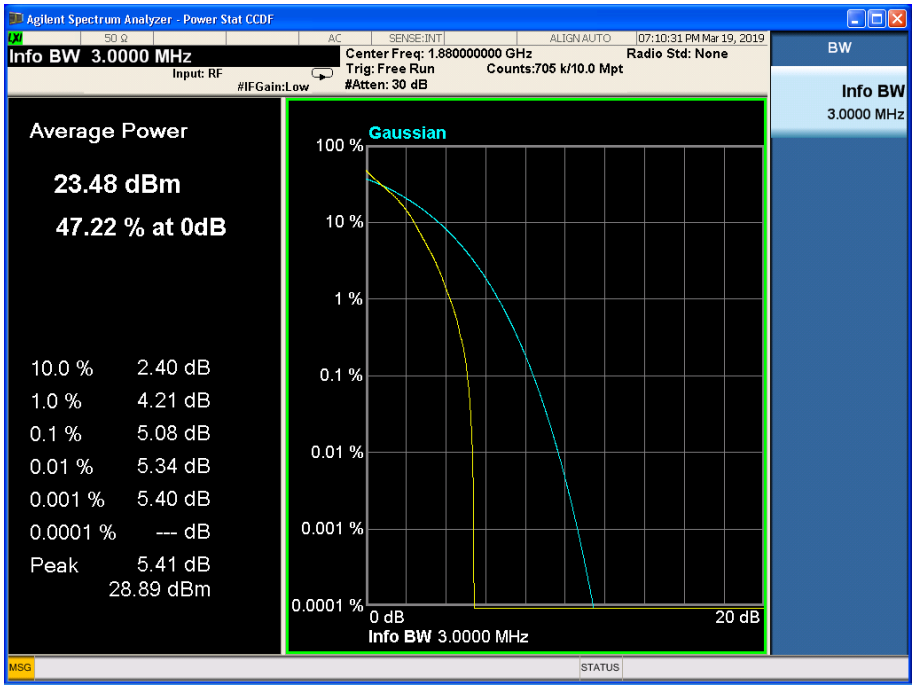
Peak-Average Ratio Plot(1.4MHz BW,QPSK,Band 2-mid Channel)



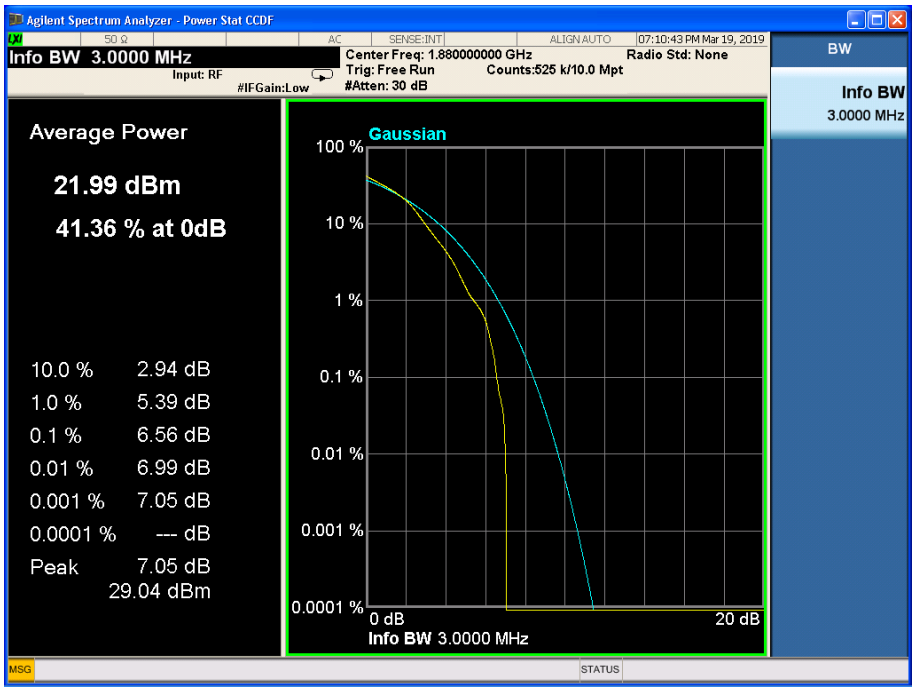
Peak-Average Ratio Plot(1.4MHz BW,16QAM,Band 2-mid Channel)



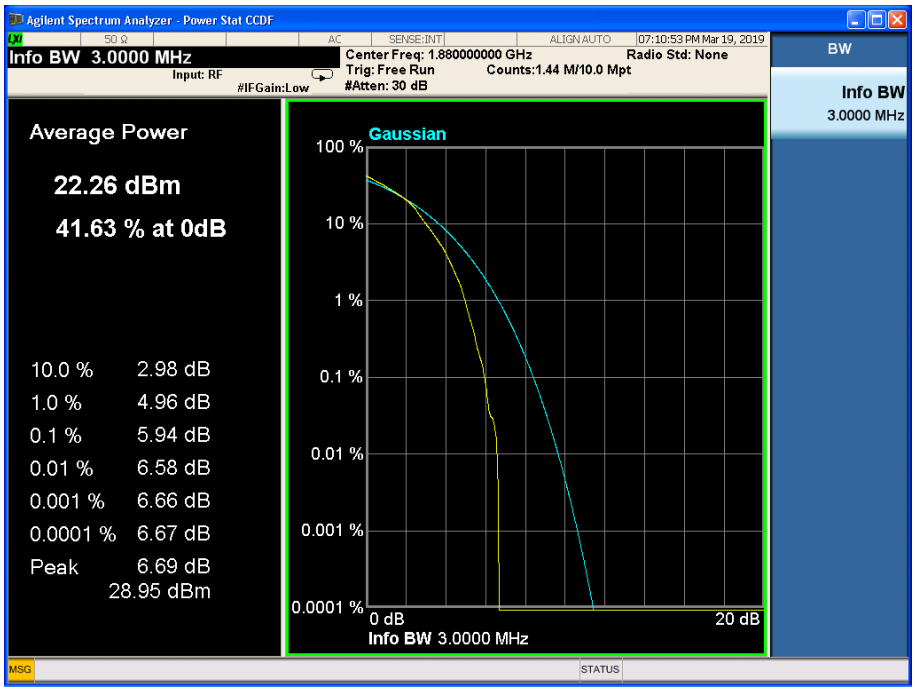
Peak-Average Ratio Plot(1.4MHz BW,64QAM,Band 2-mid Channel)



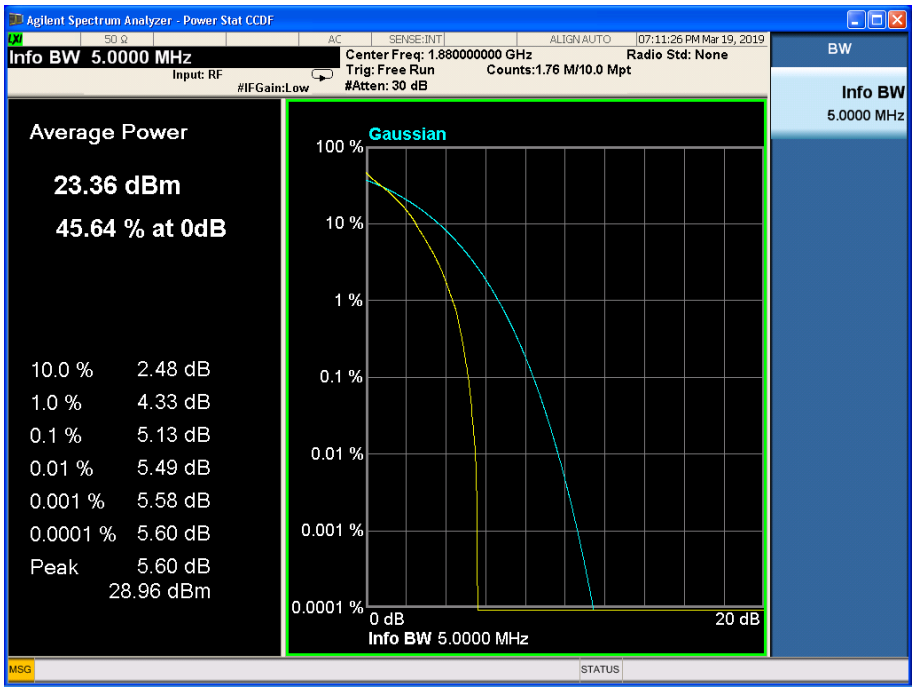
Peak-Average Ratio Plot(3MHz BW,QPSK,Band 2-mid Channel)



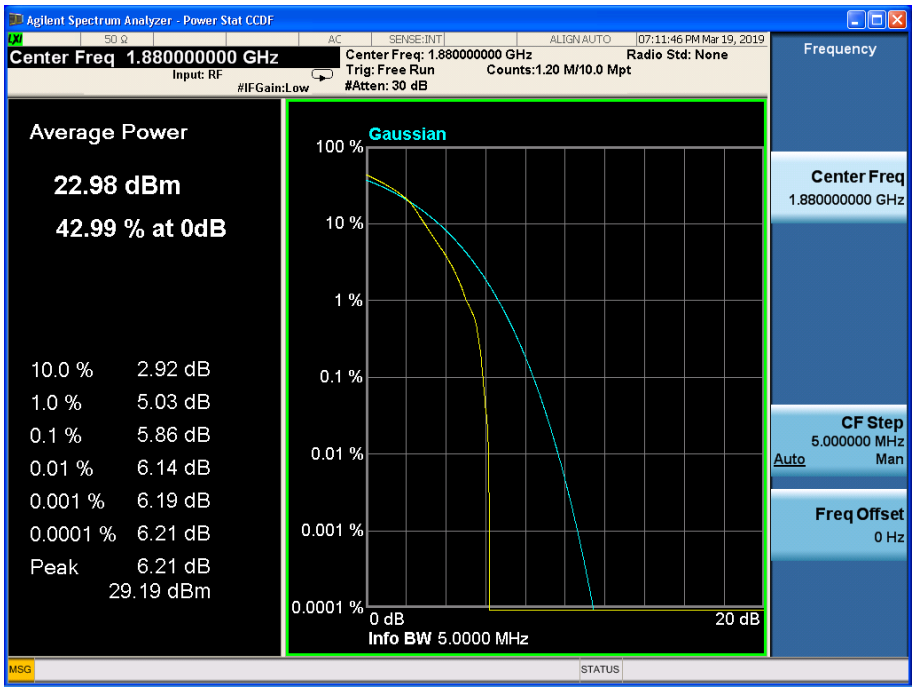
Peak-Average Ratio Plot(3MHz BW,16QAM,Band 2-mid Channel)



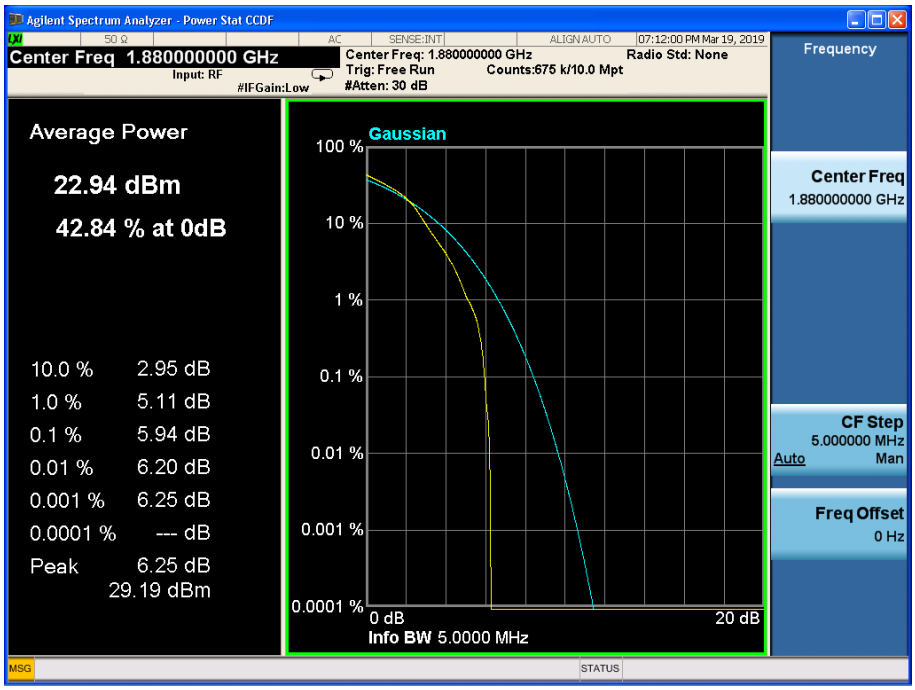
Peak-Average Ratio Plot(3MHz BW,64QAM,Band 2-mid Channel)



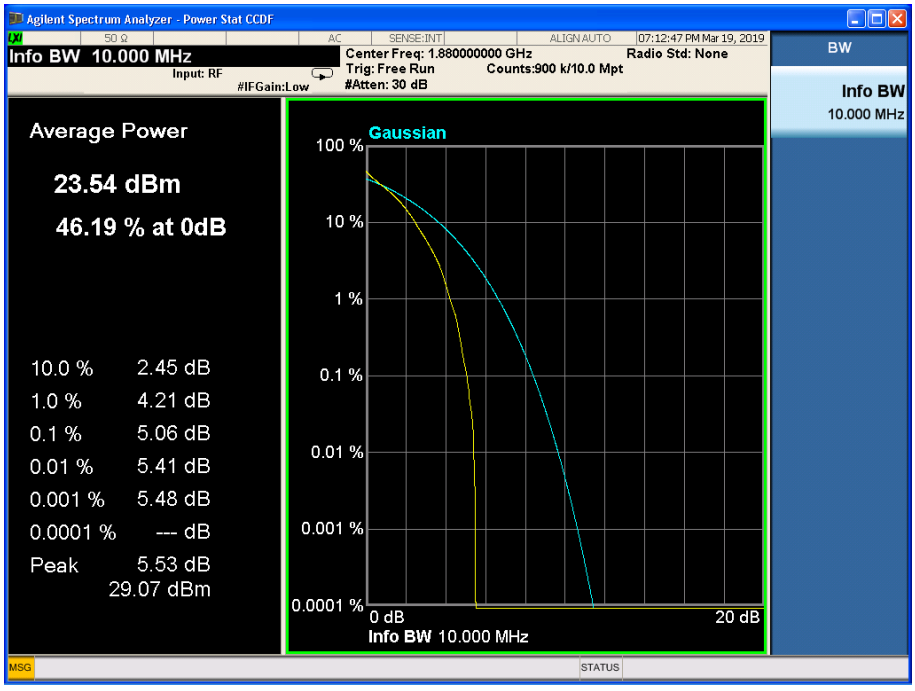
Peak-Average Ratio Plot(5MHz BW,QPSK,Band 2-mid Channel)



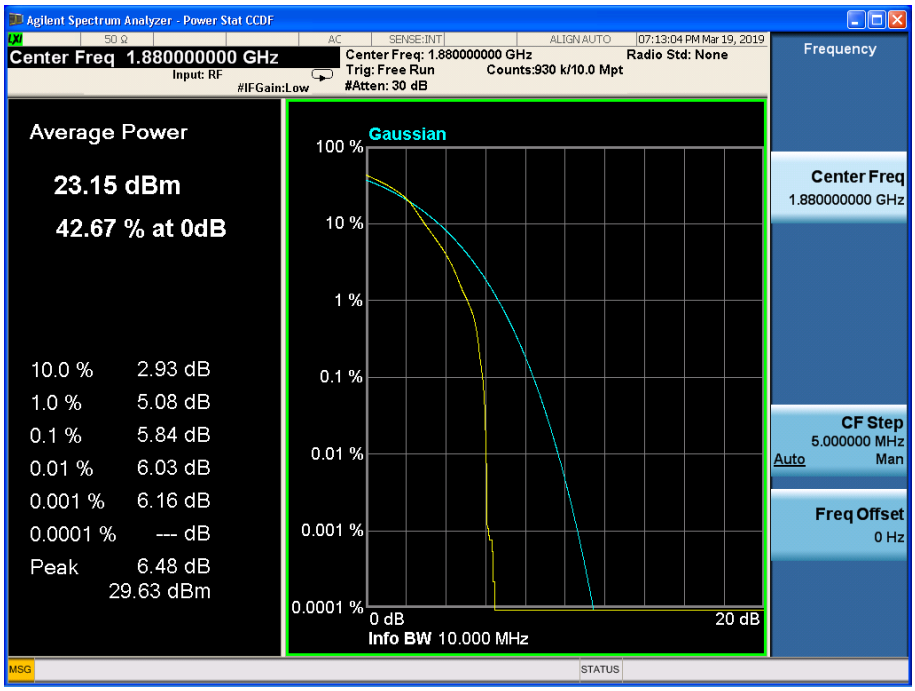
Peak-Average Ratio Plot(5MHz BW,16QAM,Band 2-mid Channel)



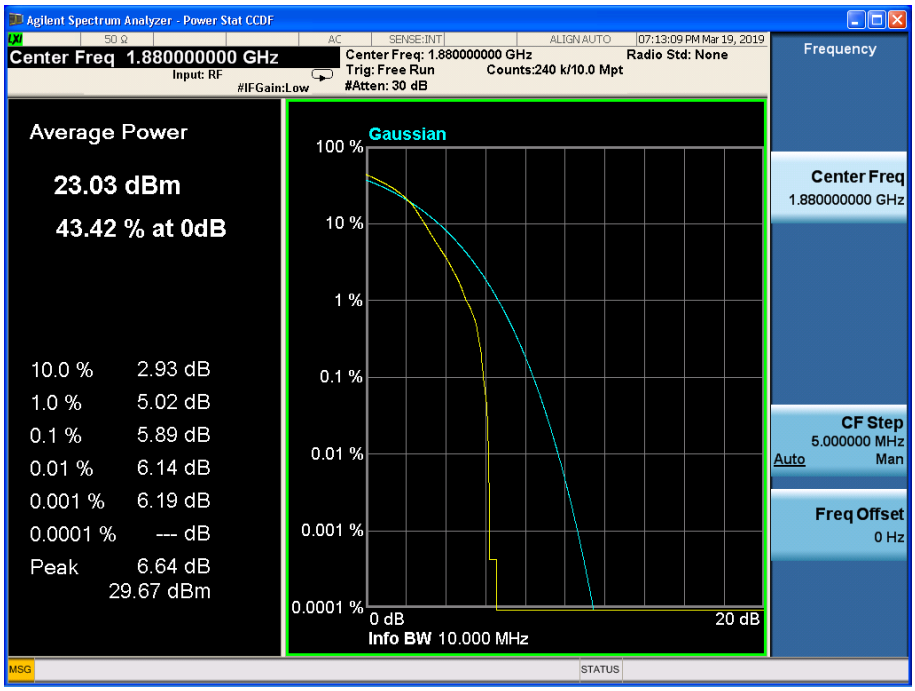
Peak-Average Ratio Plot(5MHz BW,64QAM,Band 2-mid Channel)



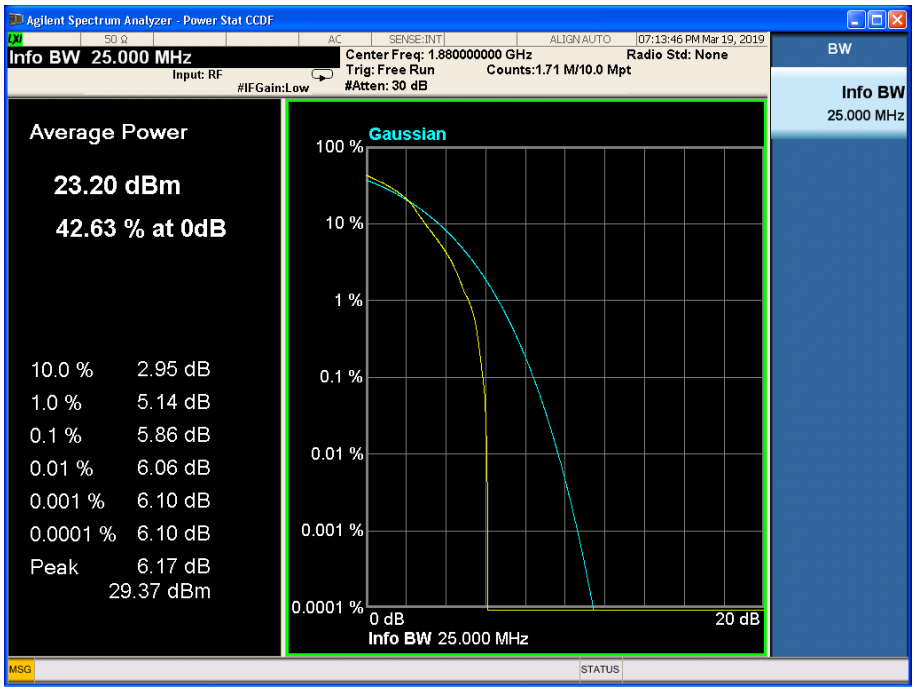
Peak-Average Ratio Plot(10MHz BW,QPSK,Band 2-mid Channel)



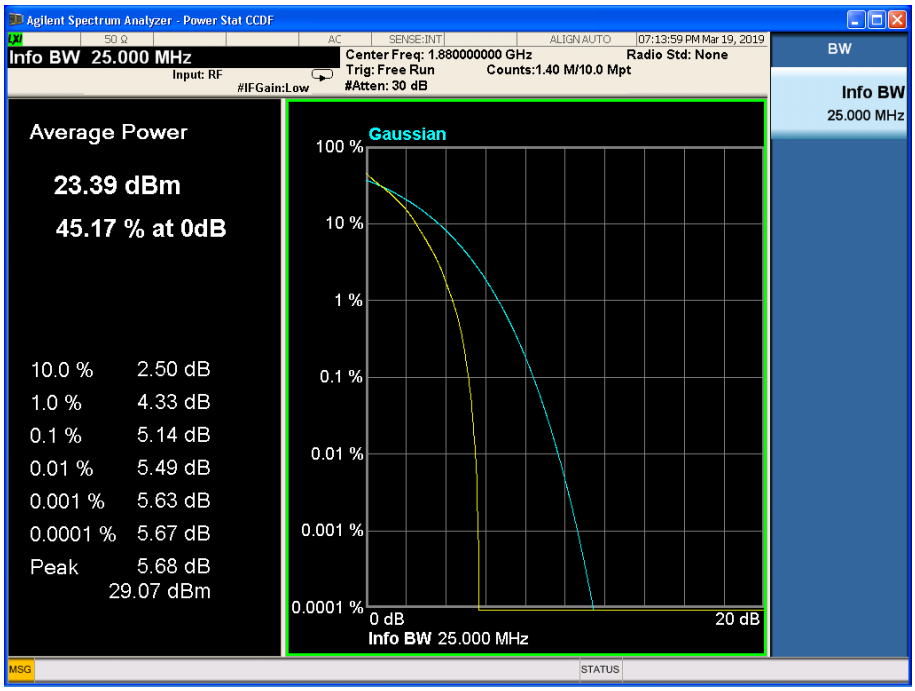
Peak-Average Ratio Plot(10MHz BW,16QAM,Band 2-mid Channel)



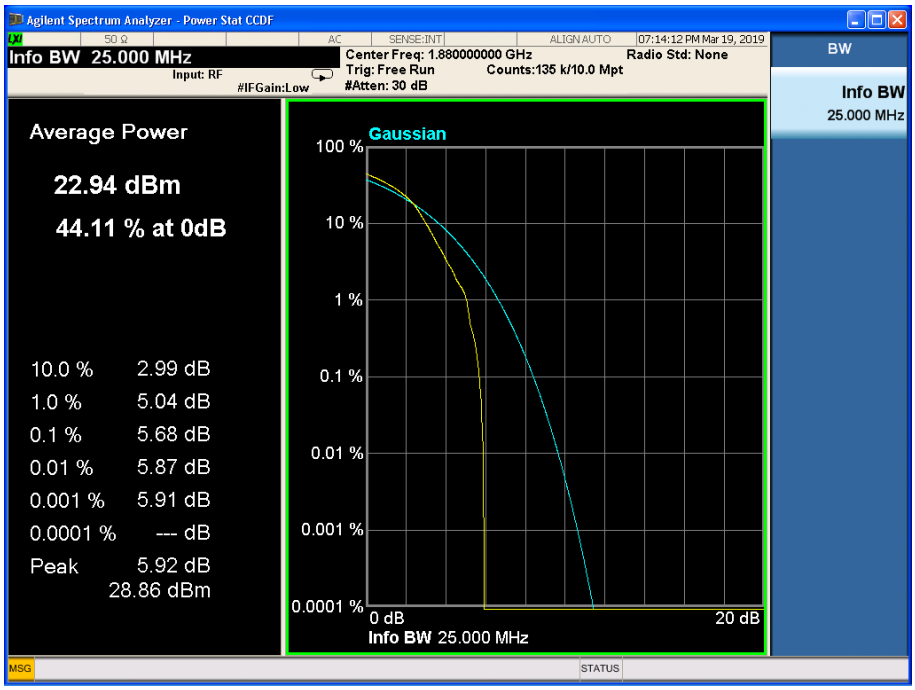
Peak-Average Ratio Plot(10MHz BW,64QAM,Band 2-mid Channel)



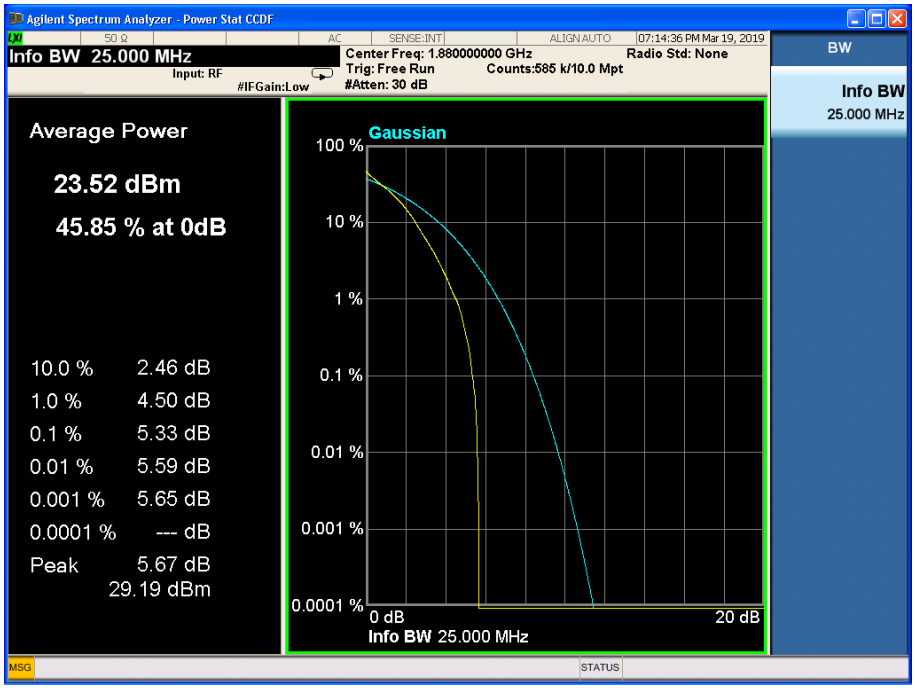
Peak-Average Ratio Plot(15MHz BW,QPSK,Band 2-mid Channel)



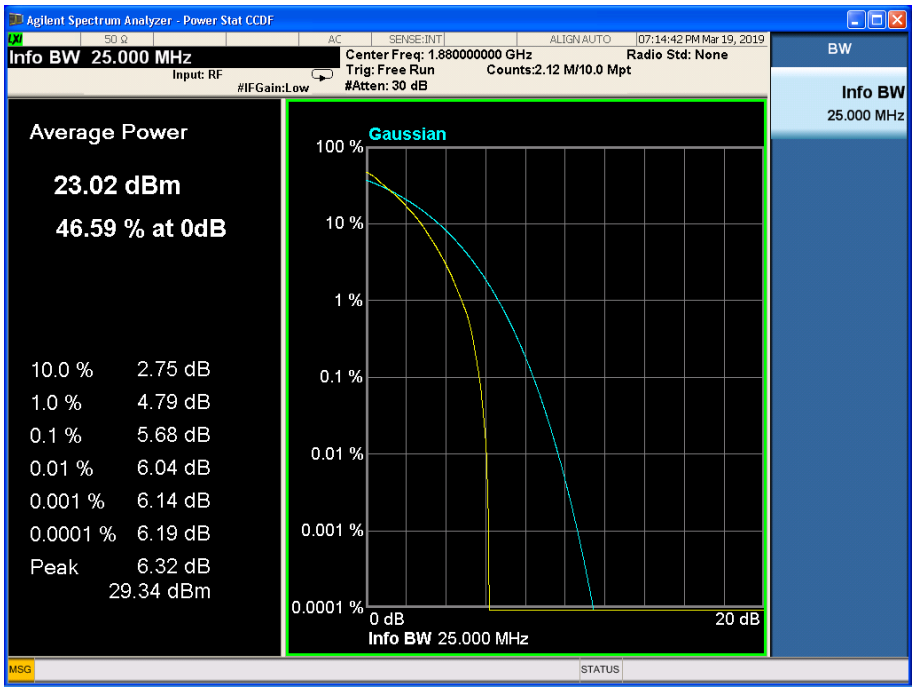
Peak-Average Ratio Plot(15MHz BW,16QAM,Band 2-mid Channel)



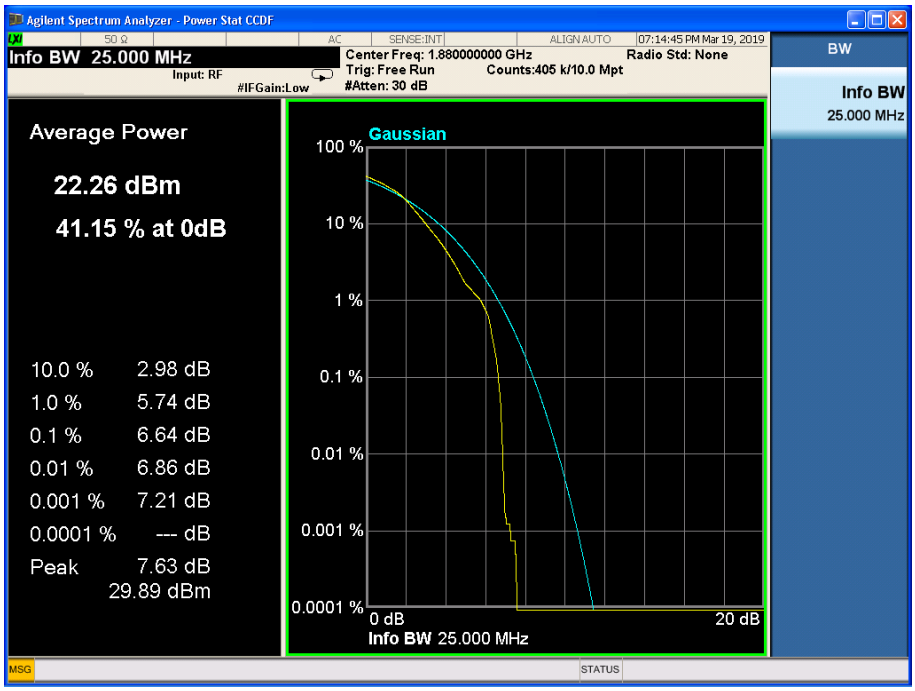
Peak-Average Ratio Plot(15MHz BW,64QAM,Band 2-mid Channel)



Peak-Average Ratio Plot(20MHz BW,QPSK,Band 2-mid Channel)



Peak-Average Ratio Plot(20MHz BW,16QAM,Band 2-mid Channel)



Peak-Average Ratio Plot(20MHz BW,64QAM,Band 2-mid Channel)

4 Spurious Emissions at antenna terminal

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Conducted Spurious Plot
						QPSK
2	1860	18700	20	1	0	Fig.1

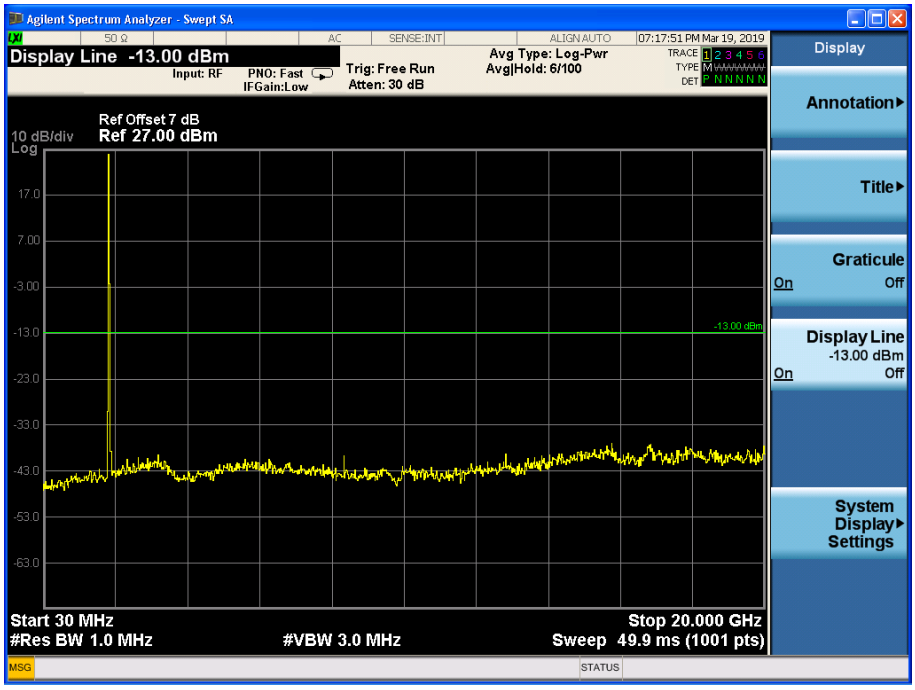


Fig.1

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Conducted Spurious Plot
						QPSK
2	1880	18900	20	1	0	Fig.1

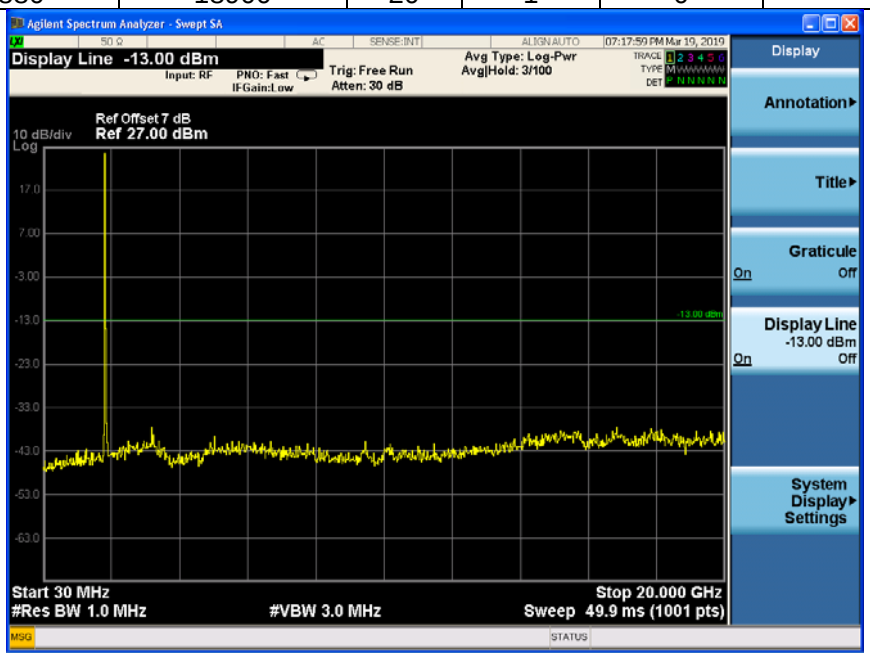


Fig.1

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Conducted Spurious Plot
						QPSK
2	1900	19100	20	1	0	Fig.1

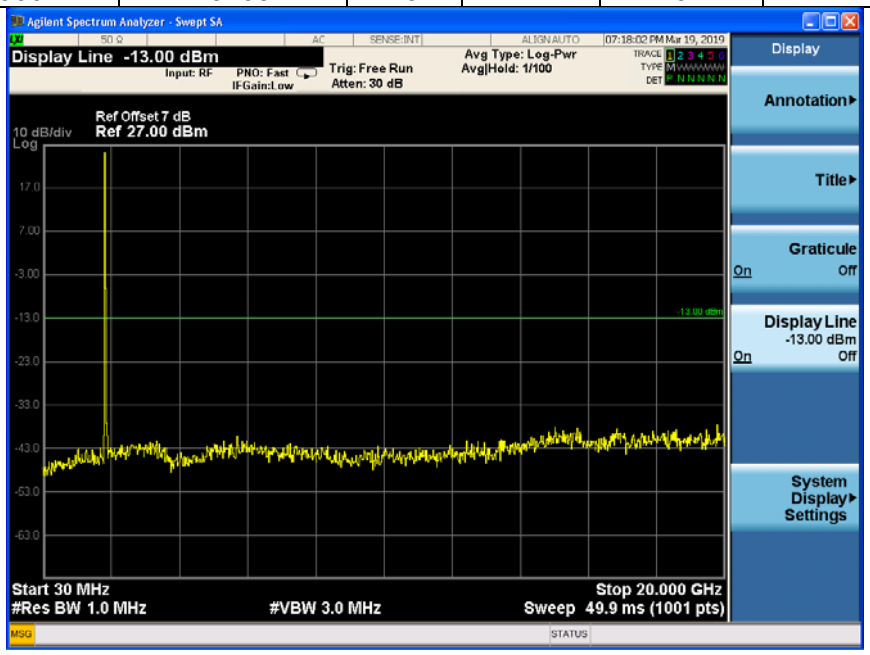


Fig.1

5 Band Edges Compliance

Test result

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1850.7	18607	1.4	1	0	Fig.1
				6	0	Fig.4

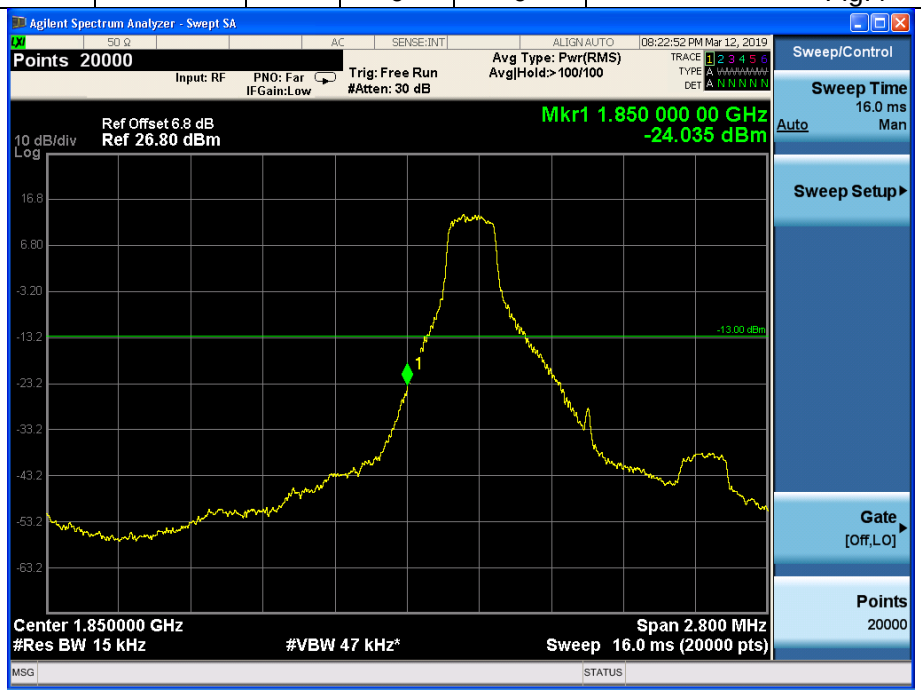


Fig.1

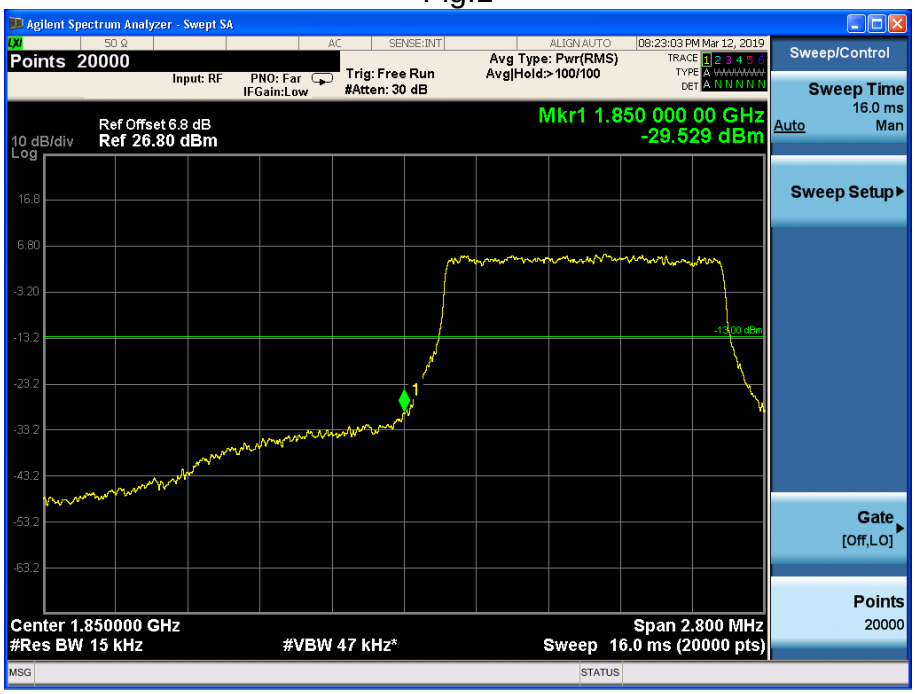


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1909.3	19193	1.4	1	5	Fig.1
				6	0	Fig.4

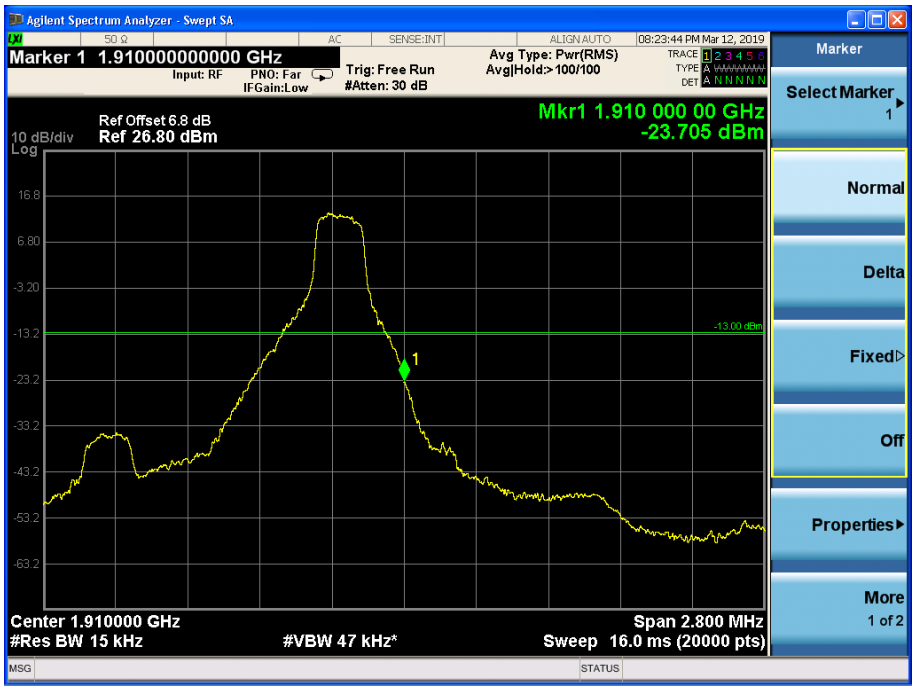


Fig.1

Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1851.5	18615	3	1	0	Fig.1
				15	0	Fig.4

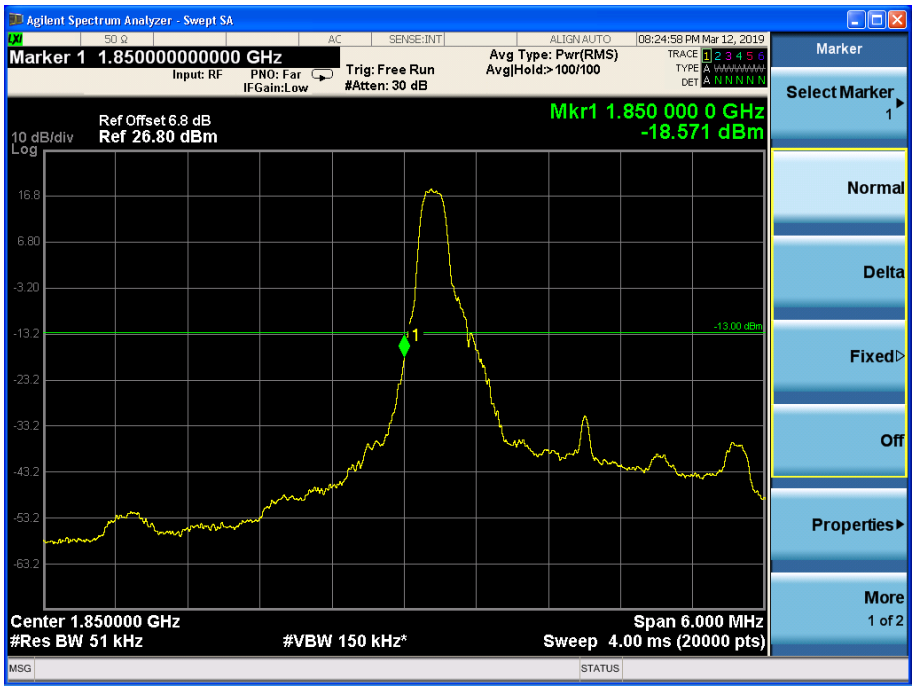


Fig.1

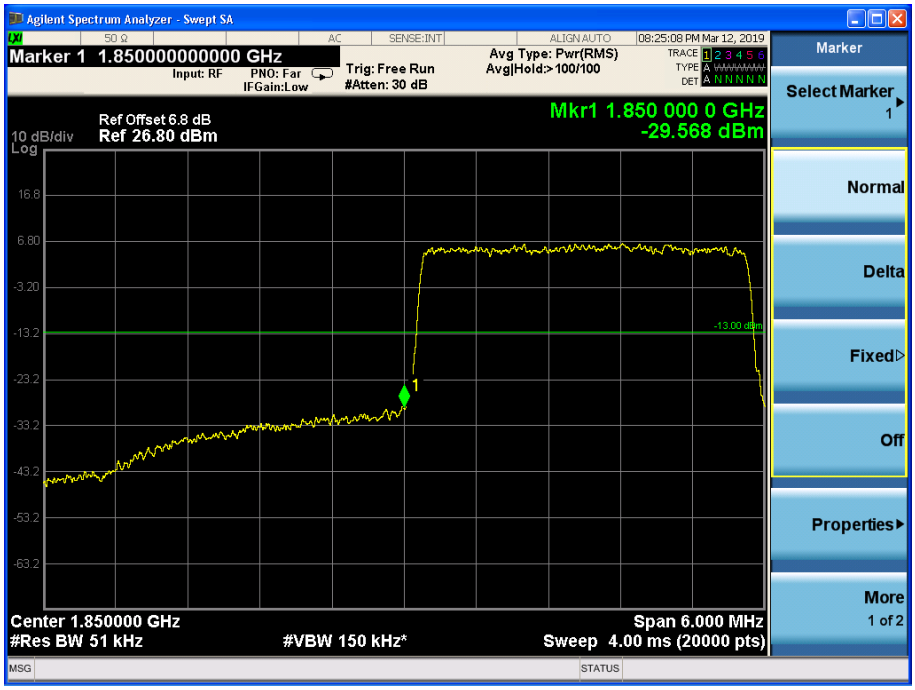


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1908.5	19185	3	1	14	Fig.1
				15	0	Fig.4

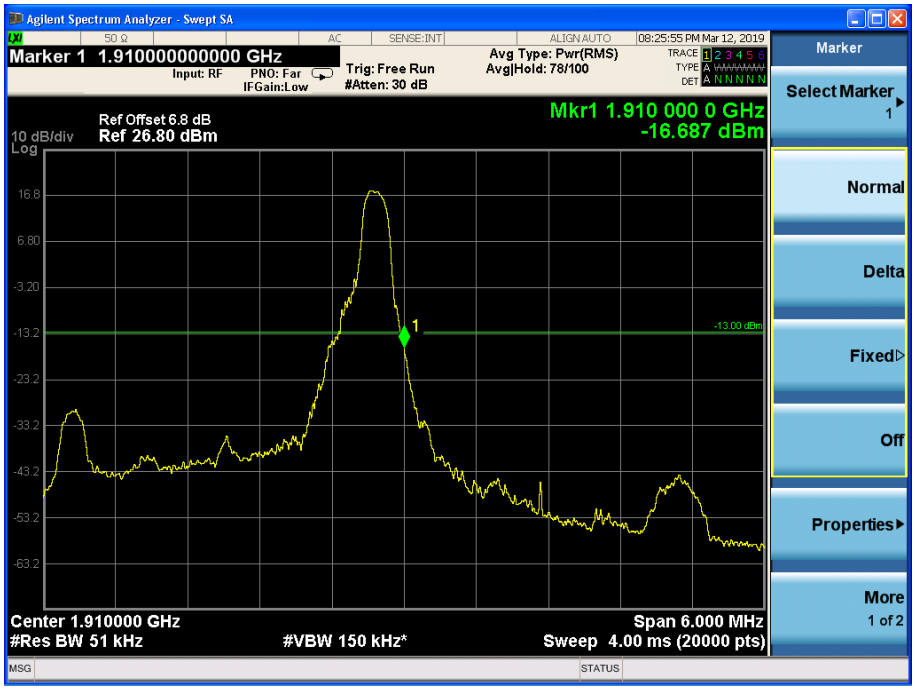


Fig.1

Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1852.5	18625	5	1	0	Fig.1
				25	0	Fig.4

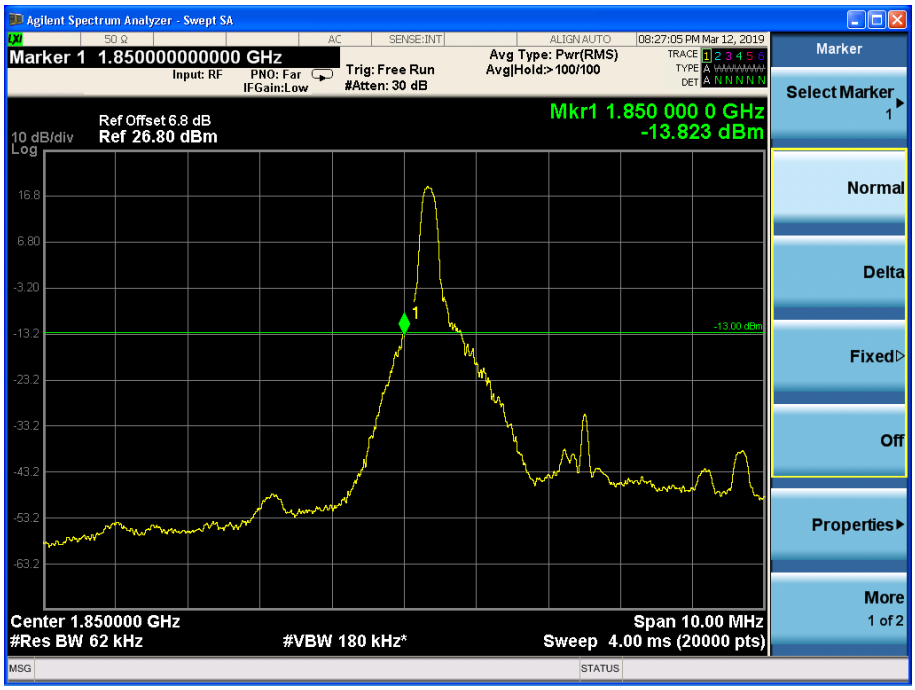


Fig.1

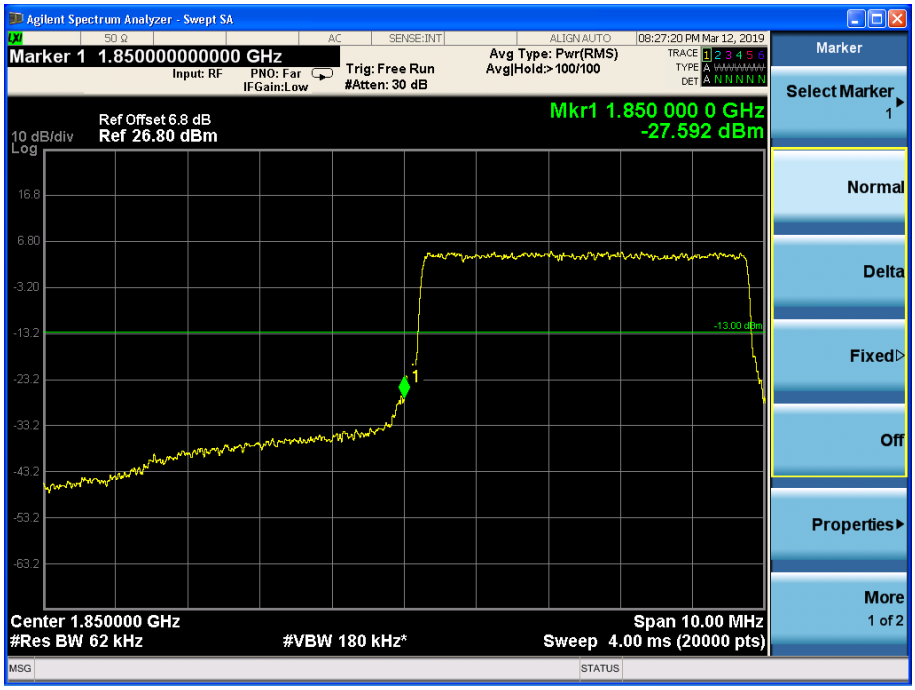


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1907.5	19175	5	1	24	Fig.1
				25	0	Fig.4

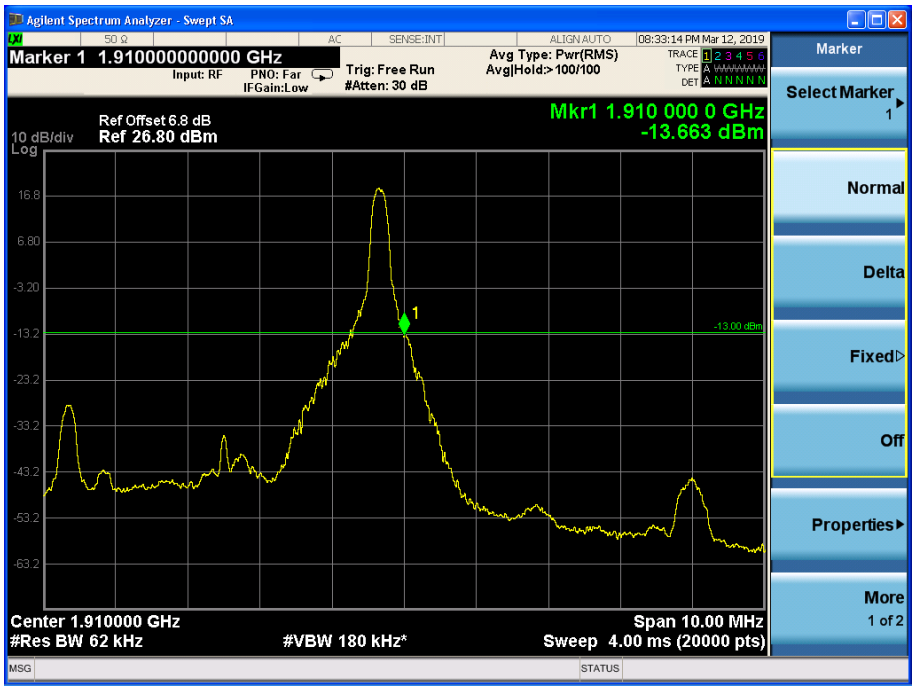


Fig.1

Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1855	18650	10	1	0	Fig.1
				50	0	Fig.4

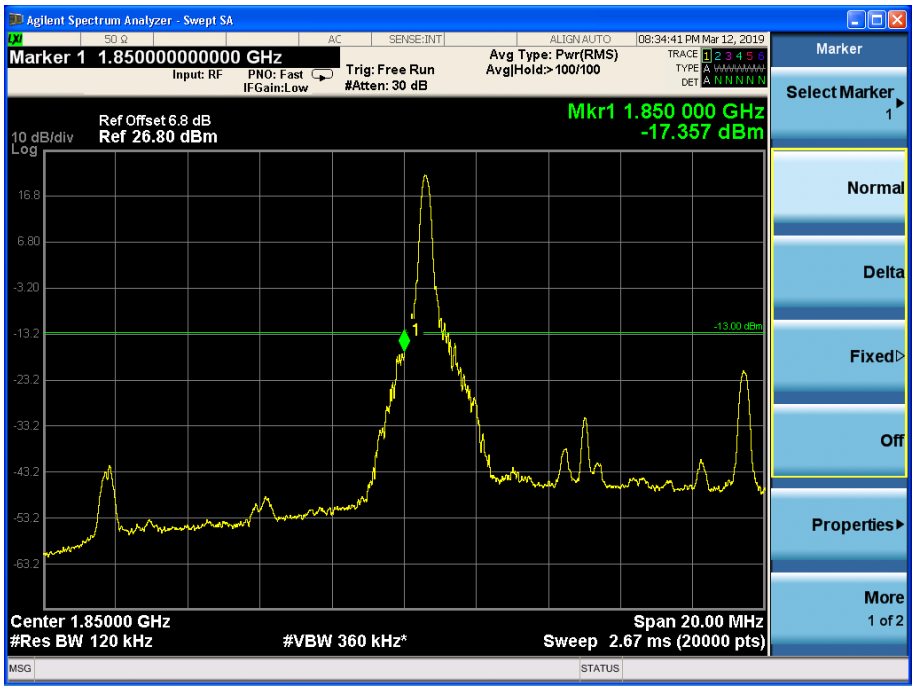


Fig.1

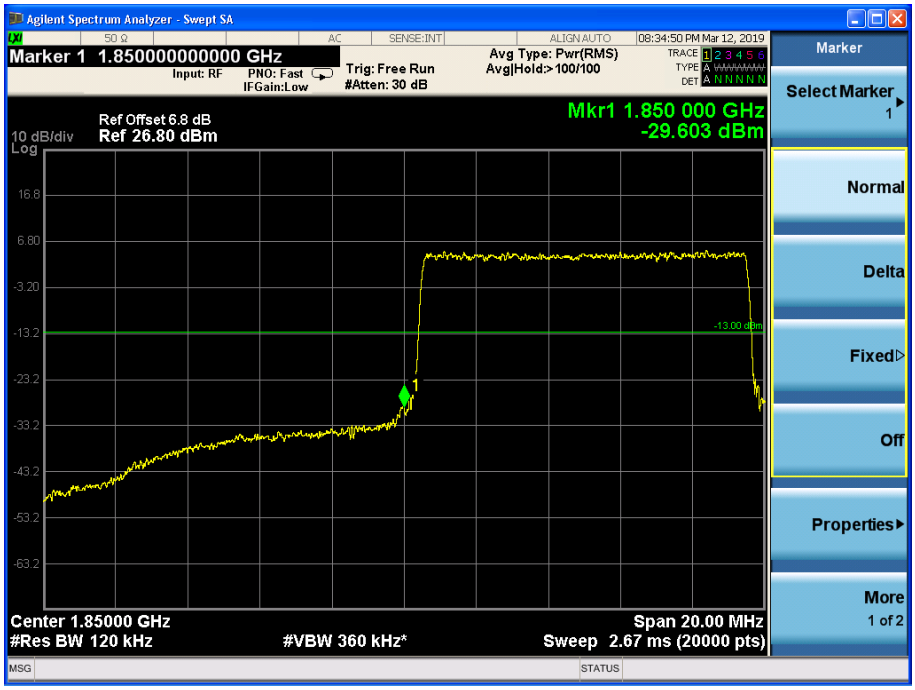


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1905	19150	10	1	49	Fig.1
				50	0	Fig.4

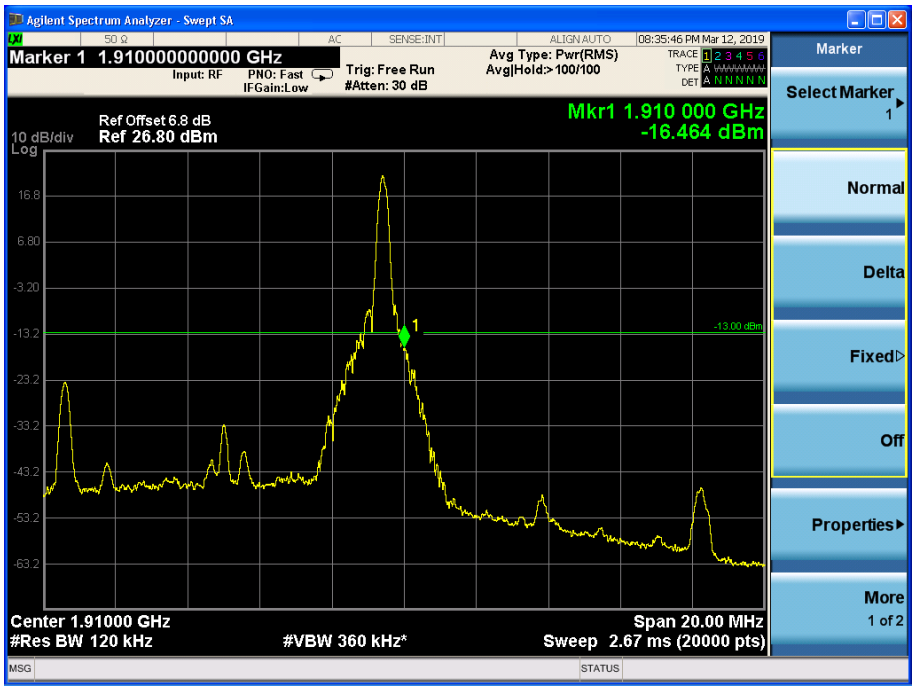


Fig.1

Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1857.5	18675	15	1	0	Fig.1
				75	0	Fig.4

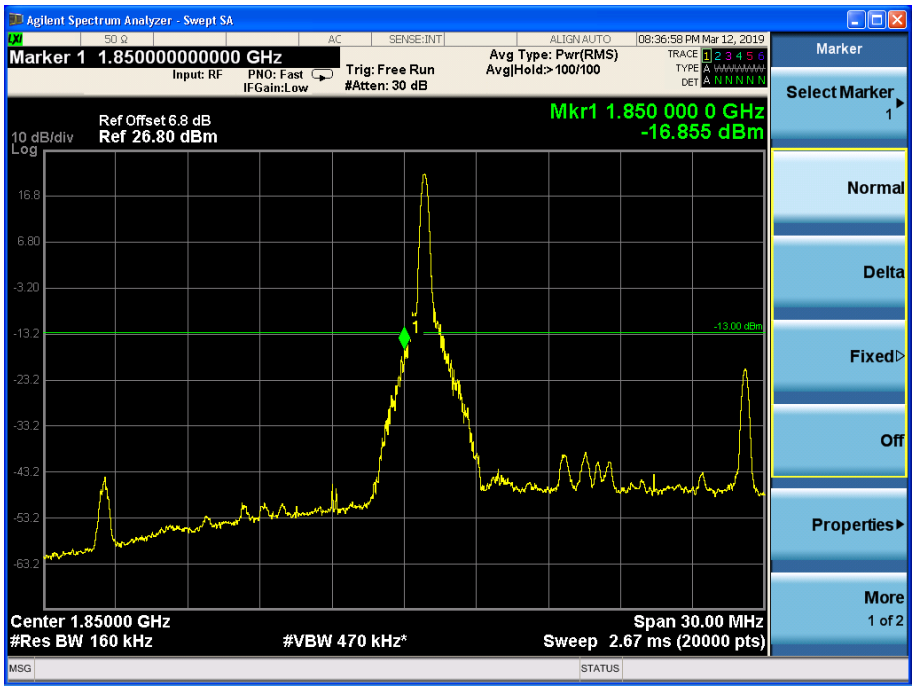


Fig.1

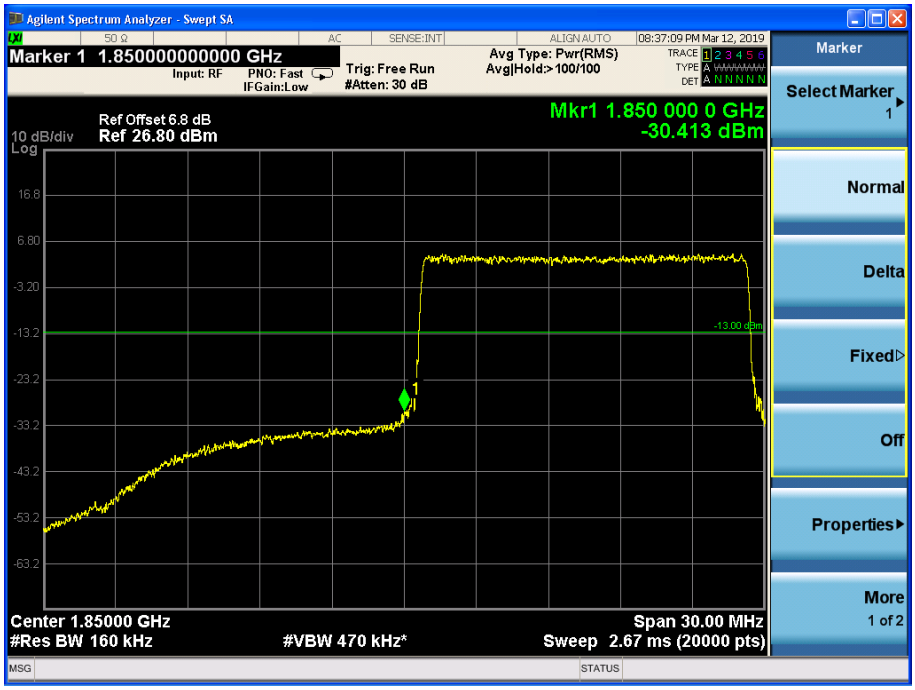


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1902.5	19125	15	1	74	Fig.1
				75	0	Fig.4

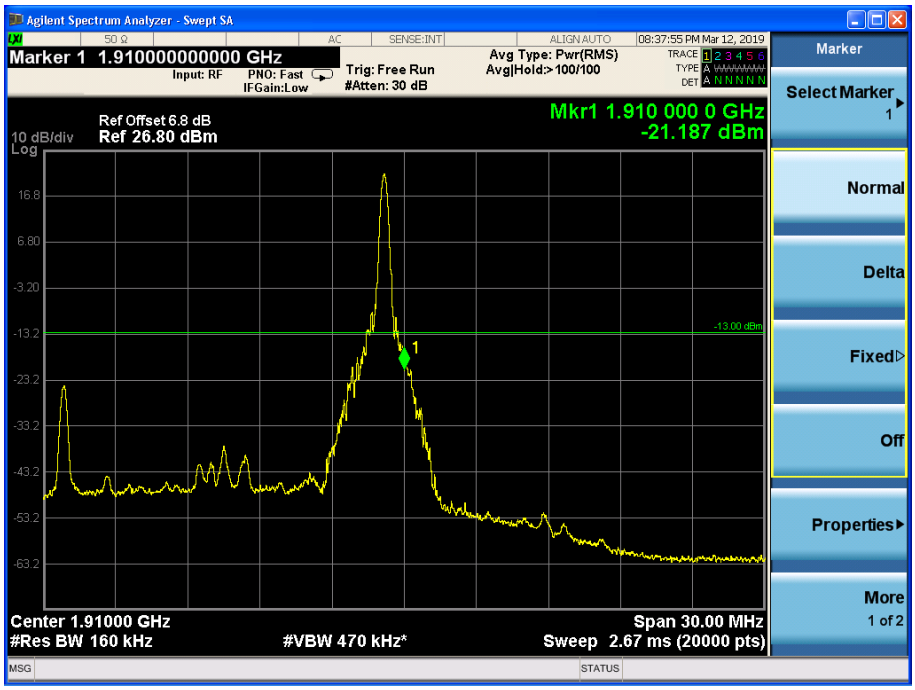


Fig.1

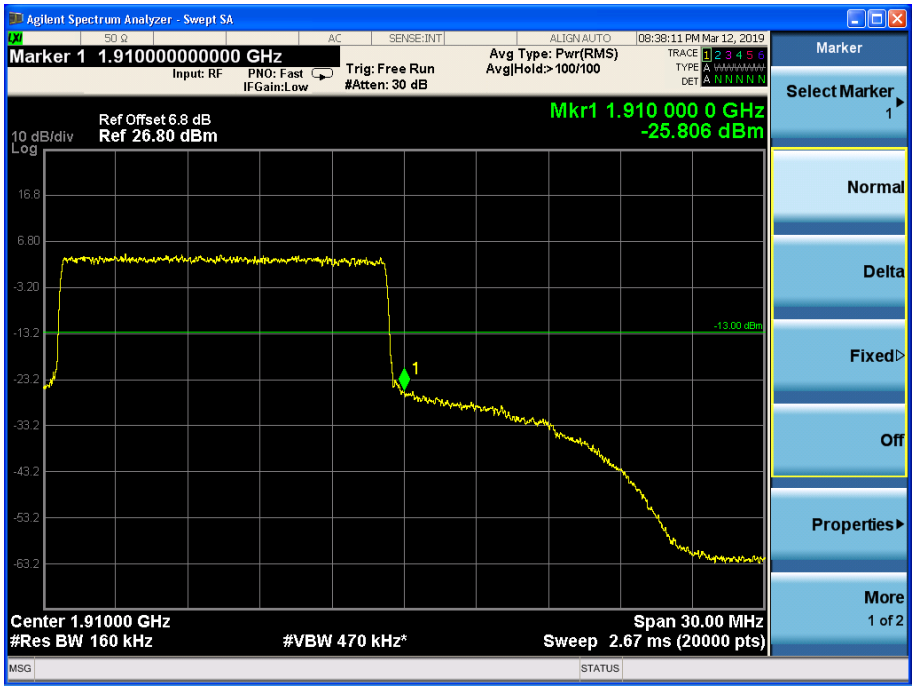


Fig.4

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1860	18700	20	1	0	Fig.1
				100	0	Fig.4

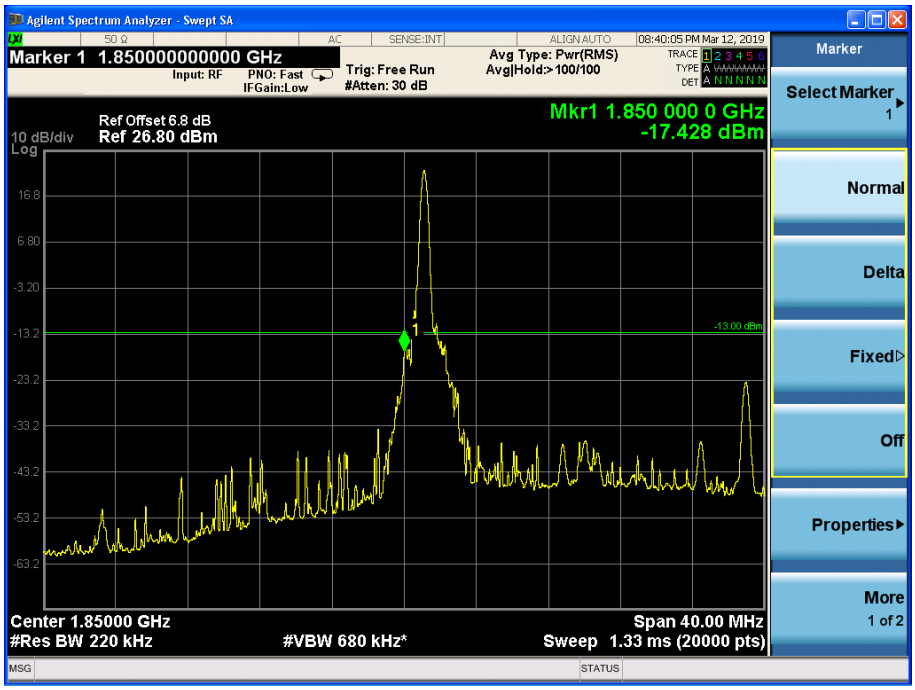


Fig.1

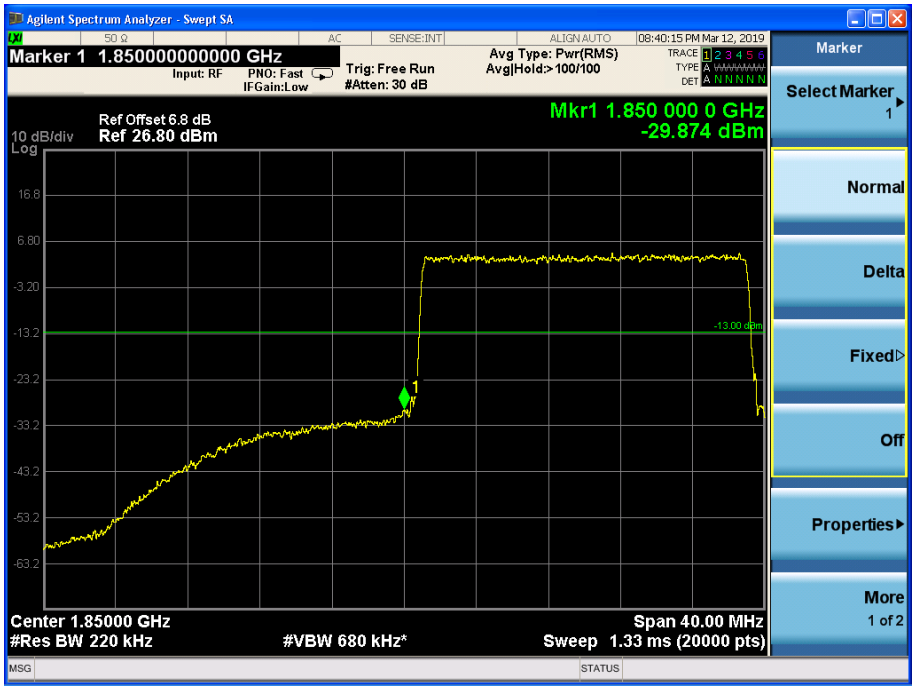


Fig.4

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Band Edges Plot
						QPSK
2	1900	19100	20	1	99	Fig.1
				100	0	Fig.4

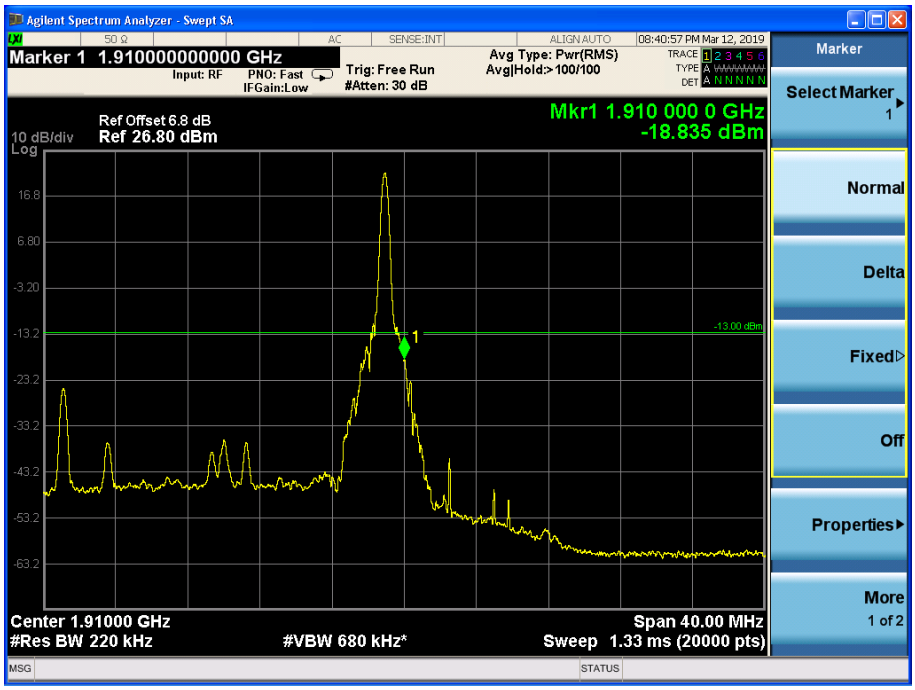


Fig.1

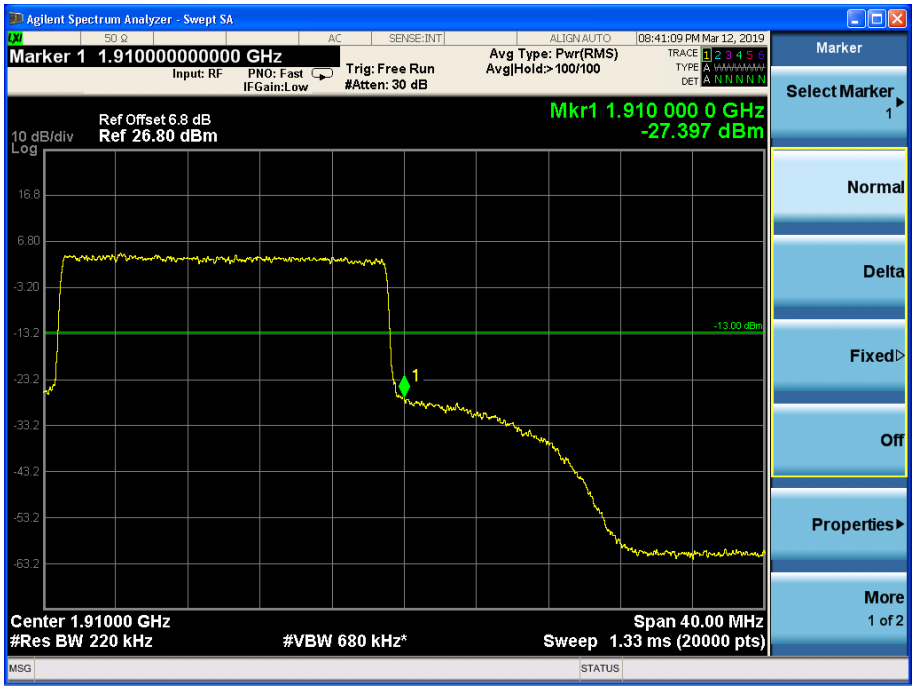


Fig.4

6 Frequency Stability

Test result:

Temperature(°C)	Voltage	Test Result (ppm) Band2 Low Channel					
		1.4M	3M	5M	10M	15M	20M
0	NV	0.001	0.012	-0.006	0.011	-0.009	-0.012
+10	NV	0.005	-0.002	0.006	0.010	0.004	-0.012
+20	NV	-0.003	-0.013	-0.012	-0.009	-0.004	0.008
+30	NV	0.001	0.000	0.017	-0.002	-0.009	0.002
+40	NV	-0.009	0.015	-0.004	0.011	0.001	0.015
+50	NV	0.014	-0.011	-0.004	-0.008	0.014	0.008
+55	NV	0.002	0.003	0.001	-0.011	0.010	-0.009
+20	LV	0.010	-0.002	-0.005	-0.005	-0.001	0.005
+20	HV	0.008	-0.006	-0.003	-0.014	-0.013	0.009

Temperature(°C)	Voltage	Test Result (ppm) Band2 High Channel					
		1.4M	3M	5M	10M	15M	20M
0	NV	-0.004	0.001	0.010	0.005	-0.001	0.015
+10	NV	0.006	0.006	-0.009	-0.011	-0.006	-0.012
+20	NV	0.009	-0.010	-0.006	0.004	-0.001	0.018
+30	NV	0.000	0.011	0.002	-0.003	0.006	0.005
+40	NV	0.013	-0.014	-0.001	-0.005	0.002	0.008
+50	NV	-0.003	0.004	-0.003	-0.004	-0.005	-0.013
+55	NV	-0.010	-0.002	0.001	0.011	-0.006	-0.008
+20	LV	-0.010	-0.014	0.001	0.009	0.006	-0.002
+20	HV	0.009	0.005	-0.008	0.000	0.004	0.006

APPENDIX A – TEST DATA OF CONDUCTED EMISSION

LTE Band 4

1 RF Power Output

Antenna Gain=-0.11dBi

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1710.7	19957	1.4	1	0	23.21	0.204
				1	5	23.21	0.204
				3	2	22.30	0.166
				6	0	22.21	0.162
	1732.5	20175		1	0	23.12	0.200
				1	5	23.12	0.200
				3	2	22.31	0.166
				6	0	22.22	0.163
	1754.3	20393		1	0	23.14	0.201
				1	5	23.14	0.201
				3	2	22.18	0.161
				6	0	22.13	0.159
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1710.7	19957	1.4	1	0	22.51	0.174
				1	5	22.45	0.171
				3	2	21.50	0.138
				6	0	21.40	0.135
	1732.5	20175		1	0	22.50	0.173
				1	5	22.46	0.172
				3	2	21.51	0.138
				6	0	21.40	0.135
	1754.3	20393		1	0	22.49	0.173
				1	5	22.44	0.171
				3	2	21.40	0.135
				6	0	21.37	0.134
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1710.7	19957	1.4	1	0	22.71	0.182
				1	5	22.68	0.181
				3	2	21.50	0.138
				6	0	21.42	0.135
	1732.5	20175		1	0	22.68	0.181
				1	5	22.60	0.177
				3	2	21.47	0.137
				6	0	21.40	0.135
	1754.3	20393		1	0	22.58	0.177
				1	5	22.54	0.175
				3	2	21.39	0.134
				6	0	21.35	0.133

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1711.5	19965	3	1	0	23.26	0.207
				1	14	23.26	0.207
				8	4	22.35	0.167
				15	0	22.30	0.166
	1732.5	20175		1	0	23.24	0.206
				1	14	23.24	0.206
				8	4	22.43	0.171
				15	0	22.34	0.167
	1753.5	20385		1	0	23.25	0.206
				1	14	23.25	0.206
				8	4	22.29	0.165
				15	0	22.24	0.163
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1711.5	19965	3	1	0	22.56	0.176
				1	14	22.50	0.173
				8	4	21.55	0.139
				15	0	21.49	0.137
	1732.5	20175		1	0	22.62	0.178
				1	14	22.58	0.177
				8	4	21.63	0.142
				15	0	21.52	0.138
	1753.5	20385		1	0	22.60	0.177
				1	14	22.55	0.175
				8	4	21.51	0.138
				15	0	21.48	0.137
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1711.5	19965	3	1	0	22.76	0.184
				1	14	22.73	0.183
				8	4	21.55	0.139
				15	0	21.51	0.138
	1732.5	20175		1	0	22.80	0.186
				1	14	22.72	0.182
				8	4	21.59	0.141
				15	0	21.52	0.138
	1753.5	20385		1	0	22.69	0.181
				1	14	22.65	0.179
				8	4	21.50	0.138
				15	0	21.46	0.136

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1712.5	19975	5	1	0	23.34	0.210
				1	24	23.34	0.210
				12	6	22.43	0.171
				25	0	22.38	0.169
	1732.5	20175		1	0	23.26	0.207
				1	24	23.26	0.207
				12	6	22.45	0.171
				25	0	22.36	0.168
	1752.5	20375		1	0	23.35	0.211
				1	24	23.35	0.211
				12	6	22.39	0.169
				25	0	22.34	0.167
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1712.5	19975	5	1	0	22.64	0.179
				1	24	22.58	0.177
				12	6	21.63	0.142
				25	0	21.57	0.140
	1732.5	20175		1	0	22.64	0.179
				1	24	22.60	0.177
				12	6	21.65	0.143
				25	0	21.54	0.139
	1752.5	20375		1	0	22.70	0.182
				1	24	22.65	0.179
				12	6	21.61	0.141
				25	0	21.58	0.140
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1712.5	19975	5	1	0	22.84	0.187
				1	24	22.81	0.186
				12	6	21.63	0.142
				25	0	21.59	0.141
	1732.5	20175		1	0	22.82	0.187
				1	24	22.74	0.183
				12	6	21.61	0.141
				25	0	21.54	0.139
	1752.5	20375		1	0	22.79	0.185
				1	24	22.75	0.184
				12	6	21.60	0.141
				25	0	21.56	0.140

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1715	20000	10	1	0	23.43	0.215
				1	49	23.43	0.215
				24	12	22.52	0.174
				50	0	22.47	0.172
	1732.5	20175		1	0	23.32	0.209
				1	49	23.32	0.209
				24	12	22.51	0.174
				50	0	22.42	0.170
	1750	20350		1	0	23.40	0.213
				1	49	23.40	0.213
				24	12	22.44	0.171
				50	0	22.39	0.169
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1715	20000	10	1	0	22.73	0.183
				1	49	22.67	0.180
				24	12	21.72	0.145
				50	0	21.66	0.143
	1732.5	20175		1	0	22.70	0.182
				1	49	22.66	0.180
				24	12	21.71	0.145
				50	0	21.60	0.141
	1750	20350		1	0	22.75	0.184
				1	49	22.70	0.182
				24	12	21.66	0.143
				50	0	21.63	0.142
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1715	20000	10	1	0	22.93	0.191
				1	49	22.90	0.190
				24	12	21.72	0.145
				50	0	21.68	0.144
	1732.5	20175		1	0	22.88	0.189
				1	49	22.80	0.186
				24	12	21.67	0.143
				50	0	21.60	0.141
	1750	20350		1	0	22.84	0.187
				1	49	22.80	0.186
				24	12	21.65	0.143
				50	0	21.61	0.141

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1717.5	20025	15	1	0	23.51	0.219
				1	74	23.51	0.219
				40	18	22.60	0.177
				75	0	22.55	0.175
	1732.5	20175		1	0	23.39	0.213
				1	74	23.39	0.213
				40	18	22.58	0.177
				75	0	22.49	0.173
	1747.5	20325		1	0	23.41	0.214
				1	74	23.41	0.214
				40	18	22.45	0.171
				75	0	22.40	0.169
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1717.5	20025	15	1	0	22.81	0.186
				1	74	22.75	0.184
				40	18	21.80	0.148
				75	0	21.74	0.146
	1732.5	20175		1	0	22.80	0.186
				1	74	22.73	0.183
				40	18	21.78	0.147
				75	0	21.67	0.143
	1747.5	20325		1	0	22.76	0.184
				1	74	22.71	0.182
				40	18	21.67	0.143
				75	0	21.64	0.142
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1717.5	20025	15	1	0	23.01	0.195
				1	74	22.98	0.194
				40	18	21.80	0.148
				75	0	21.76	0.146
	1732.5	20175		1	0	22.98	0.194
				1	74	22.87	0.189
				40	18	21.74	0.146
				75	0	21.67	0.143
	1747.5	20325		1	0	22.85	0.188
				1	74	22.81	0.186
				40	18	21.66	0.143
				75	0	21.62	0.142

Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
QPSK	1720	20050	20	1	0	23.72	0.230
				1	99	23.72	0.230
				50	25	22.77	0.185
				100	0	22.72	0.182
	1732.5	20175		1	0	23.78	0.233
				1	99	23.78	0.233
				50	25	22.82	0.187
				100	0	22.73	0.183
	1745	20300		1	0	23.79	0.233
				1	99	23.79	0.233
				50	25	22.72	0.182
				100	0	22.67	0.180
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
16QAM	1720	20050	20	1	0	22.98	0.194
				1	99	22.92	0.191
				50	25	21.97	0.153
				100	0	21.91	0.151
	1732.5	20175		1	0	23.01	0.195
				1	99	22.97	0.193
				50	25	22.02	0.155
				100	0	21.91	0.151
	1745	20300		1	0	23.03	0.196
				1	99	22.98	0.194
				50	25	21.94	0.152
				100	0	21.91	0.151
Modulation	Carrier frequency (MHz)	UL Channel	BW	RB Size	RB Offset	Conducted power (dBm)	EIRP (W)
64QAM	1720	20050	20	1	0	23.18	0.203
				1	99	23.15	0.201
				50	25	21.97	0.153
				100	0	21.93	0.152
	1732.5	20175		1	0	23.19	0.203
				1	99	23.11	0.200
				50	25	21.98	0.154
				100	0	21.91	0.151
	1745	20300		1	0	23.12	0.200
				1	99	23.08	0.198
				50	25	21.93	0.152
				100	0	21.89	0.151

2 Occupied Bandwidth

Test result

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1710.7	19957	1.4	6	0	1.1055	Fig.1	1.1033	Fig.2	1.1033	Fig.3
4	1732.5	20175	1.4	6	0	1.1025	Fig.4	1.0958	Fig.5	1.0955	Fig.6
4	1754.3	20393	1.4	6	0	1.1021	Fig.7	1.1001	Fig.8	1.1013	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1710.7	19957	1.4	6	0	1.330	Fig.1	1.319	Fig.2	1.301	Fig.3
4	1732.5	20175	1.4	6	0	1.317	Fig.4	1.326	Fig.5	1.313	Fig.6
4	1754.3	20393	1.4	6	0	1.331	Fig.7	1.320	Fig.8	1.307	Fig.9

Fig.1

Fig.2

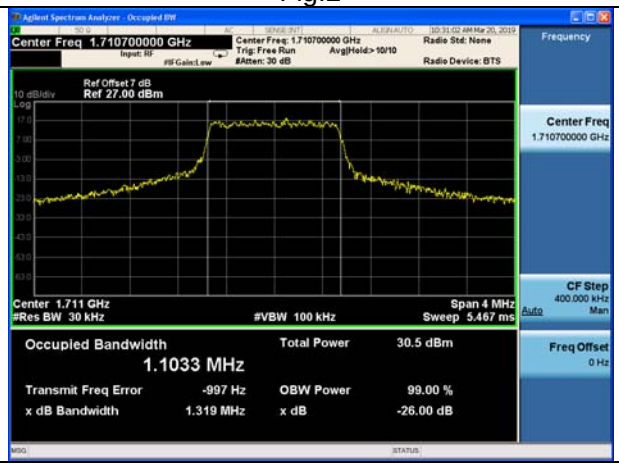


Fig.3

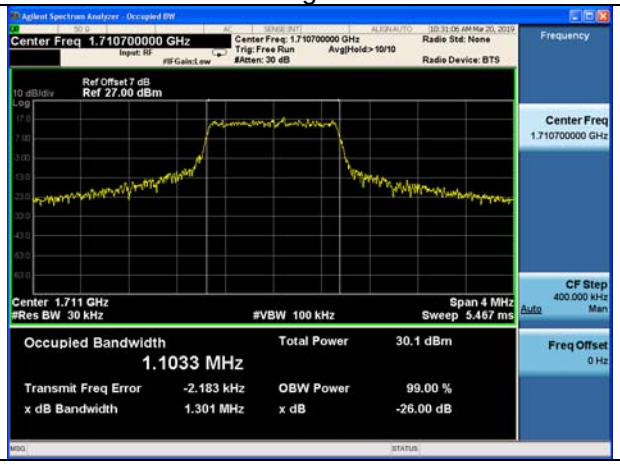


Fig.4

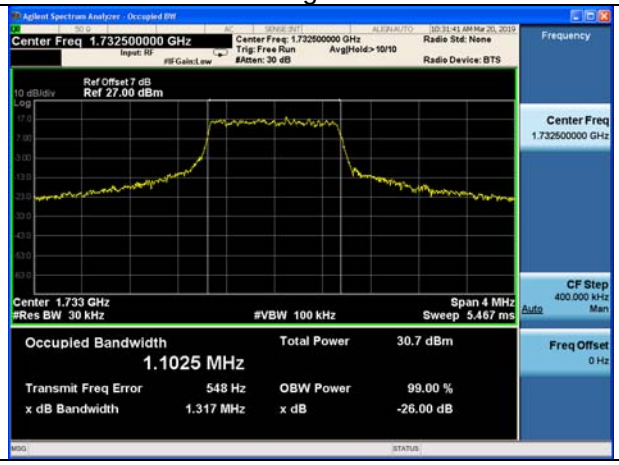


Fig.5

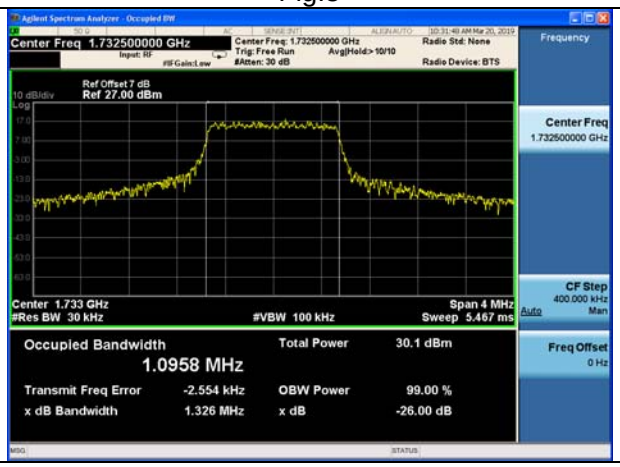


Fig.6

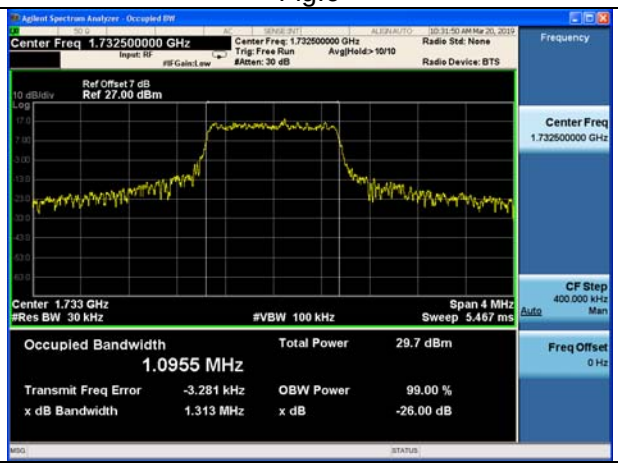


Fig.7

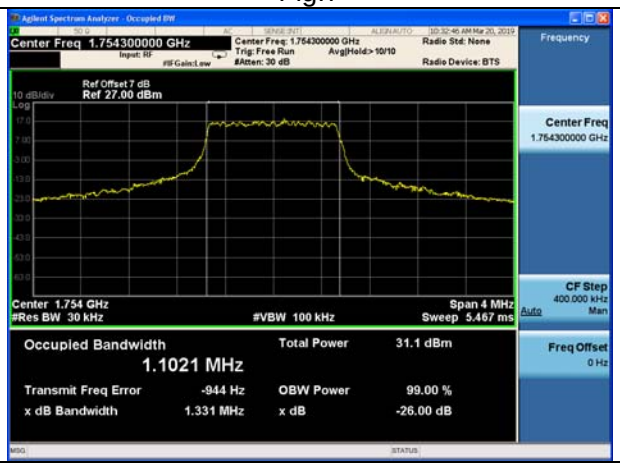


Fig.8

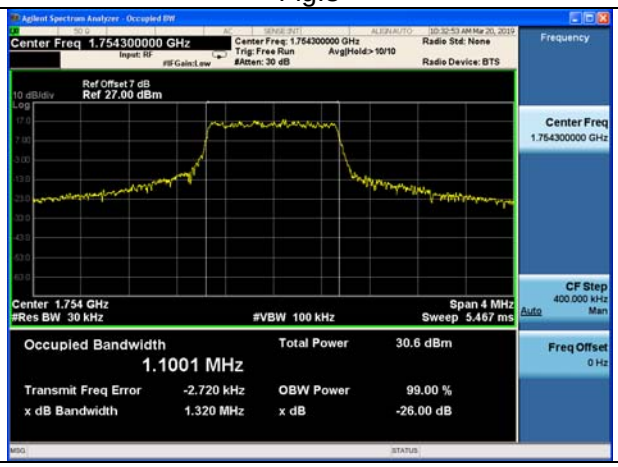
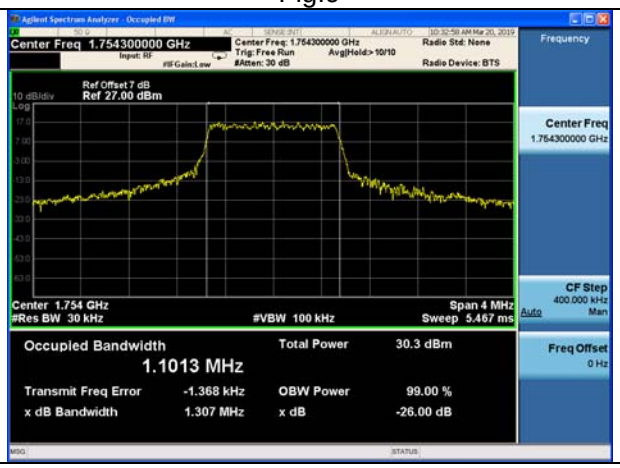


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1711.5	19965	3	15	0	2.7723	Fig.1	2.7713	Fig.2	2.7517	Fig.3
4	1732.5	20175	3	15	0	2.7607	Fig.4	2.7626	Fig.5	2.7554	Fig.6
4	1753.5	20385	3	15	0	2.7617	Fig.7	2.7628	Fig.8	2.7598	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1711.5	19965	3	15	0	3.501	Fig.1	3.313	Fig.2	3.429	Fig.3
4	1732.5	20175	3	15	0	3.508	Fig.4	3.527	Fig.5	3.332	Fig.6
4	1753.5	20385	3	15	0	3.431	Fig.7	3.323	Fig.8	3.354	Fig.9

Fig.1

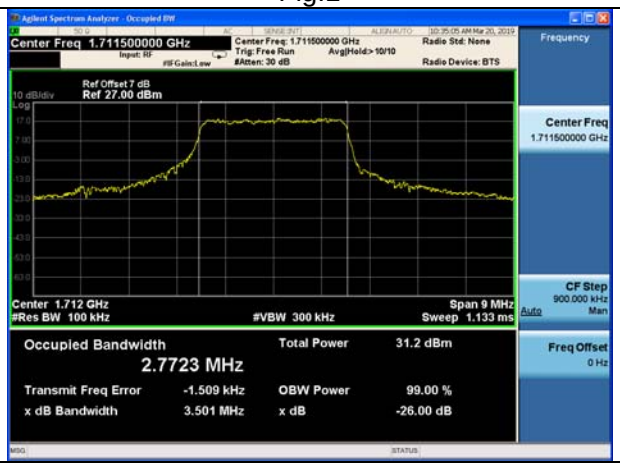


Fig.2

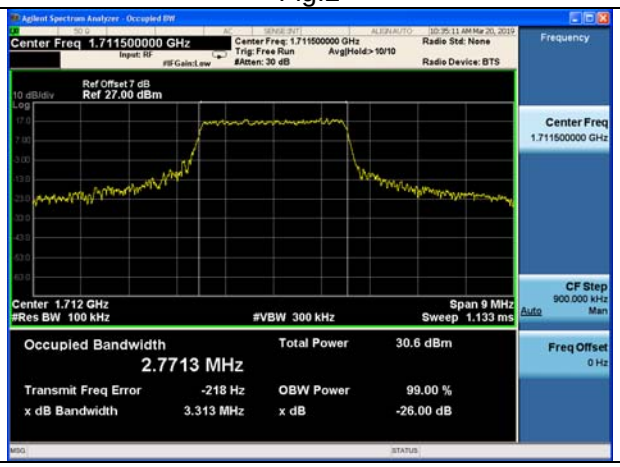


Fig.3

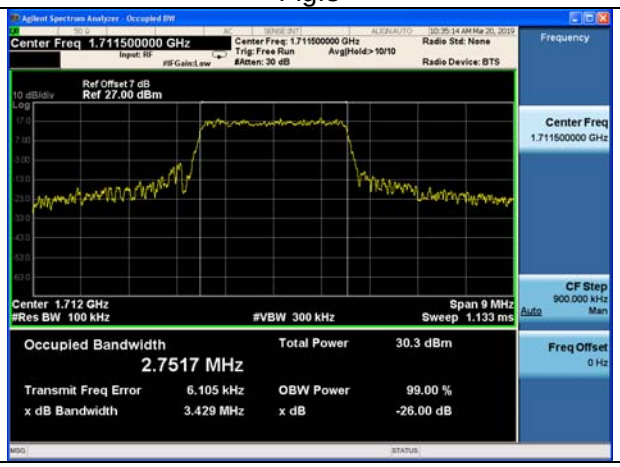


Fig.4

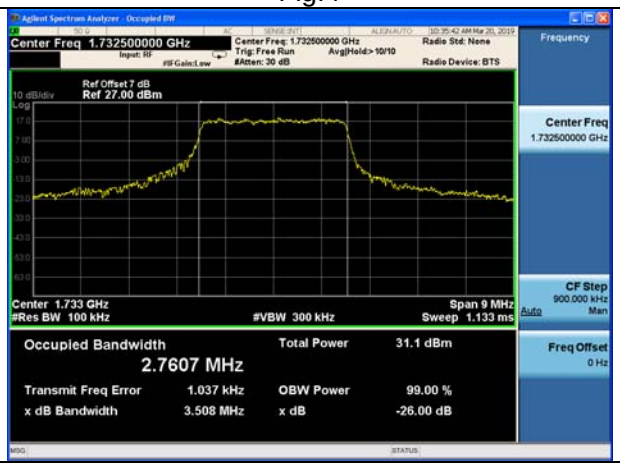


Fig.5

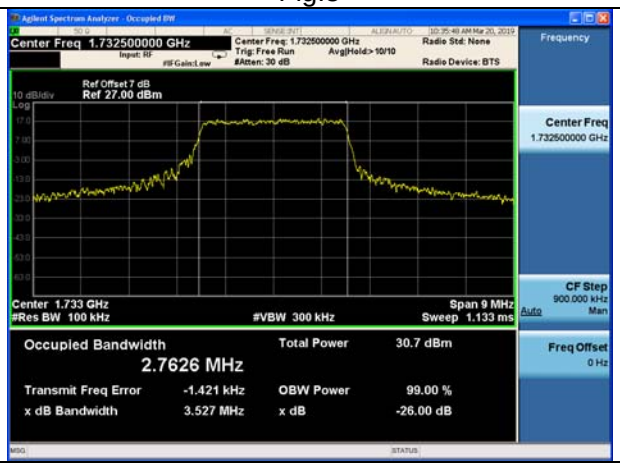


Fig.6

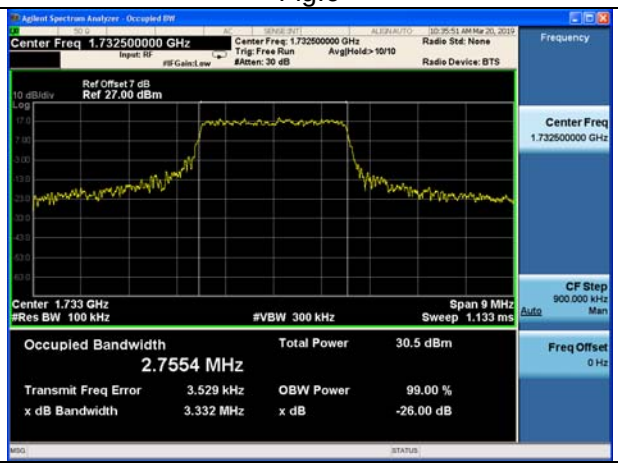


Fig.7

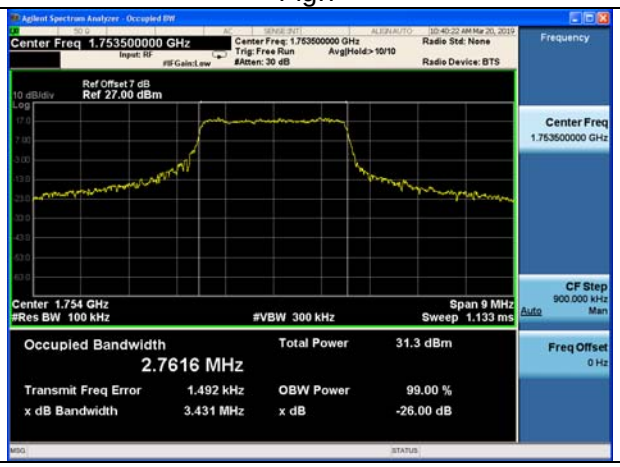


Fig.8

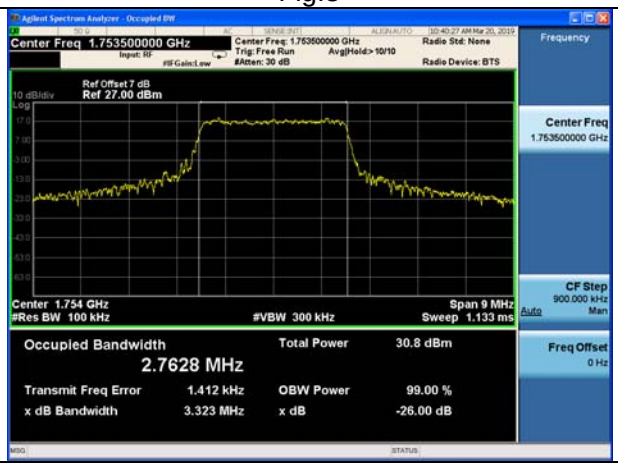
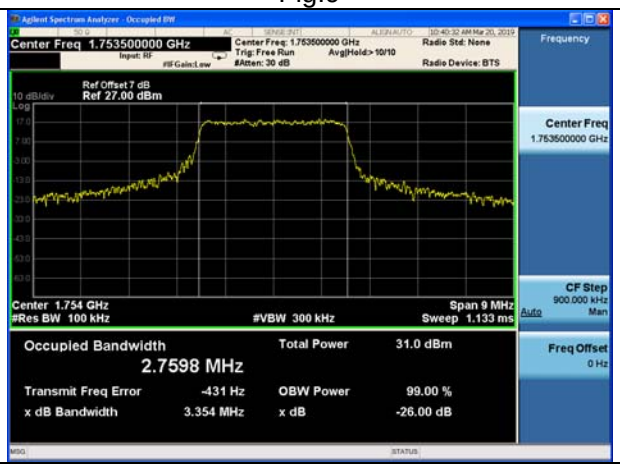


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1712.5	19975	5	25	0	4.5183	Fig.1	4.5226	Fig.2	4.5089	Fig.3
4	1732.5	20175	5	25	0	4.5241	Fig.4	4.5134	Fig.5	4.5171	Fig.6
4	1752.5	20375	5	25	0	4.5217	Fig.7	4.5167	Fig.8	4.5202	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1712.5	19975	5	25	0	5.244	Fig.1	5.269	Fig.2	5.088	Fig.3
4	1732.5	20175	5	25	0	5.261	Fig.4	5.153	Fig.5	5.217	Fig.6
4	1752.5	20375	5	25	0	5.302	Fig.7	5.231	Fig.8	5.268	Fig.9

Fig.1

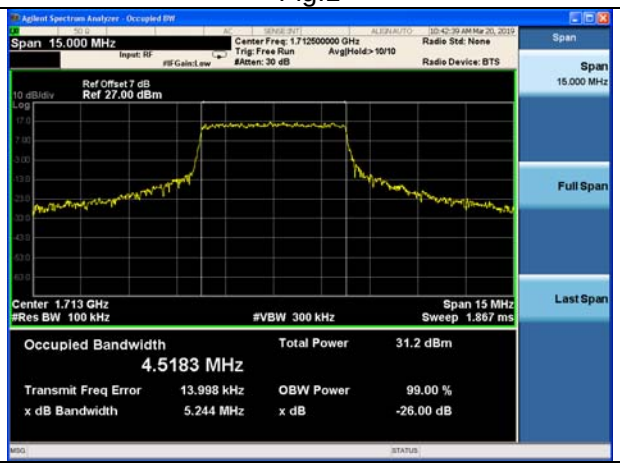


Fig.2

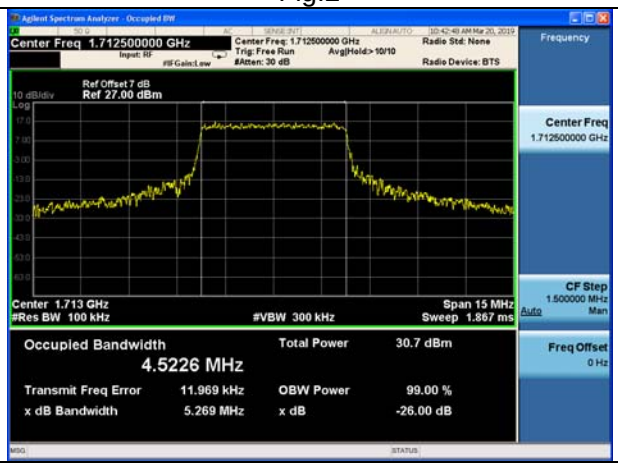


Fig.3

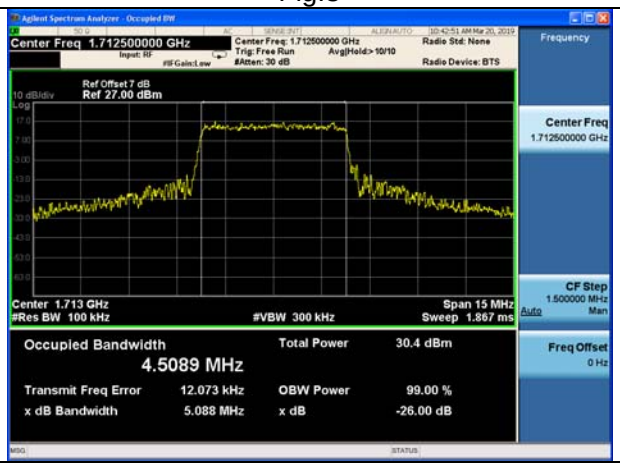


Fig.4

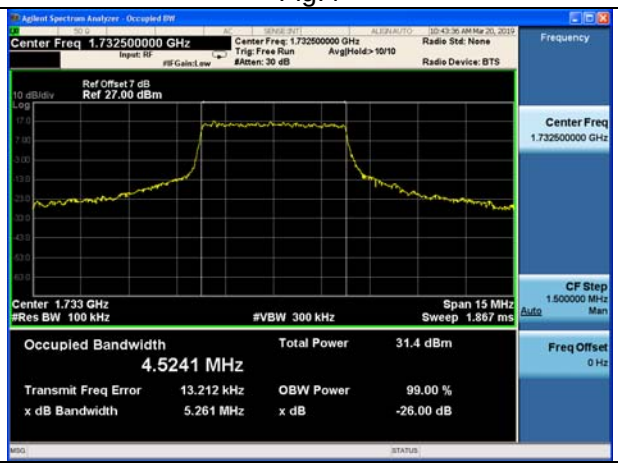


Fig.5

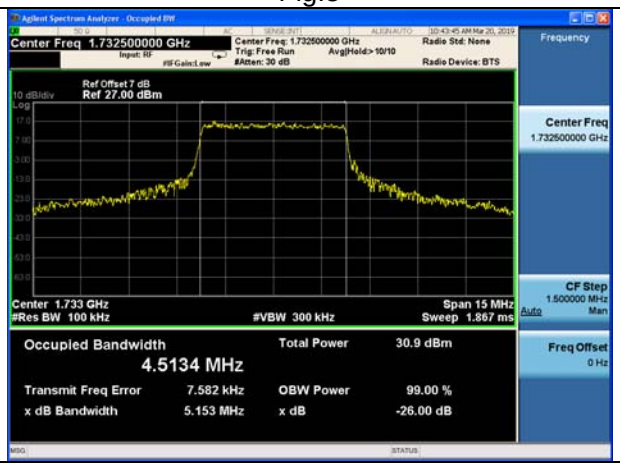


Fig.6

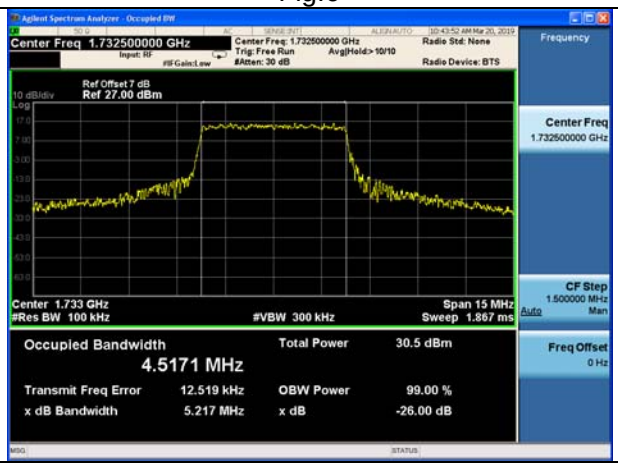


Fig.7

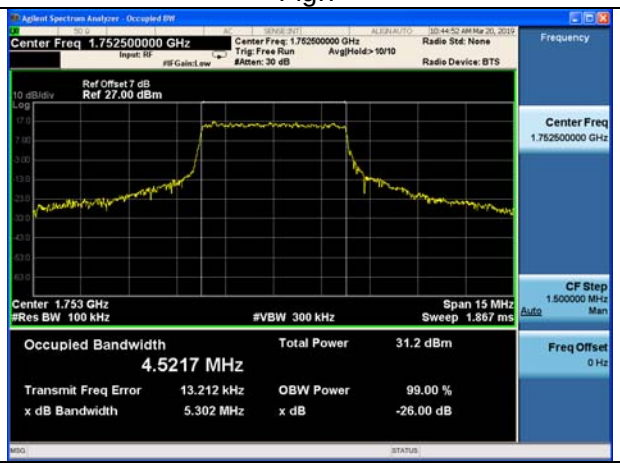


Fig.8

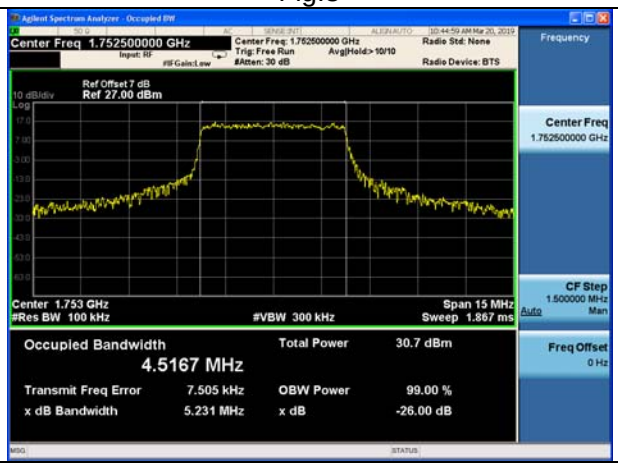
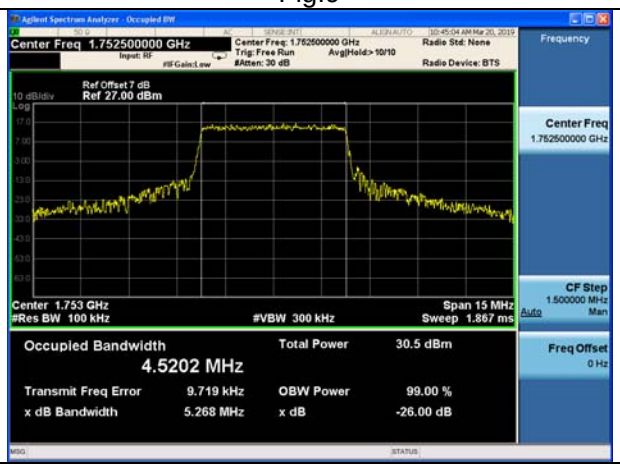


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1715	20000	10	50	0	9.0788	Fig.1	9.0640	Fig.2	9.0415	Fig.3
4	1732.5	20175	10	50	0	9.0754	Fig.4	9.0855	Fig.5	9.0791	Fig.6
4	1750	20350	10	50	0	9.0864	Fig.7	9.0682	Fig.8	9.0636	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1715	20000	10	50	0	10.67	Fig.1	10.68	Fig.2	10.63	Fig.3
4	1732.5	20175	10	50	0	10.84	Fig.4	10.52	Fig.5	10.42	Fig.6
4	1750	20350	10	50	0	10.54	Fig.7	10.51	Fig.8	10.16	Fig.9

Fig.1

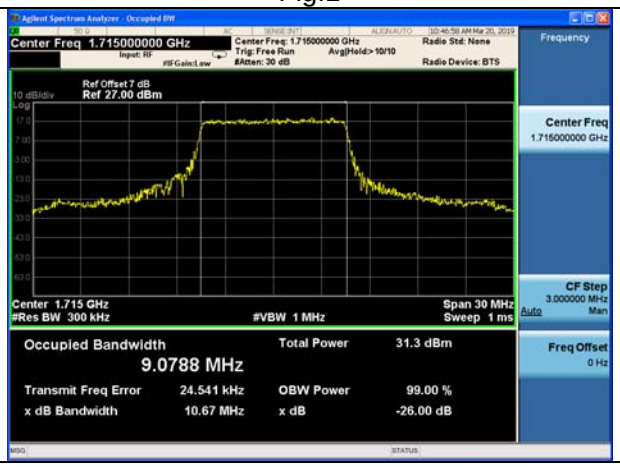


Fig.2

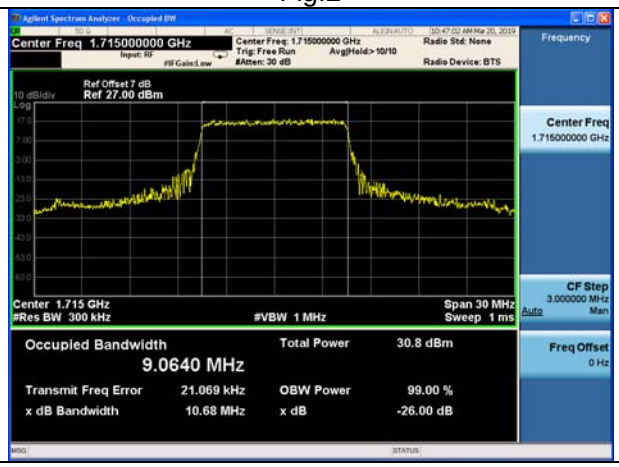


Fig.3

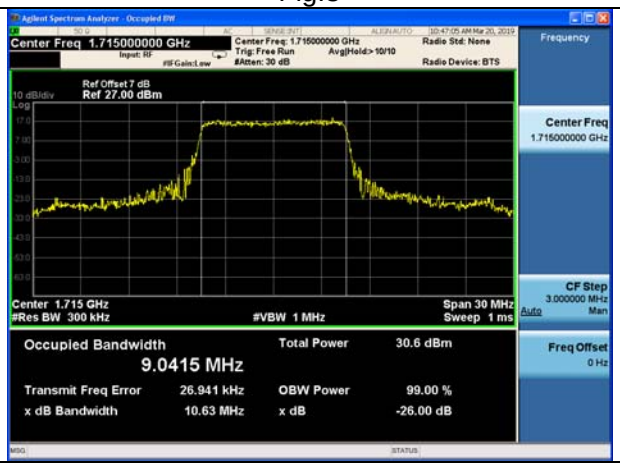


Fig.4

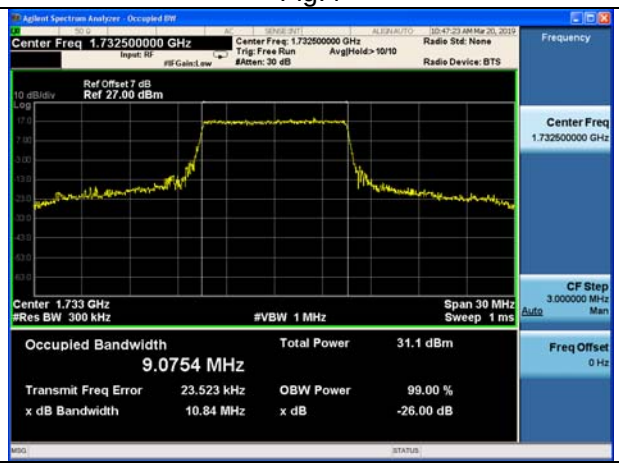


Fig.5

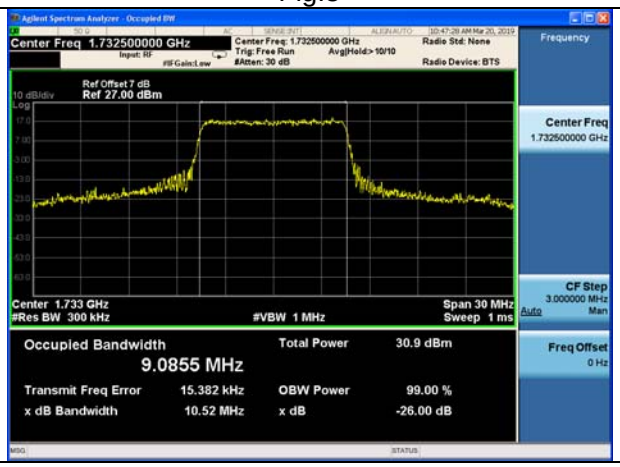


Fig.6

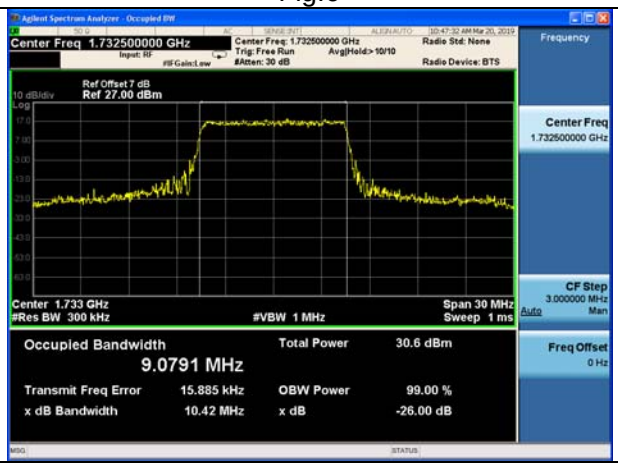


Fig.7

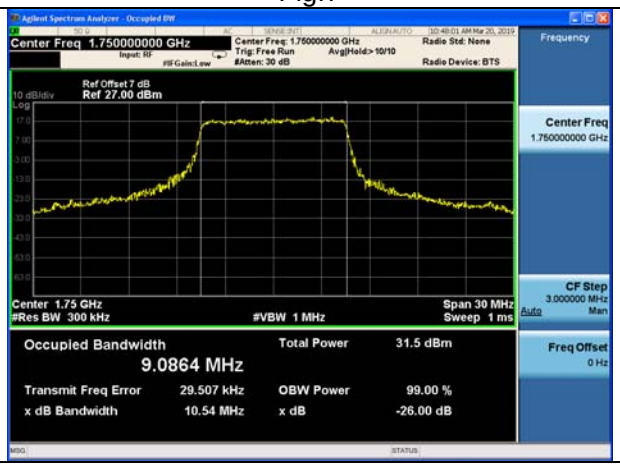


Fig.8

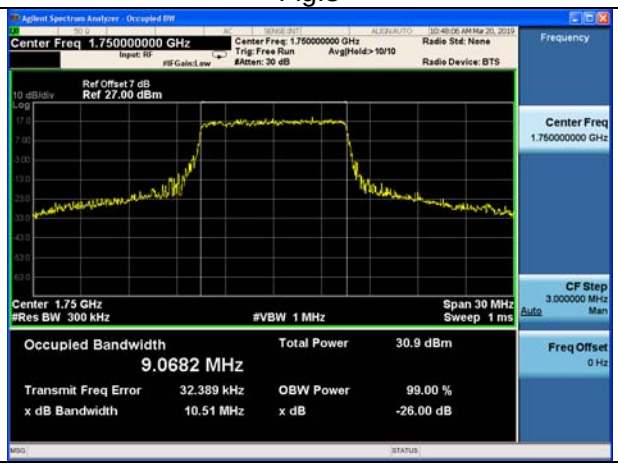
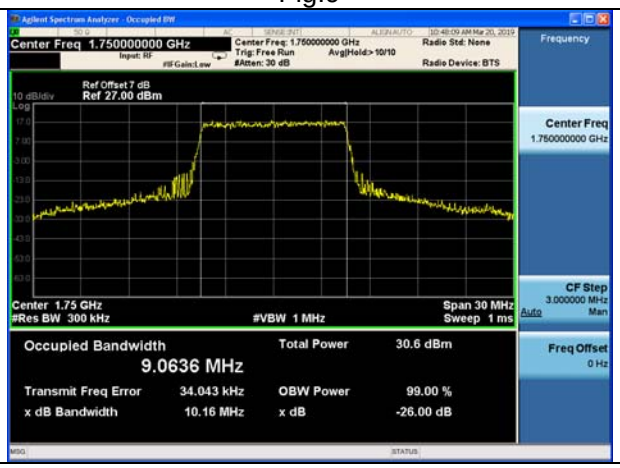


Fig.9



Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1717.5	20025	15	75	0	13.461	Fig.1	13.467	Fig.2	13.467	Fig.3
4	1732.5	20175	15	75	0	13.539	Fig.4	13.477	Fig.5	13.524	Fig.6
4	1747.5	20325	15	75	0	13.465	Fig.7	13.457	Fig.8	13.490	Fig.9

Band	Carrier frequency (MHz)	Channel(Low)	BW	RB Size	RB Offset	Bandwidth of -26dB transmitter power (MHz)					
						QPSK		16-QAM		64-QAM	
4	1717.5	20025	15	75	0	14.95	Fig.1	14.97	Fig.2	14.97	Fig.3
4	1732.5	20175	15	75	0	15.14	Fig.4	15.35	Fig.5	14.88	Fig.6
4	1747.5	20325	15	75	0	15.08	Fig.7	15.02	Fig.8	15.11	Fig.9

Fig.1

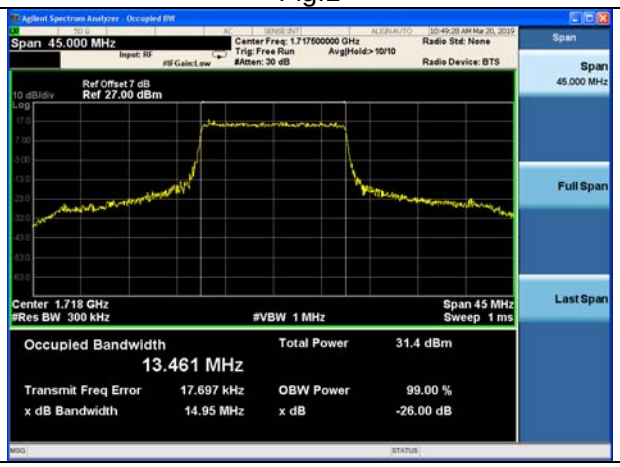


Fig.2

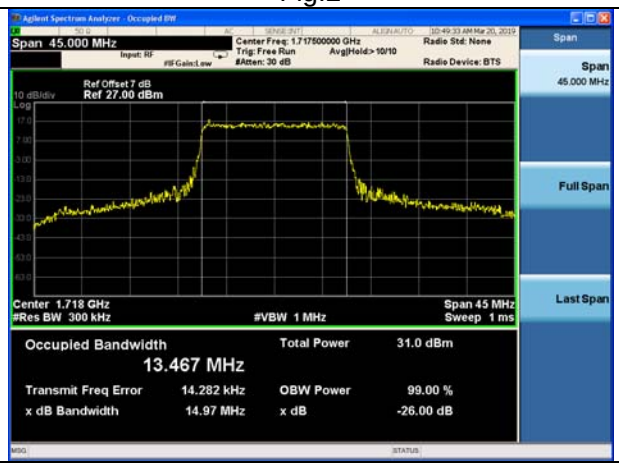


Fig.3

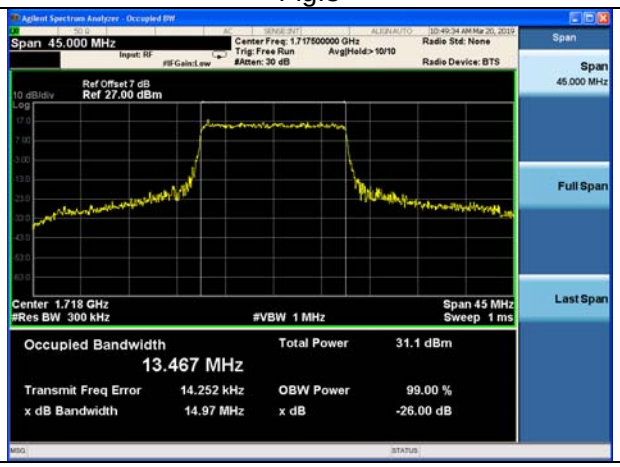


Fig.4