Certificate Number: 5055.02

# TEST REPORT FOR RF TESTING

Report No.: SRTC2019-9004(F)-19101501(C)

Product Name: Mobile Phone

Product Model: HLTE220E

Applicant: Hisense International Co., Ltd.

Manufacturer: Hisense Communications Co., Ltd.

Specification: FCC Part 2, Part 24E, Part 22H, Part 27 (2019)

FCC ID: 2ADOBHLTE220E

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

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## 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 |
| Tel: | +86 10 57996183 |
| Fax: | +86 10 57996388 |
| Email: | liujiaf@srtc.org.cn |

## 1.3 Applicant's details

| | |
|---|---|
| Company: | Hisense International Co., Ltd. |
| Address: | Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China |
| City: | Qingdao |
| Country or Region: | China |
| Contacted person: | Geng Ruifeng |
| Tel: | +86-532-80877742 |
| Fax: | --- |
| Email: | gengruifeng@hisense.com |

## 1.4 Manufacturer's details

| | |
|---|---|
| Company: | Hisense Communications Co., Ltd. |
| Address: | No.218 Qianwangang Road, Economic & Technological Development Zone, Qingdao, China |
| City: | Qingdao |
| Country or Region: | China |
| Contacted person: | Song Haibin |
| Tel: | +86-532-55753700 |
| Fax: | --- |
| Email: | songhaibin@hisense.com |

## 1.5 Test Environment

| | |
|---|---|
| Date of Receipt of test sample at SRTC: | 2019-10-15 |
| Testing Start Date: | 2019-10-15 |
| Testing End Date: | 2019-10-31 |

| Environmental Data: | Temperature (°C) | Humidity (%) |
|---|---|---|
| Ambient | 25 | 30 |
| Maximum Extreme | 50 | --- |
| Minimum Extreme | 0 | --- |

| | |
|---|---|
| Normal Supply Voltage (V d.c.): | 3.80 |
| Maximum Extreme Supply Voltage (V d.c.): | 4.35 |
| Minimum Extreme Supply Voltage (V d.c.): | 3.50 |

# 2 DESCRIPTION OF THE EQUIPMENT UNDER TEST

## 2.1 Final Equipment Build Status

| | |
|---|---|
| Frequency Range | LTE Band 2: Tx:1850~1910MHz Rx:1930~1990MHz<br>LTE Band 4: Tx:1710~1755MHz Rx:2110~2155MHz<br>LTE Band 5: Tx:824~849 MHz Rx:869 ~894MHz<br>LTE Band 7: Tx:2500~2570MHz Rx:2620~2690MHz<br>LTE Band 12: Tx:699~716MHz Rx:729~746MHz |
| Modulation Type | QPSK/16QAM |
| Antenna Type | Fixed Internal Antenna |
| Antenna Gain | LTE 2: -1.3dBi/LTE 4: -1.7dBi/LTE 5: -2.1dBi/<br>LTE 7: -2.2dBi/LTE12: -1.8dBi |
| Power Supply | Battery/Charger |
| Hardware Version | YK680--MB-V0.1 |
| Software Version | Hisense_HLTE220E_MX02_L201.01_20190926 |
| IMEI | 863501040485537 |
| Power Supply | Battery/Charger |
| IMEI | 865531040002659 |

Note: The equipments have two supplies, is different on the supplier of CTP/Earphone/Camera/Data cable.

Main Supply

| Part Name | Model | Supplier(Brand) | Description |
|---|---|---|---|
| Camera | ST-CFKS816-5MFF-V2.0/<br>ST-CFKS816-30WFF-V2.0/ | Union Image | Front CAM |
| Camera | ST-CFKS816BF-V2.0 | Union Image | Rear CAM |
| CTP | CCF11700-6.0 | Jiangxi Holitech Technology Co.,Ltd | CTP |
| Data cable | KLKS816AUSB | Dongguan Keling Electronic Technology Co., Ltd. | |
| Earphone | KLKS816A | Shenzhen Jinchuangju Electronic Technology Co.,Ltd. | |

Secondary Supply

| Part Name | Model Name | supplier | Remark |
|---|---|---|---|
| Camera | HTP1157/HTV1155 | JIXIHOLITECH TECHNOLGY CO.LTD | Front CAM |
| Camera | HTV1156 | JIXIHOLITECH TECHNOLGY CO.LTD | Rear CAM |
| CTP | Y152073B2-D-X | Dongguan Yuye Commumication Technology CO.,ted | CTP |
| Data cable | A106-0022-S | SHENZHEN KOAR ELECTIC CO.,LTD | |
| Earphone | W1G513A06S | Shenzhen Jinchuangju Electronic Technology Co.,Ltd. | |

## 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 | 0.279 | -0.085 | 1M08G7D | 1.4M | 1.258 | QPSK |
| | 1850.7-1909.3 | 0.250 | -0.085 | 1M08D7W | 1.4M | 1.249 | 16QAM |
| | 1851.5-1908.5 | 0.264 | -0.091 | 2M70G7D | 3M | 2.918 | QPSK |
| | 1851.5-1908.5 | 0.241 | -0.091 | 2M70D7W | 3M | 2.917 | 16QAM |
| | 1852.5-1907.5 | 0.271 | 0.096 | 4M49G7D | 5M | 5.059 | QPSK |
| | 1852.5-1907.5 | 0.242 | 0.096 | 4M49D7W | 5M | 5.086 | 16QAM |
| | 1855-1905 | 0.288 | 0.100 | 8M96G7D | 10M | 9.911 | QPSK |
| | 1855-1905 | 0.236 | 0.100 | 8M96D7W | 10M | 9.906 | 16QAM |
| | 1857.5-1902.5 | 0.273 | 0.093 | 13M4G7D | 15M | 14.81 | QPSK |
| | 1857.5-1902.5 | 0.238 | 0.093 | 13M5D7W | 15M | 14.69 | 16QAM |
| | 1860-1900 | 0.270 | -0.085 | 17M9G7D | 20M | 19.33 | QPSK |
| | 1860-1900 | 0.243 | -0.085 | 17M9D7W | 20M | 19.31 | 16QAM |
| LTE BAND4 | | | | | | | |
| 27 | 1710.7-1754.3 | 0.285 | 0.095 | 1M08G7D | 1.4M | 1.248 | QPSK |
| | 1710.7-1754.3 | 0.234 | 0.095 | 1M08D7W | 1.4M | 1.234 | 16QAM |
| | 1711.5-1753.5 | 0.275 | -0.100 | 2M70G7D | 3M | 2.916 | QPSK |
| | 1711.5-1753.5 | 0.224 | -0.100 | 2M70D7W | 3M | 2.901 | 16QAM |
| | 1712.5-1752.5 | 0.279 | -0.098 | 4M50G7D | 5M | 5.084 | QPSK |
| | 1712.5-1752.5 | 0.232 | -0.098 | 4M49D7W | 5M | 5.023 | 16QAM |
| | 1715-1750 | 0.285 | 0.098 | 8M97G7D | 10M | 9.973 | QPSK |
| | 1715-1750 | 0.244 | 0.098 | 8M97D7W | 10M | 9.777 | 16QAM |
| | 1717.5-1747.5 | 0.256 | 0.086 | 13M4G7D | 15M | 14.72 | QPSK |
| | 1717.5-1747.5 | 0.231 | 0.086 | 13M4D7W | 15M | 14.80 | 16QAM |
| | 1720-1745 | 0.282 | 0.095 | 17M9G7D | 20M | 19.38 | QPSK |
| | 1720-1745 | 0.241 | 0.095 | 17M9D7W | 20M | 19.29 | 16QAM |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LTE BAND5 | | | | | | | |
| 22H | 824.7-848.3 | 0.271 | 0.070 | 1M08G7D | 1.4M | 1.237 | QPSK |
| | 824.7-848.3 | 0.223 | 0.070 | 1M08D7W | 1.4M | 1.227 | 16QAM |
| | 825.5-847.5 | 0.254 | 0.087 | 2M69G7D | 3M | 2.910 | QPSK |
| | 825.5-847.5 | 0.226 | 0.087 | 2M68D7W | 3M | 2.889 | 16QAM |
| | 826.5-846.5 | 0.261 | 0.090 | 4M49G7D | 5M | 5.068 | QPSK |
| | 826.5-846.5 | 0.220 | 0.090 | 4M49D7W | 5M | 5.060 | 16QAM |
| | 829-844 | 0.269 | 0.088 | 8M97G7D | 10M | 9.821 | QPSK |
| | 829-844 | 0.243 | 0.088 | 8M99D7W | 10M | 9.934 | 16QAM |
| LTE BAND7 | | | | | | | |
| 27 | 2502.5-2567.5 | 0.269 | -0.098 | 4M49G7D | 5M | 5.092 | QPSK |
| | 2502.5-2567.5 | 0.244 | -0.098 | 4M50D7W | 5M | 5.045 | 16QAM |
| | 2505-2565 | 0.294 | -0.095 | 8M97G7D | 10M | 9.872 | QPSK |
| | 2505-2565 | 0.249 | -0.095 | 8M97D7W | 10M | 9.825 | 16QAM |
| | 2507.5-2562.5 | 0.280 | 0.099 | 13M4G7D | 15M | 14.69 | QPSK |
| | 2507.5-2562.5 | 0.220 | 0.099 | 13M4D7W | 15M | 14.60 | 16QAM |
| | 2510-2560 | 0.300 | 0.095 | 17M9G7D | 20M | 19.37 | QPSK |
| | 2510-2560 | 0.240 | 0.095 | 17M9D7W | 20M | 19.30 | 16QAM |
| LTE BAND12 | | | | | | | |
| 27 | 699.7-715.3 | 0.275 | 0.097 | 1M08G7D | 1.4M | 1.241 | QPSK |
| | 699.7-715.3 | 0.239 | 0.097 | 1M08D7W | 1.4M | 1.230 | 16QAM |
| | 700.5-714.5 | 0.285 | -0.097 | 2M69G7D | 3M | 2.895 | QPSK |
| | 700.5-714.5 | 0.220 | -0.097 | 2M69D7W | 3M | 2.901 | 16QAM |
| | 701.5-713.5 | 0.283 | 0.099 | 4M49G7D | 5M | 5.050 | QPSK |
| | 701.5-713.5 | 0.240 | 0.099 | 4M49D7W | 5M | 5.083 | 16QAM |
| | 704-711 | 0.264 | 0.100 | 8M99G7D | 10M | 9.843 | QPSK |
| | 704-711 | 0.219 | 0.100 | 8M95D7W | 10M | 9.983 | 16QAM |

## 2.3 Support Equipment

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

| | |
|---|---|
| Equipment | Battery |
| Manufacturer | Shenzhen Tianjin New Energy Technology Co.,Ltd； |
| Model Number | KS816 |
| Serial Number | --- |

| | |
|---|---|
| Equipment | Charger |
| Manufacturer | Shenzhen Tianyin Electronics Co., Ltd |
| Model Number | TPA-97050100VU |
| Serial Number | --- |

| | |
|---|---|
| Equipment | USB Cable1 |
| Manufacturer | SHENZHEN KOAR　ELECTIC CO.,LTD |
| Model Number | A106-0022-S |
| Serial Number | --- |

| | |
|---|---|
| Equipment | USB Cable2 |
| Manufacturer | Dongguan Keling Electronic Technology Co., Ltd. |
| Model Number | KLKS816AUSB |
| Serial Number | --- |

# 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. |
| NTC | 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(a)(5), 24.232(c), 27.50(b)(10), 27.50(c)(10), 27.50(h)(2), 27.50(d)(4), 27.50(a)(3) | Pass |
| 3 | Occupied Bandwidth | 2.1049 | Pass |
| 4 | Peak-Average Ratio | 24.232(d), 27.50(d)(5) | Pass |
| 5 | Emission Bandwidth | 2.1049 | Pass |
| 6 | Spurious Emissions at antenna terminals | 2.1051, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(m), 27.53(a) | Pass |
| 7 | Band Edges Compliance | 2.1051, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(m), 27.53(a) | Pass |
| 8 | Frequency Stability | 2.1055, 22.355, 24.235, 27.54 | Pass |
| 9 | Radiated Spurious Emissions | 2.1053, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(f), 27.53(a), 27.53(m) | Pass |

| | |
|---|---|
| This Test Report Is Issued by:<br>Mr. Peng Zhen | Checked by:<br>Mr. Li Bin |
| Tested by:<br>Mr. He Dengshun | Issued date:<br>20191101 |

# 6 TEST RESULT

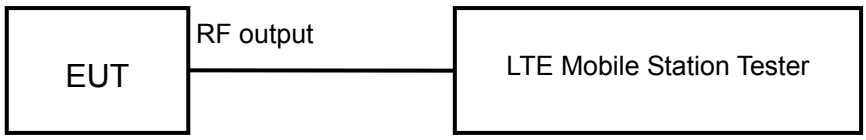
## 6.1 RF Power Output

Rule Part(s)
FCC: 2.1046

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 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: No RF Power Output requirements in part 2.1046.
Test result:
The test results are shown in Appendix A.

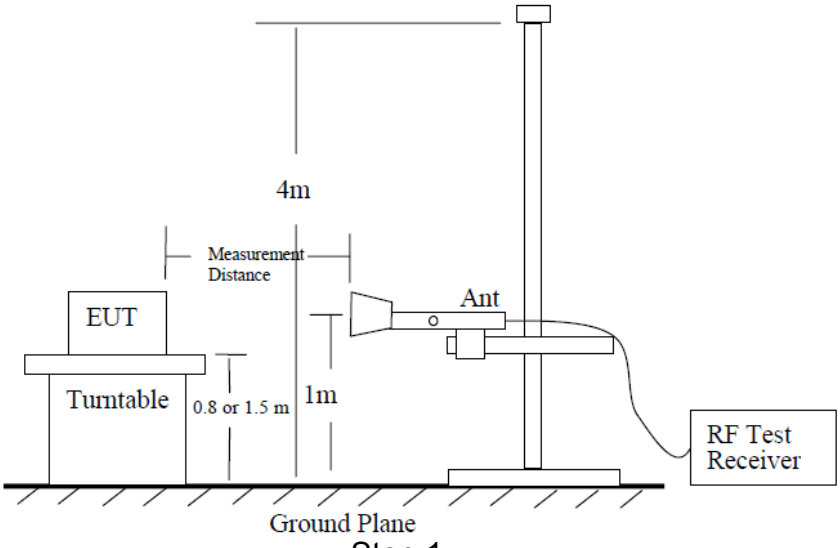
## 6.2 Effective Radiated Power and Effective Isotropic Radiated Power

Rule Part(s)
FCC: 22.913(a) (5), 24.232(c), 27.50(b) (10), 27.50(c) (10), 27.50(h) (2), 27.50(d) (4), 27.50(a) (3)

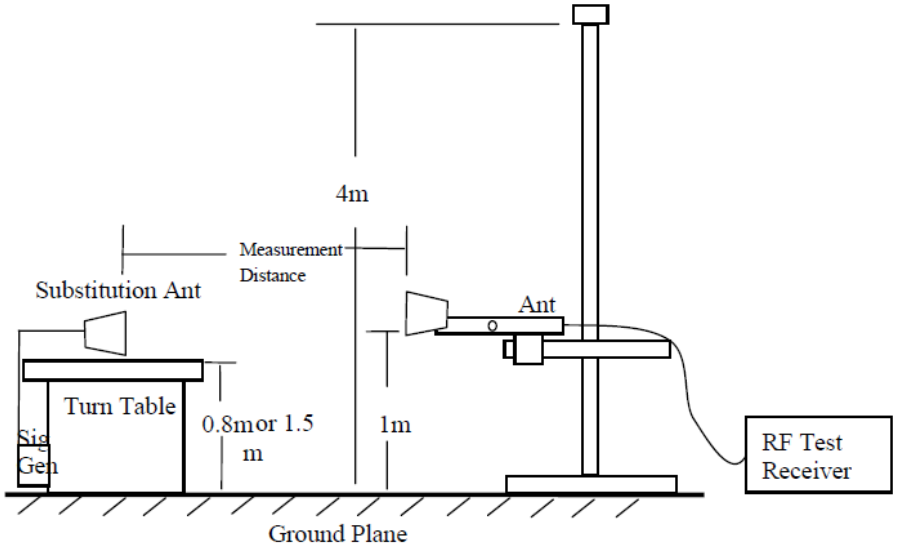
Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test setup:




Step 1




Step 2

Test procedure:
The measurements procedures in TIA-603-E-2016 are used.
Step 1:
The measurement is carried out in the fully anechoic chamber. EUT was placed on a 2.4 meters high non-conductive table at a 3 meters 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. A peak detector is used and RBW is set to 3MHz. Then the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum power value on spectrum analyzer or receiver. And the maximum value of the receiver should be recorded as (Pr).

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. To repeat the same procedure as step1 and the level of signal generator will be adjusted till the same power value on the spectrum analyzer or receiver. The ERP/EIRP of the EUT 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).

The measurement results are obtained as described below:
Power (EIRP) = Pmea+ Pca+ Ga

**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) (5)

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

24.232(c)

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

27.50(b) (10)

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

27.50(c) (10)

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

27.50(h) (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.

27.50(d) (4)

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

27.50(a) (3)

Mobile and portable stations (i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

Test result:

The test results are shown in Appendix B.

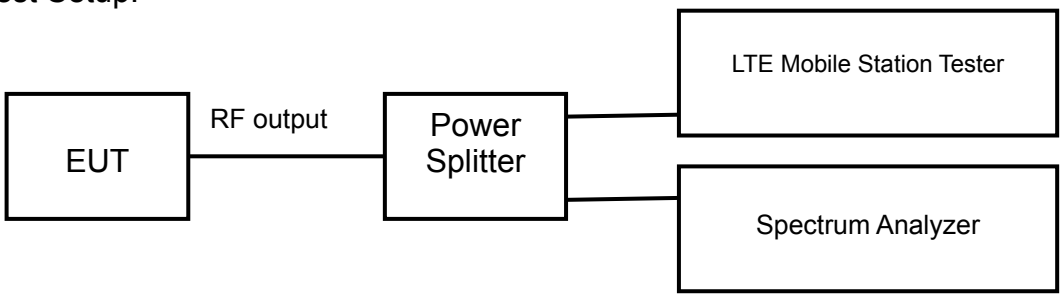
## 6.3 Occupied Bandwidth

Rule Part(s)
FCC: 2.1049

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test Setup:




Test procedure:

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation.
d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.
e) Set the detection mode to peak, and the trace mode to max hold.
f) Use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

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.

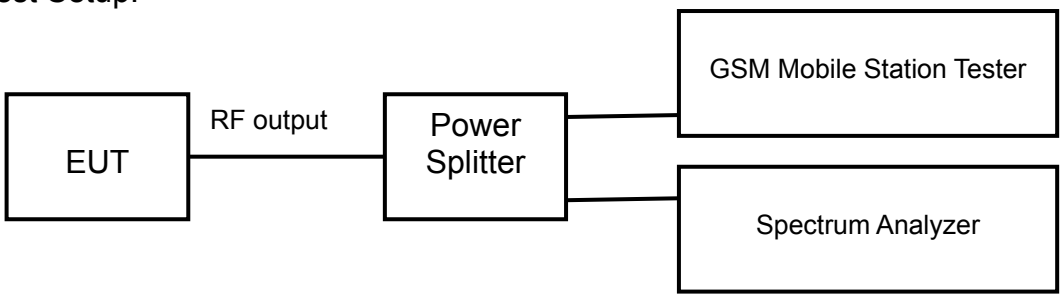
## 6.4 Emission Bandwidth

Rule Part(s)
FCC: 2.1049

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test Setup:




Test procedure:

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation.
d) NOTE—Steps a) through c) may require iteration to adjust within the specified tolerances.
e) Set the detection mode to peak, and the trace mode to max hold.
f) Use the 26dB bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.

Limits: No specific emission bandwidth requirements in part 2.1049.

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

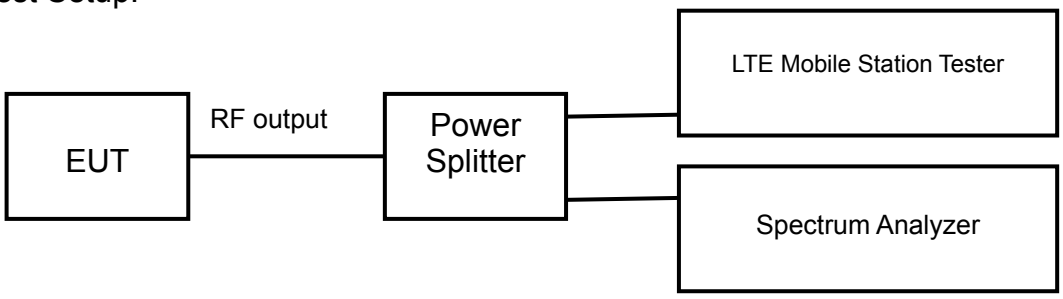
## 6.5 Peak-Average Ratio

Rule Part(s)
FCC: 24.232(d), 27.50(d) (5)

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test Setup:




Test procedure:

a) The signal analyzer's CCDF measurement profile is enabled
b) Frequency = carrier center frequency
c) Measurement BW ≥ OBW or specified reference bandwidth
d) The signal analyzer was set to collect one million samples to generate the CCDF curve
e) The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Limits
24.232(d), 27.50(d) (5)
In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

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

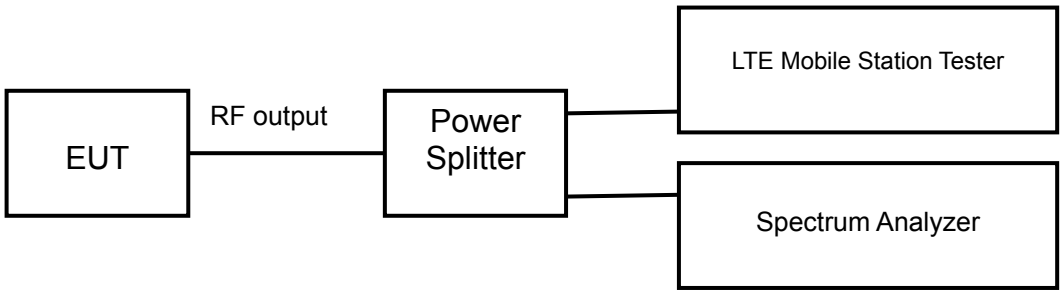
## 6.6 Spurious Emissions at antenna terminal

Rule Part(s)
FCC: 2.1051, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(m), 27.53(a)

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test Setup:




Test procedure:

a) Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
b) RBW=1MHz
c) VBW=3MHz
d) Detector = RMS
e) Trace mode = trace average for continuous emissions, max hold for pulse emissions
f) Sweep time = auto couple
g) The trace was allowed to stabilize

Limits
The minimum permissible attenuation level of any spurious emission is 43 + log10 (P [Watts]), where P is the transmitter power in Watts.
For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is 70 + log10 (P [Watts]).
For Band 7 and 41, the minimum permissible attenuation level of any spurious emission is 55 + log10 (P [Watts]).

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

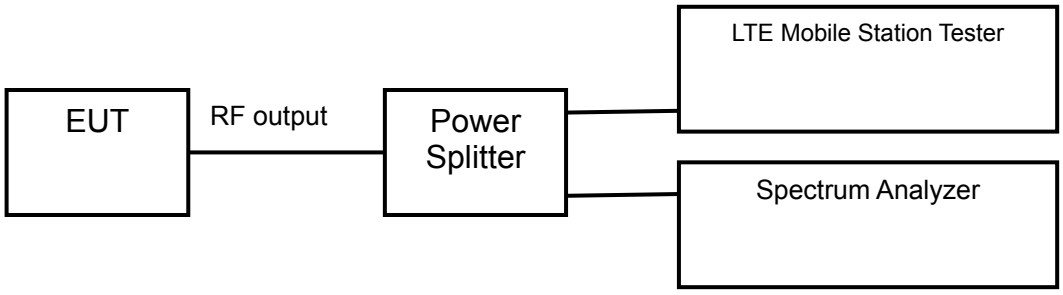
## 6.7 Band Edges Compliance

Rule Part(s)
FCC: 2.1051, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(m), 27.53(a)

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test Setup:




Test procedure:

a) Start and stop frequency were set such that the band edge would be placed in the center of the plot
b) Span was set large enough so as to capture all out of band emissions near the band edge
c) RBW > 1% of the emission bandwidth
d) VBW > 3 x RBW
e) Detector = RMS
f) Number of sweep points ≥ 2 x Span/RBW
g) Trace mode = trace average for continuous emissions, max hold for pulse emissions
h) Sweep time = auto couple
i) The trace was allowed to stabilize

Limits
The minimum permissible attenuation level of any spurious emission is 43 + log10 (P [Watts]), where P is the transmitter power in Watts.
The minimum permissible attenuation level for Band 30 is > 43 + 10log10 (P [Watts] at 2300-2305MHz & 2345-2360MHz, > 55 + 10log10 (P [Watts]) at 2320-2324MHz & 2341-2345MHz, > 61 + 10log10 (P [Watts]) at 2324-2328MHz & 2337-2341MHz, > 67 + 10log10 (P [Watts]) at 2288-2292MHz & 2328- 2337MHz, and > 70 + 10log10 (P [Watts]) at frequencies < 2288MHz & >2365MHz.
Per 22.917(b) 24.238(a) 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the

transmitter power.
Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
Per 27.53(c)(5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c)(4) is 65 + 10log10(P) = -35dBm in a 6.25kHz bandwidth.
Per 27.53(a)(5) in the 1 MHz bands immediately outside and adjacent to the channel blocks at 2305, 2310, 2315, 2320, 2345, 2350, 2355, and 2360 MHz, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

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

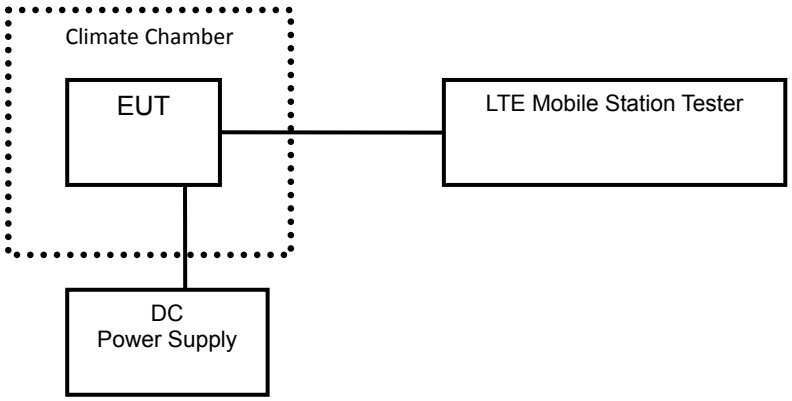
## 6.8 Frequency Stability

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

Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 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 (Bottom, middle and top channels).

Limits: For Part 22, the frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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

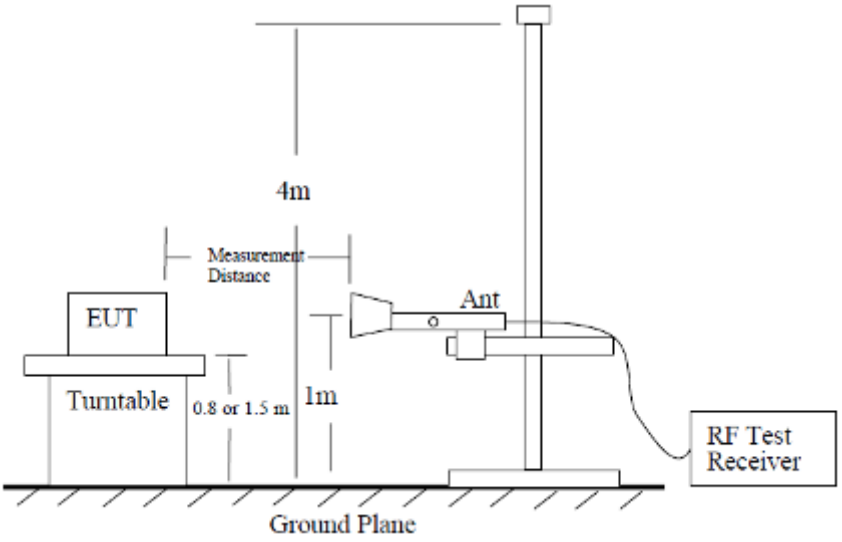
## 6.9 Radiated Spurious Emissions

Rule Part(s)
FCC: 2.1053, 22.917(a), 24.238(a), 27.53(c), 27.53(g), 27.53(h), 27.53(f), 27.53(a), 27.53(m)

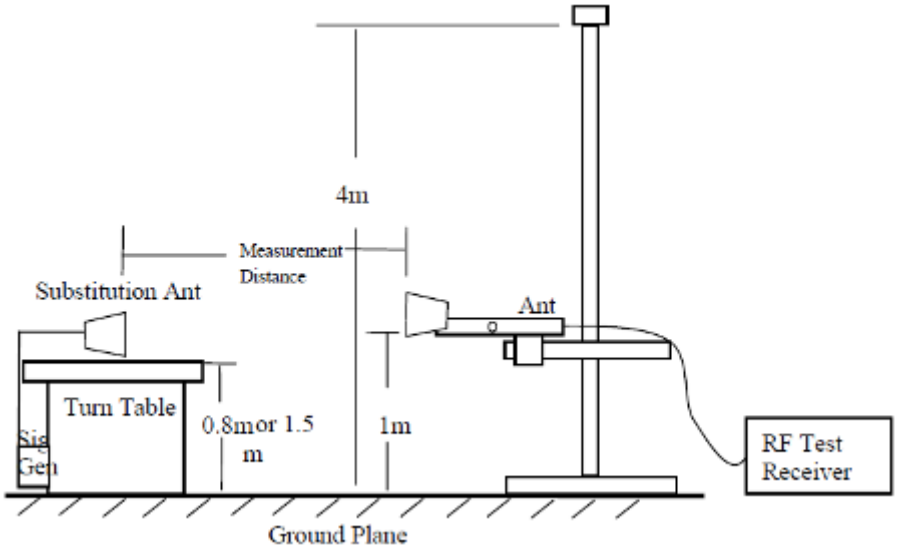
Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 25°C | 30% | 101.9kPa |

Test Setup:




Step 1




Step 2

Test procedure:
The measurements procedures in TIA-603-E-2016 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 | 2019.08.20 | 2020.08.19 |
| 2 | FSV40 Spectrum Analyzer | R&S | 101065 | 2019.08.20 | 2020.08.19 |
| 2 | N9020A Spectrum Analyzer | Agilent | MY48010771 | 2019.08.20 | 2020.08.19 |
| 3 | 6007 Power Divider | Weinschel | 6007-GJ-1 | 2019.08.20 | 2020.08.19 |
| 4 | DC Power Supply E3645A | Agilent | MY40000741 | 2019.03.01 | 2020.02.28 |
| 5 | Temperature chamber SH241 | ESPEC | 92013758 | 2019.08.20 | 2020.08.19 |
| 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 | 2019.08.20 | 2020.08.19 |
| 14 | HF 907 Double-Ridged Waveguide Horn Antenna | R&S | 100513 | 2019.08.20 | 2020.08.19 |
| 15 | HL562 Ultra log antenna | R&S | 100016 | 2019.08.20 | 2020.08.19 |
| 16 | 3160-09 Receive antenna | SCHWARZ-BECK | 002058-002 | 2019.08.20 | 2020.08.19 |
| 17 | ESI 40 EMI test receiver | R&S | 100015 | 2019.08.20 | 2020.08.19 |
| 18 | ESCS30 EMI test receiver | R&S | 100029 | 2019.08.20 | 2020.08.19 |
| 19 | HL562 Receive antenna | R&S | 100167 | 2019.08.20 | 2020.08.19 |
| 20 | ENV216 AMN | R&S | 3560.6550.12 | 2019.08.20 | 2020.08.19 |

# APPENDIX A – TEST DATA OF CONDUCTED EMISSION

**LTE Band 2**

**1 RF Power Output**

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1850.7 | 18607 | 1.4 | 1 | 0 | 23.62 |
| | | | | 1 | 5 | 23.62 |
| | | | | 3 | 2 | 22.79 |
| | | | | 6 | 0 | 22.75 |
| | 1880 | 18900 | | 1 | 0 | 23.75 |
| | | | | 1 | 5 | 23.75 |
| | | | | 3 | 2 | 22.91 |
| | | | | 6 | 0 | 22.82 |
| | 1909.3 | 19193 | | 1 | 0 | 23.76 |
| | | | | 1 | 5 | 23.76 |
| | | | | 3 | 2 | 22.82 |
| | | | | 6 | 0 | 22.81 |
| 16QAM | 1850.7 | 18607 | 1.4 | 1 | 0 | 22.78 |
| | | | | 1 | 5 | 22.78 |
| | | | | 3 | 2 | 21.81 |
| | | | | 6 | 0 | 21.71 |
| | 1880 | 18900 | | 1 | 0 | 23.10 |
| | | | | 1 | 5 | 23.10 |
| | | | | 3 | 2 | 21.78 |
| | | | | 6 | 0 | 21.72 |
| | 1909.3 | 19193 | | 1 | 0 | 23.02 |
| | | | | 1 | 5 | 23.02 |
| | | | | 3 | 2 | 21.82 |
| | | | | 6 | 0 | 21.68 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1851.5 | 18615 | 3 | 1 | 0 | 23.44 |
| | | | | 1 | 14 | 23.44 |
| | | | | 8 | 4 | 22.61 |
| | | | | 15 | 0 | 22.57 |
| | 1880 | 18900 | | 1 | 0 | 23.57 |
| | | | | 1 | 14 | 23.57 |
| | | | | 8 | 4 | 22.73 |
| | | | | 15 | 0 | 22.64 |
| | 1908.5 | 19185 | | 1 | 0 | 23.58 |
| | | | | 1 | 14 | 23.58 |
| | | | | 8 | 4 | 22.64 |
| | | | | 15 | 0 | 22.63 |
| 16QAM | 1851.5 | 18615 | 3 | 1 | 0 | 22.60 |
| | | | | 1 | 14 | 22.60 |
| | | | | 8 | 4 | 21.67 |
| | | | | 15 | 0 | 21.60 |
| | 1880 | 18900 | | 1 | 0 | 22.99 |
| | | | | 1 | 14 | 22.99 |
| | | | | 8 | 4 | 21.67 |
| | | | | 15 | 0 | 21.61 |
| | 1908.5 | 19185 | | 1 | 0 | 22.91 |
| | | | | 1 | 14 | 22.91 |
| | | | | 8 | 4 | 21.71 |
| | | | | 15 | 0 | 21.57 |
| 64QAM | 1851.5 | 18615 | 3 | 1 | 0 | 23.44 |
| | | | | 1 | 14 | 23.44 |
| | | | | 8 | 4 | 22.61 |
| | | | | 15 | 0 | 22.57 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1852.5 | 18625 | 5 | 1 | 0 | 23.56 |
| | | | | 1 | 24 | 23.56 |
| | | | | 12 | 6 | 22.73 |
| | | | | 25 | 0 | 22.69 |
| | 1880 | 18900 | | 1 | 0 | 23.69 |
| | | | | 1 | 24 | 23.69 |
| | | | | 12 | 6 | 22.85 |
| | | | | 25 | 0 | 22.76 |
| | 1907.5 | 19175 | | 1 | 0 | 23.70 |
| | | | | 1 | 24 | 23.70 |
| | | | | 12 | 6 | 22.76 |
| | | | | 25 | 0 | 22.75 |
| 16QAM | 1852.5 | 18625 | 5 | 1 | 0 | 22.70 |
| | | | | 1 | 24 | 22.70 |
| | | | | 12 | 6 | 21.77 |
| | | | | 25 | 0 | 21.67 |
| | 1880 | 18900 | | 1 | 0 | 23.06 |
| | | | | 1 | 24 | 23.06 |
| | | | | 12 | 6 | 21.74 |
| | | | | 25 | 0 | 21.68 |
| | 1907.5 | 19175 | | 1 | 0 | 22.98 |
| | | | | 1 | 24 | 22.98 |
| | | | | 12 | 6 | 21.78 |
| | | | | 25 | 0 | 21.64 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1855 | 18650 | 10 | 1 | 0 | 23.52 |
| | | | | 1 | 49 | 23.52 |
| | | | | 24 | 12 | 22.69 |
| | | | | 50 | 0 | 22.65 |
| | 1880 | 18900 | | 1 | 0 | 23.65 |
| | | | | 1 | 49 | 23.65 |
| | | | | 24 | 12 | 22.81 |
| | | | | 50 | 0 | 22.72 |
| | 1905 | 19150 | | 1 | 0 | 23.66 |
| | | | | 1 | 49 | 23.66 |
| | | | | 24 | 12 | 22.72 |
| | | | | 50 | 0 | 22.71 |
| 16QAM | 1855 | 18650 | 10 | 1 | 0 | 22.64 |
| | | | | 1 | 49 | 22.64 |
| | | | | 24 | 12 | 21.71 |
| | | | | 50 | 0 | 21.61 |
| | 1880 | 18900 | | 1 | 0 | 23.00 |
| | | | | 1 | 49 | 23.00 |
| | | | | 24 | 12 | 21.72 |
| | | | | 50 | 0 | 21.66 |
| | 1905 | 19150 | | 1 | 0 | 22.96 |
| | | | | 1 | 49 | 22.96 |
| | | | | 24 | 12 | 21.76 |
| | | | | 50 | 0 | 21.62 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1857.5 | 18675 | 15 | 1 | 0 | 23.61 |
| | | | | 1 | 74 | 23.61 |
| | | | | 40 | 18 | 22.78 |
| | | | | 75 | 0 | 22.74 |
| | 1880 | 18900 | | 1 | 0 | 23.74 |
| | | | | 1 | 74 | 23.74 |
| | | | | 40 | 18 | 22.82 |
| | | | | 75 | 0 | 22.73 |
| | 1902.5 | 19125 | | 1 | 0 | 23.67 |
| | | | | 1 | 74 | 23.67 |
| | | | | 40 | 18 | 22.73 |
| | | | | 75 | 0 | 22.72 |
| 16QAM | 1857.5 | 18675 | 15 | 1 | 0 | 22.69 |
| | | | | 1 | 74 | 22.69 |
| | | | | 40 | 18 | 21.76 |
| | | | | 75 | 0 | 21.66 |
| | 1880 | 18900 | | 1 | 0 | 23.05 |
| | | | | 1 | 74 | 23.10 |
| | | | | 40 | 18 | 21.78 |
| | | | | 75 | 0 | 21.72 |
| | 1902.5 | 19125 | | 1 | 0 | 23.02 |
| | | | | 1 | 74 | 23.02 |
| | | | | 40 | 18 | 21.82 |
| | | | | 75 | 0 | 21.68 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1860 | 18700 | 20 | 1 | 0 | 23.65 |
| | | | | 1 | 99 | 23.65 |
| | | | | 50 | 25 | 22.82 |
| | | | | 100 | 0 | 22.78 |
| | 1880 | 18900 | | 1 | 0 | 23.78 |
| | | | | 1 | 99 | 23.78 |
| | | | | 50 | 25 | 22.94 |
| | | | | 100 | 0 | 22.85 |
| | 1900 | 19100 | | 1 | 0 | 23.79 |
| | | | | 1 | 99 | 23.79 |
| | | | | 50 | 25 | 22.85 |
| | | | | 100 | 0 | 22.84 |
| 16QAM | 1860 | 18700 | 20 | 1 | 0 | 22.81 |
| | | | | 1 | 99 | 22.81 |
| | | | | 50 | 25 | 21.88 |
| | | | | 100 | 0 | 21.78 |
| | 1880 | 18900 | | 1 | 0 | 23.17 |
| | | | | 1 | 99 | 23.17 |
| | | | | 50 | 25 | 21.85 |
| | | | | 100 | 0 | 21.79 |
| | 1900 | 19100 | | 1 | 0 | 23.09 |
| | | | | 1 | 99 | 23.09 |
| | | | | 50 | 25 | 21.89 |
| | | | | 100 | 0 | 21.75 |

## 2 Occupied Bandwidth

Test result

| Band | Carrier frequency (MHz) | Channel | BW (MHz) | RB Size | RB Offset | Bandwidth of 99% Power (MHz) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | QPSK | | 16-QAM | |
| 2 | 1850.7 | 18607 | 1.4 | 6 | 0 | 1.0782 | Fig.1 | 1.0801 | Fig.2 |
| | 1880.0 | 18900 | | 6 | 0 | 1.0787 | Fig.3 | 1.0776 | Fig.4 |
| | 1909.3 | 19193 | | 6 | 0 | 1.0791 | Fig.5 | 1.0793 | Fig.6 |
| | 1851.5 | 18615 | 3 | 15 | 0 | 2.6992 | Fig.7 | 2.6980 | Fig.8 |
| | 1880.0 | 18900 | | 15 | 0 | 2.7010 | Fig.9 | 2.6837 | Fig.10 |
| | 1908.5 | 19185 | | 15 | 0 | 2.6922 | Fig.11 | 2.6902 | Fig.12 |
| | 1852.5 | 18625 | 5 | 25 | 0 | 4.4941 | Fig.13 | 4.4761 | Fig.14 |
| | 1880.0 | 18900 | | 25 | 0 | 4.4906 | Fig.15 | 4.4884 | Fig.16 |
| | 1907.5 | 19175 | | 25 | 0 | 4.4921 | Fig.17 | 4.4790 | Fig.18 |
| | 1855 | 18650 | 10 | 50 | 0 | 8.9442 | Fig.19 | 8.9452 | Fig.20 |
| | 1880 | 18900 | | 50 | 0 | 8.9417 | Fig.21 | 8.9458 | Fig.22 |
| | 1905 | 19150 | | 50 | 0 | 8.9654 | Fig.23 | 8.9643 | Fig.24 |
| | 1857.5 | 18675 | 15 | 75 | 0 | 13.437 | Fig.25 | 13.467 | Fig.26 |
| | 1880.0 | 18900 | | 75 | 0 | 13.413 | Fig.27 | 13.416 | Fig.28 |
| | 1902.5 | 19125 | | 75 | 0 | 13.404 | Fig.29 | 13.418 | Fig.30 |
| | 1860 | 18700 | 20 | 100 | 0 | 17.846 | Fig.31 | 17.872 | Fig.32 |
| | 1880 | 18900 | | 100 | 0 | 17.863 | Fig.33 | 17.882 | Fig.34 |
| | 1900 | 19100 | | 100 | 0 | 17.868 | Fig.35 | 17.914 | Fig.36 |

| Band | Carrier frequency (MHz) | Channel | BW (MHz) | RB Size | RB Offset | Bandwidth of -26dB transmitter power (MHz) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | QPSK | | 16-QAM | |
| 2 | 1850.7 | 18607 | 1.4 | 6 | 0 | 1.258 | Fig.1 | 1.242 | Fig.2 |
| | 1880.0 | 18900 | | 6 | 0 | 1.253 | Fig.3 | 1.249 | Fig.4 |
| | 1909.3 | 19193 | | 6 | 0 | 1.254 | Fig.5 | 1.249 | Fig.6 |
| | 1851.5 | 18615 | 3 | 15 | 0 | 2.884 | Fig.7 | 2.899 | Fig.8 |
| | 1880.0 | 18900 | | 15 | 0 | 2.902 | Fig.9 | 2.894 | Fig.10 |
| | 1908.5 | 19185 | | 15 | 0 | 2.918 | Fig.11 | 2.917 | Fig.12 |
| | 1852.5 | 18625 | 5 | 25 | 0 | 5.059 | Fig.13 | 5.070 | Fig.14 |
| | 1880.0 | 18900 | | 25 | 0 | 4.957 | Fig.15 | 5.086 | Fig.16 |
| | 1907.5 | 19175 | | 25 | 0 | 4.982 | Fig.17 | 4.978 | Fig.18 |
| | 1855 | 18650 | 10 | 50 | 0 | 9.876 | Fig.19 | 9.859 | Fig.20 |
| | 1880 | 18900 | | 50 | 0 | 9.858 | Fig.21 | 9.906 | Fig.22 |
| | 1905 | 19150 | | 50 | 0 | 9.911 | Fig.23 | 9.856 | Fig.24 |
| | 1857.5 | 18675 | 15 | 75 | 0 | 14.68 | Fig.25 | 14.49 | Fig.26 |
| | 1880.0 | 18900 | | 75 | 0 | 14.81 | Fig.27 | 14.65 | Fig.28 |
| | 1902.5 | 19125 | | 75 | 0 | 14.54 | Fig.29 | 14.69 | Fig.30 |
| | 1860 | 18700 | 20 | 100 | 0 | 19.24 | Fig.31 | 19.13 | Fig.32 |
| | 1880 | 18900 | | 100 | 0 | 19.33 | Fig.33 | 19.28 | Fig.34 |
| | 1900 | 19100 | | 100 | 0 | 19.10 | Fig.35 | 19.31 | Fig.36 |

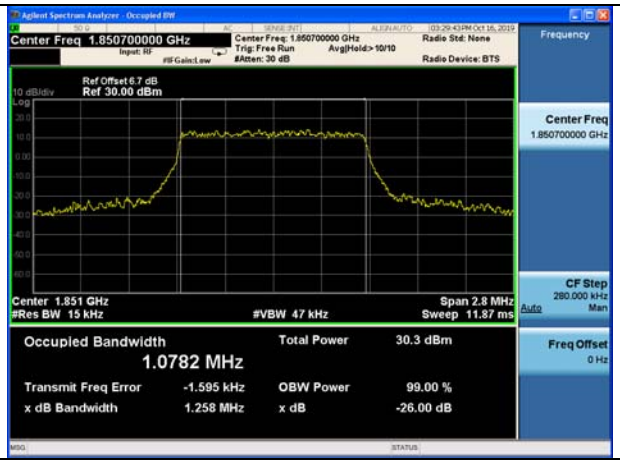



Fig.1

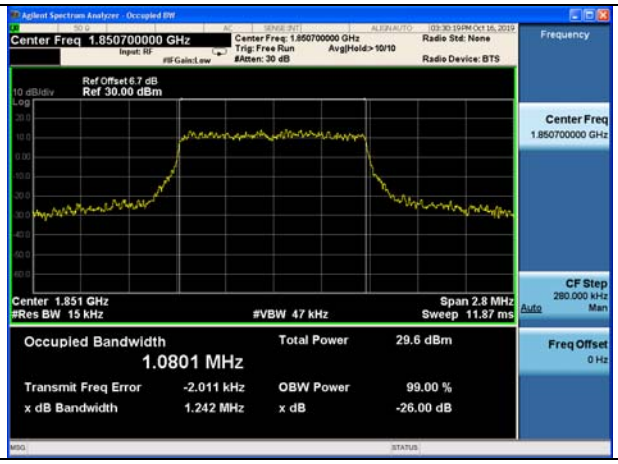



Fig.2

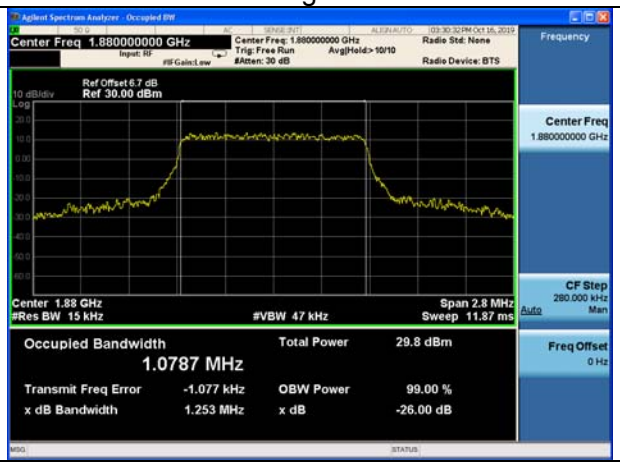



Fig.3

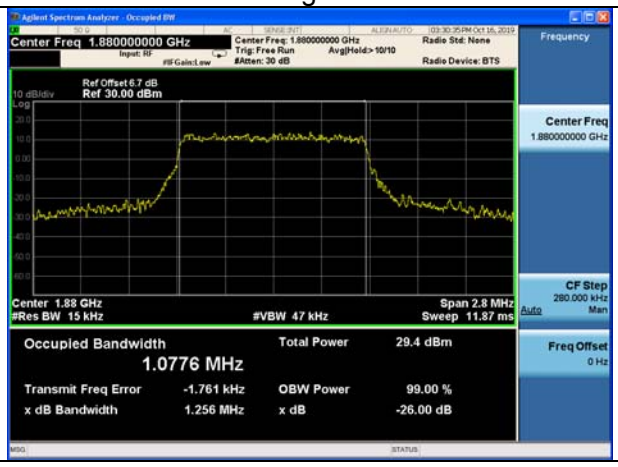



Fig.4

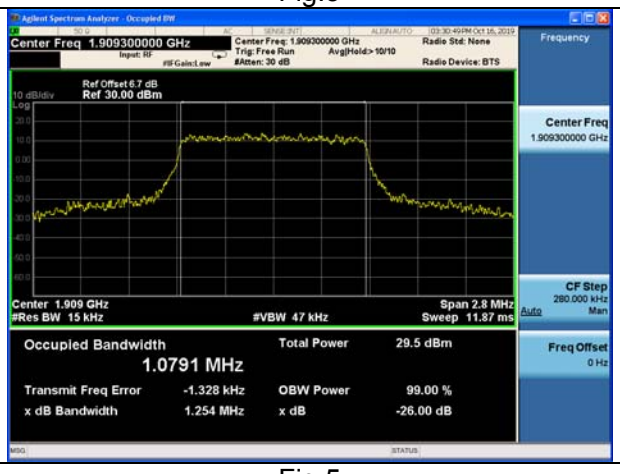



Fig.5

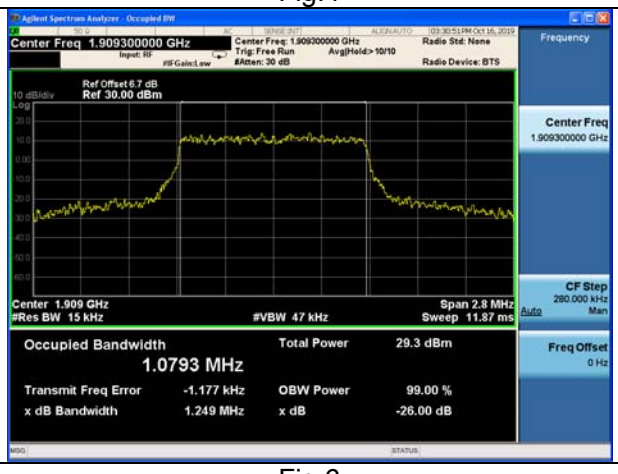



Fig.6


Fig.7

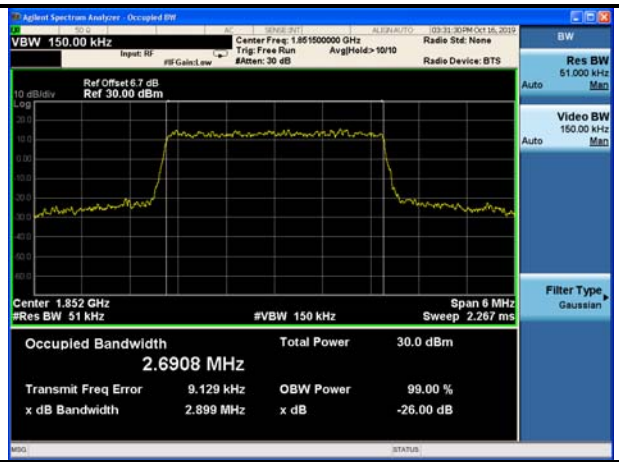



Fig.8

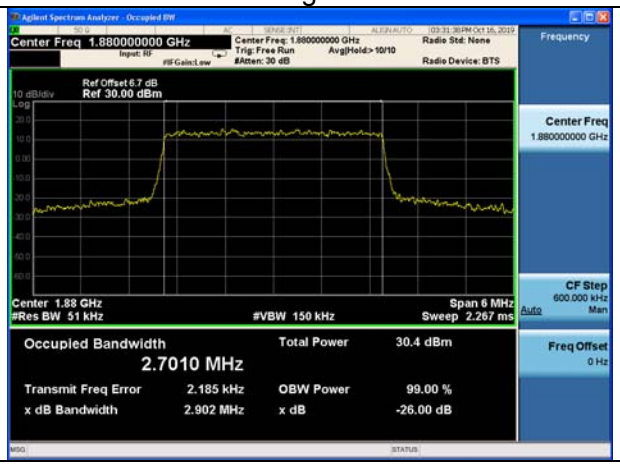



Fig.9

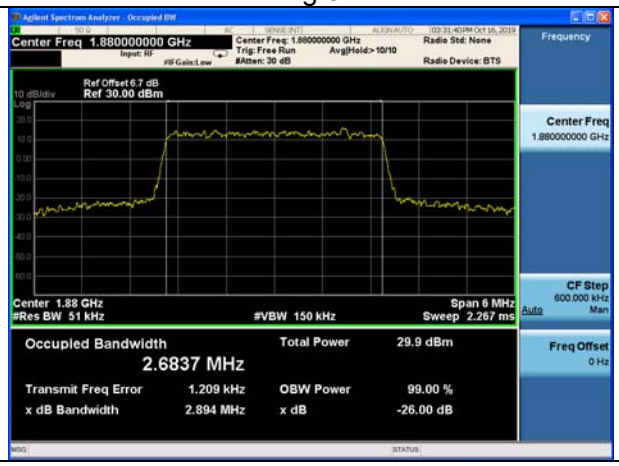



Fig.10

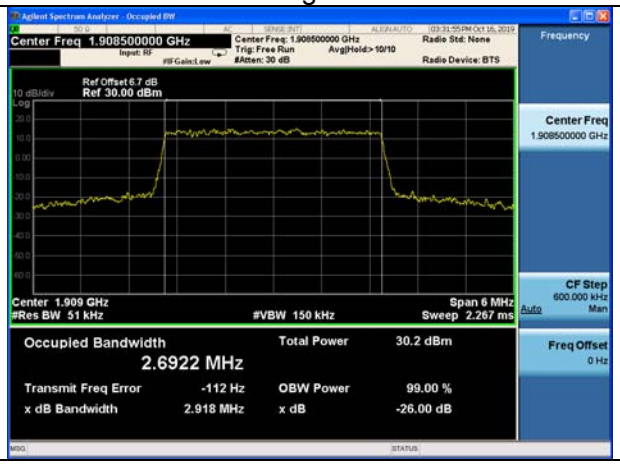



Fig.11


Fig.12

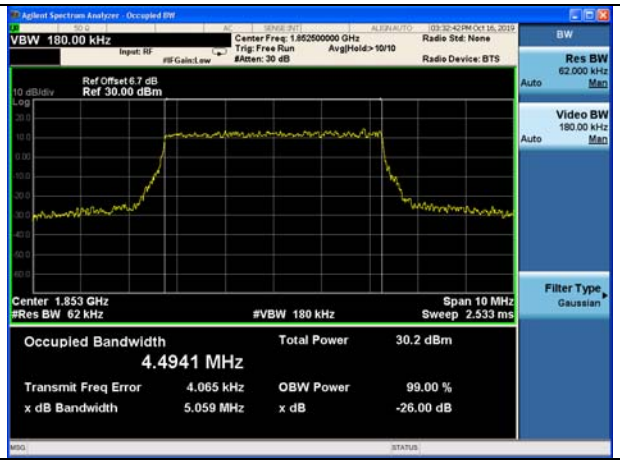



Fig.13

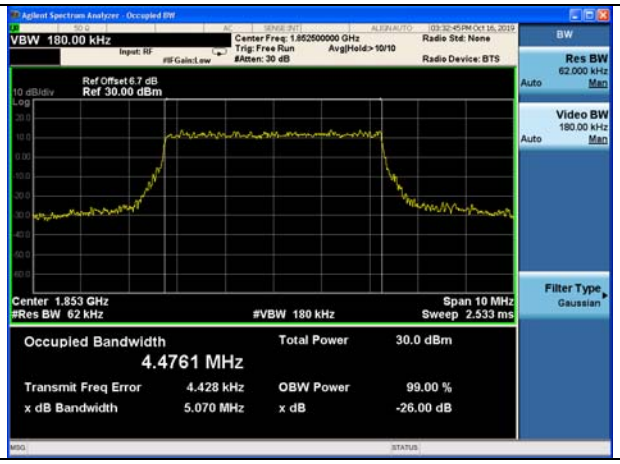



Fig.14

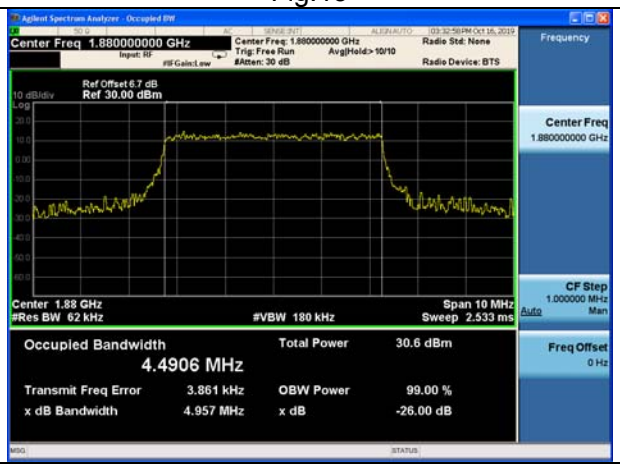



Fig.15

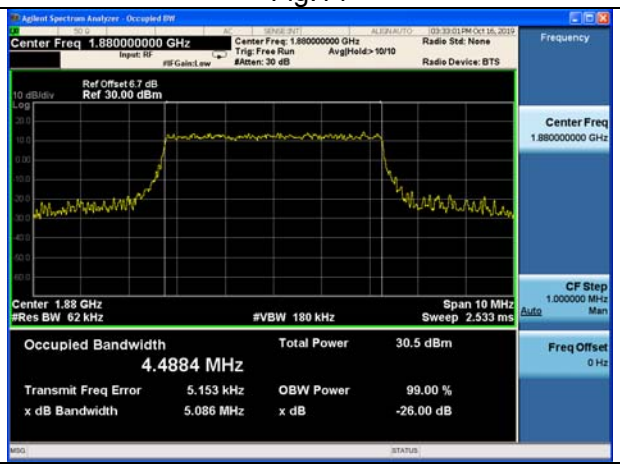



Fig.16

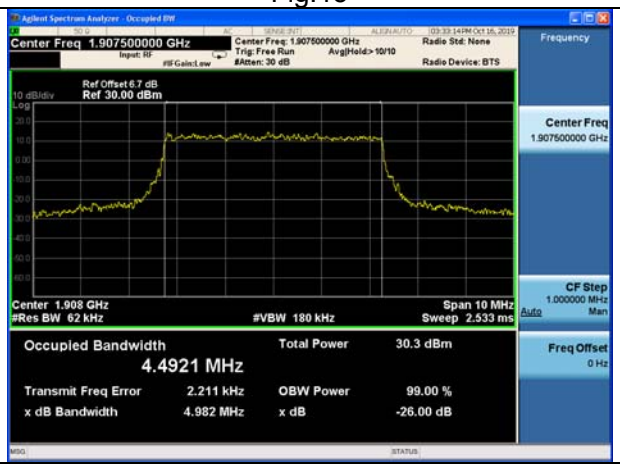



Fig.17

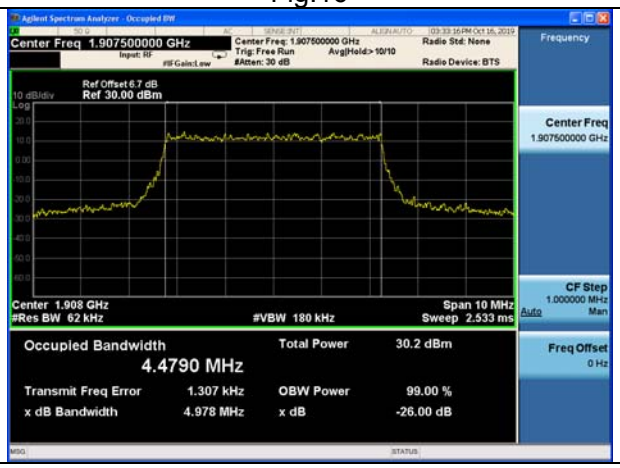



Fig.18


Fig.19


Fig.20

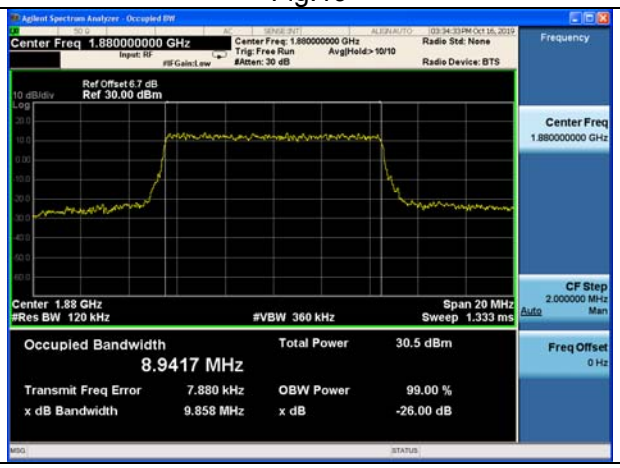



Fig.21

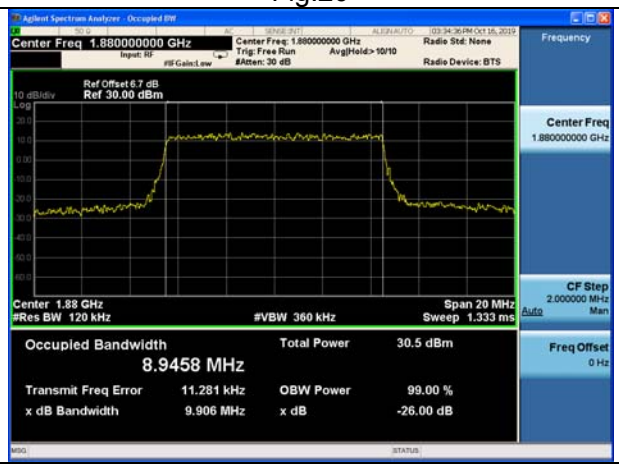



Fig.22

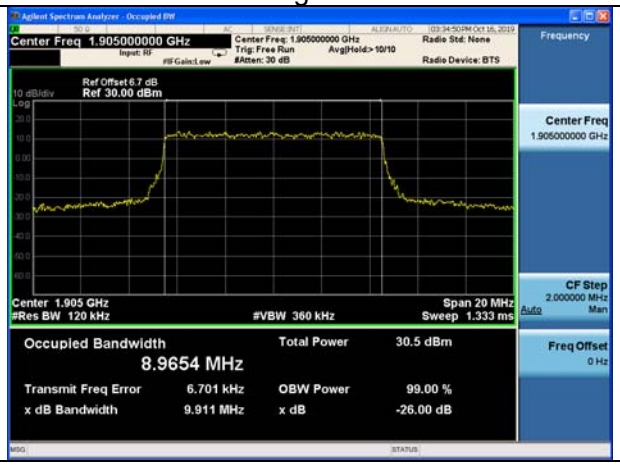



Fig.23

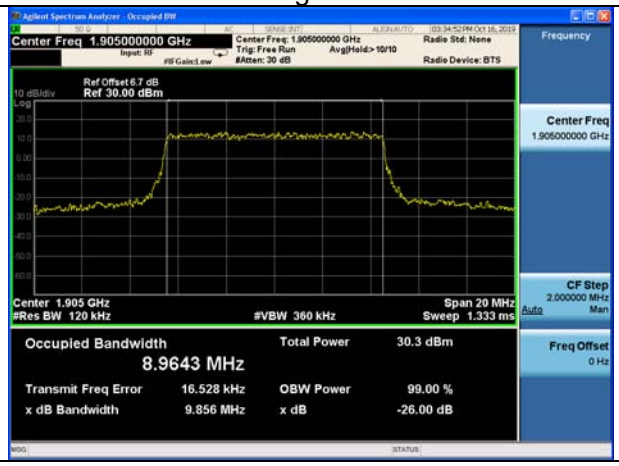



Fig.24

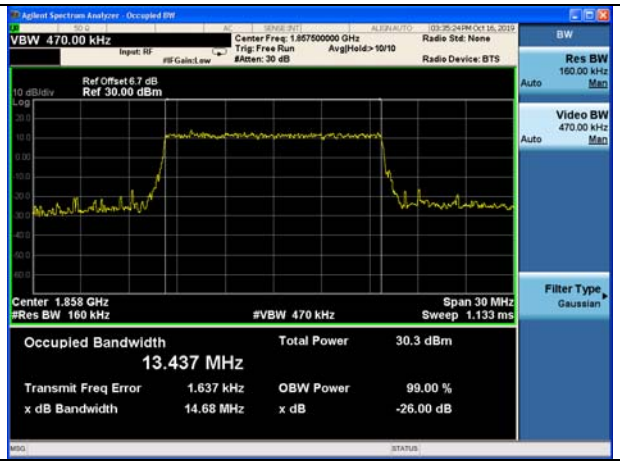



Fig.25

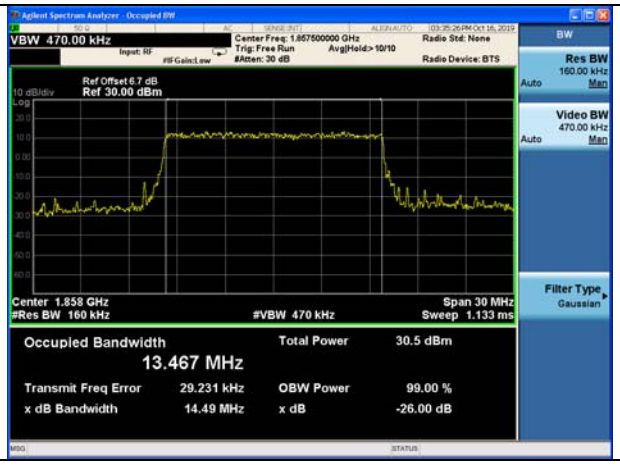



Fig.26

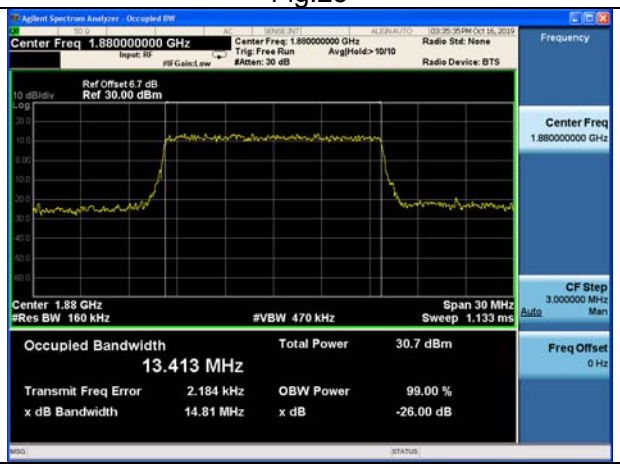



Fig.27

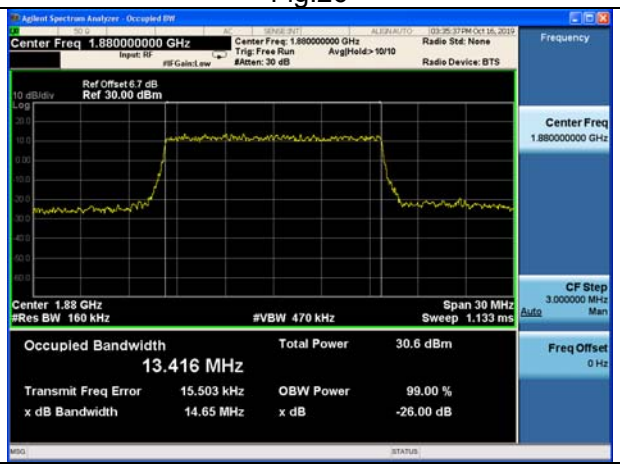



Fig.28

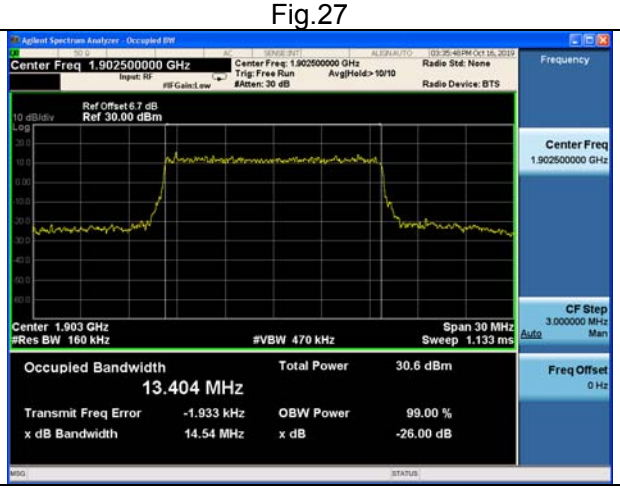



Fig.29

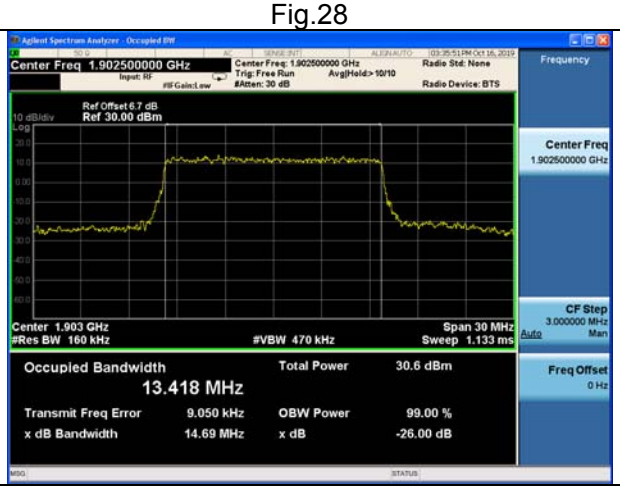



Fig.30


Fig.31

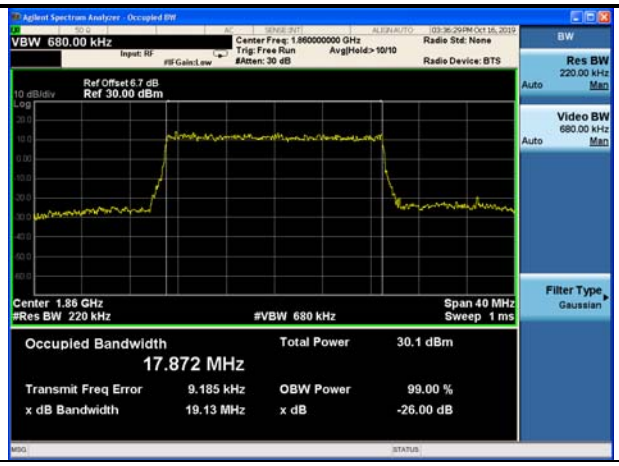



Fig.32

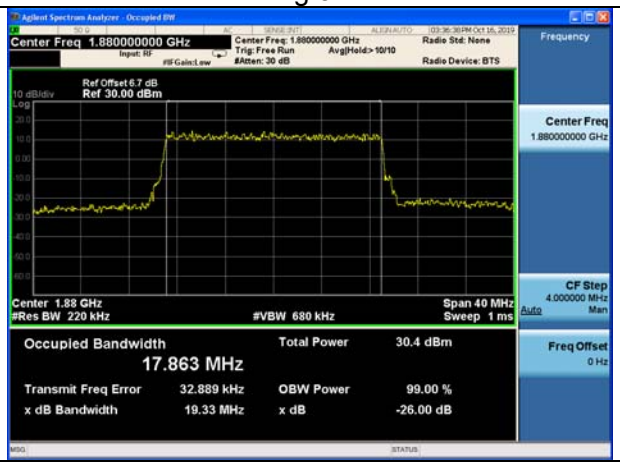



Fig.33

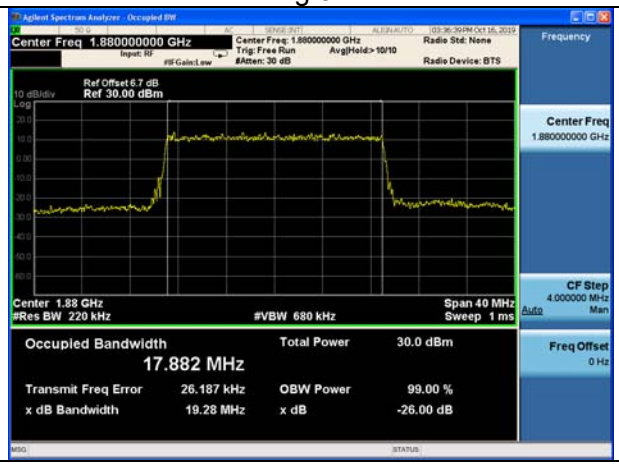



Fig.34

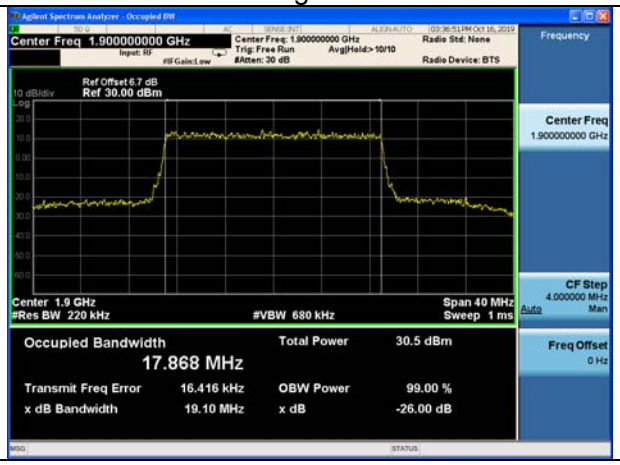



Fig.35

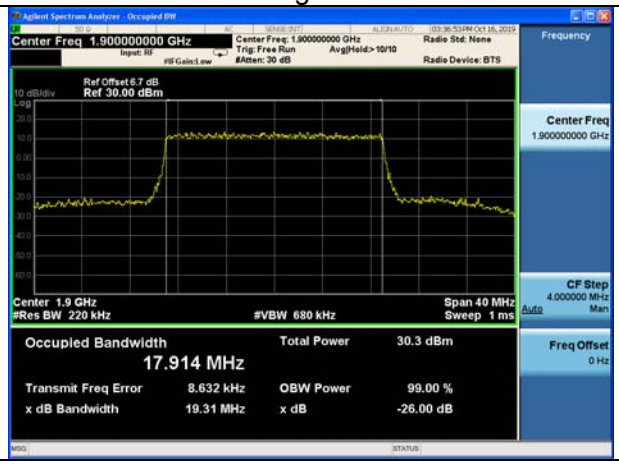



Fig.36

## 3 Peak-Average Ratio

| Band | Carrier frequency (MHz) | Channel | BW (MHz) | RB Size | RB Offset | QPSK | 16-QAM |
|---|---|---|---|---|---|---|---|
| 2 | 1880.0 | 18900 | 1.4 | 1 | 0 | Fig.1 | Fig.2 |
| | | | 3 | 1 | 0 | Fig.3 | Fig.4 |
| | | | 5 | 1 | 0 | Fig.5 | Fig.6 |
| | | | 10 | 1 | 0 | Fig.7 | Fig.8 |
| | | | 15 | 1 | 0 | Fig.9 | Fig.10 |
| | | | 20 | 1 | 0 | Fig.11 | Fig.12 |


Fig.1


Fig.2


Fig.3


Fig.4


Fig.5


Fig.6


Fig.7


Fig.8


Fig.9


Fig.10


Agilent Spectrum Analyzer - Power Stat CCDF
Info BW 25.000 MHz
Center Freq: 1.880000000 GHz
Trig: Free Run
#Atten: 30 dB
Counts:405 k/10.0 Mpt
Radio Std: None
BW
Info BW
25.000 MHz
Average Power
23.02 dBm
48.75 % at 0dB
10.0 % 2.44 dB
1.0 % 3.76 dB
0.1 % 4.30 dB
0.01 % 4.40 dB
0.001 % 4.43 dB
0.0001 % --- dB
Peak 4.46 dB
27.48 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz

Fig.11


Agilent Spectrum Analyzer - Power Stat CCDF
Info BW 25.000 MHz
Center Freq: 1.880000000 GHz
Trig: Free Run
#Atten: 30 dB
Counts:495 k/10.0 Mpt
Radio Std: None
BW
Info BW
25.000 MHz
Average Power
22.11 dBm
45.08 % at 0dB
10.0 % 2.86 dB
1.0 % 4.69 dB
0.1 % 5.24 dB
0.01 % 5.38 dB
0.001 % 5.42 dB
0.0001 % --- dB
Peak 5.44 dB
27.55 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz

Fig.12

## 4 Spurious Emissions at antenna terminal

| Band | Carrier frequency (MHz) | Channel | BW | RB Size | RB Offset | Conducted Spurious Plot |
|---|---|---|---|---|---|---|
| | | | | | | QPSK |
| 2 | 1860 | 18700 | 20 | 1 | 0 | Fig.1 |
| | 1880 | 18900 | 20 | 1 | 0 | Fig.2 |
| | 1900 | 19100 | 20 | 1 | 0 | Fig.3 |


Fig.1

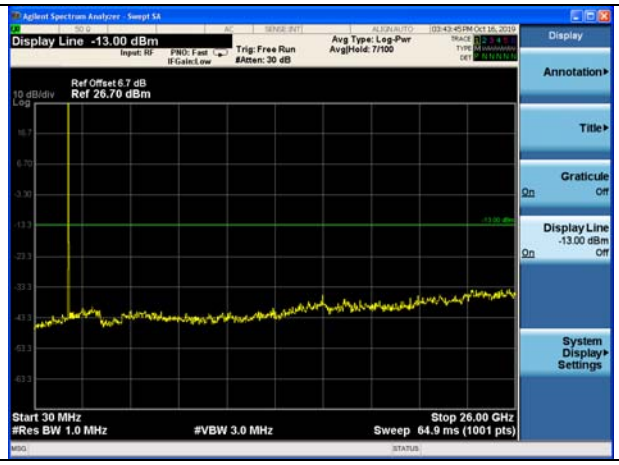



Fig.2


Fig3

## 5 Band Edges Compliance

Test result

| Band | Carrier frequency (MHz) | Channel | BW | RB Size | RB Offset | Band Edges Plot |
|---|---|---|---|---|---|---|
| | | | | | | QPSK |
| 2 | 1850.7 | 18607 | 1.4 | 1 | 0 | Fig.1 |
| | | | | 6 | 0 | Fig.2 |
| | 1909.3 | 19193 | | 1 | 5 | Fig.3 |
| | | | | 6 | 0 | Fig.4 |
| | 1851.5 | 18615 | 3 | 1 | 0 | Fig.5 |
| | | | | 15 | 0 | Fig.6 |
| | 1908.5 | 19185 | | 1 | 14 | Fig.7 |
| | | | | 15 | 0 | Fig.8 |
| | 1852.5 | 18625 | 5 | 1 | 0 | Fig.9 |
| | | | | 25 | 0 | Fig.10 |
| | 1907.5 | 19175 | | 1 | 24 | Fig.11 |
| | | | | 25 | 0 | Fig.12 |
| | 1855 | 18650 | 10 | 1 | 0 | Fig.13 |
| | | | | 50 | 0 | Fig.14 |
| | 1905 | 19150 | | 1 | 49 | Fig.15 |
| | | | | 50 | 0 | Fig.16 |
| | 1857.5 | 18675 | 15 | 1 | 0 | Fig.17 |
| | | | | 75 | 0 | Fig.18 |
| | 1902.5 | 19125 | | 1 | 74 | Fig.19 |
| | | | | 75 | 0 | Fig.20 |
| | 1860 | 18700 | 20 | 1 | 0 | Fig.21 |
| | | | | 100 | 0 | Fig.22 |
| | 1900 | 19100 | | 1 | 99 | Fig.23 |
| | | | | 100 | 0 | Fig.24 |


Fig.1


Fig.2

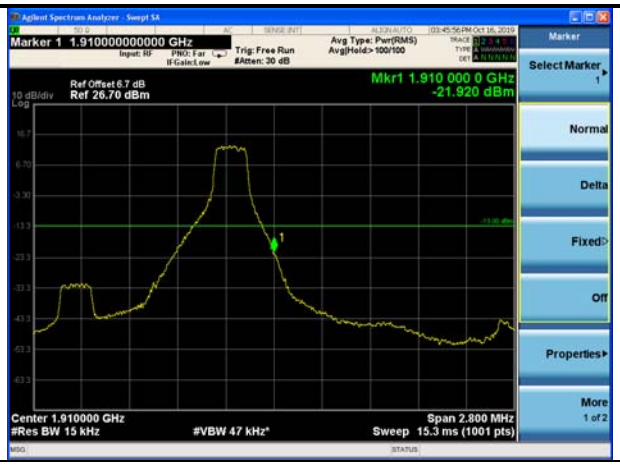



Fig.3


Fig.4

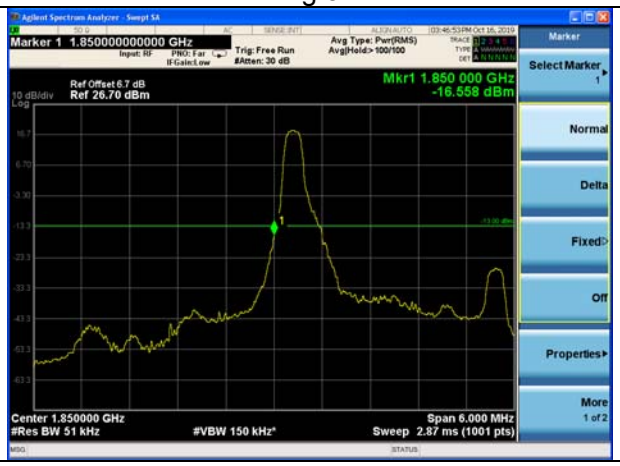



Fig.5


Fig.6


Fig.7


Fig.8

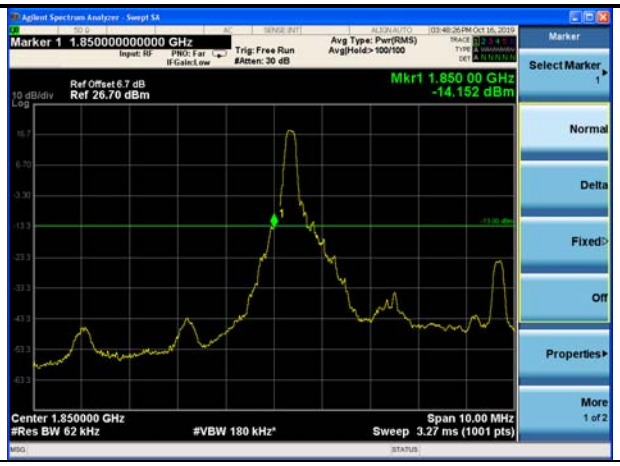



Fig.9

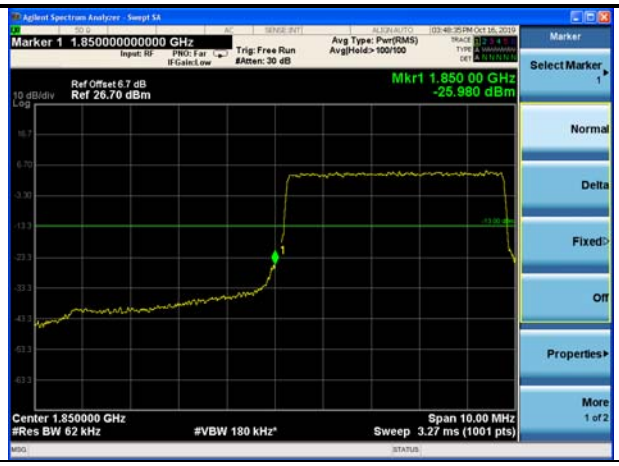



Fig.10

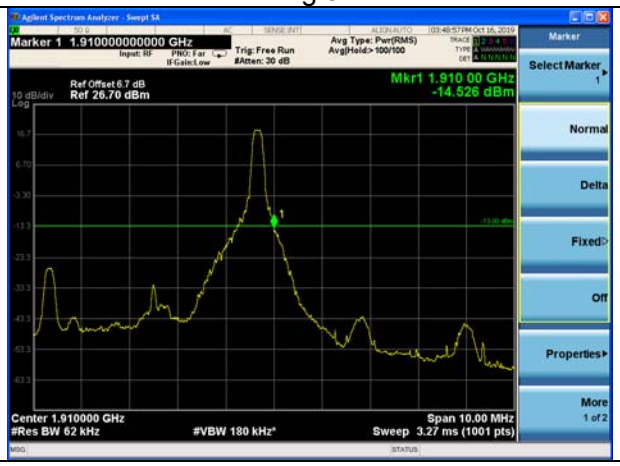



Fig.11


Fig.12

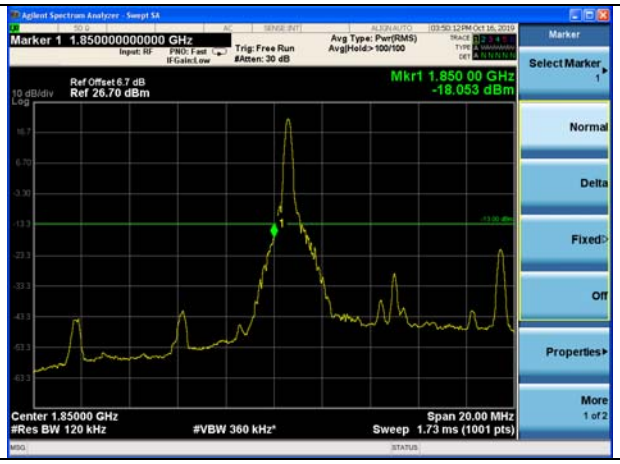



Fig.13

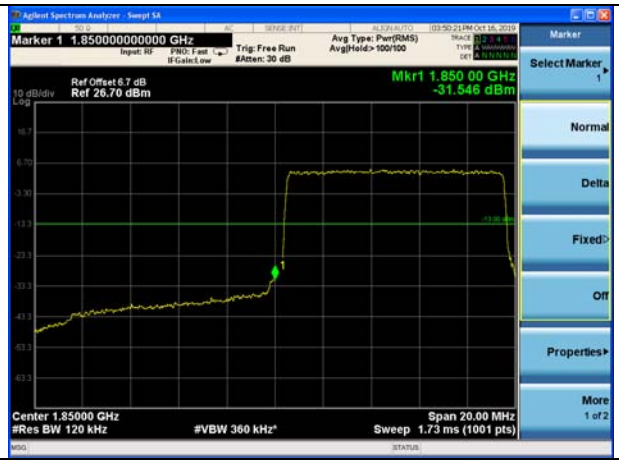



Fig.14

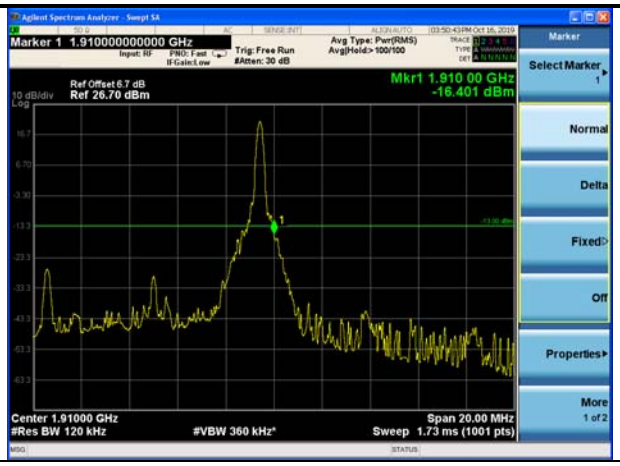



Fig.15


Fig.16

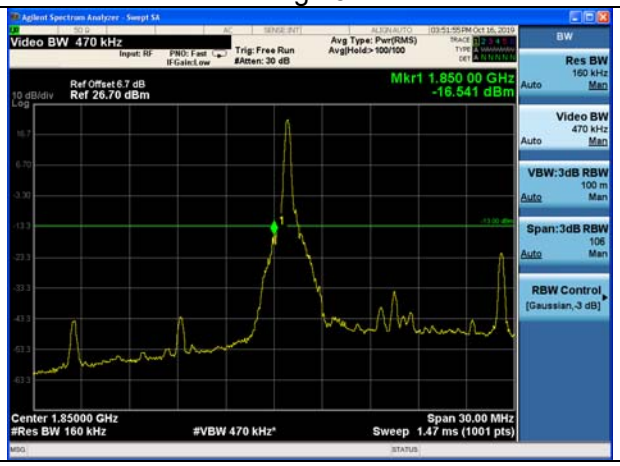



Fig.17

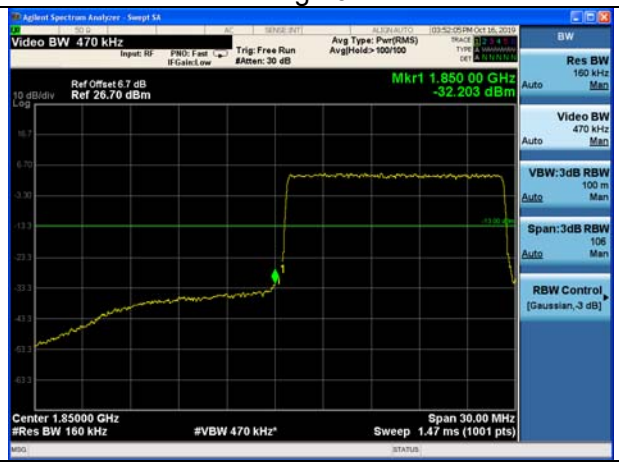



Fig.18

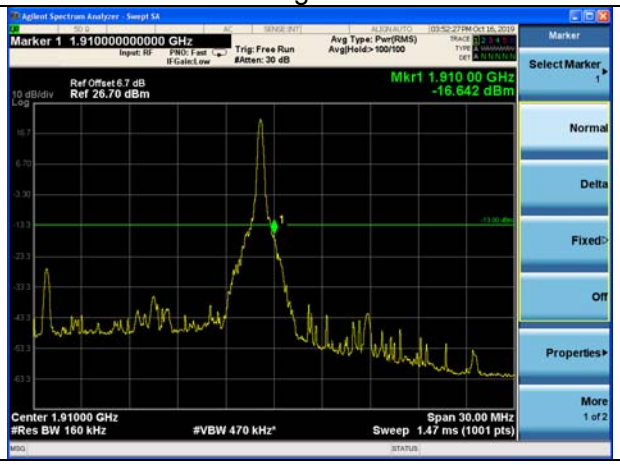



Fig.19


Fig.20

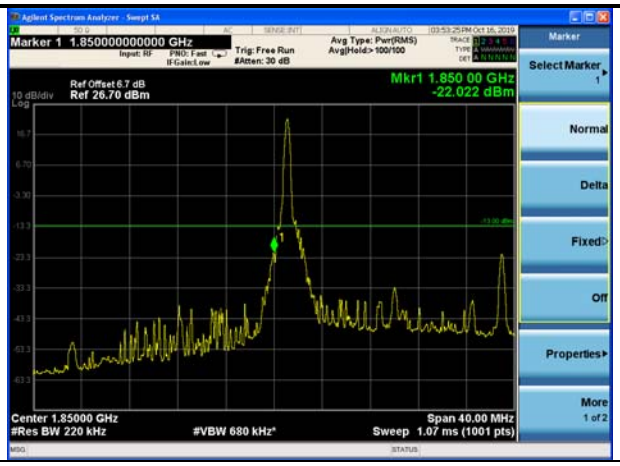



Fig.21

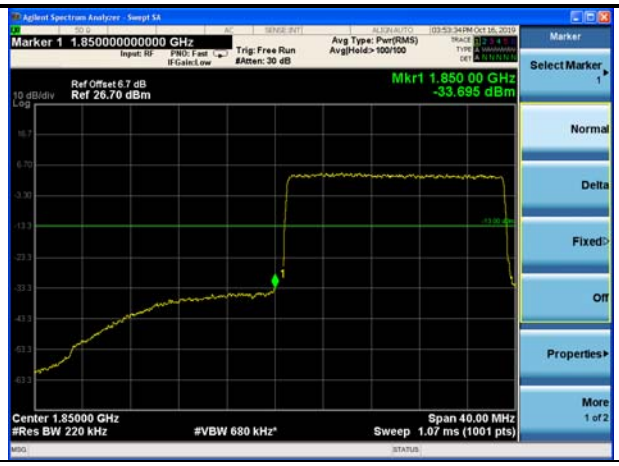



Fig.22

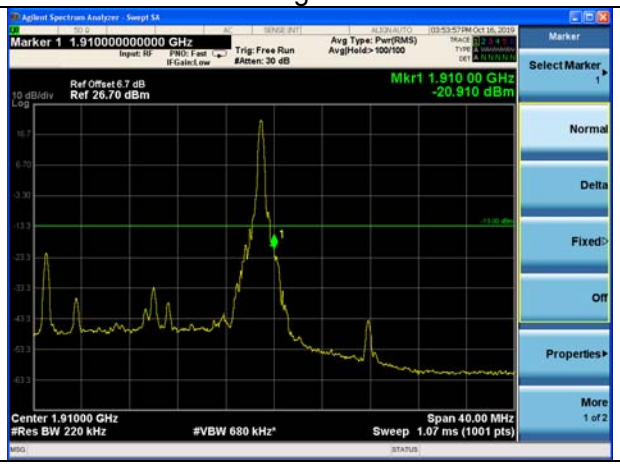



Fig.23


Fig.24

## 6 Frequency Stability

Test result:

| Temperature(°C) | Voltage | Test Result (ppm) Band2 Low Channel | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1.4M | 3M | 5M | 10M | 15M | 20M |
| 0 | NV | -0.046 | -0.091 | -0.007 | -0.049 | 0.040 | -0.046 |
| +10 | NV | 0.036 | -0.009 | 0.096 | 0.093 | -0.062 | 0.036 |
| +20 | NV | 0.040 | -0.003 | 0.060 | -0.027 | -0.060 | 0.040 |
| +30 | NV | -0.021 | 0.074 | -0.025 | -0.067 | 0.084 | -0.021 |
| +40 | NV | -0.083 | -0.001 | -0.020 | -0.011 | 0.028 | -0.083 |
| +50 | NV | -0.005 | 0.081 | -0.076 | -0.065 | 0.043 | -0.005 |
| +20 | LV | -0.022 | -0.087 | 0.088 | -0.021 | 0.025 | -0.022 |
| +20 | HV | -0.046 | -0.091 | -0.007 | -0.049 | 0.040 | -0.046 |

| Temperature(°C) | Voltage | Test Result (ppm) Band2 High Channel | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1.4M | 3M | 5M | 10M | 15M | 20M |
| 0 | NV | 0.028 | 0.060 | 0.061 | -0.023 | 0.090 | 0.028 |
| +10 | NV | -0.016 | -0.008 | 0.049 | 0.048 | 0.022 | -0.016 |
| +20 | NV | -0.085 | -0.006 | 0.039 | 0.080 | 0.093 | -0.085 |
| +30 | NV | 0.043 | -0.065 | -0.040 | -0.077 | 0.084 | 0.043 |
| +40 | NV | -0.037 | -0.006 | -0.073 | 0.100 | 0.027 | -0.037 |
| +50 | NV | 0.010 | 0.056 | -0.051 | -0.068 | 0.069 | 0.010 |
| +20 | LV | 0.000 | 0.038 | -0.095 | -0.040 | 0.055 | 0.000 |
| +20 | HV | 0.028 | 0.060 | 0.061 | -0.023 | 0.090 | 0.028 |

# APPENDIX A – TEST DATA OF CONDUCTED EMISSION

**LTE Band 4**

**1 RF Power Output**

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1710.7 | 19957 | 1.4 | 1 | 0 | 21.88 |
| | | | | 1 | 5 | 21.88 |
| | | | | 3 | 2 | 21.23 |
| | | | | 6 | 0 | 21.14 |
| | 1732.5 | 20175 | | 1 | 0 | 21.88 |
| | | | | 1 | 5 | 21.88 |
| | | | | 3 | 2 | 21.06 |
| | | | | 6 | 0 | 21.03 |
| | 1754.3 | 20393 | | 1 | 0 | 21.87 |
| | | | | 1 | 5 | 21.87 |
| | | | | 3 | 2 | 21.04 |
| | | | | 6 | 0 | 20.98 |
| 16QAM | 1710.7 | 19957 | 1.4 | 1 | 0 | 21.15 |
| | | | | 1 | 5 | 21.15 |
| | | | | 3 | 2 | 20.17 |
| | | | | 6 | 0 | 20.07 |
| | 1732.5 | 20175 | | 1 | 0 | 21.12 |
| | | | | 1 | 5 | 21.12 |
| | | | | 3 | 2 | 19.99 |
| | | | | 6 | 0 | 19.97 |
| | 1754.3 | 20393 | | 1 | 0 | 21.12 |
| | | | | 1 | 5 | 21.12 |
| | | | | 3 | 2 | 19.97 |
| | | | | 6 | 0 | 19.90 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1711.5 | 19965 | 3 | 1 | 0 | 21.77 |
| | | | | 1 | 14 | 21.77 |
| | | | | 8 | 4 | 21.12 |
| | | | | 15 | 0 | 21.03 |
| | 1732.5 | 20175 | | 1 | 0 | 21.77 |
| | | | | 1 | 14 | 21.77 |
| | | | | 8 | 4 | 20.95 |
| | | | | 15 | 0 | 20.92 |
| | 1753.5 | 20385 | | 1 | 0 | 21.76 |
| | | | | 1 | 14 | 21.76 |
| | | | | 8 | 4 | 20.93 |
| | | | | 15 | 0 | 20.87 |
| 16QAM | 1711.5 | 19965 | 3 | 1 | 0 | 21.09 |
| | | | | 1 | 14 | 21.09 |
| | | | | 8 | 4 | 20.15 |
| | | | | 15 | 0 | 20.05 |
| | 1732.5 | 20175 | | 1 | 0 | 21.10 |
| | | | | 1 | 14 | 21.10 |
| | | | | 8 | 4 | 19.97 |
| | | | | 15 | 0 | 19.95 |
| | 1753.5 | 20385 | | 1 | 0 | 21.10 |
| | | | | 1 | 14 | 21.10 |
| | | | | 8 | 4 | 19.95 |
| | | | | 15 | 0 | 19.88 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1712.5 | 19975 | 5 | 1 | 0 | 21.83 |
| | | | | 1 | 24 | 21.83 |
| | | | | 12 | 6 | 21.18 |
| | | | | 25 | 0 | 21.09 |
| | 1732.5 | 20175 | | 1 | 0 | 21.83 |
| | | | | 1 | 24 | 21.83 |
| | | | | 12 | 6 | 21.01 |
| | | | | 25 | 0 | 20.98 |
| | 1752.5 | 20375 | | 1 | 0 | 21.82 |
| | | | | 1 | 24 | 21.82 |
| | | | | 12 | 6 | 20.99 |
| | | | | 25 | 0 | 20.88 |
| 16QAM | 1712.5 | 19975 | 5 | 1 | 0 | 21.05 |
| | | | | 1 | 24 | 21.05 |
| | | | | 12 | 6 | 20.11 |
| | | | | 25 | 0 | 20.01 |
| | 1732.5 | 20175 | | 1 | 0 | 21.06 |
| | | | | 1 | 24 | 21.06 |
| | | | | 12 | 6 | 19.93 |
| | | | | 25 | 0 | 19.91 |
| | 1752.5 | 20375 | | 1 | 0 | 21.06 |
| | | | | 1 | 24 | 21.06 |
| | | | | 12 | 6 | 19.91 |
| | | | | 25 | 0 | 19.84 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1715 | 20000 | 10 | 1 | 0 | 21.77 |
| | | | | 1 | 49 | 21.77 |
| | | | | 24 | 12 | 21.12 |
| | | | | 50 | 0 | 21.03 |
| | 1732.5 | 20175 | | 1 | 0 | 21.77 |
| | | | | 1 | 49 | 21.77 |
| | | | | 24 | 12 | 21.06 |
| | | | | 50 | 0 | 21.03 |
| | 1750 | 20350 | | 1 | 0 | 21.87 |
| | | | | 1 | 49 | 21.87 |
| | | | | 24 | 12 | 21.04 |
| | | | | 50 | 0 | 20.98 |
| 16QAM | 1715 | 20000 | 10 | 1 | 0 | 21.15 |
| | | | | 1 | 49 | 21.15 |
| | | | | 24 | 12 | 20.10 |
| | | | | 50 | 0 | 20.00 |
| | 1732.5 | 20175 | | 1 | 0 | 21.05 |
| | | | | 1 | 49 | 21.05 |
| | | | | 24 | 12 | 19.92 |
| | | | | 50 | 0 | 19.90 |
| | 1750 | 20350 | | 1 | 0 | 21.05 |
| | | | | 1 | 49 | 21.05 |
| | | | | 24 | 12 | 19.90 |
| | | | | 50 | 0 | 19.83 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1717.5 | 20025 | 15 | 1 | 0 | 21.85 |
| | | | | 1 | 74 | 21.85 |
| | | | | 40 | 18 | 21.20 |
| | | | | 75 | 0 | 21.11 |
| | 1732.5 | 20175 | | 1 | 0 | 21.85 |
| | | | | 1 | 74 | 21.85 |
| | | | | 40 | 18 | 21.03 |
| | | | | 75 | 0 | 21.00 |
| | 1747.5 | 20325 | | 1 | 0 | 21.84 |
| | | | | 1 | 74 | 21.84 |
| | | | | 40 | 18 | 20.95 |
| | | | | 75 | 0 | 20.89 |
| 16QAM | 1717.5 | 20025 | 15 | 1 | 0 | 21.06 |
| | | | | 1 | 74 | 21.06 |
| | | | | 40 | 18 | 20.12 |
| | | | | 75 | 0 | 20.02 |
| | 1732.5 | 20175 | | 1 | 0 | 21.07 |
| | | | | 1 | 74 | 21.07 |
| | | | | 40 | 18 | 19.94 |
| | | | | 75 | 0 | 19.92 |
| | 1747.5 | 20325 | | 1 | 0 | 21.07 |
| | | | | 1 | 74 | 21.07 |
| | | | | 40 | 18 | 19.92 |
| | | | | 75 | 0 | 19.85 |

| Modulation | Carrier frequency (MHz) | UL Channel | BW | RB Size | RB Offset | Conducted power (dBm) |
|---|---|---|---|---|---|---|
| QPSK | 1720 | 20050 | 20 | 1 | 0 | 21.96 |
| | | | | 1 | 99 | 21.96 |
| | | | | 50 | 25 | 21.18 |
| | | | | 100 | 0 | 21.10 |
| | 1732.5 | 20175 | | 1 | 0 | 21.95 |
| | | | | 1 | 99 | 21.95 |
| | | | | 50 | 25 | 21.04 |
| | | | | 100 | 0 | 21.00 |
| | 1745 | 20300 | | 1 | 0 | 21.94 |
| | | | | 1 | 99 | 21.94 |
| | | | | 50 | 25 | 20.97 |
| | | | | 100 | 0 | 20.94 |
| 16QAM | 1720 | 20050 | 20 | 1 | 0 | 21.20 |
| | | | | 1 | 99 | 21.20 |
| | | | | 50 | 25 | 20.22 |
| | | | | 100 | 0 | 20.11 |
| | 1732.5 | 20175 | | 1 | 0 | 21.27 |
| | | | | 1 | 99 | 21.27 |
| | | | | 50 | 25 | 20.05 |
| | | | | 100 | 0 | 20.02 |
| | 1745 | 20300 | | 1 | 0 | 21.17 |
| | | | | 1 | 99 | 21.17 |
| | | | | 50 | 25 | 20.03 |
| | | | | 100 | 0 | 19.97 |

## 2 Occupied Bandwidth

Test result

| Band | Carrier frequency (MHz) | Channel | BW (MHz) | RB Size | RB Offset | Bandwidth of 99% Power (MHz) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | QPSK | | 16-QAM | |
| 4 | 1710.7 | 19957 | 1.4 | 6 | 0 | 1.0775 | Fig.1 | 1.0747 | Fig.2 |
| | 1732.5 | 20175 | | 6 | 0 | 1.0747 | Fig.3 | 1.0741 | Fig.4 |
| | 1754.3 | 20393 | | 6 | 0 | 1.0758 | Fig.5 | 1.0763 | Fig.6 |
| | 1711.5 | 19965 | 3 | 15 | 0 | 2.6961 | Fig.7 | 2.6936 | Fig.8 |
| | 1732.5 | 20175 | | 15 | 0 | 2.6867 | Fig.9 | 2.7029 | Fig.10 |
| | 1753.5 | 20385 | | 15 | 0 | 2.7030 | Fig.11 | 2.6927 | Fig.12 |
| | 1712.5 | 19975 | 5 | 25 | 0 | 4.4750 | Fig.13 | 4.4787 | Fig.14 |
| | 1732.5 | 20175 | | 25 | 0 | 4.4883 | Fig.15 | 4.4937 | Fig.16 |
| | 1752.5 | 20375 | | 25 | 0 | 4.4960 | Fig.17 | 4.4896 | Fig.18 |
| | 1715 | 20000 | 10 | 50 | 0 | 8.9743 | Fig.19 | 8.9674 | Fig.20 |
| | 1732.5 | 20175 | | 50 | 0 | 8.9388 | Fig.21 | 8.9645 | Fig.22 |
| | 1750 | 20350 | | 50 | 0 | 8.9380 | Fig.23 | 8.9531 | Fig.24 |
| | 1717.5 | 20025 | 15 | 75 | 0 | 13.439 | Fig.25 | 13.397 | Fig.26 |
| | 1732.5 | 20175 | | 75 | 0 | 13.425 | Fig.27 | 13.412 | Fig.28 |
| | 1747.5 | 20325 | | 75 | 0 | 13.407 | Fig.29 | 13.422 | Fig.30 |
| | 1720 | 20050 | 20 | 100 | 0 | 17.871 | Fig.31 | 17.853 | Fig.32 |
| | 1732.5 | 20175 | | 100 | 0 | 17.869 | Fig.33 | 17.868 | Fig.34 |
| | 1745 | 20300 | | 100 | 0 | 17.857 | Fig.35 | 17.844 | Fig.36 |

| Band | Carrier frequency (MHz) | Channel | BW (MHz) | RB Size | RB Offset | Bandwidth of -26dB transmitter power (MHz) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | QPSK | | 16-QAM | |
| 4 | 1710.7 | 19957 | 1.4 | 6 | 0 | 1.230 | Fig.1 | 1.224 | Fig.2 |
| | 1732.5 | 20175 | | 6 | 0 | 1.245 | Fig.3 | 1.234 | Fig.4 |
| | 1754.3 | 20393 | | 6 | 0 | 1.248 | Fig.5 | 1.231 | Fig.6 |
| | 1711.5 | 19965 | 3 | 15 | 0 | 2.916 | Fig.7 | 2.899 | Fig.8 |
| | 1732.5 | 20175 | | 15 | 0 | 2.913 | Fig.9 | 2.888 | Fig.10 |
| | 1753.5 | 20385 | | 15 | 0 | 2.883 | Fig.11 | 2.901 | Fig.12 |
| | 1712.5 | 19975 | 5 | 25 | 0 | 5.047 | Fig.13 | 4.995 | Fig.14 |
| | 1732.5 | 20175 | | 25 | 0 | 4.997 | Fig.15 | 5.023 | Fig.16 |
| | 1752.5 | 20375 | | 25 | 0 | 5.084 | Fig.17 | 4.945 | Fig.18 |
| | 1715 | 20000 | 10 | 50 | 0 | 9.967 | Fig.19 | 9.720 | Fig.20 |
| | 1732.5 | 20175 | | 50 | 0 | 9.805 | Fig.21 | 9.777 | Fig.22 |
| | 1750 | 20350 | | 50 | 0 | 9.973 | Fig.23 | 9.730 | Fig.24 |
| | 1717.5 | 20025 | 15 | 75 | 0 | 14.60 | Fig.25 | 14.44 | Fig.26 |
| | 1732.5 | 20175 | | 75 | 0 | 14.51 | Fig.27 | 14.72 | Fig.28 |
| | 1747.5 | 20325 | | 75 | 0 | 14.72 | Fig.29 | 14.80 | Fig.30 |
| | 1720 | 20050 | 20 | 100 | 0 | 19.38 | Fig.31 | 19.29 | Fig.32 |
| | 1732.5 | 20175 | | 100 | 0 | 19.24 | Fig.33 | 19.18 | Fig.34 |
| | 1745 | 20300 | | 100 | 0 | 19.36 | Fig.35 | 19.15 | Fig.36 |

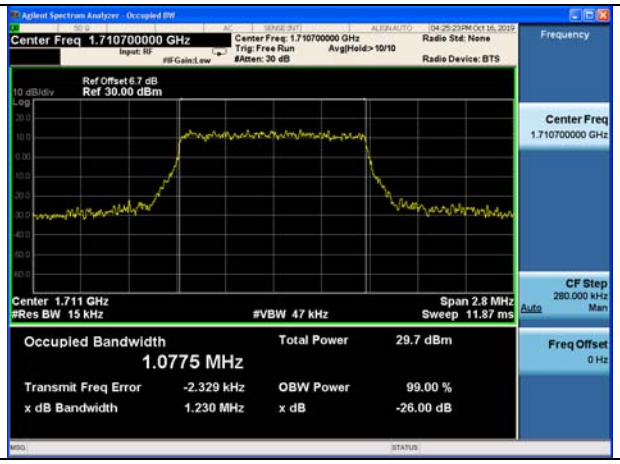



Fig.1

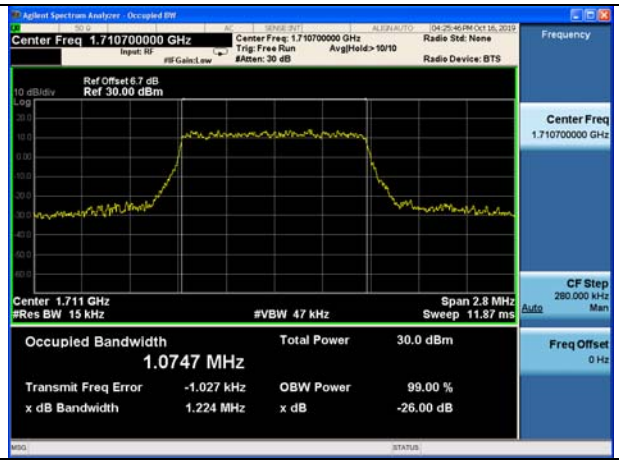



Fig.2

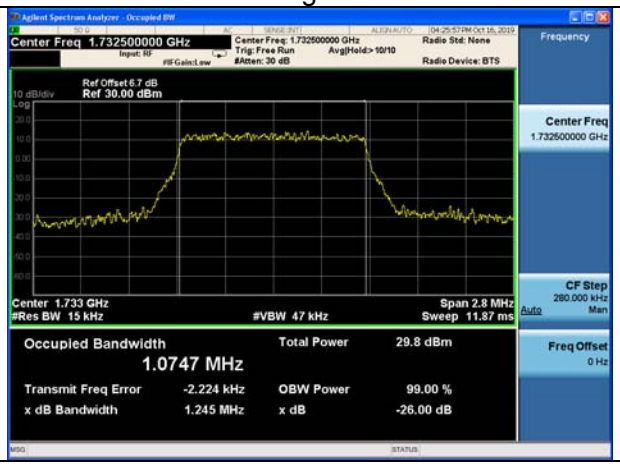



Fig.3

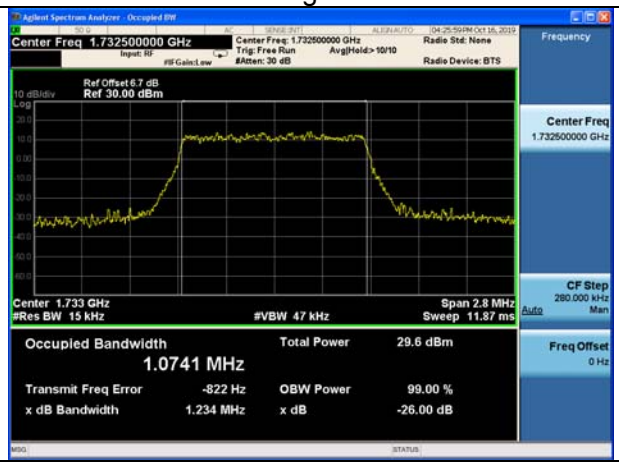



Fig.4

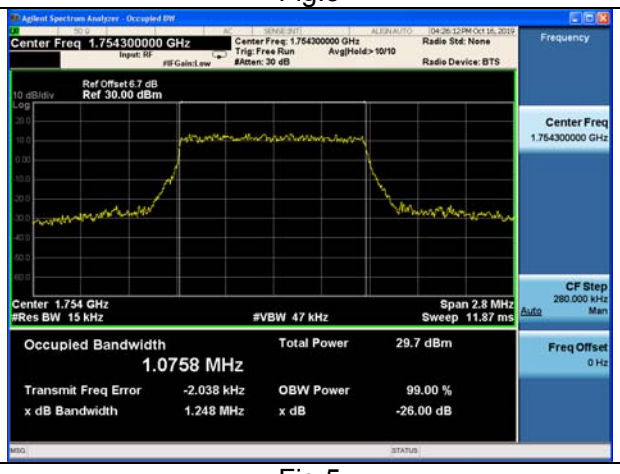



Fig.5

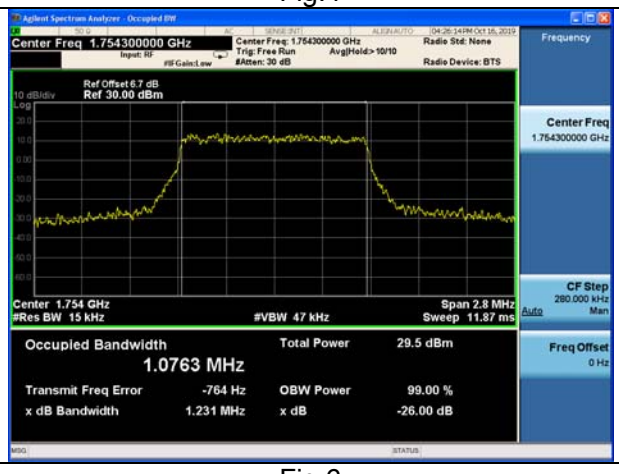



Fig.6

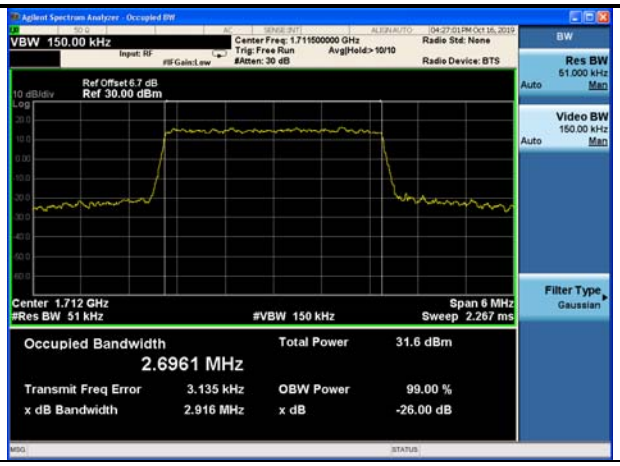



Fig.7

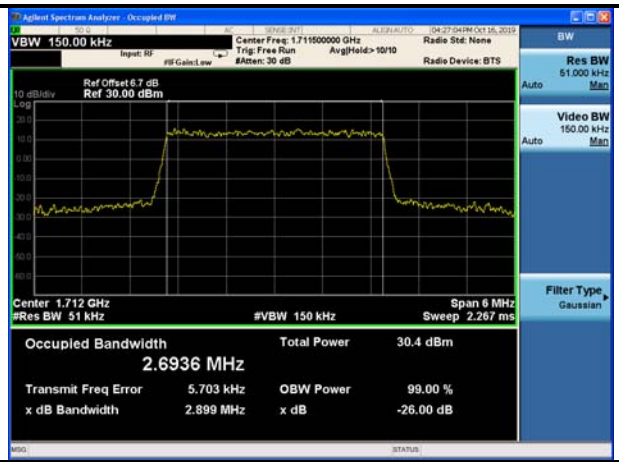



Fig.8

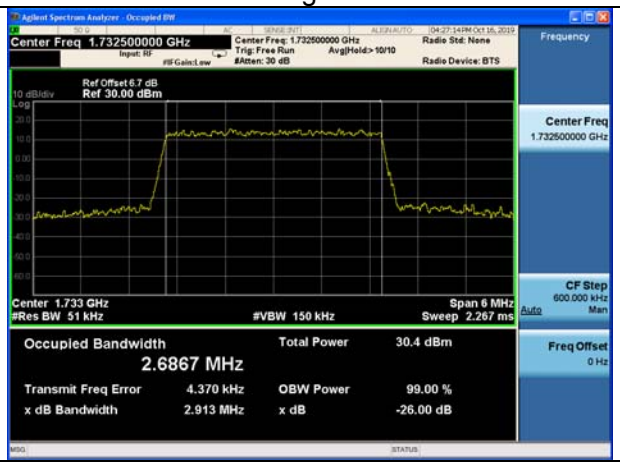



Fig.9

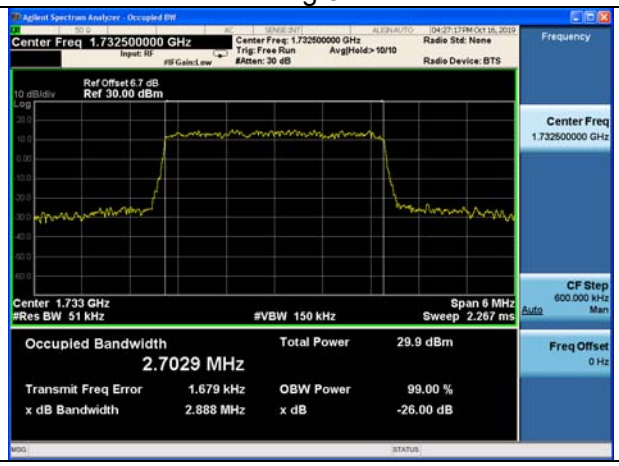



Fig.10

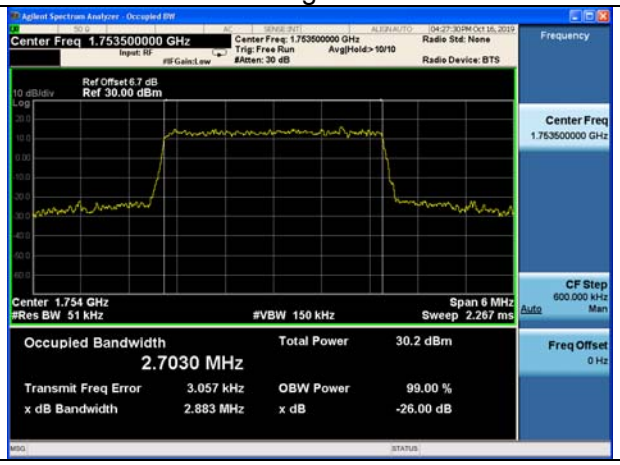



Fig.11

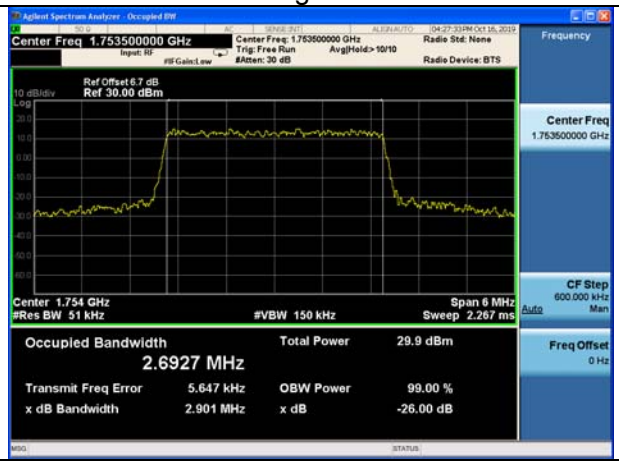



Fig.12


Fig.13

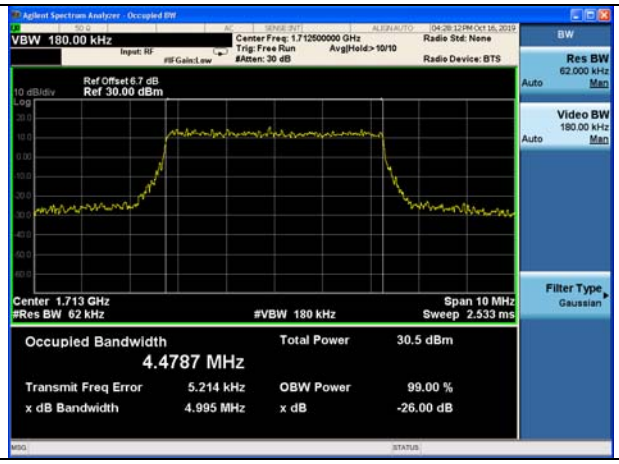



Fig.14

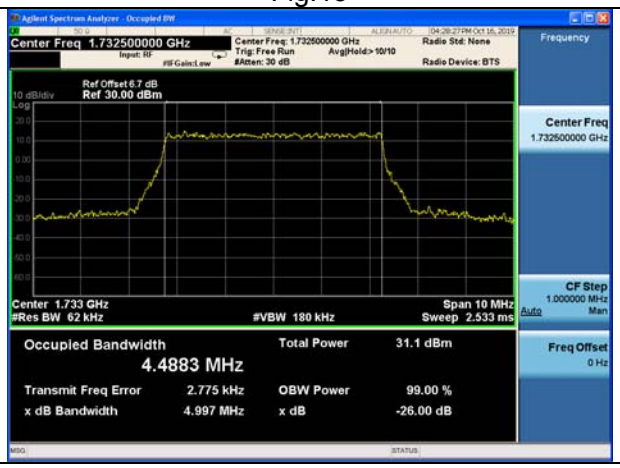



Fig.15

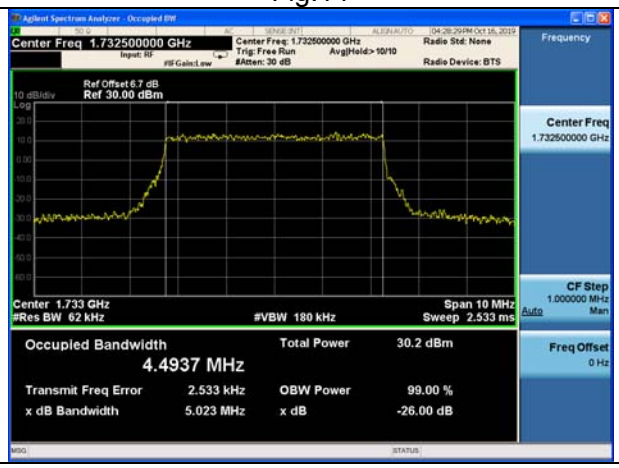



Fig.16


Fig.17

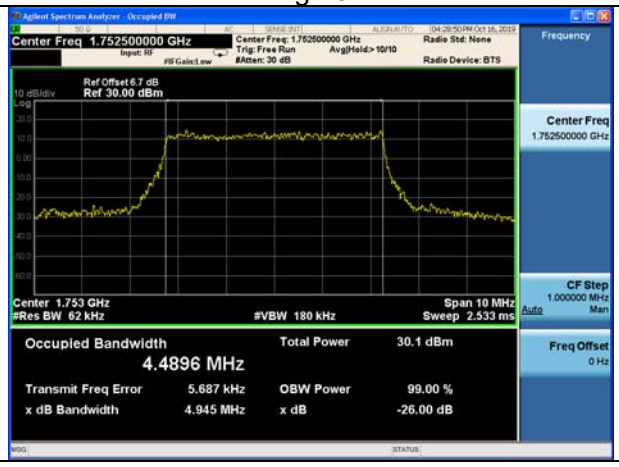



Fig.18

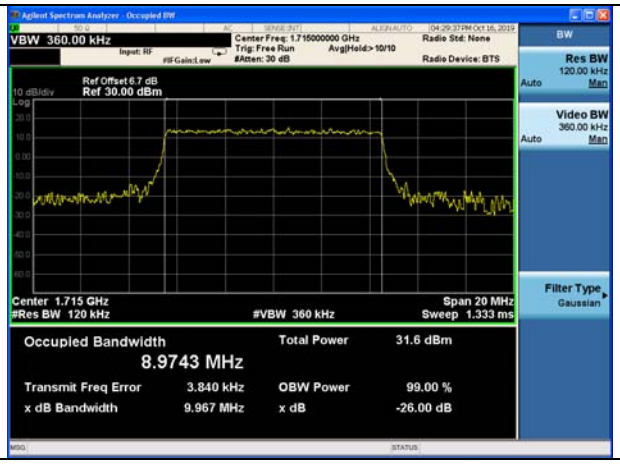



Fig.19

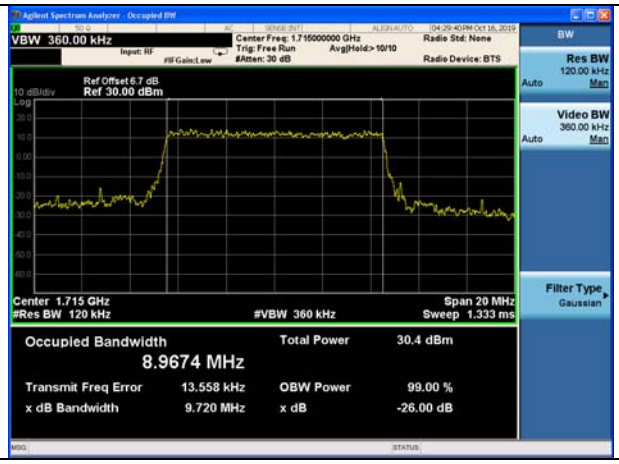



Fig.20

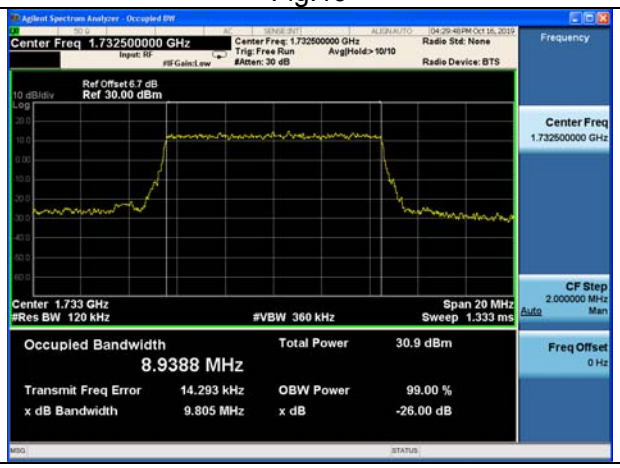



Fig.21

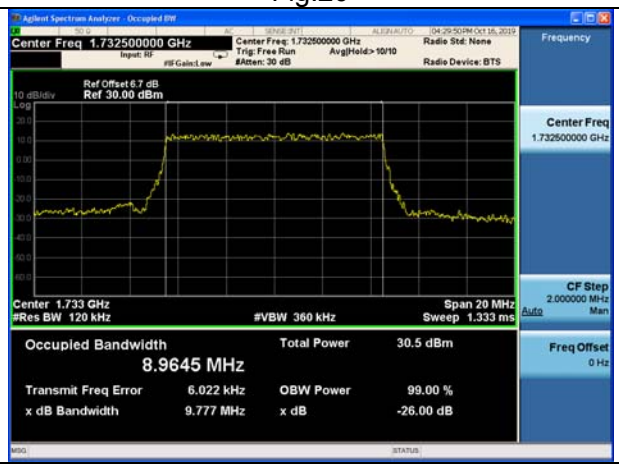



Fig.22

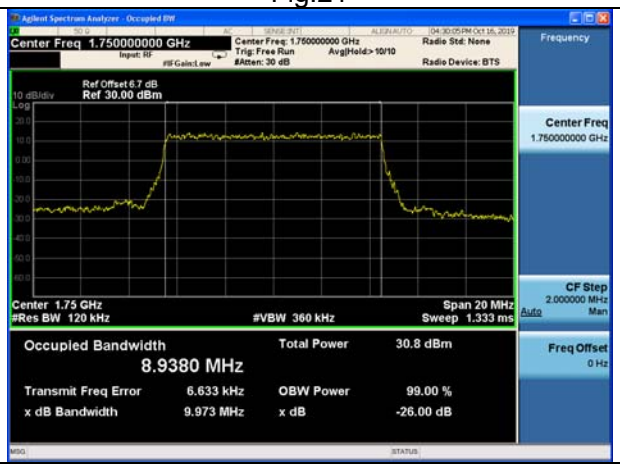



Fig.23

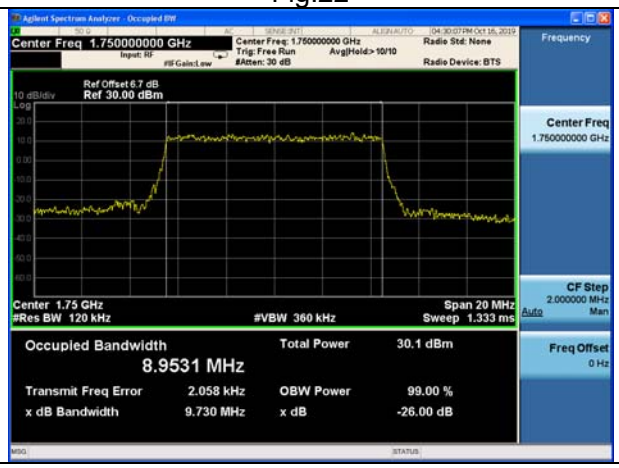



Fig.24

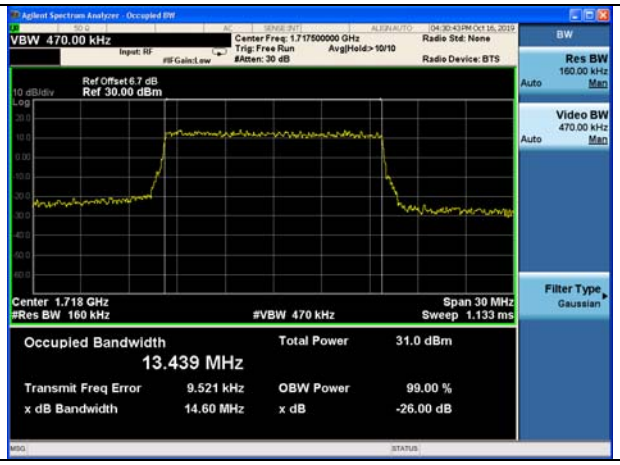



Fig.25

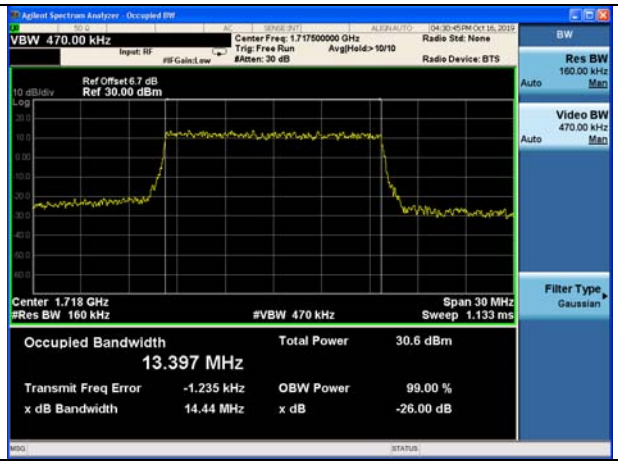



Fig.26

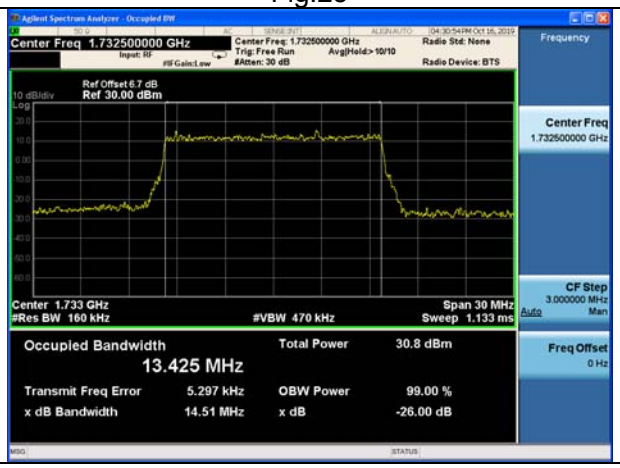



Fig.27

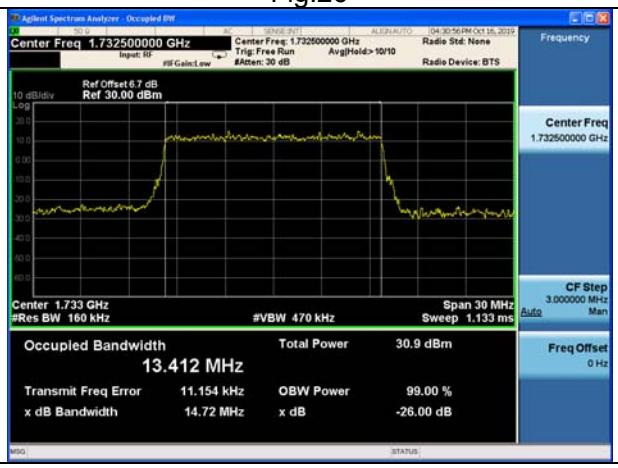



Fig.28

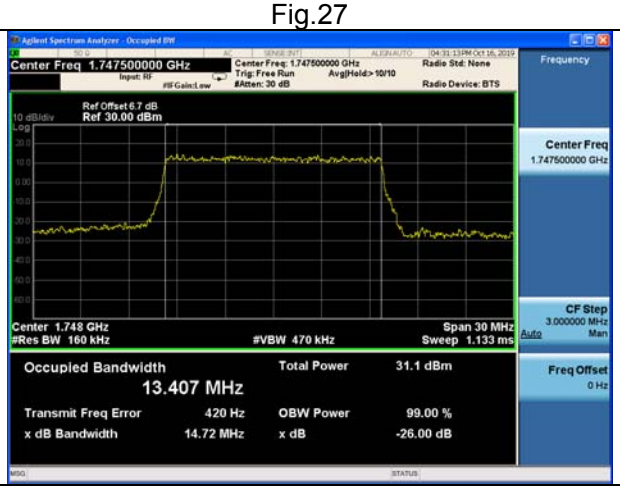



Fig.29

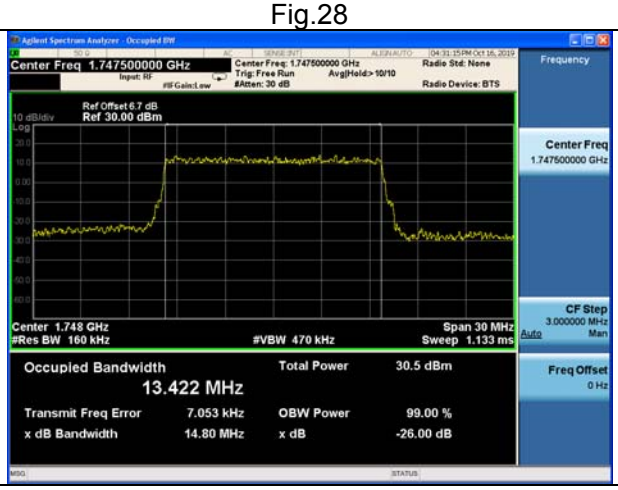



Fig.30

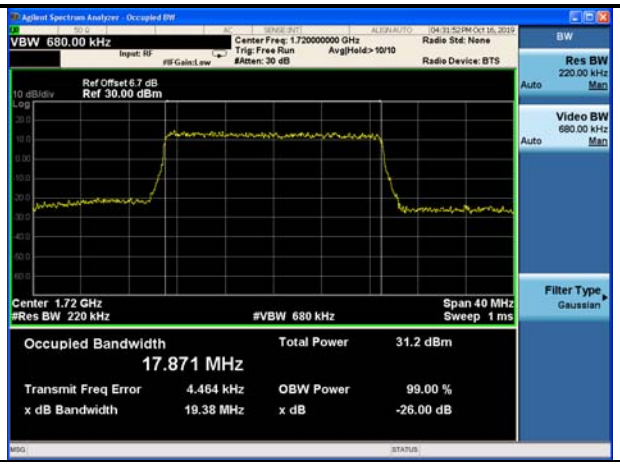



Fig.31

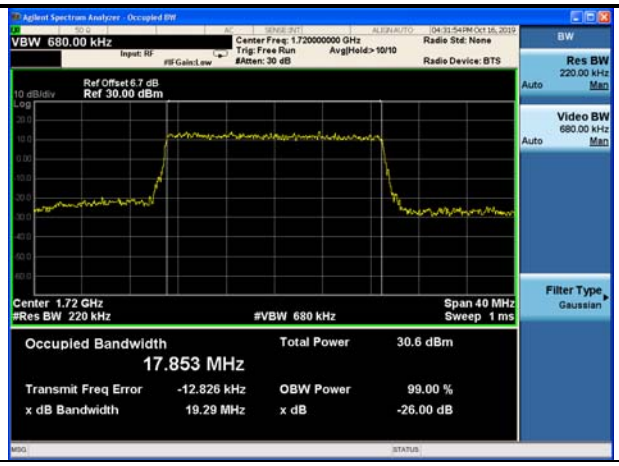



Fig.32

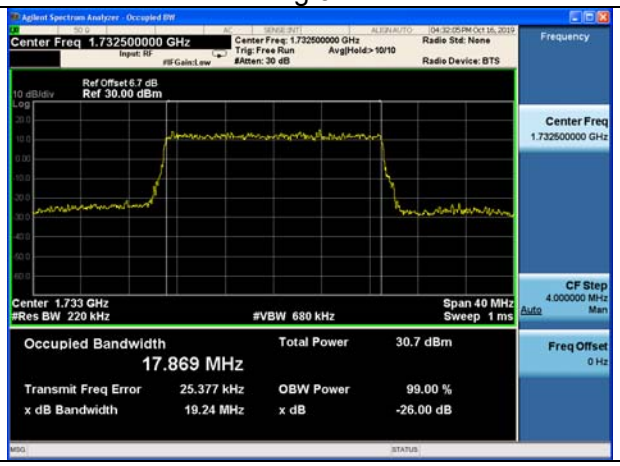



Fig.33

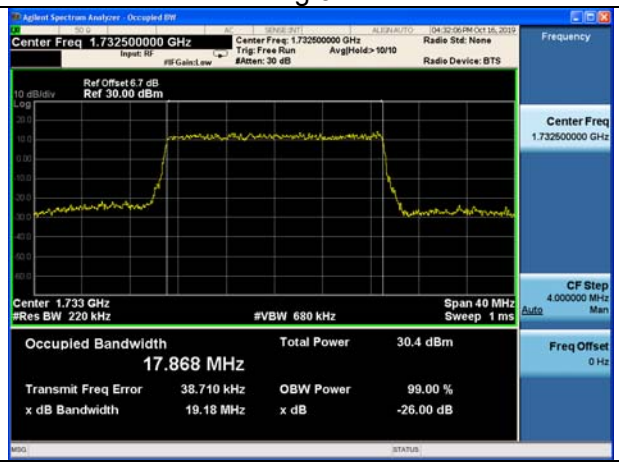



Fig.34

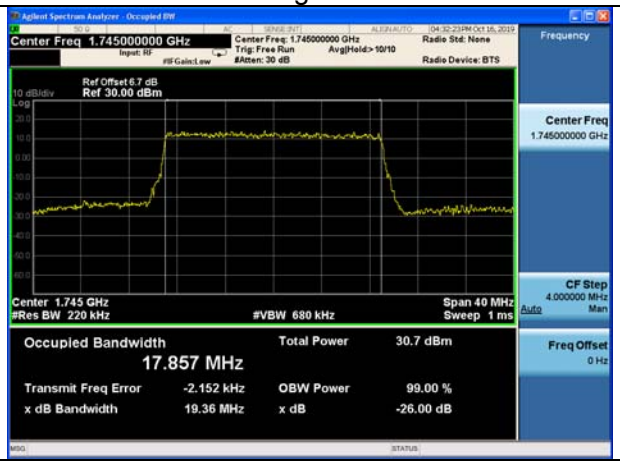



Fig.35

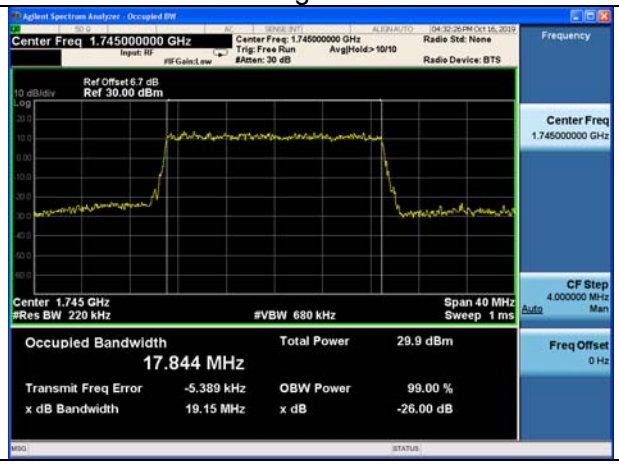



Fig.36

## 3 Peak-Average Ratio

| Band | Carrier frequency (MHz) | Channel | BW (MHz) | RB Size | RB Offset | QPSK | 16-QAM |
|---|---|---|---|---|---|---|---|
| 4 | 1732.5 | 20175 | 1.4 | 1 | 0 | Fig.1 | Fig.2 |
| | | | 3 | 1 | 0 | Fig.3 | Fig.4 |
| | | | 5 | 1 | 0 | Fig.5 | Fig.6 |
| | | | 10 | 1 | 0 | Fig.7 | Fig.8 |
| | | | 15 | 1 | 0 | Fig.9 | Fig.10 |
| | | | 20 | 1 | 0 | Fig.11 | Fig.12 |


Fig.1


Fig.2


Fig.3


Fig.4


Fig.5

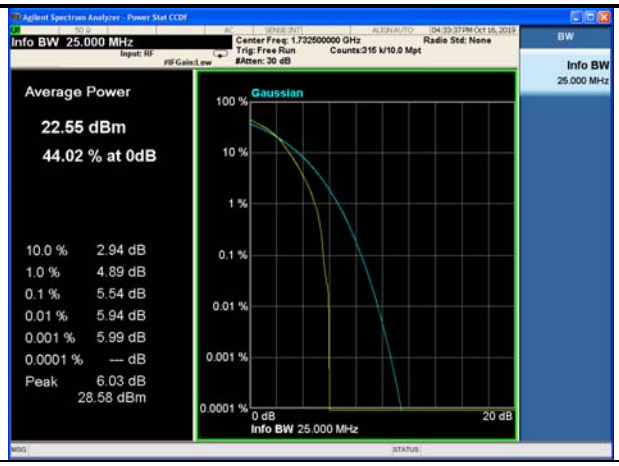



Fig.6


Fig.7


Fig.8


Fig.9


Fig.10


Agilent Spectrum Analyzer - Power Stat CCDF
Info BW 25.000 MHz
Center Freq: 1.732500000 GHz
Trig: Free Run
#Atten: 30 dB
Counts:585 k/10.0 Mpt
Radio Std: None
BW
Info BW
25.000 MHz
Average Power
23.33 dBm
48.44 % at 0dB
10.0 % 2.54 dB
1.0 % 4.13 dB
0.1 % 4.76 dB
0.01 % 4.96 dB
0.001 % 5.10 dB
0.0001 % --- dB
Peak 5.16 dB
28.49 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz

Fig.11


Agilent Spectrum Analyzer - Power Stat CCDF
Info BW 25.000 MHz
Center Freq: 1.732500000 GHz
Trig: Free Run
#Atten: 30 dB
Counts:450 k/10.0 Mpt
Radio Std: None
BW
Info BW
25.000 MHz
Average Power
22.69 dBm
44.18 % at 0dB
10.0 % 2.88 dB
1.0 % 4.71 dB
0.1 % 5.97 dB
0.01 % 6.11 dB
0.001 % 6.16 dB
0.0001 % --- dB
Peak 6.16 dB
28.85 dBm
Gaussian
100 %
10 %
1 %
0.1 %
0.01 %
0.001 %
0.0001 %
0 dB
20 dB
Info BW 25.000 MHz

Fig.12

## 4 Spurious Emissions at antenna terminal

| Band | Carrier frequency (MHz) | Channel | BW | RB Size | RB Offset | Conducted Spurious Plot |
|---|---|---|---|---|---|---|
| | | | | | | QPSK |
| 4 | 1720 | 20050 | 20 | 1 | 0 | Fig.1 |
| | 1732.5 | 20175 | 20 | 1 | 0 | Fig.2 |
| | 1745 | 20300 | 20 | 1 | 0 | Fig.3 |

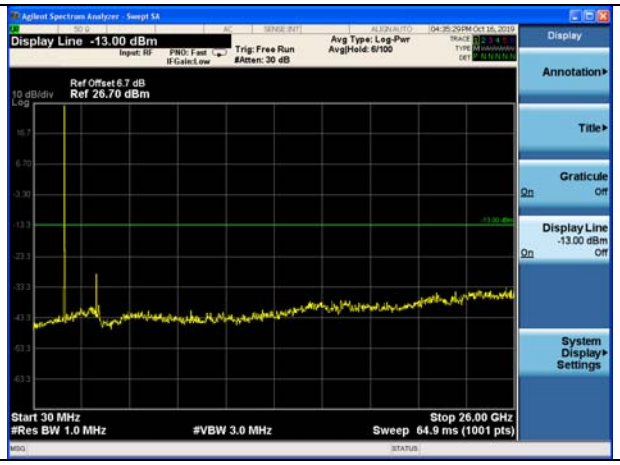



Fig.1

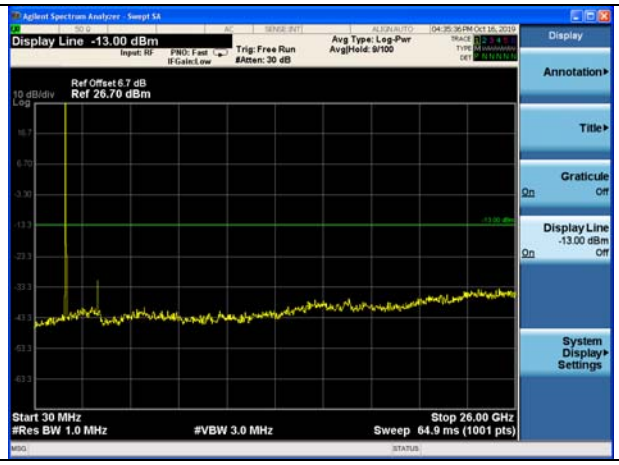



Fig.2

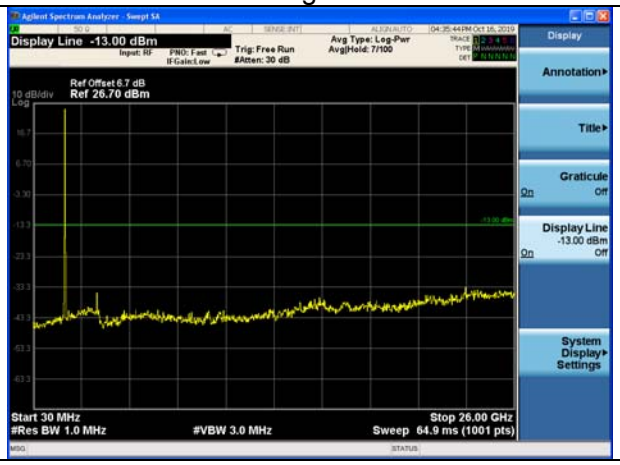



Fig3

## 5 Band Edges Compliance

Test result

| Band | Carrier frequency (MHz) | Channel | BW | RB Size | RB Offset | Band Edges Plot |
|---|---|---|---|---|---|---|
| | | | | | | QPSK |
| 4 | 1710.7 | 19957 | 1.4 | 1 | 0 | Fig.1 |
| | | | | 6 | 0 | Fig.2 |
| | 1754.3 | 20393 | | 1 | 5 | Fig.3 |
| | | | | 6 | 0 | Fig.4 |
| | 1711.5 | 19965 | 3 | 1 | 0 | Fig.5 |
| | | | | 15 | 0 | Fig.6 |
| | 1753.5 | 20385 | | 1 | 14 | Fig.7 |
| | | | | 15 | 0 | Fig.8 |
| | 1712.5 | 19975 | 5 | 1 | 0 | Fig.9 |
| | | | | 25 | 0 | Fig.10 |
| | 1752.5 | 20375 | | 1 | 24 | Fig.11 |
| | | | | 25 | 0 | Fig.12 |
| | 1715 | 20000 | 10 | 1 | 0 | Fig.13 |
| | | | | 50 | 0 | Fig.14 |
| | 1750 | 20350 | | 1 | 49 | Fig.15 |
| | | | | 50 | 0 | Fig.16 |
| | 1717.5 | 20025 | 15 | 1 | 0 | Fig.17 |
| | | | | 75 | 0 | Fig.18 |
| | 1747.5 | 20325 | | 1 | 74 | Fig.19 |
| | | | | 75 | 0 | Fig.20 |
| | 1720 | 20050 | 20 | 1 | 0 | Fig.21 |
| | | | | 100 | 0 | Fig.22 |
| | 1745 | 20300 | | 1 | 99 | Fig.23 |
| | | | | 100 | 0 | Fig.24 |


Fig.1


Fig.2


Fig.3


Fig.4


Fig.5

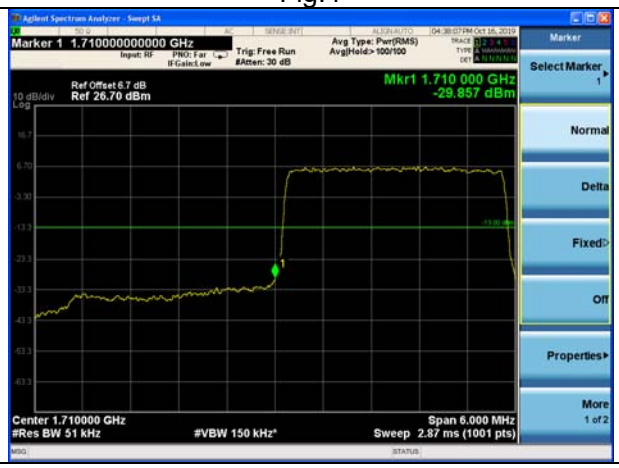



Fig.6


Fig.7


Fig.8


Fig.9

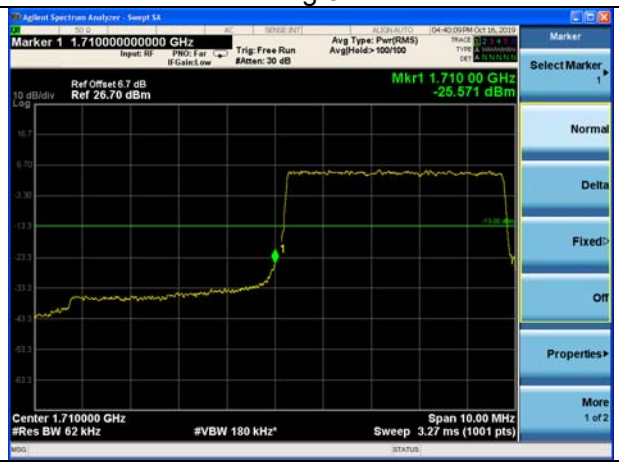



Fig.10


Fig.11

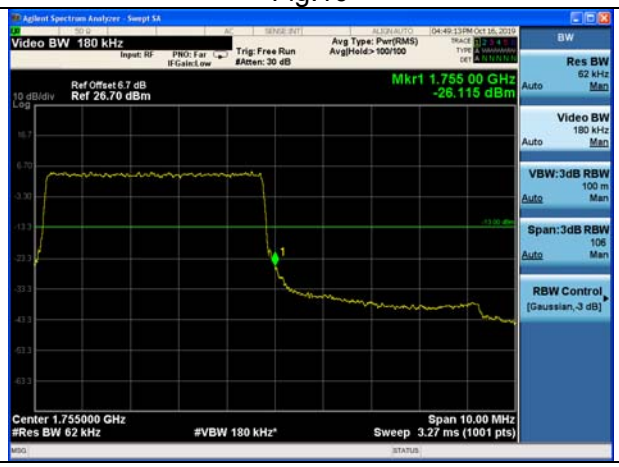



Fig.12

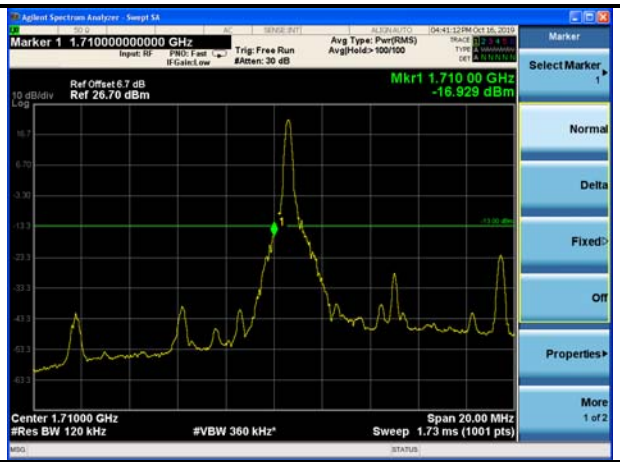



Fig.13

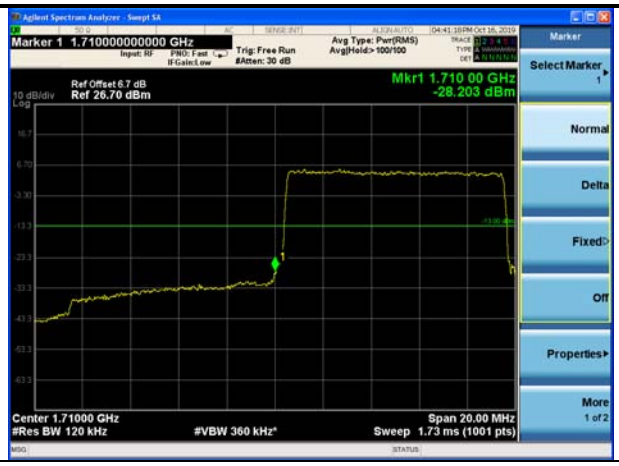



Fig.14

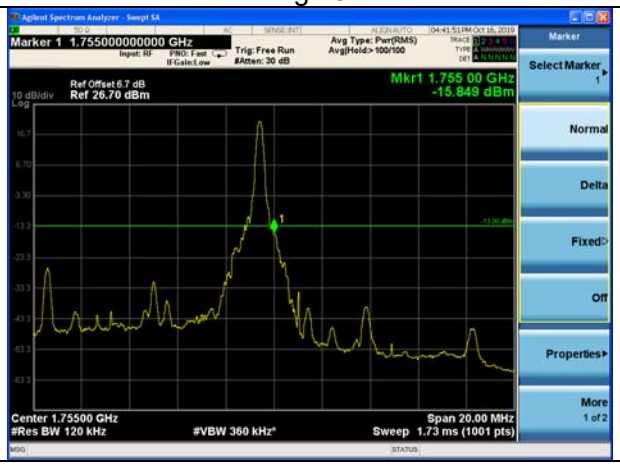



Fig.15


Fig.16

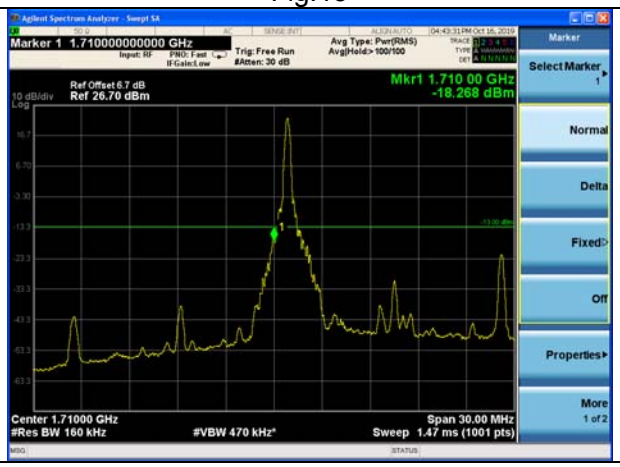



Fig.17

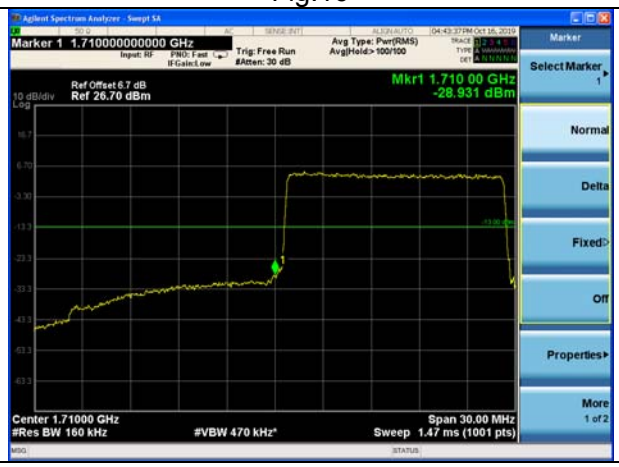



Fig.18