



TEST REPORT FOR RF TESTING

Report No.: SRTC2015-9004(F)-0027

Product Name: GSM/GPRS/EDGE/UMTS/LTE Digital Mobile Phone
with Bluetooth and WiFi

Product Model: Philips S616

Applicant: Shenzhen Sang Fei Consumer Communications Co.,Ltd.

Manufacturer: Shenzhen Sang Fei Consumer Communications Co.,Ltd.

Specification: FCC Part 24E, Part 22H Part 2 Part 27 (August 20, 2015
edition)

FCC ID: VQRCTS616

The State Radio_monitoring_center Testing Center (SRTC)

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1. GENERAL INFORMATION

1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	No.80 Beilishi Road, Xicheng District
City:	Beijing
Country or Region:	P.R.China
Contacted person:	liujia
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Fax:	+86 10 5799 6288
Email:	liujiaf@srtc.org.cn

1.3 Applicant's details

Company:	Shenzhen Sang Fei Consumer Communications Co.,Ltd.
Address:	11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park, Nanshan District
City:	Shenzhen
Country or Region:	China
Grantee Code:	VQR
Contacted person:	linda zhang
Tel:	010-68300097
Fax:	010-68300097
Email:	linda.zhang@sangfei.com

1.4 Manufacturer's details

Company:	Shenzhen Sang Fei Consumer Communications Co.,Ltd.
Address:	11 Science & Technology Rd., Shenzhen Hi-tech Industrial Park, Nanshan District
City:	Shenzhen
Country or Region:	China
Contacted person:	linda zhang
Tel:	010-68300097
Fax:	010-68300097
Email:	linda.zhang@sangfei.com

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2015.10.14
Testing Start Date:	2015.11.04
Testing End Date:	2015.11.18

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	38
Maximum Extreme	55	80
Minimum Extreme	-10	---

Normal Supply Voltage (V d.c.):	3.8
Maximum Extreme Supply Voltage (V d.c.):	4.35
Minimum Extreme Supply Voltage (V d.c.):	3.5

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 3: Tx:1710~1785MHz Rx:1805~1880MHz LTE Band 4: Tx:1710~1755MHz Rx:2110~2155MHz LTE Band 7: Tx:2500~2570MHz Rx:2620~2690MHz
Modulation Type	QPSK 16QAM
Duplex Mode	FDD
Antenna Type	Fixed Internal
Power Supply	Battery
HW Version	WMDKa
SW Version	Philips_S616_1539_V01_AG
IMEI	8680440020011432

2.2 Summary table.

FCC Rule Part	Frequency Range(MHz)	Output Power(W)	Frequency Tolerance	Emission Designator	Emission Bandwidth (MHz)	Communication Type
GSM						
22H	824.2-848.8	0.77	0.015	300KGXW	---	GPRS 850
	824.2-848.8	0.74	0.018	300KG7W	---	EGPRS850
24E	1850.2-1909.8	0.43	0.015	300KGXW	---	GPRS 1900
	1850.2-1909.8	0.44	0.016	300KG7W	---	EGPRS1900
WCDMA						
22H	826.4-846.6	0.19	0.016	4M50F9W	---	WCDMA
	826.4-846.6	0.16	0.016	4M50F9W	---	HSDPA/UPA
24E	1852.4-1907.6	0.20	0.014	4M50F9W	---	WCDMA
	1852.4-1907.6	0.20	0.016	4M50F9W	---	HSDPA/UPA
LTE BAND2						
24E	1850.7-1909.3	0.17	0.004	1M40G7D	1.4M	QPSK
	1850.7-1909.3	0.13	0.004	1M40D7W	1.4M	16QAM
	1851.5-1908.5	0.17	0.004	3M00G7D	3M	QPSK
	1851.5-1908.5	0.13	0.004	3M00D7W	3M	16QAM
	1852.5-1907.5	0.17	0.004	5M00G7D	5M	QPSK
	1852.5-1907.5	0.13	0.004	5M00D7W	5M	16QAM
	1855-1905	0.17	0.004	10M0G7D	10M	QPSK
	1855-1905	0.13	0.004	10M0D7W	10M	16QAM
	1857.5-1902.5	0.18	0.004	15M0G7D	15M	QPSK
	1857.5-1902.5	0.13	0.004	15M0D7W	15M	16QAM
	1860-1900	0.18	0.004	20M0G7D	20M	QPSK
1860-1900	0.14	0.004	20M0D7W	20M	16QAM	
LTE BAND3						
---	1710.7-1784.3	0.18	0.008	1M40G7D	1.4M	QPSK
	1710.7-1784.3	0.13	0.008	1M40D7W	1.4M	16QAM
	1711.5-1783.5	0.17	0.008	3M00G7D	3M	QPSK
	1711.5-1783.5	0.13	0.008	3M00D7W	3M	16QAM
	1712.5-1782.5	0.18	0.008	5M00G7D	5M	QPSK
	1712.5-1782.5	0.13	0.008	5M00D7W	5M	16QAM
	1715-1780	0.18	0.008	10M0G7D	10M	QPSK
	1715-1780	0.13	0.008	10M0D7W	10M	16QAM
	1717.5-1777.5	0.18	0.008	15M0G7D	15M	QPSK
	1717.5-1777.5	0.16	0.008	15M0D7W	15M	16QAM
	1720-1775	0.21	0.008	20M0G7D	20M	QPSK
1720-1775	0.16	0.008	20M0D7W	20M	16QAM	
LTE BAND4						
27L	1710.7-1754.3	0.17	0.006	1M40G7D	1.4M	QPSK
	1710.7-1754.3	0.13	0.006	1M40D7W	1.4M	16QAM
	1711.5-1753.5	0.17	0.006	3M00G7D	3M	QPSK

	1711.5-1753.5	0.13	0.006	3M00D7W	3M	16QAM
	1712.5-1752.5	0.17	0.006	5M00G7D	5M	QPSK
	1712.5-1752.5	0.13	0.006	5M00D7W	5M	16QAM
	1715-1750	0.17	0.006	10M0G7D	10M	QPSK
	1715-1750	0.13	0.006	10M0D7W	10M	16QAM
	1717.5-1747.5	0.17	0.006	15M0G7D	15M	QPSK
	1717.5-1747.5	0.13	0.006	15M0D7W	15M	16QAM
	1720-1745	0.17	0.006	20M0G7D	20M	QPSK
	1720-1745	0.13	0.006	20M0D7W	20M	16QAM
LTE BAND7						
	2500.7-2569.3	0.20	0.008	1M40G7D	1.4M	QPSK
	2500.7-2569.3	0.16	0.008	1M40D7W	1.4M	16QAM
	2501.5-2568.5	0.19	0.008	3M00G7D	3M	QPSK
	2501.5-2568.5	0.15	0.008	3M00D7W	3M	16QAM
	2502.5-2567.5	0.20	0.008	5M00G7D	5M	QPSK
	2502.5-2567.5	0.16	0.008	5M00D7W	5M	16QAM
---	2505-2565	0.20	0.008	10M0G7D	10M	QPSK
	2505-2565	0.16	0.008	10M0D7W	10M	16QAM
	2507.5-2562.5	0.21	0.008	15M0G7D	15M	QPSK
	2507.5-2562.5	0.16	0.008	15M0D7W	15M	16QAM
	2510-2560	0.21	0.008	20M0G7D	20M	QPSK
	2510-2560	0.16	0.008	20M0D7W	20M	16QAM

2.3 Support Equipment

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

Equipment	Battery
Manufacturer	Shenzhen cyclelong power-tech Co., ltd
Model Number	AB3000GWMT
Serial Number	-----

3 REFERENCE SPECIFICATION

Specification	Version	Title
2.1046	July 7, 1998	Measurements required: RF power output.
2.1049	July 7, 1998	Measurements required: Occupied bandwidth.
2.1051	July 7, 1998	Measurements required: Spurious emissions at antenna terminals.
2.1053	July 7, 1998	Measurements required: Field strength of spurious radiation.
2.1055	Dec. 9, 2003	Measurements required: Frequency stability.
22.355	Oct. 17, 1996	Frequency tolerance.
22.913	Dec. 15, 2004	Effective radiated power limits.
22.917	Dec. 17, 2002	Emission limitations for cellular equipment.
24.232	May 2, 2008	Power and antenna height limits.
24.235/27.54	N/A	Frequency stability.
24.238	Dec. 17, 2002	Emission limitations for Broadband PCS equipment.
27.50	Apr. 7, 1997	Power limits and duty cycle.
27.53	Apr. 7, 1997	Emission limits.

4 KEY TO NOTES AND RESULT CODES

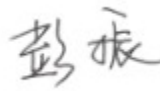

The following are the definition of the test result.

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	24.232(c) /27.50(d)(4)/27.50(h)	Pass
3	Occupied Bandwidth	2.1049/27.53(h)(1)	Pass
4	Peak-Average Ratio	27.50(d)(5)	Pass
5	Emission Bandwidth	24.238(b)/27.53(h)	Pass
6	Spurious Emissions at antenna terminals	2.1051/22.917(a)/ 22.53(m)/24.238(a)/ 27.53(h)	Pass
7	Band Edges Compliance	2.1051/22.917(a)/ 22.53(m)/24.238(a)/ 27.53(h)	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(h)	Pass

This Test Report Is Issued by: Ms. Xu Qiaochun 	Checked by: Deputy Director of International Certification Mr. Peng Zhen 
Tested by: Test Engineer Mr. Jiang Shuo 	Issued date: 20151215

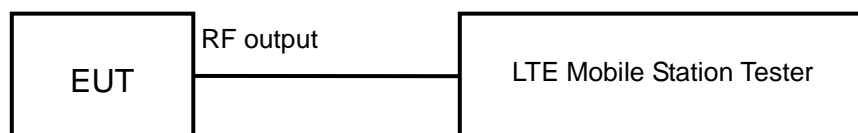
6 TEST RESULT

6.1 RF Power Output-FCC Part 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:

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1850.7	18607	1.4	1	0	22.32	21.13
				1	5	22.29	21.09
				3	2	22.03	20.82
				6	0	21.30	20.30

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1880	18900	1.4	1	0	22.34	21.23
				1	5	22.33	21.25
				3	2	22.06	20.94
				6	0	21.22	20.34

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1909.3	19193	1.4	1	0	21.71	20.54
				1	5	21.70	20.50
				3	2	21.42	20.25
				6	0	20.67	19.67

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1851.5	18615	3	1	0	22.26	21.09
				1	14	22.29	21.09
				8	4	21.34	20.32
				15	0	21.32	20.31

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1880	18900	3	1	0	22.28	21.19
				1	14	22.26	21.17
				8	4	21.21	20.28
				15	0	21.11	20.20

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1908.5	19185	3	1	0	21.67	20.52
				1	14	21.68	20.49
				8	4	20.70	19.76
				15	0	20.64	19.66

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1852.5	18625	5	1	0	22.37	21.16
				1	24	22.34	21.12
				12	6	21.30	20.23
				25	0	21.21	20.27

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1880	18900	5	1	0	22.41	21.28
				1	24	22.32	21.18
				12	6	21.14	20.14
				25	0	21.09	20.22

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1907.5	19175	5	1	0	21.73	20.53
				1	24	21.69	20.50
				12	6	20.58	19.54
				25	0	20.49	19.61

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1855	18650	10	1	0	22.37	21.17
				1	49	22.38	21.20
				24	12	21.18	20.20
				50	0	21.20	20.24

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1880	18900	10	1	0	21.78	20.64
				1	49	21.72	20.51
				24	12	20.39	19.55
				50	0	20.57	19.64

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1905	19150	10	1	0	21.76	20.57
				1	49	21.78	20.61
				24	12	20.48	19.61
				50	0	20.62	19.67

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1857.5	18675	15	1	0	22.40	21.19
				1	74	22.44	21.20
				38	18	21.23	20.29
				75	0	21.27	20.28

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1880	18900	15	1	0	21.90	20.72
				1	74	21.77	20.60
				38	18	20.66	19.77
				75	0	20.61	19.70

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1902.5	19125	15	1	0	22.37	21.20
				1	74	22.38	21.17
				38	18	21.21	20.33
				75	0	21.19	20.26

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1860	18700	20	1	0	22.52	21.27
				1	99	22.44	21.29
				50	25	21.31	20.35
				100	0	21.28	20.36

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1880	18900	20	1	0	22.53	21.37
				1	99	22.35	21.17
				50	25	21.19	20.27
				100	0	21.22	20.37

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
2	1900	19100	20	1	0	22.62	21.35
				1	99	22.57	21.30
				50	25	21.38	20.40
				100	0	21.35	20.44

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1710.7	19207	1.4	1	0	22.44	21.30
				1	5	22.40	21.26
				3	2	22.08	20.94
				6	0	21.44	20.44

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1747.5	19575	1.4	1	0	22.20	21.08
				1	5	22.19	21.06
				3	2	21.90	20.78
				6	0	21.10	20.13

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1784.3	19943	1.4	1	0	22.42	21.26
				1	5	22.44	21.24
				3	2	22.07	20.92
				6	0	21.40	20.39

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1711.5	19215	3	1	0	22.40	21.23
				1	14	22.39	21.23
				8	4	21.45	20.44
				15	0	21.39	20.41

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1747.5	19575	3	1	0	22.14	21.03
				1	14	22.15	21.04
				8	4	21.14	20.20
				15	0	21.12	20.11

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1783.5	19935	3	1	0	22.36	21.19
				1	14	22.38	21.19
				8	4	21.49	20.41
				15	0	21.42	20.42

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1712.5	19225	5	1	0	22.43	21.27
				1	24	22.36	21.19
				12	6	21.31	20.25
				25	0	21.28	20.31

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1747.5	19575	5	1	0	22.23	21.03
				1	24	22.16	21.01
				12	6	21.06	19.95
				25	0	21.00	20.11

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1782.5	19925	5	1	0	22.48	21.30
				1	24	22.45	21.24
				12	6	21.39	20.31
				25	0	21.38	20.34

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1715	19250	10	1	0	22.50	21.30
				1	49	22.36	21.17
				24	12	21.25	20.29
				50	0	21.20	20.28

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1747.5	19575	10	1	0	22.23	21.10
				1	49	22.23	21.04
				24	12	21.00	20.06
				50	0	21.06	20.05

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1780	19900	10	1	0	22.41	21.25
				1	49	22.47	21.25
				24	12	21.26	20.34
				50	0	21.28	20.32

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1717.5	19275	15	1	0	22.54	21.34
				1	74	22.45	21.33
				38	18	21.29	20.33
				75	0	21.32	20.36

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1747.5	19575	15	1	0	22.31	21.15
				1	74	21.90	21.11
				38	18	21.07	20.13
				75	0	21.05	20.08

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1777.5	19875	15	1	0	22.53	21.91
				1	74	22.56	21.53
				38	18	21.70	20.75
				75	0	21.76	20.78

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1720	19300	20	1	0	22.51	21.32
				1	99	22.34	21.17
				50	25	21.25	20.23
				100	0	21.22	20.28

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1747.5	19575	20	1	0	22.28	21.13
				1	99	22.26	21.09
				50	25	21.07	20.08
				100	0	21.07	20.16

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
3	1775	19850	20	1	0	23.12	21.93
				1	99	22.74	21.47
				50	25	21.79	20.73
				100	0	21.84	20.80

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1710.7	19957	1.4	1	0	22.36	21.17
				1	5	22.32	21.15
				3	2	21.99	20.81
				6	0	21.29	20.25

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1732.5	20175	1.4	1	0	21.80	20.60
				1	5	21.79	20.59
				3	2	21.46	20.29
				6	0	20.84	19.78

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1754.3	20393	1.4	1	0	22.01	20.86
				1	5	21.99	20.86
				3	2	21.66	20.53
				6	0	20.91	19.92

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1711.5	19965	3	1	0	22.31	21.15
				1	14	22.28	21.11
				8	4	21.31	20.30
				15	0	21.22	20.26

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1732.5	20175	3	1	0	21.90	20.54
				1	14	21.74	20.50
				8	4	20.85	19.80
				15	0	20.83	19.76

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1753.5	20385	3	1	0	21.98	20.88
				1	14	22.00	20.86
				8	4	20.97	19.99
				15	0	20.84	19.91

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1712.5	19975	5	1	0	22.38	21.17
				1	24	22.28	21.13
				12	6	21.19	20.12
				25	0	21.13	20.19

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1732.5	20175	5	1	0	22.02	20.79
				1	24	21.93	20.73
				12	6	20.93	19.81
				25	0	20.88	19.86

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1752.5	20375	5	1	0	22.09	20.92
				1	24	21.98	20.85
				12	6	20.87	19.83
				25	0	20.88	19.93

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1715	20000	10	1	0	22.40	21.17
				1	49	22.32	21.14
				24	12	21.08	20.15
				50	0	21.14	20.13

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1732.5	20175	10	1	0	21.97	20.82
				1	49	21.96	20.75
				24	12	20.85	19.84
				50	0	20.81	19.77

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1750	20350	10	1	0	22.09	20.92
				1	49	22.07	20.90
				24	12	20.88	19.92
				50	0	20.87	19.88

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1717.5	20025	15	1	0	22.42	21.22
				1	74	22.30	21.17
				38	18	21.15	20.21
				75	0	21.18	20.19

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1732.5	20175	15	1	0	22.04	20.91
				1	74	21.97	20.75
				38	18	20.83	19.80
				75	0	20.84	19.81

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1747.5	20325	15	1	0	22.12	20.89
				1	74	22.08	20.92
				38	18	20.93	19.92
				75	0	20.93	19.93

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1720	20050	20	1	0	22.40	21.21
				1	99	22.20	20.99
				50	25	21.07	20.10
				100	0	21.03	20.12

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1732.5	20175	20	1	0	22.10	20.95
				1	99	22.06	20.85
				50	25	20.87	19.81
				100	0	20.86	19.86

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
4	1745	20300	20	1	0	22.05	20.82
				1	99	22.09	20.75
				50	25	20.90	19.78
				100	0	20.90	19.79

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2500.7	20757	1.4	1	0	22.89	21.77
				1	5	22.87	21.74
				3	2	22.80	21.79
				6	0	21.88	20.83

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2535	21100	1.4	1	0	22.62	21.63
				1	5	22.60	21.64
				3	2	22.36	21.69
				6	0	21.76	20.70

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2569.3	21443	1.4	1	0	22.92	21.90
				1	5	22.64	21.85
				3	2	22.63	21.93
				6	0	21.91	20.92

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2501.5	20765	3	1	0	22.90	21.74
				1	14	22.80	21.71
				8	4	21.86	20.79
				15	0	21.81	20.80

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2535	21100	3	1	0	22.67	21.58
				1	14	22.69	21.61
				8	4	21.73	20.69
				15	0	21.69	20.63

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2568.5	21435	3	1	0	22.85	21.85
				1	14	22.56	21.87
				8	4	21.95	20.92
				15	0	21.96	20.92

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2502.5	20775	5	1	0	22.89	21.68
				1	24	22.80	21.65
				12	6	21.73	20.67
				25	0	21.74	20.74

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2535	21100	5	1	0	23.09	21.95
				1	24	23.05	21.88
				12	6	21.94	20.87
				25	0	21.94	20.96

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2567.5	21425	5	1	0	22.74	21.54
				1	24	22.60	21.36
				12	6	21.54	20.42
				25	0	21.53	20.51

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2505	20800	10	1	0	22.96	21.78
				1	49	22.99	21.84
				24	12	21.77	20.77
				50	0	21.78	20.72

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2535	21100	10	1	0	23.11	21.93
				1	49	23.11	21.99
				24	12	21.87	20.88
				50	0	21.88	20.87

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2565	21400	10	1	0	23.00	21.86
				1	49	22.70	21.52
				24	12	21.64	20.68
				50	0	21.64	20.61

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2507.5	20825	15	1	0	22.94	21.76
				1	74	22.98	21.89
				38	18	21.68	20.67
				75	0	21.75	20.72

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2535	21100	15	1	0	23.15	22.01
				1	74	23.16	22.00
				38	18	21.86	20.82
				75	0	21.91	20.89

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2562.5	21375	15	1	0	23.09	21.95
				1	74	22.60	21.40
				38	18	21.66	20.67
				75	0	21.66	20.67

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2510	20850	20	1	0	22.95	21.82
				1	99	23.04	21.80
				50	25	21.70	20.69
				100	0	21.81	20.73

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2535	21100	20	1	0	23.23	22.05
				1	99	23.08	21.98
				50	25	21.88	20.86
				100	0	21.93	20.94

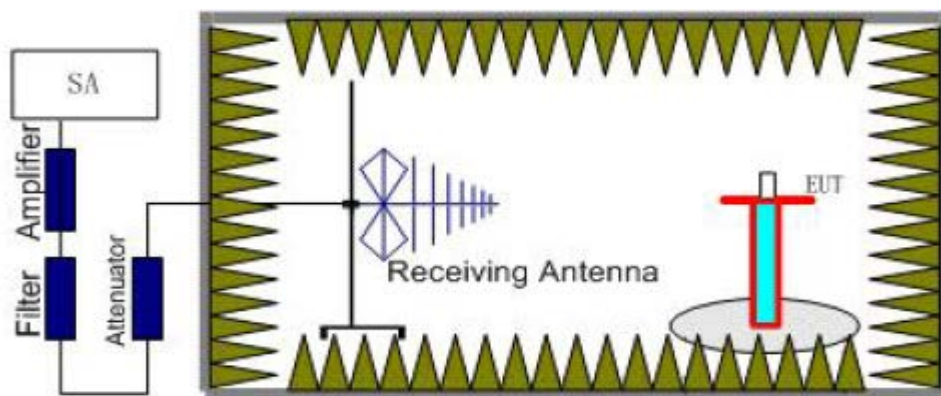
Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	RF Power Output (dBm)	
						QPSK	16-QAM
7	2560	21350	20	1	0	23.29	22.02
				1	99	22.62	21.38
				50	25	21.71	20.71
				100	0	21.70	20.70

6.2 Effective Radiated Power-FCC Part 27.50(d)(4)/27.50(h)

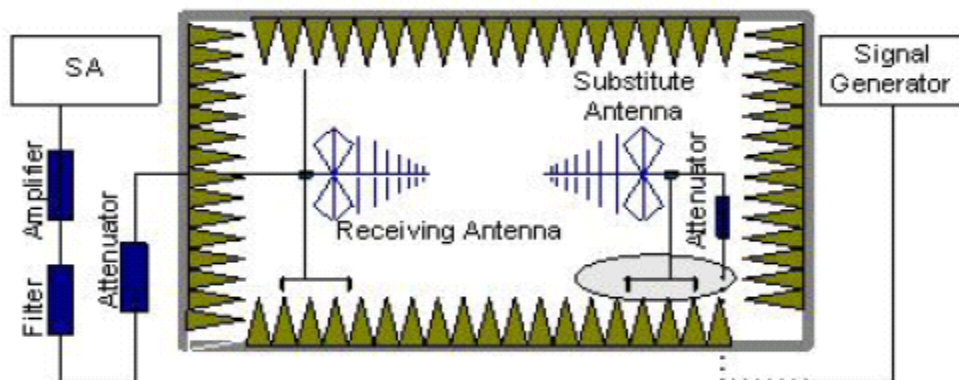
Ambient condition:

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.

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:

$$\text{Power (EIRP)} = P_{mea} + P_{ca} + G_a$$

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, $ERP = EIRP - 2.15 \text{ (dB)}$.

Limits	$\leq 30\text{dBm}$
--------	---------------------

LTE band 2

Test result:

Frequency (MHz)	Peak EIRP(dBm)	Pca Cable loss	Ga Antenna Gain (dB)	Pmea (dBm)	Polarization
1851.5	22.76	-5.2	8.4	19.56	Vertical
1880.0	21.99	-5.2	8.6	18.59	Vertical
1907.5	22.44	-5.2	8.6	19.04	Vertical

LTE band 3

Test result:

Frequency (MHz)	Peak EIRP(dBm)	Pca Cable loss	Ga Antenna Gain (dB)	Pmea (dBm)	Polarization
1712.5	23.07	-5	8.6	19.47	Vertical
1747.5	22.48	-5	8.6	18.88	Vertical
1782.5	21.72	-5	8.4	18.32	Vertical

LTE band 4

Test result:

Frequency (MHz)	Peak EIRP(dBm)	Pca Cable loss	Ga Antenna Gain (dB)	Pmea (dBm)	Polarization
1710.7	21.53	-5	8.6	17.93	Vertical
1732.5	22.62	-5	8.6	19.02	Vertical
1754.3	22.72	-5	8.6	19.12	Vertical

LTE band 7

Test result:

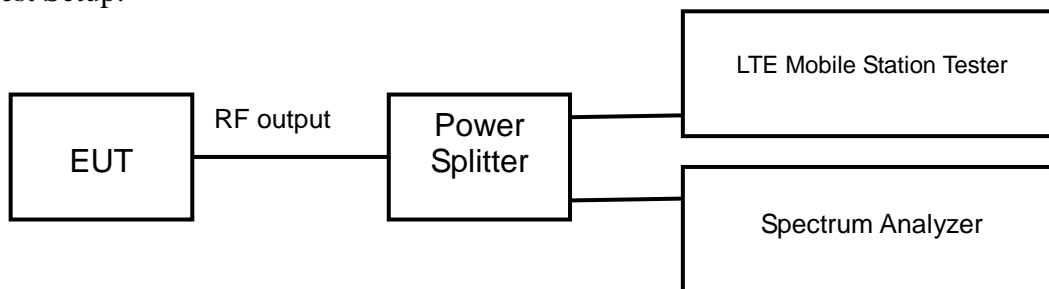
Frequency (MHz)	Peak EIRP(dBm)	Pca Cable loss	Ga Antenna Gain (dB)	Pmea (dBm)	Polarization
2502.5	21.38	-5.8	8	19.18	Vertical
2535	21.40	-5.8	8	19.20	Vertical
2560	20.96	-5.8	8.2	18.56	Vertical

6.1.3 Occupied Bandwidth-FCC Part 2.1049/27.53(h)(1)

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:

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)			
						QPSK		16-QAM	
2	1850.7	18607	1.4	1	0	0.300	Fig.1	0.284	Fig.5
				1	5	0.285	Fig.2	0.288	Fig.6
				3	2	0.608	Fig.3	0.606	Fig.7
				6	0	1.101	Fig.4	1.098	Fig.8

LTE Mode:

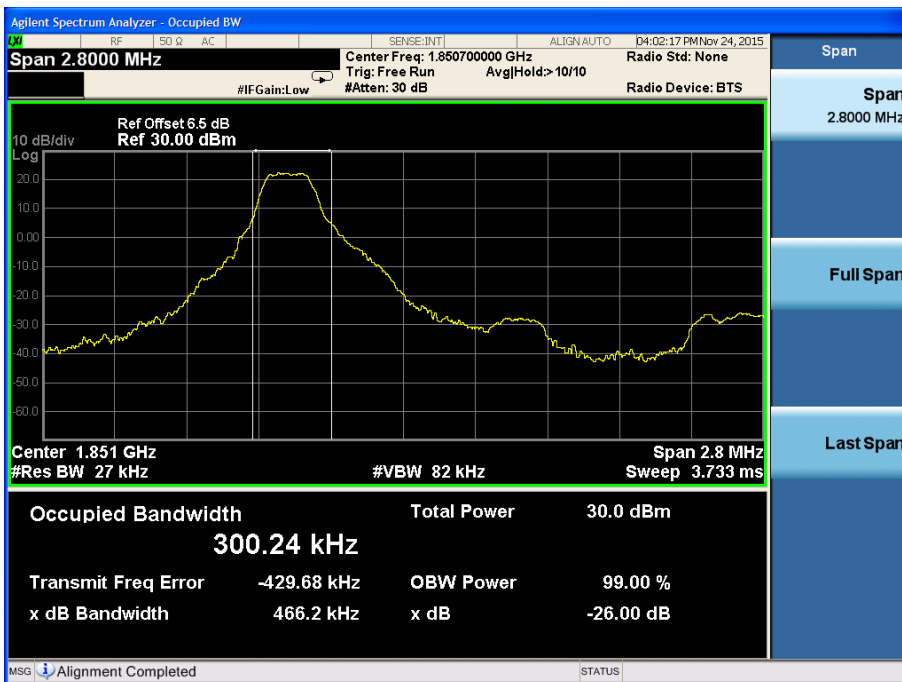


Fig.1

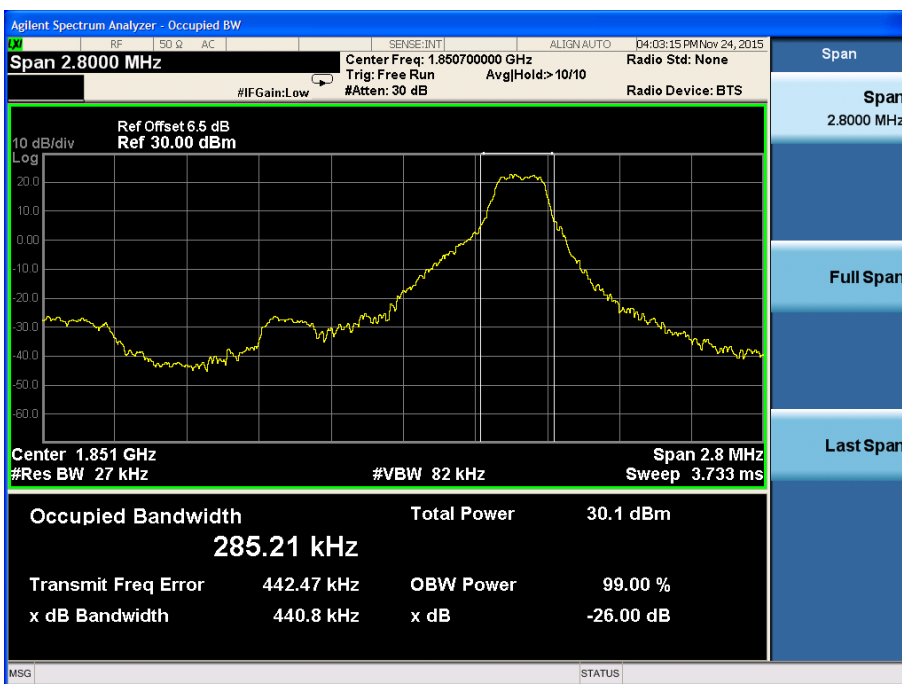


Fig.2

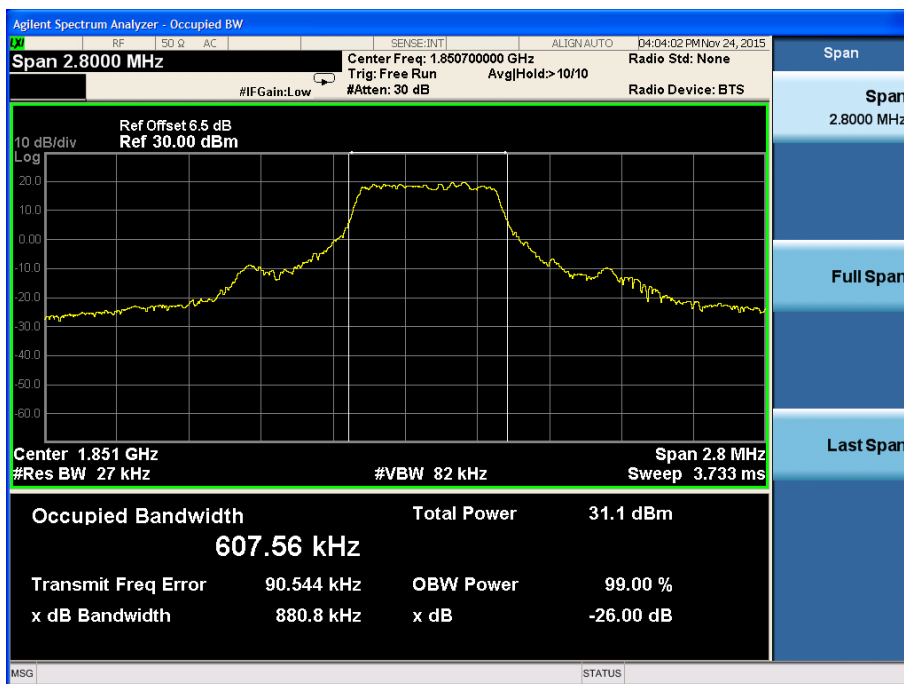


Fig.3

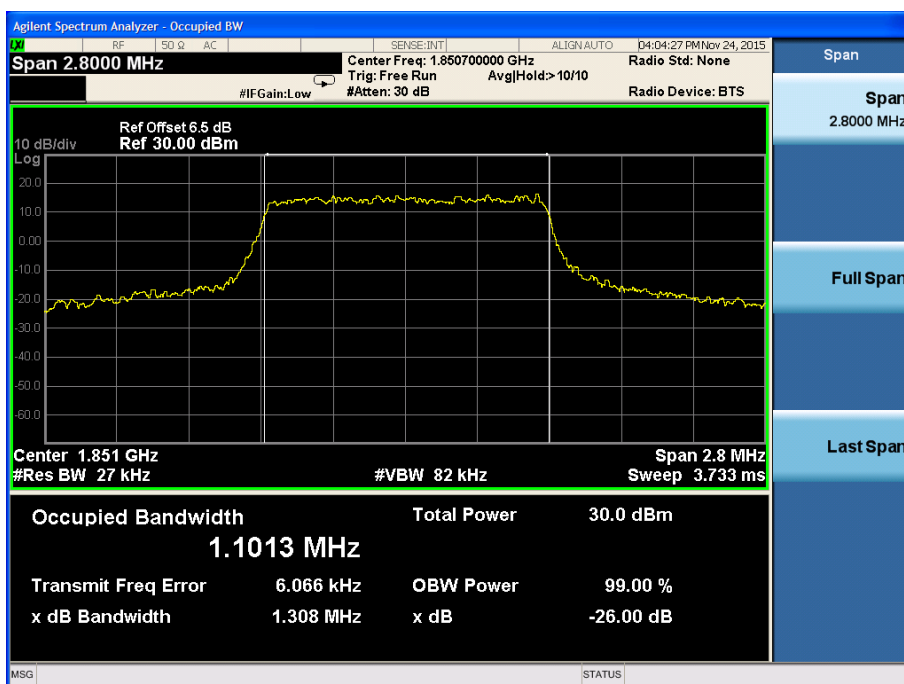


Fig.4

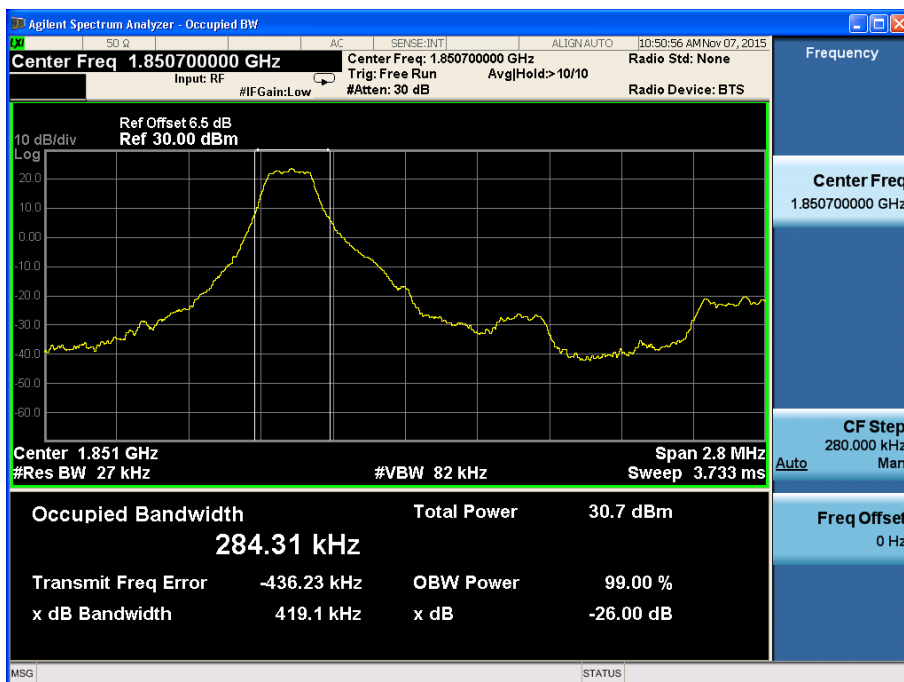


Fig.5

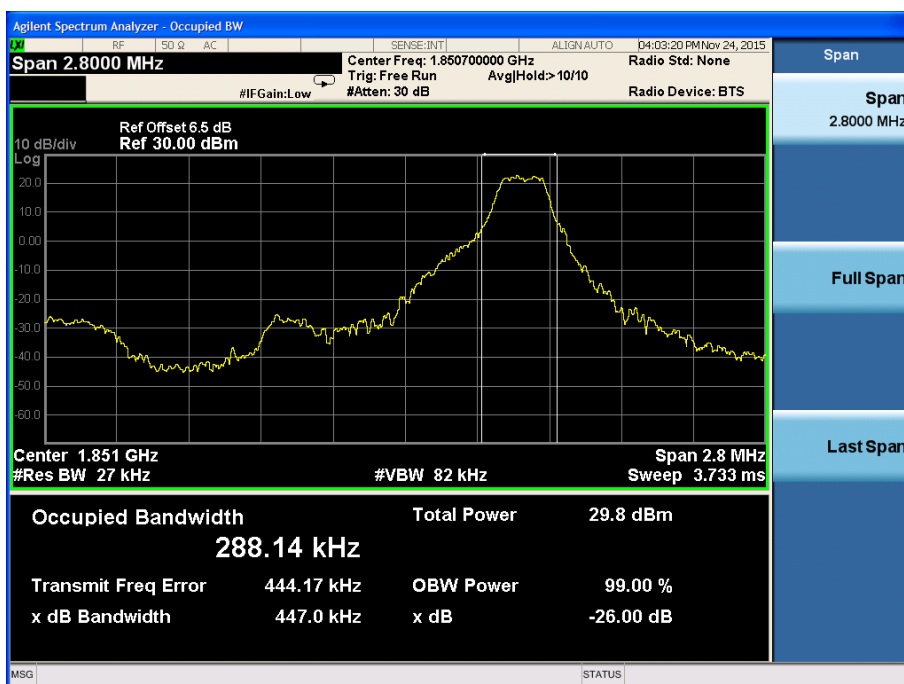


Fig.6

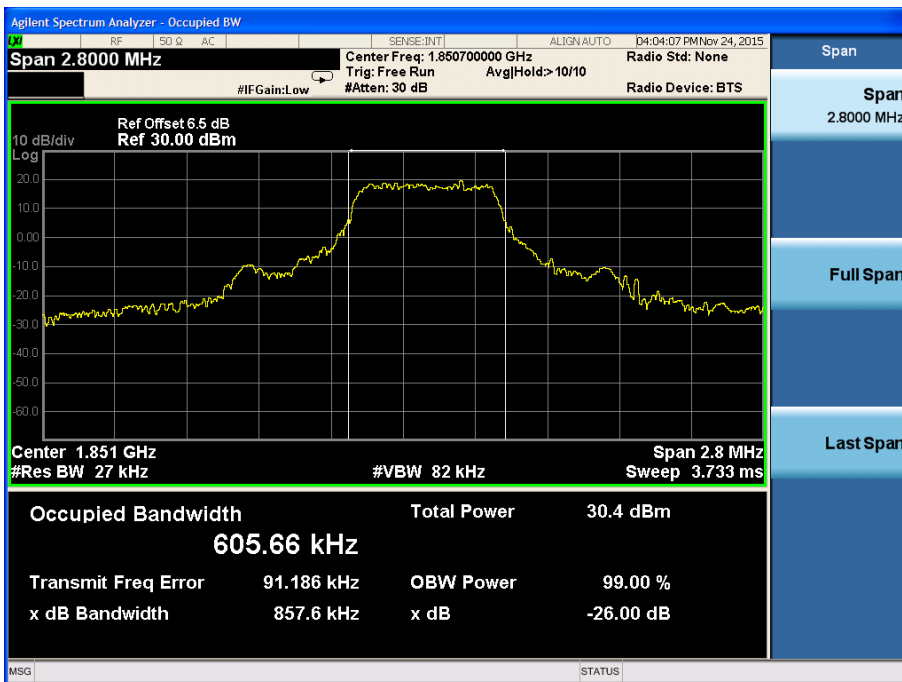


Fig.7

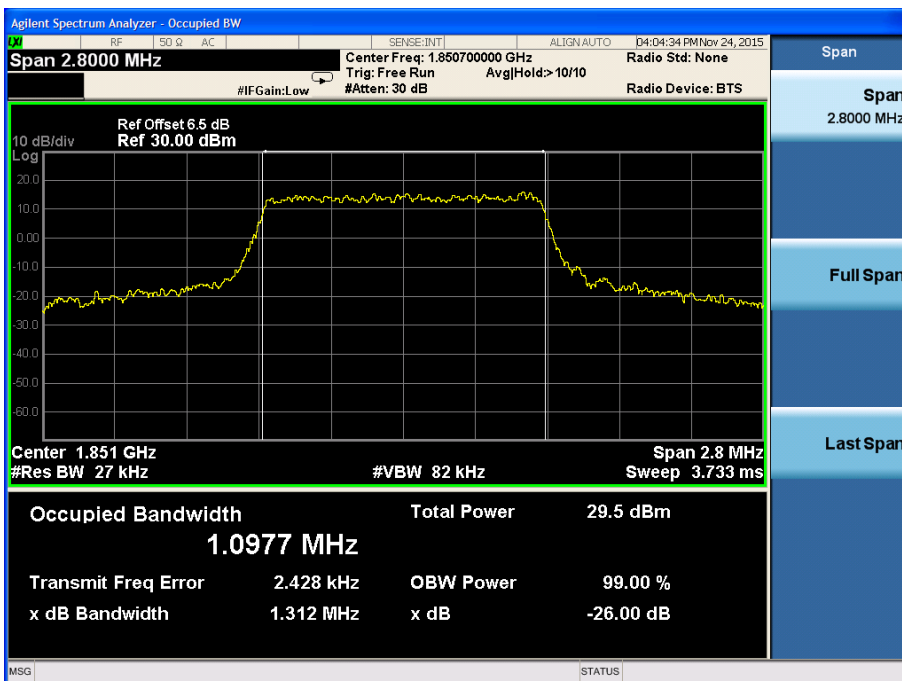


Fig.8

Band	Carrier frequency (MHz)	Channel (Mid)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)			
						QPSK		16-QAM	
2	1880	18900	1.4	1	0	0.288	Fig.1	0.285	Fig.5
				1	5	0.273	Fig.2	0.277	Fig.6
				3	2	0.601	Fig.3	0.601	Fig.7
				6	0	1.095	Fig.4	1.101	Fig.8

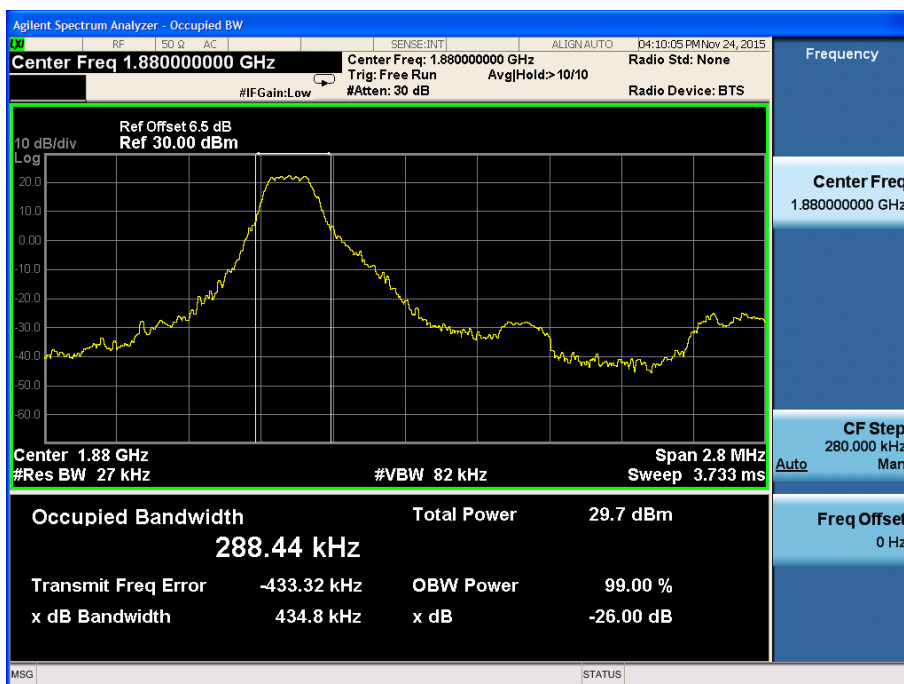


Fig.1

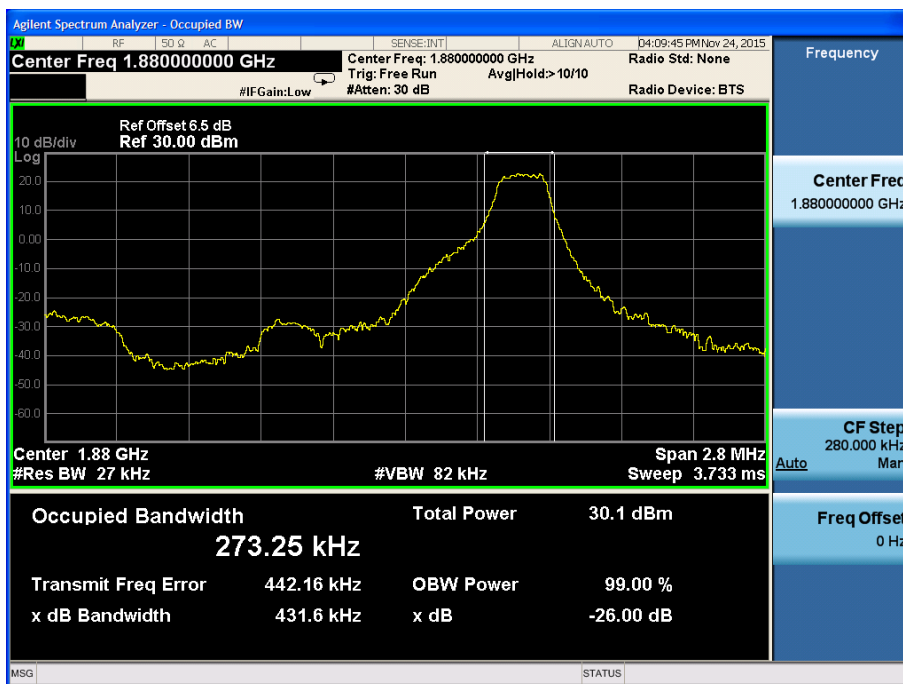


Fig.2

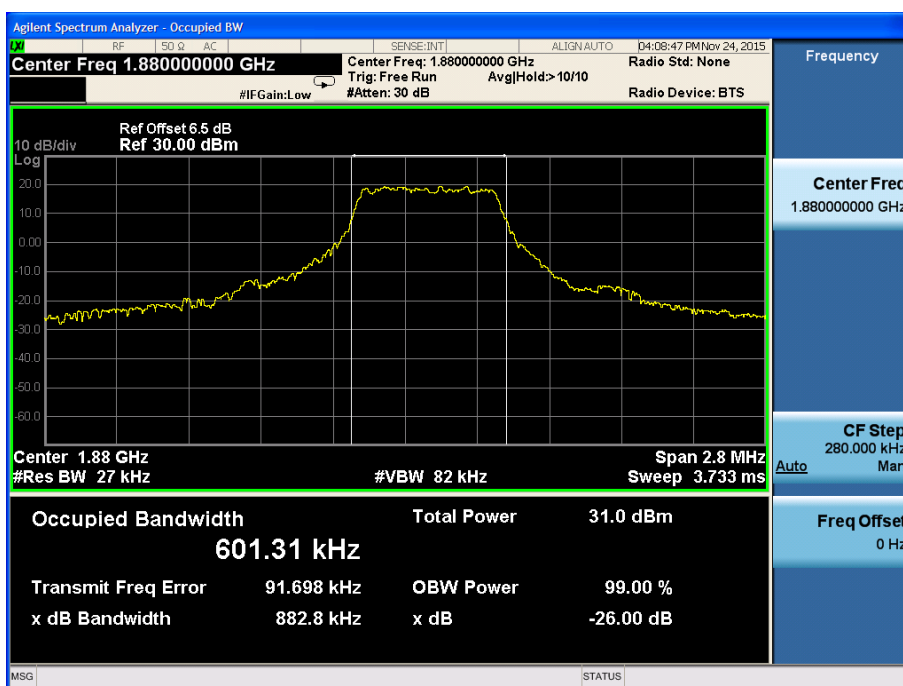


Fig.3

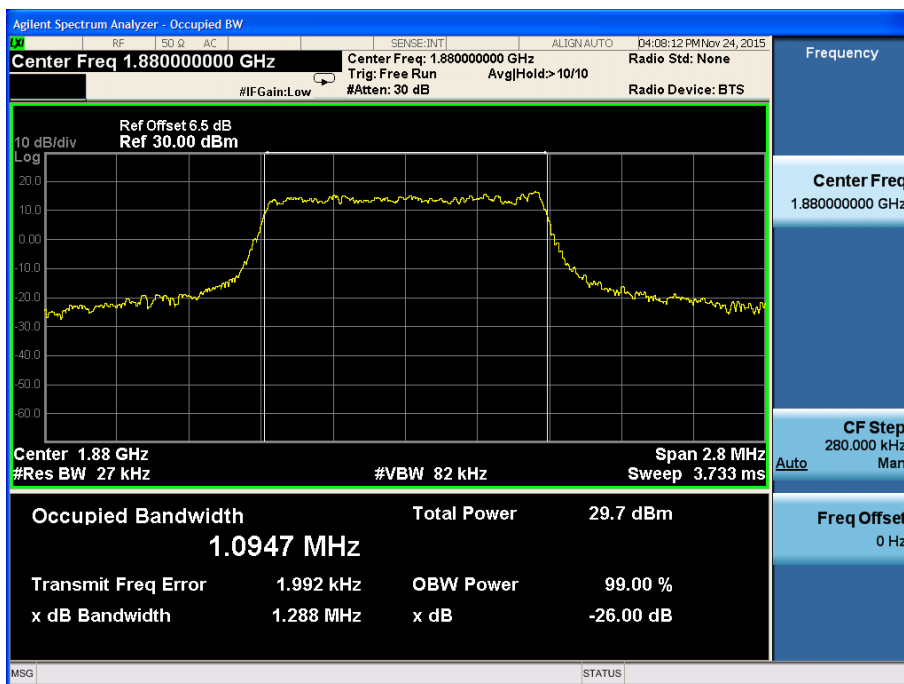


Fig.4

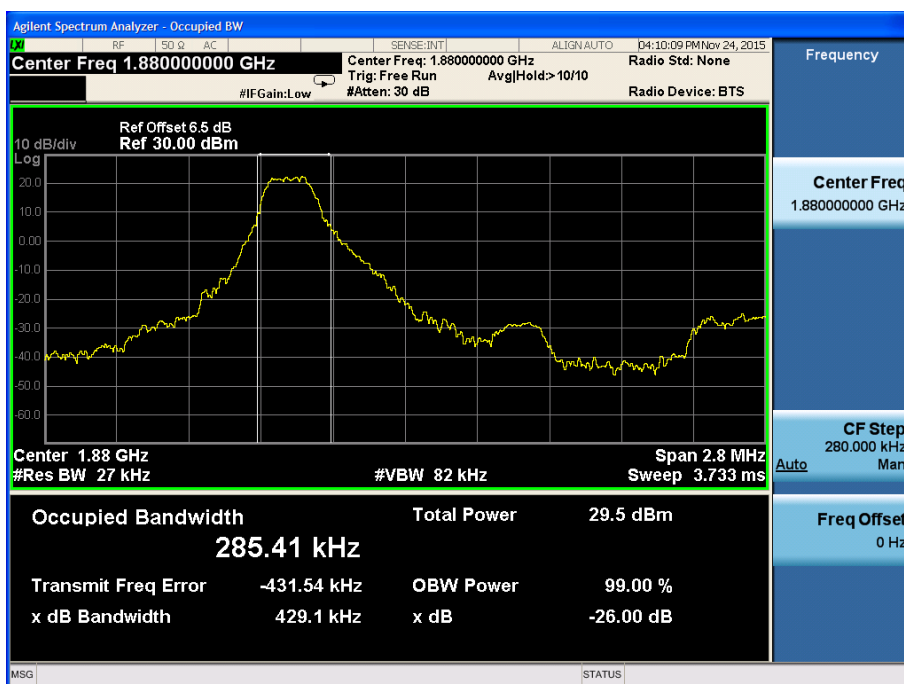


Fig.5

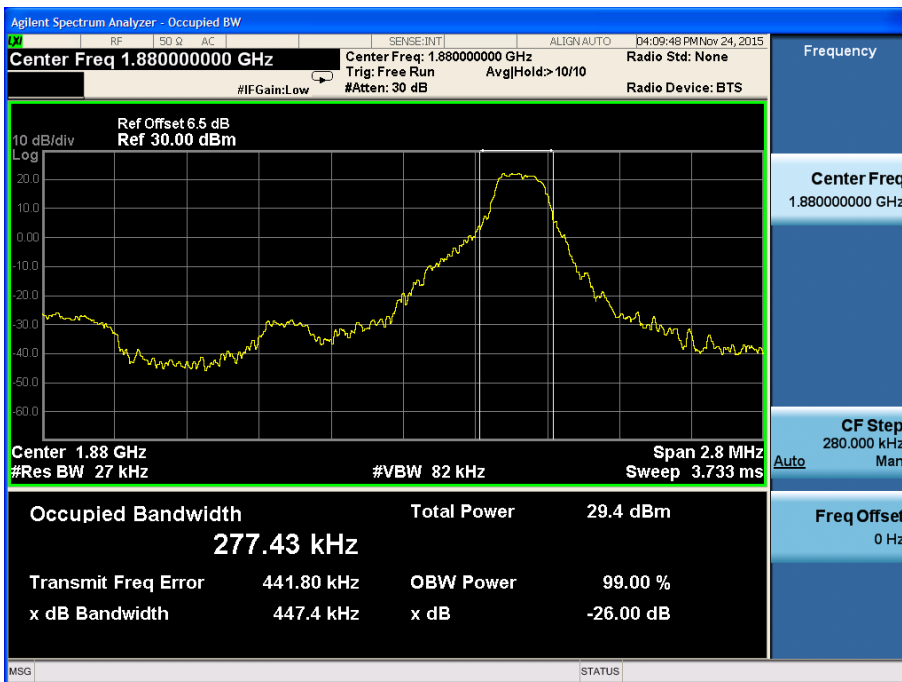


Fig.6

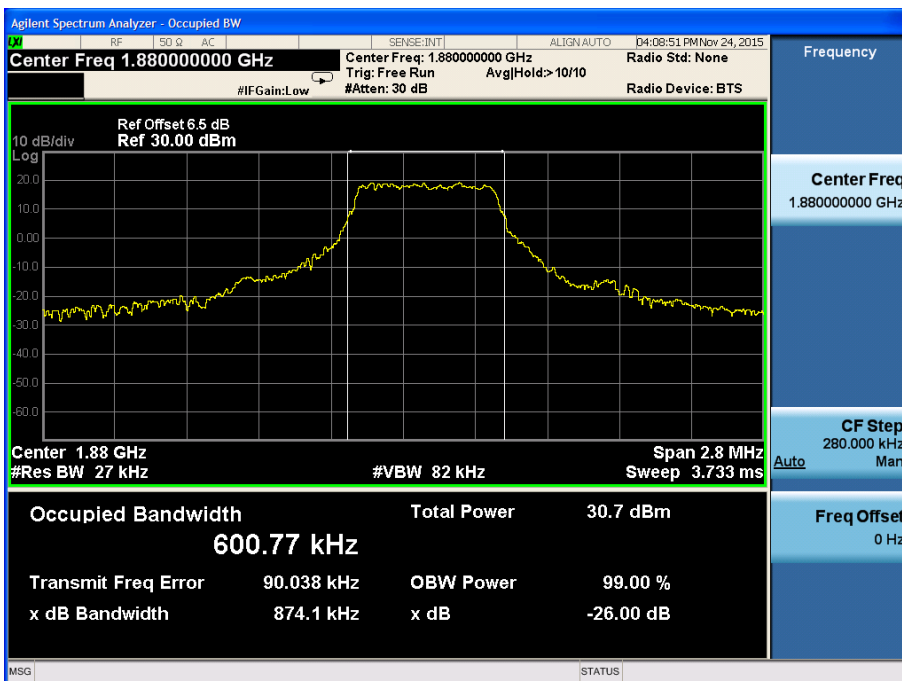


Fig.7

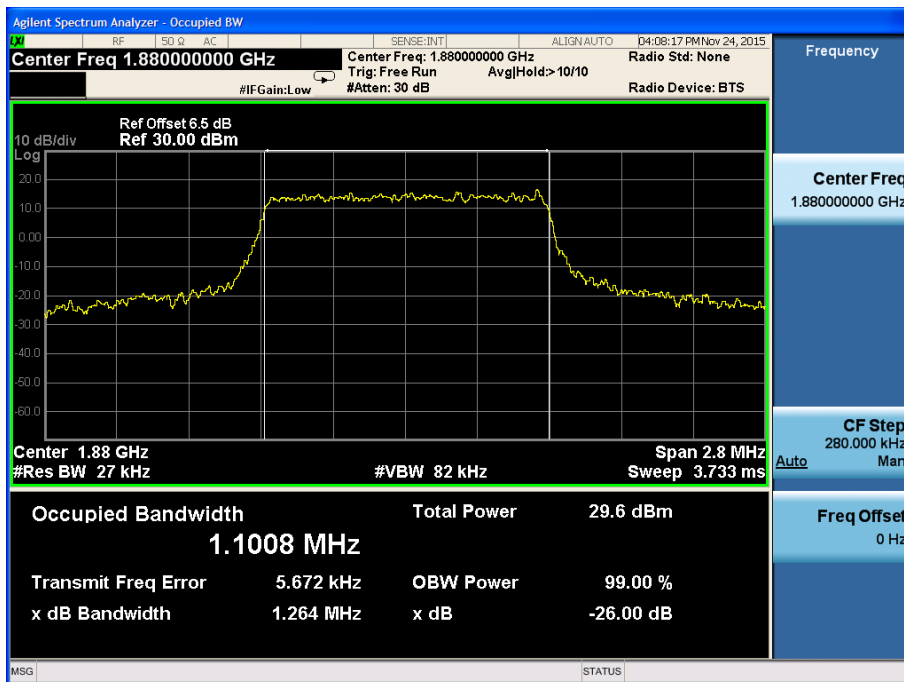


Fig.8

Band	Carrier frequency (MHz)	Channel (High)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)			
						QPSK		16-QAM	
2	1909.3	19193	1.4	1	0	0.298	Fig.1	0.292	Fig.5
				1	5	0.289	Fig.2	0.286	Fig.6
				3	2	0.605	Fig.3	0.607	Fig.7
				6	0	1.091	Fig.4	1.102	Fig.8

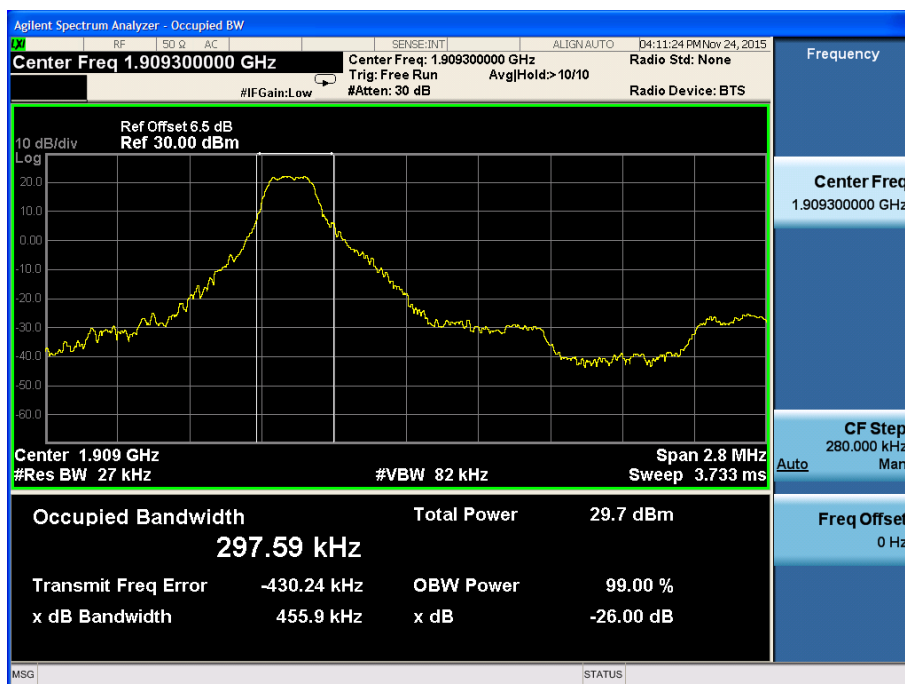


Fig.1

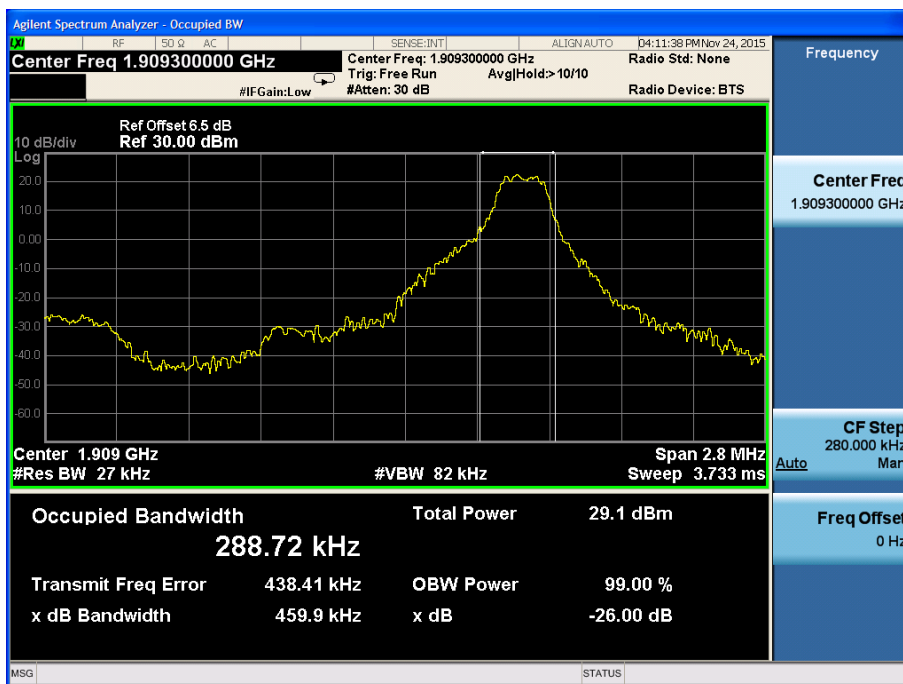


Fig.2

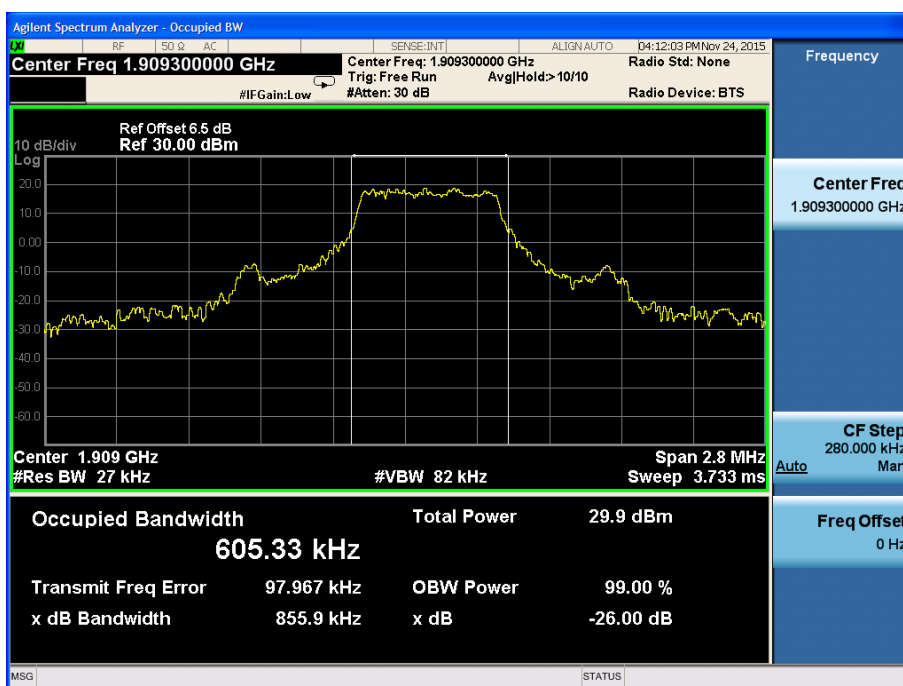


Fig.3

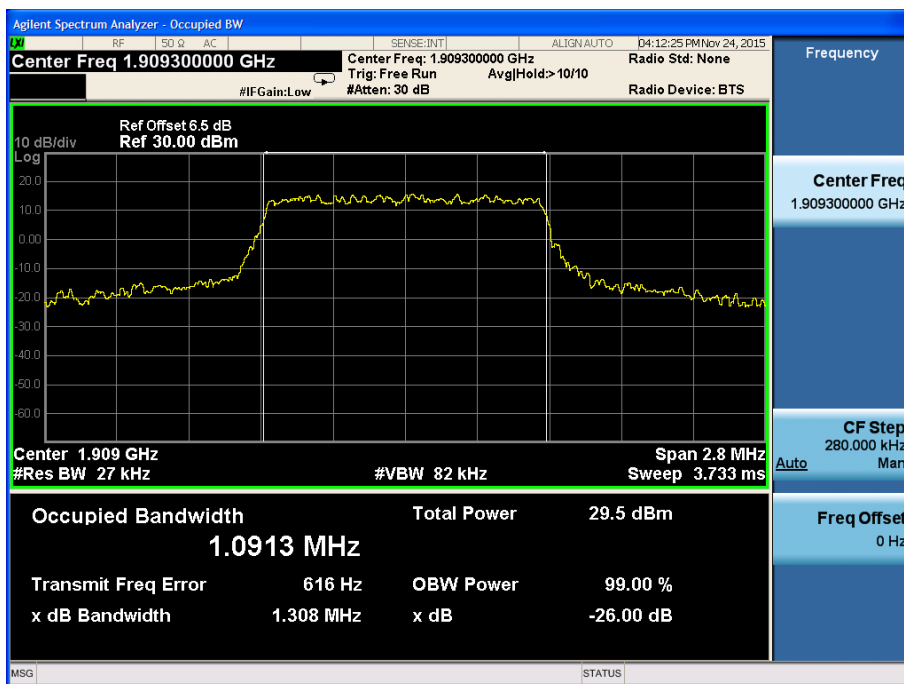


Fig.4

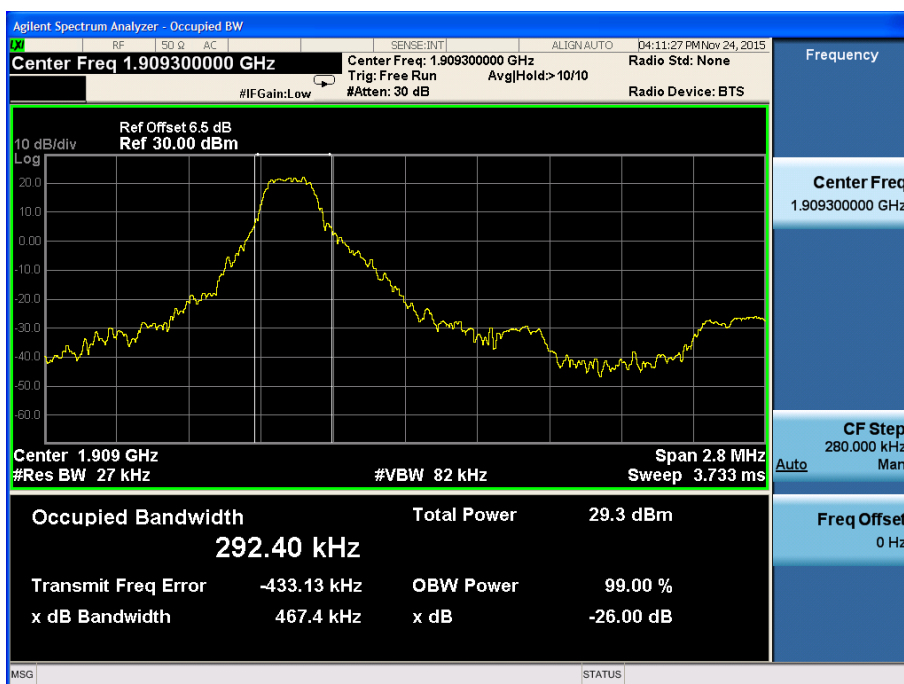


Fig.5

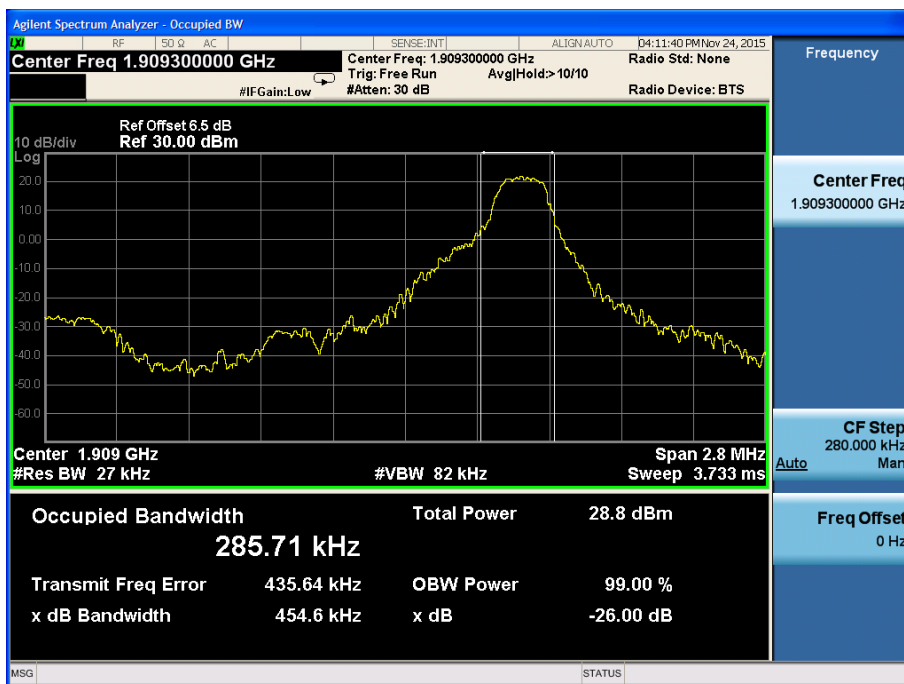


Fig.6

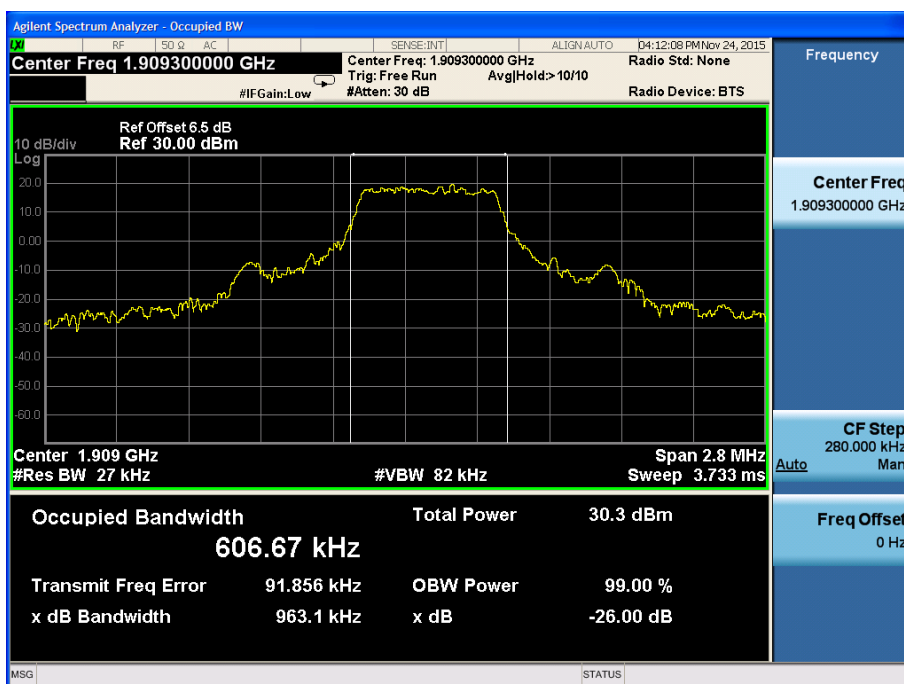


Fig.7

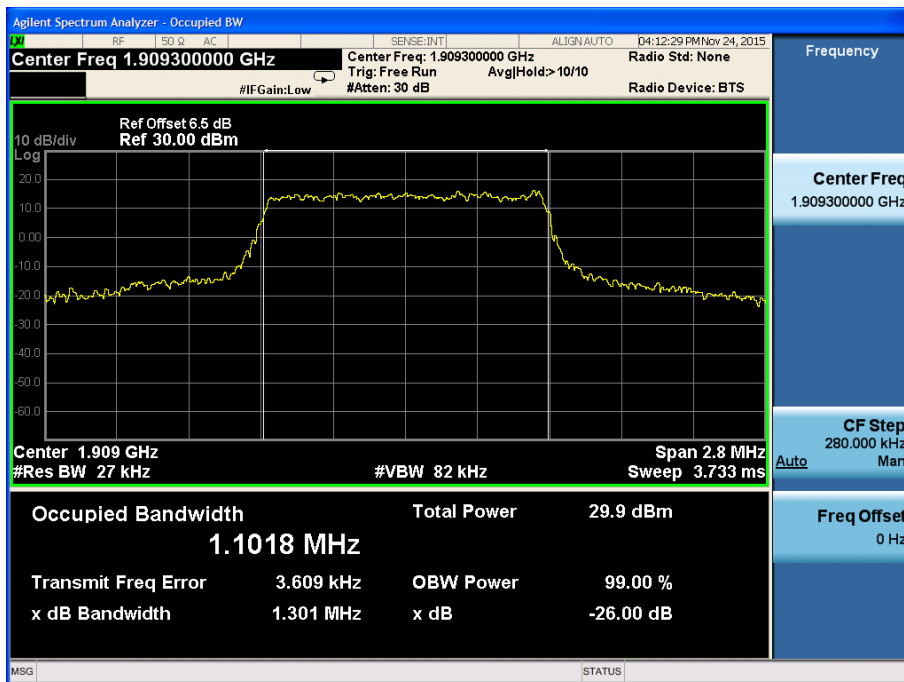


Fig.8

Band	Carrier frequency (MHz)	Channel (Low)	BW	RB Size	RB Offset	Bandwidth of 99% Power (MHz)			
						QPSK		16-QAM	
2	1851.5	18615	3	1	0	0.403	Fig.1	0.397	Fig.5
				1	14	0.417	Fig.2	0.400	Fig.6
				8	4	1.496	Fig.3	1.488	Fig.7
				15	0	2.704	Fig.4	2.709	Fig.8

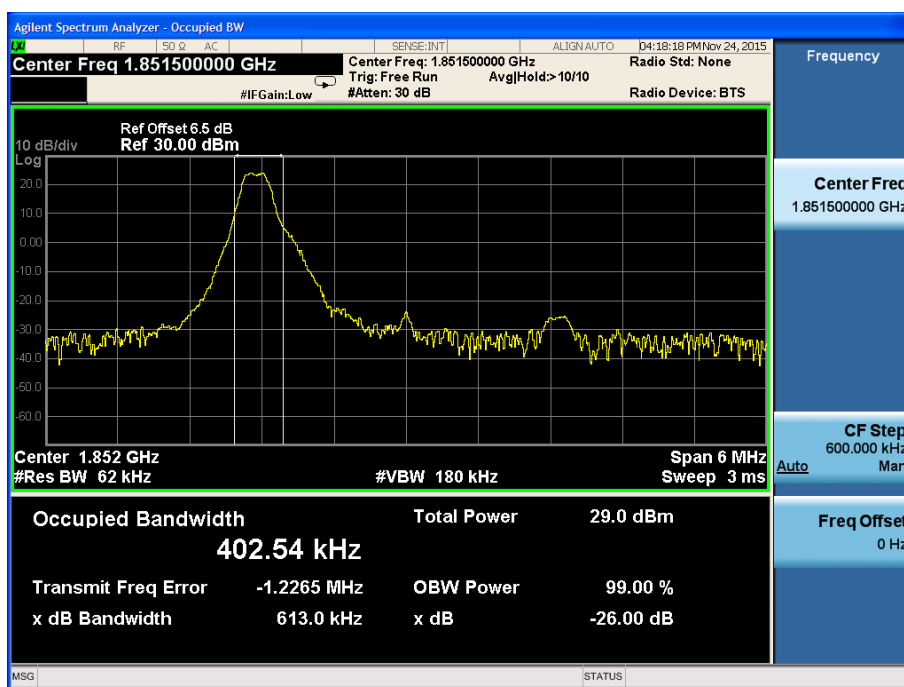


Fig.1

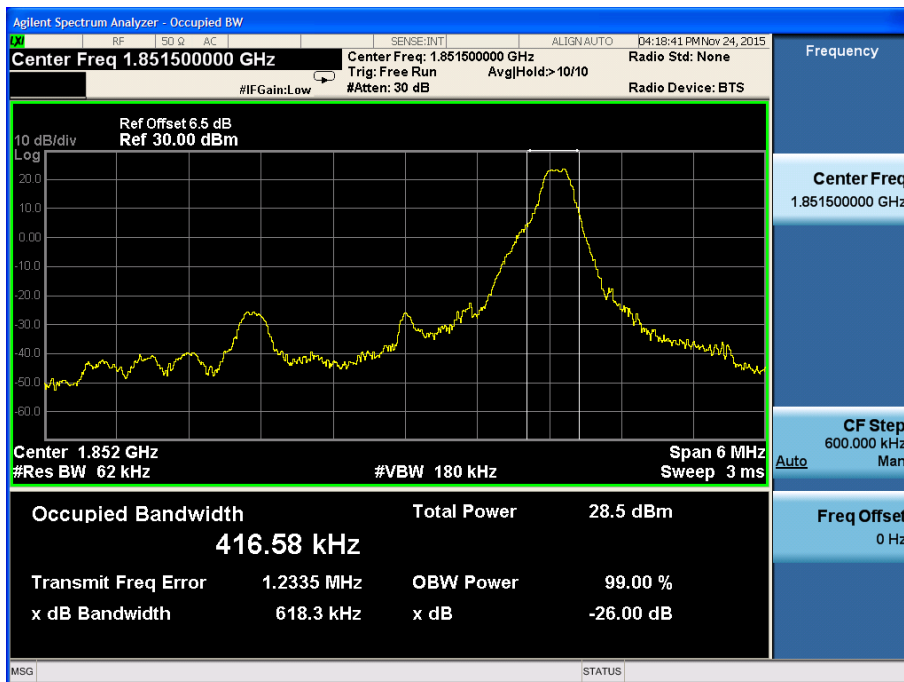


Fig.2

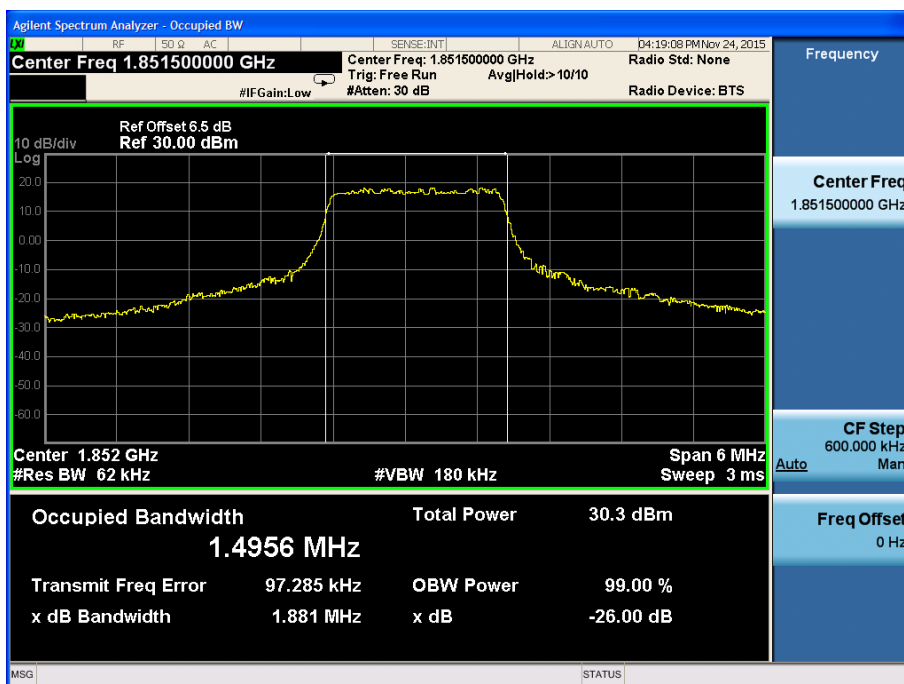


Fig.3

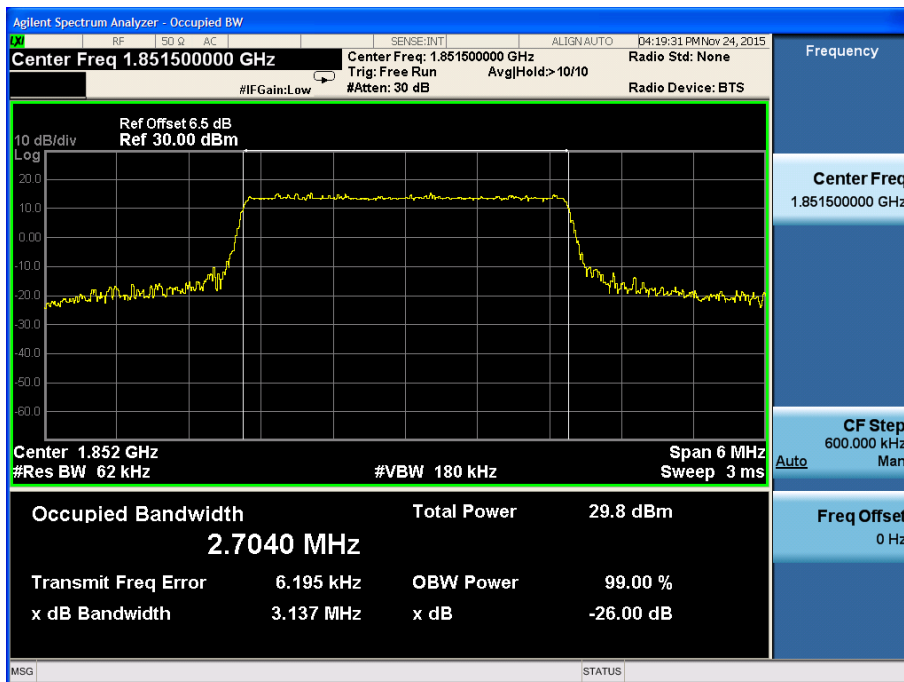


Fig.4

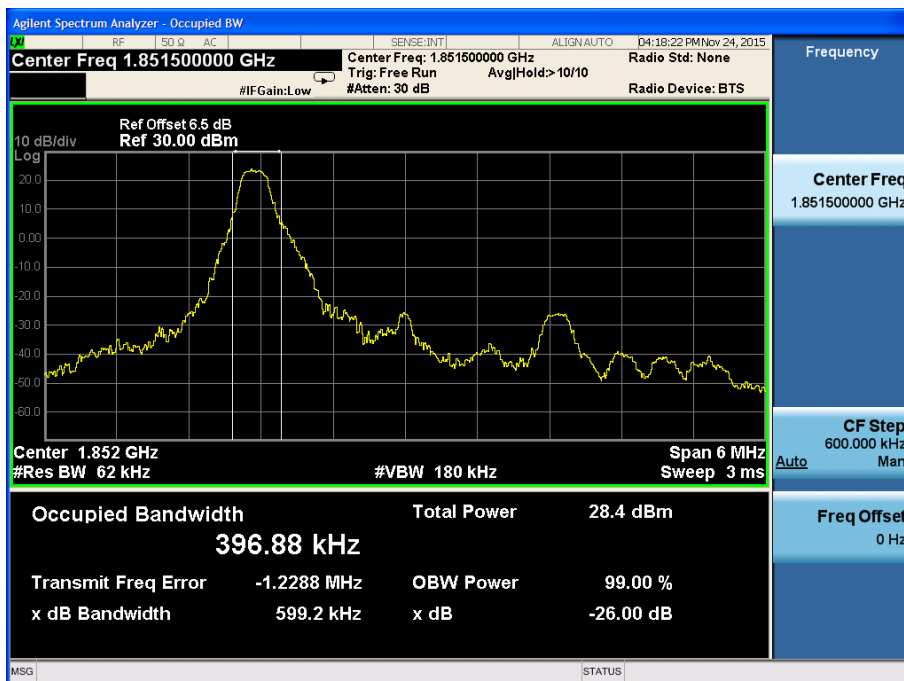


Fig.5

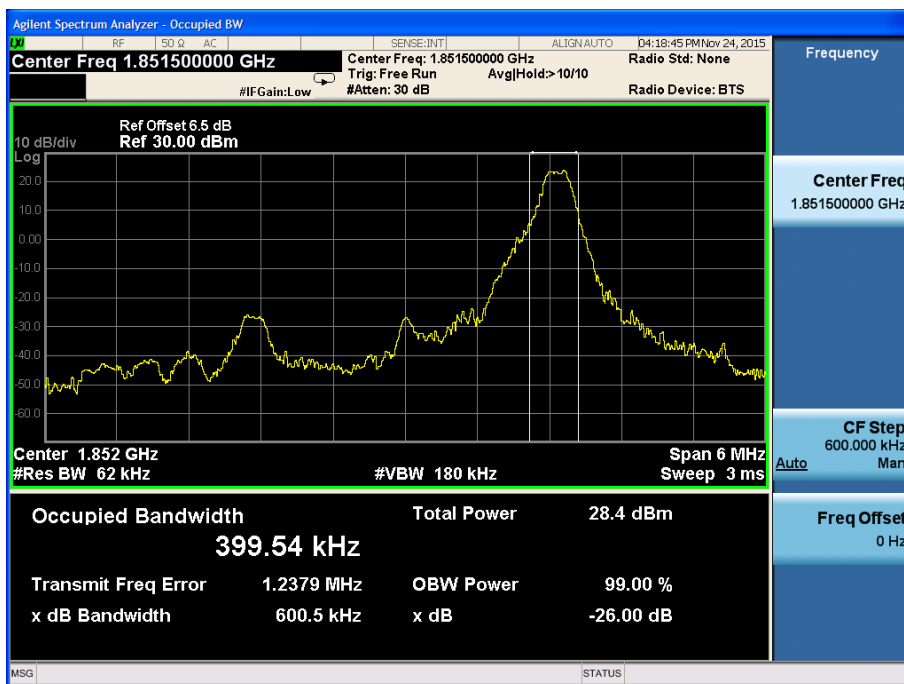


Fig.6

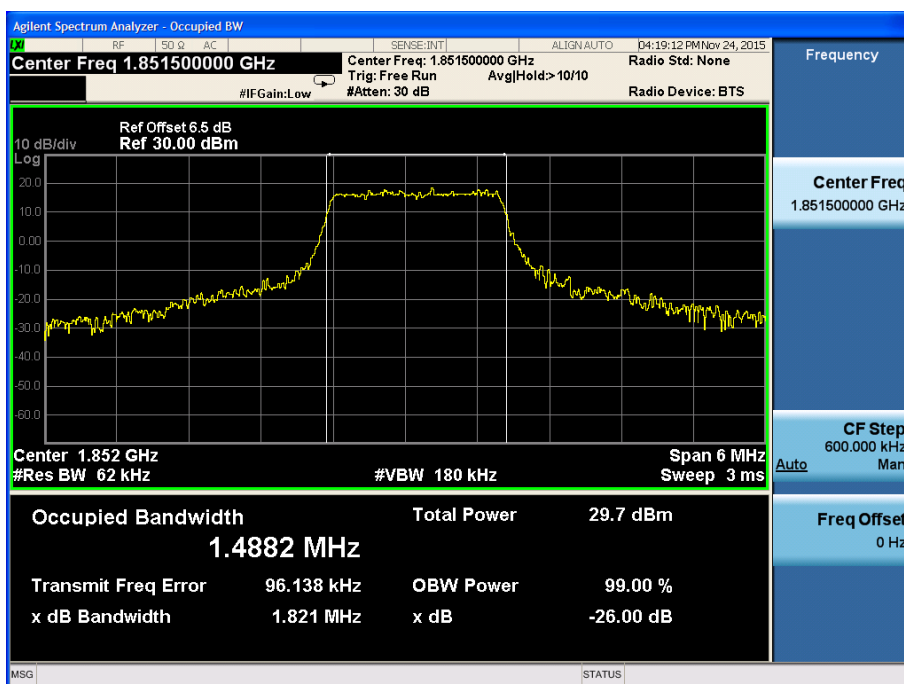


Fig.7

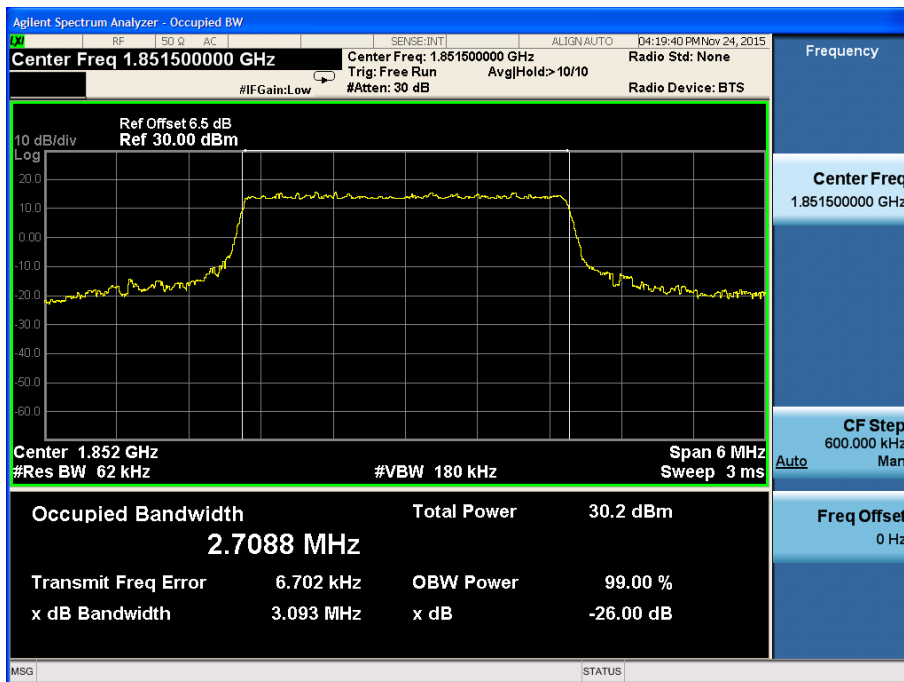


Fig.8