FCC RADIO TEST REPORT

Applicant	:	Shenzhen ORVIBO Electronics Co., Ltd.
Address	:	7F, Block A7, Nanshan i Park, No.1001 Xueyuan Road, Nanshan District, Shenzhen
Equipment	:	ZigBee Mini Hub
Model No.	:	VS10ZW
Trade Name	:	ORVIBO
FCC ID	:	2ACLPVS10ZW

I HEREBY CERTIFY THAT :

The sample was received on Jan. 07, 2016 and the testing was carried out on Jan. 17, 2016 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Sun Zhang
Technique principal

Laboratory Accreditation:

☐ Cerpass Technology Corporation Test Laboratory

NVLAP LAB Code:	**200954-0**
TAF LAB Code:	**1439**

☒ Cerpass Technology(SuZhou) Co., Ltd.

NVLAP LAB Code:	**200814-0**
CNAS LAB Code:	**L5515**

Contents

History of this test report

■ ORIGINAL

☐ Additional attachment as following record:

Attachment No.	Issue Date	Description

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.4: 2009

FCC Rules and Regulations Part 15 Subpart C §15.247

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. AC Power Line Conducted Emission	Pass
15.209 15.205	. Spurious Emission(Radiated)	Pass
15.247(d)	. Spurious Emission(Conducted)	Pass
15.247(a)(2)	. 6dB Bandwidth	Pass
15.247(b)	. Maximum Peak Output Power	Pass
15.247(e)	. Power Spectral Density	Pass

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Modulation Type	O-QPSK
Frequency Range	2405~2475MHz
Channel Number	7 Channels
Antenna Type/ gain	Multilayer Chip Antenna/1.3dBi
Power Rating	Input: 5 V ⎓ 1A
Adapter Spec.	Model:ICP12-050-1000B I/P:100-240V~ 50/60Hz 0.3A O/P:5V ⎓ 1000mA

2.2 Carrier Frequency of Channels

Channel	Frequency(MHz)	Channel	Frequency(MHz)
***11**	**2405**	20	2450
14	2420	24	2470
15	2425	***25**	**2475**
***19**	**2445**		

Note: Channels remarked * are selected to perform test.

2.3 Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b. The complete test system included Notebook, Mouse and EUT for the RF test.
c. An executive program, “JN5168_test_tool.exe” which transmits and receives data through Wireless.
d. The EUT had been tested under operating condition

. After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.
EUT staying in continuous transmitting mode was programmed.
O-QPSK :Channel Low (2405MHz), Channel Mid (2445MHz) and Channel High (2475MHz) were chosen for full testing.

2.4 Description of Test System

Device	Manufacturer	Model No.	Description
NB	SONY	PCG-71811P	R33021
USB Mouse	DELL	OXN967	R41108

Use Cable:

No.	Cable	Quantity	Description
A	USB Mouse Cable	1	1.5m Non Shielding
B	DC Cable	1	1.0m Non Shielding
C	RJ45 Cable	1	1.0m Non Shielding

2.5 General Information of Test

☐	Test Site	**Cerpass Technology Corporation Test Laboratory** Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582
	FCC	TW1079, TW1061,390316, 228391, 641184
	IC	4934B-1, 4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-3428, R-4218 for Radiated emission test G-812, G-813 for radiated disturbance above 1GHz
☒	Test Site	**Cerpass Technology (Suzhou) Co.,Ltd** Address: No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China Tel: +86-512-6917-5888 Fax: +86-512-6917-5666
	FCC	916572, 331395
	IC	7290A-1, 7290A-2
	VCCI	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test G-227 for radiated disturbance above 1GHz
Frequency Range Investigated:		Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25000MHz
Test Distance:		The test distance of radiated emission from antenna to EUT is 3 M.

3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Test Receiver	R&S	ESCI	100564	2015.02.25	2016.02.24
LISN	SCHWARZBECK	NSLK 8127	8127748	2015.10.22	2016.10.21
LISN	SCHWARZBECK	NSLK 8127	8127749	2015.10.22	2016.10.21
Pulse Limiter with 10dB Attenuation	SCHWARZBECK	VTSD 9561-F	9561-F106	2015.02.25	2016.02.24
Temperature/ Humidity Meter	mingle	ETH529	N/A	2015.02.25	2016.02.24
AMPLIFIER	HP	8447F	3113A05915	2015.02.25	2016.02.24
BILOG Antenna	SCHAFFNER	CBL6112D	22241	2015.02.25	2016.02.24
Horn Antenna	Sunol	DRH-118	A072913	2015.09.30	2016.09.29
Temp&Humidity&barometer	mingle	ETH529	N/A	2015.02.25	2016.02.24
Preamplifier	Fleld	AFS44-00101800-25-10P-44	1579008	2015.09.30	2016.09.29
ESG VECTOR SIGNAL GENERATOR	Agilent	E4438C	MY45092582	2015.07.18	2016.07.17
MXG VECTOR SIGNAL GENERATOR	Agilent	N5182B	MY53050127	2015.07.18	2016.07.17
EXA Signal Analyzer	Agilent	N9020A	US46220290	2015.07.18	2016.07.17
Power sensor	e-channel	ERS-180T-24	TW5451026	2015.06.25	2016.06.24

4. Antenna Requirements

4.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Antenna Construction and Directional Gain

No.	Antenna Type	Antenna Gain
1	Multilayer Chip Antenna	1.3dBi

5. Test of AC Power Line Conducted Emission

5.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

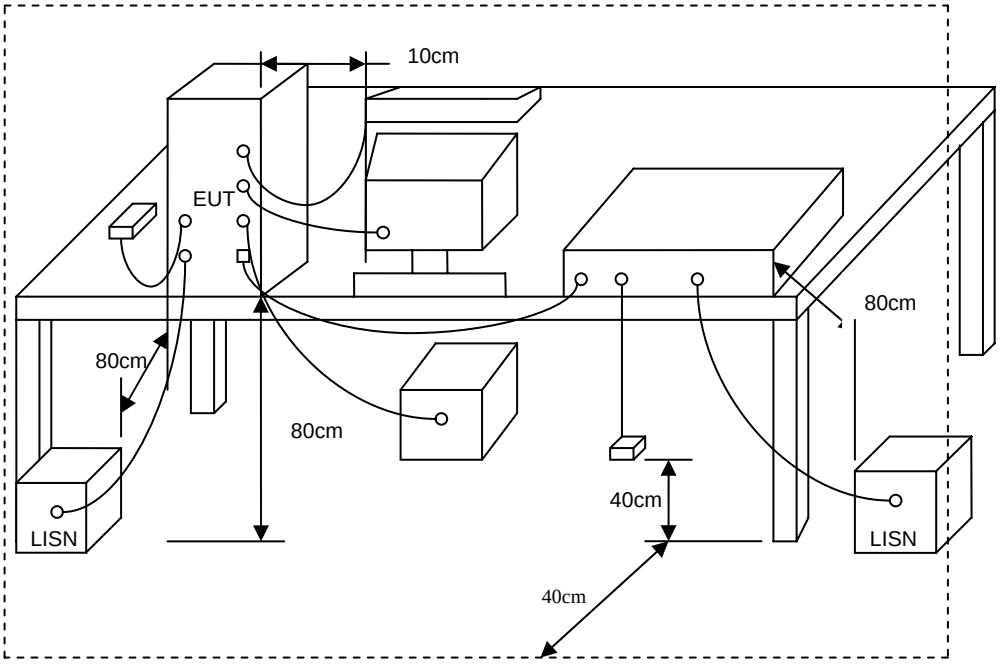
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

5.2 Test Procedures

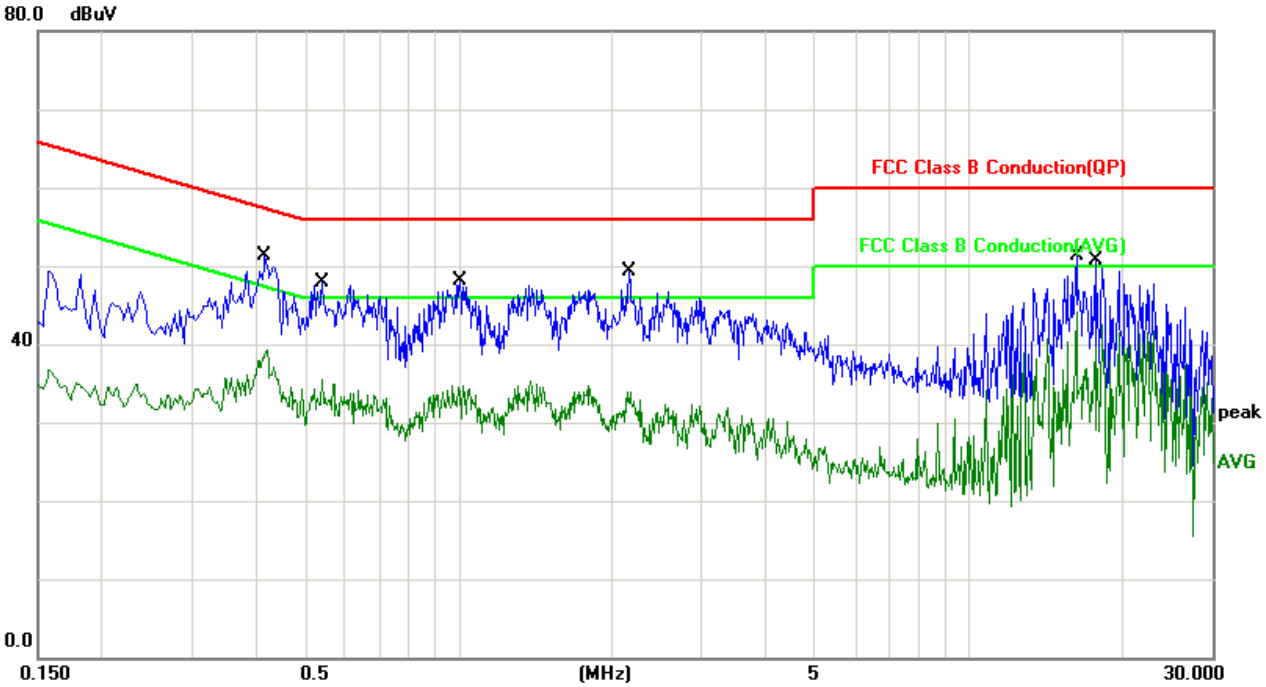
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.3 Typical Test Setup



5.4 Test Result and Data

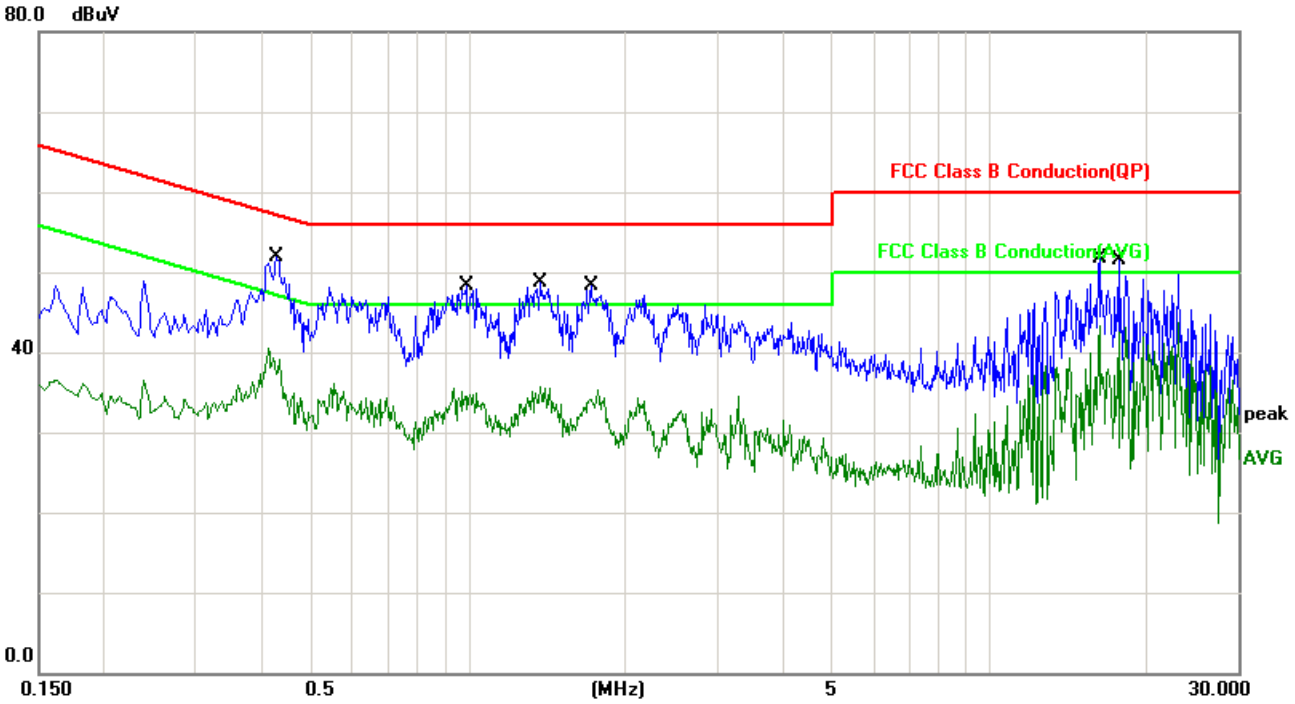
Test Mode :	Normal Link	Phase :	Line
Temperature :	20°C	Humidity:	51%
Pressur(mbar) :	1002	Date:	2016/01/13



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4180	10.51	36.49	47.00	57.49	-10.49	QP
2	0.4180	10.51	26.13	36.64	47.49	-10.85	AVG
3	0.5420	10.34	32.33	42.67	56.00	-13.33	QP
4	0.5420	10.34	22.03	32.37	46.00	-13.63	AVG
5	1.0100	10.27	31.37	41.64	56.00	-14.36	QP
6	1.0100	10.27	21.49	31.76	46.00	-14.24	AVG
7	2.1580	10.99	30.12	41.11	56.00	-14.89	QP
8	2.1580	10.99	18.62	29.61	46.00	-16.39	AVG
9	16.2300	10.46	38.87	49.33	60.00	-10.67	QP
10	16.2300	10.46	30.76	41.22	50.00	-8.78	AVG
11	17.6940	10.48	38.82	49.30	60.00	-10.70	QP
12	17.6940	10.48	30.52	41.00	50.00	-9.00	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

Test Mode :	Normal Link	Phase :	Neutral
Temperature :	20°C	Humidity :	51%
Pressur(mbar) :	1002	Date :	2016/01/13



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4300	10.49	37.28	47.77	57.25	-9.48	QP
2	0.4300	10.49	26.19	36.68	47.25	-10.57	AVG
3	0.9900	10.27	32.76	43.03	56.00	-12.97	QP
4	0.9900	10.27	22.51	32.78	46.00	-13.22	AVG
5	1.3740	10.27	32.88	43.15	56.00	-12.85	QP
6	1.3740	10.27	23.00	33.27	46.00	-12.73	AVG
7	1.7180	10.28	32.76	43.04	56.00	-12.96	QP
8	1.7180	10.28	22.67	32.95	46.00	-13.05	AVG
9	16.2300	10.46	39.29	49.75	60.00	-10.25	QP
10	16.2300	10.46	31.67	42.13	50.00	-7.87	AVG
11	17.6940	10.48	38.98	49.46	60.00	-10.54	QP
12	17.6940	10.48	31.38	41.86	50.00	-8.14	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

6. Test of Spurious Emission (Radiated)

6.1 Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions for unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance Meters	Radiated (μ V / M)	Radiated (dB μ V/ M)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

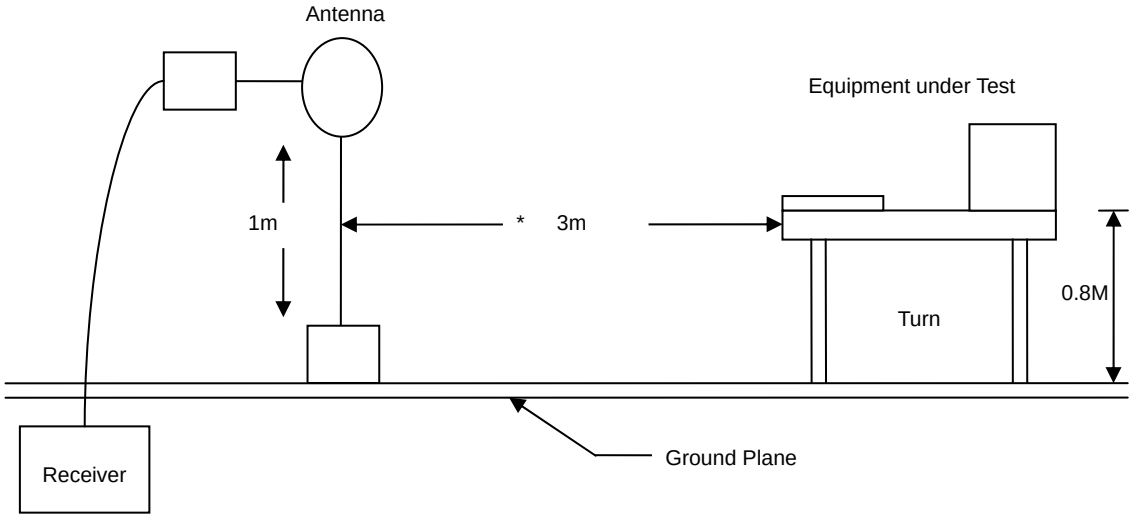
Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	**10**	**30**
230-1000	**10**	**37**

6.2 Test Procedures

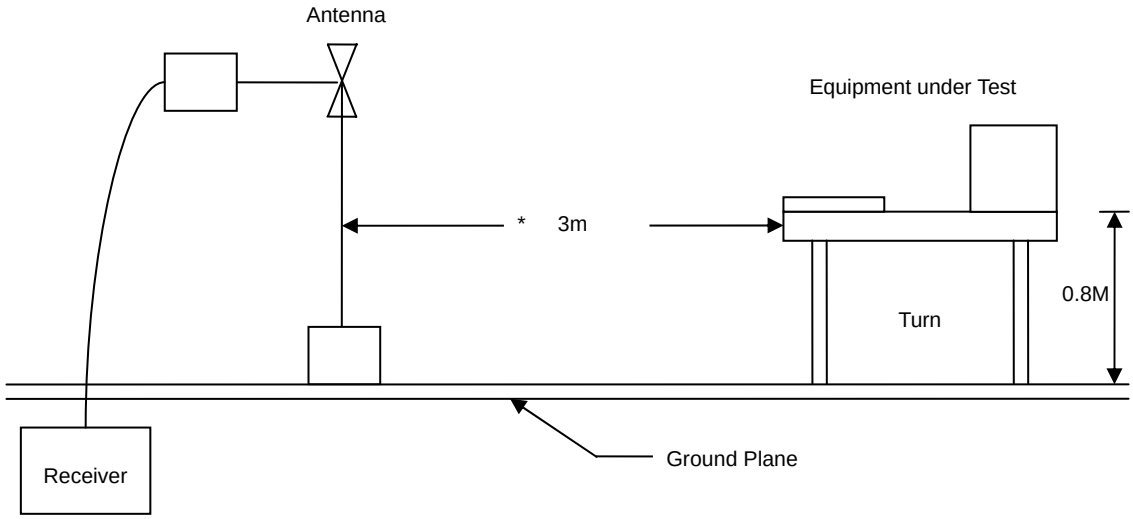
a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

6.3 Typical Test Setup

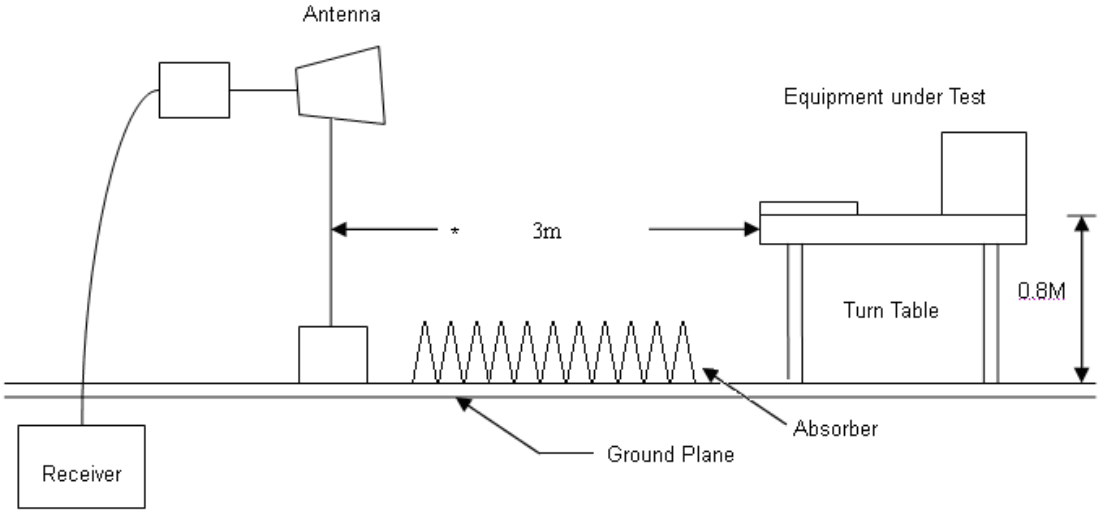
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



6.4 Test Result and Data (30MHz ~ 1GHz)

Power	:	AC 120V	Temperature	:	24 °C
Test Mode	:	Normal Link	Humidity	:	54 %
Test date	:	Jan. 13, 2015	Atmospheric Pressure	:	1010 hpa

Frequency (MHz)	AntPol. H/V	Correct Factor (dB)	Reading level (dBuV)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector mode (PK/QP)
31.9400	H	-4.16	30.64	26.48	40.00	-13.52	QP
80.4399	H	-13.39	48.95	35.56	40.00	-4.44	QP
90.1400	H	-11.37	47.16	35.79	43.50	-7.71	QP
322.9399	H	-5.98	34.00	28.02	46.00	-17.98	QP
500.4499	H	-2.20	35.90	33.70	46.00	-12.30	QP
600.3600	H	-1.05	34.54	33.49	46.00	-12.51	QP
43.5800	V	-11.77	46.89	35.12	40.00	-4.88	QP
74.6200	V	-13.89	51.50	37.61	40.00	-2.39	QP
88.2000	V	-11.58	50.23	38.65	43.50	-4.85	QP
163.8600	V	-12.30	47.95	35.65	43.50	-7.85	QP
500.4499	V	-2.20	34.20	32.00	46.00	-14.00	QP
600.3600	V	-1.05	37.86	36.81	46.00	-9.19	QP

Note: Level = Reading + Factor
Margin = Level – Limit
Factor= Antenna Factor + Cable Loss - Amplifier Factor

6.5 Test Result and Data (1GHz ~ 25GHz)

Power :	AC 120V	Temperature :	24 °C
Test Mode	2405MHz	Humidity :	54 %
Test date :	Jan. 13, 2016	Atmospheric Pressure :	1010 hpa

Frequency (MHz)	AntPol. H/V	Correct Factor (dB)	Reading level (dBuV)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector mode (PK/QP)
1595.000	H	-7.06	46.64	39.58	74.00	-34.42	peak
2402.500	H	-3.00	45.37	42.37	74.00	-31.63	peak
3805.000	H	4.44	38.21	42.65	74.00	-31.35	peak
4825.000	H	8.27	37.07	45.34	74.00	-28.66	peak
4995.000	H	8.59	37.81	46.40	74.00	-27.60	peak
7205.000	H	12.88	39.77	52.65	74.00	-21.35	peak
1595.000	V	-7.06	56.51	49.45	74.00	-24.55	peak
2020.000	V	-4.64	49.44	44.80	74.00	-29.20	peak
3805.000	V	4.44	40.04	44.48	74.00	-29.52	peak
4825.000	V	8.27	41.85	50.12	74.00	-23.88	peak
4995.000	V	8.59	40.90	49.49	74.00	-24.51	peak
7205.000	V	12.88	45.00	57.88	74.00	-16.12	peak
7205.000	V	12.88	33.54	46.42	54.00	-7.58	AVG

Note: Level = Reading + Factor
Margin = Level – Limit
Factor= Antenna Factor + Cable Loss - Amplifier Factor

Power :	AC 120V	Temperature :	24 °C
Test Mode	2445MHz	Humidity :	54 %
Test date :	Jan. 13, 2016	Atmospheric Pressure :	1010 hpa

Frequency (MHz)	AntPol. H/V	Correct Factor (dB)	Reading level (dBuV)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector mode (PK/QP)
2020.000	H	-4.64	50.57	45.93	74.00	-28.07	peak
2440.000	H	-2.84	52.01	49.17	74.00	-24.83	peak
2912.500	H	0.18	42.33	42.51	74.00	-31.49	peak
3805.000	H	4.44	37.84	42.28	74.00	-31.72	peak
4995.000	H	8.59	40.07	48.66	74.00	-25.34	peak
7320.000	H	13.33	42.81	56.14	74.00	-17.86	peak
7320.000	H	13.33	30.32	43.65	54.00	-10.35	AVG
2440.000	V	-2.84	51.76	48.92	74.00	-25.08	peak
2955.000	V	0.47	40.38	40.85	74.00	-33.15	peak
4655.000	V	7.95	32.94	40.89	74.00	-33.11	peak
5122.500	V	8.70	32.67	41.37	74.00	-32.63	peak
7120.000	V	12.55	31.55	44.10	74.00	-29.90	peak
7320.000	V	13.33	43.82	57.15	74.00	-16.85	peak
7320.000	V	13.33	32.56	45.89	54.00	-8.11	AVG

Note: Level = Reading + Factor
Margin = Level – Limit
Factor= Antenna Factor + Cable Loss - Amplifier Factor

Power :	AC 120V	Temperature :	24 °C
Test Mode	2475MHz	Humidity :	54 %
Test date :	Jan. 13, 2016	Atmospheric Pressure :	1010 hpa

Frequency (MHz)	AntPol. H/V	Correct Factor (dB)	Reading level (dBuV)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector mode (PK/QP)
1595.000	H	-7.06	48.52	41.46	74.00	-32.54	peak
2487.500	H	-2.63	48.85	46.22	74.00	-27.78	peak
3805.000	H	4.44	37.68	42.12	74.00	-31.88	peak
4952.500	H	8.51	41.07	49.58	74.00	-24.42	peak
6185.000	H	10.33	33.94	44.27	74.00	-29.73	peak
7417.500	H	13.71	40.30	54.01	74.00	-19.99	peak
7417.500	H	13.71	28.94	42.65	54.00	-11.35	AVG
1595.000	V	-7.06	54.34	47.28	74.00	-26.72	peak
2487.500	V	-2.63	50.32	47.69	74.00	-26.31	peak
2870.000	V	-0.10	42.20	42.10	74.00	-31.90	peak
3805.000	V	4.44	40.25	44.69	74.00	-29.31	peak
4952.500	V	8.51	43.60	52.11	74.00	-21.89	peak
7417.500	V	13.71	45.00	58.71	74.00	-15.29	peak
7417.500	V	13.71	34.26	47.97	54.00	-6.03	AVG

Note: Level = Reading + Factor
Margin = Level – Limit
Factor= Antenna Factor + Cable Loss - Amplifier Factor

6.6 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

6.7 Restrict Band Emission Measurement Data

Test Date: Jan. 13, 2016 Temperature: 26℃

Atmospheric pressure: 1018 hPa Humidity: 47%

Modulation Standard: O-QPSK

Low Channel						Fundamental Frequency: 2405MHz	
Frequency (MHz)	**Factor (dB/m)**	**Reading (dBuV)**	**Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Det.**	**Ant-Pol H/V**
2374.100	-3.12	56.89	53.77	74.00	-20.23	peak	H
2374.100	-3.12	45.31	42.19	54.00	-11.81	AVG	H
2390.000	-3.05	52.54	49.49	74.00	-24.51	peak	H
2390.000	-3.05	37.88	34.83	54.00	-19.17	AVG	H
2372.600	-3.13	57.33	54.20	74.00	-19.80	peak	V
2372.600	-3.13	45.34	42.21	54.00	-11.79	AVG	V
2390.000	-3.05	52.55	49.50	74.00	-24.50	peak	V
2390.000	-3.05	40.06	37.01	54.00	-16.99	AVG	V
High Channel						Fundamental Frequency: 2475MHz	
2483.500	-2.65	58.96	56.31	74.00	-17.69	peak	H
2483.500	-2.65	47.62	44.97	54.00	-9.03	AVG	H
2483.500	-2.65	60.98	58.33	74.00	-15.67	peak	V
2483.500	-2.65	50.05	47.40	54.00	-6.60	AVG	V

Notes:

1. Result = Meter Reading + Factor
2. Factor = Antenna Factor + Cable Loss – Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3 MHz (detector peak mode) for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3 MHz (detector sample mode) for Average detection at frequency above 1GHz.

7. Test of Spurious Emission (Conducted)

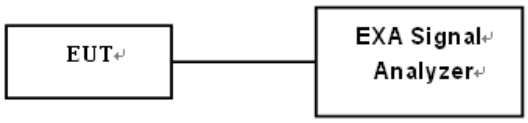
7.1 Test Limit

Below –20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

7.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
b. Set RBW 100KHz and VBW 300KHz of spectrum analyzer with convenient frequency span including 100 KHz bandwidth from band edge.
c. The band edges was measured and recorded.

7.3 Test Setup Layout



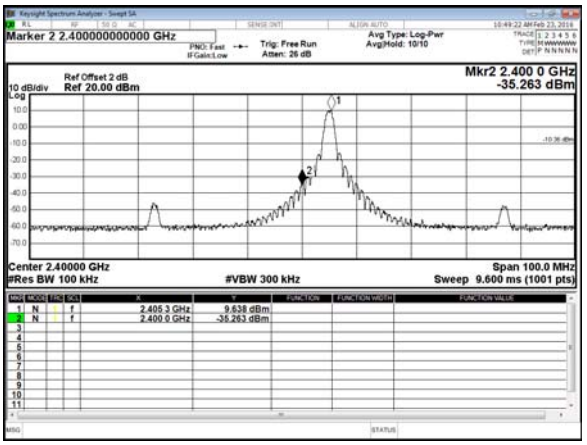
7.4 Test Result and Data

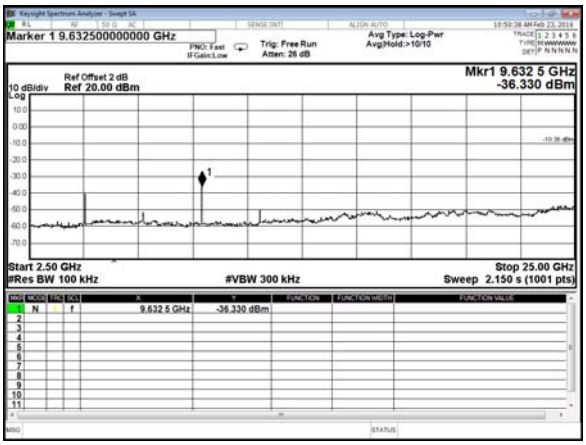
Test Date: Jan. 13, 2016 Temperature: 24℃

Atmospheric pressure: 1014 hPa Humidity: 47%

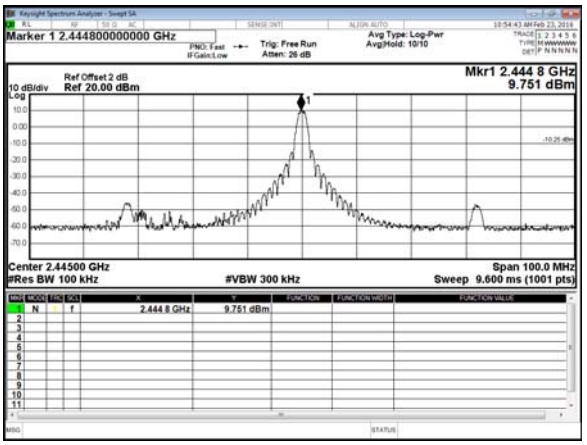
Modulation Standard	Channel	Frequency (MHz)	Test Result
O-QPSK	Low	2405	Pass
	Middle	2445	Pass
	High	2475	Pass

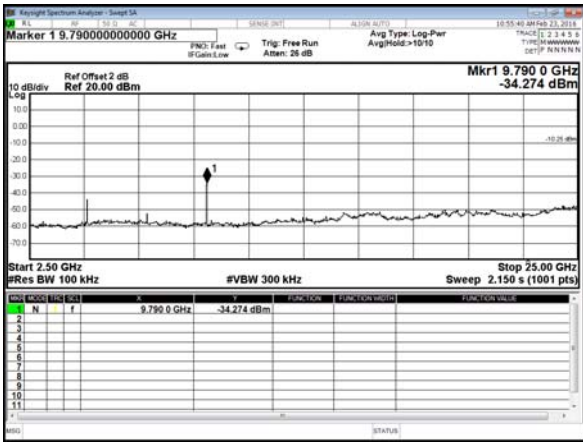
Modulation Type: O-QPSK
CH Low



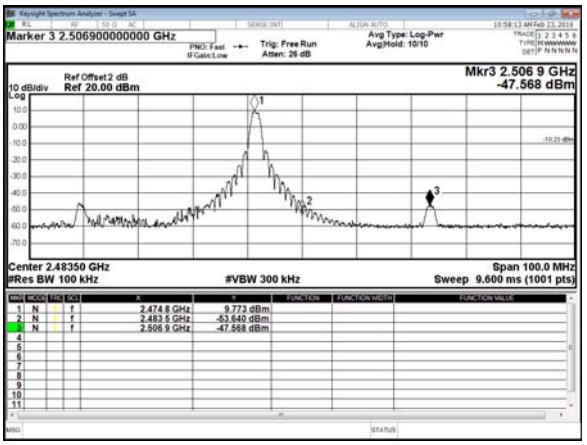


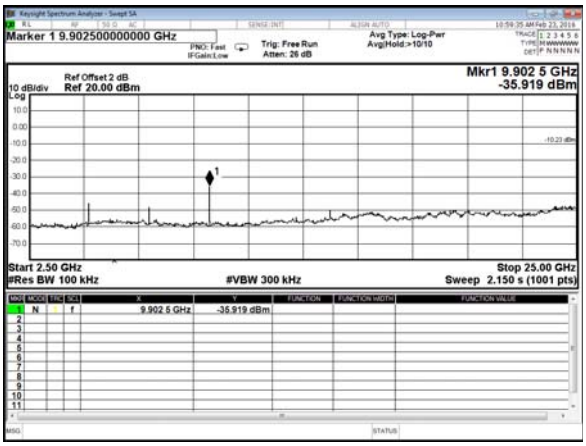
CH Middle





CH High





8. 6dB Bandwidth Measurement Data

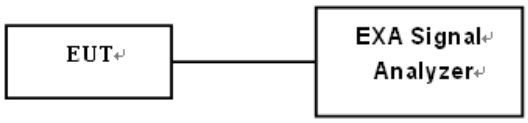
8.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

8.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.
b. Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.
c. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

8.3 Test Setup Layout



8.4 Test Result and Data

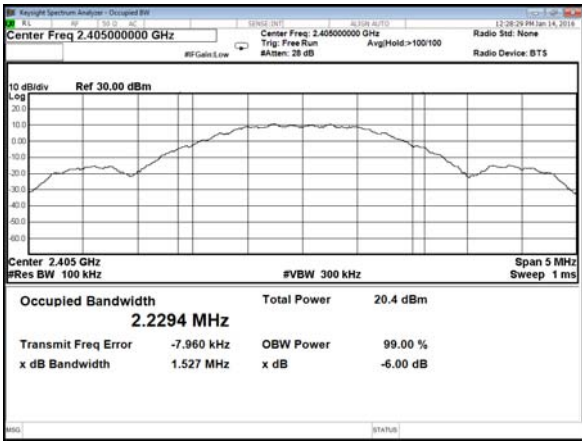
Test Date: Jan. 13, 2016 Temperature: 24℃

Atmospheric pressure: 1016 hPa Humidity: 46%

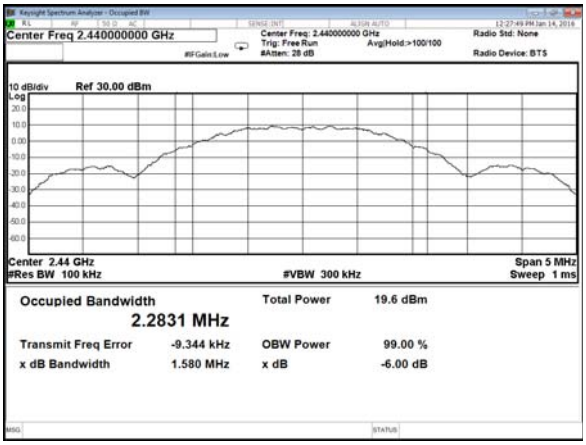
Modulation Standard	Channel	Frequency (MHz)	6dB Bandwidth (MHz)
O-QPSK	Low	2405	1.52
	Middle	2445	1.64
	High	2475	1.64

Modulation Type: O-QPSK

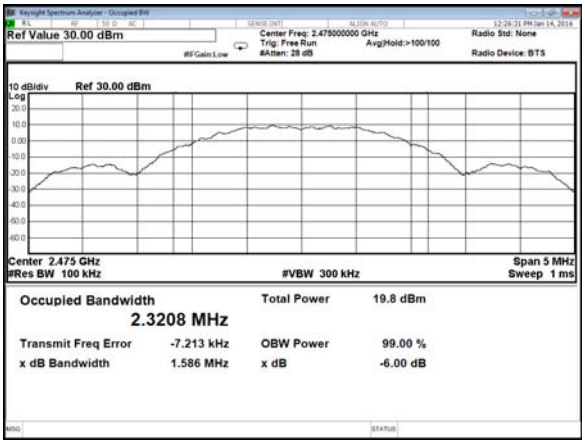
CH Low



CH Middle



CH High



9. Maximum Peak Output Power

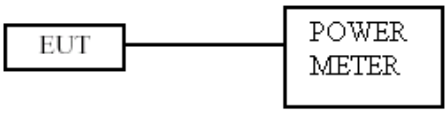
9.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.

9.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

9.3 Test Setup Layout



9.4 Test Result and Data

Test Date: Jan. 13, 2016 Temperature: 24℃

Atmospheric pressure: 1016 hPa Humidity: 46%

Modulation Standard	Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Output (mW)
			Peak	Peak
O-QPSK	Low	2405	15.69	37.068
	Middle	2445	15.21	33.189
	High	2475	14.89	30.832

10. Power Spectral Density

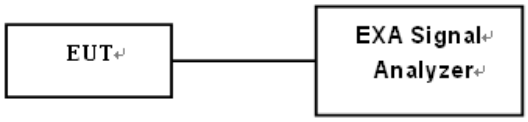
10.1 Test Limit

The Maximum of Power Spectral Density Measurement is 8dBm.

10.2 Test Procedures

a. The transmitter output was connected to spectrum analyzer.
b. The spectrum analyzer's resolution bandwidth were set at 3KHz RBW and 10KHz VBW as that of the fundamental frequency. Set the sweep time=span/3KHz.
c. The power spectral density was measured and recorded.
d. The Sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

10.3 Test Setup Layout



10.4 Test Result and Data

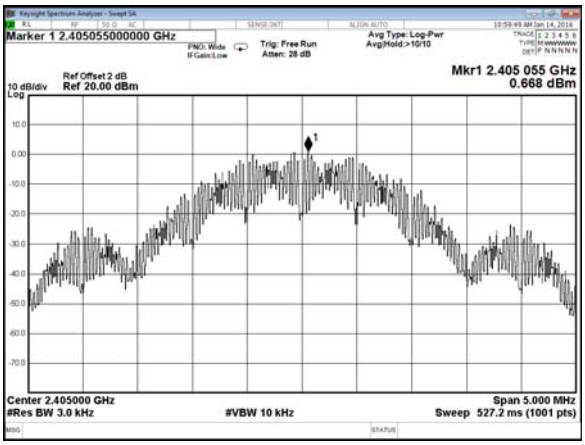
Test Date: Jan. 16, 2016 Temperature: 24℃

Atmospheric pressure: 1014 hPa Humidity: 47%

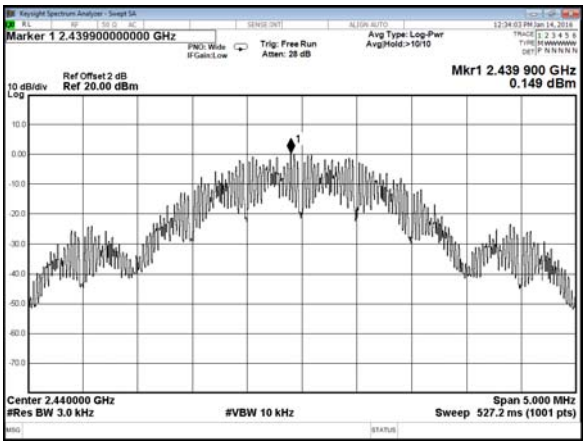
Modulation Standard	Channel	Frequency (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)
O-QPSK	Low	2405	0.668
	Middle	2445	0.149
	High	2475	-0.340

Modulation Type: O-QPSK

CH Low



CH Middle



CH High