

FCC PART 15.249

TEST REPORT

For

Beijing Noitom Technology Limited

Room432,Main Tower 28 Xijiekouwai Blvd, Beijing,China

FCC ID: 2ABTR-MSW-P-S-01

Report Type: Original Report		Product Type: mySwing Professional	
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Report Number:	RBJ160121052-00A		
Report Date:	2016-08-08		
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Beijing Noitom Technology Limited*'s product, model number: *NTM-MSW-P-SS-01*, *NTM-MSW-P-BS-01* (FCC ID: 2ABTR-MSW-P-S-01) (the "EUT") in this report was a *mySwing Professional*, rated input voltage: DC 3.7V from battery.

Model	Length (mm)	Width (mm)	High (mm)
<i>NTM-MSW-P-BS-01</i>	35.6	33	20
<i>NTM-MSW-P-SS-01</i>	50	27.5	46.4

Note: the series product, model NTM-MSW-P-SS-01, NTM-MSW-P-BS-01 have same RF module, the differences between them were explained in the declaration letter, we selected NTM-MSW-P-BS-01 for full testing, NTM-MSW-P-SS-01 for Conduction Emissions and radiated emission testing.

* All measurement and test data in this report was gathered from production sample serial number: 160121052 (Assigned by BACL.Dongguan). The EUT was received on 2016-01-22.

Objective

This type approval report is prepared on behalf of *Beijing Noitom Technology Limited* in accordance with Part 2-Subpart J, and Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.249 rules.

Related Submittal(s)/Grant(s)

Submitted with the part of a system with FCC ID: 2ABTR-MSW-P-R-01

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in engineering mode with maximum power output and switched the channels by key.

Channels list as follows:

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	2401	6	2440
2	2403	7	2450
3	2410	8	2460
4	2420	9	2470
5	2430	10	2480

Channel 1, 6, 10 were selected to test.

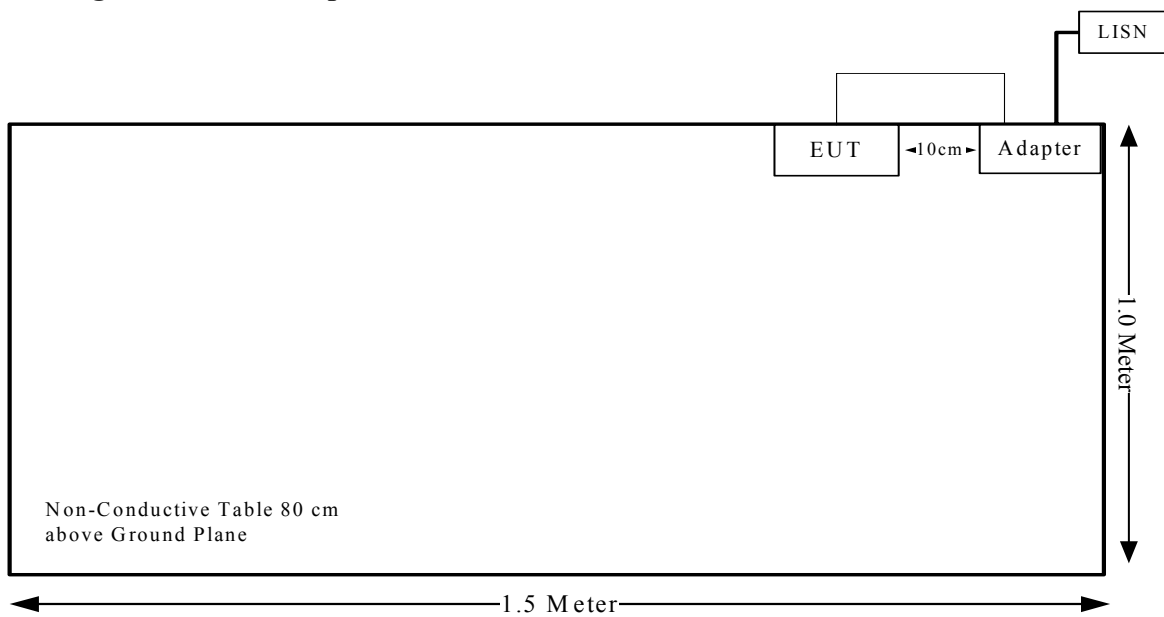
EUT Exercise Software

No software was used in test.

Equipment Modifications

No modifications were made to the EUT.

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207(a)	Conduction Emissions	Compliance
15.205, §15.209, §15.249	Radiated Emissions	Compliance
§15.215 (c)	20 dB Bandwidth	Compliance

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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

Antenna Connector Construction

The EUT has an internal PCB antenna, and the antenna gain is 1.5dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

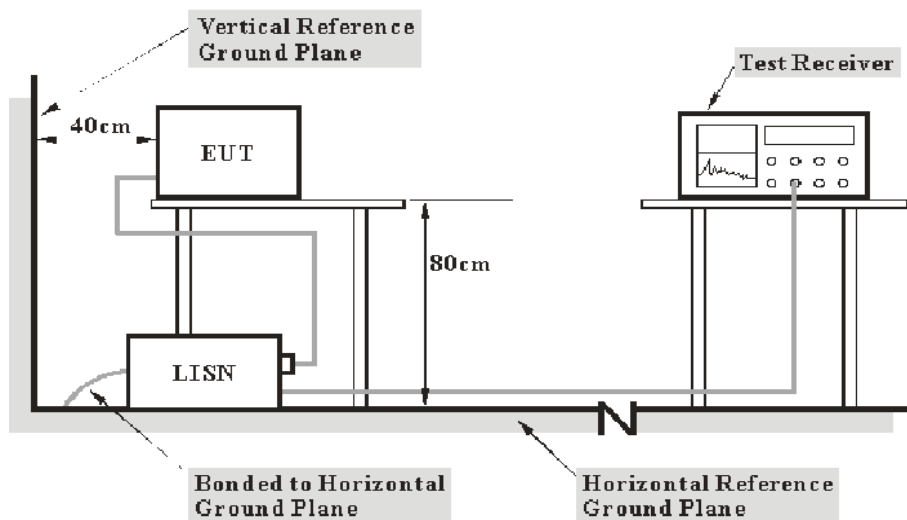
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter of laptop was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter of laptop was connected to the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2015-12-10	2016-12-09
R&S	L.I.S.N	ESH3-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

16.6 dB at 0.190505 MHz in the **Line** conducted mode

Test Data

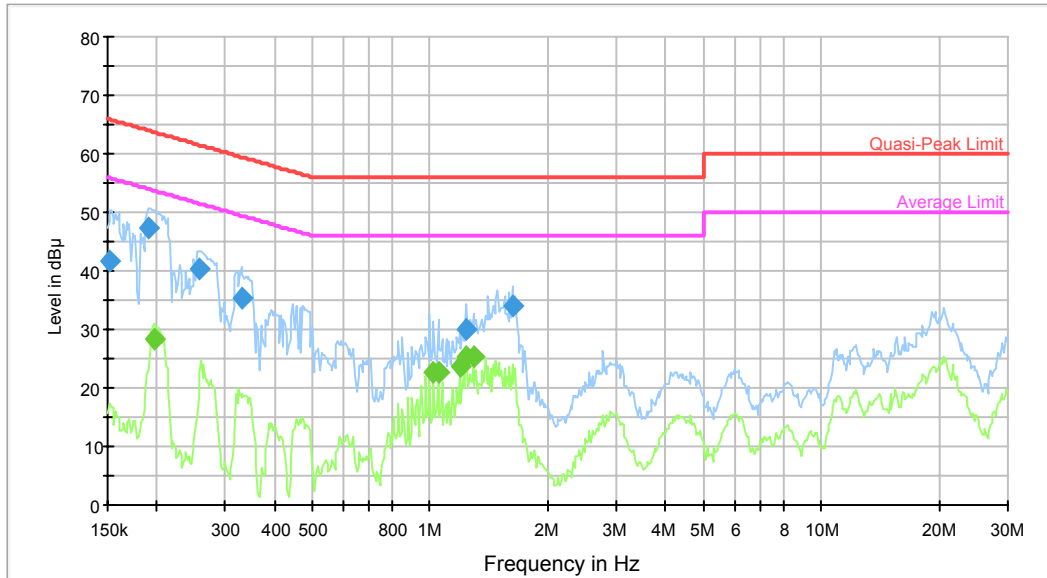
Environmental Conditions

Temperature:	19.2°C
Relative Humidity:	41 %
ATM Pressure:	101.8kPa

The testing was performed by Robin Zheng on 2016-01-27.

Test Mode: Charging

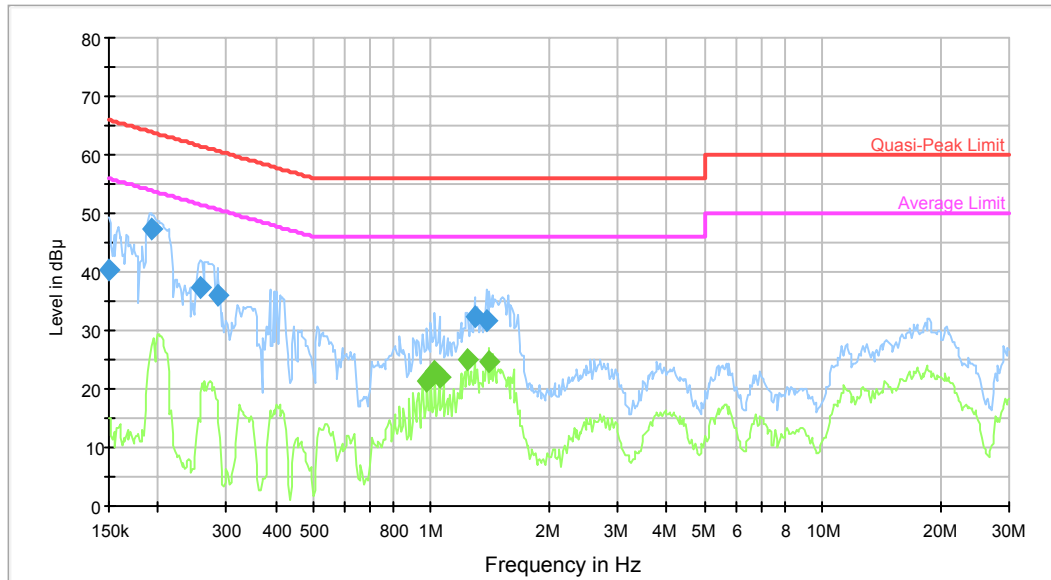
Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.152410	41.7	9.000	L1	9.8	24.2	65.9	Compliance
0.190505	47.4	9.000	L1	9.7	16.6	64.0	Compliance
0.257874	40.2	9.000	L1	9.7	21.3	61.5	Compliance
0.330129	35.4	9.000	L1	9.7	24.0	59.4	Compliance
1.239175	30.0	9.000	L1	9.8	26.0	56.0	Compliance
1.624765	33.9	9.000	L1	9.8	22.1	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.198249	28.3	9.000	L1	9.7	25.4	53.7	Compliance
1.023481	22.7	9.000	L1	9.8	23.3	46.0	Compliance
1.048242	22.6	9.000	L1	9.8	23.4	46.0	Compliance
1.190776	23.7	9.000	L1	9.8	22.3	46.0	Compliance
1.239175	25.3	9.000	L1	9.8	20.7	46.0	Compliance
1.289541	25.3	9.000	L1	9.8	20.7	46.0	Compliance

Neutral:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	40.3	9.000	N	9.7	25.7	66.0	Compliance
0.192030	47.1	9.000	N	9.7	16.8	63.9	Compliance
0.255827	37.4	9.000	N	9.7	24.2	61.6	Compliance
0.283749	36.0	9.000	N	9.7	24.7	60.7	Compliance
1.289541	32.4	9.000	N	9.8	23.6	56.0	Compliance
1.385415	31.6	9.000	N	9.8	24.4	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.975701	21.3	9.000	N	9.8	24.7	46.0	Compliance
0.999305	22.1	9.000	N	9.8	23.9	46.0	Compliance
1.023481	23.0	9.000	N	9.8	23.0	46.0	Compliance
1.048242	21.9	9.000	N	9.8	24.1	46.0	Compliance
1.239175	25.0	9.000	N	9.8	21.0	46.0	Compliance
1.407671	24.8	9.000	N	9.8	21.2	46.0	Compliance

FCC§15.205, §15.209&§15.249- RADIATED EMISSIONS

Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

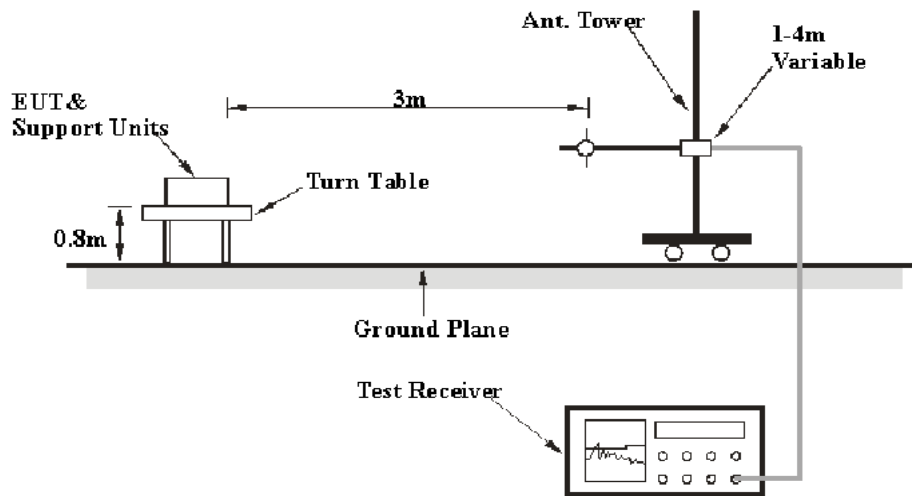
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

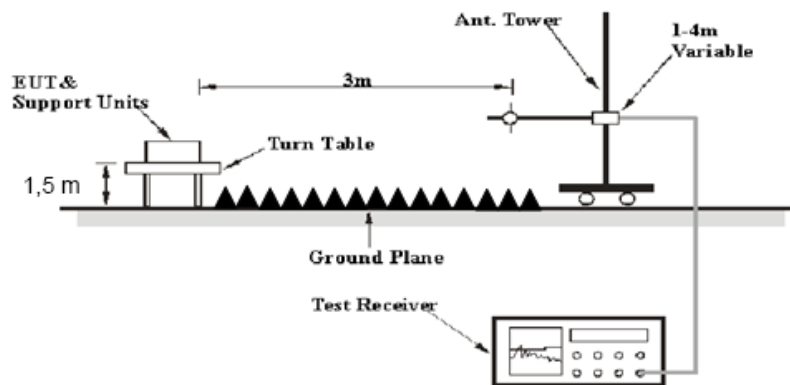
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission and out of band emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013 The specification used was the FCC 15.209/15.205 and FCC 15.249 limits.

Test Equipment Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode from 30 MHz to 1GHz, peak and average detection mode above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-12-04	2016-12-04
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW- 18405536-JO	15964001001	2015-09-06	2016-09-06
N/A	Coaxial Cable	14m	N/A	2015-05-06	2016-05-06
N/A	Coaxial Cable	8m	N/A	2015-05-06	2016-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209 & 15.205 & 15.249, with the worst margin reading of:

5.02 dB at 2483.5 MHz in the Horizontal polarization

Test Data**Environmental Conditions**

Temperature:	26.6 °C
Relative Humidity:	50 %
ATM Pressure:	100.1 kPa

The testing was performed by Robin Zheng on 2016-02-02.

Test Mode: Transmitting

Model: NTM-MSW-P-SS-01

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
frequency:2401MHz									
2401	61.53	PK	H	25.64	3.65	0.00	90.82	114.00	23.18
2401	48.47	AV	H	25.64	3.65	0.00	77.76	94.00	16.24
2401	50.65	PK	V	25.64	3.65	0.00	79.94	114.00	34.06
2401	38.61	AV	V	25.64	3.65	0.00	67.90	94.00	26.10
2400	36.86	PK	H	25.64	3.65	0.00	66.15	74.00	7.85
2400	16.79	AV	H	25.64	3.65	0.00	46.08	54.00	7.92
4802	35.9	PK	H	30.59	5.07	27.41	44.15	74.00	29.85
4802	22.86	AV	H	30.59	5.07	27.41	31.11	54.00	22.89
7203	33.83	PK	H	34.09	6.61	25.91	48.62	74.00	25.38
7203	19.75	AV	H	34.09	6.61	25.91	34.54	54.00	19.46
9604	29.67	PK	H	35.95	8.53	27.56	46.59	74.00	27.41
9604	16.46	AV	H	35.95	8.53	27.56	33.38	54.00	20.62
2837	31.96	PK	H	26.78	5.21	27.55	36.40	74.00	37.60
2837	21.64	AV	H	26.78	5.21	27.55	26.08	54.00	27.92
197.63	43.1	QP	H	12.37	1.70	21.46	35.71	43.50	7.79
frequency:2440MHz									
2440	63.14	PK	H	25.74	3.76	0.00	92.64	114.00	21.36
2440	50.62	AV	H	25.74	3.76	0.00	80.12	94.00	13.88
2440	52.53	PK	V	25.74	3.76	0.00	82.03	114.00	31.97
2440	39.48	AV	V	25.74	3.76	0.00	68.98	94.00	25.02
4880	36.44	PK	H	30.79	5.18	27.42	44.99	74.00	29.01
4880	23.55	AV	H	30.79	5.18	27.42	32.10	54.00	21.90
7320	34.08	PK	H	34.37	6.75	25.88	49.32	74.00	24.68
7320	21.63	AV	H	34.37	6.75	25.88	36.87	54.00	17.13
9760	29.71	PK	H	36.32	8.62	27.21	47.44	74.00	26.56
9760	16.52	AV	H	36.32	8.62	27.21	34.25	54.00	19.75
3131	31.78	PK	H	27.62	6.93	27.43	38.90	74.00	35.10
3131	21.45	AV	H	27.62	6.93	27.43	28.57	54.00	25.43
2083	35.4	PK	H	24.82	3.29	27.40	36.11	74.00	37.89
2083	23.05	AV	H	24.82	3.29	27.40	23.76	54.00	30.24
197.63	43.6	QP	H	12.37	1.70	21.46	36.21	43.50	7.29
frequency:2480MHz									
2480	64.38	PK	H	25.85	3.68	0.00	93.91	114.00	20.09
2480	51.79	AV	H	25.85	3.68	0.00	81.32	94.00	12.68
2480	53.69	PK	V	25.85	3.68	0.00	83.22	114.00	30.78
2480	40.86	AV	V	25.85	3.68	0.00	70.39	94.00	23.61
2483.5	34.72	PK	H	25.86	3.67	0.00	64.25	74.00	9.75
2483.5	18.79	AV	H	25.86	3.67	0.00	48.32	54.00	5.68
4960	36.71	PK	H	31.00	5.34	27.43	45.62	74.00	28.38
4960	23.93	AV	H	31.00	5.34	27.43	32.84	54.00	21.16
7440	34.19	PK	H	34.66	6.89	25.97	49.77	74.00	24.23
7440	21.4	AV	H	34.66	6.89	25.97	36.98	54.00	17.02
9920	29.77	PK	H	36.71	8.71	26.66	48.53	74.00	25.47
9920	16.58	AV	H	36.71	8.71	26.66	35.34	54.00	18.66
3131	31.72	PK	H	27.62	6.93	27.43	38.84	74.00	35.16
3131	21.93	AV	H	27.62	6.93	27.43	29.05	54.00	24.95
197.63	43.2	QP	H	12.37	1.70	21.46	35.81	43.50	7.69

Model: NTM-MSW-P-BS-01

Frequency	Receiver		Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Detector	Polar	Factor					
MHz	dBµV	PK/QP/AV	H/V	dB(1/m)	dB	dB	dBµV/m	dBµV/m	dB
frequency:2401MHz									
2401	60.31	PK	H	25.64	3.65	0.00	89.60	114.00	24.40
2401	47.86	AV	H	25.64	3.65	0.00	77.15	94.00	16.85
2401	50.28	PK	V	25.64	3.65	0.00	79.57	114.00	34.43
2401	38.51	AV	V	25.64	3.65	0.00	67.80	94.00	26.20
2400	36.13	PK	H	25.64	3.65	0.00	65.42	74.00	8.58
2400	16.08	AV	H	25.64	3.65	0.00	45.37	54.00	8.63
4802	37.18	PK	H	30.59	5.07	27.41	45.43	74.00	28.57
4802	25.74	AV	H	30.59	5.07	27.41	33.99	54.00	20.01
7203	32.93	PK	H	34.09	6.61	25.91	47.72	74.00	26.28
7203	20.56	AV	H	34.09	6.61	25.91	35.35	54.00	18.65
9604	30.22	PK	H	35.95	8.53	27.56	47.14	74.00	26.86
9604	18.36	AV	H	35.95	8.53	27.56	35.28	54.00	18.72
2147	35.41	PK	H	24.98	3.17	27.34	36.22	74.00	37.78
2147	22.46	AV	H	24.98	3.17	27.34	23.27	54.00	30.73
197.63	43.2	QP	H	12.37	1.70	21.46	35.81	43.50	7.69
frequency:2440MHz									
2440	61.17	PK	H	25.74	3.76	0.00	90.67	114.00	23.33
2440	49.81	AV	H	25.74	3.76	0.00	79.31	94.00	14.69
2440	51.78	PK	V	25.74	3.76	0.00	81.28	114.00	32.72
2440	40.75	AV	V	25.74	3.76	0.00	70.25	94.00	23.75
4880	37.52	PK	H	30.79	5.18	27.42	46.07	74.00	27.93
4880	25.86	AV	H	30.79	5.18	27.42	34.41	54.00	19.59
7320	33.14	PK	H	34.37	6.75	25.88	48.38	74.00	25.62
7320	21.93	AV	H	34.37	6.75	25.88	37.17	54.00	16.83
9760	30.3	PK	H	36.32	8.62	27.21	48.03	74.00	25.97
9760	18.41	AV	H	36.32	8.62	27.21	36.14	54.00	17.86
2147	35.15	PK	H	24.98	3.17	27.34	35.96	74.00	38.04
2147	22.76	AV	H	24.98	3.17	27.34	23.57	54.00	30.43
3093	32.27	PK	H	27.50	6.81	27.46	39.12	74.00	34.88
3093	20.01	AV	H	27.50	6.81	27.46	26.86	54.00	27.14
197.63	43.8	QP	H	12.37	1.70	21.46	36.41	43.50	7.09
frequency:2480MHz									
2480	62.6	PK	H	25.85	3.68	0.00	92.13	114.00	21.87
2480	50.67	AV	H	25.85	3.68	0.00	80.20	94.00	13.80
2480	53.13	PK	V	25.85	3.68	0.00	82.66	114.00	31.34
2480	41.85	AV	V	25.85	3.68	0.00	71.38	94.00	22.62
2483.5	33.67	PK	H	25.86	3.67	0.00	63.20	74.00	10.80
2483.5	19.45	AV	H	25.86	3.67	0.00	48.98	54.00	5.02
4960	37.94	PK	H	31.00	5.34	27.43	46.85	74.00	27.15
4960	25.36	AV	H	31.00	5.34	27.43	34.27	54.00	19.73
7440	33.5	PK	H	34.66	6.89	25.97	49.08	74.00	24.92
7440	21.48	AV	H	34.66	6.89	25.97	37.06	54.00	16.94
9920	30.46	PK	H	36.71	8.71	26.66	49.22	74.00	24.78
9920	18.54	AV	H	36.71	8.71	26.66	37.30	54.00	16.70
2147	34.86	PK	H	24.98	3.17	27.34	35.67	74.00	38.33
2147	22.89	AV	H	24.98	3.17	27.34	23.70	54.00	30.30
197.63	44.1	QP	H	12.37	1.70	21.46	36.71	43.50	6.79

FCC §15.215(c) – 20 dB BANDWIDTH TESTING

Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Procedure

1. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
2. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	831259/019	2015-07-28	2016-07-27
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
N/A	Coaxial Cable	14m	N/A	2015-05-06	2016-05-06
N/A	Coaxial Cable	8m	N/A	2015-05-06	2016-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	22.2°C
Relative Humidity:	51 %
ATM Pressure:	101.7 kPa

* The testing was performed by Robin Zheng on 2016-02-01.

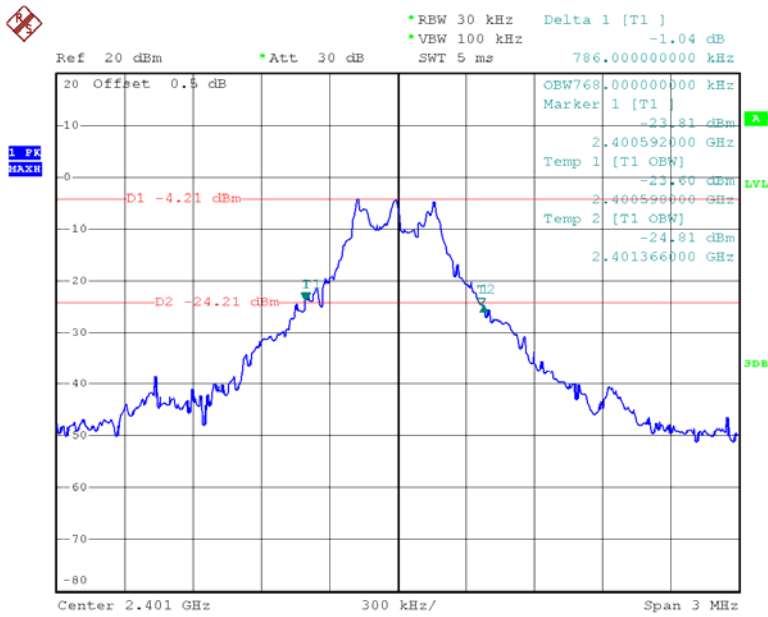
Test Result: Compliant.

Please refer to following tables and plots

Test Mode: Transmitting

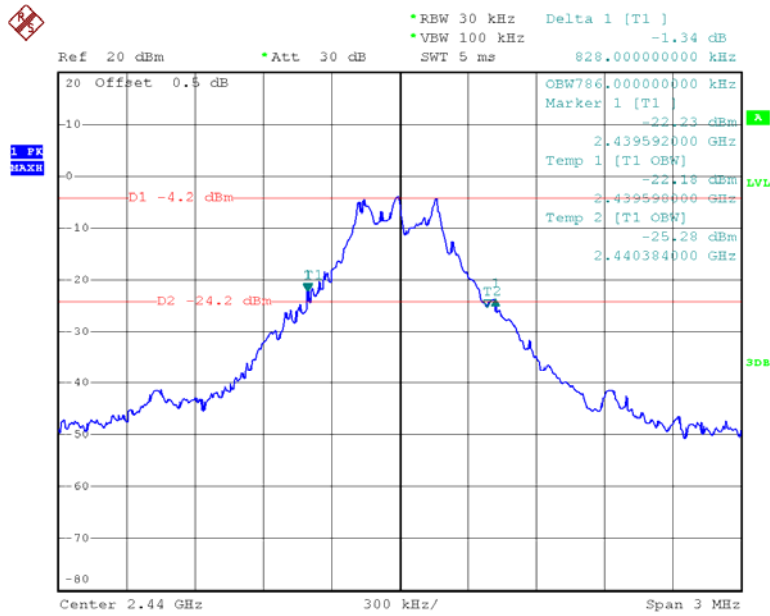
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2401	0.768
Middle	2440	0.786
High	2480	0.912

Low Channel



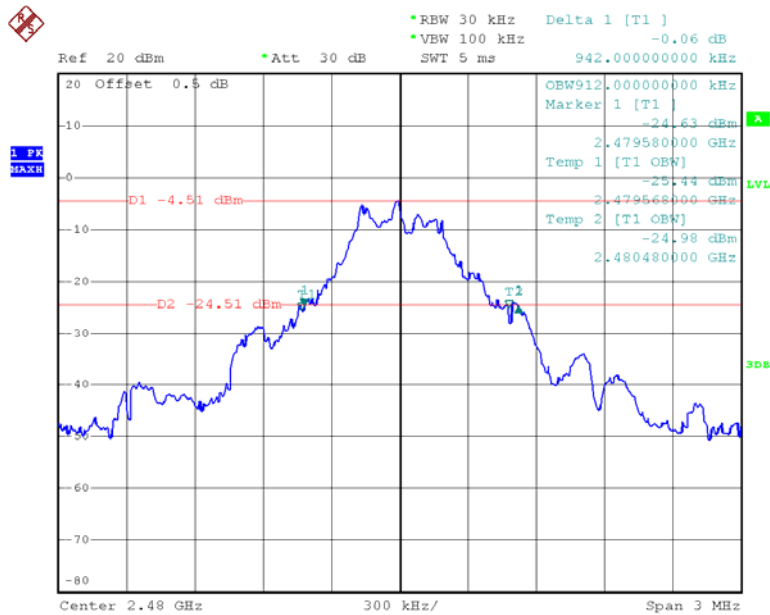
Date: 1.FEB.2016 17:20:20

Middle Channel



Date: 1.FEB.2016 17:13:24

High Channel



Date: 1.FEB.2016 17:23:38

***** END OF REPORT *****