

FCC PART 15.249

TEST REPORT

For

Beijing Noitom Technology Limited

Room432,Main Tower 28 Xijiekouwai Blvd, Beijing,China

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

Report Type: Original Report		Product Type: mySwing Professional	
Test Engineer:	Allen Qiao <i>Allen Qiao</i>		
Report Number:	RBJ160121050-00A		
Report Date:	2016-02-02		
Reviewed By:	Sula Huang <i>Sula Huang</i> RF Leader		
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn		

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).

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	4
JUSTIFICATION	4
EUT EXERCISE SOFTWARE	4
EQUIPMENT MODIFICATIONS	4
SUPPORT EQUIPMENT LIST AND DETAILS	4
EXTERNAL I/O CABLE.....	4
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
FCC§15.203 - ANTENNA REQUIREMENT.....	7
APPLICABLE STANDARD	7
ANTENNA CONNECTOR CONSTRUCTION	7
FCC §15.207 (A) – AC LINE CONDUCTED EMISSIONS	8
APPLICABLE STANDARD	8
MEASUREMENT UNCERTAINTY.....	8
EUT SETUP	8
EMI TEST RECEIVER SETUP.....	9
TEST PROCEDURE	9
CORRECTED AMPLITUDE & MARGIN CALCULATION	9
TEST EQUIPMENT LIST AND DETAILS.....	10
TEST RESULTS SUMMARY	10
TEST DATA	10
FCC§15.205, §15.209&§15.249- RADIATED EMISSIONS	13
APPLICABLE STANDARD	13
MEASUREMENT UNCERTAINTY.....	13
EUT SETUP	14
TEST EQUIPMENT SETUP	15
TEST PROCEDURE	15
CORRECTED AMPLITUDE & MARGIN CALCULATION	15
TEST EQUIPMENT LIST AND DETAILS.....	16
TEST RESULTS SUMMARY	16
TEST DATA	16
FCC §15.215(C) – 20 DB BANDWIDTH TESTING	19
APPLICABLE STANDARD	19
TEST PROCEDURE	19
TEST EQUIPMENT LIST AND DETAILS.....	19
TEST DATA	19

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Beijing Noitom Technology Limited*'s product, model number: *NTM-MSW-P-R-01*(FCC ID: 2ABTR-MSW-P-R-01) (the "EUT") in this report was a *mySwing Professional*, which was measured approximately: 8 cm (L) x 4.3 cm (W) x 1.7 cm (H), rated input voltage: DC5.0V from system.

All measurement and test data in this report was gathered from production sample serial number: 160121050 (Assigned byBACL, 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)

FCC Part 15B JBP submissions with FCC ID: 2ABTR-MSW-P-R-01
Submitted with Part of a system with FCC ID: 2ABTR-MSW-P-S-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

The software “RF Change Tools” was used for testing, which was provided by manufacturer. The maximum power was configured by system default setting.

Equipment Modifications

No modifications were made to the EUT.

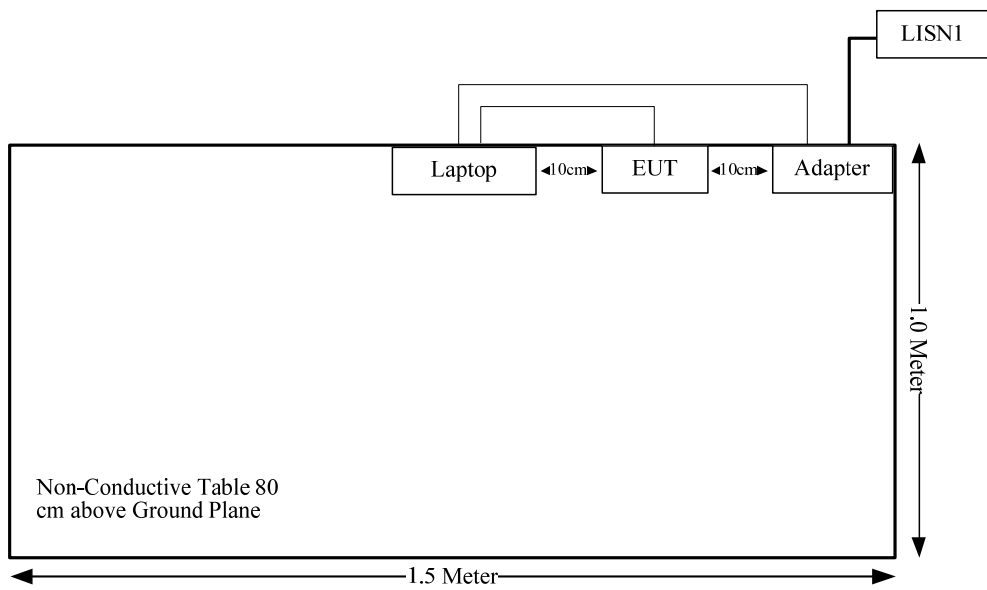
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	G510	N/A

External I/O Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
USB Cable	Yes	Yes	1.2	USB Port of Laptop	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
§15.249(d)	Outside of Band Emission (50dB attenuation)	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 external detachable antenna and with RP-SMA female connector, the directional antenna gain is 5dBi and the omnidirectional antenna gain is 3dBi, 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_{cisp} 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_{cisp} of Table 1, then:

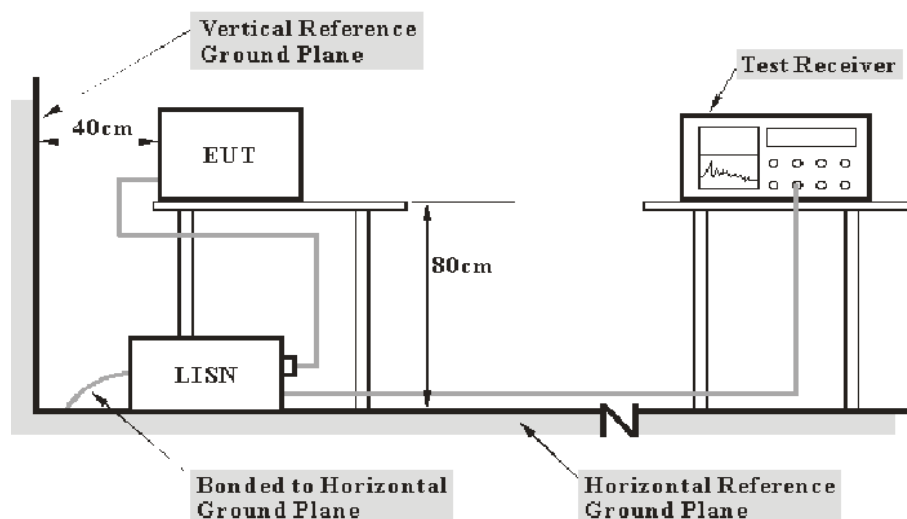
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

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_{cisp}

Measurement	U_{cisp}
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:

4.4 dB at 0.195114 MHz in the Line conducted mode

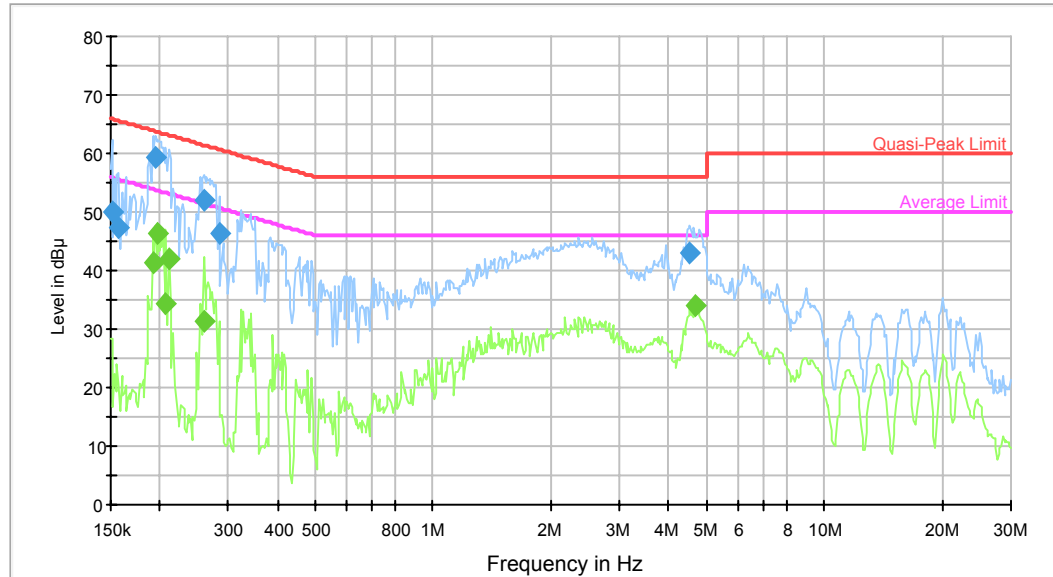
Test Data**Environmental Conditions**

Temperature:	24.5 °C
Relative Humidity:	56 %
ATM Pressure:	100.3 kPa

The testing was performed by Allen Qiao on 2016-02-02.

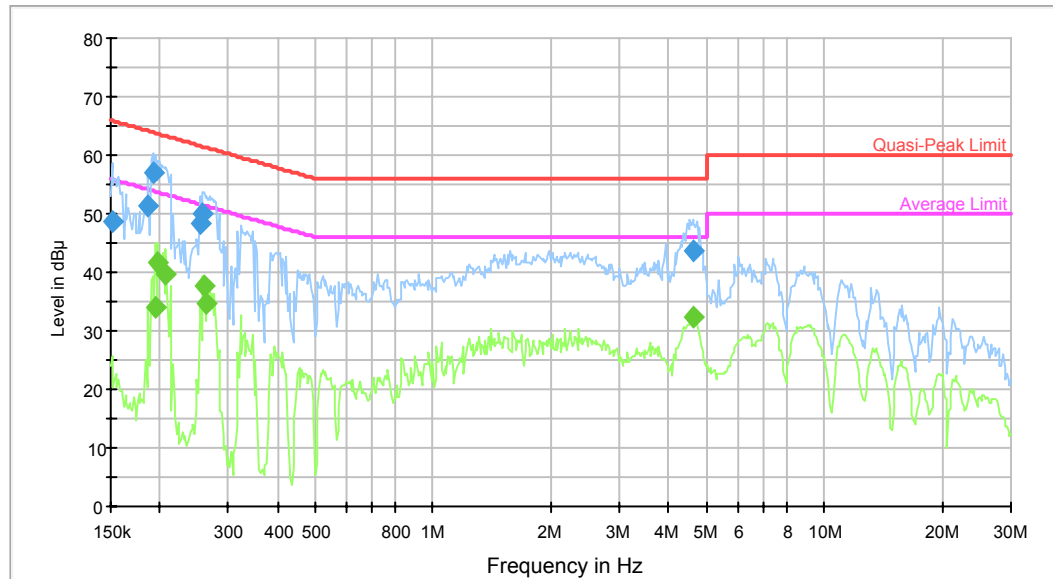
Test Mode: Transmitting

AC120 V, 60 Hz, Line:



Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.151200	50.1	9.000	L1	9.8	15.8	65.9	Compliance
0.157346	47.4	9.000	L1	9.7	18.2	65.6	Compliance
0.195114	59.4	9.000	L1	9.7	4.4	63.8	Compliance
0.259937	52.0	9.000	L1	9.7	9.4	61.4	Compliance
0.283749	46.5	9.000	L1	9.7	14.2	60.7	Compliance
4.541500	43.0	9.000	L1	9.9	13.0	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.192030	41.2	9.000	L1	9.7	12.7	53.9	Compliance
0.198249	46.3	9.000	L1	9.7	7.4	53.7	Compliance
0.207957	34.4	9.000	L1	9.7	18.9	53.3	Compliance
0.211298	42.1	9.000	L1	9.7	11.1	53.2	Compliance
0.259937	31.2	9.000	L1	9.7	20.2	51.4	Compliance
4.688581	34.1	9.000	L1	9.9	11.9	46.0	Compliance

AC120 V, 60 Hz, Neutral:

Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.151200	48.5	9.000	N	9.7	17.4	65.9	Compliance
0.187494	51.3	9.000	N	9.7	12.8	64.1	Compliance
0.192030	56.8	9.000	N	9.7	7.1	63.9	Compliance
0.253797	48.2	9.000	N	9.7	13.4	61.6	Compliance
0.257874	49.9	9.000	N	9.7	11.6	61.5	Compliance
4.614454	43.7	9.000	N	9.9	12.3	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.195114	33.8	9.000	N	9.7	20.0	53.8	Compliance
0.198249	41.5	9.000	N	9.7	12.2	53.7	Compliance
0.207957	39.8	9.000	N	9.7	13.5	53.3	Compliance
0.259937	37.6	9.000	N	9.7	13.8	51.4	Compliance
0.264113	34.7	9.000	N	9.7	16.6	51.3	Compliance
4.614454	32.3	9.000	N	9.9	13.7	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_{cisprr} 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_{cisprr} of Table 1, then:

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

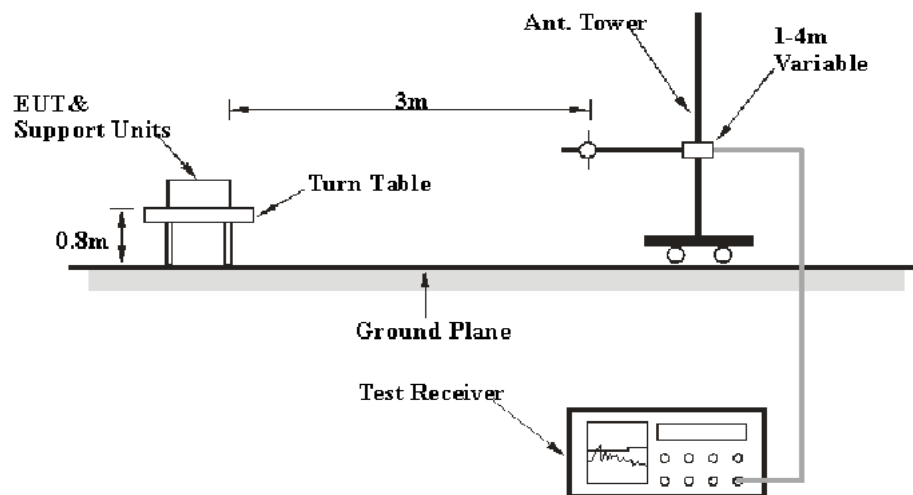
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

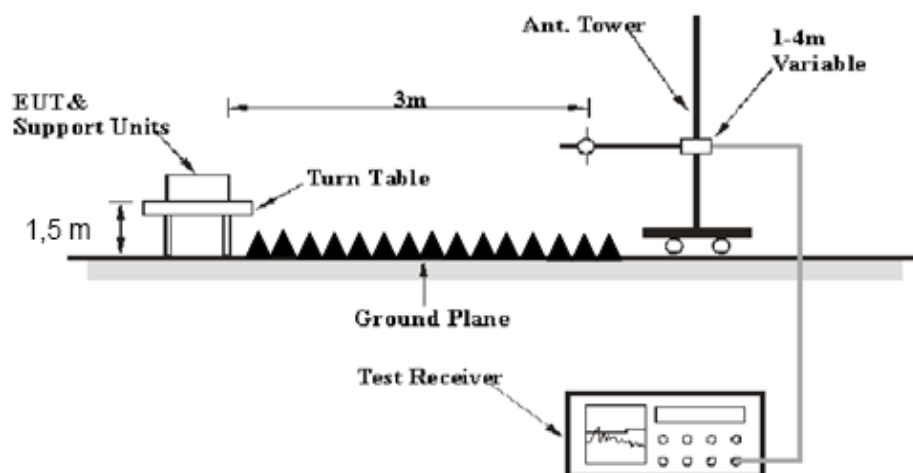
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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	2015-11-23	2016-11-22
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.

Test Data**Environmental Conditions**

Temperature:	25.3 °C
Relative Humidity:	52%
ATM Pressure:	100.3 kPa

The testing was performed by Allen Qiao on 2016-01-30.

Test Mode: Transmitting

Omnidirectional Antenna:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB(1/m))					
frequency: 2401 MHz									
2401	64.7	PK	H	25.64	3.65	0.00	93.99	114.00	20.01
2401	51.24	AV	H	25.64	3.65	0.00	80.53	94.00	13.47
2401	67.63	PK	V	25.64	3.65	0.00	96.92	114.00	17.08
2401	54.27	AV	V	25.64	3.65	0.00	83.56	94.00	10.44
2400	38.66	PK	V	25.64	3.65	0.00	67.95	74.00	6.05
2400	17.36	AV	V	25.64	3.65	0.00	46.65	54.00	7.35
4802	35.36	PK	V	30.59	5.07	27.41	43.61	74.00	30.39
4802	22.9	AV	V	30.59	5.07	27.41	31.15	54.00	22.85
7203	32.37	PK	V	34.09	6.61	25.91	47.16	74.00	26.84
7203	19.05	AV	V	34.09	6.61	25.91	33.84	54.00	20.16
9604	30.59	PK	V	35.95	8.53	27.56	47.51	74.00	26.49
9604	16.68	AV	V	35.95	8.53	27.56	33.60	54.00	20.40
3131	40.81	PK	V	27.62	6.93	27.43	47.93	74.00	26.07
3131	30.19	AV	V	27.62	6.93	27.43	37.31	54.00	16.69
197.81	43.9	QP	H	12.40	1.70	21.46	36.54	43.50	6.96
frequency: 2440 MHz									
2440	63.01	PK	H	25.74	3.76	0.00	92.51	114.00	21.49
2440	50.59	AV	H	25.74	3.76	0.00	80.09	94.00	13.91
2440	67.68	PK	V	25.74	3.76	0.00	97.18	114.00	16.82
2440	53.26	AV	V	25.74	3.76	0.00	82.76	94.00	11.24
4880	35.51	PK	V	30.79	5.18	27.42	44.06	74.00	29.94
4880	23.06	AV	V	30.79	5.18	27.42	31.61	54.00	22.39
7320	32.32	PK	V	34.37	6.75	25.88	47.56	74.00	26.44
7320	18.96	AV	V	34.37	6.75	25.88	34.20	54.00	19.80
9760	30.86	PK	V	36.32	8.62	27.21	48.59	74.00	25.41
9760	16.8	AV	V	36.32	8.62	27.21	34.53	54.00	19.47
3131	40.79	PK	V	27.62	6.93	27.43	47.91	74.00	26.09
3131	30.18	AV	V	27.62	6.93	27.43	37.30	54.00	16.70
3190	41.32	PK	V	27.81	6.26	27.38	48.01	74.00	25.99
3190	28.7	AV	V	27.81	6.26	27.38	35.39	54.00	18.61
197.81	43.6	QP	H	12.40	1.70	21.46	36.24	43.50	7.26
frequency: 2480 MHz									
2480	59.78	PK	H	25.85	3.68	0.00	89.31	114.00	24.69
2480	46.28	AV	H	25.85	3.68	0.00	75.81	94.00	18.19
2480	64.83	PK	V	25.85	3.68	0.00	94.36	114.00	19.64
2480	51.07	AV	V	25.85	3.68	0.00	80.60	94.00	13.40
2483.5	32.56	PK	V	25.86	3.67	0.00	62.09	74.00	11.91
2483.5	16.6	AV	V	25.86	3.67	0.00	46.13	54.00	7.87
4960	35.36	PK	V	31.00	5.34	27.43	44.27	74.00	29.73
4960	22.8	AV	V	31.00	5.34	27.43	31.71	54.00	22.29
7440	32.16	PK	V	34.66	6.89	25.97	47.74	74.00	26.26
7440	18.72	AV	V	34.66	6.89	25.97	34.30	54.00	19.70
9920	30.14	PK	V	36.71	8.71	26.66	48.90	74.00	25.10
9920	16.54	AV	V	36.71	8.71	26.66	35.30	54.00	18.70
3131	40.73	PK	V	27.62	6.93	27.43	47.85	74.00	26.15
3131	30.09	AV	V	27.62	6.93	27.43	37.21	54.00	16.79
197.81	43.3	QP	H	12.40	1.70	21.46	35.94	43.50	7.56

Directional Antenna:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB(1/m))					
frequency: 2401 MHz									
2401	62.49	PK	H	25.64	3.65	0.00	91.78	114.00	22.22
2401	48.95	AV	H	25.64	3.65	0.00	78.24	94.00	15.76
2401	75.22	PK	V	25.64	3.65	0.00	104.51	114.00	9.49
2401	60.95	AV	V	25.64	3.65	0.00	90.24	94.00	3.76
2400	40.26	PK	V	25.64	3.65	0.00	69.55	74.00	4.45
2400	19.53	AV	V	25.64	3.65	0.00	48.82	54.00	5.18
4802	37.54	PK	V	30.59	5.07	27.41	45.79	74.00	28.21
4802	25.12	AV	V	30.59	5.07	27.41	33.37	54.00	20.63
7203	32.15	PK	V	34.09	6.61	25.91	46.94	74.00	27.06
7203	19.29	AV	V	34.09	6.61	25.91	34.08	54.00	19.92
9604	30.85	PK	V	35.95	8.53	27.56	47.77	74.00	26.23
9604	17.06	AV	V	35.95	8.53	27.56	33.98	54.00	20.02
3131	40.41	PK	V	27.62	6.93	27.43	47.53	74.00	26.47
3131	28.89	AV	V	27.62	6.93	27.43	36.01	54.00	17.99
197.81	43.5	QP	H	12.40	1.70	21.46	36.14	43.50	7.36
frequency: 2440 MHz									
2440	62.62	PK	H	25.74	3.76	0.00	92.12	114.00	21.88
2440	48.4	AV	H	25.74	3.76	0.00	77.90	94.00	16.10
2440	74.8	PK	V	25.74	3.76	0.00	104.30	114.00	9.70
2440	60.33	AV	V	25.74	3.76	0.00	89.83	94.00	4.17
4880	36.03	PK	V	30.79	5.18	27.42	44.58	74.00	29.42
4880	23.62	AV	V	30.79	5.18	27.42	32.17	54.00	21.83
7320	32.63	PK	V	34.37	6.75	25.88	47.87	74.00	26.13
7320	19.34	AV	V	34.37	6.75	25.88	34.58	54.00	19.42
9760	30.61	PK	V	36.32	8.62	27.21	48.34	74.00	25.66
9760	16.67	AV	V	36.32	8.62	27.21	34.40	54.00	19.60
3131	40.52	PK	V	27.62	6.93	27.43	47.64	74.00	26.36
3131	29.94	AV	V	27.62	6.93	27.43	37.06	54.00	16.94
3190	41.68	PK	V	27.81	6.26	27.38	48.37	74.00	25.63
3190	29.05	AV	V	27.81	6.26	27.38	35.74	54.00	18.26
197.81	44.2	QP	H	12.40	1.70	21.46	36.84	43.50	6.66
frequency: 2480 MHz									
2480	61.49	PK	H	25.85	3.68	0.00	91.02	114.00	22.98
2480	47.06	AV	H	25.85	3.68	0.00	76.59	94.00	17.41
2480	73.52	PK	V	25.85	3.68	0.00	103.05	114.00	10.95
2480	59.02	AV	V	25.85	3.68	0.00	88.55	94.00	5.45
2483.5	30.22	PK	V	25.86	3.67	0.00	59.75	74.00	14.25
2483.5	14.77	AV	V	25.86	3.67	0.00	44.30	54.00	9.70
4960	34.89	PK	V	31.00	5.34	27.43	43.80	74.00	30.20
4960	22.67	AV	V	31.00	5.34	27.43	31.58	54.00	22.42
7440	32.59	PK	V	34.66	6.89	25.97	48.17	74.00	25.83
7440	19.42	AV	V	34.66	6.89	25.97	35.00	54.00	19.00
9920	30.54	PK	V	36.71	8.71	26.66	49.30	74.00	24.70
9920	16.82	AV	V	36.71	8.71	26.66	35.58	54.00	18.42
3131	40.62	PK	V	27.62	6.93	27.43	47.74	74.00	26.26
3131	28.11	AV	V	27.62	6.93	27.43	35.23	54.00	18.77
197.81	43.1	QP	H	12.40	1.70	21.46	35.74	43.50	7.76

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. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. 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
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2015-05-06	2016-05-06
N/A	Coaxial Cable	0.1m	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:	23.6°C
Relative Humidity:	55 %
ATM Pressure:	100.5 kPa

* The testing was performed by Allen Qiao on 2016-01-27.

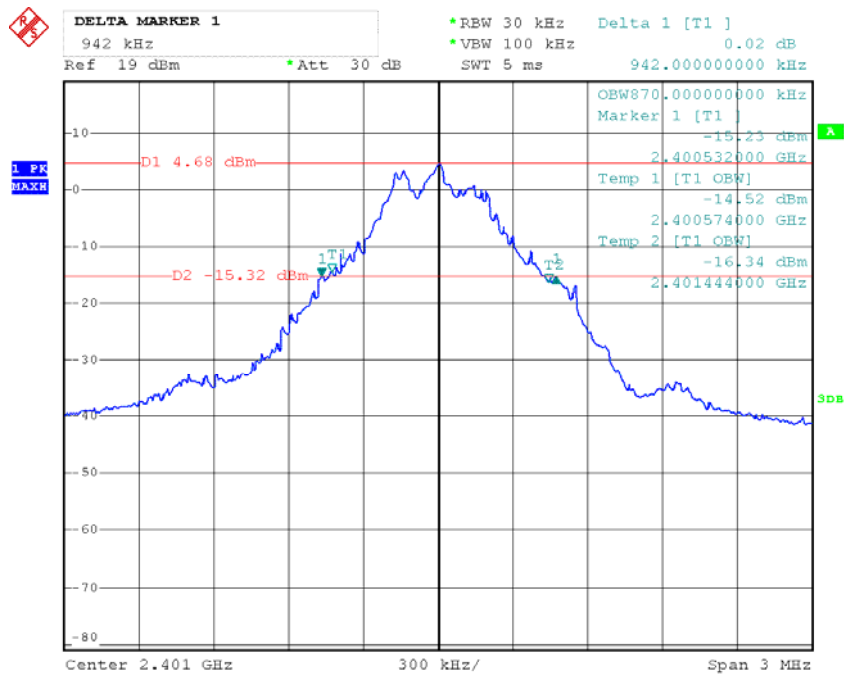
Test Result: Compliant.

Please refer to following tables and plots

Test Mode: Transmitting

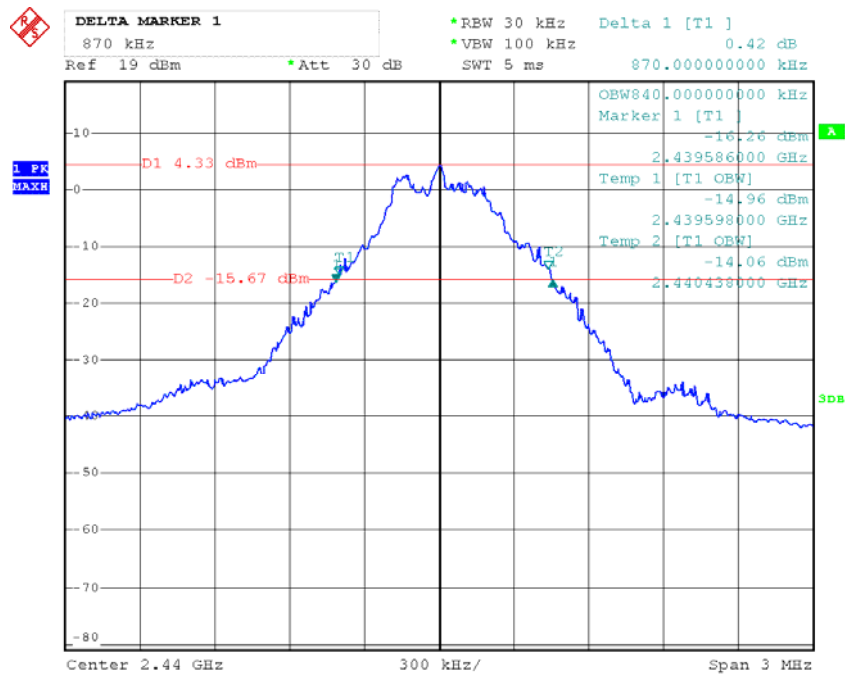
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2401	0.942
Middle	2440	0.870
High	2480	0.882

Low Channel



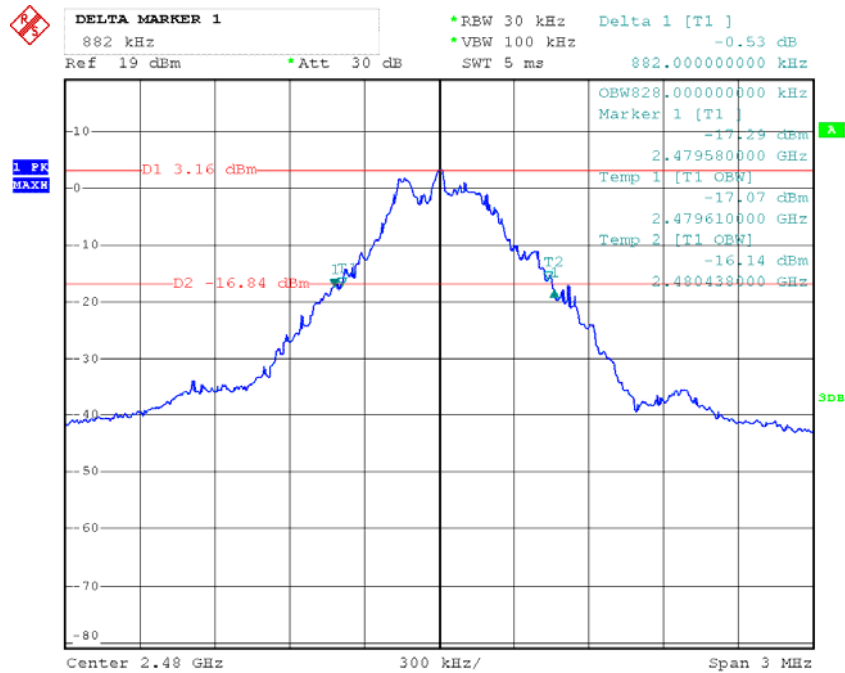
Date: 27.JAN.2016 16:05:04

Middle Channel



Date: 27.JAN.2016 16:07:39

High Channel



Date: 27.JAN.2016 16:09:11

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