FCC Part 15 Subpart B and ANSI C63.4, ICES-003 Issue 6

EMI TEST REPORT

FOR

W04A

MODEL: Whistle GO, Whistle GO Explore

FCC ID : S8W-W04A

REPORT NUMBER: 4788872713A-US-E0-V3

ISSUE DATE : May. 23, 2019

Prepared for

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Testing Laboratory

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	Apr. 3, 2019	Initial Issue	Evelyn Lee
V1	Apr. 15, 2019	Revise model number to W04A	Evelyn Lee
V2	Apr. 19, 2019	Add collar attachment on page 9	Evelyn Lee
V3	May. 23, 2019	Revise model name and product name	Evelyn Lee

Summary of Test Results			
Standard	**Test Item**	**Limit**	**Result**
FCC Part 15 Subpart B Class B ANSI C63.4:2014	Conducted emission	Class B	PASS
	Radiated emission (Below 1 GHz)	Class B	PASS
	Radiated emission (Above 1 GHz)	Class B	N/A (Note 1)

Note1: The highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall test to below 1GHz only.

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Whistle Labs, Inc. 1355 Market Street Suite 210 San Francisco, CA 94103, USA
EUT DESCRIPTION:	W04A
MODEL:	Whistle GO, Whistle GO Explore
DATE TESTED:	Mar. 14, 2018 ~ Mar. 15, 2018

APPLICABLE STANDARDS	
STANDARDS	**TEST RESULTS**
FCC Part 15 Subpart B: Class B ANSI C63.4:2014 ICES-003 issue 6	**PASS**

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/orobservations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Evelyn Lee Date : May. 23, 2019
Project Handler

Approved and Authorized By:

Roy Chen Date : May. 23, 2019
Operations Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the procedures documented FCC Part 15 Subpart B and ANSI C63.4, ICES-003 Issue 6.

3. FACILITIES AND ACCREDITATION

Test Location	Underwriters Laboratories Taiwan Co., Ltd.,
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Description	All measurement facilities use to collect the measurement data are located at Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	2.6
966-1 Test Site			
Radiated disturbance below 30MHz	9 kHz - 30 MHz	2	2.5
Radiated disturbance below 1 GHz	30MHz ~ 1000MHz	2	6.3
Radiated disturbance above 1GHz	1000MHz ~ 6000MHz	2	5.0
Radiated disturbance above 1GHz	6000-18000MHz	2	5.3
Radiated disturbance above 1GHz	18000-40000MHz	2	5.1

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name：	W04A
Model：	Whistle GO, Whistle GO Explore
Power Rating:	Input: 100-240Vac Output: 19.5Vdc, 3.34A (for Adapter) 3.8V, 520mAh (for Battery)
Highest Frequency within EUT:	48MHz
Condition of EUT:	PVT
Date Of Receipt Of Sample:	Mar. 12, 2019

Model Deviation			
Product	**Brand**	**Model**	**Difference**
W04A	Whistle	Whistle GO	small LED window
		Whistle GO Explore	big LED window.

Note:

The deviation of EUT only have enclosure and color differences, and other circuit and electrical characteristics are the same; therefore, there is no more testing need to be verify.

5.2. Test Mode

Pre-test mode:

Mode	Description	Conducted Emission	Radiated Emission
Mode 1	Operation Mode with Notebook charge mode	v	v
Mode 2	Operation Mode (Standalone)		v

After pre-testing, the final test mode was displayed as below table.

Conducted Emission:	
Mode 1	Operation Mode with Notebook charge mode
Radiated Emission:	
Mode 1	Operation Mode with Notebook charge mode

5.3. EUT Operation Test Setup

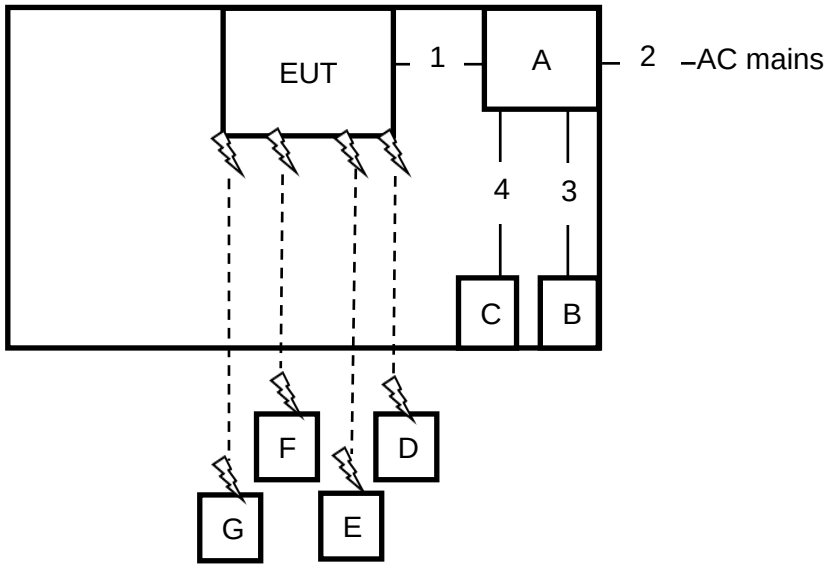
Mode 1:
a. The EUT was charged by the Notebook with a USB cable.
b. The EUT was connected to a cell phone via Bluetooth.
c. The EUT was connected to a router via WiFi 2.4GHz
d. The EUT was connected to signal generator via GPS.
e. The EUT was connected to Wideband Radio Communication Tester via LTE signal.
f. Executed H pattern in the Notebook.

5.4. Accessory

Item	Accessory	Brand Name	Model Name	Note
1	USB Cable	Whistle	N/A	0.77 meter, non-shielded cable, w/o ferrite core
-	Collar Attachment	Whistle	N/A	N/A

5.5. Block diagram showing the configuration of system tested

Conducted test configuration:
Radiated test configuration:
Mode 1:



5.6. Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	FCC ID	Note
A	NB	DELL	E5470	JVSKWF2	N/A	N/A
B	mouse	Microsoft	1113	N/A	N/A	N/A
C	earphone	TECO	XYFSE005	N/A	N/A	N/A
D	router	NETGEAR	R7000P	4TJ17375A06D5	N/A	N/A
E	CELLPHONE	HTC	HTC One X9 Dual sim	HT6C3BK00731	N/A	N/A
F	Signal Generator	KEYSIGHT	N5172B	MY56200315	N/A	N/A
G	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	161064	N/A	N/A

Item	Connection	Shielded Type	Length	Note
2	Power cord	Non-Shielded	3.0m	N/A
3	USB cable	Shielded	1.2m	N/A
4	AUDIO cable	Non-Shielded	1.2m	N/A

Note: (1) for detachable type I/O cable should be specified the length in m in “Length” column.

5.7. Measuring Instrument List

Instrument						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Expired date**
	Conducted Disturbance					
☒	EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2018/11/14	2019/11/13
☒	Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2018/8/5	2019/8/4
☐	Four-Line V-Network	Rohde & Schwarz	ENV432	101298	2017/12/7	N/A
☒	Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2018/8/2	2019/8/1
☒	Measurement Software	Farad	EZ-EMC Ver: EMEC-3A1	N/A	N/A	N/A
	Radiated Disturbance					
	966-1					
☒	EMI Test Receiver	Rohde & Schwarz	ESR7	101755	2018/11/27	2019/11/26
☒	Trilog-Broadband Antena with 5dB Attenuator	SCHWARZBECK	VULB 9168 & N-6-05	9168-773 & AT-N0539	2019/1/14	2020/1/13
☐	Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	1686	2019/1/16	2020/1/15
☐	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	759	2018/11/13	2019/11/12
☒	Preamplifier	EMC Instrument	EMC330E	980404	2019/1/8	2020/1/7
☐	Preamplifier	EMC Instrument	EMC051835BE	980407	2019/1/8	2020/1/7
☐	Preamplifier	EMC Instrument	EMC184045SE	980408	2018/3/13	2019/3/12
☒	Measurement Software	Farad	EZ-EMC Ver: EMEC-3A1	N/A	N/A	N/A

6. EMISSION TEST

6.1. Conducted Disturbance Measurement

6.1.1. Limits of conducted disturbance voltage and common mode disturbance

FREQUENCY (MHz)	☐Class A (dBμV)		☒Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 – 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

6.1.2. Test Procedure

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

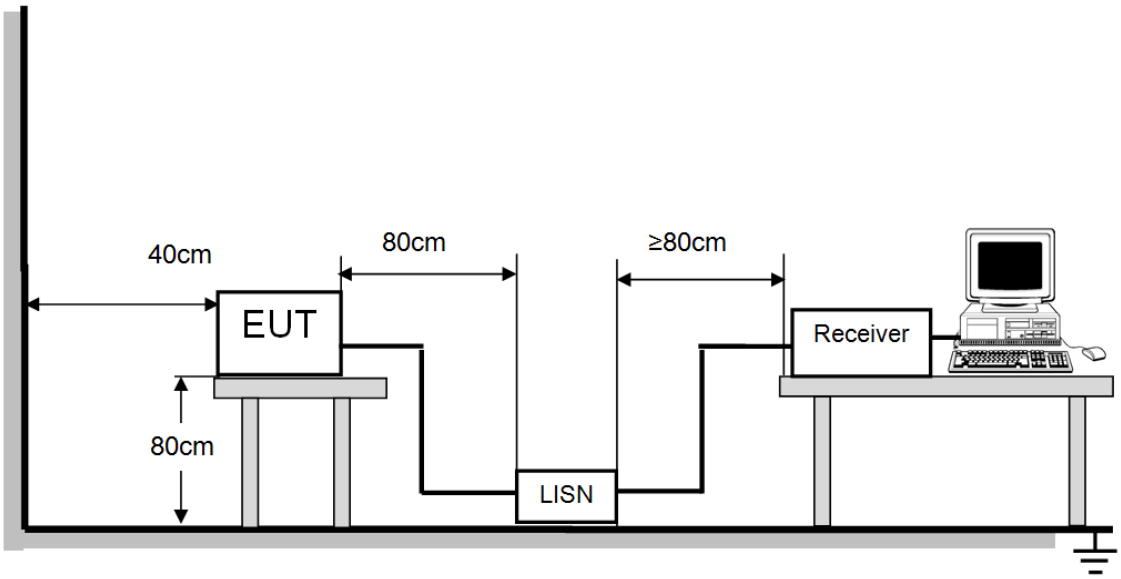
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall at least 1 m.

d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item: EUT Test Photos.

6.1.3. Test Setup

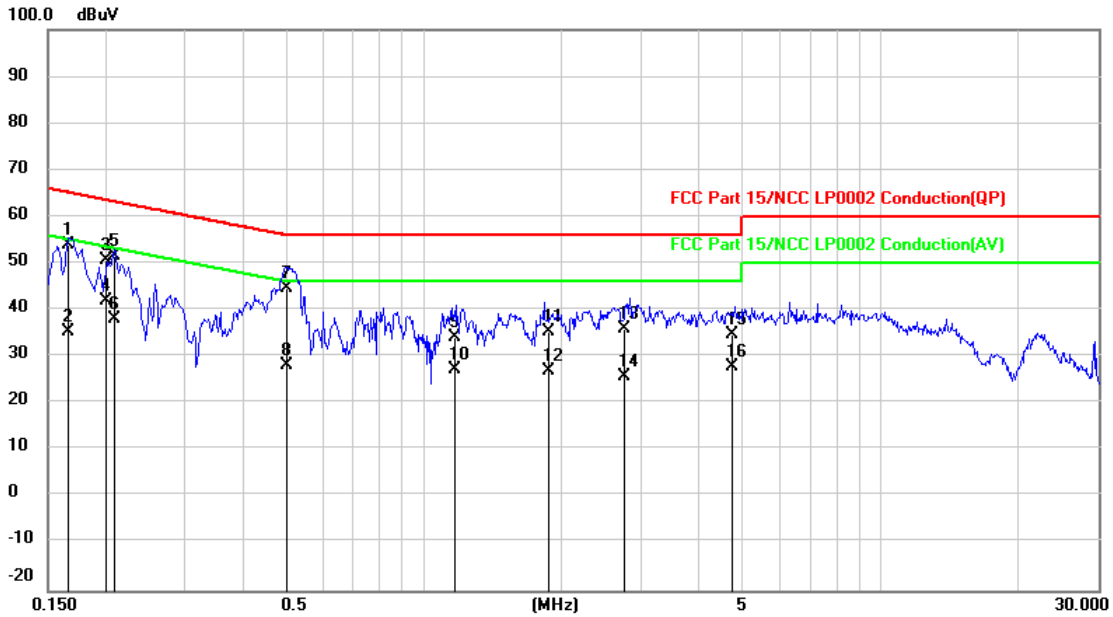


For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

6.1.4. Test Result

Test Mode:	Mode 1	Temperature:	26℃
Test Voltage:	AC 120V/60Hz	Humidity:	54%
Tested By:	Eric T. Fan	Test Date:	Mar. 14, 2019

Phase: Line

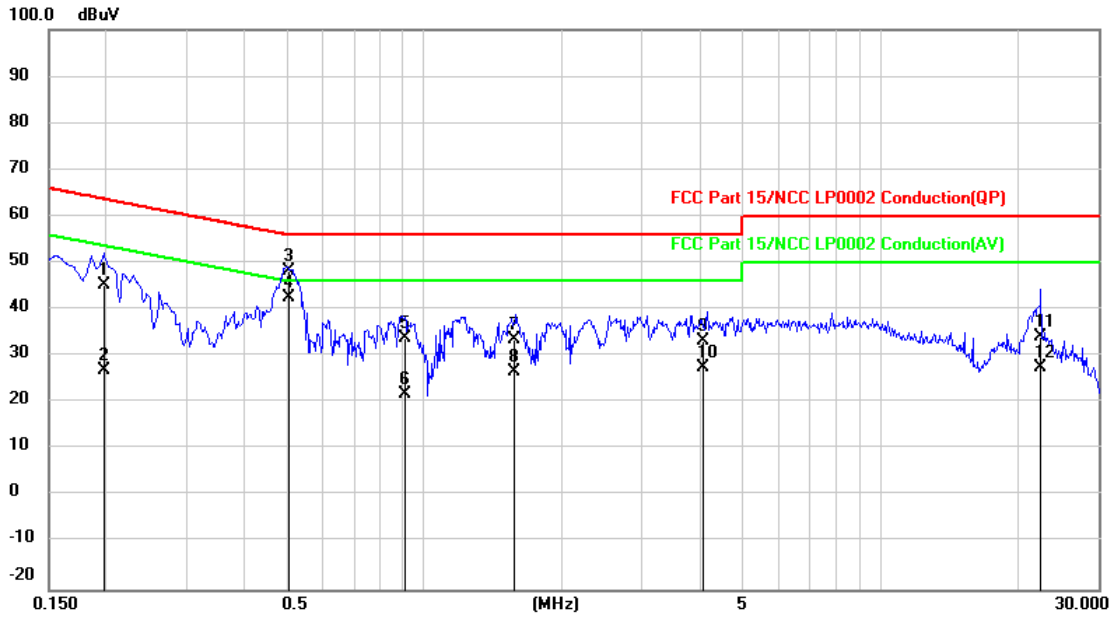


No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1660	34.31	19.55	53.86	65.16	-11.30	QP
2	0.1660	15.87	19.55	35.42	55.16	-19.74	AVG
3	0.2002	31.23	19.54	50.77	63.60	-12.83	QP
4	0.2002	22.48	19.54	42.02	53.60	-11.58	AVG
5	0.2100	32.12	19.54	51.66	63.21	-11.55	QP
6	0.2100	18.41	19.54	37.95	53.21	-15.26	AVG
7	0.4997	25.19	19.53	44.72	56.00	-11.28	QP
8	0.4997	8.61	19.53	28.14	46.00	-17.86	AVG
9	1.1681	14.71	19.54	34.25	56.00	-21.75	QP
10	1.1681	7.79	19.54	27.33	46.00	-18.67	AVG
11	1.8747	15.88	19.56	35.44	56.00	-20.56	QP
12	1.8747	7.28	19.56	26.84	46.00	-19.16	AVG
13	2.7395	16.47	19.55	36.02	56.00	-19.98	QP
14	2.7395	6.17	19.55	25.72	46.00	-20.28	AVG
15	4.7335	15.05	19.58	34.63	56.00	-21.37	QP
16	4.7335	8.38	19.58	27.96	46.00	-18.04	AVG

Remark:
Result = Reading +Correct
Margin = Result - Limit

Test Mode:	Mode 1	Temperature:	26℃
Test Voltage:	AC 120V/60Hz	Humidity:	54%
Tested By:	Eric T. Fan	Test Date:	Mar. 14, 2019

Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1985	25.81	19.54	45.35	63.67	-18.32	QP
2	0.1985	7.32	19.54	26.86	53.67	-26.81	AVG
3	0.5081	28.58	19.53	48.11	56.00	-7.89	QP
4	0.5081	22.91	19.53	42.44	46.00	-3.56	AVG
5	0.9082	14.46	19.54	34.00	56.00	-22.00	QP
6	0.9082	2.41	19.54	21.95	46.00	-24.05	AVG
7	1.5790	14.03	19.56	33.59	56.00	-22.41	QP
8	1.5790	7.11	19.56	26.67	46.00	-19.33	AVG
9	4.0784	13.69	19.59	33.28	56.00	-22.72	QP
10	4.0784	7.96	19.59	27.55	46.00	-18.45	AVG
11	22.4665	14.35	19.86	34.21	60.00	-25.79	QP
12	22.4665	7.82	19.86	27.68	50.00	-22.32	AVG

Remark:
Result = Reading +Correct
Margin = Result - Limit

6.2. Radiated Disturbance Measurement (below 1G)

6.2.1. Limits of radiated disturbance measurement

FREQUENCY (MHz)	☒Class B
	☒At 3m
	(microvolts/meter)
30 – 88	100
88 – 216	150
216 – 960	200
960 – 1000	500

NOTE:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBμV/m)=20*log Emission level (uV/m).

(3) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor,

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use),

Margin Level = Measurement Value - Limit Value.

6.2.2. Test Procedure

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

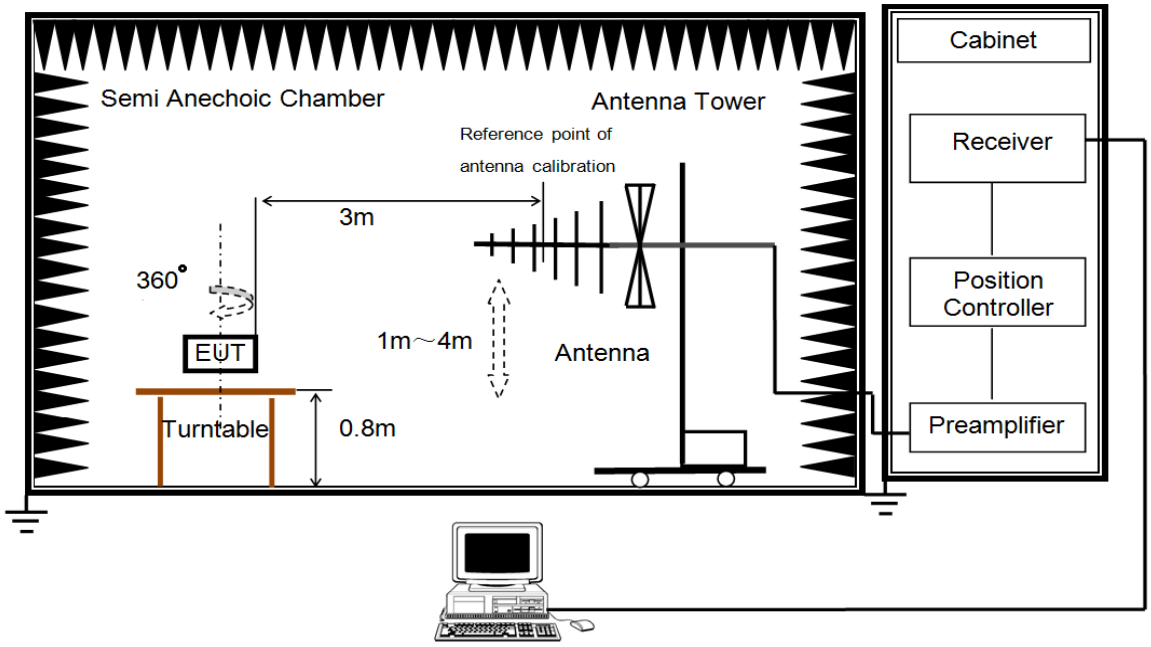
b. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

c. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

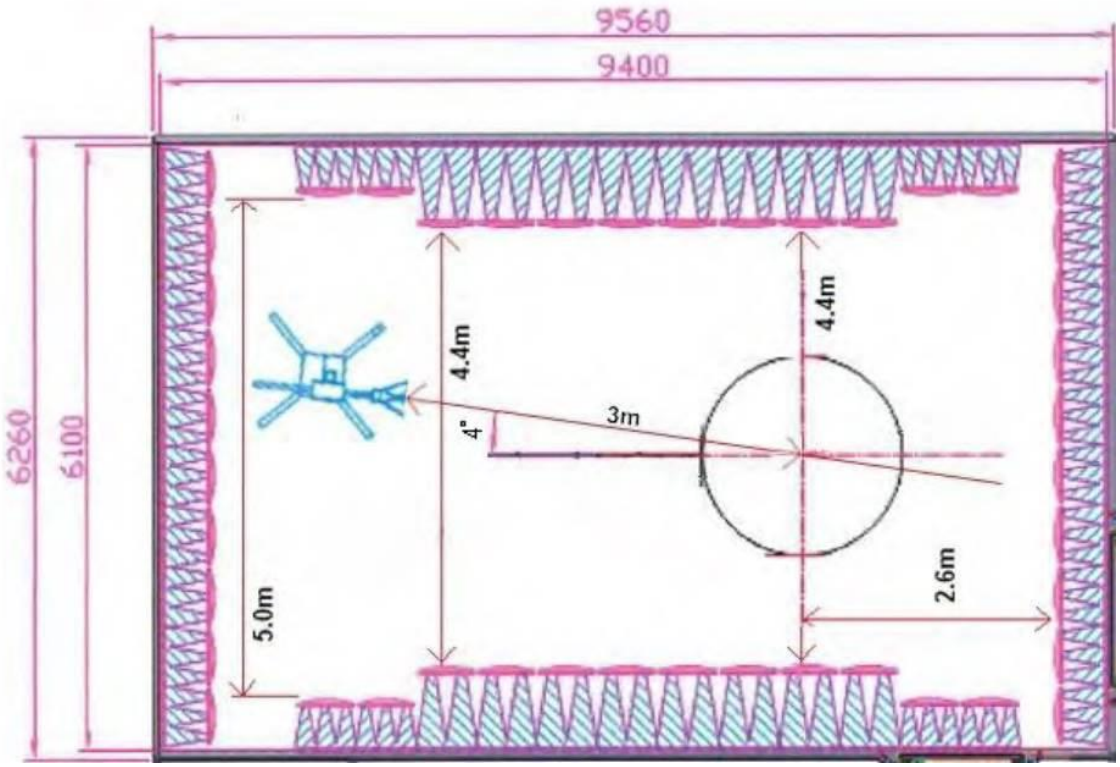
d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

e. For the actual test configuration, please refer to the related Item: EUT Test Photos.

6.2.3. Test Setup



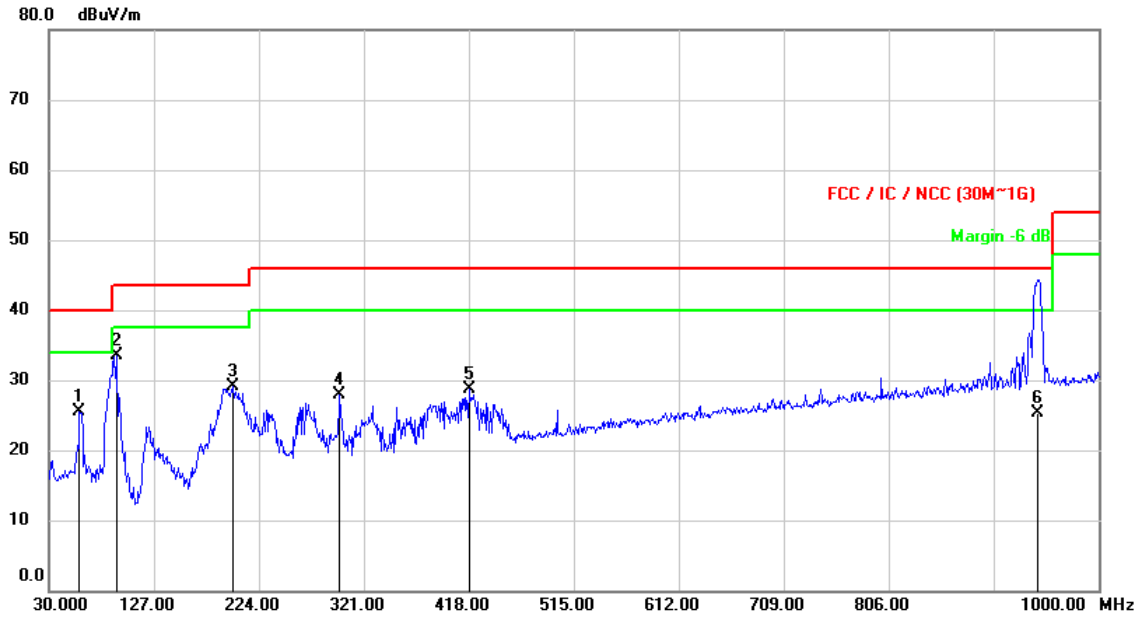
For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.



6.2.4. Test Result

Test Mode:	Mode 1	Temperature:	25℃
Test Voltage:	AC 120V/60Hz	Humidity:	52%
Tested By:	Eric T. Fan	Test Date:	Mar. 15, 2019

Polarization: Horizontal

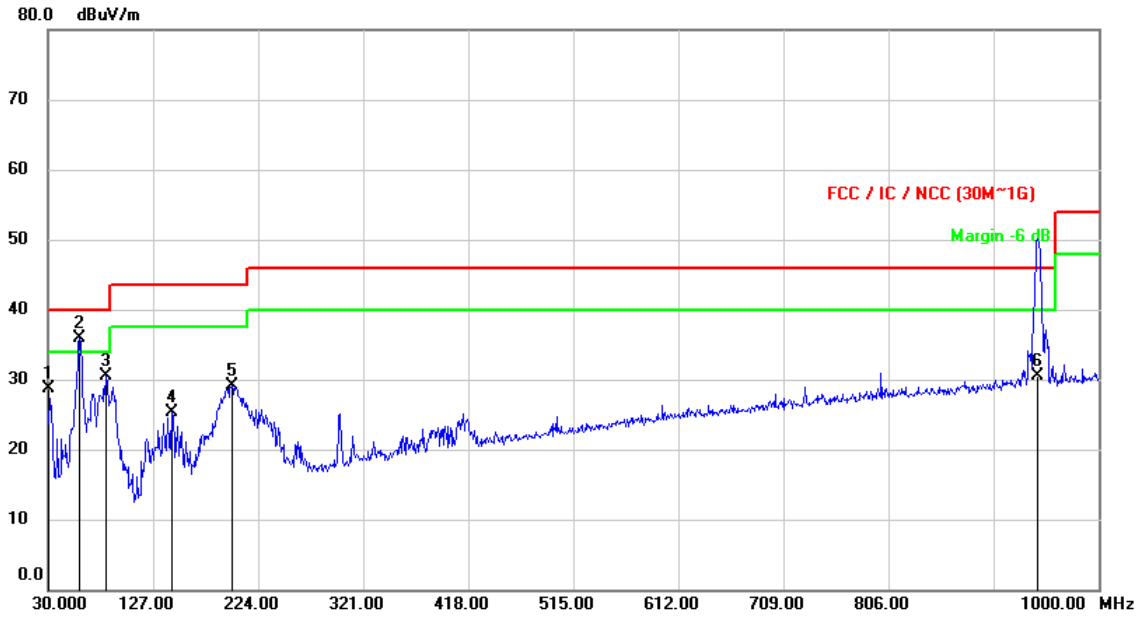


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	58.2593	41.75	-16.25	25.50	40.00	-14.50	peak
2	92.2417	54.98	-21.53	33.45	43.50	-10.05	peak
3	199.8793	47.13	-17.96	29.17	43.50	-14.33	peak
4	299.2720	42.42	-14.48	27.94	46.00	-18.06	peak
5	418.3233	39.89	-11.17	28.72	46.00	-17.28	peak
6	944.6716	26.69	-1.34	25.35	46.00	-20.65	QP

Remark:
Result = Reading +Correct
Margin = Result - Limit

Test Mode:	Mode 1	Temperature:	25℃
Test Voltage:	AC 120V/60Hz	Humidity:	52%
Tested By:	Eric T. Fan	Test Date:	Mar. 15, 2019

Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.7437	45.91	-17.13	28.78	40.00	-11.22	peak
2	59.7143	52.28	-16.36	35.92	40.00	-4.08	peak
3	83.7703	51.28	-20.84	30.44	40.00	-9.56	peak
4	145.3977	41.28	-15.88	25.40	43.50	-18.10	peak
5	200.6877	47.09	-17.96	29.13	43.50	-14.37	peak
6	943.7520	31.93	-1.35	30.58	46.00	-15.42	QP

Remark:
Result = Reading +Correct
Margin = Result - Limit

Appendix I： Photographs of Test Configuration

Please refer to Test Configuration.

Appendix II：Photographs of the EUT

Please see the photographs of EUT in the test report no.: 4788872713-EP.

END OF REPORT