FCC Test Report

APPLICANT	:	HTC Corporation
EQUIPMENT	:	VIVE Headset
MODEL NAME	:	2Q27200
FCC ID	:	NM82Q27200
STANDARD	:	FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION	:	Certification

The product was received on Feb. 12, 2018 and testing was completed on Feb. 23, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Louis Wu

Reviewed by: Louis Wu / Manager

Jones Tsai

Approved by: Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC821216	Rev. 01	Initial issue of report	Apr. 12, 2018
FC821216	Rev. 02	Revising applicant address and manufacturer address	Apr. 13, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	Under limit 13.38 dB at 0.152 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 3.50 dB at 252.750 MHz for Quasi-Peak

1. General Description

1.1. Applicant

HTC Corporation
NO. 88, Section 3, Zhongxing Rd., Xindian Dist, New Taipei City, Taiwan 231

1.2. Manufacturer

HTC Corporation
NO. 88, Section 3, Zhongxing Rd., Xindian Dist, New Taipei City, Taiwan 231

1.3. Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, and Wi-Fi 5GHz 802.11a/n/ac

Product Specification subjective to this standard	
Antenna Type	WLAN: Dipole Antenna Bluetooth: Dipole Antenna

1.4. Modification of EUT

No modifications are made to the EUT during all test items.

1.5. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1093 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	CO05-HY	03CH06-HY

1.6. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2014

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

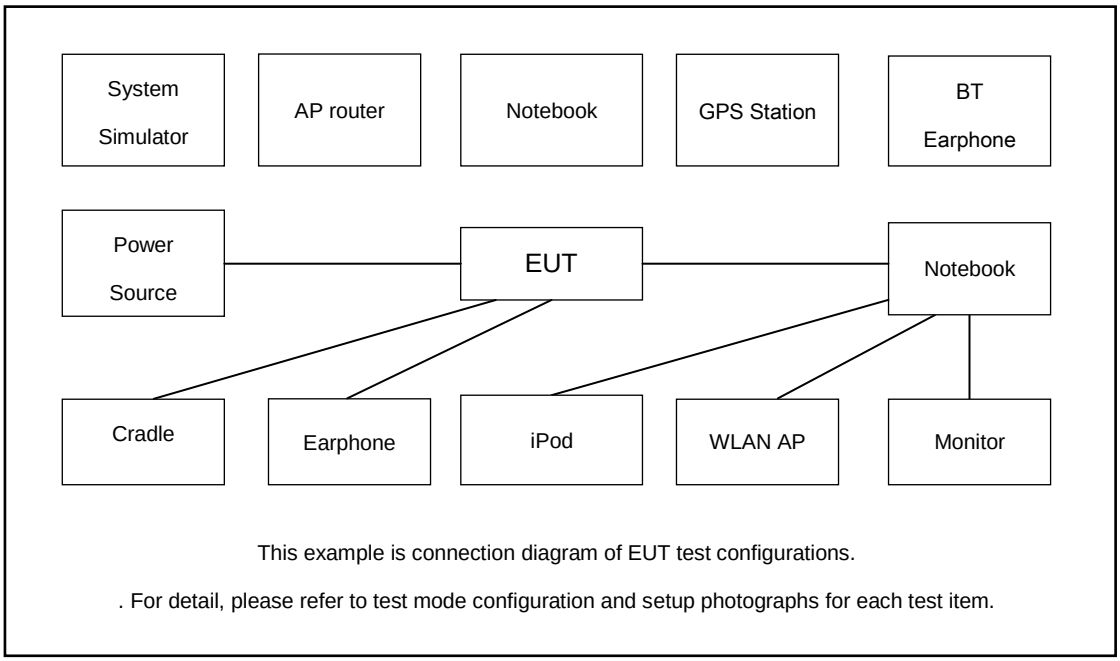
2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: Bluetooth Idle + WLAN Idle + MPEG4 + speaker output + USB Cable (Charging from Adapter 1) Mode 2: Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + USB Cable (Charging from Adapter 2) Mode 3: Bluetooth Idle + WLAN Idle + H-Pattern + USB Cable (Data Link with Notebook)
Radiated Emissions	Mode 1: Bluetooth Idle + WLAN Idle + MPEG4 + speaker output + USB Cable (Charging from Adapter 1) Mode 2: Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + USB Cable (Charging from Adapter 2) Mode 3: Bluetooth Idle + WLAN Idle + H-Pattern + Earphone + USB Cable (Data Link with Notebook)\
Remark: **1.** The worst case of AC is mode 1; only the test data of this mode was reported. **2.** The worst case of RE is mode 2; only the test data of this mode was reported. **3.** Data Link with Notebook means data application transferred mode between EUT and Notebook.	

2.2. Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
2.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
3.	iPhone Earphone	Apple	N/A	Verification	Unshielded, 1.2m	N/A
4.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.4. EUT Operation Test Setup

The EUT was attached to the VIVE Controller or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Data application is transferred between Notebook and EUT via USB cable.
2. Execute “Video player” to play MPEG4 files.
3. Execute “H Pattern” to show H Pattern on the Monitor.

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

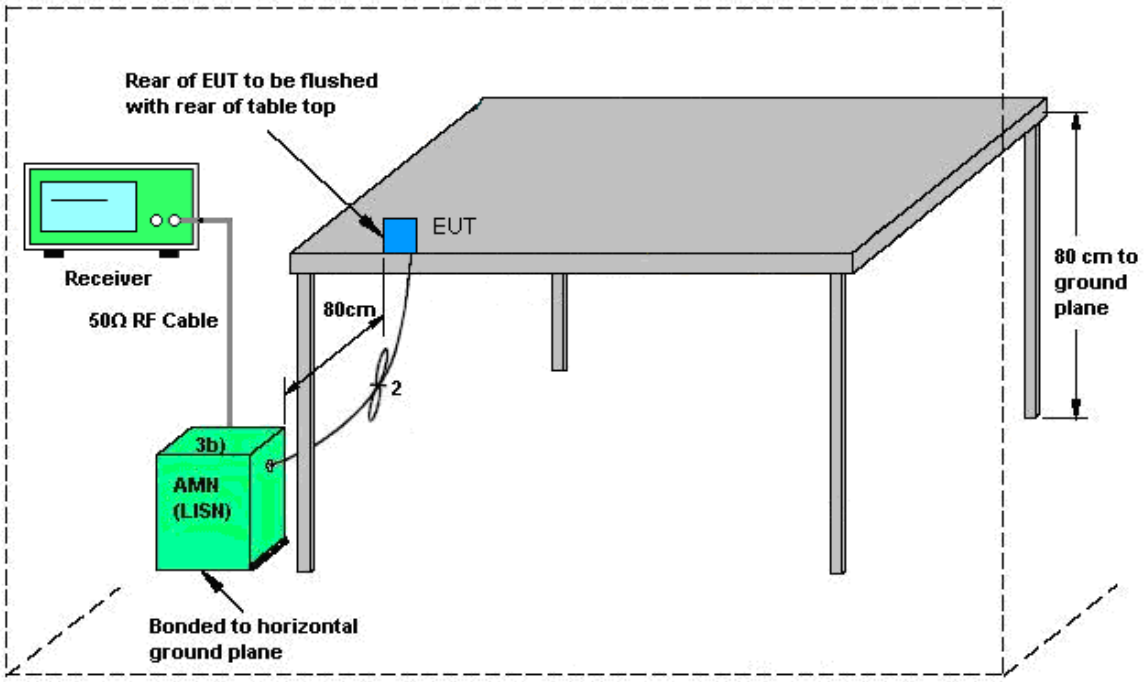
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedure

1. 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.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

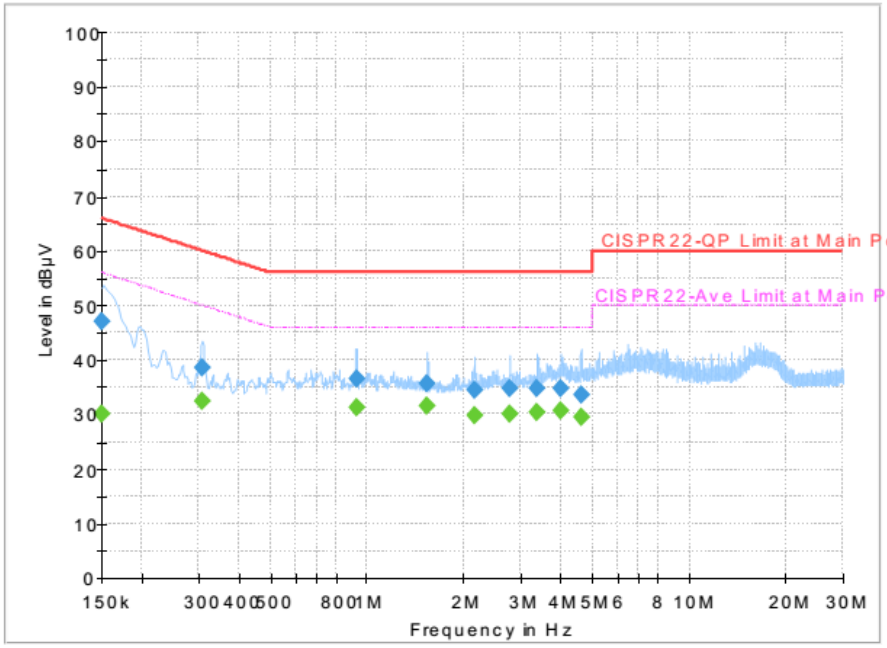
3.1.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

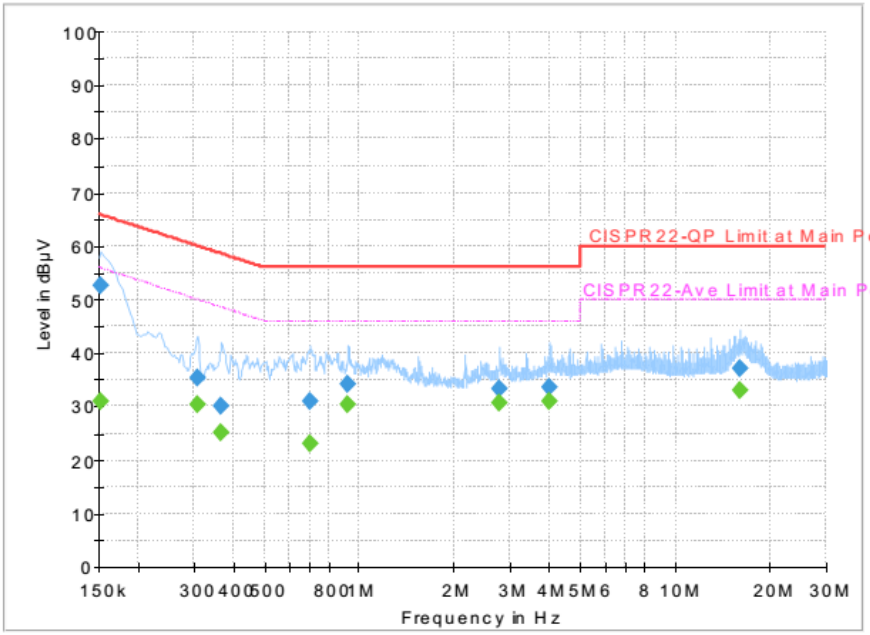
3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Blue Lan	Temperature :	24~25℃
		Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	30.23	56.00	25.77	L1	OFF	19.5
0.150000	46.97	---	66.00	19.03	L1	OFF	19.5
0.307500	---	32.54	50.04	17.50	L1	OFF	19.5
0.307500	38.48	---	60.04	21.56	L1	OFF	19.5
0.924000	---	31.21	46.00	14.79	L1	OFF	19.5
0.924000	36.46	---	56.00	19.54	L1	OFF	19.5
1.536000	---	31.67	46.00	14.33	L1	OFF	19.6
1.536000	35.58	---	56.00	20.42	L1	OFF	19.6
2.148000	---	29.96	46.00	16.04	L1	OFF	19.4
2.148000	34.44	---	56.00	21.56	L1	OFF	19.4
2.764500	---	30.19	46.00	15.81	L1	OFF	19.6
2.764500	34.74	---	56.00	21.26	L1	OFF	19.6
3.378750	---	30.39	46.00	15.61	L1	OFF	19.6
3.378750	34.69	---	56.00	21.31	L1	OFF	19.6
3.993000	---	30.61	46.00	15.39	L1	OFF	19.6
3.993000	34.69	---	56.00	21.31	L1	OFF	19.6
4.605000	---	29.54	46.00	16.46	L1	OFF	19.6
4.605000	33.68	---	56.00	22.32	L1	OFF	19.6

Test Engineer :	Blue Lan	Temperature :	24~25℃
		Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	30.90	55.88	24.98	N	OFF	19.5
0.152250	52.50	---	65.88	13.38	N	OFF	19.5
0.307500	---	30.48	50.04	19.56	N	OFF	19.5
0.307500	35.29	---	60.04	24.75	N	OFF	19.5
0.366000	---	25.07	48.59	23.52	N	OFF	19.5
0.366000	30.17	---	58.59	28.42	N	OFF	19.5
0.699000	---	22.97	46.00	23.03	N	OFF	19.5
0.699000	30.97	---	56.00	25.03	N	OFF	19.5
0.921750	---	30.50	46.00	15.50	N	OFF	19.5
0.921750	34.24	---	56.00	21.76	N	OFF	19.5
2.764500	---	30.71	46.00	15.29	N	OFF	19.5
2.764500	33.45	---	56.00	22.55	N	OFF	19.5
3.993000	---	30.90	46.00	15.10	N	OFF	19.6
3.993000	33.64	---	56.00	22.36	N	OFF	19.6
15.967500	---	33.16	50.00	16.84	N	OFF	19.8
15.967500	36.99	---	60.00	23.01	N	OFF	19.8

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

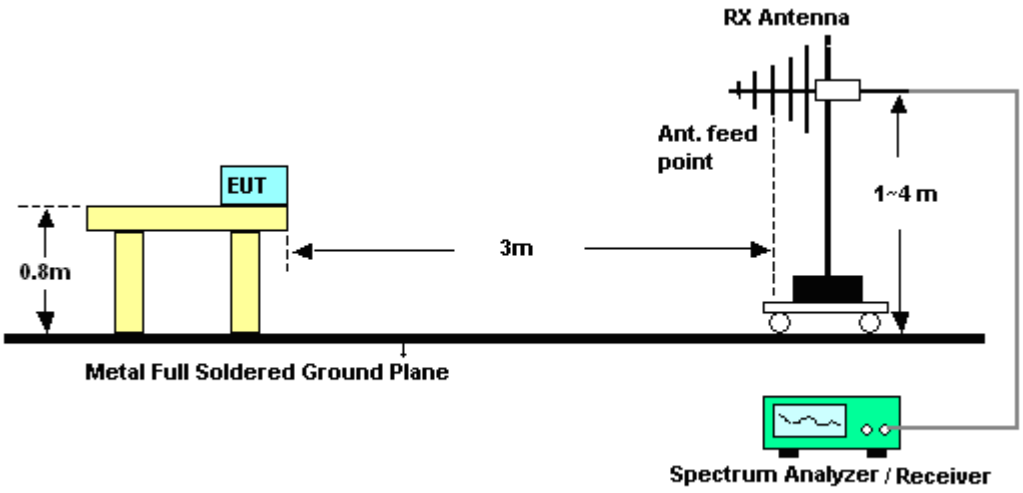
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

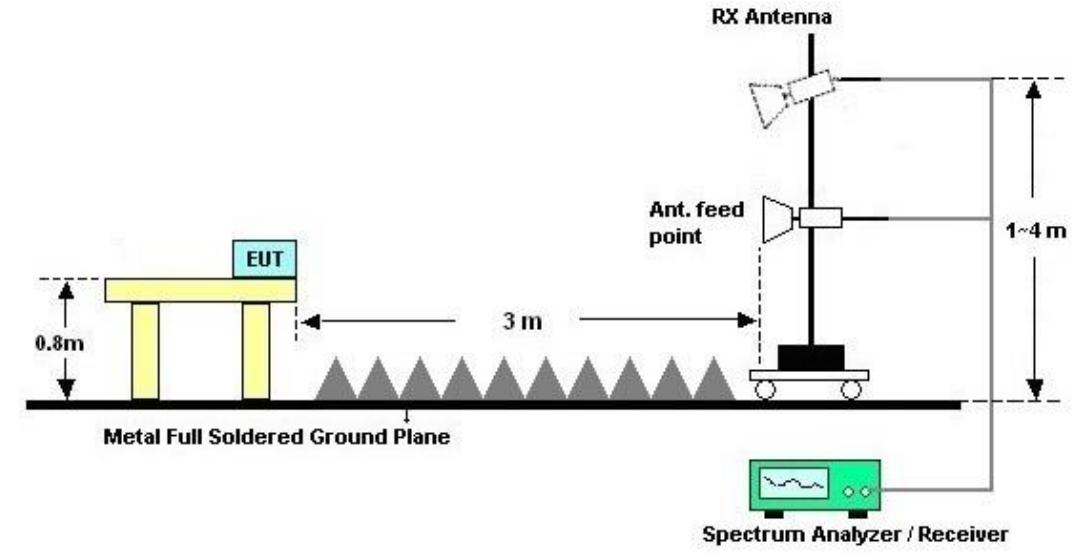
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. 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 turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBμV/m) = 20 log Emission level (μV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

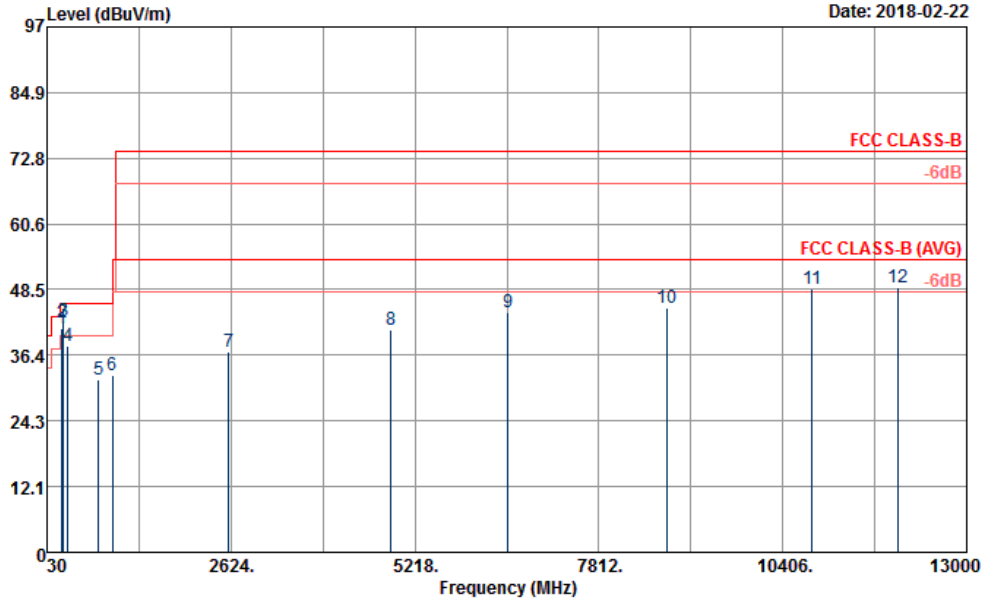


For radiated emissions above 1GHz



3.2.5. Test Result of Radiated Emission

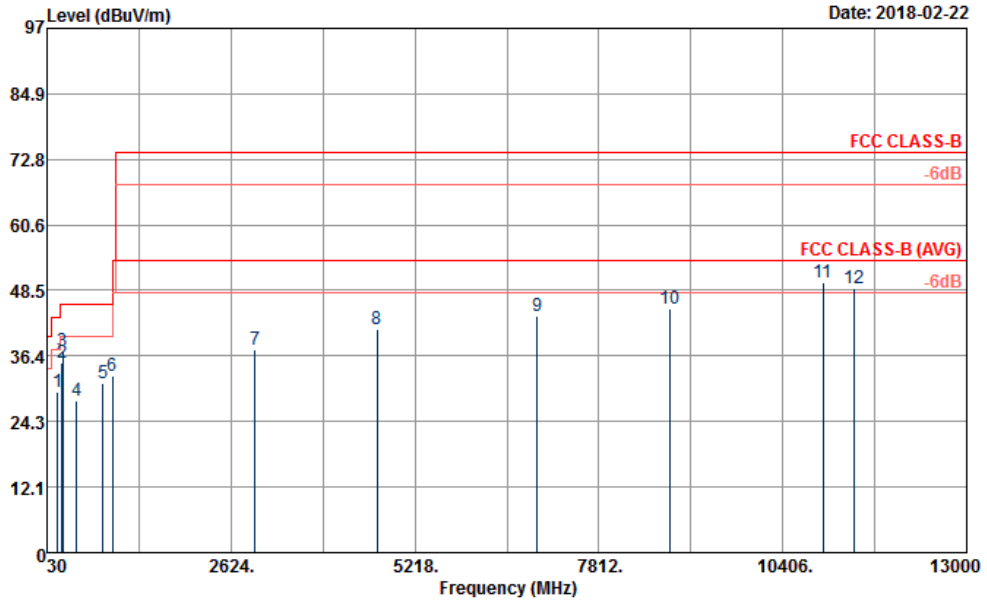
Test Engineer :	Eric Jeng	Temperature :	22~24°C
		Relative Humidity :	51~53%
Test Distance :	3m	Polarization :	Horizontal



Site : 03CH06-HY
Condition : FCC CLASS-B 3m 9120D_1156_170915 HORIZONTAL
Project : 821216
Power : 120Vac/60Hz
Mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	245.19	41.40	-4.60	46.00	53.21	17.78	2.17	31.76	132	145	QP
2	252.75	42.50	-3.50	46.00	53.20	18.85	2.20	31.75	140	152	QP
3	260.04	42.75	-3.25	46.00	52.48	19.79	2.23	31.75	---	---	Peak
4	320.30	38.16	-7.84	46.00	48.01	19.44	2.46	31.75	---	---	Peak
5	759.90	31.82	-14.18	46.00	32.29	27.90	3.66	32.03	---	---	Peak
6	954.50	32.60	-13.40	46.00	28.72	30.81	4.14	31.07	---	---	Peak
7	2594.00	37.01	-36.99	74.00	63.09	27.57	7.41	61.06	---	---	Peak
8	4884.00	41.04	-32.96	74.00	58.47	31.23	10.69	59.35	---	---	Peak
9	6526.00	44.35	-29.65	74.00	57.18	34.23	12.33	59.39	---	---	Peak
10	8766.00	45.18	-28.82	74.00	51.71	36.78	14.82	58.13	---	---	Peak
11	10816.00	48.72	-25.28	74.00	49.70	39.90	16.57	57.45	---	---	Peak
12	12038.00	48.85	-25.15	74.00	49.81	38.23	18.37	57.56	100	66	Peak

Test Engineer :	Eric Jeng	Temperature :	22~24°C
		Relative Humidity :	51~53%
Test Distance :	3m	Polarization :	Vertical



Site : 03CH06-HY
Condition : FCC CLASS-B 3m 9120D_1156_170915 VERTICAL
Project : 821216
Power : 120Vac/60Hz
Mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	175.53	29.85	-13.65	43.50	44.81	14.96	1.86	31.78	---	---	Peak
2	245.19	35.20	-10.80	46.00	47.01	17.78	2.17	31.76	---	---	Peak
3	252.48	37.23	-8.77	46.00	48.06	18.72	2.20	31.75	100	0	Peak
4	443.50	28.14	-17.86	46.00	34.29	22.84	2.86	31.85	---	---	Peak
5	818.70	31.33	-14.67	46.00	31.65	27.78	3.80	31.90	---	---	Peak
6	957.30	32.63	-13.37	46.00	28.57	30.97	4.14	31.05	---	---	Peak
7	2962.00	37.49	-36.51	74.00	62.15	28.59	8.02	61.27	---	---	Peak
8	4684.00	41.25	-32.75	74.00	59.95	30.86	10.33	59.89	---	---	Peak
9	6948.00	43.76	-30.24	74.00	54.74	35.36	12.88	59.22	---	---	Peak
10	8820.00	45.01	-28.99	74.00	51.55	36.81	14.84	58.19	---	---	Peak
11	10970.00	49.89	-24.11	74.00	50.08	40.09	16.79	57.07	100	66	Peak
12	11408.00	48.86	-25.14	74.00	48.54	39.49	17.43	56.60	---	---	Peak

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Feb. 23, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	Feb. 23, 2018	Dec. 07, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Feb. 23, 2018	Nov. 29, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 08, 2017	Feb. 23, 2018	Dec. 07, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V8.4	N/A	N/A	N/A	Feb. 23, 2018	N/A	Conduction (CO05-HY)
Bilog Antenna	Schaffner	CBL6111C&N-6-06	2725&AT-N0601	30MHz~1GHz	Oct. 14, 2017	Feb. 22, 2018	Oct. 13, 2018	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Jan. 04, 2018	Feb. 22, 2018	Jan. 03, 2019	Radiation (03CH06-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1156	1GHz~18GHz	Aug. 08, 2017	Feb. 22, 2018	Aug. 07, 2018	Radiation (03CH06-HY)
Preamplifier	SONOMA	310N	186713	9kHz~1GHz	Apr. 25, 2017	Feb. 22, 2018	Apr. 24, 2018	Radiation (03CH06-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1850117	1GHz ~ 18GHz	May 22, 2017	Feb. 22, 2018	May 21, 2018	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1m~4m	N/A	Feb. 22, 2018	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0-360 degree	N/A	Feb. 22, 2018	N/A	Radiation (03CH06-HY)

5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.7**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.9**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.7**