

## FCC Verification Test Report

**Report No.:** FV170627D08

**Test Model:** PMX-100 Series

**Series Model:** PMX-100 Series, PMX-xxx ("x" can be 0-9, A-Z or blank for marketing purpose)

**Received Date:** Jun. 27, 2017

**Test Date:** Jul. 4 ~ 6, 2017

**Issued Date:** Jul. 11, 2017

**Applicant:** Vecow Co., Ltd.

**Address:** 12F., No. 111, Zhongcheng Rd., Tucheng Dist., New Taipei City 23674 Taiwan (R.O.C.)

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)



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### Release Control Record

Issue No.	Description	Date Issued
FV170627D08	Original release.	Jul. 11, 2017

## 1 Certificate of Conformity

**Product:** Mini PCIe 2-port PoE+ Card

**Brand:** Vecow

**Test Model:** PMX-100 Series

**Series Model:** PMX-100 Series, PMX-xxx ("x" can be 0-9, A-Z or blank for marketing purpose)

**Sample Status:** Engineering Sample

**Applicant:** Vecow Co., Ltd.

**Test Date:** Jul. 4 ~ 6, 2017

**Standards:** 47 CFR FCC Part 15, Subpart B, Class A  
ICES-003:2016 Issue 6, Class A  
ANSI C63.4:2014

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Sandra Lin , **Date:** Jul. 11, 2017  
Sandra Lin / Specialist

**Approved by :** Henry Lai , **Date:** Jul. 11, 2017  
Henry Lai / Director

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart B / ICES-003:2016 Issue 6, Class A

ANSI C63.4:2014

FCC Clause	ICES-003 Clause	Test Item	Result/Remarks	Verdict
15.107	6.1	AC Power Line Conducted Emissions	Minimum passing Class A margin is -16.61 dB at 0.16172 MHz	Pass
15.109	6.2.1	Radiated Emissions up to 1 GHz	Minimum passing Class A margin is -5.26 dB at 999.99 MHz	Pass
	6.2.2	Radiated Emissions above 1 GHz	Minimum passing Class A margin is -16.86 dB at 1000.06 MHz	Pass

Note: There is no deviation to the applied test methods and requirements covered by the scope of this report.

### 2.1 Measurement Uncertainty

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

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.77 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	3.89 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	4.97 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 Features of EUT

The tests reported herein were performed according to the method specified by Vecow Co., Ltd., for detailed feature description, please refer to the manufacturer's specifications or user's manual.

#### 3.2 General Description of EUT

Product	Mini PCIe 2-port PoE+ Card
Brand	Vecow
Test Model	PMX-100 Series
Series Model	PMX-100 Series, PMX-xxx ("x" can be 0-9, A-Z or blank for marketing purpose)
Model Difference	Marketing purpose
Sample Status	Engineering Sample
Operating Software	Win 10
Power Supply Rating	DC power from host equipment
Accessory Device	N/A
Data Cable Supplied	N/A

#### 3.3 Operating Modes of EUT and Determination of Worst Case Operating Mode

Test modes are presented in the report as below.

Mode	Test Condition	Input Power (System)
1	EUT with system	120Vac/ 60Hz

#### 3.4 Test Program Used and Operation Descriptions

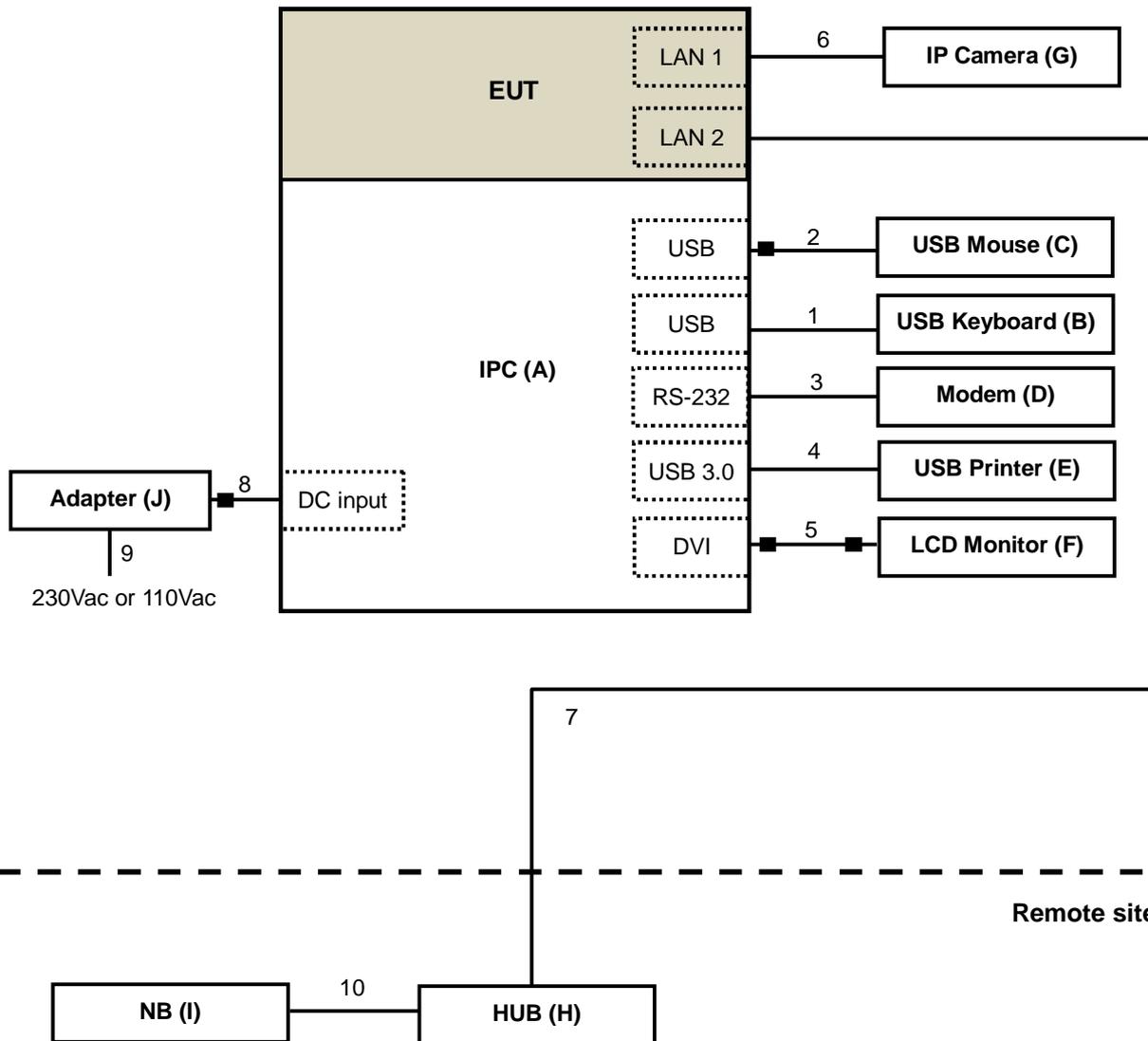
- a. Installed the EUT into IPC.
- b. Turned on the power of all equipment.
- c. IPC ran a test program to enable all functions.
- d. IPC read and wrote messages to/ from int. HDD.
- e. IPC sent and received messages to/ from PC with HUB (kept in a remote area) via EUT with a STP LAN cable (10m).
- f. IP Camera captured images to IPC via EUT.
- g. IPC sent "H" messages to ext. LCD monitor. Then it displayed "H" messages on its screen.
- h. PC sent messages to printer and printer printed them out.
- i. IPC sent messages to modem.
- j. Steps c-i were repeated.

#### 3.5 Primary Clock Frequencies of Internal Source

The highest frequency generated or used within the EUT or on which the EUT operates or tunes is 1GHz, provided by Vecow Co., Ltd., for detailed internal source, please refer to the manufacturer's specifications.

#### 4 Configuration and Connections with EUT

##### 4.1 Connection Diagram of EUT and Peripheral Devices



#### 4.2 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	IPC	VECOW	RCS-9440	N/A	N/A	Supplied by client
B.	USB Keyboard	HP	KB-0316	BC3520BGAUJ010	FCC DoC Approved	Provided by Lab
C.	USB Mouse	Microsoft	1113	9170515772224	FCC DOC Approved	Provided by Lab
D.	Modem	ACEEX	1414	980020512	IFAXDM1414	Provided by Lab
E.	Printer	HP	CV136-64001	CN55FCV012	N/A	Provided by Lab
F.	24" LCD Monitor	DELL	U2410	CN082WXD728720 CC0YTL	FCC DoC Approved	Provided by Lab
G.	IP Camera	N/A	A301MIF-3N	T31504056	FCC DoC Approved	Supplied by client
H.	HUB	CISCO	SG350-10MP	N/A	FCC DoC Approved	Supplied by client
I.	Notebook Computer	DELL	PP27L	8SNZ12S	FCC DoC Approved	Provided by Lab
J.	Adapter	MW	GS160A24	N/A	N/A	Supplied by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. The EUT was installed into support unit A.
3. Items E-G acted as communication partners to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	1.5	Y	0	Provided by Lab
2.	USB cable	1	1.8	Y	1	Provided by Lab
3.	RS-232 cable	1	1.2	Y	0	Provided by Lab
4.	USB cable	1	1.5	Y	0	Provided by Lab
5.	DVI cable	1	1.8	Y	2	Provided by Lab
6.	LAN cable	1	3.0	Y	0	Supplied by client
7.	LAN cable	1	10	Y	0	Provided by Lab
8.	DC power cable	1	1.15	N	1	Supplied by client
9.	AC power cable	1	1.8	N	0	Supplied by client
10.	LAN cable	1	1.0	N	0	Provided by Lab

Note: The core(s) is(are) originally attached to the cable(s).

## 5 Conducted Emissions at Mains Ports

### 5.1 Limits

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Notes: 1. The lower limit shall apply at the transition frequencies.  
 2. The limit decreases linearly with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

### 5.2 Test Instruments

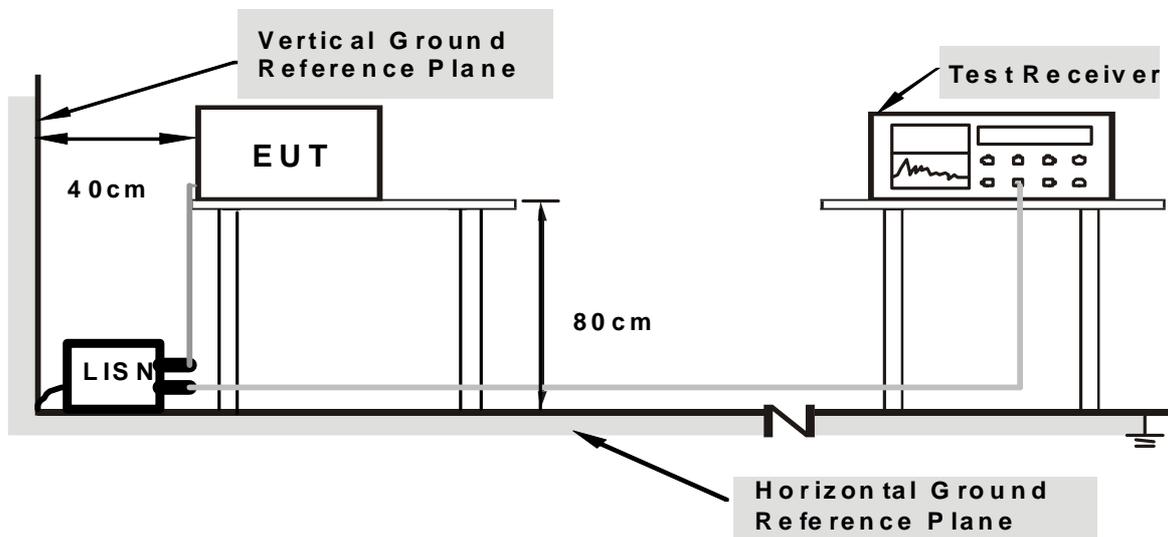
Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100290	Dec. 26, 2016	Dec. 25, 2017
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH2-Z5	100104	Dec. 01, 2016	Nov. 30, 2017
LISN With Adapter (for EUT)	AD10	C09Ada-001	Dec. 01, 2016	Nov. 30, 2017
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	847265/023	Oct. 27, 2016	Oct. 26, 2017
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 09, 2017	May 08, 2018
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C09.01	Feb. 21, 2017	Feb. 20, 2018
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010789	May 18, 2017	May 17, 2018
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 08, 2016	Nov. 07, 2017
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 08, 2016	Nov. 07, 2017

Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The test was performed in Shielded Room No. 9.  
 3. The VCCI Site Registration No. C-1312.  
 4. Tested Date: Jul. 5, 2017

### 5.3 Test Arrangement

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.



**Note: Support units were connected to second LISN.**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

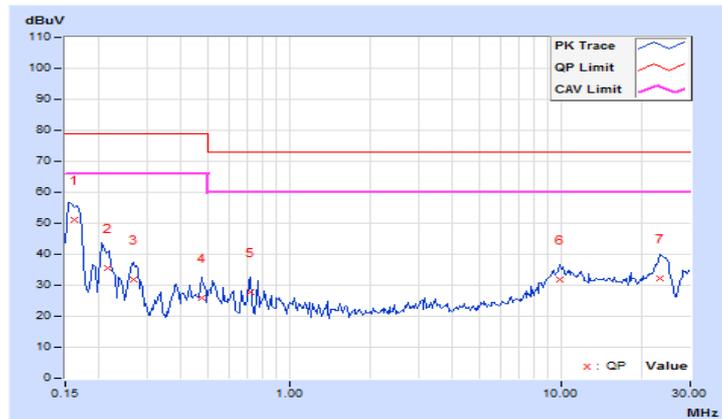
### 5.4 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25°C, 71%RH
Tested by	Chiawei Lin		
Test Mode	Mode 1		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16164	10.09	40.97	36.71	51.06	46.80	79.00	66.00	-27.94	-19.20
2	0.21484	10.12	25.53	9.32	35.65	19.44	79.00	66.00	-43.35	-46.56
3	0.26719	10.14	21.53	17.13	31.67	27.27	79.00	66.00	-47.33	-38.73
4	0.47805	10.20	15.85	11.72	26.05	21.92	79.00	66.00	-52.95	-44.08
5	0.71641	10.22	17.39	12.81	27.61	23.03	73.00	60.00	-45.39	-36.97
6	9.94922	10.72	21.05	16.68	31.77	27.40	73.00	60.00	-41.23	-32.60
7	23.24609	11.11	21.20	13.38	32.31	24.49	73.00	60.00	-40.69	-35.51

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

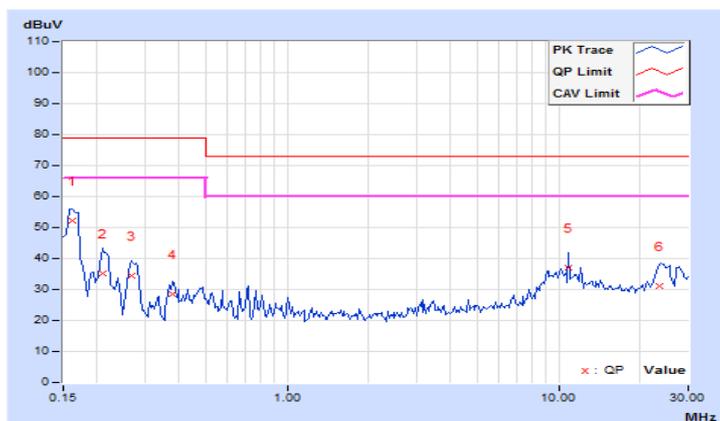


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power (System)</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	25°C, 71%RH
<b>Tested by</b>	Chiawei Lin		
<b>Test Mode</b>	Mode 1		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.09	42.26	39.30	52.35	49.39	79.00	66.00	-26.65	-16.61
2	0.20859	10.05	25.11	12.83	35.16	22.88	79.00	66.00	-43.84	-43.12
3	0.26719	10.08	24.30	21.46	34.38	31.54	79.00	66.00	-44.62	-34.46
4	0.38047	10.15	18.21	13.35	28.36	23.50	79.00	66.00	-50.64	-42.50
5	10.88281	10.70	26.17	15.11	36.87	25.81	73.00	60.00	-36.13	-34.19
6	23.42969	10.71	20.51	13.28	31.22	23.99	73.00	60.00	-41.78	-36.01

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 6 Radiated Emissions up to 1 GHz

### 6.1 Limits

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		

Radiated Emissions Limits at 3 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	49.5	40	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54		

- Notes:
1. The lower limit shall apply at the transition frequencies.
  2. Emission level (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m).
  3. QP detector shall be applied if not specified.

### 6.2 Test Instruments

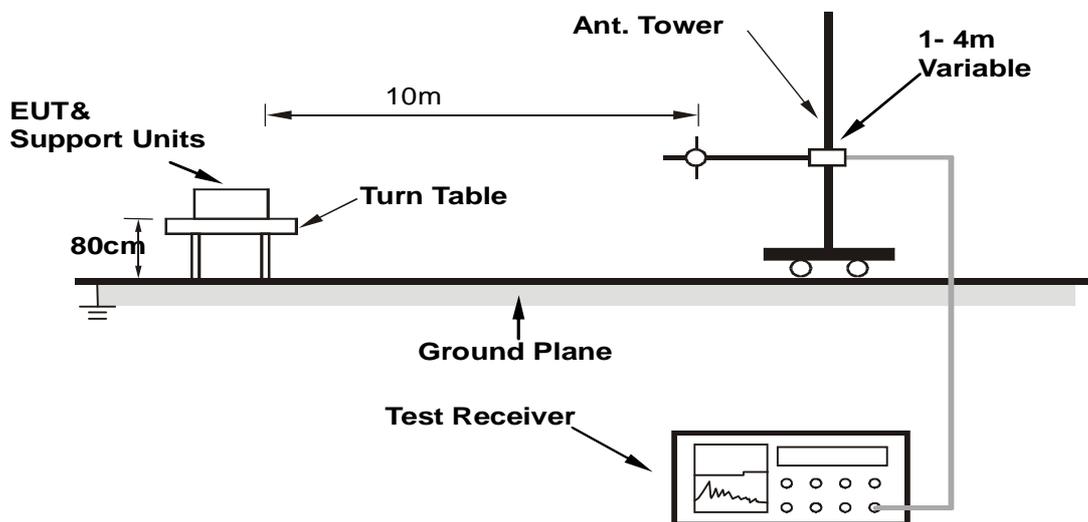
Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCI	100412	Sep. 05, 2016	Sep. 04, 2017
Schwarzbeck BILOG Antenna	VULB9168	9168-479	Dec. 16, 2016	Dec. 15, 2017
Agilent Preamplifier	8447D	2944A08312	Feb. 21, 2017	Feb. 20, 2018
CT Turn Table	TT100	CT-0055	NA	NA
CT Tower	AT100	CT-0055	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
ADT RF Switches BOX	EM-H-01-1	1002	Sep. 22 2016	Sep. 21, 2017
WOKEN RF cable With 5dB PAD	8D	CABLE-ST6-01	Sep. 22 2016	Sep. 21, 2017

- Notes:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in Open Site No. 6.
  3. The VCCI Site Registration No. R-728.
  4. The FCC Site Registration No. 90427.
  5. Tested Date: Jul. 4, 2017

### 6.3 Test Arrangement

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 6.4 Test Results

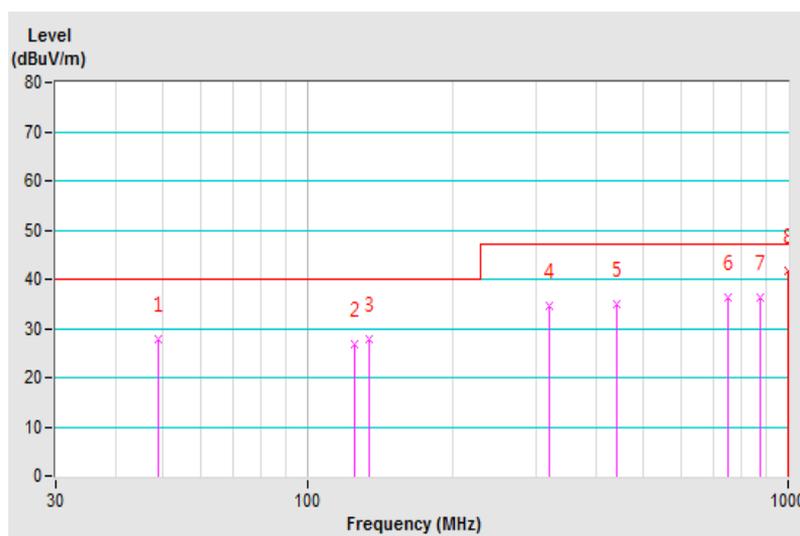
Frequency Range	30MHz ~ 1GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120kHz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	33°C, 58%RH, 1000mbar
Tested by	Vincent Lin		
Test Mode	Mode 1		

### Antenna Polarity & Test Distance : Horizontal at 10 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	48.85	27.87 QP	40.00	-12.13	4.00 H	128	37.29	-9.42
2	125.08	26.65 QP	40.00	-13.35	4.00 H	243	37.47	-10.82
3	134.53	27.93 QP	40.00	-12.07	4.00 H	307	37.97	-10.04
4	318.81	34.54 QP	47.00	-12.46	3.61 H	53	41.18	-6.64
5	439.00	34.93 QP	47.00	-12.07	2.89 H	48	39.06	-4.13
6	750.02	36.36 QP	47.00	-10.64	1.66 H	333	34.05	2.31
7	875.02	36.17 QP	47.00	-10.83	1.00 H	147	32.24	3.93
8	999.99	41.74 QP	47.00	-5.26	1.09 H	66	35.52	6.22

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value

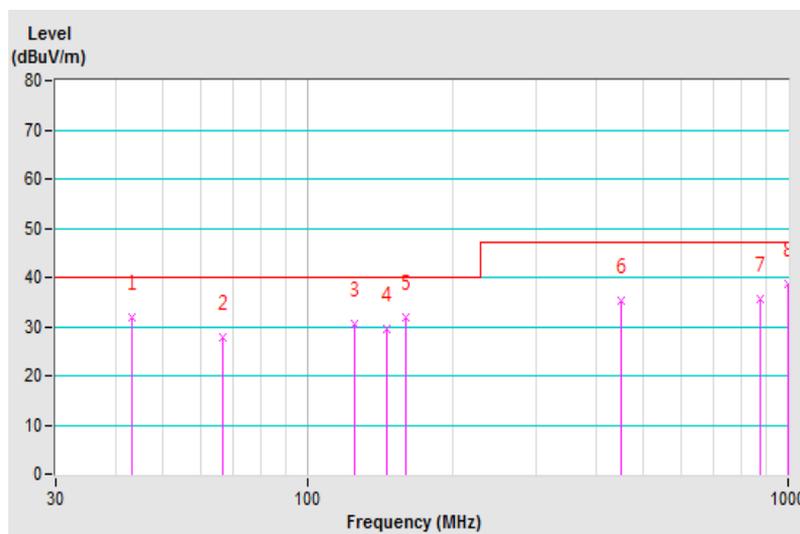


<b>Frequency Range</b>	30MHz ~ 1GHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP), 120kHz
<b>Input Power (System)</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	33°C, 58%RH, 1000mbar
<b>Tested by</b>	Vincent Lin		
<b>Test Mode</b>	Mode 1		

Antenna Polarity & Test Distance : Vertical at 10 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	43.34	31.78 QP	40.00	-8.22	1.00 V	51	41.47	-9.69
2	66.69	27.86 QP	40.00	-12.14	1.00 V	214	38.82	-10.96
3	125.01	30.63 QP	40.00	-9.37	1.00 V	193	41.46	-10.83
4	146.74	29.51 QP	40.00	-10.49	1.00 V	63	38.49	-8.98
5	159.85	31.98 QP	40.00	-8.02	1.00 V	112	40.77	-8.79
6	449.50	35.30 QP	47.00	-11.70	2.81 V	134	39.40	-4.10
7	874.99	35.54 QP	47.00	-11.46	2.57 V	169	31.62	3.92
8	999.98	38.53 QP	47.00	-8.47	2.26 V	219	32.31	6.22

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value



## 7 Radiated Emissions above 1 GHz

### 7.1 Limits

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
1000-3000	Avg: 49.5	Avg: 43.5	Not defined	Not defined
Above 3000	Peak: 69.5	Peak: 63.5	Not defined	Not defined

Radiated Emissions Limits at 3 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
1000-3000	Avg: 60	Avg: 54	Avg: 56 Peak: 76	Avg: 50 Peak: 70
Above 3000	Peak: 80	Peak: 74	Avg: 60 Peak: 80	Avg: 54 Peak: 74

Radiated Emissions Limits at 1.5 meters (dB $\mu$ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
Above 18000	Avg: 66 Peak: 86	Avg: 60 Peak: 80	Avg: 66 Peak: 86	Avg: 60 Peak: 80

- Notes:
1. The lower limit shall apply at the transition frequencies.
  2. Emission level (dB $\mu$ V/m) = 20 log Emission level (uV/m).
  3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Frequency Range (For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower

## 7.2 Test Instruments

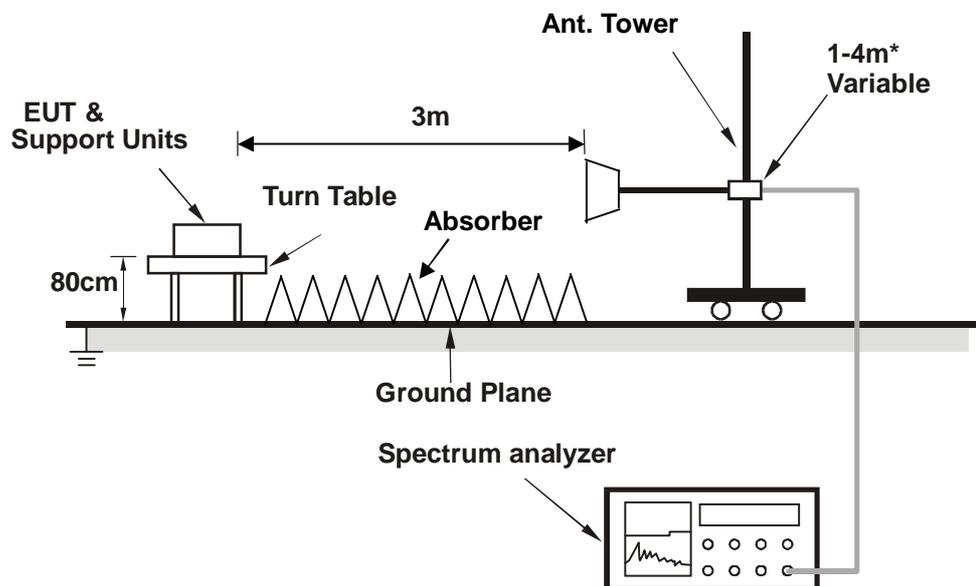
Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Agilent Spectrum	E4446A	MY51100009	Jun. 01, 2017	May 31, 2018
Agilent Test Receiver	N9038A	MY51210137	Jun. 23, 2017	Jun. 22, 2018
Agilent Preamplifier	8449B	3008A01292	Feb. 22, 2017	Feb. 21, 2018
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 21, 2017	Feb. 20, 2018
EMCI Preamplifier	EMC184045B	980235	Feb. 22, 2017	Feb. 21, 2018
Schwarzbeck Horn Antenna	BBHA-9170	212	Dec. 30, 2016	Dec. 29, 2017
EMCO Horn Antenna	3115	6714	Dec. 29, 2016	Dec. 28, 2017
Max Full. Turn Table	MF7802	MF780208216	NA	NA
Software	Radiated_V8.7.08	NA	NA	NA
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH10-3.6m	Aug. 15, 2016	Aug. 14, 2017
MICRO-TRONICS Notch filter	BRC50703-01	010	May 31, 2017	May 30, 2018
MICRO-TRONICS Band Pass Filter	BRM17690	005	May 31, 2017	May 30, 2018

- Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Chamber No. 10.
3. The Industry Canada Reference No. IC 7450E-11.
4. The VCCI Site Registration No. G-10427
5. The FCC Site Registration No. 367016
6. Tested Date: Jul. 6, 2017

### 7.3 Test Arrangement

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The spectrum analyzer system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

Note: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection (PK) at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.



\* :depends on the EUT height and the antenna 3dB beamwidth both.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

### 7.4 Test Results

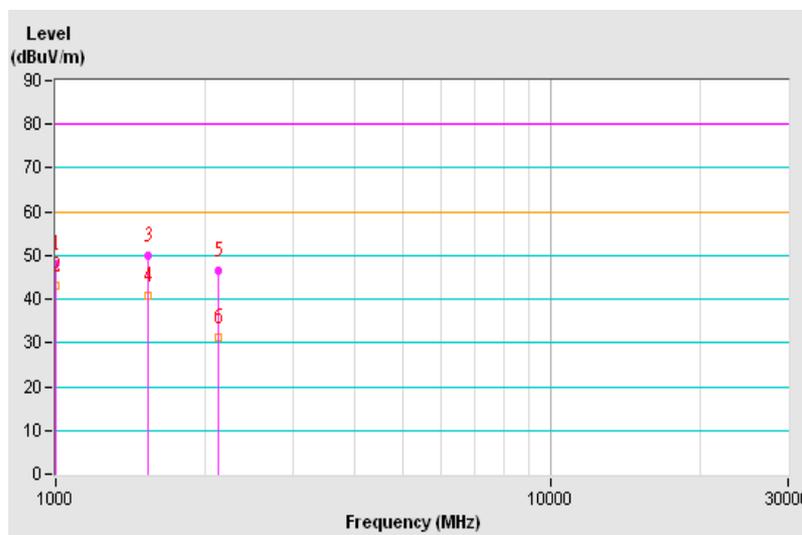
Frequency Range	1GHz ~ 5GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	22°C, 70%RH
Tested by	Paul Chen		
Test Mode	Mode 1		

#### Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1000.06	47.89 PK	80.00	-32.11	2.44 H	302	52.54	-4.65
<b>2</b>	<b>1000.06</b>	<b>43.14 AV</b>	<b>60.00</b>	<b>-16.86</b>	<b>2.44 H</b>	<b>302</b>	<b>47.79</b>	<b>-4.65</b>
3	1539.92	49.99 PK	80.00	-30.01	1.13 H	205	53.37	-3.38
4	1539.92	40.95 AV	60.00	-19.05	1.13 H	205	44.33	-3.38
5	2128.39	46.44 PK	80.00	-33.56	1.08 H	223	47.09	-0.65
6	2128.39	31.31 AV	60.00	-28.69	1.08 H	223	31.96	-0.65

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value

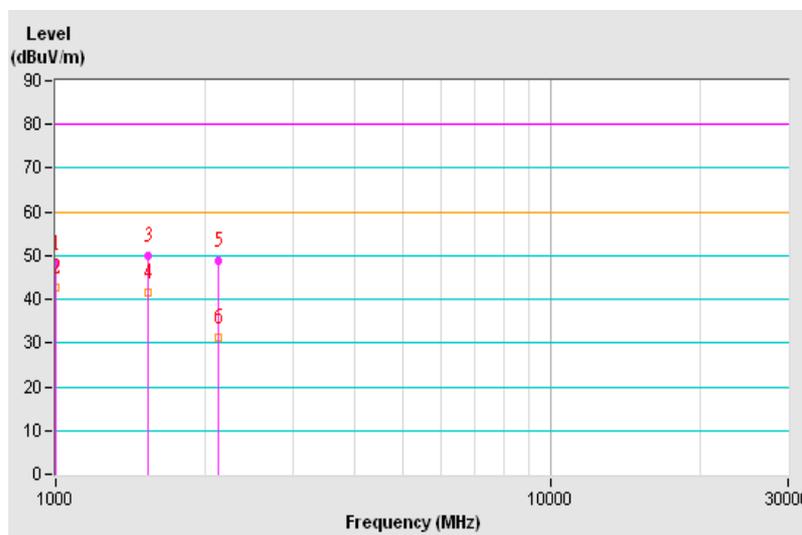


<b>Frequency Range</b>	1GHz ~ 5GHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Peak (PK) / Average (AV), 1MHz
<b>Input Power (System)</b>	120Vac, 60Hz	<b>Environmental Conditions</b>	22°C, 70%RH
<b>Tested by</b>	Paul Chen		
<b>Test Mode</b>	Mode 1		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1000.12	48.17 PK	80.00	-31.83	1.92 V	346	52.82	-4.65
2	1000.12	42.74 AV	60.00	-17.26	1.92 V	346	47.39	-4.65
3	1540.05	50.04 PK	80.00	-29.96	1.53 V	233	53.42	-3.38
4	1540.05	41.47 AV	60.00	-18.53	1.53 V	233	44.85	-3.38
5	2130.88	48.67 PK	80.00	-31.33	1.00 V	164	49.32	-0.65
6	2130.88	31.40 AV	60.00	-28.60	1.00 V	164	32.05	-0.65

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value



## 8 Pictures of Test Arrangements

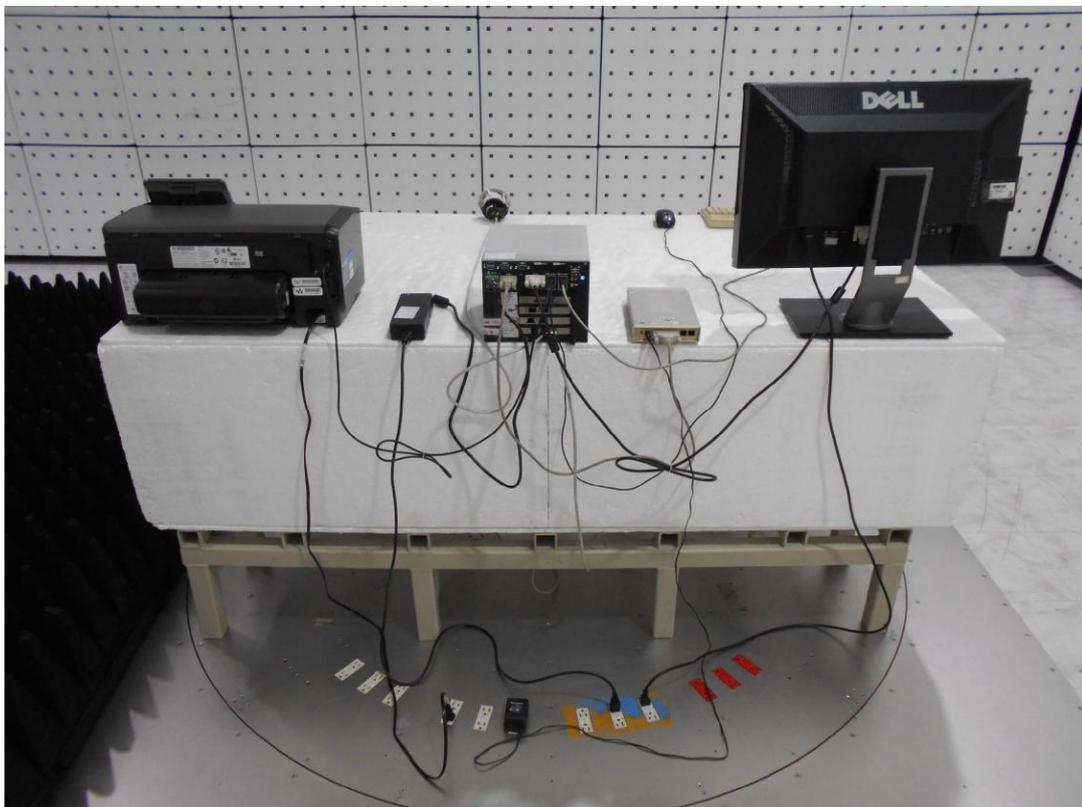
### 8.1 Conducted Emissions at Mains Ports



## 8.2 Radiated Emissions up to 1 GHz



### 8.3 Radiated Emissions above 1 GHz



## Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: 886-2-26051924

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

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