

# TEST REPORT

## CERTIFICATE OF CONFORMITY

**Standard:** ICES-003: 2020 Issue 7, Class A

ICES-Gen: 2024 Issue 2

ANSI C63.4-2014 amended as per ANSI C63.4a-2017

**Report No.:** CIBDBO-WTW-P23120002

**Product:** High-Performance Fanless System

**Brand:** Vecow

**Model No.:** IVX-1000-ICY

**Series Model:** IVX-1XXXXXXXXXXXXXXXXX ("X" can be 0-9, A-Z or blank for marketing purpose)

**Received Date:** 2023/12/1

**Test Date:** 2023/12/11 ~ 2023/12/12

**Issued Date:** 2024/7/15

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

**Address:** 3F., No. 10, Jiankang Rd., Zhonghe Dist., New Taipei City 23586, Taiwan

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

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

**Test Location:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Approved by:



Date:

2024/7/15

Jim Hsiang / Associate Technical Manager

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Prepared by : Vivian Chen / Senior Specialist



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## Release Control Record

Issue No.	Description	Date Issued
CIBDBO-WTW-P23120002	Original release.	2024/7/15

## 1 Certificate

**Product:** High-Performance Fanless System

**Brand:** Vecow

**Test Model:** IVX-1000-ICY

**Series Model:** IVX-1XXXXXXXXXXXXXXXXX ("X" can be 0-9, A-Z or blank for marketing purpose)

**Sample Status:** Mass Production

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

**Test Date:** 2023/12/11 ~ 2023/12/12

**Standard:** ICES-003: 2020 Issue 7, Class A

ICES-Gen: 2024 Issue 2

ANSI C63.4-2014 amended as per ANSI C63.4a-2017

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.

## 2 Summary of Test Results

The test items that the EUT need to perform in accordance with its interfaces, evaluated functions, are as follows:

Standard	Test Item	Result	Remark
ICES-003	Conducted Emissions from Power Ports	Pass	Minimum passing Class A margin is -15.23 dB at 9.51130 MHz
ICES-003	Radiated Emissions up to 1 GHz	Pass	Minimum passing Class A margin is -2.65 dB at 51.33 MHz
ICES-003	Radiated Emissions above 1 GHz	Pass	Minimum passing Class A margin is -0.68 dB at 6000.02 MHz

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)	Maximum allowable uncertainty (±)
Conducted Emissions from Power Ports	9 kHz ~ 30 MHz	2.90 dB	3.4 dB ( $U_{\text{CISPR}}$ )
Radiated Emissions up to 1 GHz	30 MHz ~ 1 GHz	3m: 5.46 dB 10m: 4.04 dB	6.3 dB ( $U_{\text{CISPR}}$ )
	1 GHz ~ 6 GHz	4.72 dB	5.2 dB ( $U_{\text{CISPR}}$ )
Radiated Emissions above 1 GHz	6 GHz ~ 18 GHz	4.68 dB	5.5 dB ( $U_{\text{CISPR}}$ )

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

### 2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

### 3 General Information

#### 3.1 Description of EUT

Product	High-Performance Fanless System
Brand	Vecow
Test Model	IVX-1000-ICY
Series Model	IVX-1XXXXXXXXXXXXXXXXX ("X" can be 0-9, A-Z or blank for marketing purpose)
Model Difference	For Marketing Differentiation
Sample Status	Mass Production
Operating Software	WIN 10, BURNINTEST
Power Supply Rating	DC from Adapter
Accessory Device	Adapter
Data Cable Supplied	N/A

Note:

The EUT uses following adapter.

Brand	Model	Specification
LITEON	PA-1181-28E	AC Input: 100-240V, 2.34A, 50-60Hz (3pin) DC Output: 24V, 7.5A 180W (1.5m, with two ferrite cores.)

#### 3.2 Primary Clock Frequencies of Internal Source

The highest frequency generated or used within the EUT or on which the EUT operates or tunes is 1.4 GHz, provided by Vecow Co., Ltd., for detailed internal source, please refer to the manufacturer's specifications.

#### 3.3 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.

Please refer to appendix of the report if the applicant has provided additional descriptions of the EUT.

The EUT configured with the following key components:

Component	Specification
CPU	13th Gen Intel® Core™ i7-13700TE@1.10GHz
RAM	INNODISK DDR5 4800 32GB W/T SODIMM x 2
SSD	INNODISK 2.5" SATA SSD 3TE7 512GB x 6

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

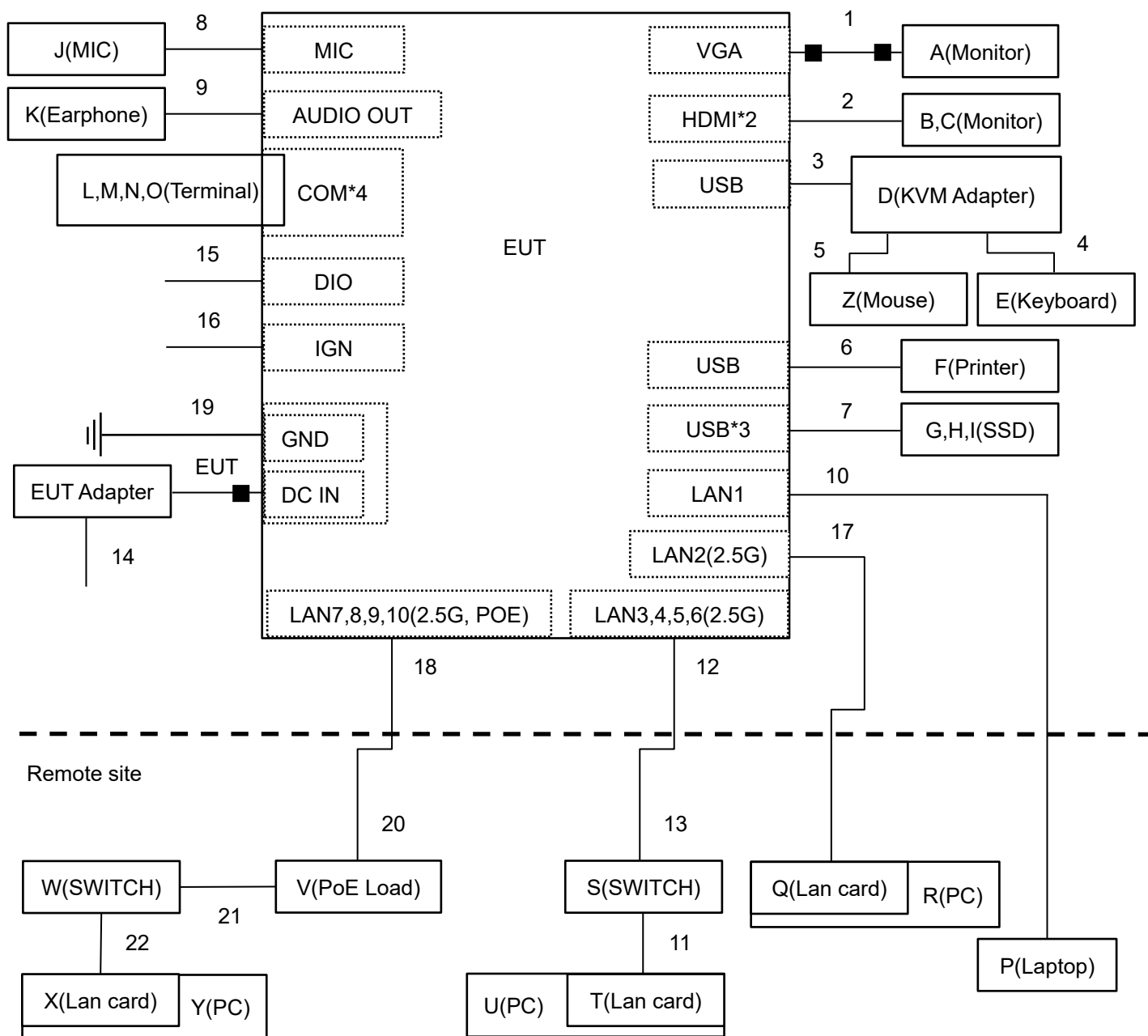
Test modes are presented in the report as below.

Test Condition	
Mode	Conducted Emissions from Power Ports
A	HDMI*2:1920*1080/60Hz + VGA:1920*1080/60Hz + with adapter + Lan 3 ~Lan 10: with load & link + Lan 2: 2.5G link + Lan 1: 1G link + Input Power(120 Vac, 60 Hz)
Mode	Radiated Emissions up to 1 GHz
A	HDMI*2:1920*1080/60Hz + VGA:1920*1080/60Hz + with adapter + Lan 3~Lan 10: with load & link + Lan 2: 2.5G link + Lan 1: 1G link + Input Power(120 Vac, 60 Hz)
Mode	Radiated Emissions above 1 GHz
A	HDMI*2:1920*1080/60Hz + VGA:1920*1080/60Hz + with adapter + Lan 3~Lan 10: with load & link + Lan 2: 2.5G link + Lan 1: 1G link + Input Power(120 Vac, 60 Hz)

### 3.5 Test Program Used and Operation Descriptions

- a. Turned on the power of all equipment.
- b. EUT ran a test program (BurnIntest) to enable all functions.
- c. EUT read and wrote messages to/ from internal storage devices and external storage devices.
- d. Laptop/ PC (kept at remote area) sent and received messages to/ from EUT via LAN cable.
- e. EUT sent (H) messages to monitors. Then they displayed messages on their screens simultaneously.
- f. EUT sent messages to printer and the printer printed them out.
- g. EUT sent (1kHz audio) signal to earphone
- h. Steps c-g were repeated.

### 3.6 Connection Diagram of EUT and Peripheral Devices





### 3.7 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Monitor	DELL	U2410	CN082WXD728720CC0HLL	DoC	Provided by Lab
B	Monitor	DELL	U2410	CN082WXD728720CC0KVL	DoC	Provided by Lab
C	Monitor	DELL	U2410	CN082WXD728720CC0LGL	DoC	Provided by Lab
D	KVM Adapter	N/A	N/A	N/A	N/A	Supplied by applicant
E	USB Keyboard	Dell	KB216t	CN-0W33XP-LO300-7CL-1903	N/A	Provided by Lab
F	PRINTER	HP	HP Officejet Pro 251dw	CN62OCV0JN	B94SDGOB1191	Provided by Lab
G	USB 3.1 SSD	Crucial	CT500X8SSD9	1941E3201117	N/A	Provided by Lab
H	USB 3.1 SSD	Crucial	CT500X8SSD9	1940E3200AD3	N/A	Provided by Lab
I	USB 3.1 SSD	Crucial	CT500X8SSD9	1942E32014B5	N/A	Provided by Lab
J	Microphone	E-books	E-EPB099	N/A	N/A	Provided by Lab
K	EARPHONE	PHILIPS	SBC HL150	H2010150	N/A	Provided by Lab
L	Terminal	N/A	N/A	N/A	N/A	Supplied by applicant
M	Terminal	N/A	N/A	N/A	N/A	Supplied by applicant
N	Terminal	N/A	N/A	N/A	N/A	Supplied by applicant
O	Terminal	N/A	N/A	N/A	N/A	Supplied by applicant
P	Laptop	LENOVO	T480	PF1EZSA2	N/A	Provided by Lab
Q	LAN CARD_10G_PCIE	ASUS	XG-C100C	N/A	DoC	Provided by Lab
R	PC	DELL	3010 SF	N/A	N/A	Provided by Lab
S	10G NETWORK SWITCH	NETGEAR	XS508M	52J22974D07E1	N/A	Provided by Lab
T	LAN CARD_10G_PCIE	ASUS	XG-C100C	N/A	DoC	Provided by Lab
U	Desktop PC	DELL	3010 SF	CHWQS02	N/A	Provided by Lab
V	POE LOAD	N/A	N/A	N/A	N/A	Supplied by applicant
W	SWITCH	TP-LINK	TL-SX105	N/A	DoC	Provided by Lab
X	LAN CARD_10G_PCIE	ASUS	XG-C100C	N/A	DoC	Provided by Lab
Y	PC	DELL	3010 SF	N/A	N/A	Provided by Lab
Z	USB Mouse	DELL	MOCZUL	CN-049TWY-PRC00-77B-0083	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	VGA cable	1	1.8	Yes	2	Provided by Lab
2	HDMI cable	2	2	Yes	0	Provided by Lab
3	USB cable	1	2	Yes	0	Supplied by applicant
4	USB cable	1	1.8	Yes	0	Provided by Lab
5	USB cable	1	1.8	Yes	0	Provided by Lab
6	USB cable	1	1.8	Yes	0	Provided by Lab
7	USB Type A to C cable	3	1	Yes	0	Provided by Lab
8	Audio cable	1	2	No	0	Provided by Lab
9	Audio cable	1	1.2	No	0	Provided by Lab
10	RJ45 (Cat. 5e) cable	1	10	Yes	0	Provided by Lab
11	RJ45 (Cat. 5e) cable	1	3	Yes	0	Provided by Lab
12	RJ45 (Cat. 5e) cable	4	2	Yes	0	Supplied by applicant
13	RJ45 (Cat. 5e) cable	4	10	Yes	0	Provided by Lab
14	AC power cable	1	1.8	No	0	Provided by Lab
15	Data cable	1	1.5	No	0	Provided by Lab
16	Data cable	1	1.5	No	0	Provided by Lab
17	RJ45 (Cat. 5e) cable	1	10	Yes	0	Provided by Lab
18	RJ45 (Cat. 5e) cable	4	2	Yes	0	Supplied by applicant
19	GND (PE) cable	1	1.5	No	0	Provided by Lab
20	RJ45 (Cat. 5e) cable	4	10	Yes	0	Provided by Lab
21	RJ45 (Cat. 5e) cable	4	3	Yes	0	Provided by Lab
22	RJ45 (Cat. 5e) cable	1	3	Yes	0	Provided by Lab

## 4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.1 Conducted Emissions from Power Ports

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance LYNICS	0900510	E1-011285	2023/9/21	2024/9/20
		E1-011286	2023/9/21	2024/9/20
50 ohm terminal resistance SUHNER	65BNC-5001	E1-010789	2023/6/16	2024/6/15
EMI Test Receiver R&S	ESCI	100412	2023/8/23	2024/8/22
	ESCS 30	100276	2023/4/20	2024/4/19
Fixed Attenuator STI	STI02-2200-10	NO.1	2023/9/13	2024/9/12
LISN R&S	ENV216	101196	2023/5/22	2024/5/21
		101197	2023/7/12	2024/7/11
LISN Schwarzbeck	NNLK 8121	8121-731	2023/6/9	2024/6/8
		8121-00759	2023/8/21	2024/8/20
		8121-808	2023/5/2	2024/5/1
	NNLK 8129	8129229	2023/6/27	2024/6/26
RF Coaxial Cable PEWC	5D-FB	Cable-CO10-01	2023/2/8	2024/2/7
Software BVADT	Cond_V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in Linkou Conduction 10.
2. The VCCI Site Registration No. C-11852.
3. Tested Date: 2023/12/12

## 4.2 Radiated Emissions up to 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-717	2023/10/16	2024/10/15
		9168-718	2023/10/16	2024/10/15
Coupling / Decoupling Network Schwarzbeck	CDNE-M2	00097	2023/5/25	2024/5/24
	CDNE-M3	00091	2023/5/25	2024/5/24
EMI Test Receiver R&S	ESR3	102983	2023/5/18	2024/5/17
		102984	2023/6/15	2024/6/14
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-CH8-01	2023/9/22	2024/9/21
		PAD-CH8-02	2023/9/22	2024/9/21
Preamplifier EMCI	EMC9135	980326	2023/2/16	2024/2/15
		980327	2023/2/16	2024/2/15
RF Coaxial Cable JYBAO	LMR-600	Cable-CH8-01	2023/9/22	2024/9/21
		Cable-CH8-02	2023/9/22	2024/9/21
RF Coaxial Cable Pacific	8D-FB	Cable-CH8-03	2023/9/22	2024/9/21
Software BVADT	Radiated_V8.7.08	N/A	N/A	N/A
Tower Max Full.	MF7802	MF780208105	N/A	N/A
Turn Table & Tower Max Full.	MF7802	MF7802121	N/A	N/A

Notes:

1. The test was performed in Linkou 10M Chamber (Chamber 8) , The test site validated date: 2023/8/26 (NSA)
2. The VCCI Site Registration No. R-12946.
3. Tested Date: 2023/12/12

### 4.3 Radiated Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	
Band Pass Filter Micro-Tronics	BRM17690	005	2023/5/25	2024/5/24	
Fix tool for Boresight antenna tower BV	BAF-01	4	N/A	N/A	
Fixed Attenuator Mini-Circuits	BW-K3-2W44+	PAD-CH7-03	2023/7/6	2024/7/5	
	BW-N4W5+	PAD-CH7-02	2023/7/6	2024/7/5	
Horn Antenna EMCO	3115	9312-4192	2023/11/12	2024/11/11	
Horn Antenna ETS-Lindgren	3117-PA	00215857	2023/11/12	2024/11/11	
Horn Antenna Schwarzbeck	BBHA-9170	BBHA9170190	2023/11/12	2024/11/11	
MXA Signal Analyzer Keysight	N9020B	MY60110438	2023/11/28	2024/11/27	
		MY60112260	2023/5/24	2024/5/23	
Notch Filter Micro-Tronics	BRC50703-01	010	2023/5/25	2024/5/24	
Preamplifier EMCI	EMC0126545	EMC184045B	980076	2023/2/16	2024/2/15
			980175	2023/9/2	2024/9/1
			980235	2023/2/16	2024/2/15
Preamplifier HP	8449B	3008A01292	2023/2/16	2024/2/15	
PSA Spectrum Analyzer Agilent	E4446A	MY51100009	2023/6/21	2024/6/20	
RF Coaxial Cable EMEC	EM102-KMKM	01	2023/7/6	2024/7/5	
RF Coaxial Cable HUBER+SUHNER	SF-102	Cable-CH7(3m)-02	2023/7/6	2024/7/5	
Software BVADT	Radiated_V8.7.08	N/A	N/A	N/A	
Turn Table & Tower Max Full	MF7802	MF780208103	N/A	N/A	

Notes:

1. The test was performed in Linkou 966 Chamber 2 (CH 7).
2. The VCCI Site Registration No. G-10039.
3. Tested Date: 2023/12/11

## 5 Limits of Test Items

### 5.1 Conducted Emissions from Power Ports

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 Radiated Emissions up to 1 GHz

Frequency range (MHz)	Class A (3 m) Quasi-peak dB $\mu$ V/m	Class A (10 m) Quasi-peak dB $\mu$ V/m	Class B (3 m) Quasi-peak dB $\mu$ V/m	Class B (10 m) Quasi-peak dB $\mu$ V/m
30-88	50.0	40.0	40.0	30.0
88-216	54.0	43.5	43.5	33.1
216-230	56.9	46.4	46.0	35.6
230-960	57.0	47.0	47.0	37.0
960-1000	60.0	49.5	54.0	43.5

Notes: 1. The lower limit shall apply at the transition frequencies.

### 5.3 Radiated Emissions above 1 GHz

Required highest measurement frequency

Highest internal frequency ( $F_x$ )	Highest measurement frequency ( $F_M$ ) (GHz)
$F_x \leq 108$ MHz	1
108 MHz < $F_x \leq 500$ MHz	2
500 MHz < $F_x \leq 1$ GHz	5
$F_x > 1$ GHz	5 x $F_x$ up to a maximum of 40 GHz

$F_x$  is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.

Radiated Emissions Limits at 3 meters (dB $\mu$ V/m)		
Frequency range (GHz)	Class A	Class B
1 - $F_M$	Avg: 60 Peak: 80	Avg: 54 Peak: 74

Notes: 1. These limit levels apply for a measurement distance of 3 m. If using a different measurement distance, the measured levels shall be extrapolated to the 3 m limit distance using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far field of the ITE or digital apparatus under test.

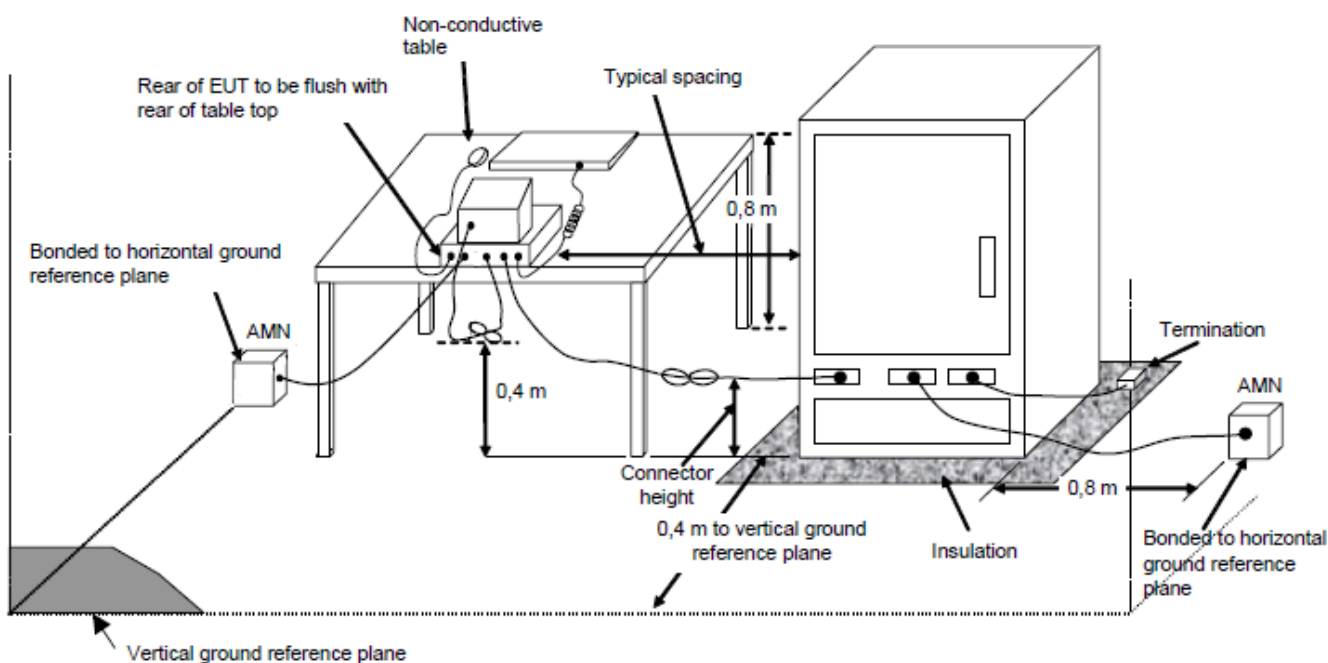
At and above 1 GHz, if the ITE or digital apparatus is an outdoor unit of home satellite receiving systems, it shall comply with the limits in Table A.7 in clause A.2 of CAN/CSA-CISPR 32:17 (in Annex A therein). For these types of ITE or digital apparatus, the highest measurement frequency shall be 18 GHz.

## 6 Test Arrangements

### 6.1 Conducted Emissions from Power Ports

- For the table-top EUT is placed on a 0.8 meter insulation table; for the floor standing EUT shall be insulated (by insulation of 12 mm) from the horizontal reference ground plane. The EUT is 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 are connected to the power mains through another LISN. They provide 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.

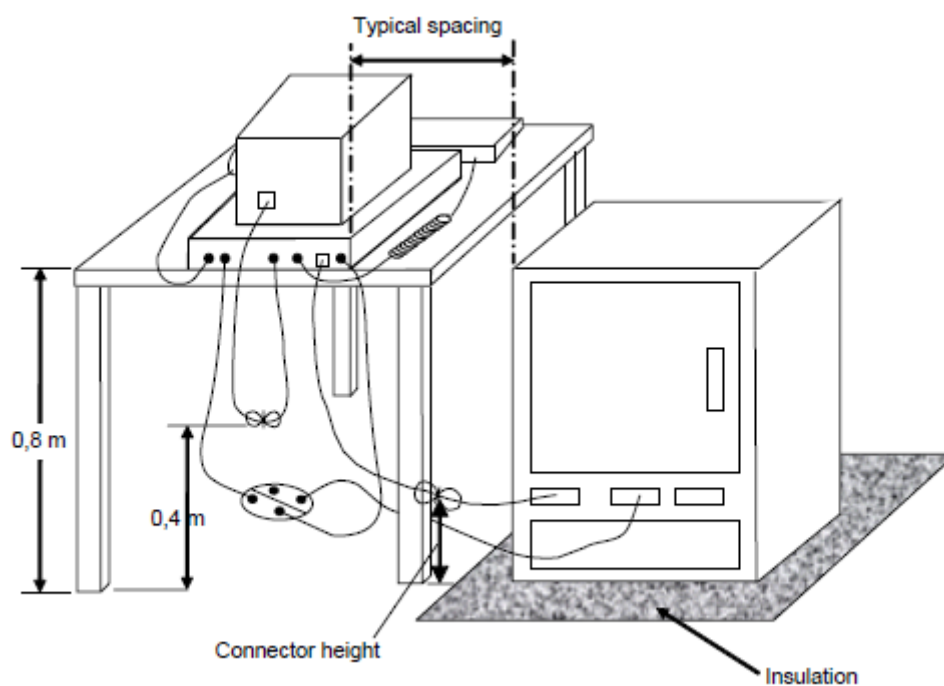


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

## 6.2 Radiated Emissions up to 1 GHz

- For the table-top EUT is placed on a 0.8 meter to the top of rotating table; for the floor standing EUT shall be insulated (by insulation of 12 mm) from the horizontal reference ground plane. The rotating table is rotated 360 degrees to determine the position of the highest radiation. If the equipment requires a dedicated ground connection, this shall be provided and bonded to the RGP.
- 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 up to 1 GHz.

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



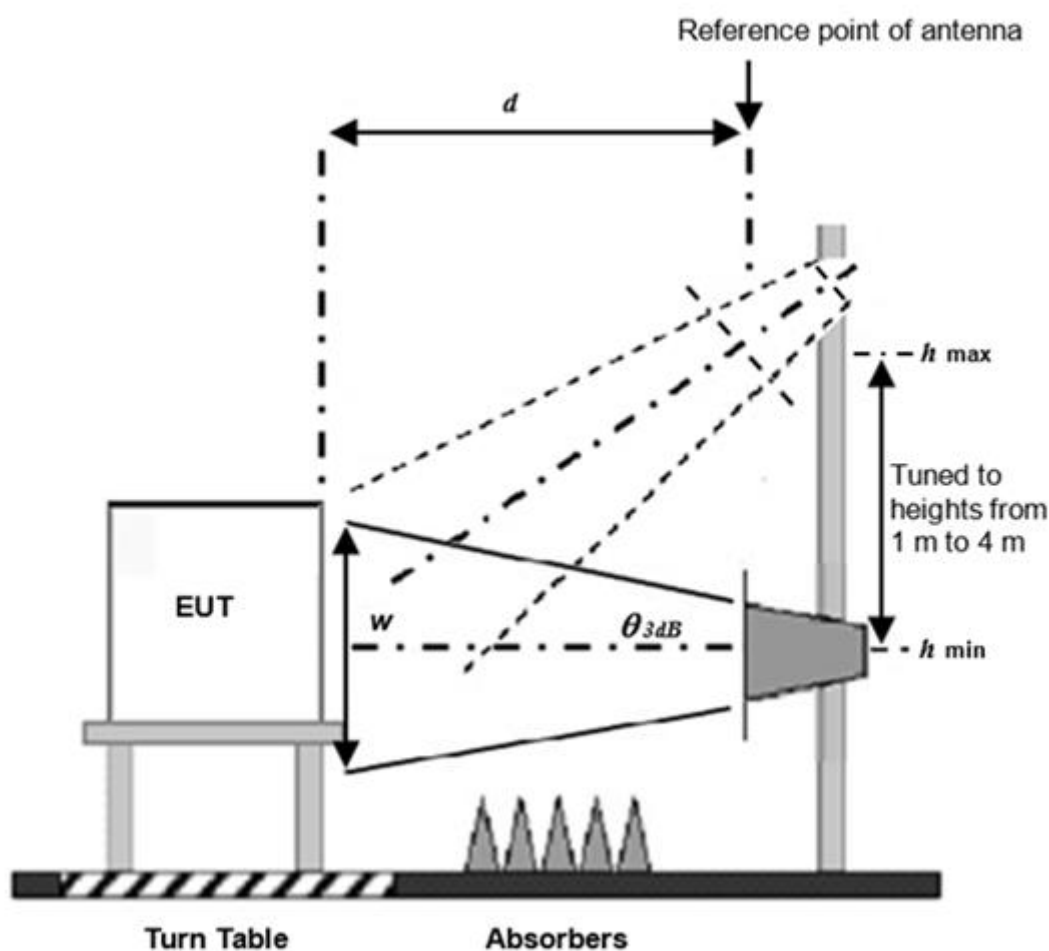
For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.



### 6.3 Radiated Emissions above 1 GHz

- For the table-top EUT is placed on a 0.8 meter to the top of rotating table; for the floor standing EUT shall be insulated (by insulation of 12 mm) from the horizontal reference ground plane. The rotating table is rotated 360 degrees to determine the position of the highest radiation. If the equipment requires a dedicated ground connection, this shall be provided and bonded to the RGP.
- The EUT was set  $d = 3$  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 detects 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.



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

## 7 Test Results of Test Item

### 7.1 Conducted Emissions from Power Ports

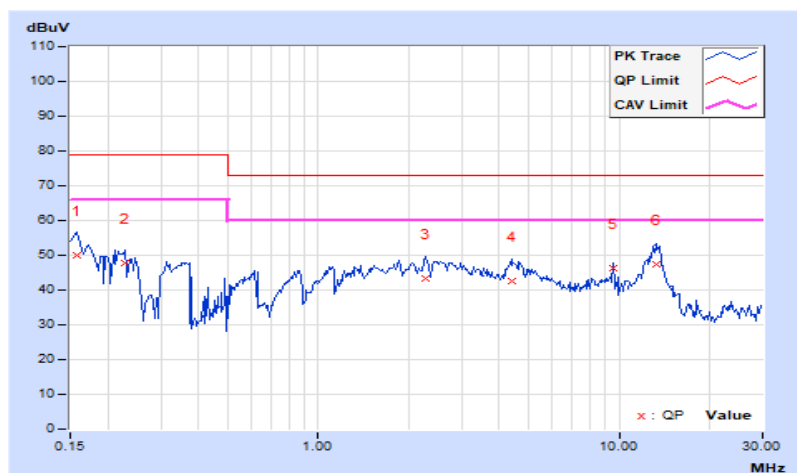
#### Mode A

Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21°C, 70% RH
Tested by	Adam Chen		

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	0.15781	9.98	39.92	36.37	49.90	46.35	79.00	66.00	-29.10	-19.65
2	0.22812	9.98	37.69	27.43	47.67	37.41	79.00	66.00	-31.33	-28.59
3	2.26953	10.09	33.37	20.60	43.46	30.69	73.00	60.00	-29.54	-29.31
4	4.42188	10.14	32.39	23.79	42.53	33.93	73.00	60.00	-30.47	-26.07
<b>5</b>	<b>9.51130</b>	<b>10.25</b>	<b>35.89</b>	<b>34.52</b>	<b>46.14</b>	<b>44.77</b>	<b>73.00</b>	<b>60.00</b>	<b>-26.86</b>	<b>-15.23</b>
6	13.32814	10.30	37.24	29.45	47.54	39.75	73.00	60.00	-25.46	-20.25

#### 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

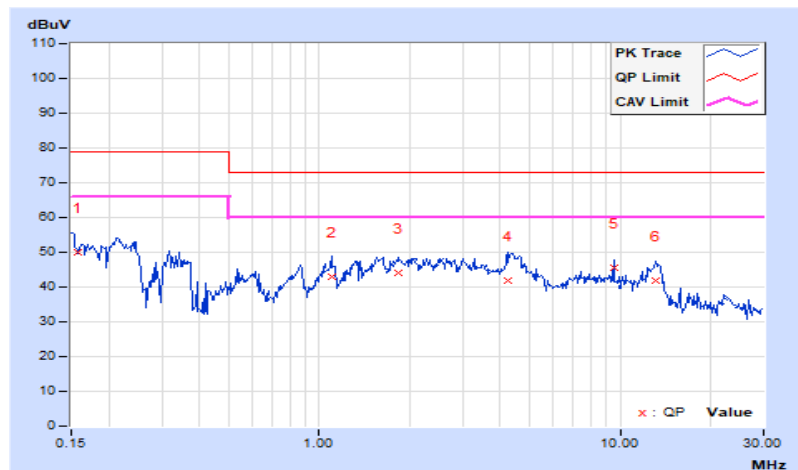


<b>Frequency Range</b>	150 kHz ~ 30 MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	21°C, 70% RH
<b>Tested by</b>	Adam Chen		

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	0.15763	9.98	39.98	36.45	49.96	46.43	79.00	66.00	-29.04	-19.57
2	1.09766	10.01	32.92	19.02	42.93	29.03	73.00	60.00	-30.07	-30.97
3	1.83203	10.07	33.94	19.79	44.01	29.86	73.00	60.00	-28.99	-30.14
4	4.24609	10.13	31.57	23.03	41.70	33.16	73.00	60.00	-31.30	-26.84
5	9.50399	10.24	35.49	33.18	45.73	43.42	73.00	60.00	-27.27	-16.58
6	13.14453	10.28	31.40	23.96	41.68	34.24	73.00	60.00	-31.32	-25.76

**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



## 7.2 Radiated Emissions up to 1 GHz

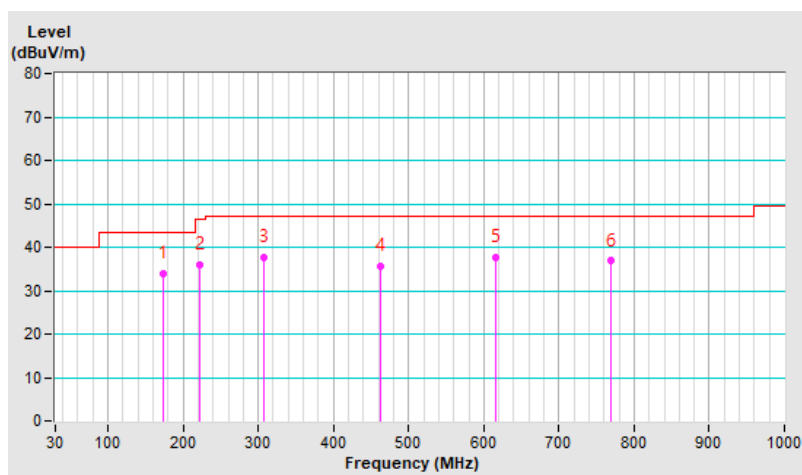
### Mode A

Frequency Range	30 MHz ~ 1 GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Kobe Lu		

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	174.24	34.02 QP	43.50	-9.48	3.11 H	59	50.80	-16.78
2	222.51	36.01 QP	46.40	-10.39	4.00 H	148	55.29	-19.28
3	307.97	37.76 QP	47.00	-9.24	2.95 H	300	52.81	-15.05
4	461.97	35.59 QP	47.00	-11.41	1.88 H	60	46.78	-11.19
5	615.98	37.74 QP	47.00	-9.26	1.00 H	38	45.36	-7.62
6	769.98	36.81 QP	47.00	-10.19	1.95 H	44	42.25	-5.44

#### 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. Margin value = Emission level – Limit value
4. The other emission levels were very low against the limit.

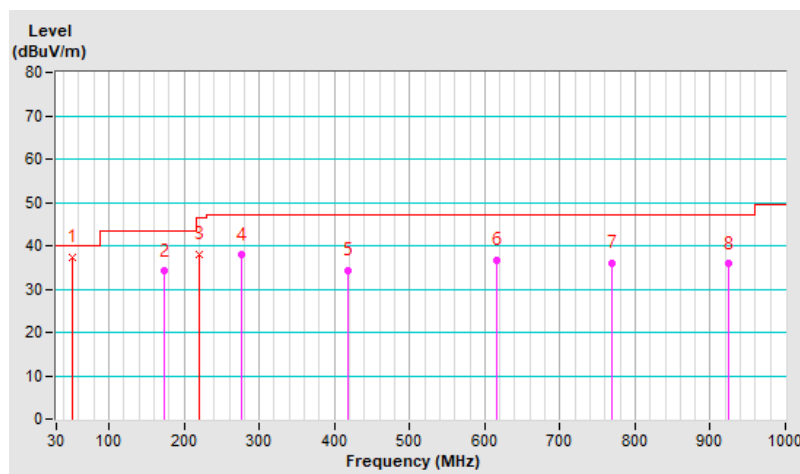


<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP), 120 kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25 °C, 75 % RH
<b>Tested By</b>	Kobe Lu		

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	51.33	37.35 QP	40.00	-2.65	1.83 V	216	54.78	-17.43
2	174.34	34.08 QP	43.50	-9.42	1.00 V	300	50.89	-16.81
3	220.63	38.11 QP	46.40	-8.29	1.00 V	314	57.30	-19.19
4	275.41	37.83 QP	47.00	-9.17	2.06 V	332	53.70	-15.87
5	418.55	34.24 QP	47.00	-12.76	3.95 V	122	46.63	-12.39
6	615.98	36.72 QP	47.00	-10.28	3.12 V	97	44.45	-7.73
7	769.98	36.08 QP	47.00	-10.92	2.88 V	102	41.53	-5.45
8	923.98	35.77 QP	47.00	-11.23	1.94 V	61	39.67	-3.90

**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. Margin value = Emission level – Limit value
4. The other emission levels were very low against the limit.



### 7.3 Radiated Emissions above 1 GHz

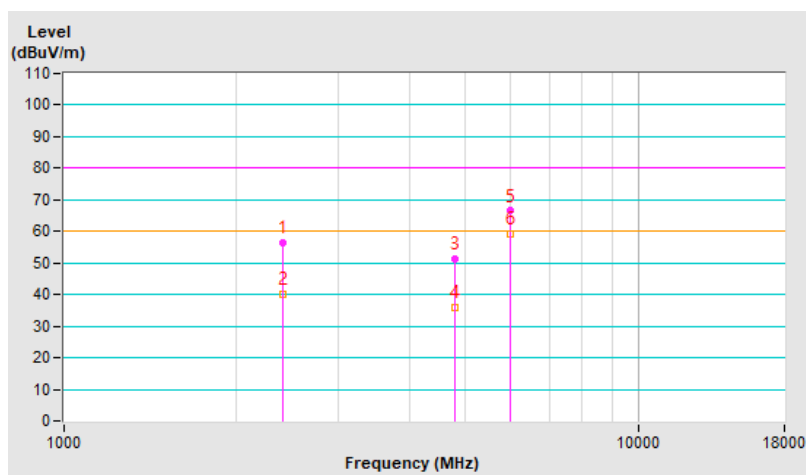
#### Mode A

Frequency Range	1 GHz ~ 7 GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Vincent Lin		

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	2398.89	56.52 PK	80.00	-23.48	1.06 H	290	58.11	-1.59
2	2398.89	40.31 AV	60.00	-19.69	1.06 H	290	41.90	-1.59
3	4800.47	51.20 PK	80.00	-28.80	1.53 H	34	47.28	3.92
4	4800.47	35.88 AV	60.00	-24.12	1.53 H	34	31.96	3.92
5	6000.02	66.53 PK	80.00	-13.47	2.60 H	193	61.11	5.42
<b>6</b>	<b>6000.02</b>	<b>59.32 AV</b>	<b>60.00</b>	<b>-0.68</b>	<b>2.60 H</b>	<b>193</b>	<b>53.90</b>	<b>5.42</b>

#### 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. Margin value = Emission level – Limit value
4. The other emission levels were very low against the limit.

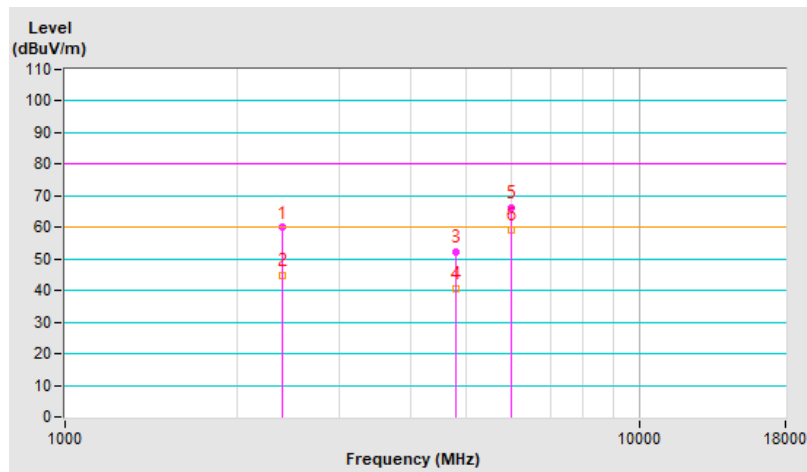


<b>Frequency Range</b>	1 GHz ~ 7 GHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Peak (PK) / Average (AV), 1MHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 75% RH
<b>Tested By</b>	Vincent Lin		

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	2396.74	60.02 PK	80.00	-19.98	1.05 V	223	61.62	-1.60
2	2396.74	44.68 AV	60.00	-15.32	1.05 V	223	46.28	-1.60
3	4800.16	52.32 PK	80.00	-27.68	2.69 V	0	48.40	3.92
4	4800.16	40.53 AV	60.00	-19.47	2.69 V	0	36.61	3.92
5	5999.99	66.15 PK	80.00	-13.85	2.59 V	174	60.73	5.42
6	5999.99	59.19 AV	60.00	-0.81	2.59 V	174	53.77	5.42

**Remarks:**

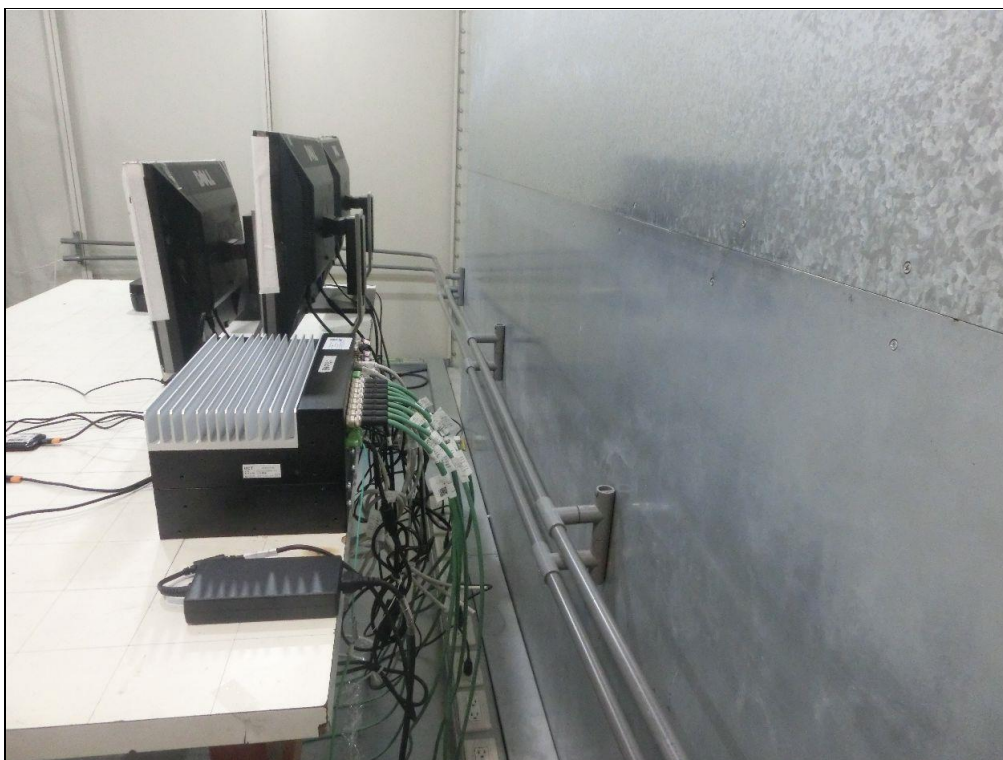
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. Margin value = Emission level – Limit value
4. The other emission levels were very low against the limit.



## 8 Pictures of Test Arrangements

### 8.1 Conducted Emissions from Power Ports

#### Mode A





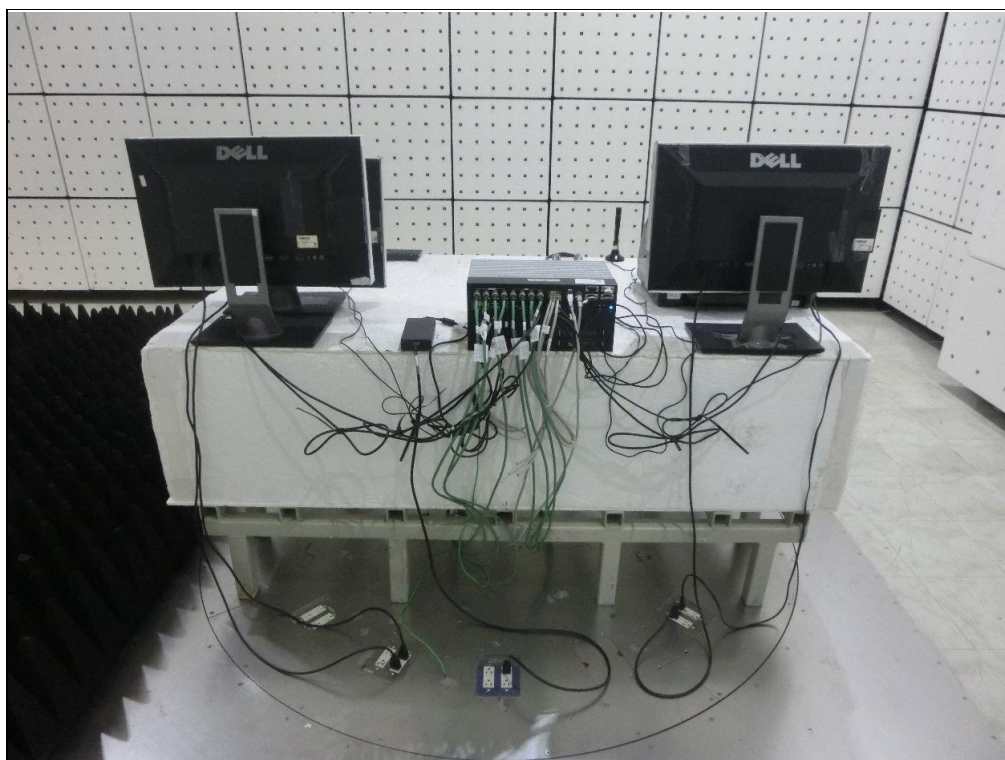
## 8.2 Radiated Emissions up to 1 GHz

### Mode A



### 8.3 Radiated Emissions above 1 GHz

#### Mode A



## 9 Information of 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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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