TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**ICES-003: 2020 Issue 7, Class A** **ICES-Gen: 2018 Issue 1 +A1:2021** **ANSI C63.4-2014 amended as per ANSI C63.4a-2017**
Report No.:	CIBDBO-WTW-P23070172
Product:	Compact Embedded Computing System
Brand:	Vecow
Model No.:	VCM-1100F
Series Model:	VCM-1000, VCM-1XXXXXXXXXXXXXXX ("X" can be 0-9, A-Z or blank for marketing purpose)
Received Date:	2023/7/10
Test Date:	2023/7/12 ~ 2023/7/15
Issued Date:	2023/8/10
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: Jim Hsiang , **Date:** 2023/8/10

Jim Hsiang / Associate Technical Manager

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Prepared by : Celia Chen / Supervisor

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Release Control Record

Issue No.	Description	Date Issued
CIBDBO-WTW-P23070172	Original release.	2023/8/10

1 Certificate

Product:	Compact Embedded Computing System
Brand:	Vecow
Test Model:	VCM-1100F
Series Model:	VCM-1000, VCM-1XXXXXXXXXXXXXX ("X" can be 0-9, A-Z or blank for marketing purpose)
Sample Status:	Engineering sample
Applicant:	Vecow Co., Ltd.
Test Date:	2023/7/12 ~ 2023/7/15
Standard:	ICES-003: 2020 Issue 7, Class A ICES-Gen: 2018 Issue 1 +A1:2021 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 -20.99 dB at 16.16590 MHz
ICES-003	Radiated Emissions up to 1 GHz	Pass	Minimum passing Class A margin is -0.34 dB at 616.00 MHz
ICES-003	Radiated Emissions above 1 GHz	Pass	Minimum passing Class A margin is -10.73 dB at 2617.97 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	2.94 dB	3.4 dB (U_{cispr})
Radiated Emissions up to 1 GHz	30 MHz ~ 1 GHz	3m : 5.72 dB 10m : 4.38 dB	6.3 dB (U_{cispr})
Radiated Emissions above 1 GHz	1 GHz ~ 6 GHz	4.42 dB	5.2 dB (U_{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	Compact Embedded Computing System
Brand	Vecow
Test Model	VCM-1100F
Series Model	VCM-1000, VCM-1XXXXXXXXXXXXXX (“X” can be 0-9, A-Z or blank for marketing purpose)
Model Difference	For marketing purpose
Sample Status	Engineering sample
Operating Software	Windows 10
Power Supply Rating	DC in 24V from adapter
Accessory Device	Adapter
Data Cable Supplied	N/A

Note: The EUT uses following accessory.

AC Adapter		
Brand	Model	Specification
LITEON	PA-1121-24	AC Input : 100-240Vac, 2.0A, 50-60Hz DC Output : 24V, 5.0A, 120W Power cable: Non-shielded AC 3 Pin (1.8m) Non-shielded DC (1.8m) with one ferrite core

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 1.1GHz, 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	Intel i7-13700TE 1.1GHz
RAM	Innodisk DDR5 4800 32GB*2
SSD	MEMXPRO ET30 128GB

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

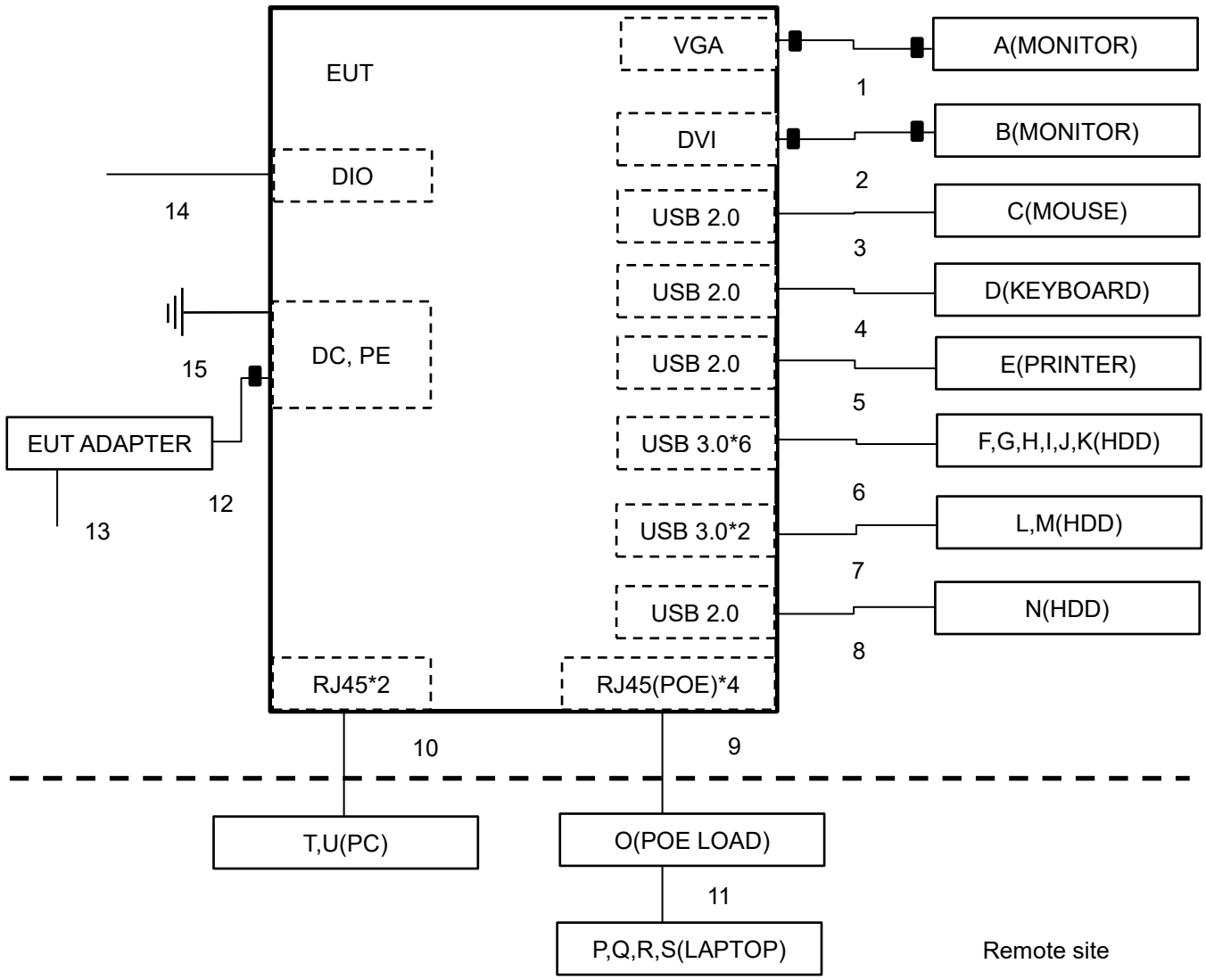
Test modes are presented in the report as below.

Test Condition	
Mode	Conducted Emissions from Power Ports
A	Full system,DVI+VGA:1920*1200,60Hz + Lan 1+Lan 2:1G link + Lan 3~Lan 6 with PoE load & link + Input Power(120 Vac, 60 Hz)
B	Full system,DVI+VGA:1920*1200,60Hz + Lan 1+Lan 2:1G link + Lan 3~Lan 6 with PoE load & link + Input Power(240 Vac, 60 Hz)
Mode	Radiated Emissions up to 1 GHz
A	Full system,DVI+VGA:1920*1200,60Hz + Lan 1+Lan 2:1G link + Lan 3~Lan 6 with PoE load & link + Input Power(120 Vac, 60 Hz)
Mode	Radiated Emissions above 1 GHz
A	Full system,DVI+VGA:1920*1200,60Hz + Lan 1+Lan 2:1G link + Lan 3~Lan 6 with PoE load & 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 to enable all functions.
c. EUT read and wrote messages to/ from internal storage drives, and external storage drives.
d. EUT sent “H” messages to monitor. Then they displayed messages on their screens simultaneously.
e. EUT sent “1kHz audio” signal out.
f. EUT sent and received messages to/ from PC (kept in a remote area) via STP cable.
g. EUT sent and received messages to/ from Laptop (kept in a remote area) via UTP/ STP cable with PoE load.
h. EUT sent messages to printer and printed them out.

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	CN082WXD728720CC0LGL	DoC	Provided by Lab
B	Monitor	DELL	U2410	CN082WXD728720CC0UHL	DoC	Provided by Lab
C	USB Mouse	DELL	MOCZUL	CN-049TWY-PRC00-77B-0083	N/A	Provided by Lab
D	USB Keyboard	Dell	KB216t	CN-0W33XP-LO300-7CL-191E	N/A	Provided by Lab
E	Printer	HP	HP Officejet Pro 251dW	N/A	B94SDGOB1191	Provided by Lab
F	USB 3.0 External Hard Disk	WD	WDBUZG0010BBK-PESN	WX61A45JR2YK	DoC	Provided by Lab
G	USB 3.0 External Hard Disk	WD	WDBUZG0010BBK-PESN	WXN1E84F21W	DoC	Provided by Lab
H	USB 3.0 External Hard Disk	WD	WDBUZG0010BBK-PESN	WXM1E1504NEE	DoC	Provided by Lab
I	USB 3.0 External Hard Disk	WD	WDBUZG0010BBK-PESN	WXN1E94A9S8X	DoC	Provided by Lab
J	USB 3.0 External Hard Disk	WD	WDBUZG0010BBK-PESN	WXN1E84F21W	DoC	Provided by Lab
K	USB 3.0 External Hard Disk	WD	WDBUZG0010BBK-PESN	WXN1E94A7N5R	DoC	Provided by Lab
L	USB-C Hard Disk	G-DRIVE	0G04878	620XJ6RW	DoC	Provided by Lab
M	USB-C Hard Disk	G-DRIVE	0G04878	620VL3BW	DoC	Provided by Lab
N	USB-C Hard Disk	G-DRIVE	0G04878	BN071T1E	DoC	Provided by Lab
O	SWITCH TEST LOAD 12 PORT	Delta	DL-G12ATRA-R	420CC000032	N/A	Provided by Lab
P	Laptop	LENOVO	T480	PF1EK03U	N/A	Provided by Lab
Q	Laptop	LENOVO	T480	PF1EZSA2	N/A	Provided by Lab
R	Laptop	LENOVO	T480	PF1EPGFH	N/A	Provided by Lab
S	Laptop	LENOVO	T480	PF1EPB9F	N/A	Provided by Lab
T	PC	HP	Elite Desk 800G4	4CE8451MG4	N/A	Provided by Lab
U	PC	HP	Elite Desk 800G4	4CE8451BL4	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	DVI cable	1	1.8	Yes	2	Provided by Lab
3	USB cable	1	1.8	Yes	0	Provided by Lab
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	6	1.2	Yes	0	Provided by Lab
7	USB cable	2	1	Yes	0	Provided by Lab
8	USB cable	1	1	Yes	0	Provided by Lab
9	RJ45 (Cat. 5e) cable	4	10	Yes	0	Provided by Lab
10	RJ45 (Cat. 5e) cable	2	10	Yes	0	Provided by Lab
11	RJ45 (Cat. 5e) cable	4	1	No	0	Provided by Lab
12	DC power cable	1	1.8	No	1	Supplied by applicant
13	AC power(3pin) cable	1	1.8	No	0	Supplied by applicant
14	DIO cable	5	1.4	No	0	Provided by Lab
15	GND cable	1	1.5	No	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	E1-01-299	2023/1/5	2024/1/4
		E1-011286	2022/9/19	2023/9/18
DC LISN R&S	ESH3-Z6	100219	2022/8/2	2023/8/1
		844950/018	2022/8/2	2023/8/1
EMI Test Receiver R&S	ESCS 30	100276	2023/4/20	2024/4/19
	ESR3	102414	2022/12/14	2023/12/13
Fixed Attenuator STI	STI02-2200-10	NO.2	2022/8/11	2023/8/10
Isolation Transformer Erika Fiedler	D-65396	017	2022/9/8	2023/9/7
LISN R&S	ESH2-Z5	100104	2022/12/15	2023/12/14
	ESH3-Z5	847265/023	2022/10/26	2023/10/25
LISN Schwarzbeck	NNLK 8121	8121-731	2023/6/9	2024/6/8
		8121-00759	2022/8/18	2023/8/17
		8121-808	2023/5/2	2024/5/1
	NNLK 8129	8129229	2023/6/27	2024/6/26
RF Coaxial Cable PEWC	5D-FB	Cable-CO9-01	2022/8/11	2023/8/10
Software BVADT	Cond_V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in Linkou Conduction 9.
2. The VCCI Site Registration No. C-11312.
3. Tested Date: 2023/7/15

4.2 Radiated Emissions up to 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
ADT. Tower	AT100	0205	N/A	N/A
ADT. Turn Table	TT100	0205	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-303	2022/10/25	2023/10/24
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	ESCS 30	100276	2023/4/20	2024/4/19
		100292	2022/8/30	2023/8/29
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-ST2-01	2022/10/21	2023/10/20
Preamplifier Agilent	8447D	2944A11062	2023/2/15	2024/2/14
Preamplifier EMCI	EMC9135	980711	2023/3/12	2024/3/11
Preamplifier HP	8447D	2944A08313	2023/2/15	2024/2/14
RF Coaxial Cable Pacific	8D-FB	Cable-ST2-01	2022/10/21	2023/10/20
Software BVADT	Radiated_V7.6.15.9.5	N/A	N/A	N/A

Notes:

1. The test was performed in Linkou Open Site2 , The test site validated date: 2022/7/16 (NSA)
2. The VCCI Site Registration No. R-10237.
3. Tested Date: 2023/7/12

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	9	N/A	N/A
Fixed Attenuator Mini-Circuits	BW-K3-2W44+	PAD-CH7-03	2023/7/6	2024/7/5
	BW-N4W5+	PAD-CH10-02	2023/7/6	2024/7/5
Horn Antenna EMCO	3115	6714	2022/11/13	2023/11/12
Horn Antenna ETS-Lindgren	3117-PA	00215857	2022/11/13	2023/11/12
Horn Antenna Schwarzbeck	BBHA 9170	212	2022/10/20	2023/10/19
MXA Signal Analyzer Keysight	N9020B	MY60110438	2022/12/6	2023/12/5
		MY60112260	2023/5/24	2024/5/23
Notch Filter Micro-Tronics	BRC50703-01	010	2023/5/25	2024/5/24
Preamplifier EMCI	EMC0126545	980076	2023/2/16	2024/2/15
	EMC184045B	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-3.5	EM102-KMKM-3.5-02	2022/9/27	2023/9/26
RF Coaxial Cable Woken	WC01	Cable-CH10-03	2023/7/6	2024/7/5
Software BVADT	Radiated_V8.7.08	N/A	N/A	N/A
Turn Table & Tower Max Full	MF7802	MF780208216	N/A	N/A

Notes:

1. The test was performed in Linkou 966 Chamber 3 (CH 10).
2. The VCCI Site Registration No. G-10427.
3. Tested Date: 2023/7/12

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 dBµV/m	Class A (10 m) Quasi-peak dBµV/m	Class B (3 m) Quasi-peak dBµV/m	Class B (10 m) Quasi-peak dBµV/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 (*FX*)	**Highest measurement frequency (*FM*)** (GHz)
FX *≤ 108 MHz*	1
108 MHz < ***FX*** ≤ 500 MHz	2
500 MHz < ***FX*** ≤ 1 GHz	5
FX *> 1 GHz*	5 x ***FX*** up to a maximum of 40 GHz
FX is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.	

Radiated Emissions Limits at 3 meters (dBµV/m)		
Frequency range (GHz)	Class A	Class B
1 –***FM***	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

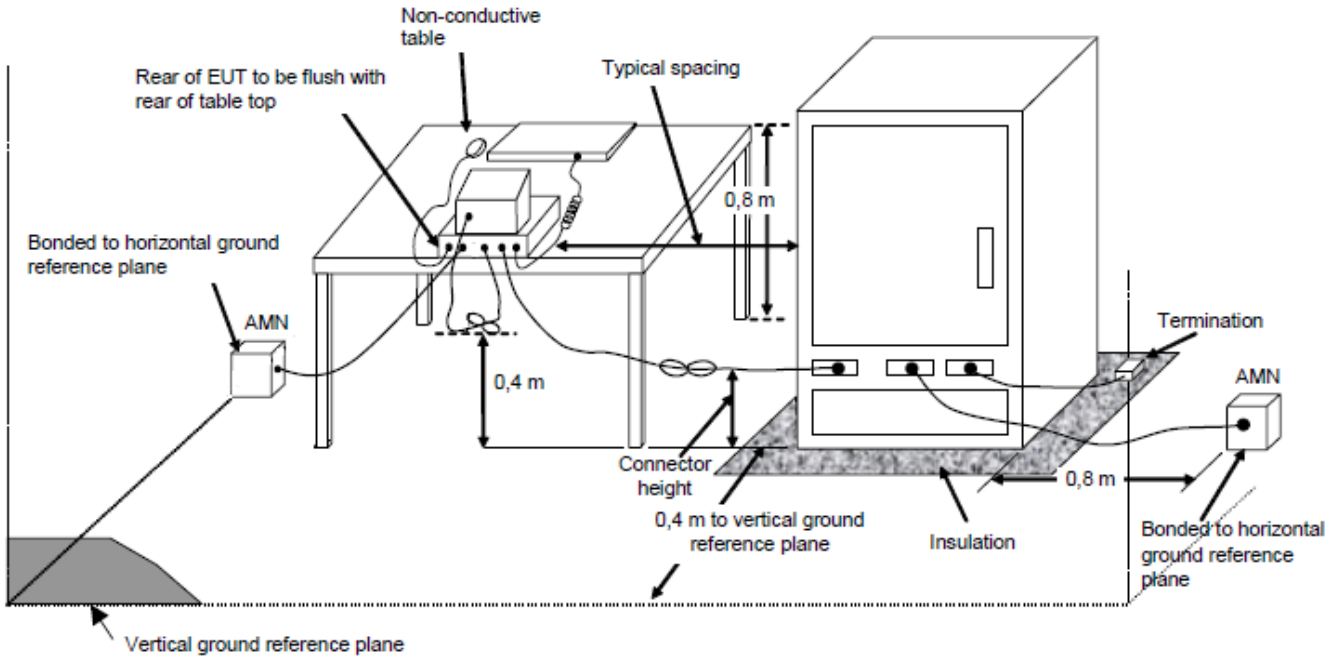
6.1 Conducted Emissions from Power Ports

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. 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.

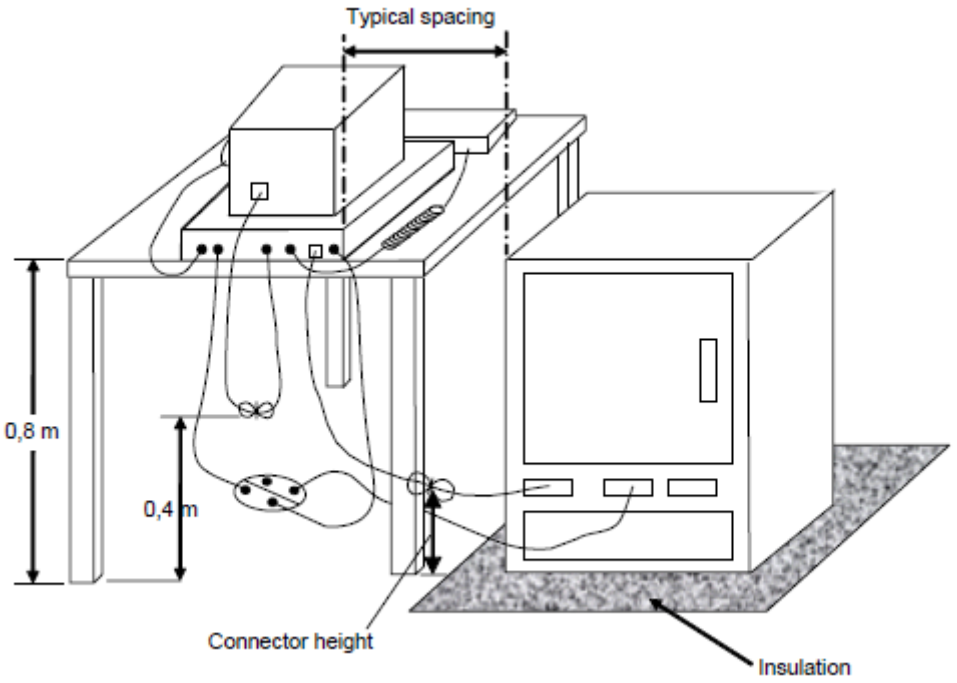


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

6.2 Radiated Emissions up to 1 GHz

a. 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.
b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. 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.
d. 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.
e. 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.

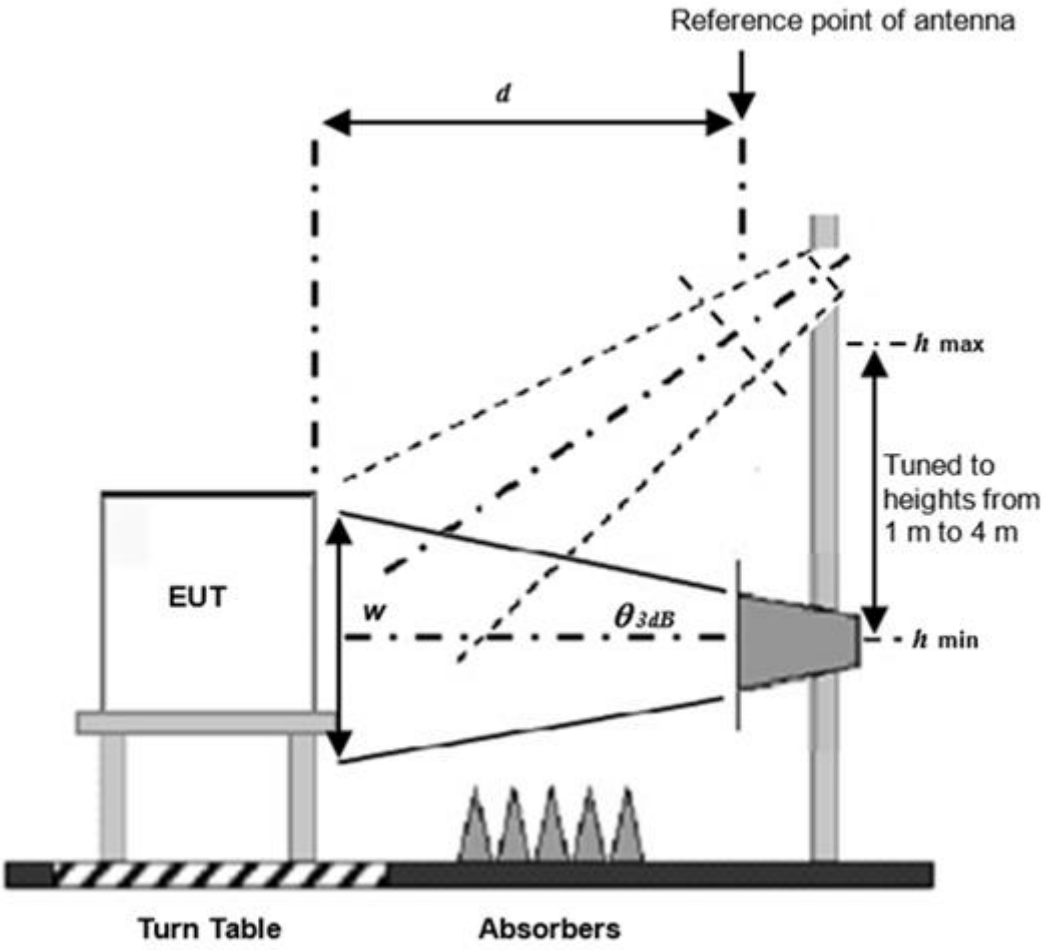


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

6.3 Radiated Emissions above 1 GHz

a. 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.
b. 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.
c. 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.
d. 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.
e. 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

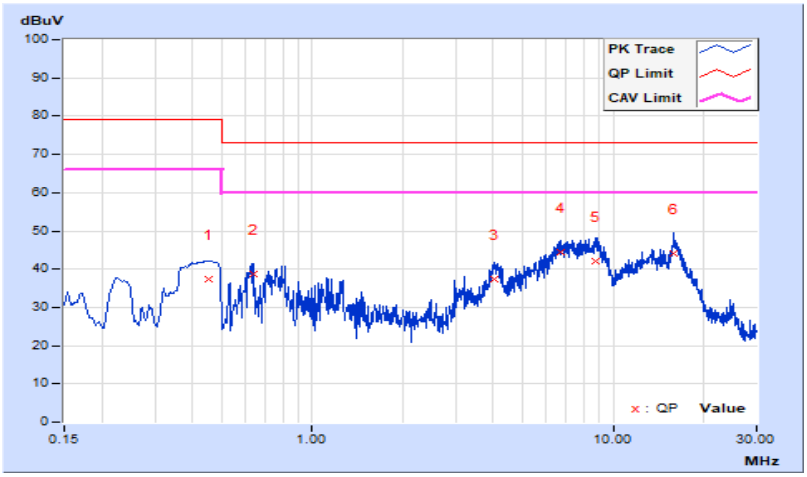
Mode A

Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 72% RH
Tested by	Chin-Wen Wang		

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	0.45337	9.95	27.55	11.37	37.50	21.32	79.00	66.00	-41.50	-44.68
2	0.64080	9.97	28.80	9.43	38.77	19.40	73.00	60.00	-34.23	-40.60
3	4.03788	10.20	27.19	21.33	37.39	31.53	73.00	60.00	-35.61	-28.47
4	6.73648	10.45	33.89	23.71	44.34	34.16	73.00	60.00	-28.66	-25.84
5	8.69198	10.63	31.40	21.16	42.03	31.79	73.00	60.00	-30.97	-28.21
6	15.93125	11.54	32.67	24.33	44.21	35.87	73.00	60.00	-28.79	-24.13

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

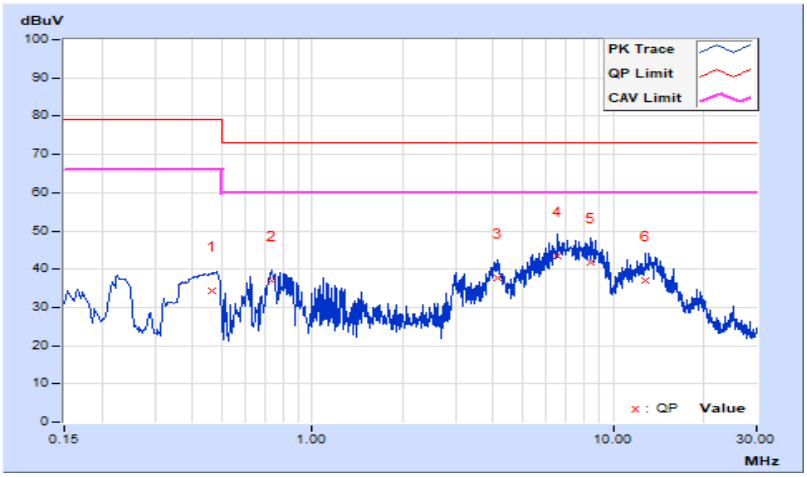


Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 72% RH
Tested by	Chin-Wen Wang		

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	0.46288	10.01	24.18	9.35	34.19	19.36	79.00	66.00	-44.81	-46.64
2	0.73817	10.03	26.92	11.51	36.95	21.54	73.00	60.00	-36.05	-38.46
3	4.15545	10.26	27.29	21.58	37.55	31.84	73.00	60.00	-35.45	-28.16
4	6.53702	10.46	32.86	23.06	43.32	33.52	73.00	60.00	-29.68	-26.48
5	8.44950	10.62	31.23	20.70	41.85	31.32	73.00	60.00	-31.15	-28.68
6	12.75942	11.10	26.01	16.66	37.11	27.76	73.00	60.00	-35.89	-32.24

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



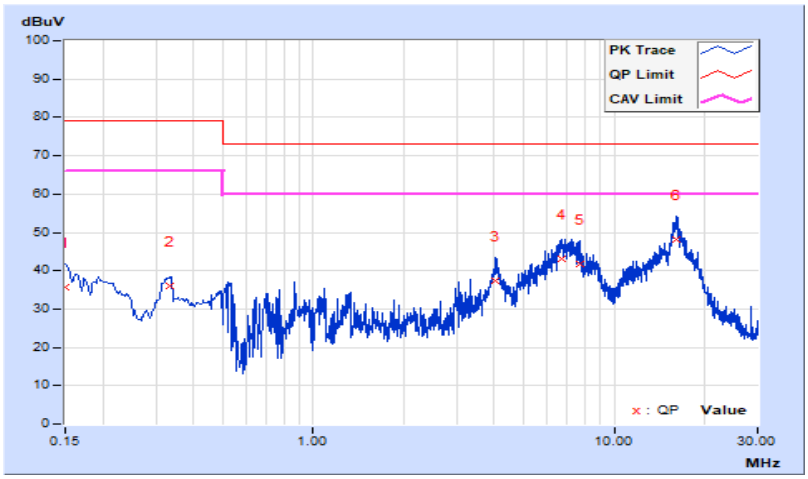
Mode B

Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	240 Vac, 60 Hz	**Environmental Conditions**	25°C, 72% RH
Tested by	Chin-Wen Wang		

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	0.15000	9.89	25.96	7.48	35.85	17.37	79.00	66.00	-43.15	-48.63
2	0.33397	9.93	26.16	10.87	36.09	20.80	79.00	66.00	-42.91	-45.20
3	4.02612	10.20	27.15	21.59	37.35	31.79	73.00	60.00	-35.65	-28.21
4	6.67391	10.45	32.70	22.61	43.15	33.06	73.00	60.00	-29.85	-26.94
5	7.65557	10.54	31.09	20.65	41.63	31.19	73.00	60.00	-31.37	-28.81
6	**16.16590**	**11.57**	**36.64**	**27.44**	**48.21**	**39.01**	**73.00**	**60.00**	**-24.79**	**-20.99**

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

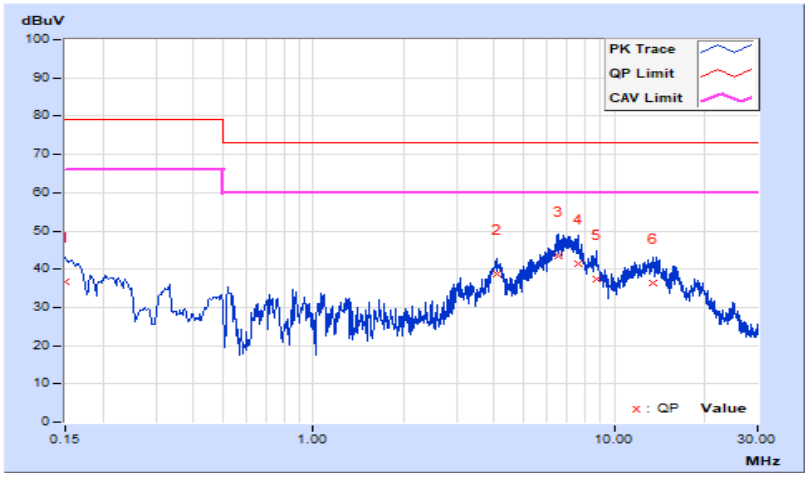


Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	240 Vac, 60 Hz	**Environmental Conditions**	25°C, 72% RH
Tested by	Chin-Wen Wang		

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	0.15000	9.96	26.65	7.32	36.61	17.28	79.00	66.00	-42.39	-48.72
2	4.07315	10.26	28.31	22.77	38.57	33.03	73.00	60.00	-34.43	-26.97
3	6.55658	10.46	32.85	23.26	43.31	33.72	73.00	60.00	-29.69	-26.28
4	7.58517	10.55	30.75	20.41	41.30	30.96	73.00	60.00	-31.70	-29.04
5	8.73500	10.64	26.88	17.88	37.52	28.52	73.00	60.00	-35.48	-31.48
6	13.47905	11.19	25.24	16.69	36.43	27.88	73.00	60.00	-36.57	-32.12

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

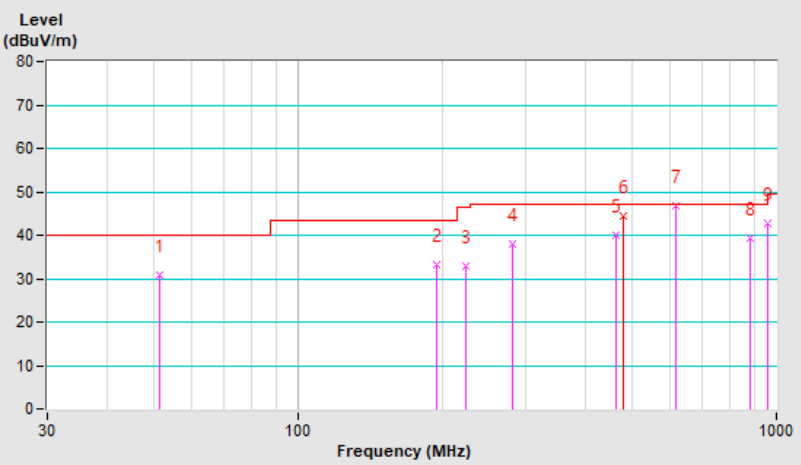
Mode A

Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP), 120 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	28°C, 62% RH
Tested By	Ed Lin		

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	51.60	30.86 QP	40.00	-9.14	4.00 H	0	39.32	-8.46
2	195.23	33.14 QP	43.50	-10.36	4.00 H	20	43.86	-10.72
3	225.12	32.77 QP	46.40	-13.63	4.00 H	20	43.19	-10.42
4	281.00	37.86 QP	47.00	-9.14	3.41 H	165	44.42	-6.56
5	462.25	40.09 QP	47.00	-6.91	1.85 H	20	42.26	-2.17
6	480.00	44.35 QP	47.00	-2.65	1.85 H	212	46.33	-1.98
7	**616.00**	**46.66 QP**	**47.00**	**-0.34**	**1.45 H**	**30**	**45.12**	**1.54**
8	880.00	39.45 QP	47.00	-7.55	1.13 H	0	32.21	7.24
9	960.25	42.85 QP	49.50	-6.65	1.00 H	198	33.99	8.86

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.

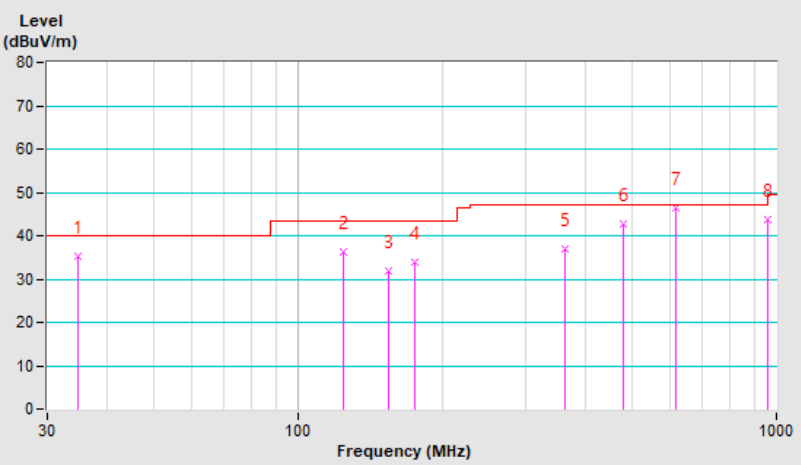


Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP), 120 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	28°C, 62% RH
Tested By	Ed Lin		

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	34.78	35.39 QP	40.00	-4.61	1.00 V	97	45.24	-9.85
2	125.00	36.37 QP	43.50	-7.13	1.00 V	174	46.20	-9.83
3	155.28	31.93 QP	43.50	-11.57	1.00 V	226	39.75	-7.82
4	175.10	34.04 QP	43.50	-9.46	1.00 V	287	42.63	-8.59
5	360.48	37.01 QP	47.00	-9.99	1.00 V	20	41.78	-4.77
6	480.25	42.62 QP	47.00	-4.38	1.00 V	31	44.60	-1.98
7	616.00	46.37 QP	47.00	-0.63	2.01 V	117	44.83	1.54
8	960.25	43.62 QP	49.50	-5.88	1.60 V	284	34.76	8.86

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

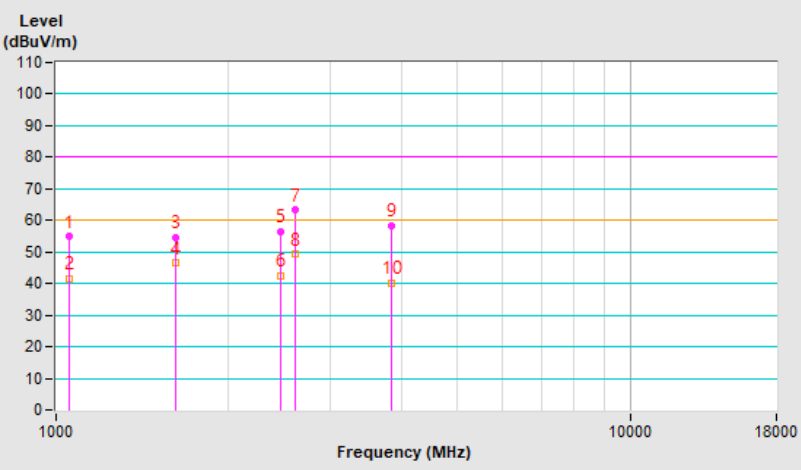
Mode A

Frequency Range	1 GHz ~ 5.5 GHz	**Detector Function & Resolution Bandwidth**	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	27°C, 67% RH
Tested By	Abraham Sun		

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	1056.92	54.80 PK	80.00	-25.20	1.84 H	233	59.79	-4.99
2	1056.92	41.64 AV	60.00	-18.36	1.84 H	233	46.63	-4.99
3	1616.94	54.52 PK	80.00	-25.48	1.02 H	146	56.96	-2.44
4	1616.94	46.42 AV	60.00	-13.58	1.02 H	146	48.86	-2.44
5	2463.19	56.47 PK	80.00	-23.53	1.35 H	326	56.07	0.40
6	2463.19	42.53 AV	60.00	-17.47	1.35 H	326	42.13	0.40
7	2617.97	63.26 PK	80.00	-16.74	2.05 H	136	62.28	0.98
8	**2617.97**	**49.27 AV**	**60.00**	**-10.73**	**2.05 H**	**136**	**48.29**	**0.98**
9	3849.59	58.31 PK	80.00	-21.69	1.93 H	111	52.38	5.93
10	3849.59	40.04 AV	60.00	-19.96	1.93 H	111	34.11	5.93

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.

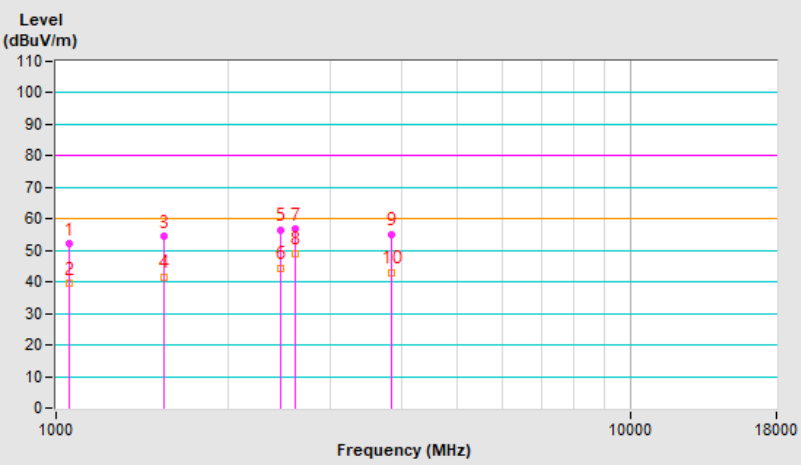


Frequency Range	1 GHz ~ 5.5 GHz	**Detector Function & Resolution Bandwidth**	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	27°C, 67% RH
Tested By	Abraham Sun		

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	1056.04	52.00 PK	80.00	-28.00	1.14 V	192	56.99	-4.99
2	1056.04	39.39 AV	60.00	-20.61	1.14 V	192	44.38	-4.99
3	1539.93	54.36 PK	80.00	-25.64	1.32 V	3	57.15	-2.79
4	1539.93	41.60 AV	60.00	-18.40	1.32 V	3	44.39	-2.79
5	2463.90	56.55 PK	80.00	-23.45	1.74 V	150	56.15	0.40
6	2463.90	44.27 AV	60.00	-15.73	1.74 V	150	43.87	0.40
7	2617.96	56.74 PK	80.00	-23.26	1.52 V	126	55.76	0.98
8	2617.96	49.15 AV	60.00	-10.85	1.52 V	126	48.17	0.98
9	3851.67	54.94 PK	80.00	-25.06	2.00 V	232	49.01	5.93
10	3851.67	42.93 AV	60.00	-17.07	2.00 V	232	37.00	5.93

Remarks:

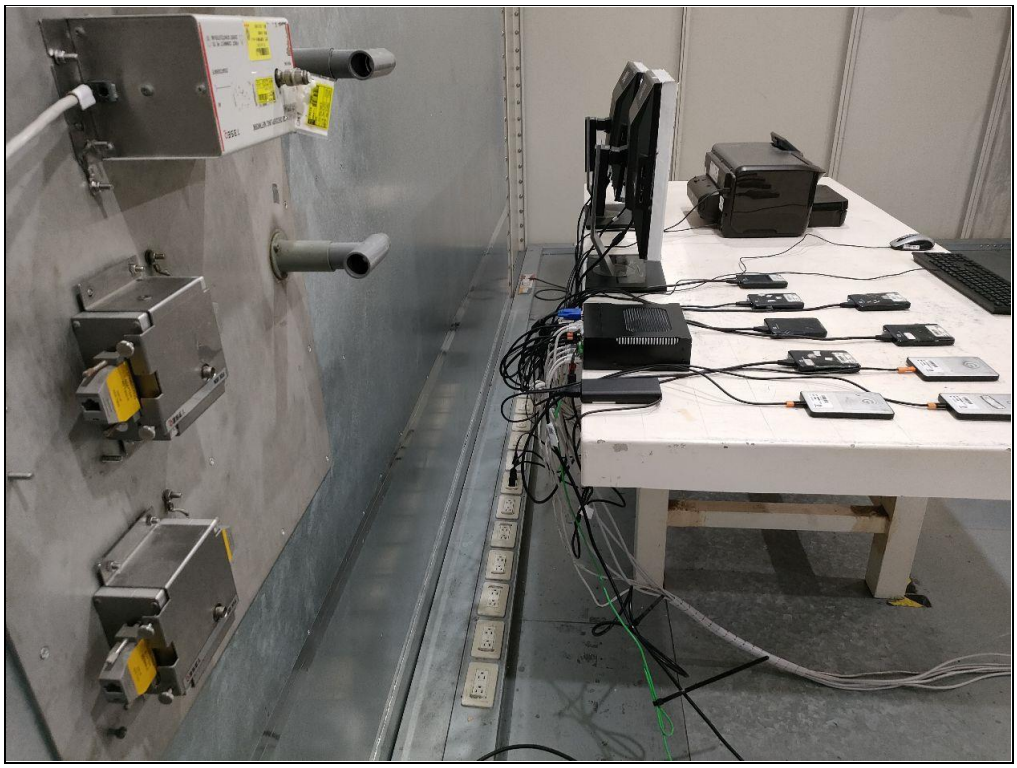
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Pre-Amplifier Factor (dB)
3. Margin value = Emission level – Limit value
4. The other emission levels were very low against the limit.



8 Pictures of Test Arrangements

8.1 Conducted Emissions from Power Ports

Mode A and B

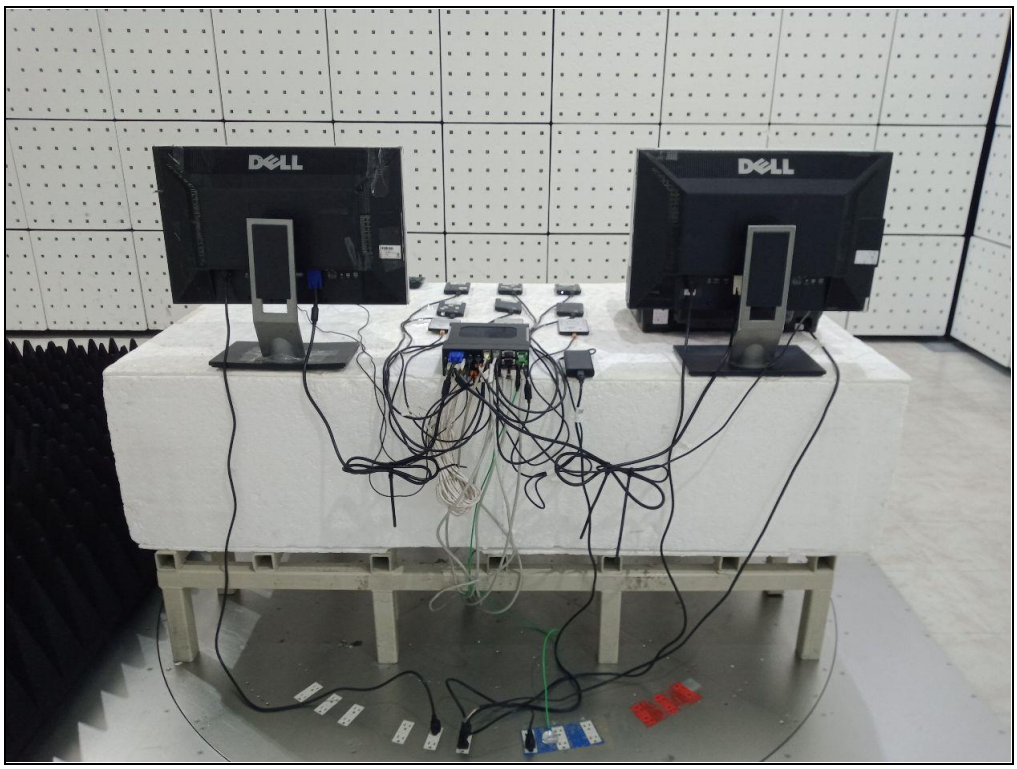


8.2 Radiated Emissions up to 1 GHz

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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