

# TEST REPORT

## CERTIFICATE OF CONFORMITY

**Standard:** 47 CFR FCC Part 15, Subpart B, Class A  
ANSI C63.4-2014  
ANSI C63.4a-2017

**Report No.:** FDBDBO-WTW-P24050433

**Product:** QEC

**Brand:** ICOP Technology Inc.

**Model No.:** QEC-M-150T

**Series Model:** QEC-M-150TXXX (X=0~9, A~Z, (,), /, - or Blank)

**Received Date:** 2024/5/16

**Test Date:** 2024/5/28 ~ 2024/5/29

**Issued Date:** 2024/6/24

**Applicant:** ICOP TECHNOLOGY INC.

**Address:** NO.15, Wugong 5th Rd., Xinzhuang Dist., New Taipei City 24890, Taiwan (R.O.C.)

**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

**FCC Registration /**  
**Designation Number:** 418586 / TW1078

Approved by:

  
Jim Hsiang / Associate Technical Manager

, Date: 2024/6/24

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Prepared by : Ivy Lin / Specialist



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## Release Control Record

Issue No.	Description	Date Issued
FDBDBO-WTW-P24050433	Original release.	2024/6/24

## 1 Certificate

**Product:** QEC

**Brand:** ICOP Technology Inc.

**Test Model:** QEC-M-150T

**Series Model:** QEC-M-150TXXX (X=0~9, A~Z, (,), /, - or Blank)

**Sample Status:** Engineering sample

**Applicant:** ICOP TECHNOLOGY INC.

**Test Date:** 2024/5/28 ~ 2024/5/29

**Standard:** 47 CFR FCC Part 15, Subpart B, Class A  
ANSI C63.4–2014  
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 / Clause	Test Item	Result	Remark
FCC Part 15.107	Conducted Emissions from Power Ports	Pass	Minimum passing Class A margin is -9.16 dB at 0.19603 MHz
FCC Part 15.109	Radiated Emissions up to 1 GHz	Pass	Minimum passing Class A margin is -0.77 dB at 480.01 MHz
FCC Part 15.109	Radiated Emissions above 1 GHz	Pass	Minimum passing Class A margin is -17.25 dB at 1920.00 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	2.9 dB	3.4 dB ( $U_{\text{CISPR}}$ )
Radiated Emissions up to 1 GHz	30 MHz ~ 1 GHz	3m : 5.44 dB 10m : 4.00 dB	6.3 dB ( $U_{\text{CISPR}}$ )
Radiated Emissions above 1 GHz	1 GHz ~ 6 GHz	4.44 dB	5.2 dB ( $U_{\text{CISPR}}$ )
	6 GHz ~ 18 GHz	4.66 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	QEC
Brand	ICOP Technology Inc.
Test Model	QEC-M-150T
Series Model	QEC-M-150TXXX (X=0~9, A~Z, (,), /, - or Blank)
Sample Status	Engineering sample
Power Supply Rating	24Vdc

#### 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 533 MHz, provided by ICOP TECHNOLOGY INC., 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 ICOP TECHNOLOGY INC., 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 for test:

Components	Brand	Model	Specification
LCD Panel	IVO	M150GWX3 R0	15" 1024 x 768 TFT
Processor	DM&P	Vortex86EX2	Master 533MHz
Memory	Micron	MT41K256M16TW-107 IT:P	512MB/1GB DDRIII
Storage	MXIC	MX25L25645GM2I-08G & MX52LM02B11XUI	32MB SPI Flash/ 2GB SLC eMMC

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

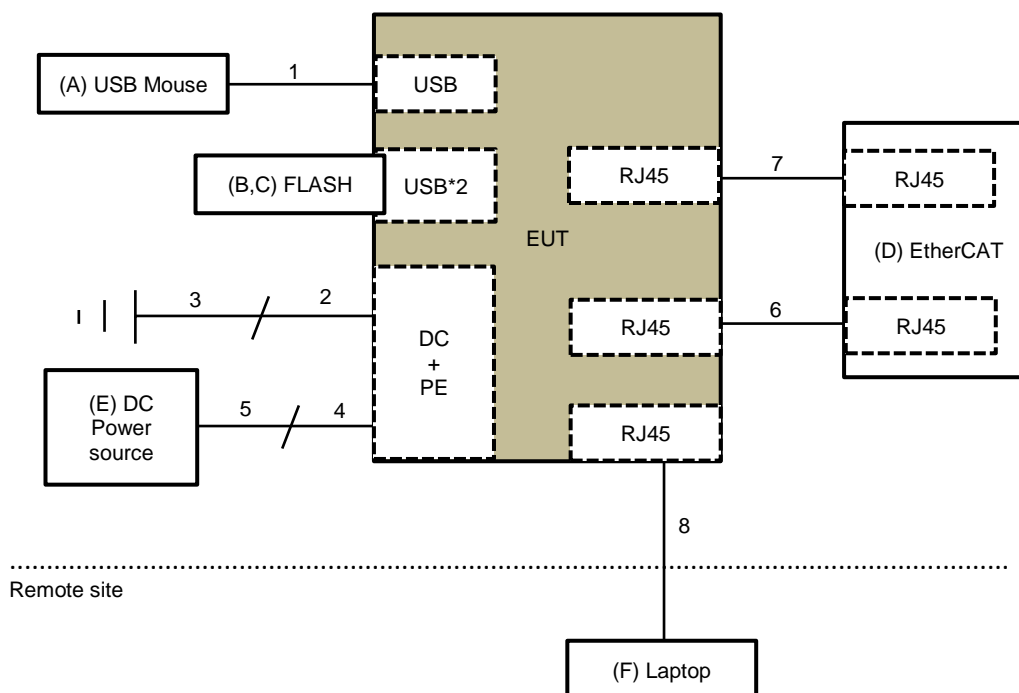
Test modes are presented in the report as below.

Test Condition	
Mode	Conducted Emissions from Power Ports
A	Resolution 1024*768,USB R/W,Lan link + Input Power(24 Vdc)
Mode	Radiated Emissions up to 1 GHz
A	Resolution 1024*768,USB R/W,Lan link + Input Power(24 Vdc)
Mode	Radiated Emissions above 1 GHz
A	Resolution 1024*768,USB R/W,Lan link + Input Power(24 Vdc)

### 3.5 Test Program Used and Operation Descriptions

- Turned on the power of all equipment.
- EUT ran a test program to enable all functions.
- EUT read and wrote messages to/ from Flash devices.
- Laptop (kept in a remote area) sent and received messages to/ from EUT via LAN cable.
- EUT sent and received messages to/ from EtherCAT.
- EUT sent (H) messages to panel. Then the displayed messages on their screens simultaneously.
- Steps c-f 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	USB Mouse	DELL	MOCZUL	CN-049TWY- PRC00-77B-007R	N/A	Provided by Lab
B	FLASH	TRANSCEND	TS64GJF340	N/A	N/A	Supplied by applicant
C	FLASH	TRANSCEND	TS64GJF340	N/A	N/A	Supplied by applicant
D	EtherCAT	QEC	QEC-R11D88D-C	N/A	N/A	Supplied by applicant
E	DC Power source	HILA	DP-6010	2216AP041904059	N/A	Provided by Lab
F	Laptop	LENOVO	T480	PF1EK03U	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB	1	1.8	Y	0	Provided by Lab
2	GND (PE)	1	0.3	N	0	Supplied by applicant
3	GND (PE)	1	1.8	N	0	Provided by Lab
4	Power	1	0.3	N	0	Supplied by applicant
5	Power	1	1.8	N	0	Provided by Lab
6	Cat. 5e	1	0.8	N	0	Supplied by applicant
7	Cat. 5e	1	0.8	N	0	Supplied by applicant
8	Cat. 5e	1	10	N	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	E1-01-305	2024/2/6	2025/2/5
		E1-011285	2023/9/21	2024/9/20
		E1-011286	2023/9/21	2024/9/20
Coupling / Decoupling Network TESEQ	CDN A201A	44601	2023/12/14	2024/12/13
EMI Test Receiver R&S	ESCS 30	100276	2024/4/24	2025/4/23
	ESR3	102413	2024/1/29	2025/1/28
Fixed Attenuator EMEC	EM-ATT30002602NN	N/A	2024/3/22	2025/3/21
Fixed Attenuator STI	STI02-2200-10	NO.3	2023/10/20	2024/10/19
High Voltage Probe Schwarzbeck	TK9420	00982	2023/12/11	2024/12/10
LISN R&S	ENV216	101196	2024/5/22	2025/5/21
		101197	2023/7/12	2024/7/11
	ESH3-Z5	100220	2023/11/22	2024/11/21
LISN Schwarzbeck	NNLK 8121	8121-731	2023/6/9	2024/6/8
		8121-00759	2023/8/21	2024/8/20
	NNLK 8129	8129229	2023/6/27	2024/6/26
RF Coaxial Cable PEWC	5D-FB	Cable-CO3-01	2023/9/13	2024/9/12
Software BVADT	Cond_V7.4.1.0	N/A	N/A	N/A

#### Notes:

1. The test was performed in Linkou Conduction 3.
2. The VCCI Site Registration No. C-10274.
3. Tested Date: 2024/5/29

## 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	2023/10/17	2024/10/16
EMI Test Receiver R&S	ESCS 30	100276	2024/4/24	2025/4/23
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-ST2-01	2023/10/20	2024/10/19
Preamplifier Agilent	8447D	2944A11062	2024/2/7	2025/2/6
RF Coaxial Cable Pacific	8D-FB	Cable-ST2-01	2023/11/7	2024/11/6
Software BVADT	Radiated_V8.8.09	N/A	N/A	N/A

### Notes:

1. The test was performed in Linkou Open Site 2. The test site validated date: 2023/7/15 (NSA).
2. The VCCI Site Registration No. R-10237.
3. Tested Date: 2024/5/28

#### 4.3 Radiated Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
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	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	MY60112260	2024/5/29	2025/5/28
Notch Filter Micro-Tronics	BRC50703-01	010	2024/5/24	2025/5/23
	BRM17690	005	2024/5/24	2025/5/23
Preamplifier EMCI	EMC0126545	980076	2024/2/15	2025/2/14
Preamplifier EMCI	EMC184045B	980235	2024/2/15	2025/2/14
Preamplifier HP	8449B	3008A01292	2024/2/15	2025/2/14
PSA Spectrum Analyzer Agilent	E4446A	MY51100009	2023/6/21	2024/6/20
RF Coaxial Cable EMCI	EMC102-KM-KM-1000	200310	2024/3/11	2025/3/10
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	200312	2024/3/11	2025/3/10
Software BVADT	Radiated_V8.8.09	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: 2024/5/29

## 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

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

Radiated Emissions Limits at 10 meters (dBµV/m)				
Frequencies (MHz)	FCC 15B, Class A	FCC 15B, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	39.1	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960				
960-1000	49.5	43.5	47	37

Radiated Emissions Limits at 3 meters (dBμV/m)				
Frequencies (MHz)	FCC 15B, Class A	FCC 15B, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	49.5	40.0	50.5	40.5
88-216	54.0	43.5		
216-230	56.9	46.0		
230-960				
960-1000	60.0	54.0	57.5	47.5

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

### 5.3 Radiated Emissions above 1 GHz

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

Radiated Emissions Limits at 3 meters (dBuV/m)		
Frequency range	Class A	Class B
Above 1GHz	Avg: 60 Peak: 80	Avg: 54 Peak: 74

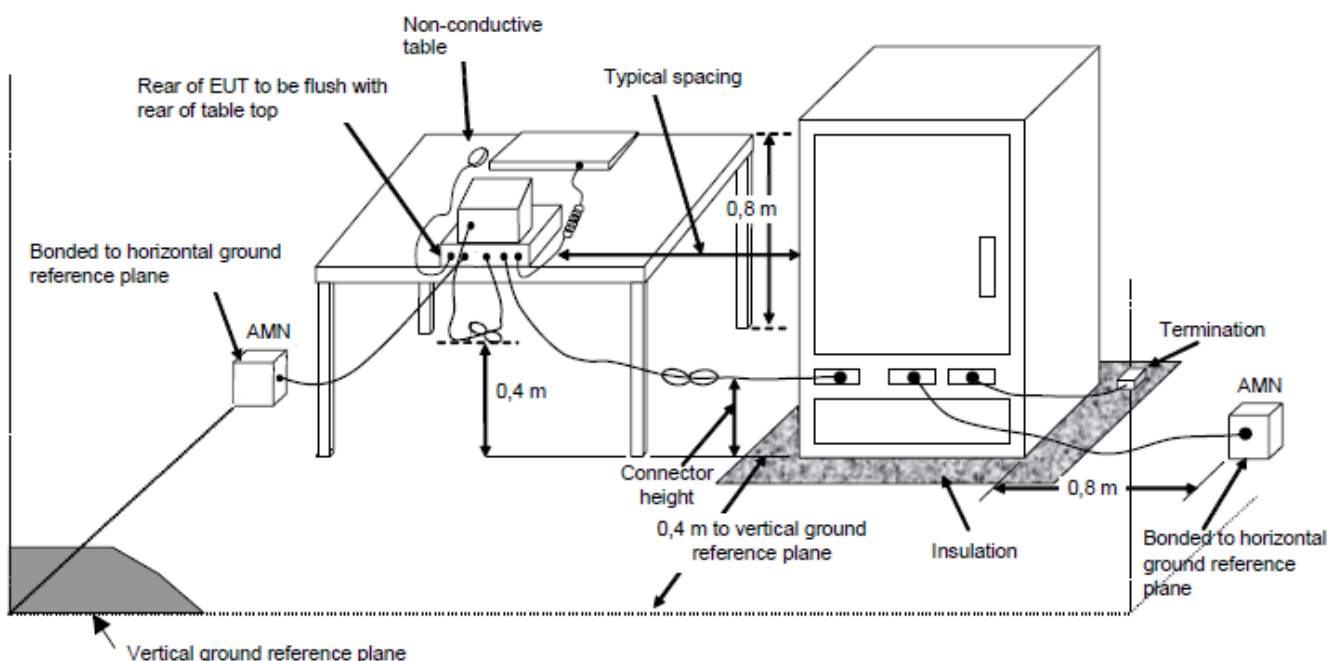
Notes: 1. These limit levels apply for a measurement distance of 3 m. If using a different measurement distance, the measured levels shall be extrapolated to the 3 m limit distance using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far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

## 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.

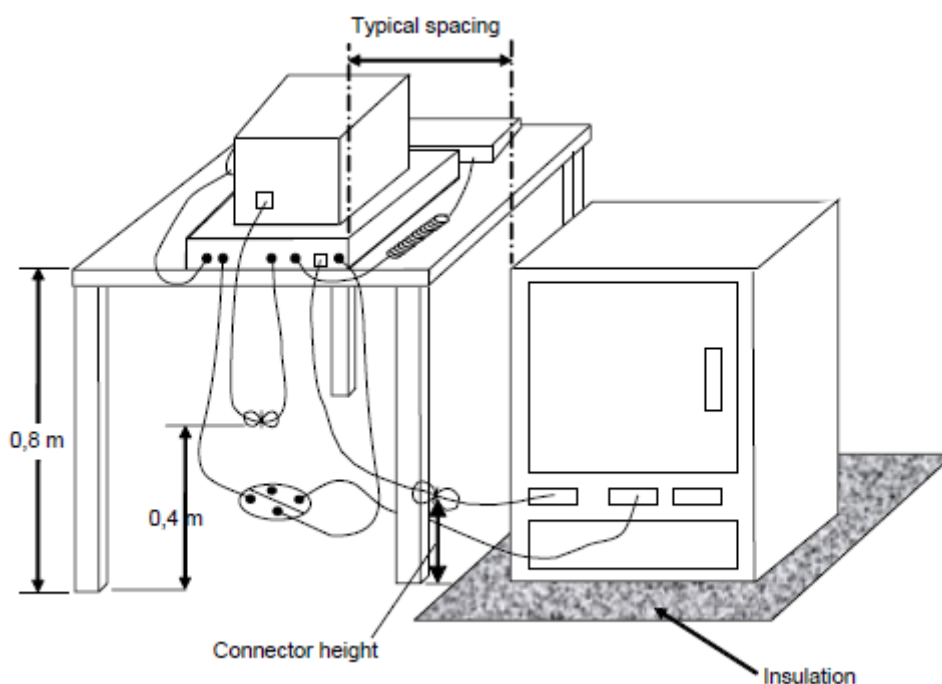


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

## 6.2 Radiated Emissions up to 1 GHz

- 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.

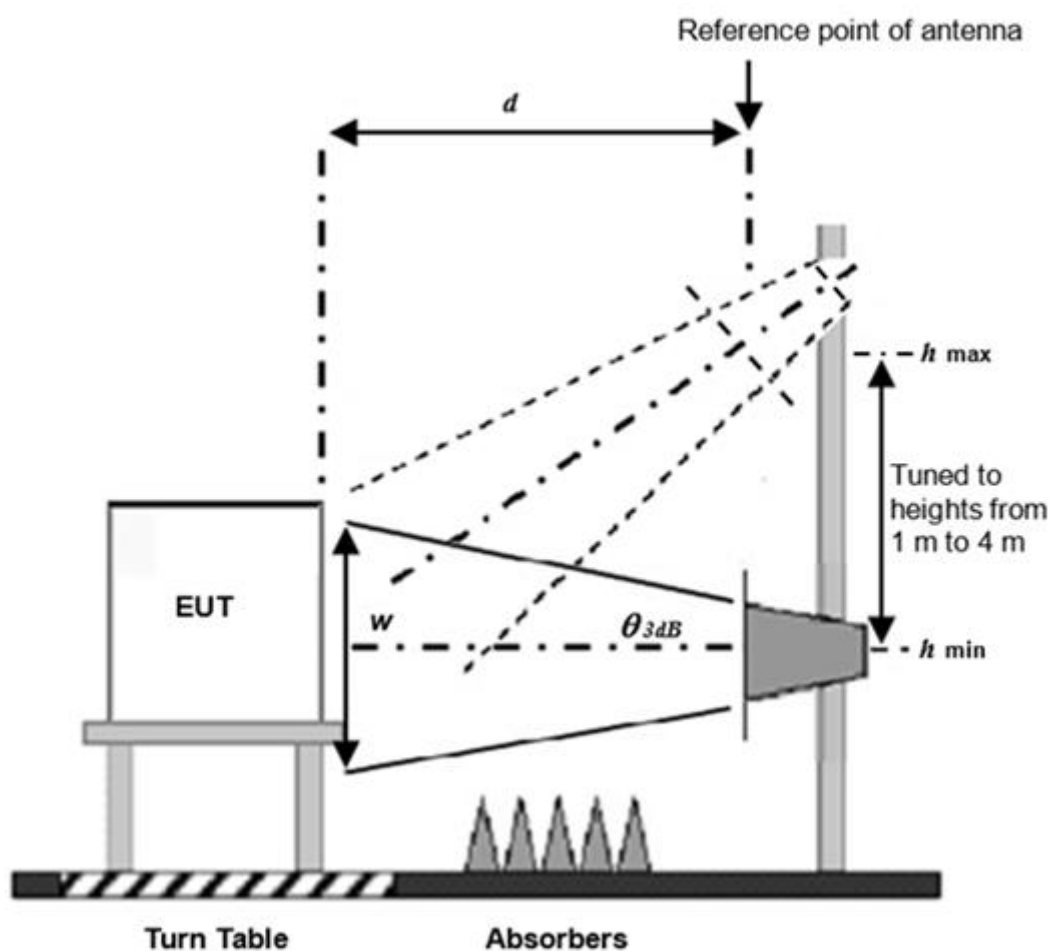


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

### 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

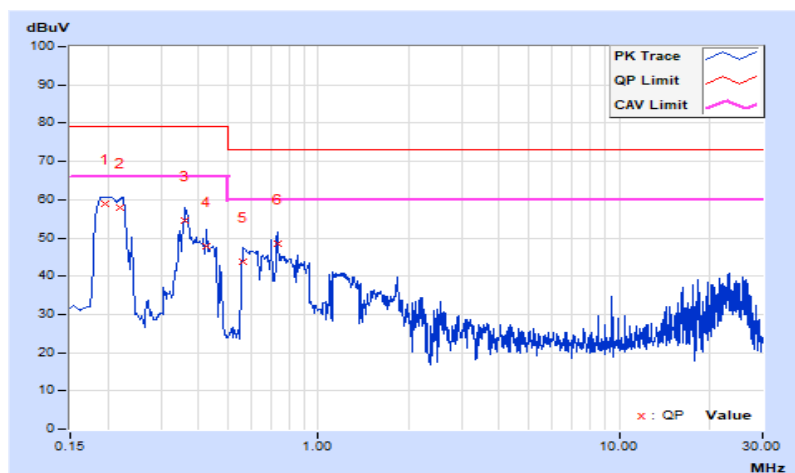
#### Mode A

Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	24 Vdc	Environmental Conditions	20 °C, 77 % RH, 999.4 mbar
Tested by	Kenny Chang		

Phase Of Power : Positive (+)										
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	0.19505	10.00	48.92	40.91	58.92	50.91	79.00	66.00	-20.08	-15.09
2	0.21959	10.00	47.84	23.96	57.84	33.96	79.00	66.00	-21.16	-32.04
3	0.36265	10.02	44.53	39.53	54.55	49.55	79.00	66.00	-24.45	-16.45
4	0.42768	10.02	37.71	12.85	47.73	22.87	79.00	66.00	-31.27	-43.13
5	0.56258	10.02	33.87	15.81	43.89	25.83	73.00	60.00	-29.11	-34.17
6	0.73075	10.03	38.47	36.50	48.50	46.53	73.00	60.00	-24.50	-13.47

#### 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



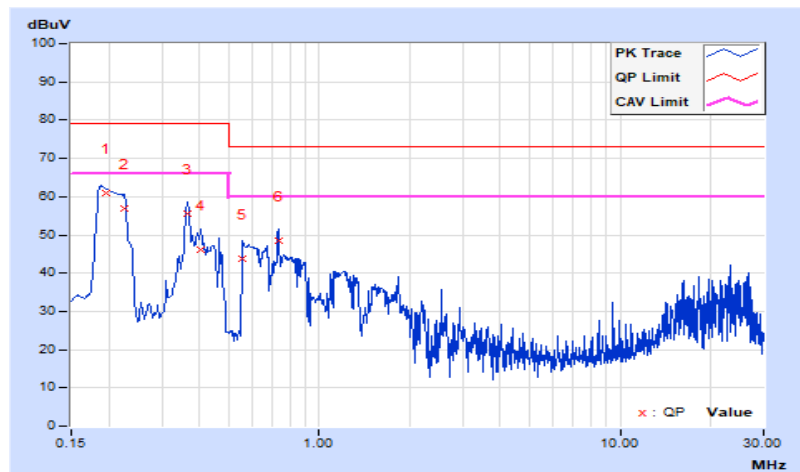


<b>Frequency Range</b>	150 kHz ~ 30 MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	24 Vdc	<b>Environmental Conditions</b>	20 °C, 77 % RH, 999.4 mbar
<b>Tested by</b>	Kenny Chang		

Phase Of Power : Negative (-)										
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	0.19603	9.99	50.97	46.85	60.96	56.84	79.00	66.00	-18.04	-9.16
2	0.22431	9.99	47.08	21.11	57.07	31.10	79.00	66.00	-21.93	-34.90
3	0.36545	10.01	45.70	41.23	55.71	51.24	79.00	66.00	-23.29	-14.76
4	0.40421	10.01	36.17	28.82	46.18	38.83	79.00	66.00	-32.82	-27.17
5	0.55475	10.01	33.73	10.74	43.74	20.75	73.00	60.00	-29.26	-39.25
6	0.72983	10.02	38.40	36.69	48.42	46.71	73.00	60.00	-24.58	-13.29

**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

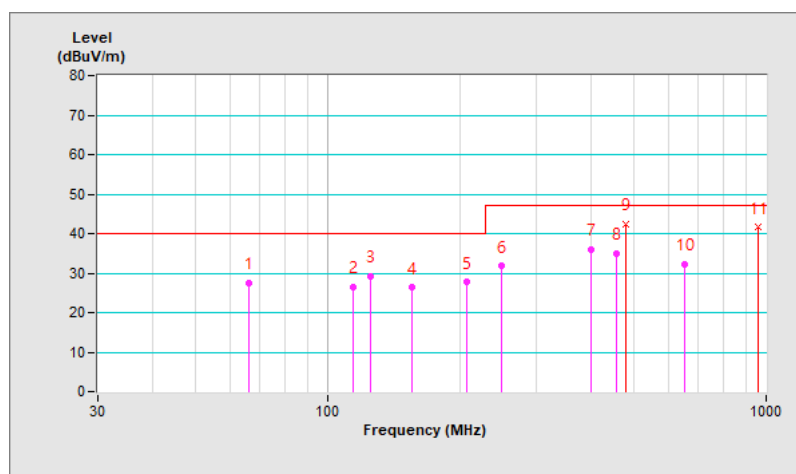
### Mode A

Frequency Range	30 MHz ~ 1 GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120 kHz
Input Power	24 Vdc	Environmental Conditions	24 °C, 79 % RH, 1000 mbar
Tested By	Paul Chen		

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	66.14	27.54 QP	40.00	-12.46	4.00 H	194	37.27	-9.73
2	114.31	26.58 QP	40.00	-13.42	4.00 H	290	37.10	-10.52
3	125.01	29.11 QP	40.00	-10.89	4.00 H	356	38.56	-9.45
4	155.87	26.31 QP	40.00	-13.69	4.00 H	178	33.79	-7.48
5	208.38	27.68 QP	40.00	-12.32	4.00 H	152	38.39	-10.71
6	249.99	31.75 QP	47.00	-15.25	3.86 H	222	39.86	-8.11
7	400.00	36.09 QP	47.00	-10.91	2.34 H	96	40.37	-4.28
8	455.19	34.92 QP	47.00	-12.08	2.25 H	140	37.99	-3.07
9	480.02	42.32 QP	47.00	-4.68	1.95 H	173	45.12	-2.80
10	650.02	32.33 QP	47.00	-14.67	1.27 H	340	31.62	0.71
11	960.01	41.58 QP	47.00	-5.42	1.00 H	111	35.29	6.29

#### 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.

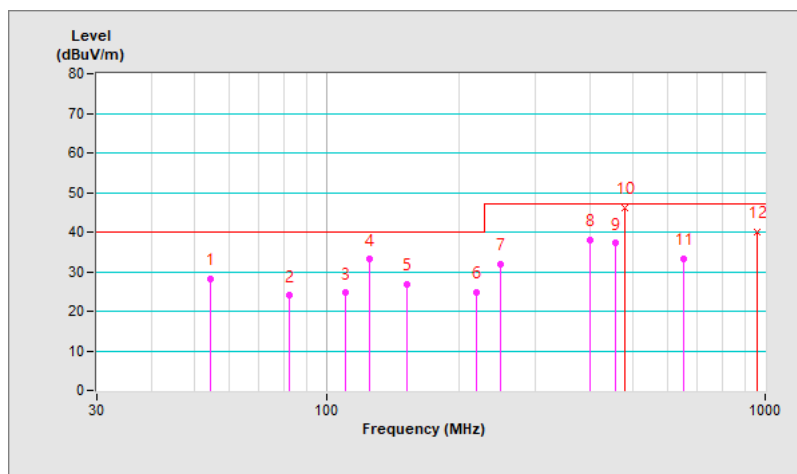


Frequency Range	30 MHz ~ 1 GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120 kHz
Input Power	24 Vdc	Environmental Conditions	24 °C, 79 % RH, 1000 mbar
Tested By	Paul Chen		

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	54.36	28.19 QP	40.00	-11.81	1.51 V	229	36.72	-8.53
2	82.21	23.92 QP	40.00	-16.08	1.79 V	356	37.43	-13.51
3	110.21	24.58 QP	40.00	-15.42	1.00 V	334	35.55	-10.97
4	125.01	33.06 QP	40.00	-6.94	1.00 V	170	42.51	-9.45
5	152.25	26.78 QP	40.00	-13.22	1.00 V	321	34.30	-7.52
6	220.16	24.84 QP	40.00	-15.16	1.00 V	356	35.05	-10.21
7	249.99	31.78 QP	47.00	-15.22	1.00 V	110	39.89	-8.11
8	400.01	38.02 QP	47.00	-8.98	1.00 V	356	42.30	-4.28
9	455.21	37.15 QP	47.00	-9.85	1.00 V	269	40.22	-3.07
10	480.01	46.23 QP	47.00	-0.77	3.41 V	152	49.03	-2.80
11	650.45	33.19 QP	47.00	-13.81	3.27 V	258	32.47	0.72
12	960.01	40.09 QP	47.00	-6.91	2.09 V	345	33.80	6.29

**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

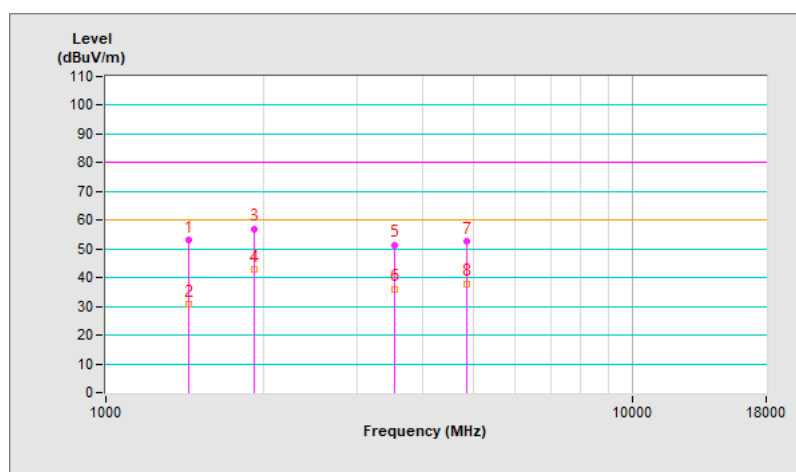
#### Mode A

Frequency Range	1 GHz ~ 5 GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1 MHz
Input Power	24 Vdc	Environmental Conditions	21 °C, 68 % RH, 999.7 mbar
Tested By	Bob 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	1440.00	52.94 PK	80.00	-27.06	1.25 H	230	70.78	-17.84
2	1440.00	30.56 AV	60.00	-29.44	1.25 H	230	48.40	-17.84
3	1920.00	56.86 PK	80.00	-23.14	1.28 H	124	70.68	-13.82
<b>4</b>	<b>1920.00</b>	<b>42.75 AV</b>	<b>60.00</b>	<b>-17.25</b>	<b>1.28 H</b>	<b>124</b>	<b>56.57</b>	<b>-13.82</b>
5	3536.20	51.25 PK	80.00	-28.75	1.23 H	38	61.36	-10.11
6	3536.20	36.12 AV	60.00	-23.88	1.23 H	38	46.23	-10.11
7	4845.81	52.54 PK	80.00	-27.46	2.47 H	4	61.64	-9.10
8	4845.81	37.67 AV	60.00	-22.33	2.47 H	4	46.77	-9.10

#### 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.

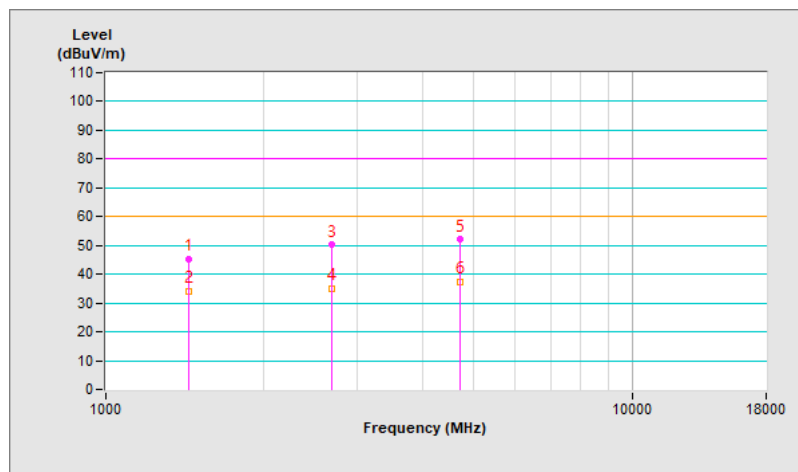


Frequency Range	1 GHz ~ 5 GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1 MHz
Input Power	24 Vdc	Environmental Conditions	21 °C, 68 % RH, 999.4 mbar
Tested By	Bob Lin		

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	1440.00	45.34 PK	80.00	-34.66	1.28 V	240	63.18	-17.84
2	1440.00	34.24 AV	60.00	-25.76	1.28 V	240	52.08	-17.84
3	2685.26	50.18 PK	80.00	-29.82	2.06 V	335	61.60	-11.42
4	2685.26	35.04 AV	60.00	-24.96	2.06 V	335	46.46	-11.42
5	4727.51	51.98 PK	80.00	-28.02	1.45 V	299	61.13	-9.15
6	4727.51	37.52 AV	60.00	-22.48	1.45 V	299	46.67	-9.15

**Remarks:**

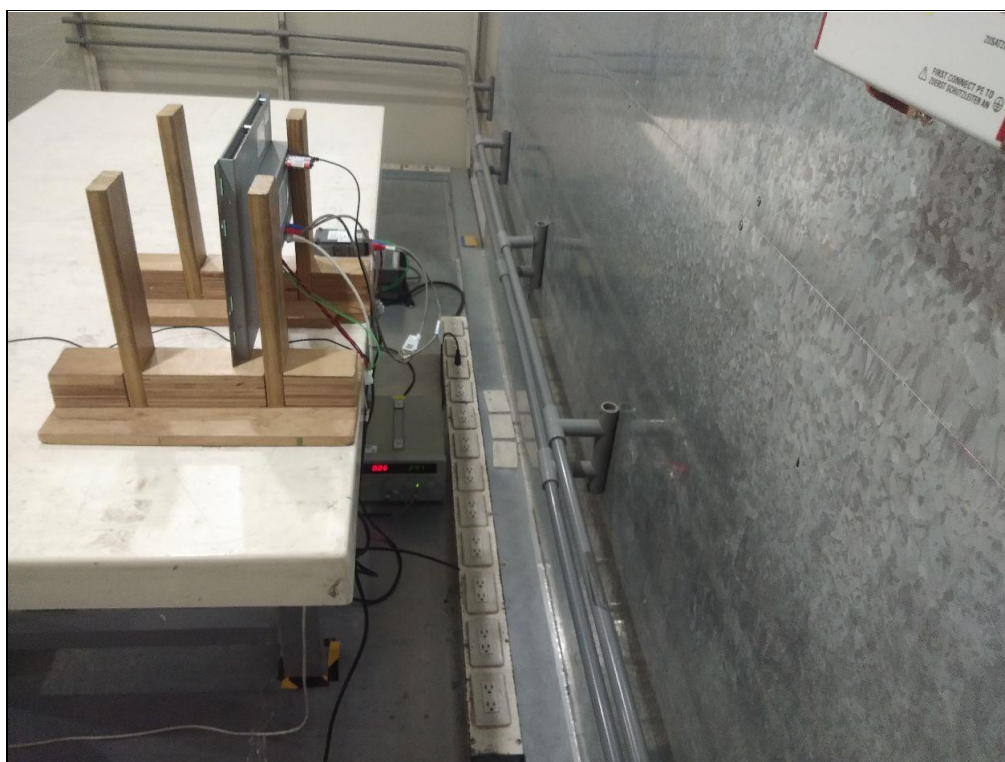
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)  
– Pre-Amplifier Factor (dB)
3. Margin value = Emission level – Limit value
4. The other emission levels were very low against the limit.



## 8 Pictures of Test Arrangements

### 8.1 Conducted Emissions from Power Ports

#### Mode A





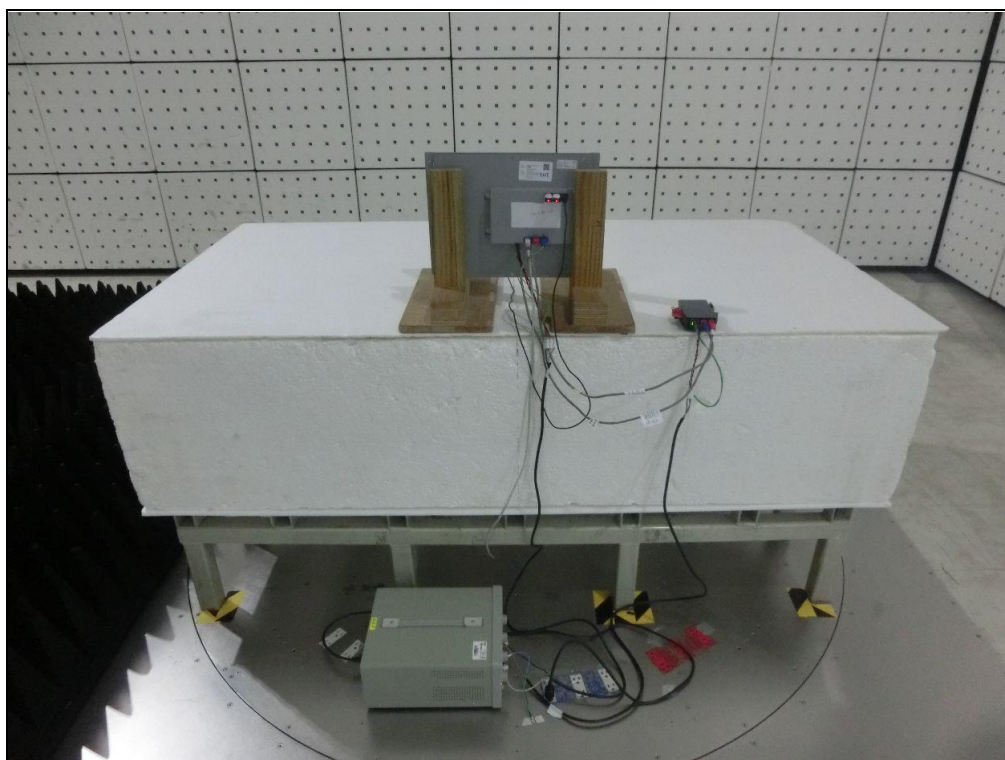
## 8.2 Radiated Emissions up to 1 GHz

### 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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