

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart B, Class B
ANSI C63.4:2014

Report No.: FDBFOK-WTW-P22010278 R1

FCC ID: RYQSTTM21VAPP

Model No.: STTM21VAPP

Received Date: 2022/2/10

Test Date: 2022/2/17

Issued Date: 2022/3/25

Applicant: FIH CO., LTD.

Address: No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, 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. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan

Approved by: _____



Ace Wu / Project Engineer

Date: _____

2022/3/25

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Prepared by : Jessie Kuo / Specialist

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Release Control Record

Issue No.	Description	Date Issued
FDBFOK-WTW-P22010278	Original release.	2022/3/15
FDBFOK-WTW-P22010278 R1	Adding FCC ID on page 1 & Removing the Test Setup Photo	2022/3/25

1 Certificate

Product: 4G cellular phone
Brand: SHARP
Test Model: STTM21VAPP
Applicant: FIH CO., LTD.
Test Date: 2022/2/17
Standard: 47 CFR FCC Part 15, Subpart B, Class B
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.

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 B margin is -10.80 dB at 0.62200 MHz
FCC Part 15.109	Radiated Emissions up to 1 GHz	Pass	Minimum passing Class B margin is -5.52 dB at 88.83 MHz
FCC Part 15.109	Radiated Emissions above 1 GHz	Pass	Minimum passing Class B margin is -13.73 dB at 7343.55 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	150 k Hz ~ 30 MHz	2.79 dB	3.4 dB (U_{CISPR})
Radiated Emissions up to 1 GHz	30 MHz ~ 1 GHz	4.14 dB	6.3 dB (U_{CISPR})
Radiated Emissions above 1 GHz	1 GHz ~ 6 GHz	5.09 dB	5.2 dB (U_{CISPR})
	6 GHz ~ 18 GHz	5.10 dB	-

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	4G cellular phone
Brand	SHARP
Test Model	STTM21VAPP
Operating Software	Android 12
Power Supply Rating	Refer to note
Accessory Device	Refer to note
Data Cable Supplied	Refer to note

Note:

1. The EUT uses following accessories.

Battery		
Brand	Model	Specification
ZHONGSHAN TIANMAO BATTERY CO., LTD.	HE401	Power Rating : 3.85 Vdc ; 3500 mAh
AC Adapter		
Model	Specification	
RT-C6	AC Input : 100 Vac-240 Vac DC Output : 5Vdc DC Output Cable : 0.95m non-shielded power cable without core Plug : US PIN Manufacturer : RongTaiFeng Technology Co.,Ltd	

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 5 G Hz, provided by FIH 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 FIH 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.

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

The EUT has been pre-tested under following test modes.

Test Condition	
Mode	Conducted Emissions from Power Ports
1	LTE B2 Link + Wifi 2.4G Link + BT Link + Earphone + GPS Rx + USB Cable + Adapter
2	LTE B4 Link + Wifi 5G Link + BT Link + Earphone + Camera(Front) + USB Cable + Adapter
3	LTE B5 Link + Wifi 5G Link + BT Link + Earphone + Camera(Back) + USB Cable + Adapter
4	LTE B12 Link + Wifi 5G Link + BT Link + Earphone + MPEG4 + USB Cable + USB Link Notebook
5	LTE B13 Idle + Wifi 5G Link + BT Link + Earphone + Camera(Back) + USB Cable + Adapter
6	LTE B5 Rx (Low Channel) + Earphone + Cable + Adapter
7	LTE B5 Rx (Middle Channel) + Earphone + Cable + Adapter
8	LTE B5 Rx (High Channel) + Earphone + Cable + Adapter
9	LTE B12 Rx (Low Channel) + Earphone + Cable + Adapter
10	LTE B12 Rx (Middle Channel) + Earphone + Cable + Adapter
11	LTE B12 Rx (High Channel) + Earphone + Cable + Adapter
12	LTE B13 Rx (Low Channel) + Earphone + Cable + Adapter
13	LTE B13 Rx (Middle Channel) + Earphone + Cable + Adapter
14	LTE B13 Rx (High Channel) + Earphone + Cable + Adapter
Note: There are both AC 240V/60Hz and AC 120V/60Hz to be pre-tested then 120V/60Hz has the highest emission value.	
Mode	Radiated Emissions up to 1 GHz
1	LTE B2 Link + Wifi 2.4G Link + BT Link + Earphone + GPS Rx + USB Cable + Adapter
2	LTE B4 Link + Wifi 5G Link + BT Link + Earphone + Camera(Front) + USB Cable + Adapter
3	LTE B5 Link + Wifi 5G Link + BT Link + Earphone + Camera(Back) + USB Cable + Adapter
4	LTE B12 Link + Wifi 5G Link + BT Link + Earphone + MPEG4 + USB Cable + USB Link Notebook
5	LTE B13 Idle + Wifi 5G Link + BT Link + Earphone + Camera(Back) + USB Cable + Adapter
6	LTE B5 Rx (Low Channel) + Earphone + Cable + Adapter
7	LTE B5 Rx (Middle Channel) + Earphone + Cable + Adapter
8	LTE B5 Rx (High Channel) + Earphone + Cable + Adapter
9	LTE B12 Rx (Low Channel) + Earphone + Cable + Adapter
10	LTE B12 Rx (Middle Channel) + Earphone + Cable + Adapter
11	LTE B12 Rx (High Channel) + Earphone + Cable + Adapter
12	LTE B13 Rx (Low Channel) + Earphone + Cable + Adapter
13	LTE B13 Rx (Middle Channel) + Earphone + Cable + Adapter
14	LTE B13 Rx (High Channel) + Earphone + Cable + Adapter
15	LTE B5 Link + Wifi 5G Link + BT Link + Earphone + Camera(Back) + USB Cable + Adapter (X Axis)
16	LTE B5 Link + Wifi 5G Link + BT Link + Earphone + Camera(Back) + USB Cable + Adapter (Y Axis)

Note: The worst case is shown up with bold words.

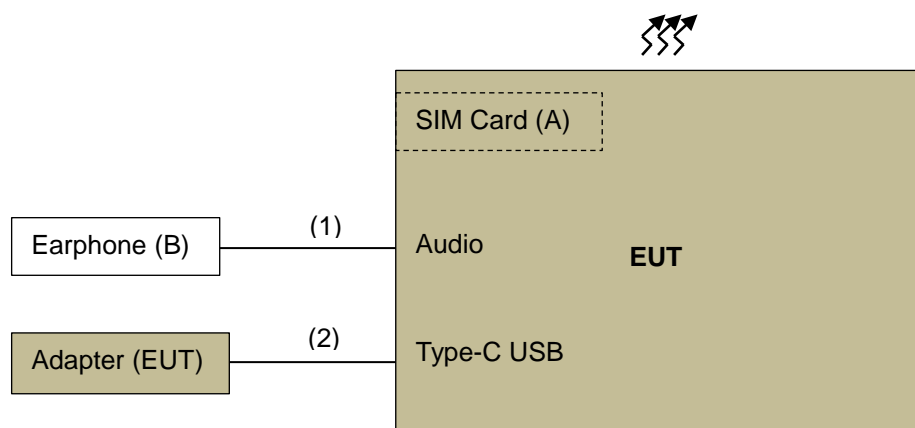
Test modes are presented in the report as below.

Test Condition	
Mode	Conducted Emissions from Power Ports
A	LTE B5 Link+Wifi 5G Link+BT Link+Earphone+Camera(Back)+USB Cable+Adapter
Mode	Radiated Emissions up to 1 GHz
A	LTE B5 Link+Wifi 5G Link+BT Link+Earphone+Camera(Back)+USB Cable+Adapter
Mode	Radiated Emissions above 1 GHz
A	LTE B5 Link+Wifi 5G Link+BT Link+Earphone+Camera(Back)+USB Cable+Adapter

3.5 Test Program Used and Operation Descriptions

- The EUT is charged via USB Adapter.
- The EUT opens the camera function.
- The EUT connects to the remote Bluetooth earphone via Bluetooth.
- The EUT connects to the remote router via WiFi 5G.
- The EUT connects to the remote Radio Communication Analyzer via LTE Band5 and performs data transmission.

3.6 Connection Diagram of EUT and Peripheral Devices



Remote Site



3.7 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	SIM Card	R&S	NA	NA	NA	-
B	Earphone	Apple	MB770FE/B	NA	NA	-
C	Radio Communication Analyzer	Anritsu	MT8820C	6201010284	NA	-
D	D-LINK DIR-826L 11a/n USB 1000M Router	D-LINK	DIR826L	QBQ91C9000416	NA	-
E	BLUETOOTH EARPHONE	ELECOM	LBT-MPHS400	N/A	NA	-

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	Audio Cable	1	1.2	Yes	0	-
2	Type-A to C USB Cable	1	0.95	No	0	Accessory of EUT

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
DC LISN R&S	ESH3-Z6	100219	2021/7/25	2022/7/24
DC-LISN SCHWARZBECK MESS- ELETRONIK	NNBM 8126G	8126G-069	2021/11/10	2022/11/9
LISN ROHDE & SCHWARZ	ENV216	101826	2021/2/25	2022/2/24
LISN R&S	ESH3-Z5	100311	2021/9/7	2022/9/6
	ENV216	100072	2021/6/16	2022/6/15
LISN Schwarzbeck	NNLK 8121	8121-731	2021/4/28	2022/4/27
LISN R&S	ESH3-Z6	844950/018	2021/7/25	2022/7/24
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2022/1/15	2023/1/14
Software BVADT	BVADT_Conc_ V7.3.7.4	NA	NA	NA
Test Receiver Rohde&Schwarz	ESCI	100613	2021/12/3	2022/12/2
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2021/8/20	2022/8/19

Notes:

1. The test was performed in HwaYa Shielded Room 1 (Conduction 1).
2. Tested Date: 2022/2/17

4.2 Radiated Emissions up to 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower (H)	MFA-440	970705	NA	NA
Antenna Tower (V)	MFA-440	9707	NA	NA
Bi_Log Antenna Schwarbeck	VULB9168	9168-148	2021/10/19	2022/10/18
		9168-156	2021/10/19	2022/10/18
Controller (H)	MF7802	08093	NA	NA
Controller (V)	MF7802	074	NA	NA
Pre_Amplifier Sonoma	310N	352924	2021/6/5	2022/6/4
		352923	2021/6/5	2022/6/4
RF Coaxial Cable TIMES	LMR-600(18M)+LMR-400 (7M)	CABLE-CH1(VER)-01	2021/9/4	2022/9/3
	LMR-600(11.8M)+LMR- 400 (7M)	CABLE-CH1(HOR)-01	2021/9/4	2022/9/3
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Test Receiver ESR7 R&S	ESR	101240	2021/11/3	2022/11/2
		101264	2021/4/9	2022/4/8
Turn Table	DS430	50303	NA	NA

Notes:

1. The test was performed in HwaYa Chamber 1.
2. The test site validated date: 2021/8/07 (NSA)
3. Tested Date: 2022/2/17

4.3 Radiated Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower BVADT	AT100	AT93021702	NA	NA
Attenuator Mini-Circuits	BW-N4W5+	PAD-CH3-03	2021/7/24	2022/7/23
	BW-K3-2W44+	PAD-CH3-04	2021/7/24	2022/7/23
BandPass Filter MICRO-TRONICS	BRM17690-01	002	2021/9/4	2022/9/3
	BRM50716-01	G010	2021/9/4	2022/9/3
Boresight antenna tower fixture BV	BAF-02	3	NA	NA
Controller BVADT	SC100	SC93021702	NA	NA
Horn Antenna Schwarzbeck	BBHA 9120 D	209	2021/11/14	2022/11/13
	BBHA 9170	BBHA9170241	2021/10/26	2022/10/25
Pre_Amplifier Agilent	8449B	3008A02465	2021/3/22	2022/3/21
Pre_Amplifier EMCI	EMC184045SE	980610	2021/6/5	2022/6/4
PXA KEYSIGHT	N9030A	MY54490561	2021/7/28	2022/7/27
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104&EMC104-SM-SM- 8000	Cable-CH3- 03(309224+170907)	2021/7/24	2022/7/23
RF Coaxial Cable EMCI	EMC102-KM-KM-1000	200311	2021/7/24	2022/7/23
	EMC102-KM-KM-3000	200313	2021/7/24	2022/7/23
Software BVADT	ADT_Radiated_V8.7.08	NA	NA	NA
Turn Table BVADT	TT100	TT93021702	NA	NA

Notes:

1. The test was performed in HwaYa Chamber 3 (966 Chamber 2).
2. The test site validated date: 2021/5/26 (VSWR)
3. Tested Date: 2022/2/17

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 / 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 (dBμV/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				
960-1000	60	54	57.5	47.5

Notes: 1. The lower limit shall apply at the transition frequencies.
 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
 3. QP detector shall be applied if not specified.

5.3 Radiated Emissions above 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 (dB μ 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 μ 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

- Notes:
1. The lower limit shall apply at the transition frequencies.
 2. Emission level (dB μ V/m) = 20 log Emission level (μ V/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

Radiated Emissions Limits at 1.5 meter (dB μ V/m)		
Frequencies (MHz)	FCC 15B, Class A	FCC 15B, Class B
18000-40000	Avg: 66 Peak: 86	Avg: 60 Peak: 80

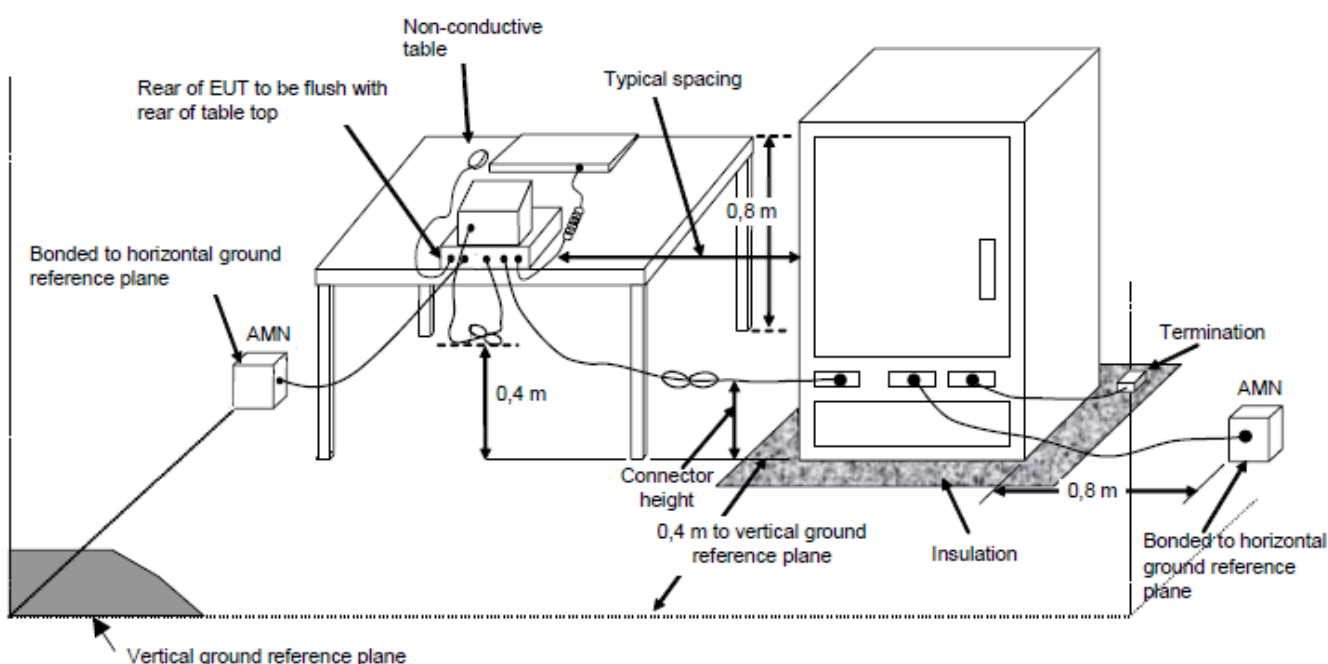
Note: Limit@1.5m = Limit@3m + 20log(3/1.5)

6 Test Arrangements

6.1 Conducted Emissions from Power Ports

- a. For the table-top EUT is placed on a 0.8 meter to the top of rotating table; for the 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.

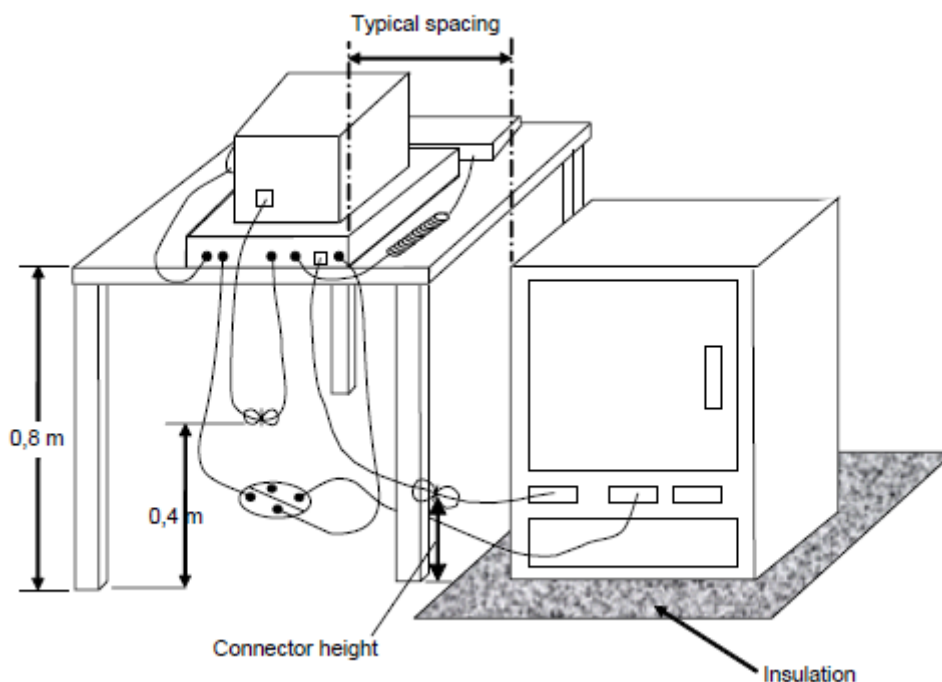


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

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 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.

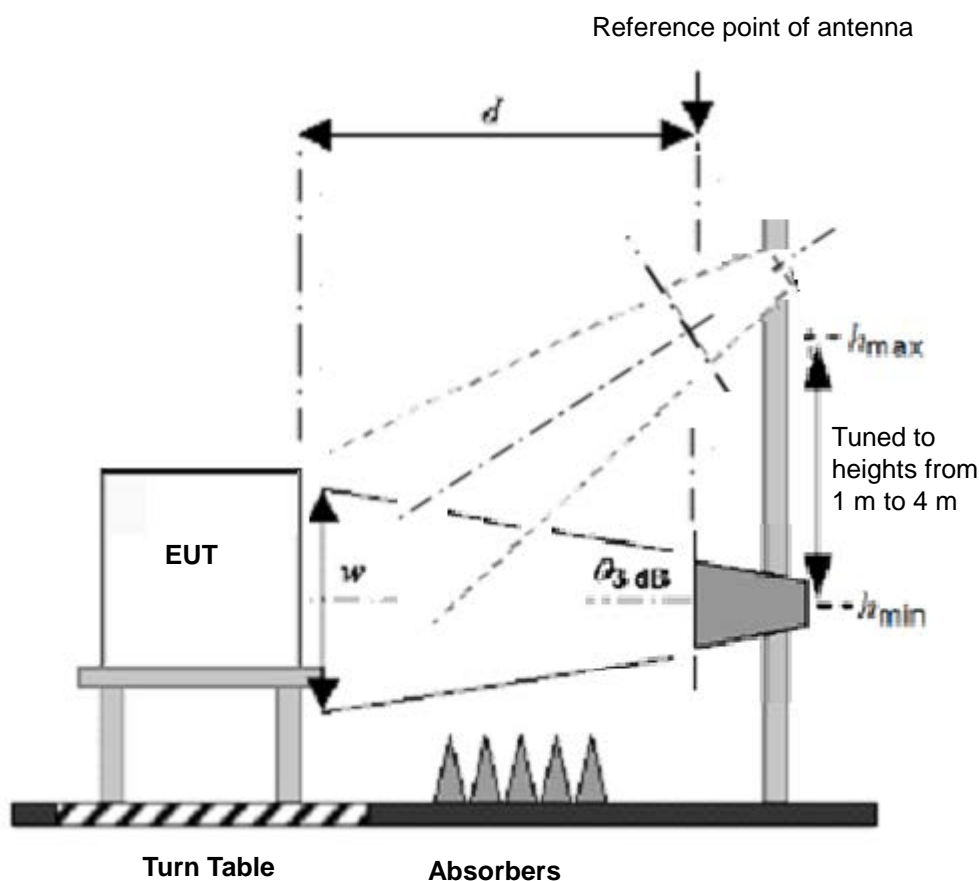


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

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 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

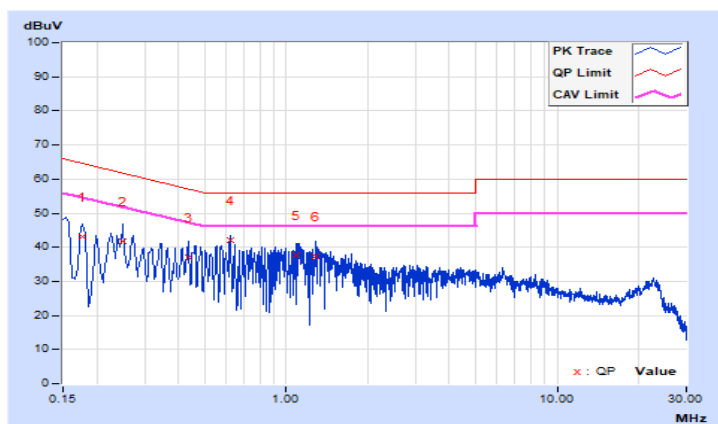
7.1 Conducted Emissions from Power Ports

Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 74 % RH
Tested by	Brian Kuo		

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	0.17754	9.79	33.44	20.35	43.23	30.14	64.60	54.60	-21.37	-24.46
2	0.25000	9.82	31.77	24.47	41.59	34.29	61.76	51.76	-20.17	-17.47
3	0.43714	9.87	27.16	20.19	37.03	30.06	57.12	47.12	-20.09	-17.06
4	0.62200	9.88	32.21	25.32	42.09	35.20	56.00	46.00	-13.91	-10.80
5	1.09400	9.92	27.79	17.43	37.71	27.35	56.00	46.00	-18.29	-18.65
6	1.28200	9.93	27.52	16.69	37.45	26.62	56.00	46.00	-18.55	-19.38

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

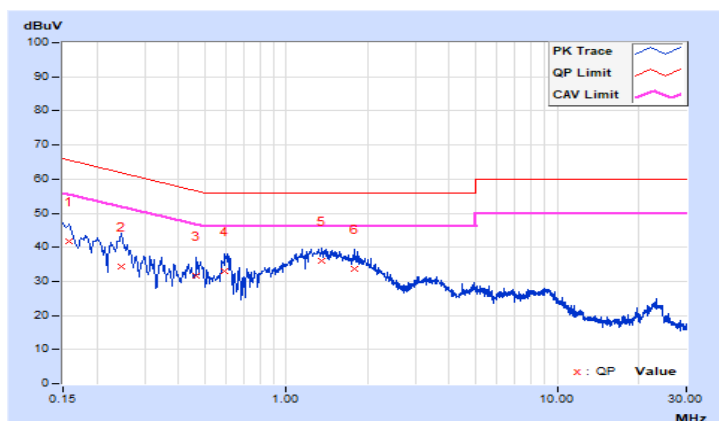


Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 74 % RH
Tested by	Brian Kuo		

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	0.15800	9.83	31.86	16.18	41.69	26.01	65.57	55.57	-23.88	-29.56
2	0.24600	9.88	24.40	12.75	34.28	22.63	61.89	51.89	-27.61	-29.26
3	0.46600	9.95	21.79	13.83	31.74	23.78	56.58	46.58	-24.84	-22.80
4	0.59400	9.96	23.15	14.50	33.11	24.46	56.00	46.00	-22.89	-21.54
5	1.34998	10.01	26.05	12.90	36.06	22.91	56.00	46.00	-19.94	-23.09
6	1.79400	10.03	23.78	10.51	33.81	20.54	56.00	46.00	-22.19	-25.46

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



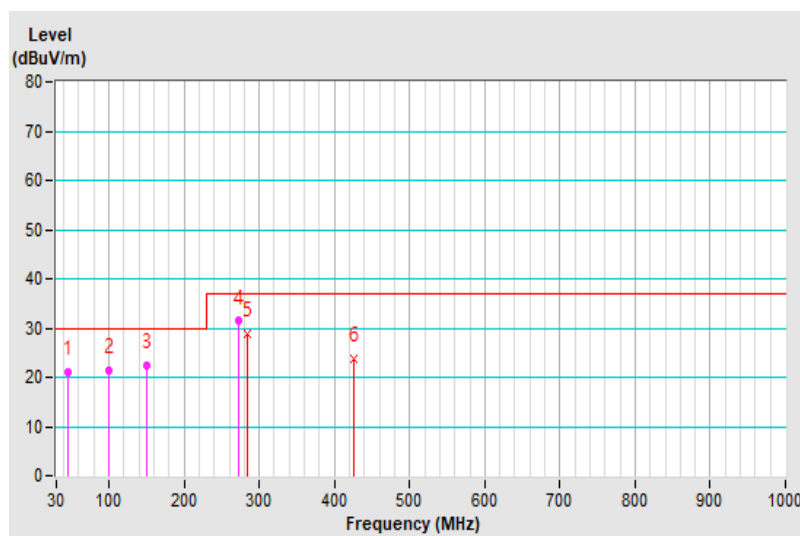
7.2 Radiated Emissions up to 1 GHz

Frequency Range	30MHz ~ 1GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 73 % RH
Tested By	Jim Lee		

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	45.52	20.95 QP	30.00	-9.05	4.00 H	25	33.98	-13.03
2	100.47	21.50 QP	30.00	-8.50	4.00 H	322	39.24	-17.74
3	149.66	22.42 QP	30.00	-7.58	3.50 H	99	35.65	-13.23
4	271.83	31.44 QP	37.00	-5.56	4.00 H	182	44.58	-13.14
5	284.57	28.78 QP	37.00	-8.22	4.00 H	168	41.52	-12.74
6	425.15	23.89 QP	37.00	-13.11	4.00 H	53	33.03	-9.14

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

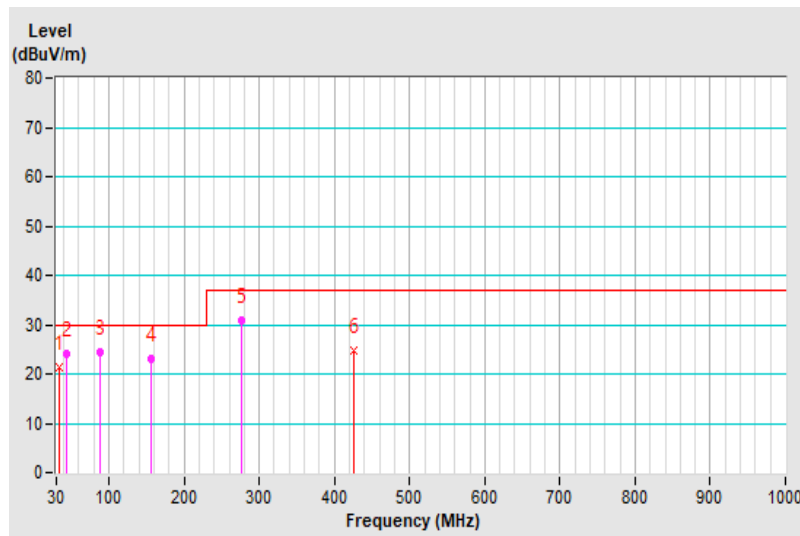


Frequency Range	30MHz ~ 1GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 73 % RH
Tested By	Jim Lee		

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	33.80	21.46 QP	30.00	-8.54	1.00 V	256	36.32	-14.86
2	44.21	24.00 QP	30.00	-6.00	1.50 V	355	37.63	-13.63
3	88.83	24.48 QP	30.00	-5.52	4.00 V	305	43.58	-19.10
4	156.01	23.13 QP	30.00	-6.87	1.50 V	147	36.18	-13.05
5	275.76	30.97 QP	37.00	-6.03	1.00 V	84	43.56	-12.59
6	425.15	24.74 QP	37.00	-12.26	4.00 V	326	33.27	-8.53

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



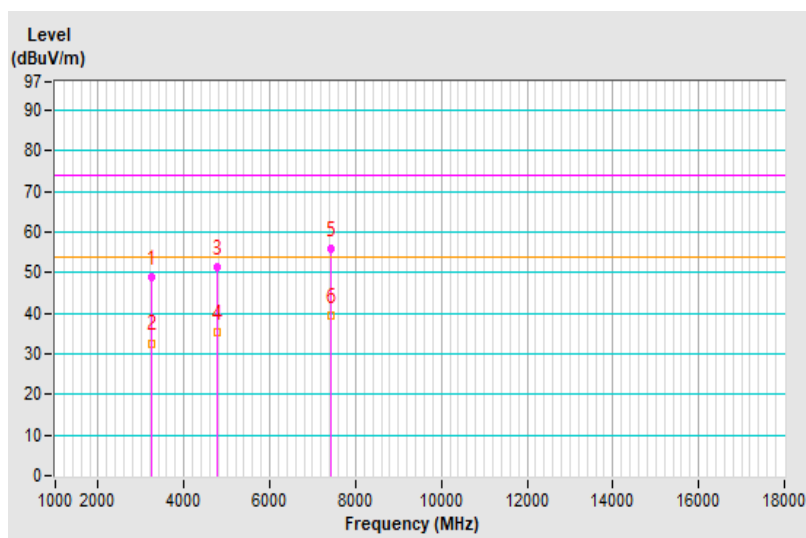
7.3 Radiated Emissions above 1 GHz

Frequency Range	1GHz ~ 18GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 73 % RH
Tested By	Kai Chu		

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	3247.84	48.73 PK	74.00	-25.27	1.57 H	122	45.51	3.22
2	3247.84	32.63 AV	54.00	-21.37	1.57 H	122	29.41	3.22
3	4762.95	51.20 PK	74.00	-22.80	1.00 H	212	43.90	7.30
4	4762.95	35.16 AV	54.00	-18.84	1.00 H	211	27.86	7.30
5	7411.55	55.95 PK	74.00	-18.05	1.00 H	318	41.27	14.68
6	7411.55	39.53 AV	54.00	-14.47	1.00 H	318	24.85	14.68

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

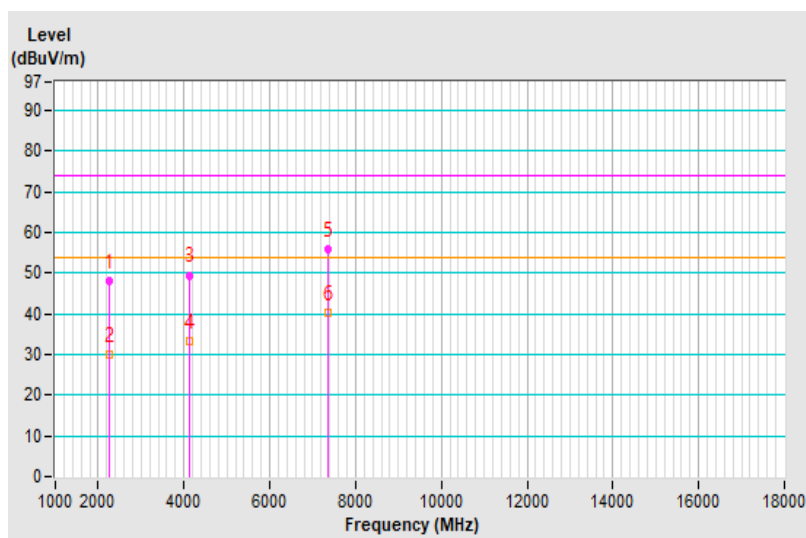


Frequency Range	1GHz ~ 18GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 73 % RH
Tested By	Kai Chu		

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	2269.85	48.22 PK	74.00	-25.78	1.00 V	346	46.23	1.99
2	2269.85	30.03 AV	54.00	-23.97	1.00 V	346	28.04	1.99
3	4141.53	49.52 PK	74.00	-24.48	1.58 V	15	44.04	5.48
4	4141.53	33.18 AV	54.00	-20.82	1.58 V	15	27.70	5.48
5	7343.55	55.79 PK	74.00	-18.21	1.00 V	334	41.58	14.21
6	7343.55	40.27 AV	54.00	-13.73	1.00 V	334	26.06	14.21

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

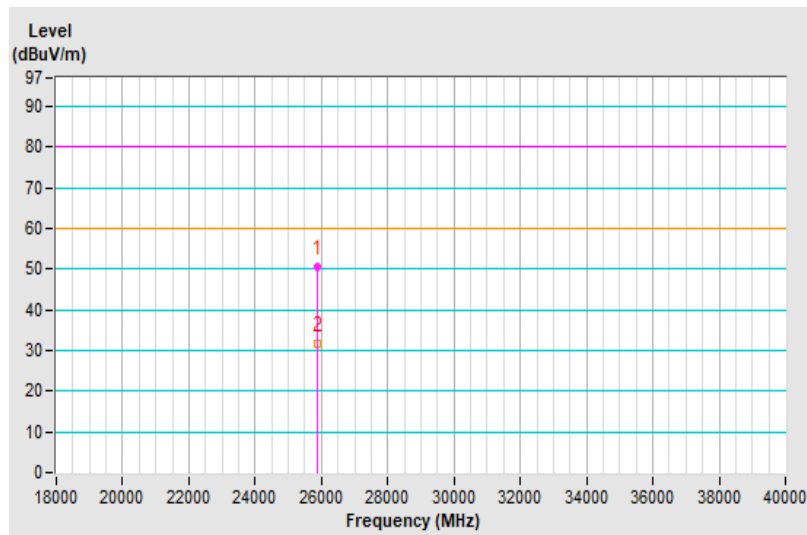


Frequency Range	18GHz ~ 30GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 73 % RH
Tested By	Kai Chu		

Antenna Polarity & Test Distance : Horizontal at 1.5 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	25896.90	50.38 PK	80.00	-29.62	1.00 H	358	51.21	-0.83
2	25896.90	31.63 AV	60.00	-28.37	1.00 H	358	32.46	-0.83

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

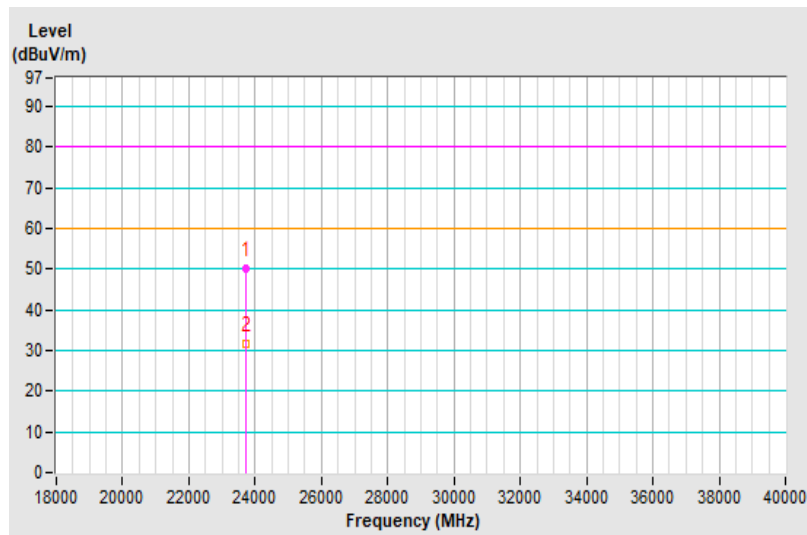


Frequency Range	18GHz ~ 30GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	21 °C, 73 % RH
Tested By	Kai Chu		

Antenna Polarity & Test Distance : Vertical at 1.5 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	23716.70	50.27 PK	80.00	-29.73	1.00 V	160	50.35	-0.08
2	23716.70	31.74 AV	60.00	-28.26	1.00 V	160	31.82	-0.08

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

Please refer to the attached file (Test Setup Photo).

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.

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

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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