

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: FCBEMI-WTW-P21080520

FCC ID: NOIKBN778K

Model No.: N778K

Received Date: 2021/8/11

Test Date: 2021/9/30 ~ 2021/12/7

Issued Date: 2021/12/7

Applicant: NETRONIX, INC.

Address: No 945, Boai St, Jubei City, Hsinchu, 30265 Taiwan

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

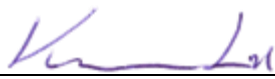
Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

Test Location: No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien
307, Taiwan

FCC Registration / 960022 / TW1058

Designation Number:

Approved by: _____



Ken Lu / Manager

Date: _____

2021/12/7

This test report consists of 27 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.



Prepared by : Evy Chen / Specialist

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

Table of Contents

Release Control Record	3
1 Certificate	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty	5
2.2 Supplementary Information	5
3 General Information	6
3.1 Description of EUT	6
3.2 Primary Clock Frequencies of Internal Source	7
3.3 Features of EUT	7
3.4 Operating Modes of EUT and Determination of Worst Case Operating Mode	8
3.5 Test Program Used and Operation Descriptions	9
3.6 Connection Diagram of EUT and Peripheral Devices	9
3.7 Configuration of Peripheral Devices and Cable Connections	9
4 Test Instruments.....	10
4.1 Conducted Emissions from Power Ports	10
4.2 Radiated Emissions up to 1 GHz	11
4.3 Radiated Emissions above 1 GHz	11
5 Limits of Test Items	13
5.1 Conducted Emissions from Power Ports	13
5.2 Radiated Emissions up to 1 GHz	13
5.3 Radiated Emissions above 1 GHz	14
6 Test Arrangements	15
6.1 Conducted Emissions from Power Ports	15
6.2 Radiated Emissions up to 1 GHz	16
6.3 Radiated Emissions above 1 GHz	17
7 Test Results of Test Item	18
7.1 Conducted Emissions from Power Ports	18
7.2 Radiated Emissions up to 1 GHz	20
7.3 Radiated Emissions above 1 GHz	22
8 Pictures of Test Arrangements	26
9 Information of the Testing Laboratories	27



Release Control Record

Issue No.	Description	Date Issued
FCBEMI-WTW-P21080520	Original release.	2021/12/7

1 Certificate

Product: Electronic Display Device

Brand: Rakuten kobo

Test Model: N778K

Sample Status: Engineering sample

Applicant: NETRONIX, INC.

Test Date: 2021/9/30 ~ 2021/12/7

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 -9.78 dB at 0.45859 MHz
FCC Part 15.109	Radiated Emissions up to 1 GHz	Pass	Minimum passing Class B margin is -6.05 dB at 121.52 MHz
FCC Part 15.109	Radiated Emissions above 1 GHz	Pass	Minimum passing Class B margin is -13.50 dB at 29248.44 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	1.8 dB	3.4 dB (U_{cispr})
Radiated Emissions up to 1 GHz	30 MHz ~ 1 GHz	5.8 dB	6.3 dB (U_{cispr})
Radiated Emissions above 1 GHz	1 GHz ~ 6 GHz	4.85 dB	5.2 dB (U_{cispr})
	6 GHz ~ 18 GHz	4.66 dB	-
	18 GHz ~ 40 GHz	5.07 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	Electronic Display Device
Brand	Rakuten kobo
Test Model	N778K
Sample Status	Engineering sample
Operating Software	NA
Power Supply Rating	3.7 Vdc from battery or 5 Vdc from USB interface
Modulation Type	WLAN: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode BT-EDR: GFSK, $\pi/4$ -DQPSK, 8DPSK BT-LE: GFSK
Modulation Technology	WLAN: DSSS, OFDM BT-EDR: FHSS BT-LE: DTS
Accessory Device	Refer to Note
Data Cable Supplied	USB Cable x1 (Shielded, 1.0m)

Note:

1. Two eMMC provided to the EUT, please refer to the following table:

No.	Model	Remark
1	EMMC32G-TX29-GA8A	1 st source eMMC
2	MKEMF032GZ1E-C	2 nd source eMMC

Note: From the above eMMCs, the worst case was found in **No. 1**. Therefore only the test data of the mode was recorded in this report.

2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	Bluetooth
2	WLAN (5GHz)	Bluetooth

3. The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
INPAQ	ACM3-3216-P1-CC-S	0.6	2.4~2.4835	Chip Antenna	None
		2	5.15~5.85		

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 5850 MHz from CPU clock frequency, provided by NETRONIX, 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 NETRONIX, INC., for detailed feature description, please refer to the manufacturer's specifications or user's manual.

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	Radiated Emissions up to 1 GHz
1	Input(DC 5V From Host)+eMM(Kingston)+Mode(USB with Leather sheath)+Arrangement(Horizontal Placement)
2	Input(DC 5V From Host)+eMM(Kingston)+Mode(USB)+Arrangement(Horizontal Placement)
3	Input(DC 3.7V From Battery)+eMM(Kingston)+Mode(BT)+Arrangement(Horizontal Placement)
4	Input(DC 3.7V From Battery)+eMM(Kingston)+Mode(WiFi)+Arrangement(Horizontal Placement)
5	Input(DC 3.7V From Battery)+eMM(Kingston)+Mode(WiFi)+Arrangement(Vertical Placement)
6	Input(DC 3.7V From Battery)+eMM(Kingston)+Mode(WiFi)+Arrangement(Side Placement)
7	Input(DC 5V From Host)+eMM(MK FOUNDER)+Mode(USB with Leather sheath)+Arrangement(Horizontal Placement)

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

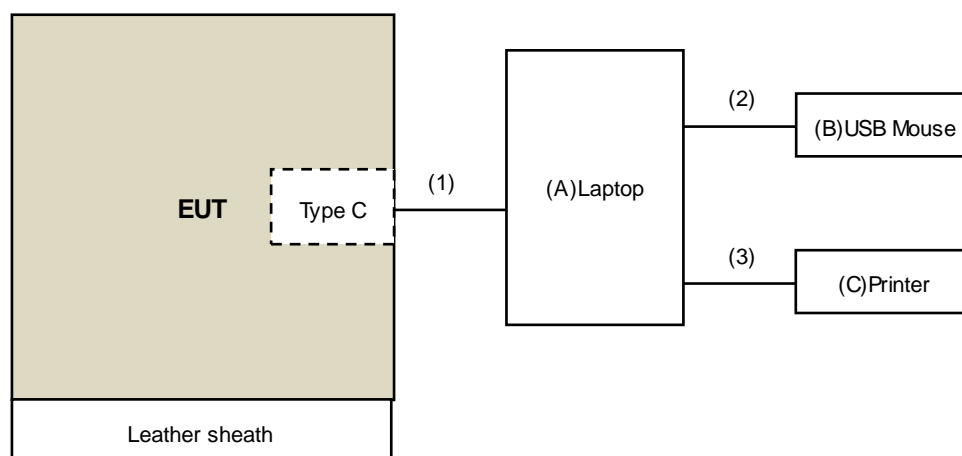
Test modes are presented in the report as below.

Test Condition	
Mode	Conducted Emissions from Power Ports
A	Input(DC 5V From Host)+eMM(Kingston)+Mode(USB with Leather sheath)+Arrangement(Horizontal Placement)
Mode	Radiated Emissions up to 1 GHz
A	Input(DC 5V From Host)+eMM(Kingston)+Mode(USB with Leather sheath)+Arrangement(Horizontal Placement)
Mode	Radiated Emissions above 1 GHz
A	Input(DC 5V From Host)+eMM(Kingston)+Mode(USB with Leather sheath)+Arrangement(Horizontal Placement)

3.5 Test Program Used and Operation Descriptions

1. Turn on the power of all equipment.
2. Support unit A (Laptop) runs a test program "EMC.bat" to enable EUT under "R/W mode" continually via one USB cable.
3. Support unit A (Laptop) runs "EMC test.exe" then sends "H" messages to itself.

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	Laptop	NA	NA	NA	NA	Provided by Lab
B	USB Mouse	NA	NA	NA	NA	Provided by Lab
C	Printer	NA	NA	NA	NA	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB Cable	1	1	Yes	0	Supplied by applicant
2	USB Cable	1	1.8	Yes	0	Provided by Lab
3	USB Cable	1	1.8	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	N/A	EMC-04	2020/10/26	2021/10/25
		EMC-06	2020/11/19	2021/11/18
DC LISN TESEQ	HV-AN 150	45176	2021/4/23	2022/4/22
		45177	2021/4/23	2022/4/22
Fixed attenuator STI	STI02-2200-10	006	2021/8/27	2022/8/26
LISN SCHWARZBECK	NSLK 8127	8127-522	2021/9/11	2022/9/10
LISN R&S	ENV216	100072	2021/6/16	2022/6/15
LISN SCHWARZBECK	NNLK 8121	0809	2021/2/24	2022/2/23
RF Coaxial Cable JYEBO	5D-FB	COACAB-001	2021/3/12	2022/3/11
Software BV	BVADT_Cond_ V7.3.7.4	NA	NA	NA
TEST RECEIVER R&S	ESCS30	100375	2021/5/11	2022/5/10

Notes:

1. The test was performed in HC - Conduction 3
2. Tested Date: 2021/10/2

4.2 Radiated Emissions up to 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Fixed attenuator Marvelous Microwave Inc.	MVE2252-05	MVE2252-05-001	2021/9/14	2022/9/13
Pre_Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-03	2020/10/20	2021/10/19
RF Coaxial Cable COMMATE/PEWC	8D	CHGCAB-005	2021/9/23	2022/9/22
	8D-FB	CHGCAB-001-2	2021/9/23	2022/9/22
RF Coaxial Cable	RF-141	CHGCAB-004	2021/9/23	2022/9/22
Software BV	ADT_Radiated_V8.7.08	NA	NA	NA
Test Receiver Agilent	N9038A	MY51210105	2021/6/17	2022/6/16
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	2020/11/4	2021/11/3

Notes:

1. The test was performed in HC - 966 chamber 1. The test site validated date: 2021/9/18(NSA)
2. Tested Date: 2021/9/30

4.3 Radiated Emissions above 1 GHz

For 1GHz ~ 18GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Fix tool for Boresight BV	BAF-01	5	NA	NA
Horn Antenna FT-RF	HA-07M18G-NF	0000320091110	2020/11/22	2021/11/21
Pre_Amplifier Agilent	8449B	3008A02578	2021/6/8	2022/6/7
Pre_Amplifier EMCI	EMC118A45SE	980817	2021/7/16	2022/7/15
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	181208	2021/8/24	2022/8/23
	EMC104-SM-SM-6000	181209	2021/8/24	2022/8/23
	EMC104-SM-SM-8500	181211	2021/8/24	2022/8/23
Software BV	ADT_Radiated_V8.7.08	NA	NA	NA
Spectrum Analyzer Agilent	E4446A	MY48250254	2020/11/20	2021/11/19
Test Receiver Agilent	N9038A	MY51210105	2021/6/17	2022/6/16

Notes:

1. The test was performed in HC - 966 chamber 1. The test site validated date: 2021/9/17 (VSWR)
2. Tested Date: 2021/9/30

For 18GHz ~ 40GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver Agilent	N9038A	MY51210105	2021/6/17	2022/6/16
Software BV	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Pre_Amplifier EMCI	EMC184045SE	980770	2021/7/16	2022/7/15
Horn Antenna SCHWARZBECK	BBHA 9170	9170-424	2021/11/14	2022/11/13
RF Cable(46GHz /1.5M) SUHNER	SUCOFLEX 102	36432/2	2021/1/5	2022/1/4
RF Coaxial Cable EMEC	EM102-KMKM-450	21090301	2021/9/11	2022/9/10

Notes:

1. The test was performed in HC - 966 chamber 1. The test site validated date: 2021/9/17 (VSWR)
2. Tested Date: 2021/12/7

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 (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
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		

Radiated Emissions Limits at 3 meters (dB 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
30-88	49.5	40	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54		

- Notes: 1. The lower limit shall apply at the transition frequencies.
 2. Emission level (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)

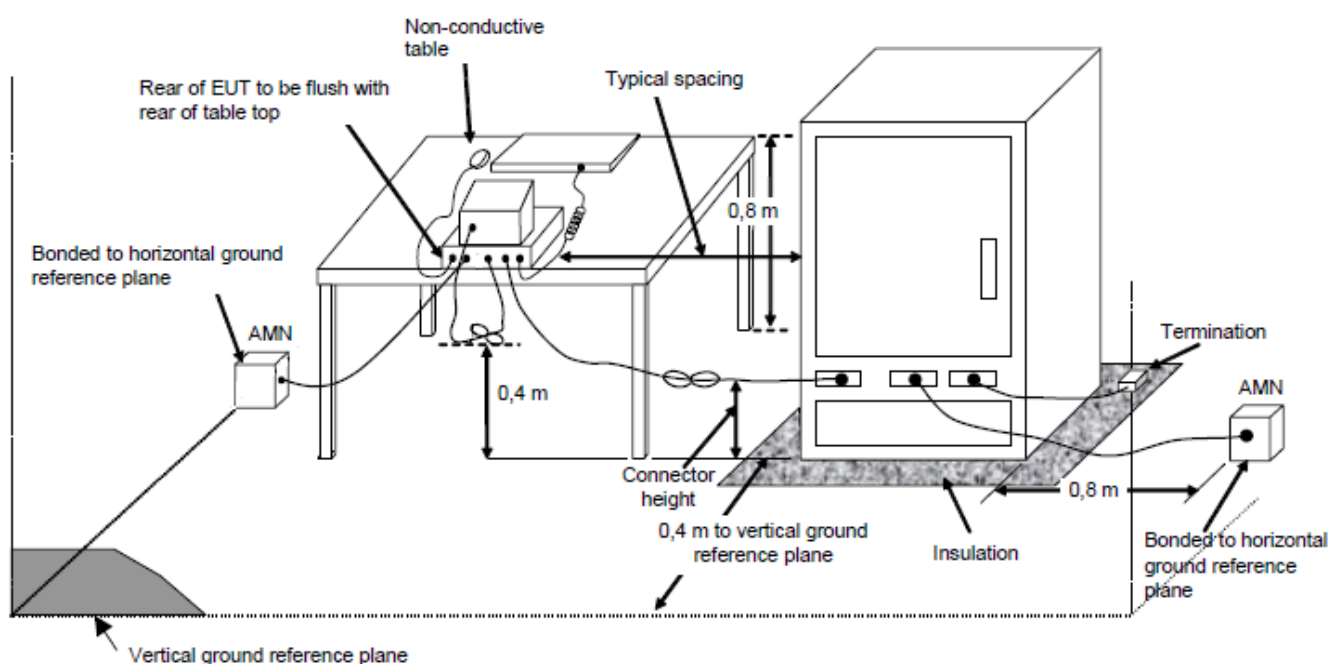
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower

6 Test Arrangements

6.1 Conducted Emissions from Power Ports

- 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.
- 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.

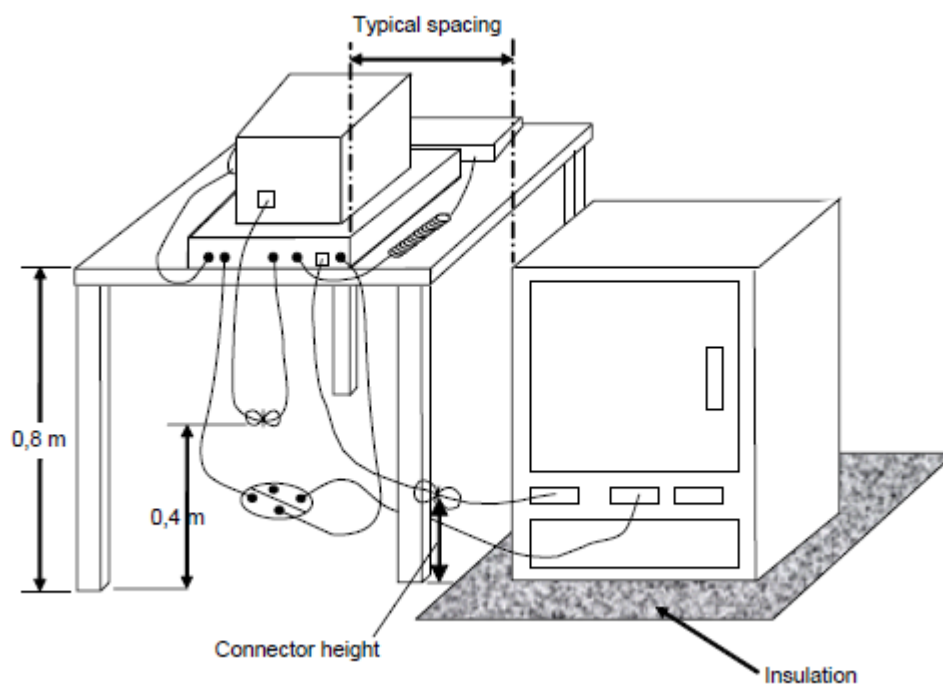


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

6.2 Radiated Emissions up to 1 GHz

- For the table-top EUT is placed on a 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 3 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.

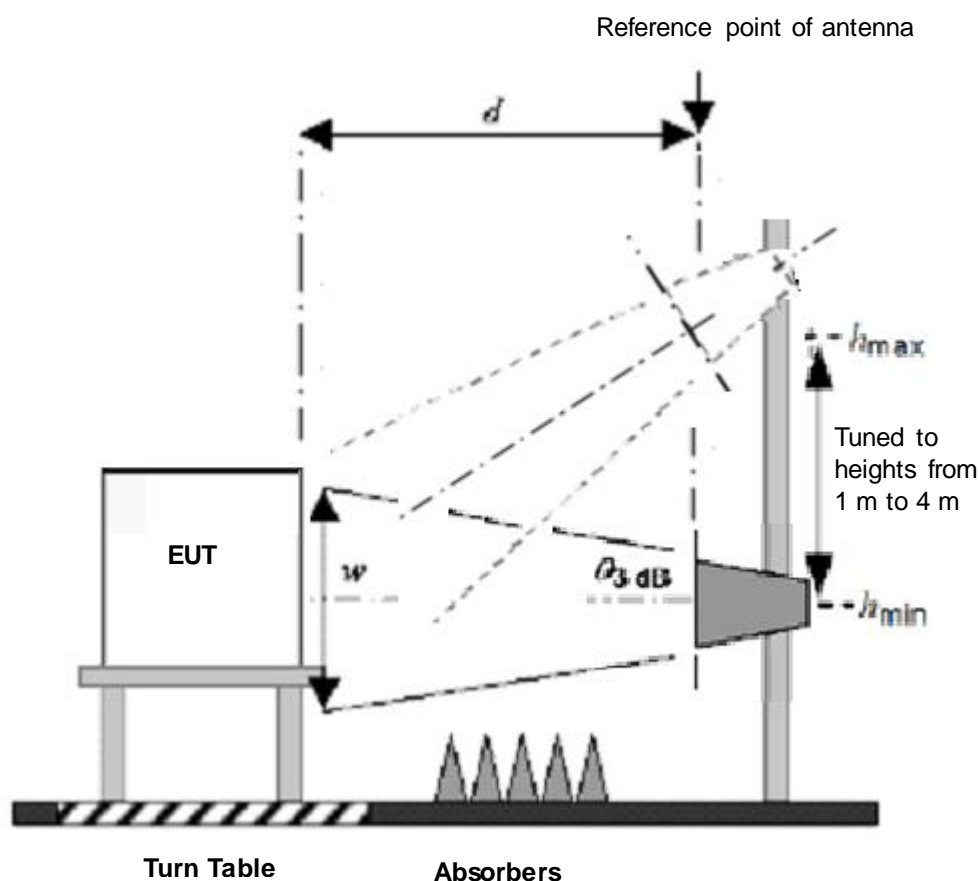


For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

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 for 1GHz to 29.25GHz 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

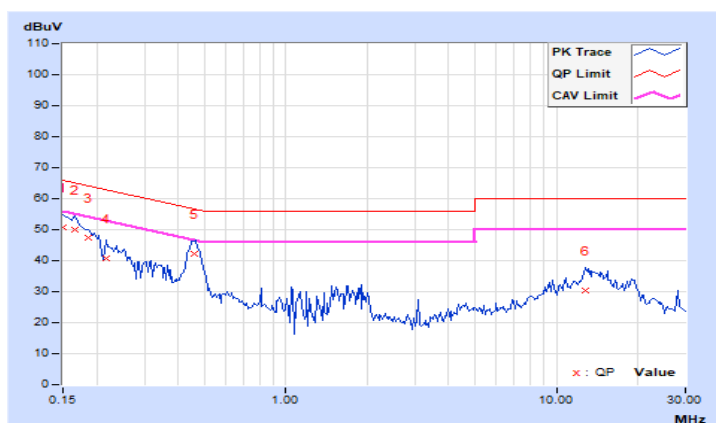
Mode A

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	26 °C, 75% RH
Tested by	Eagle 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	0.15022	10.04	40.63	26.79	50.67	36.83	65.99	55.99	-15.32	-19.16
2	0.16562	10.04	39.92	27.25	49.96	37.29	65.18	55.18	-15.22	-17.89
3	0.18516	10.03	37.37	18.79	47.40	28.82	64.25	54.25	-16.85	-25.43
4	0.21641	10.03	30.71	16.47	40.74	26.50	62.96	52.96	-22.22	-26.46
5	0.45859	10.04	32.22	26.90	42.26	36.94	56.72	46.72	-14.46	-9.78
6	12.85547	10.37	19.83	15.21	30.20	25.58	60.00	50.00	-29.80	-24.42

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

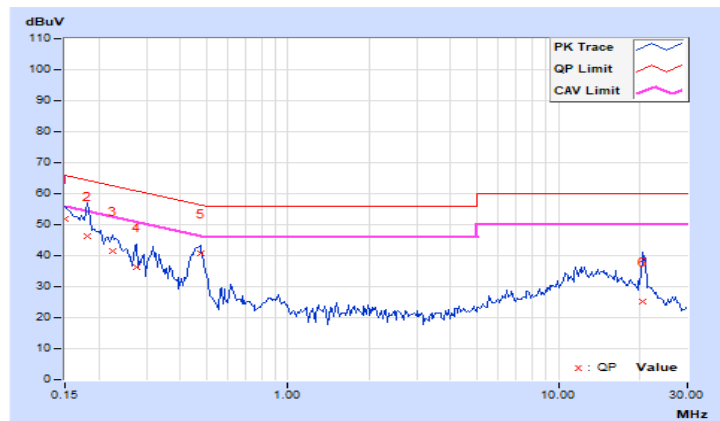


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	26 °C, 75% RH
Tested by	Eagle Chen		

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	0.15023	10.03	41.77	25.93	51.80	35.96	65.99	55.99	-14.19	-20.03
2	0.18125	10.02	36.28	20.65	46.30	30.67	64.43	54.43	-18.13	-23.76
3	0.22422	10.02	31.62	19.09	41.64	29.11	62.66	52.66	-21.02	-23.55
4	0.27500	10.03	26.15	14.32	36.18	24.35	60.97	50.97	-24.79	-26.62
5	0.47422	10.04	30.76	25.92	40.80	35.96	56.44	46.44	-15.64	-10.48
6	20.44531	10.53	14.83	9.76	25.36	20.29	60.00	50.00	-34.64	-29.71

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

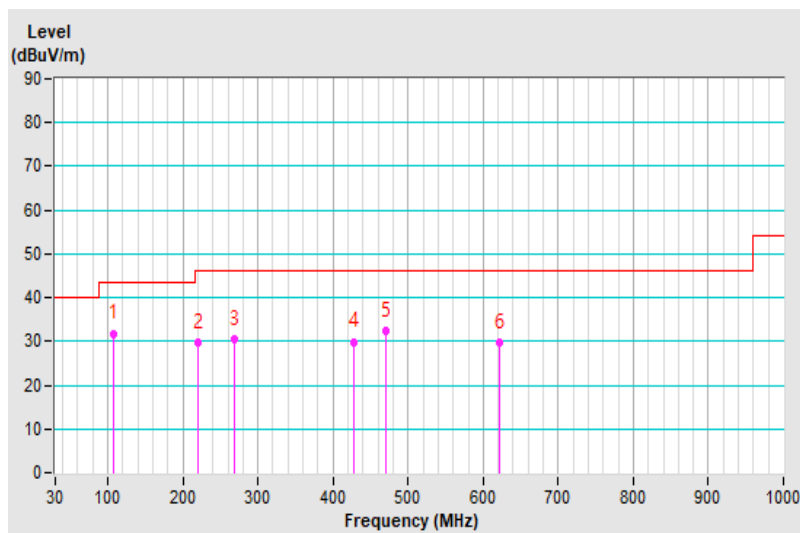
Mode A

Frequency Range	30MHz ~ 1GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120kHz
Input Power	DC 5V	Environmental Conditions	26 °C, 60% RH
Tested By	Gillian Peng		

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	108.33	31.82 QP	43.50	-11.68	2.73 H	255	43.23	-11.41
2	219.61	29.85 QP	46.00	-16.15	1.00 H	195	41.15	-11.30
3	269.32	30.58 QP	46.00	-15.42	4.00 H	146	39.30	-8.72
4	428.14	29.92 QP	46.00	-16.08	3.00 H	191	34.13	-4.21
5	471.06	32.50 QP	46.00	-13.50	4.00 H	62	35.73	-3.23
6	620.75	29.87 QP	46.00	-16.13	3.00 H	234	29.84	0.03

Remarks:

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

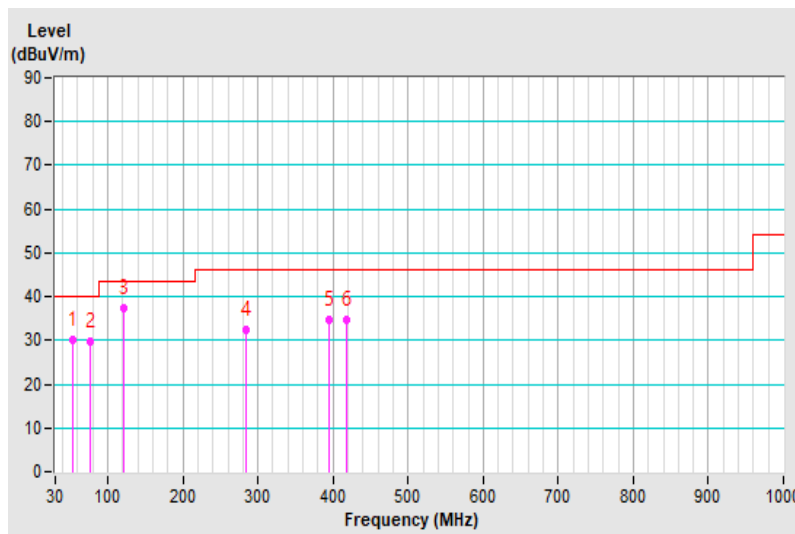


Frequency Range	30MHz ~ 1GHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP), 120kHz
Input Power	DC 5V	Environmental Conditions	26 °C, 60% RH
Tested By	Gillian Peng		

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	53.04	30.02 QP	40.00	-9.98	1.00 V	194	38.48	-8.46
2	76.51	29.80 QP	40.00	-10.20	2.00 V	166	42.15	-12.35
3	121.52	37.45 QP	43.50	-6.05	2.81 V	27	47.61	-10.16
4	284.38	32.35 QP	46.00	-13.65	2.00 V	360	40.50	-8.15
5	394.67	34.51 QP	46.00	-11.49	1.00 V	103	39.82	-5.31
6	417.44	34.52 QP	46.00	-11.48	2.00 V	319	39.17	-4.65

Remarks:

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



7.3 Radiated Emissions above 1 GHz

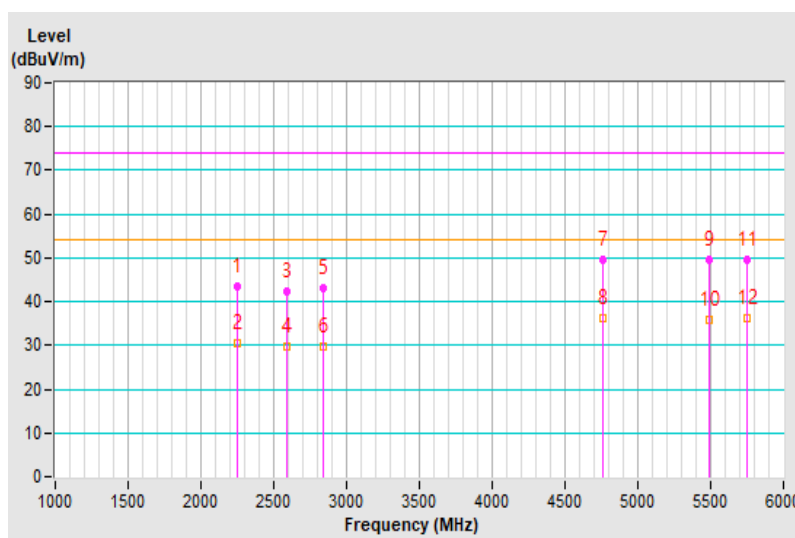
Mode A

Frequency Range	1GHz ~ 18GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	DC 5V	Environmental Conditions	26 °C, 60 % RH
Tested By	Gillian Peng		

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	2247.75	43.58 PK	74.00	-30.42	1.50 H	57	40.56	3.02
2	2247.75	30.55 AV	54.00	-23.45	1.50 H	0	27.53	3.02
3	2592.25	42.34 PK	74.00	-31.66	1.00 H	202	40.53	1.81
4	2592.25	29.70 AV	54.00	-24.30	1.00 H	235	27.89	1.81
5	2839.25	43.13 PK	74.00	-30.87	2.00 H	279	39.77	3.36
6	2839.25	29.75 AV	54.00	-24.25	2.00 H	218	26.39	3.36
7	4764.25	49.51 PK	74.00	-24.49	1.50 H	199	37.18	12.33
8	4764.25	36.27 AV	54.00	-17.73	1.32 H	360	23.94	12.33
9	5486.25	49.49 PK	74.00	-24.51	1.00 H	327	37.50	11.99
10	5486.25	35.74 AV	54.00	-18.26	1.00 H	287	23.75	11.99
11	5751.00	49.41 PK	74.00	-24.59	1.00 H	360	37.20	12.21
12	5751.00	36.21 AV	54.00	-17.79	1.00 H	342	24.00	12.21

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

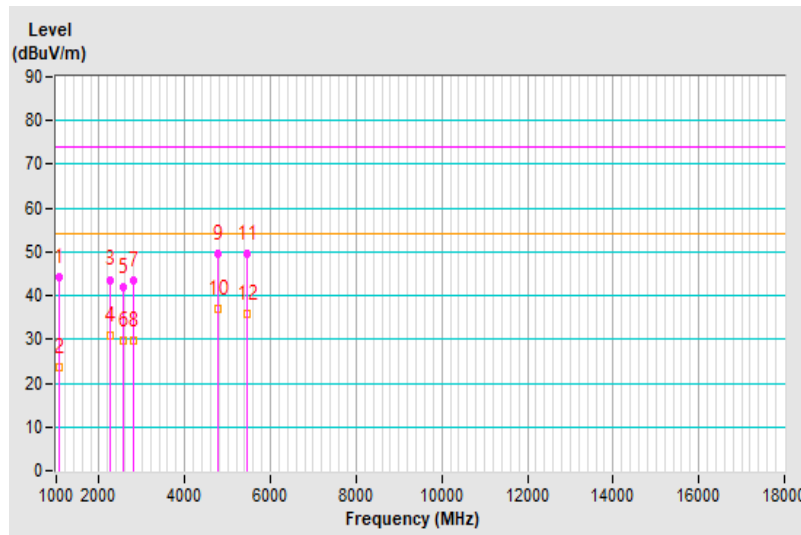


Frequency Range	1GHz ~ 18GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	DC 5V	Environmental Conditions	26 °C, 60 % RH
Tested By	Gillian Peng		

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	1059.25	44.21 PK	74.00	-29.79	1.00 V	336	50.81	-6.60
2	1059.25	23.64 AV	54.00	-30.36	1.00 V	360	30.24	-6.60
3	2264.25	43.63 PK	74.00	-30.37	2.00 V	352	40.37	3.26
4	2264.25	30.76 AV	54.00	-23.24	2.00 V	91	27.50	3.26
5	2579.50	42.00 PK	74.00	-32.00	2.00 V	327	40.27	1.73
6	2579.50	29.56 AV	54.00	-24.44	2.00 V	282	27.83	1.73
7	2795.25	43.29 PK	74.00	-30.71	2.00 V	0	40.48	2.81
8	2795.25	29.56 AV	54.00	-24.44	2.00 V	6	26.75	2.81
9	4786.25	49.45 PK	74.00	-24.55	1.00 V	349	36.41	13.04
10	4786.25	36.90 AV	54.00	-17.10	1.01 V	305	23.86	13.04
11	5443.00	49.65 PK	74.00	-24.35	1.50 V	30	37.91	11.74
12	5443.00	35.82 AV	54.00	-18.18	1.50 V	76	24.08	11.74

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

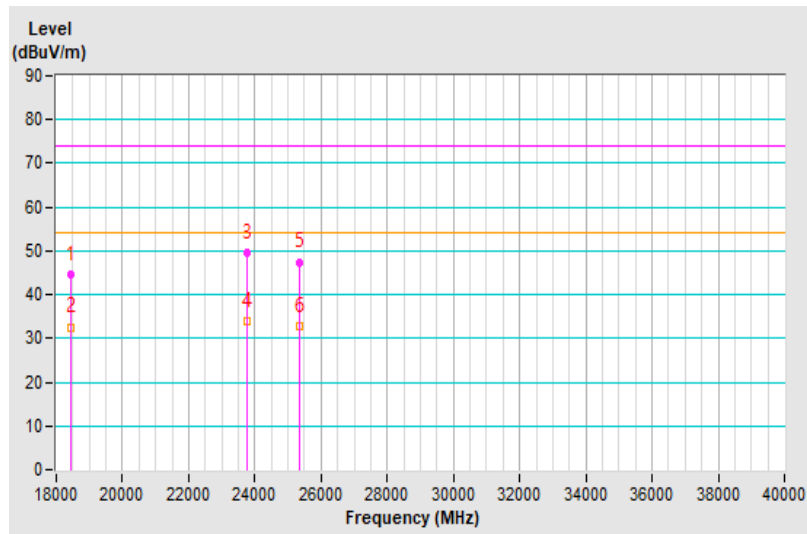


Frequency Range	18GHz ~ 29.25GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	DC 5V	Environmental Conditions	25 °C, 73 % RH
Tested By	Gillian Peng		

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	18459.28	44.76 PK	74.00	-29.24	1.50 H	360	54.51	-9.75
2	18459.28	32.60 AV	54.00	-21.40	1.50 H	21	42.35	-9.75
3	23760.71	49.48 PK	74.00	-24.52	1.00 H	0	53.77	-4.29
4	23760.71	34.04 AV	54.00	-19.96	1.11 H	340	38.33	-4.29
5	25343.18	47.48 PK	74.00	-26.52	1.00 H	238	51.22	-3.74
6	25343.18	32.74 AV	54.00	-21.26	1.00 H	0	36.48	-3.74

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

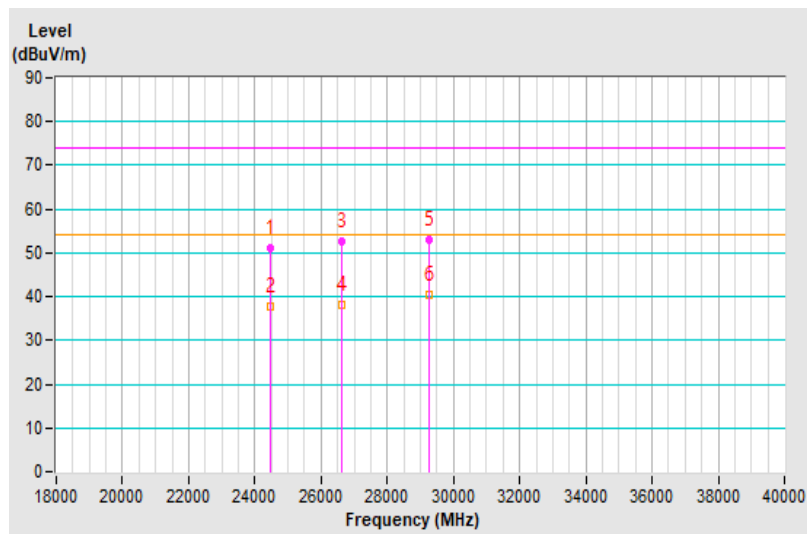


Frequency Range	18GHz ~ 29.25GHz	Detector Function & Resolution Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	DC 5V	Environmental Conditions	21 °C, 64 % RH
Tested By	Gillian Peng		

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	24481.02	51.03 PK	74.00	-22.97	1.00 V	89	54.10	-3.07
2	24481.02	37.67 AV	54.00	-16.33	1.00 V	360	40.74	-3.07
3	26643.14	52.75 PK	74.00	-21.25	1.50 V	152	54.96	-2.21
4	26643.14	38.09 AV	54.00	-15.91	1.50 V	338	40.30	-2.21
5	29248.44	53.15 PK	74.00	-20.85	1.00 V	303	55.04	-1.89
6	29248.44	40.50 AV	54.00	-13.50	1.07 V	360	42.39	-1.89

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@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---