FCC Test Report

Report No.:	RFCDVB-WTW-P22100073-6
FCC ID:	QYLEMR116V
Test Model:	V110, V110G7, V110Y (Y= 10 characters, Y can be 0 to 9, A to Z, a to z, “/”, “\”, “-”, “_” or blank for marketing purpose)
Received Date:	Oct. 11, 2022
Test Date:	Nov. 01 ~ Nov. 02, 2022
Issued Date:	Jan. 03, 2023
Applicant:	Getac Technology Corporation.
Address:	5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, 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 (1):	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
Test Location (2):	No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan
FCC Registration / Designation Number:	788550 / TW0003 281270 / TW0032

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Release Control Record

Issue No.	Description	Date Issued
RFCDVB-WTW-P22100073-6	Original Release	Jan. 03, 2023

1 Certificate of Conformity

Product:	Notebook
Brand:	Getac
Test Model:	V110, V110G7, V110Y (Y= 10 characters, Y can be 0 to 9, A to Z, a to z, "/", "\", "-", "_" or blank for marketing purpose)
Sample Status:	Engineering Sample
Applicant:	Getac Technology Corporation.
Test Date:	Nov. 01 ~ Nov. 02, 2022
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.209) ANSI C63.10-2013

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 RF characteristics under the conditions specified in this report.

Prepared by : Lena Wang , **Date:** Jan. 03, 2023

Lena Wang / Specialist

Approved by : Jeremy Lin , **Date:** Jan. 03, 2023

Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.209)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.207	Conducted emission test	Pass	Meet the requirement of limit. Minimum passing margin is -4.20 dB at 1.10200 MHz.
15.209	Radiated emission test	Pass	Meet the requirement of limit. Minimum passing margin is -3.5 dB at 29.67 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	**Frequency**	**Expanded Uncertainty (k=2) (±)**
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~1000MHz	2.93 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Notebook
Brand	Getac
Test Model	V110, V110G7, V110Y (Y= 10 characters, Y can be 0 to 9, A to Z, a to z, "/", "\", "-", "_" or blank for marketing purpose)
Status of EUT	Engineering Sample
Power Supply Rating	19Vdc from adapter 11.1Vdc from battery
Operating Frequency	82 kHz
Antenna Type	Loop Antenna
Antenna Connector	FFC & FPC Connector
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. All models are listed as below.

Product	Brand	Model	Difference
Notebook	Getac	V110	All models are electrically identical, different model names are for marketing purpose.
		V110G7	
		V110Y (Y= 10 characters, Y can be 0 to 9, A to Z, a to z, "/", "\", "-", "_" or blank for marketing purpose)	

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	Getac Technology Corp.	MTA190474W4	I/P: 100-240Vac, 50-60Hz, 1.6A O/P: 19.0Vdc, 4.74A (90.0W)
Adapter 2	FSP	FSP065-RBBN3	I/P: 100-240Vac, 50-60Hz, 1.5A O/P: 19.0Vdc, 3.42A
Battery	Getac Technology Corp.	BP3S1P2100-S	Rating: 11.1Vdc, 2040mAh, 23Wh Typical name: 2100mAh, 24Wh
WWAN Module	Telit	LN920A12-WW	-
WiFi & BT Module	Intel	AX211NGW	--
LCD Panel	AUO	G116HAN01	11.6"
CPU	Intel	Alder Lake	Intel® Core™ i5-1235U (vPro Essentials)
	Intel	Alder Lake	Intel® Core™ i7-1265U (vPro Enterprise)
DDR	Kingston	N/A	16GB (8GB+8GB)
			32GB (16GB+16GB)
			64GB (32GB+32GB)
SSD	SSSTC	N/A	256GB
			512GB
			1TB
RFID module	NXP	PN-7462	-
Digitizer module	Getac	EMR116-UA00	-
Digitizer Pen	EMpen Technology Corp	DIGITIZER PEN	-

3. The configurations of all SKU are listed as below, and SKU2 was the worst case for final test

Part	Brand	Model	Specification	Configuration		
				SKU 1	SKU 2	SKU 3
CPU	Intel	Alder Lake	i5-1235U (Non Vpro)	V		V
			i7-1265U (Vpro)		V	
DDR	Kingston	---	16GB (8GB+8GB)	V		
		---	32GB (16GB+16GB)		V	
		---	64GB (32GB+32GB)			V
SSD	SSSTC	---	256GB	V		
		---	512GB		V	
		---	1TB			V
LCD Panel	AUO	G116HAN01	11.6"	V	V	V
Touchscreen	Getac	---	---	V	V	V
Finger Print	Egistec	---	---	V	V	V
WLAN Module	Intel	AX211NGW	---	V	V	V
WWAN Module	Telit	LN920A12-WW	---	V	V	V
GPS	GlobalSat	MC1010G	---	V	V	V
RFID Module	NXP	PN-7462	---		V	V
Digitizer Module	Getac	EMR116-UA00	---		V	V
Bottom Camera	FOXLINK	FN80AF-443H	---	V	V	V
	Chicony	CKAM816	---	V	V	V
Camera	FOXLINK	FN20FF-679H	---	V	V	V
IR Camera	FOXLINK	FN23FF-678H	---		V	V
Option Bay	Honeywell	N6703	Barcode	V		V
	Getac	---	SD Card reader		V	
	Getac	---	Smart Card		V	

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
5. Only radiated measurements are used to show compliance with FCC limits for fundamental and spurious emission.
6. The EUT contains certified WLAN/BT module (Brand: Getac / Model: AX211NGW, FCC ID: QYLAX211NG), and WWAN module (Brand: Getac / Model: LN920A12-WW, FCC ID: QYLLN920V), and RFID module (Brand: NXP / Model: PN-7462, FCC ID: QYLV110NXP).

3.2 Description of Test Modes

1 channel is provided to this EUT:

Channel	Frequency (kHz)
1	82

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To		Description
	RE<1G	PLC	
-	√	√	-

Where **RE<1G:** Radiated Emission below 1 GHz **PLC:** Power Line Conducted Emission

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel
-	1	1

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel
-	1	1

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE	23 deg. C, 70 % RH	120 Vac, 60 Hz	Randy Wu
PLC	22.7 deg. C, 69.7 % RH	120 Vac, 60 Hz	Thomas Cheng

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

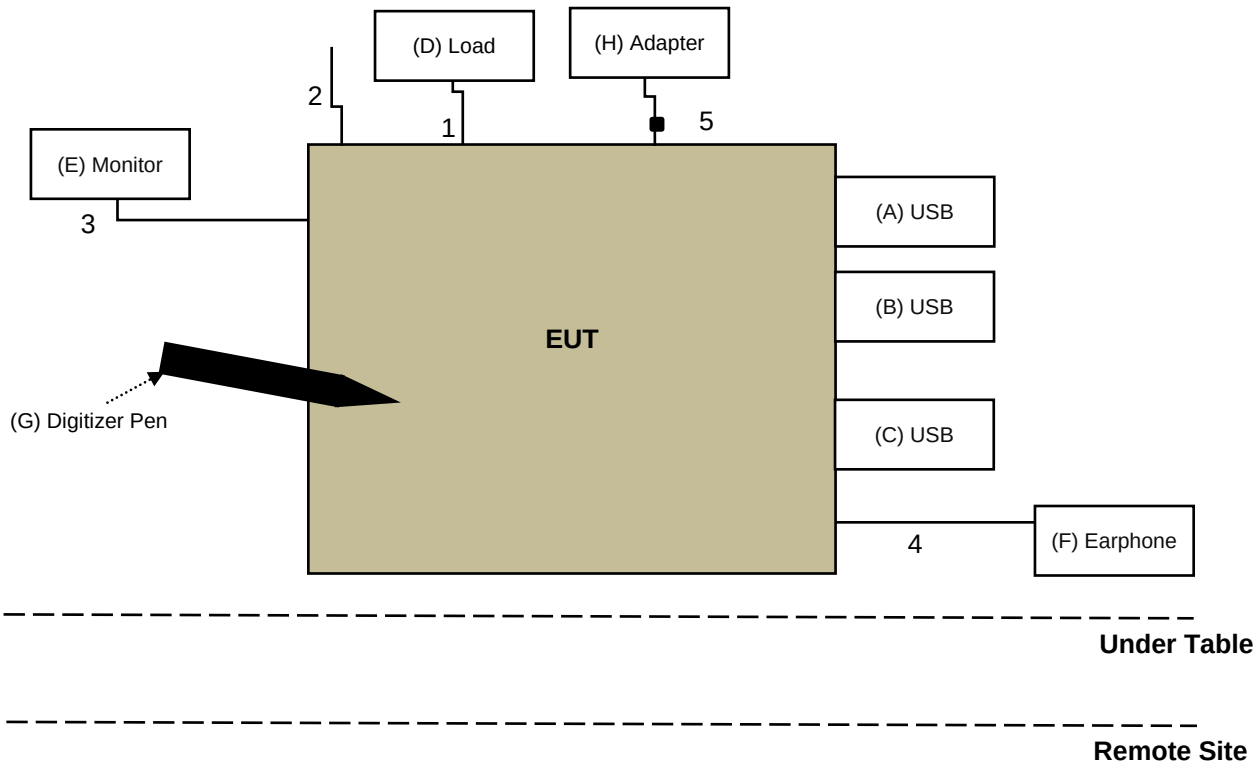
No.	Product	Brand	Model No.	Serial No.	FCC ID
A.	USB	SanDisk	SDDDC3-032G	N/A	N/A
B.	USB	SanDisk	SDDDC3-032G	N/A	N/A
C.	USB	SanDisk	SDDDC3-032G	N/A	N/A
D.	Load	N/A	N/A	N/A	N/A
E.	Monitor	ASUS	VA24EHE	LCLMTF243824	NA
F.	Earphone	Apple	MB77PFEB	N/A	N/A
G.	Digitizer Pen	EMpen Technology Corp	DIGITIZER PEN	N/A	N/A
H.	Adapter	FSP	FSP065-RBBN3	N/A	N/A

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	1.5	N	0	--
2.	Console Cable	1	1	Y	0	--
3.	HDMI Cable	1	1	Y	0	--
4.	Earphone Cable	1	1.5	N	0	--
5.	DC Cable	1	1.5	N	1	--

Note:

1. All power cords of the above support units are non-shielded (1.8m).

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.209)
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, 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 20 dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver Rohde & Schwarz	ESR3	102783	Dec. 20, 2021	Dec. 19, 2022
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 24, 2021	Dec. 23, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-1214	Oct. 20, 2022	Oct. 19, 2023
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1170	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	995	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna EMCI	EM-6879	269	Sep. 19, 2022	Sep. 18, 2023
Loop Antenna TESEQ	HLA 6121	45745	Jul. 27, 2022	Jul. 26, 2023
Preamplifier EMCI	EMC330N	980798	Jan. 17, 2022	Jan. 16, 2023
Preamplifier EMCI	EMC118A45SE	980809	Dec. 30, 2021	Dec. 29, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC104-SM-SM-(9000+2000+1000)	201244+ 201232+ 210103	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMCCFD400-NM-NM-(9000+300+500)	201251+ 201249+ 201248	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC101G-KM-KM-(5000+3000+2000)	201261+201258+201249	Jan. 17, 2022	Jan. 16, 2023
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2022	Jul. 12, 2023

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in WM Chamber 9.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 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 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 below 1 GHz.
f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

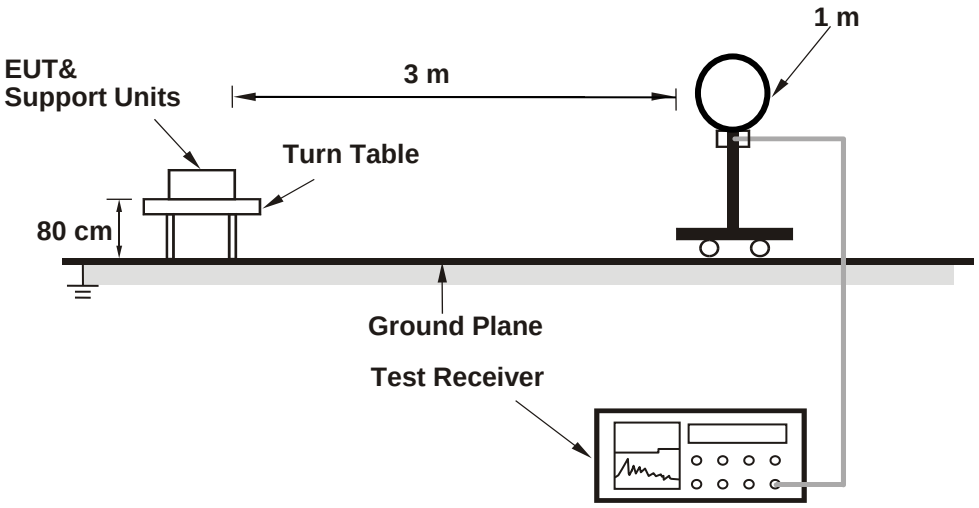
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

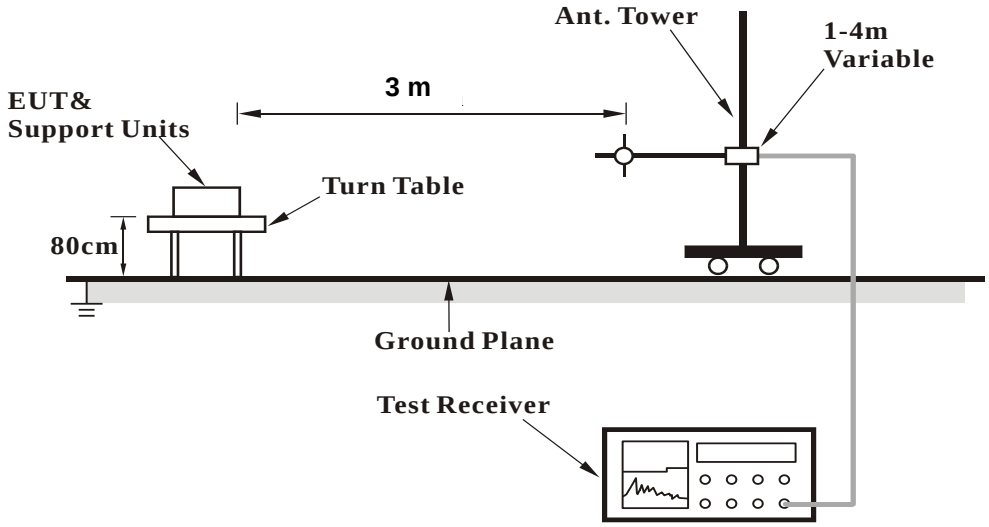
No deviation.

4.1.5 Test Setup

<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

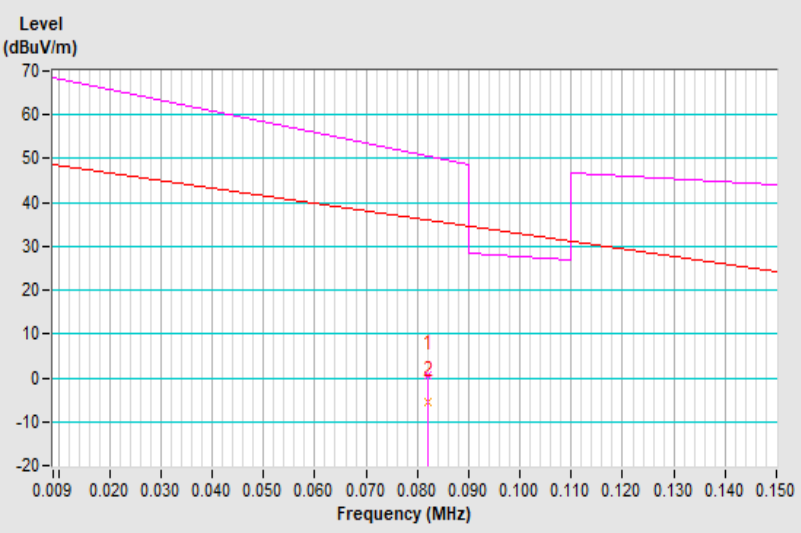
4.1.7 Test Results

Test Mode	Tx		
RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	9kHz ~ 150kHz	Detector Function & Bandwidth	Quasi-Peak (QP) / Average (AV), 200Hz

Antenna Polarity : Parallel								
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	0.082	0.6 QP	49.3	-48.7	1.0	178	20.5	-19.9
2	0.082	-5.4 AV	29.3	-34.7	1.0	178	14.5	-19.9

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)
   + Distance conversion factor
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. For 0.009 ~ 0.49MHz, the measured field strength was extrapolated to distance 300 meters
   Distance factor@3m = 40*log(3/300) = -80dB

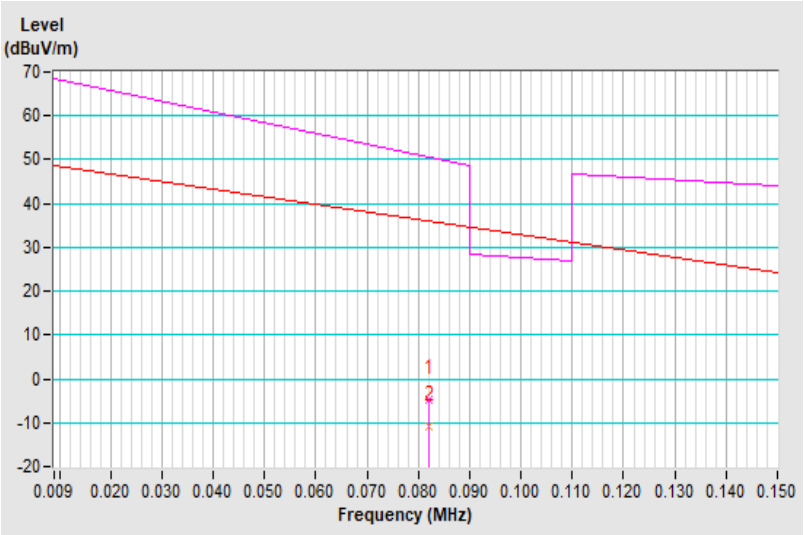


Test Mode	Tx		
RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	9kHz ~ 150kHz	Detector Function & Bandwidth	Quasi-Peak (QP) / Average (AV), 200Hz

Antenna Polarity : Perpendicular								
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	0.082	-4.7 QP	49.3	-54.0	1.0	265	15.2	-19.9
2	0.082	-10.8 AV	29.3	-40.1	1.0	265	9.1	-19.9

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)
   + Distance conversion factor
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * “: Fundamental frequency.
6. For 0.009 ~ 0.49MHz, the measured field strength was extrapolated to distance 300 meters
   Distance factor@3m = 40*log(3/300) = -80dB

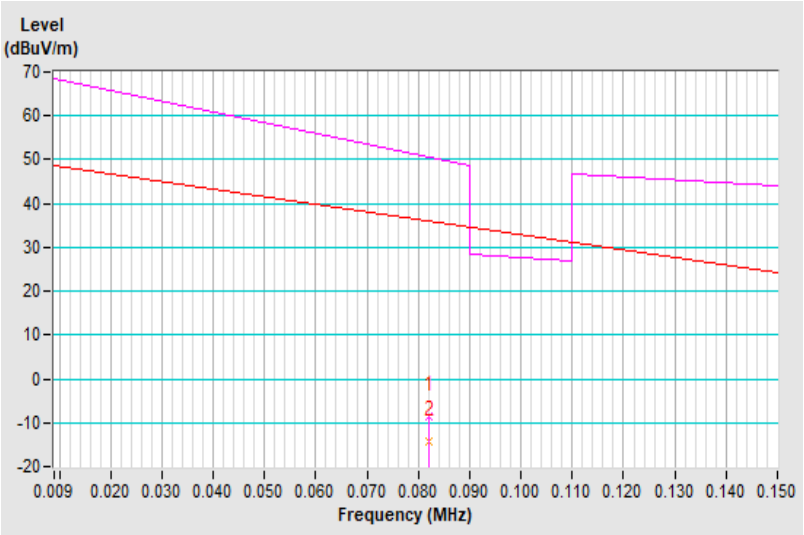


Test Mode	Tx		
RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	9kHz ~ 150kHz	Detector Function & Bandwidth	Quasi-Peak (QP) / Average (AV), 200Hz

Antenna Polarity : Ground-parallel								
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	0.082	-8.4 QP	49.3	-57.7	1.0	167	11.5	-19.9
2	0.082	-14.4 AV	29.3	-43.7	1.0	167	5.5	-19.9

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)
   + Distance conversion factor
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. “ * “: Fundamental frequency.
6. For 0.009 ~ 0.49MHz, the measured field strength was extrapolated to distance 300 meters
   Distance factor@3m = 40*log(3/300) = -80dB



Test Mode	Tx		
RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	9kHz ~ 30MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz

Antenna Polarity : Parallel								
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	3.01	-1.1 QP	29.5	-30.6	1.0	173	19.0	-20.0
2	11.71	5.1 QP	29.5	-24.4	1.0	6	23.2	-18.1
3	13.56	16.0 QP	29.5	-13.5	1.0	172	34.0	-18.0
4	18.75	14.5 QP	29.5	-15.0	1.0	92	32.4	-17.8
5	28.89	11.3 QP	29.5	-18.2	1.0	181	29.3	-18.0
6	29.67	13.9 QP	29.5	-15.7	1.0	169	31.9	-18.0

Remarks:

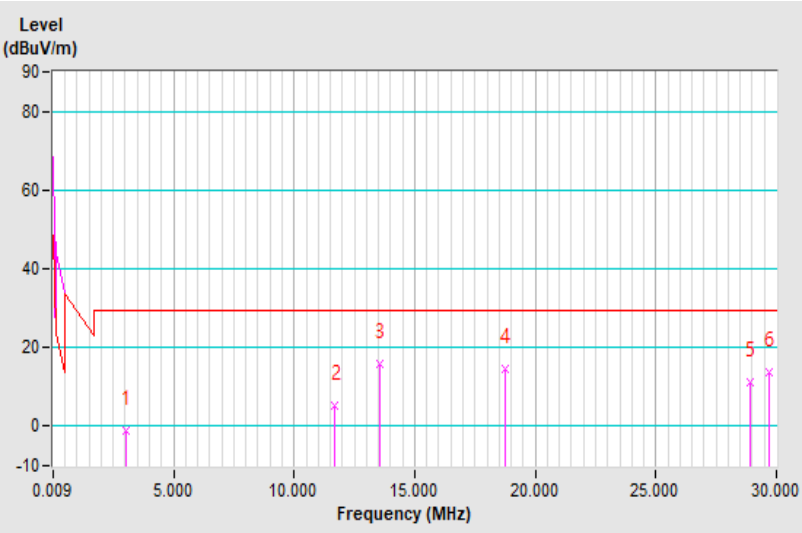
1. Emission level (dBuV/m) = Raw Value (dBuV) + Factor (dB/m)

2 The other emission levels were very low against the limit.

3. Margin value = Emission level – Limit value.

4. The factor value already contains the test distance interpolation coefficient.

The measured field strength above 490kHz was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)



Test Mode	Tx		
RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	9kHz ~ 30MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz

Antenna Polarity : Perpendicular								
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	3.01	5.0 QP	29.5	-24.5	1.0	73	25.0	-20.0
2	5.47	4.8 QP	29.5	-24.7	1.0	227	24.4	-19.6
3	14.82	10.2 QP	29.5	-19.3	1.0	88	28.2	-18.0
4	18.75	19.5 QP	29.5	-10.0	1.0	242	37.3	-17.8
5	28.11	23.9 QP	29.5	-5.6	1.0	205	41.9	-18.0
6	**29.67**	**26.0 QP**	**29.5**	**-3.5**	**1.0**	**67**	**44.0**	**-18.0**

Remarks:

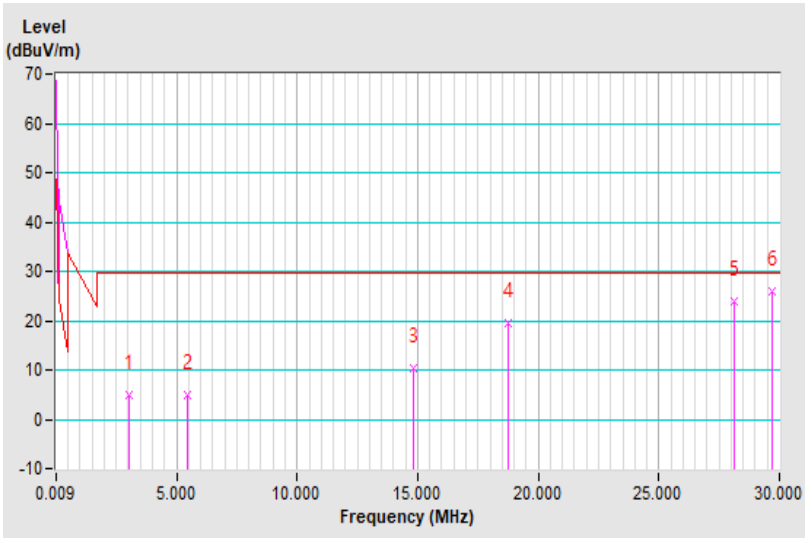
1. Emission level (dBuV/m) = Raw Value (dBuV) + Factor (dB/m)

2 The other emission levels were very low against the limit.

3. Margin value = Emission level – Limit value.

4. The factor value already contains the test distance interpolation coefficient.

The measured field strength above 490kHz was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

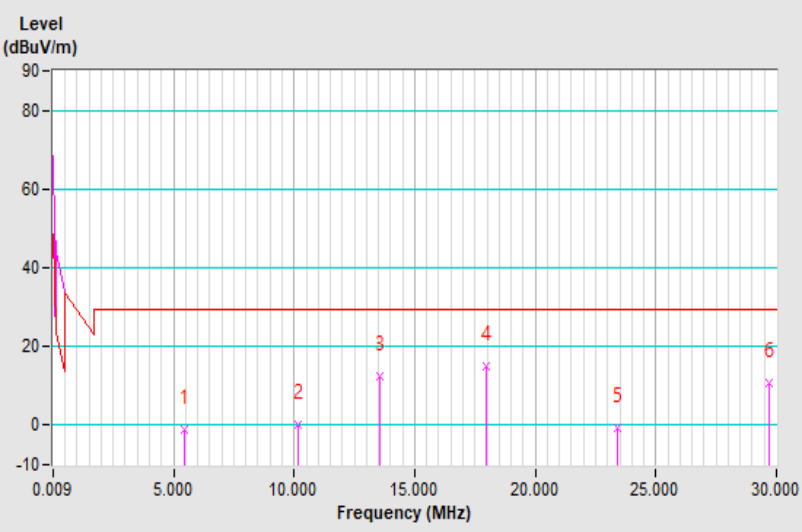


Test Mode	Tx		
RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	9kHz ~ 30MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz

Antenna Polarity : Ground-parallel								
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	5.47	-1.0 QP	29.5	-30.5	1.0	148	18.7	-19.6
2	10.15	0.1 QP	29.5	-29.5	1.0	137	18.2	-18.1
3	13.56	12.6 QP	29.5	-16.9	1.0	268	30.6	-18.0
4	17.97	15.0 QP	29.5	-14.5	1.0	2	32.9	-17.9
5	23.43	-0.5 QP	29.5	-30.0	1.0	2	17.4	-17.9
6	29.67	10.7 QP	29.5	-18.9	1.0	181	28.7	-18.0

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

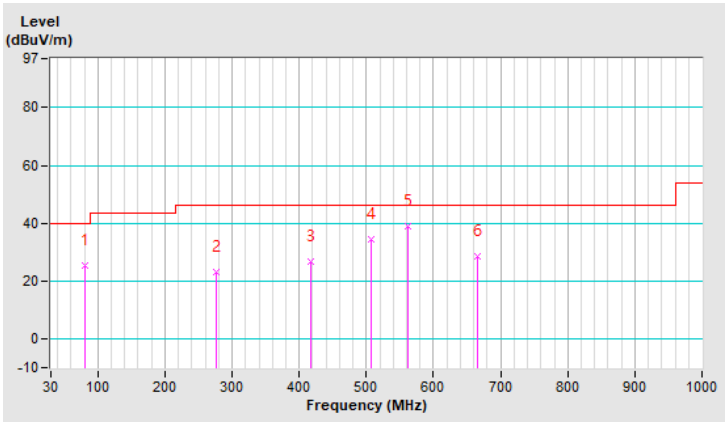


RF Mode	TX RFID	Channel	CH 1：82 kHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	80.44	25.4 QP	40.0	-14.6	1.99 H	30	43.5	-18.1
2	277.35	23.3 QP	46.0	-22.7	1.00 H	264	36.2	-12.9
3	417.03	26.8 QP	46.0	-19.2	1.99 H	2	36.5	-9.7
4	507.24	34.5 QP	46.0	-11.5	1.49 H	184	42.2	-7.7
5	562.53	39.0 QP	46.0	-7.0	1.49 H	137	45.7	-6.7
6	665.35	28.5 QP	46.0	-17.5	1.49 H	287	33.0	-4.5

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 of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

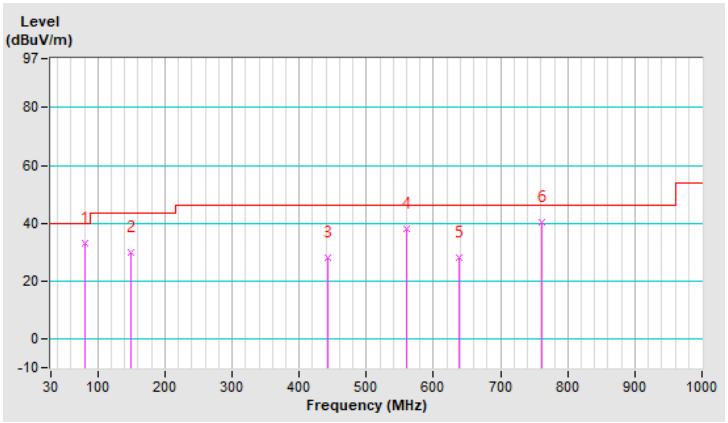


RF Mode	TX RFID	Channel	CH 1：82 kHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	80.44	33.1 QP	40.0	-6.9	1.01 V	94	51.2	-18.1
2	148.34	29.8 QP	43.5	-13.7	1.01 V	199	43.0	-13.2
3	443.22	28.1 QP	46.0	-17.9	1.01 V	184	36.9	-8.8
4	559.62	38.0 QP	46.0	-8.0	1.01 V	17	44.8	-6.8
5	639.16	27.9 QP	46.0	-18.1	1.01 V	99	32.6	-4.7
6	762.35	40.2 QP	46.0	-5.8	1.01 V	2	43.2	-3.0

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 of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Dec. 20, 2021	Dec. 19, 2022
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 03, 2022	Sep. 02, 2023
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Feb. 17, 2022	Feb. 16, 2023
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Sep. 22, 2022	Sep. 21, 2023
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2 (Conduction 2).
3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

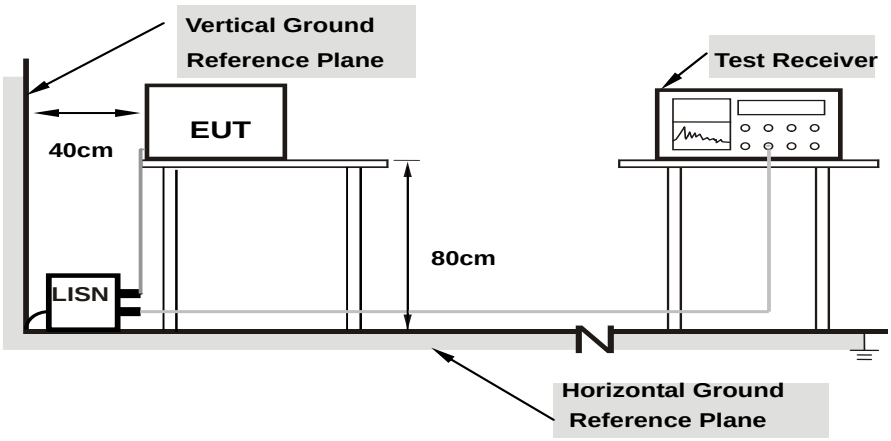
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz - 30 MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

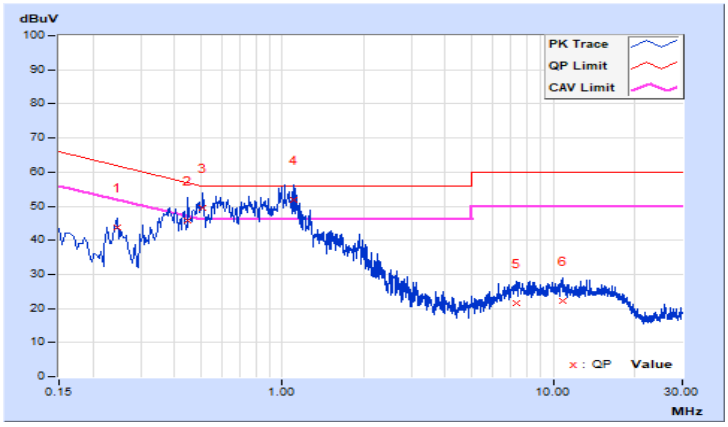
4.2.7 Test Results

RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	22.7°C, 69.7% RH
Tested By	Thomas Cheng	Test Date	2022/11/2

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	0.24600	10.13	33.60	26.99	43.73	37.12	61.89	51.89	-18.16	-14.77
2	0.45000	10.15	35.78	29.93	45.93	40.08	56.88	46.88	-10.95	-6.80
3	0.51000	10.15	39.43	29.05	49.58	39.20	56.00	46.00	-6.42	-6.80
4	**1.10200**	**10.16**	**41.64**	**27.95**	**51.80**	**38.11**	**56.00**	**46.00**	**-4.20**	**-7.89**
5	7.27800	10.25	11.35	4.19	21.60	14.44	60.00	50.00	-38.40	-35.56
6	10.85400	10.27	12.03	6.14	22.30	16.41	60.00	50.00	-37.70	-33.59

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

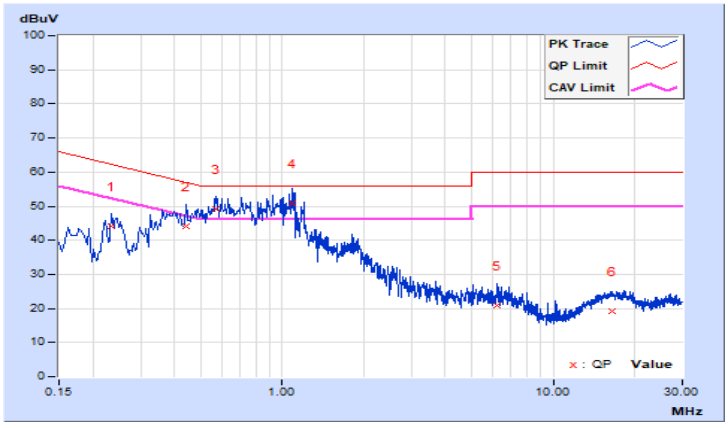


RF Mode	RFID	Channel	CH 1：82 kHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	22.7°C, 69.7% RH
Tested By	Thomas Cheng	Test Date	2022/11/2

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	0.23400	10.14	33.93	23.11	44.07	33.25	62.31	52.31	-18.24	-19.06
2	0.44178	10.15	33.83	24.27	43.98	34.42	57.03	47.03	-13.05	-12.61
3	0.56593	10.16	39.02	29.62	49.18	39.78	56.00	46.00	-6.82	-6.22
4	1.09000	10.17	40.65	25.50	50.82	35.67	56.00	46.00	-5.18	-10.33
5	6.23400	10.30	10.54	3.13	20.84	13.43	60.00	50.00	-39.16	-36.57
6	16.48200	10.44	8.67	2.93	19.11	13.37	60.00	50.00	-40.89	-36.63

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



5 Pictures of Test Arrangements

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

Appendix – 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:

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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.

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