FCC Test Report

Report No.:	RFBANI-WTW-P23080663
FCC ID:	2AVEAVT-270AHP7
Test Model:	VT-270AHP7
Series Model:	VT-270XXXX(X=0~9,A~Z,a~z OR BLANK)
Received Date:	2023/8/11
Test Date:	2023/12/7 ~ 2023/12/15
Issued Date:	2024/5/22
Applicant:	VITA ELECTRONICS CO., LTD.
Address:	5th Fl 103 Chou Tze St Neihu District Taipei 114 TAIWAN
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
FCC Registration / Designation Number:	198487 / TW2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBANI-WTW-P23080663	Original release	2024/5/22

1 Certificate of Conformity

Product:	27” LCD Monitor
Brand:	VITA
Test Model:	VT-270AHP7
Series Model:	VT-270XXXX(X=0~9,A~Z,a~z OR BLANK)
Sample Status:	Engineering sample
Applicant:	VITA ELECTRONICS CO., LTD.
Test Date:	2023/12/7 ~ 2023/12/15
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.225) 47 CFR FCC Part 15, Subpart C (Section 15.215) 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 : Annie Chang , **Date:** 2024/5/22

Annie Chang / Senior Specialist

Approved by : Jeremy Lin , **Date:** 2024/5/22

Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.225, 15.215)			
FCC Clause	Test Item	Result	Remarks
15.207	Conducted emission test	Pass	Meet the requirement of limit. Minimum passing margin is -16.25dB at 0.31359MHz
15.225 (a)	The field strength of any emissions within the band 13.553-13.567 MHz	Pass	Meet the requirement of limit. Minimum passing margin is -42.6dB at 13.35MHz.
15.225 (b)	The field strength of any emissions within the bands 13.410-13.553 MHz and 13.567-13.710 MHz	Pass	Meet the requirement of limit.
15.225 (c)	The field strength of any emissions within the bands 13.110-13.410 MHz and 13.710-14.010 MHz	Pass	Meet the requirement of limit.
15.225 (d)	The field strength of any emissions appearing outside of the 13.110-14.010 MHz band	Pass	Meet the requirement of limit. Minimum passing margin is -8.0dB at 296.75MHz
15.225 (e)	The frequency tolerance	Pass	Meet the requirement of limit.
15.215 (c)	20dB Bandwidth	Pass	Meet the requirement of limit.

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 Out of Band Emissions	9 kHz ~ 40 GHz	2.63 dB
AC Power Conducted Emissions	150kHz ~ 30MHz	2.88 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1GHz	5.7 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	27” LCD Monitor
Brand	VITA
Test Model	VT-270AHP7
Series Model	VT-270XXXX(X=0~9,A~Z,a~z OR BLANK)
Model Difference	Marketing Differentiation
Sample Status	Engineering sample
Power Supply Rating	12Vdc or 24Vdc from Adapter
Modulation Type	ASK
Operating Frequency	13.56MHz
Antenna Type	Loop Antenna with Wafer 6Pin 1.0mm connector
Field Strength	15.8dBuV/m @30m
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT has following samples:

Internal model	Shell material	IO Port
027-00000-2790A	Metal	HDMI, DP, USB3.0, USB (for Touch), Audio, Speake1, DC in
027-00000-2790C	Plastic	
027-U0042-27902	Plastic	HDMI*2, DP*1, USB (for Touch)*1, Audio*1,Speaker*1, DC in*1

The above Samples were pre-tested and Sample: **027-00000-2790A** was the worst case for final test.

2. The EUT consumes power from the switching power adapters, as the following:

Item	Brand	Model	Specification
AC Adapter 1	EDAC	EM10951E	AC Input : 100-240Vac, 50-60Hz, 2.5-1.0A (3pin, 1.5m) DC Output : 24.0V, 3.75A, 90.0W (1.0m, with 1 core)
AC Adapter 2	EDAC	EM10951F	AC Input : 100-240Vac 50-60Hz, 2.5-1.0A (3pin, 1.5m) DC Output : 12.0V, 7.5A, 90.0W (1.0m, with 1 core)
AC Adapter 3	ADAPTER TECH.	ATM160T-P240	AC Input : 100-240Vac, 50-60Hz, 1.8-0.9A (3pin, 1.5m) DC Output : 24.0V , 6.60A , 158.40W (1.5m, w/o core)

The above adapters were pre-tested and **AC Adapter 3** was the worst case for final test.

3. The EUT has the following cable sources could be chosen

Non-shielded Audio cable (1.5m)
Shielded HDMI cable (1.8m)
Shielded USB cable with 2 cores (1.8m)
Shielded DVI cable with 2 cores (1.8m)
Shielded DP cable (1.8m)
Shielded D-Sub cable with 2 cores (1.5m)
Non-shielded AC Power cable 3-Pin (1.5m)

4. Only radiated measurements are used to show compliance with FCC limits for fundamental and spurious emissions.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

1 channel is provided to EUT:

Channel	Frequency (MHz)
1	13.56

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE<1G	PLC	FS	EB	
A	√	√	√	√	Operating Mode with RFID card
B	√	√	-	√	Operating Mode without RFID card

Where **RE<1G:** Radiated Emission below 1GHz **FS:** Frequency Stability
PLC: Power Line Conducted Emission **EB:** 20dB Bandwidth measurement
NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**

Radiated Emission Test (Below 1GHz):

☒ 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	Frequency (MHz)	Modulation Type
A & B	1	13.56	ASK

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	Operating Frequency (kHz)	Tested Frequency (kHz)	Modulation Type
A & B	1	13.56	ASK

Frequency Stability:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ 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	Operating Frequency (kHz)	Tested Frequency (kHz)	Modulation Type
A	1	13.56	ASK

20dB Bandwidth:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ 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	Operating Frequency (kHz)	Tested Frequency (kHz)	Modulation Type
A & B	1	13.56	ASK

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE<1G	25 deg. C, 75% RH	120Vac, 60Hz	Ian Chang
PLC	25 deg. C, 75% RH	120Vac, 60Hz	William Su
FS	25 deg. C, 76% RH	120Vac, 60Hz	Dalen Dai
EB	25 deg. C, 76% RH	120Vac, 60Hz	Dalen Dai

3.3 Description of Support Units

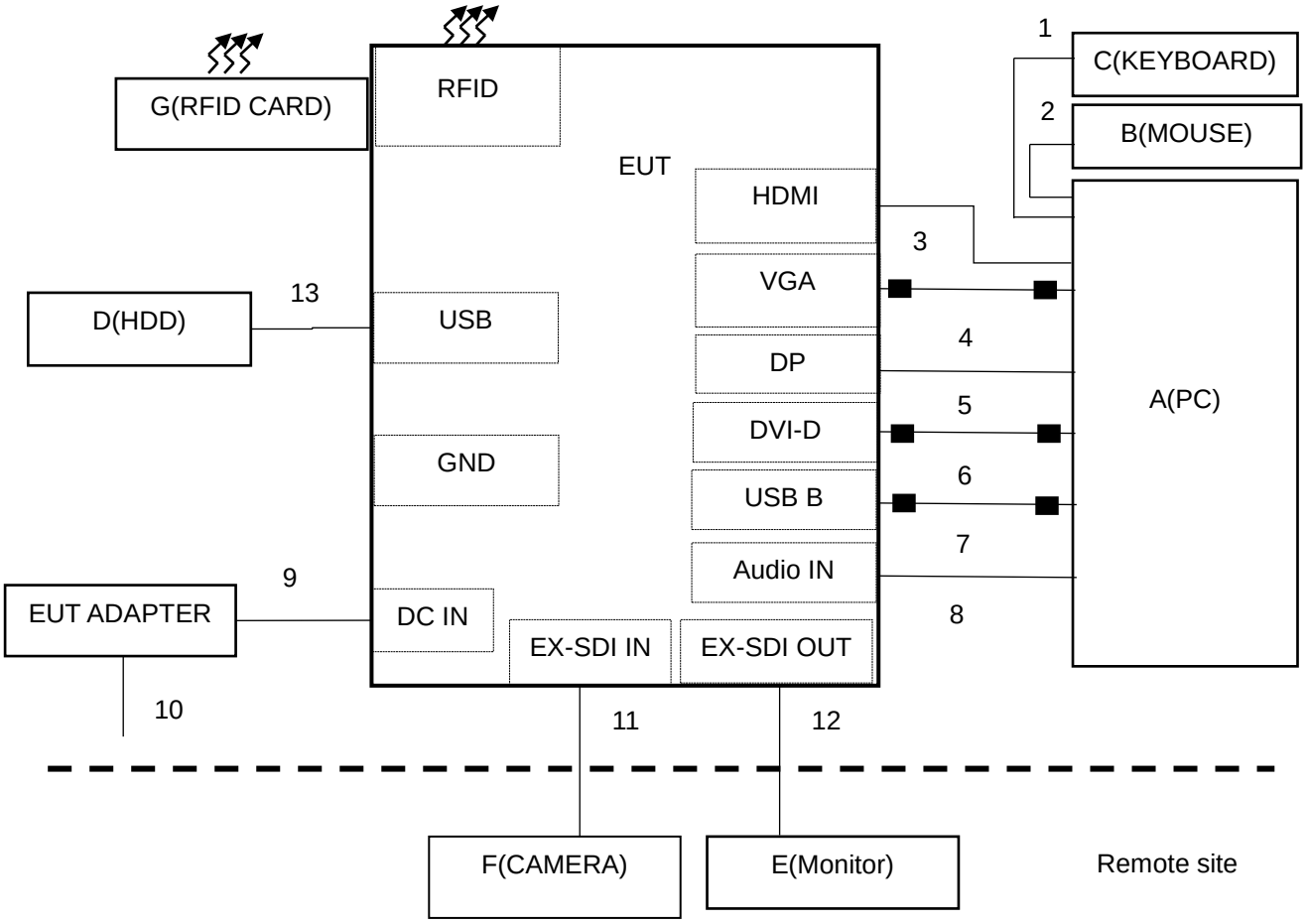
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No./lot no.	FCC ID	Remarks
A.	PC	HP	Elite Desk 800G4	4CE8451MG4	NA	Provided by Lab
B.	MOUSE	Lenovo	MOC9ULA	NA	NA	Provided by Lab
C.	KEYBOARD	BTC	5200U	NA	NA	Provided by Lab
D.	HDD	WD	WDBUZG0010BBK-PESN	WX91E942NS1Z	DoC	Provided by Lab
E.	Monitor	Weilun	NA	NA	DoC	Supplied by applicant
F.	CAMERA	SONY	EVI-HD1	103005	NA	Supplied by applicant
G.	RFID CARD	EASY CARD	Adult	NA	NA	Provided by Lab

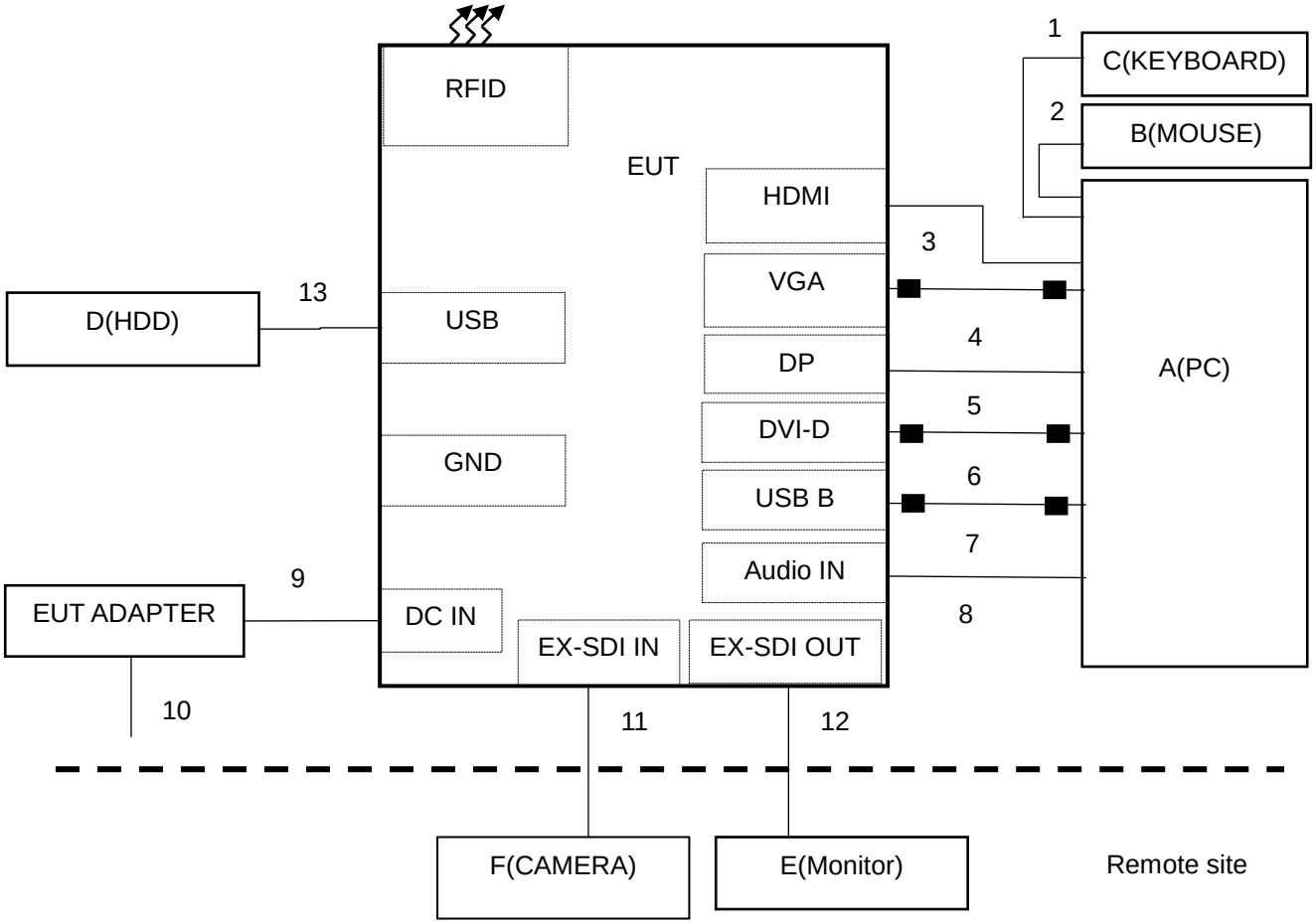
ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/ No)	Cores (Qty.)	Remarks
1.	USB cable	1	1.5	Yes	0	Provided by Lab
2.	USB cable	1	1.2	Yes	0	Provided by Lab
3.	HDMI cable	1	1.8	Yes	0	Supplied by applicant
4.	VGA cable	1	1.5	Yes	2	Supplied by applicant
5.	DP cable	1	1.8	Yes	0	Supplied by applicant
6.	DVI cable	1	1.8	Yes	2	Supplied by applicant
7.	USB cable	1	1.8	Yes	2	Supplied by applicant
8.	Audio cable	1	1.5	No	0	Supplied by applicant
9.	DC power cable	1	1.5	No	0	Supplied by applicant
10.	AC power cable	1	1.5	No	0	Supplied by applicant
11.	Coaxial cable	1	10	Yes	0	Provided by Lab
12.	Coaxial cable	1	10	Yes	0	Provided by Lab
13.	USB cable	1	1	Yes	0	Provided by Lab

3.3.1 Configuration Of System Under Test

Mode A



Mode B



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 (15.225)

FCC Part 15, Subpart C (15.215)

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

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

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 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.

4.1.2 Test Instruments

For Radiated Emission 9 kHz ~ 30 MHz Test:

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
MXE EMI Receiver Agilent	N9038A	MY51210129	2023/3/24	2024/3/23
MXE EMI Receiver Agilent	N9038A	MY51210137	2023/6/5	2024/6/4
Signal Analyzer R&S	FSV40	101544	2023/5/9	2024/5/8
Preamplifier EMCI	EMC001340	980269	2023/6/27	2024/6/26
Loop Antenna EMCI	LPA600	270	2023/9/4	2024/9/3
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2023/6/27	2024/6/26
Turn Table ADT	TT100	0306	NA	NA
Tower ADT	AT100	0306	NA	NA
Software BVADT	Radiated_V8.7.08	NA	NA	NA
Software BVADT	Radiated_V7.7.1.1.1	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 Linkou 966 Chamber 6 (CH 6).
3. Tested Date: 2023/12/7

For Radiated Emission 30 MHz ~ 1 GHz Test:

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
MXE EMI Receiver Agilent	N9038A	MY51210129	2023/3/24	2024/3/23
MXE EMI Receiver Agilent	N9038A	MY51210137	2023/6/5	2024/6/4
Signal Analyzer R&S	FSV40	101544	2023/5/9	2024/5/8
Preamplifier HP	8447D	2432A03504	2023/2/16	2024/2/15
Bi_Log Antenna Schwarzbeck	VULB 9168	137	2023/10/13	2024/10/12
RF Coaxial Cable Pacific	8D-FB	Cable-CH6-02	2023/6/27	2024/6/26
Coupling / Decoupling Network Schwarzbeck	CDNE-M2	00097	2023/5/25	2024/5/24
Coupling / Decoupling Network Schwarzbeck	CDNE-M3	00091	2023/5/25	2024/5/24
Turn Table ADT	TT100	0306	NA	NA
Tower ADT	AT100	0306	NA	NA
Software BVADT	Radiated_V8.7.08	NA	NA	NA
Software BVADT	Radiated_V7.7.1.1.1	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 Linkou 966 Chamber 6 (CH 6) , The test site validated date: 2022/10/29 (NSA)
3. Tested Date: 2023/12/7

4.1.3 Test Procedures

For Radiated emission below 30MHz

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, except for the frequency band (9kHz-90kHz, 110kHz-490kHz) set to average detect function and peak detect function.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200Hz at frequency band (9kHz-150kHz) and 9kHz at frequency below 30MHz (except 9kHz-150kHz).
2. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) 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.

Note:

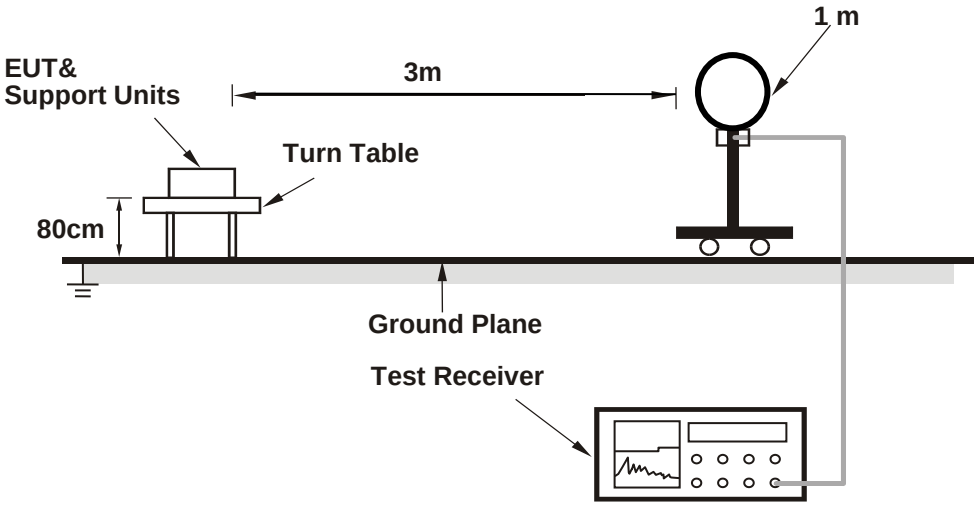
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

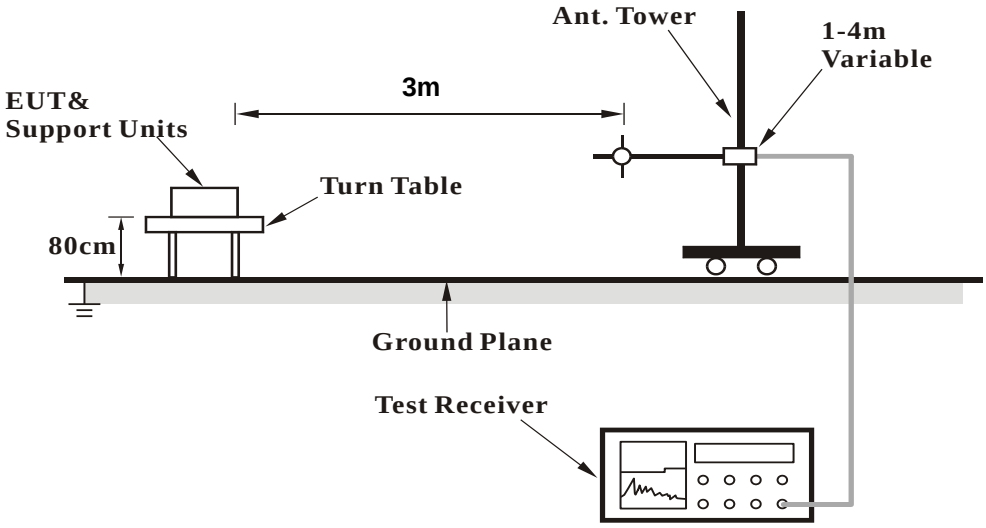
No deviation.

4.1.5 Test Set Up

For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



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

KDB 414788 OFS and Chamber Correlation Justification
- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
- Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

4.1.6 EUT Operating Conditions

Mode A

a. Connected the EUT to Adapter.
b. Put the NFC card on the EUT.
c. Set the EUT under transmission condition continuously at specific channel frequency.

Mode B

a. Connected the EUT to Adapter.
b. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

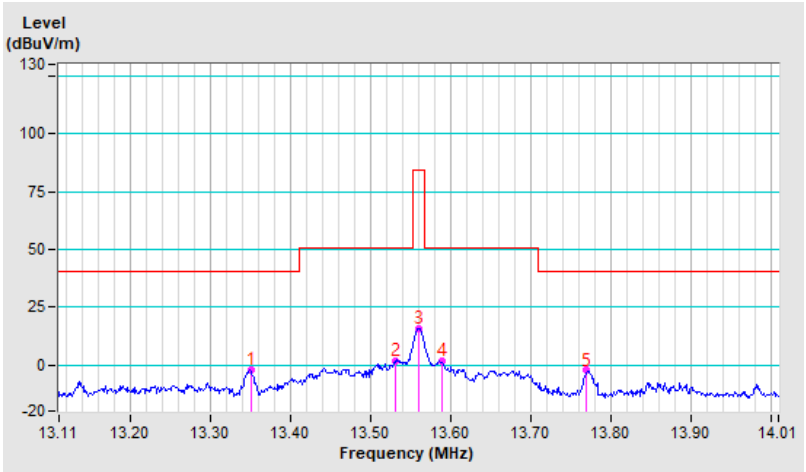
Frequency Range: 13.11 MHz ~ 14.01 MHz
Mode A

RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	13.11 MHz ~ 14.01 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	**13.35**	**-2.1 QP**	**40.5**	**-42.6**	**1.00**	**106**	**36.7**	**-38.8**
2	13.53	1.9 QP	50.5	-48.6	1.00	106	40.8	-38.9
3	*13.56	15.8 QP	84.0	-68.2	1.00	106	54.7	-38.9
4	13.59	1.4 QP	50.5	-49.1	1.00	106	40.3	-38.9
5	13.77	-2.5 QP	40.5	-43.0	1.00	106	36.4	-38.9

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) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

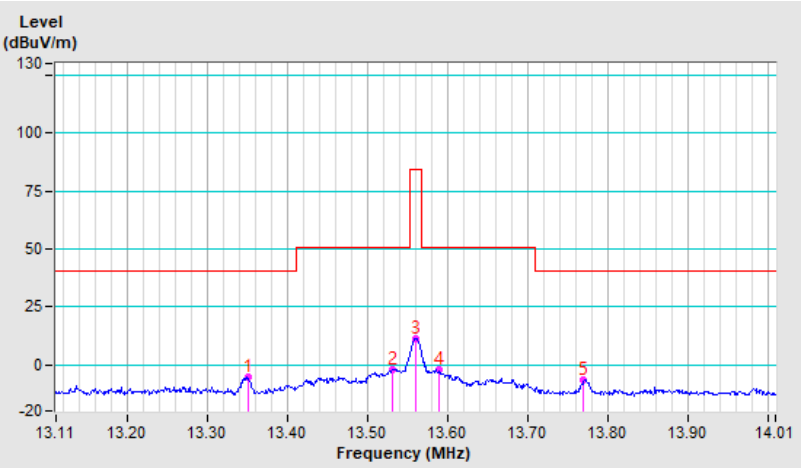


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	13.11 MHz ~ 14.01 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	13.35	-5.6 QP	40.5	-46.1	1.00	48	33.2	-38.8
2	13.53	-2.0 QP	50.5	-52.5	1.00	48	36.9	-38.9
3	*13.56	11.4 QP	84.0	-72.6	1.00	48	50.3	-38.9
4	13.59	-2.4 QP	50.5	-52.9	1.00	48	36.5	-38.9
5	13.77	-6.5 QP	40.5	-47.0	1.00	48	32.4	-38.9

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) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

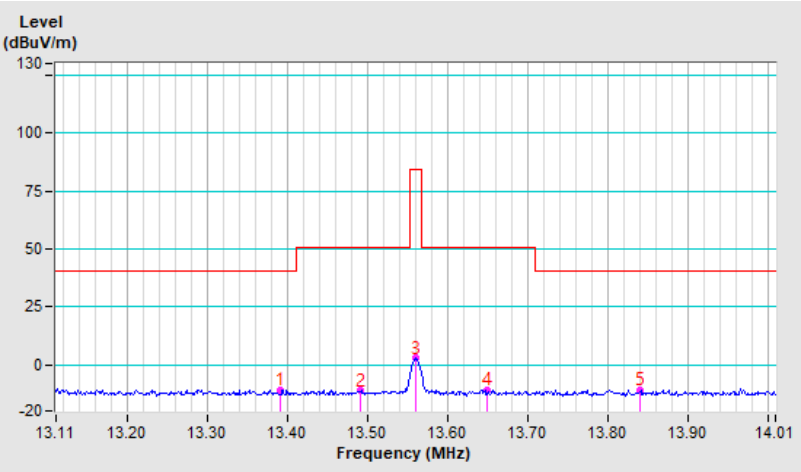


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	13.11 MHz ~ 14.01 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	13.39	-11.1 QP	40.5	-51.6	1.00	298	27.7	-38.8
2	13.49	-11.4 QP	50.5	-61.9	1.00	298	27.4	-38.8
3	*13.56	2.6 QP	84.0	-81.4	1.00	298	41.5	-38.9
4	13.65	-11.2 QP	50.5	-61.7	1.00	298	27.7	-38.9
5	13.84	-11.0 QP	40.5	-51.5	1.00	298	27.9	-38.9

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) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB



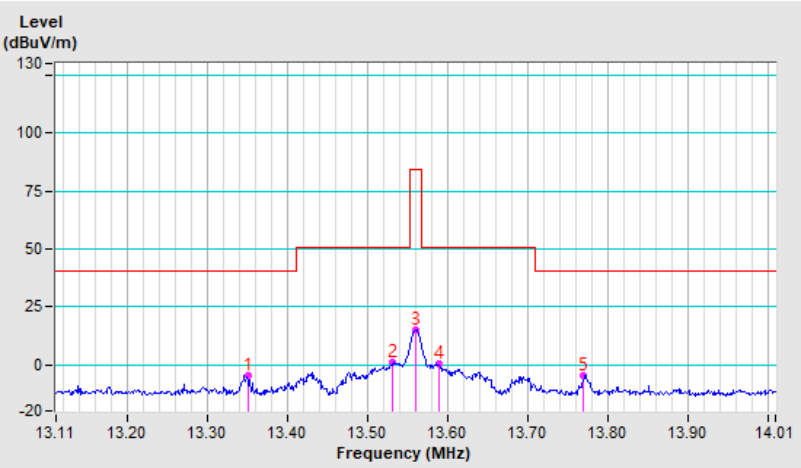
Mode B

RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	13.11 MHz ~ 14.01 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	13.35	-4.9 QP	40.5	-45.4	1.00	117	33.9	-38.8
2	13.53	1.0 QP	50.5	-49.5	1.00	117	39.9	-38.9
3	*13.56	15.0 QP	84.0	-69.0	1.00	117	53.9	-38.9
4	13.59	0.3 QP	50.5	-50.2	1.00	117	39.2	-38.9
5	13.77	-4.6 QP	40.5	-45.1	1.00	117	34.3	-38.9

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) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

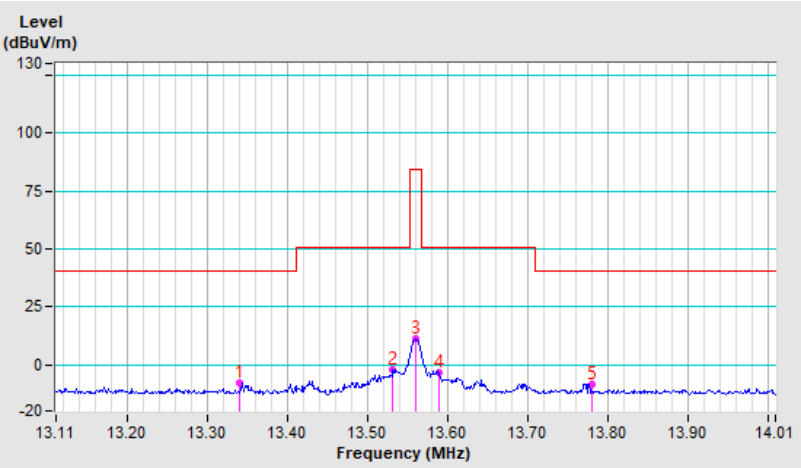


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	13.11 MHz ~ 14.01 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	13.34	-8.1 QP	40.5	-48.6	1.00	66	30.7	-38.8
2	13.53	-2.2 QP	50.5	-52.7	1.00	66	36.7	-38.9
3	*13.56	11.2 QP	84.0	-72.8	1.00	66	50.1	-38.9
4	13.59	-3.5 QP	50.5	-54.0	1.00	66	35.4	-38.9
5	13.78	-8.3 QP	40.5	-48.8	1.00	66	30.6	-38.9

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) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

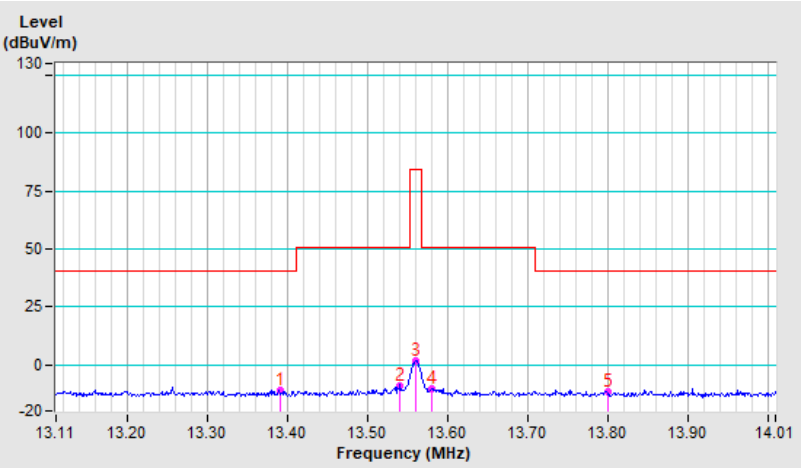


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	13.11 MHz ~ 14.01 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	13.39	-11.0 QP	40.5	-51.5	1.00	153	27.8	-38.8
2	13.54	-8.9 QP	50.5	-59.4	1.00	153	30.0	-38.9
3	*13.56	1.9 QP	84.0	-82.1	1.00	153	40.8	-38.9
4	13.58	-10.4 QP	50.5	-60.9	1.00	153	28.5	-38.9
5	13.80	-11.5 QP	40.5	-52.0	1.00	153	27.4	-38.9

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) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB



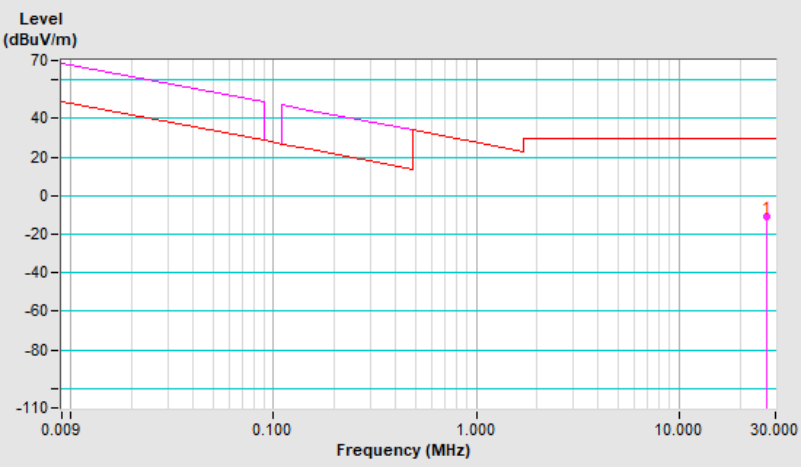
Frequency Range: 9 kHz ~ 30 MHz
Mode A

RF Mode	RFID	**Channel**	CH 1：13.56 MHz
Frequency Range	9 kHz ~ 30 MHz	**Detector Function & Bandwidth**	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Test Date	Ian Chang		

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	27.12	-11.2 QP	29.5	-40.7	1.00	176	29.5	-40.7

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) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

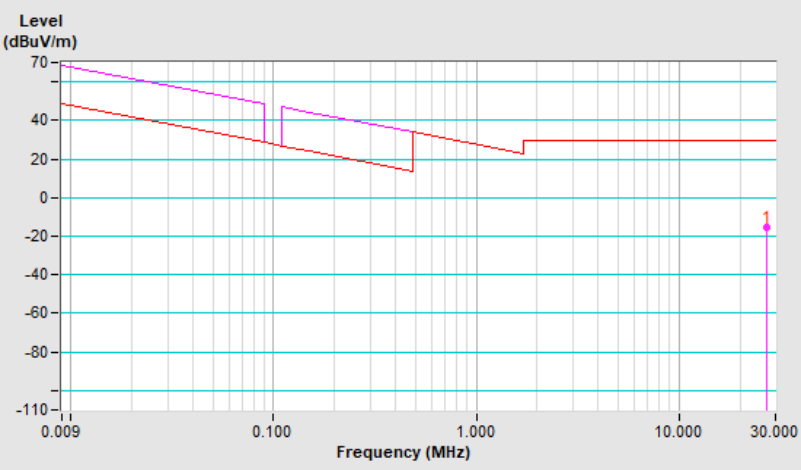


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	9 kHz ~ 30 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	27.12	-15.3 QP	29.5	-44.8	1.00	360	25.4	-40.7

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) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

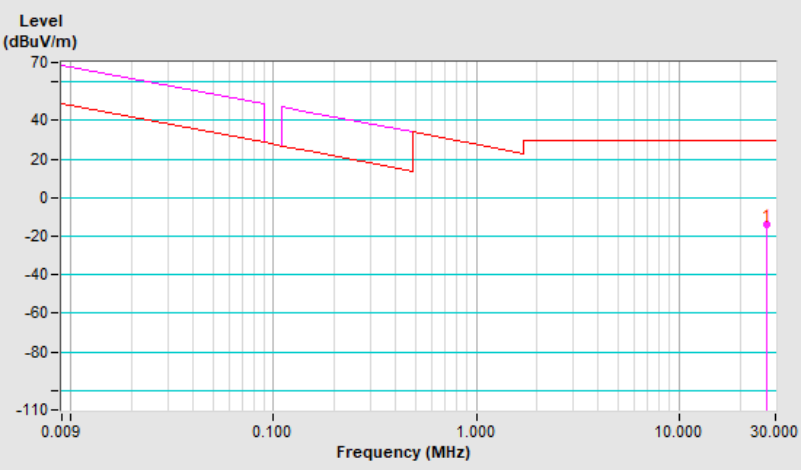


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	9 kHz ~ 30 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	27.12	-14.0 QP	29.5	-43.5	1.00	39	26.7	-40.7

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) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB



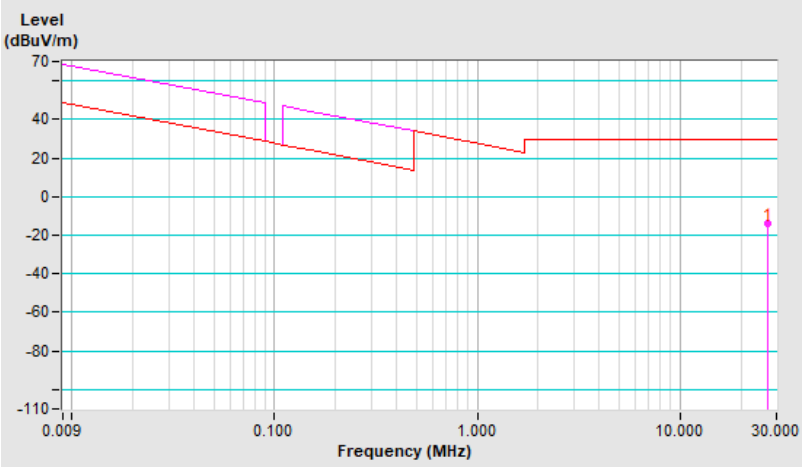
Mode B

RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	9 kHz ~ 30 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	27.12	-14.2 QP	29.5	-43.7	1.00	5	26.5	-40.7

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) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

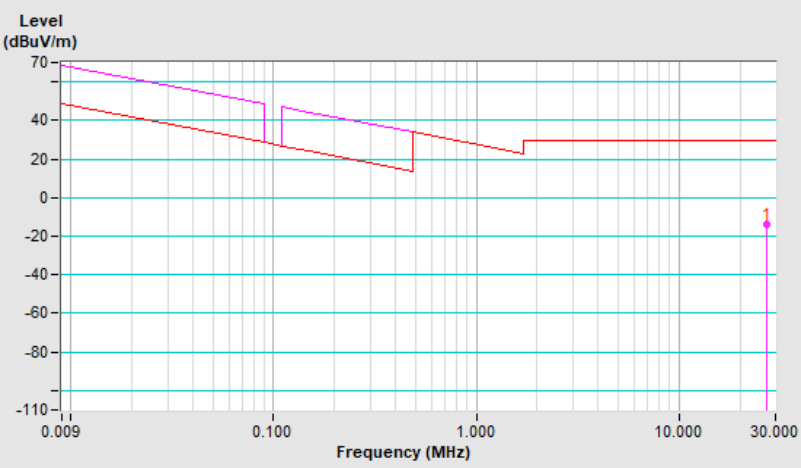


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	9 kHz ~ 30 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	27.12	-13.8 QP	29.5	-43.3	1.00	353	26.9	-40.7

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) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB

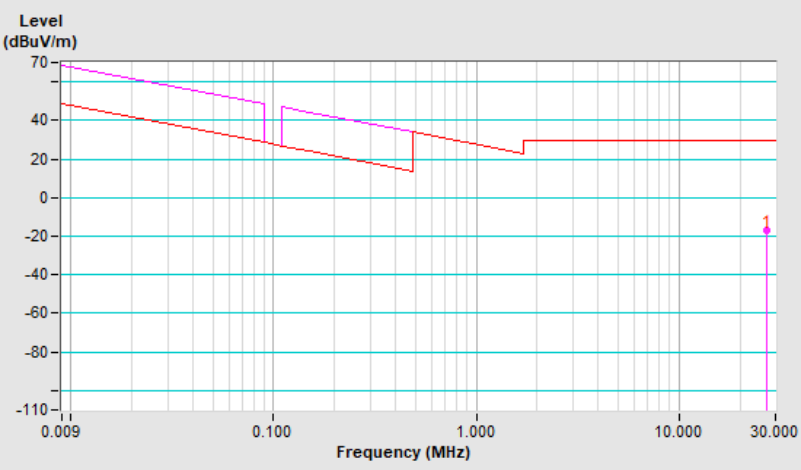


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	9 kHz ~ 30 MHz	Detector Function & Bandwidth	Quasi-Peak (QP), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Test Date	Ian Chang		

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	27.12	-17.3 QP	29.5	-46.8	1.00	330	23.4	-40.7

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) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.
   Distance factor@30 m = 40*log(3/30) = -40 dB



Frequency Range: 30 MHz ~ 1 GHz

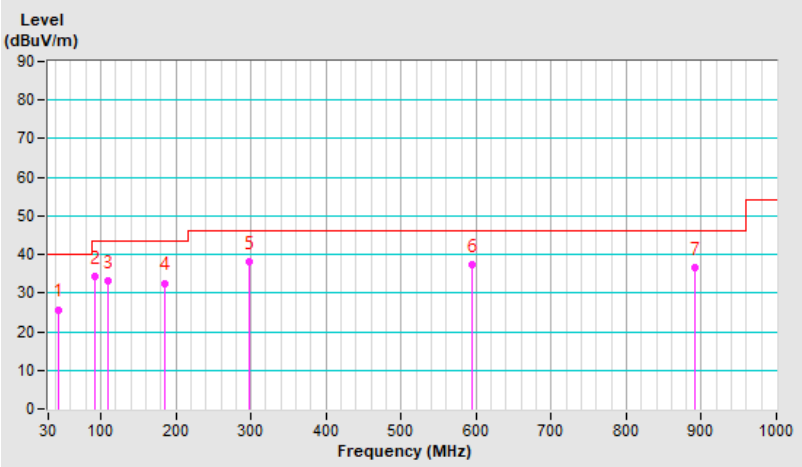
Mode A

RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Tested By	Ian Chang

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	42.61	25.7 QP	40.0	-14.3	1.34 H	224	35.0	-9.3
2	92.08	34.3 QP	43.5	-9.2	1.85 H	199	48.5	-14.2
3	108.57	33.3 QP	43.5	-10.2	2.50 H	252	45.3	-12.0
4	185.20	32.6 QP	43.5	-10.9	1.02 H	80	42.9	-10.3
5	**296.75**	**38.0 QP**	**46.0**	**-8.0**	**1.19 H**	**166**	**44.5**	**-6.5**
6	594.54	37.5 QP	46.0	-8.5	2.37 H	294	37.1	0.4
7	891.36	36.6 QP	46.0	-9.4	1.00 H	340	30.4	6.2

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.

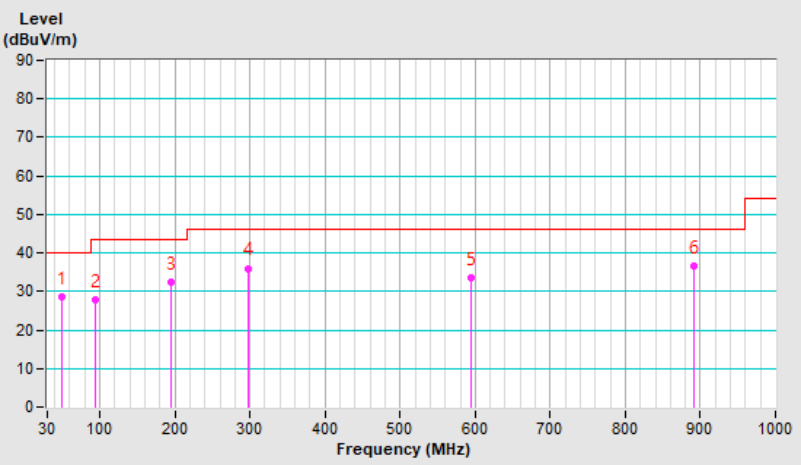


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Tested By	Ian Chang

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	48.43	28.6 QP	40.0	-11.4	1.05 V	68	37.6	-9.0
2	94.02	27.7 QP	43.5	-15.8	1.64 V	146	41.9	-14.2
3	194.90	32.4 QP	43.5	-11.1	2.39 V	177	43.4	-11.0
4	296.75	36.0 QP	46.0	-10.0	1.87 V	205	42.5	-6.5
5	594.54	33.5 QP	46.0	-12.5	1.56 V	236	33.1	0.4
6	891.36	36.5 QP	46.0	-9.5	1.74 V	304	30.3	6.2

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.



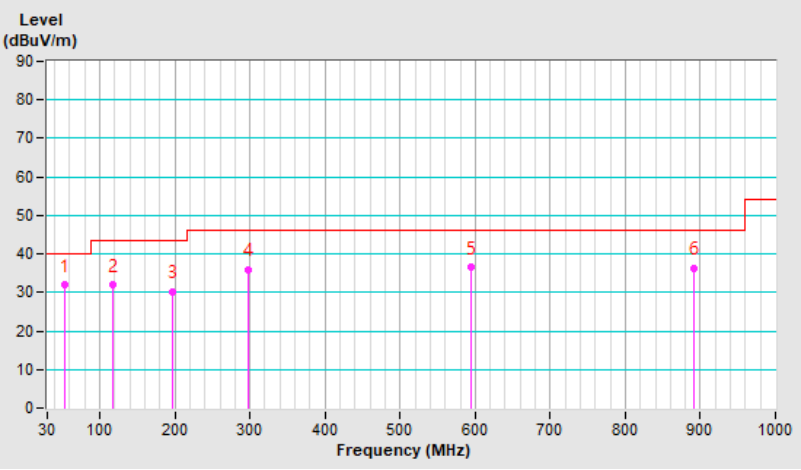
Mode B

RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Tested By	Ian Chang

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	52.31	31.9 QP	40.0	-8.1	1.07 H	48	40.9	-9.0
2	116.33	31.9 QP	43.5	-11.6	1.43 H	336	43.3	-11.4
3	196.84	30.3 QP	43.5	-13.2	1.28 H	314	41.4	-11.1
4	296.75	36.0 QP	46.0	-10.0	1.66 H	281	42.5	-6.5
5	594.54	36.7 QP	46.0	-9.3	2.25 H	230	36.3	0.4
6	891.36	36.4 QP	46.0	-9.6	2.37 H	194	30.2	6.2

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.

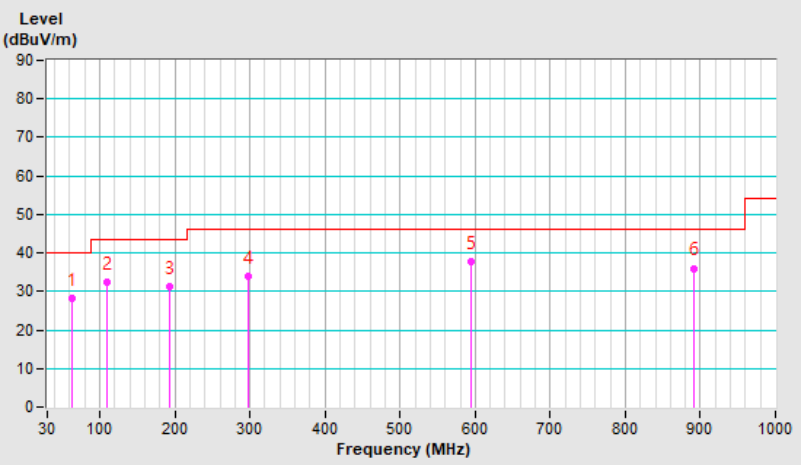


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Tested By	Ian Chang

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	62.98	28.1 QP	40.0	-11.9	1.52 V	88	37.7	-9.6
2	108.57	32.4 QP	43.5	-11.1	1.16 V	55	44.4	-12.0
3	192.96	31.2 QP	43.5	-12.3	2.28 V	283	42.1	-10.9
4	296.75	34.0 QP	46.0	-12.0	1.75 V	113	40.5	-6.5
5	594.54	37.8 QP	46.0	-8.2	1.30 V	147	37.4	0.4
6	890.39	36.0 QP	46.0	-10.0	2.08 V	179	29.8	6.2

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.



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 0.50MHz.

4.2.2 Test Instruments

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance LYNICS	0900510	E1-01-305	2023/2/13	2024/2/12
		E1-011285	2023/9/21	2024/9/20
		E1-011286	2023/9/21	2024/9/20
EMI Test Receiver R&S	ESCS 30	100276	2023/4/20	2024/4/19
	ESR3	102412	2022/12/21	2023/12/20
Fixed Attenuator STI	STI02-2200-10	NO.4	2023/9/1	2024/8/31
High Voltage Probe Schwarzbeck	TK9420	00982	2022/12/14	2023/12/13
LISN R&S	ENV216	101197	2023/7/12	2024/7/11
LISN Schwarzbeck	NNLK 8121	8121-731	2023/6/9	2024/6/8
		8121-808	2023/5/2	2024/5/1
	NNLK 8129	8129229	2023/6/27	2024/6/26
	NSLK 8128	8128-244	2023/11/10	2024/11/9
RF Coaxial Cable PEWC	5D-FB	Cable-CO5-01	2023/1/19	2024/1/18
Software BVADT	Cond_V7.3.7.4	N/A	N/A	N/A

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 Linkou Conduction 05.
3. The VCCI Site Registration No. C-11093.
4. Tested Date: 2023/12/8

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/ 50uH of coupling impedance for the measuring instrument.

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

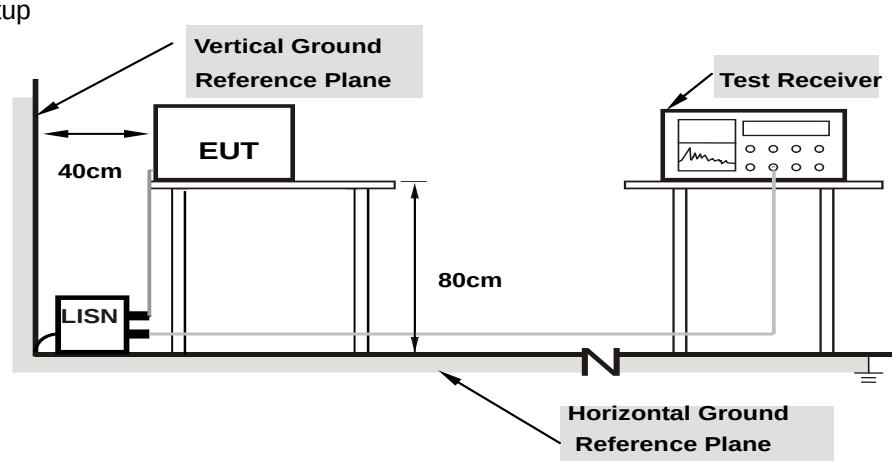
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

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 item 4.1.6.

4.2.7 Test Results

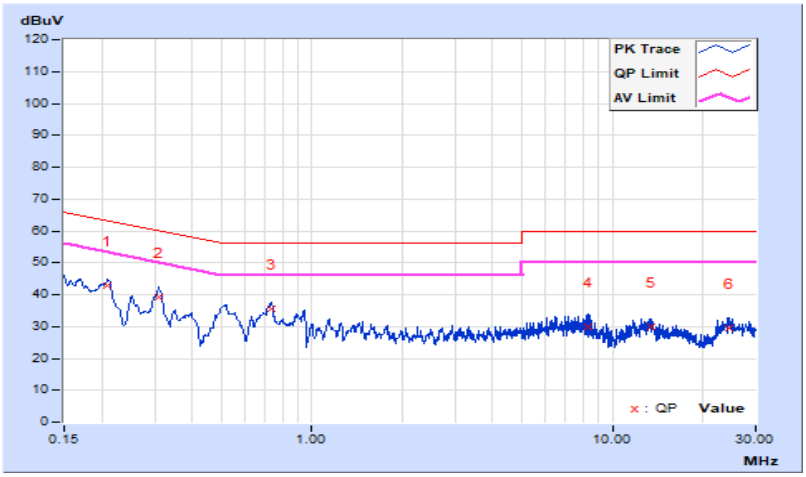
Mode A

RF Mode	RFID	Channel	CH 1：13.56 MHz
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	25°C, 75% RH
Tested By	William Su		

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	0.20985	10.07	32.77	23.31	42.84	33.38	63.21	53.21	-20.37	-19.83
2	0.30953	10.08	29.07	19.54	39.15	29.62	59.98	49.98	-20.83	-20.36
3	0.73142	10.10	25.29	13.00	35.39	23.10	56.00	46.00	-20.61	-22.90
4	8.33165	10.32	19.53	10.67	29.85	20.99	60.00	50.00	-30.15	-29.01
5	13.43885	10.44	19.46	11.72	29.90	22.16	60.00	50.00	-30.10	-27.84
6	24.51908	10.51	19.07	12.35	29.58	22.86	60.00	50.00	-30.42	-27.14

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

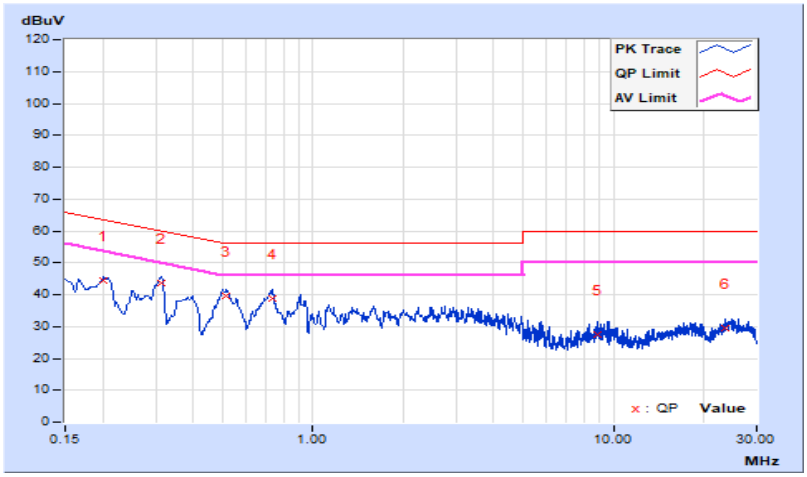


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	William Su		

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	0.20187	10.07	34.20	24.81	44.27	34.88	63.53	53.53	-19.26	-18.65
2	0.31199	10.08	33.41	22.68	43.49	32.76	59.92	49.92	-16.43	-17.16
3	0.51467	10.09	29.35	15.76	39.44	25.85	56.00	46.00	-16.56	-20.15
4	0.73065	10.10	28.78	15.48	38.88	25.58	56.00	46.00	-17.12	-20.42
5	8.82242	10.33	17.29	11.45	27.62	21.78	60.00	50.00	-32.38	-28.22
6	23.59340	10.50	19.15	13.92	29.65	24.42	60.00	50.00	-30.35	-25.58

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



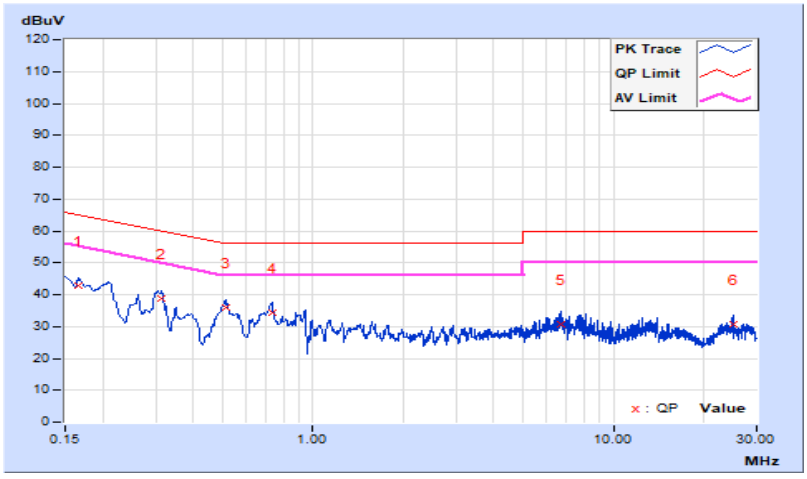
Mode B

RF Mode	RFID	Channel	CH 1：13.56 MHz
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	25°C, 75% RH
Tested By	William Su		

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	0.16596	10.03	32.94	17.74	42.97	27.77	65.16	55.16	-22.19	-27.39
2	0.31359	10.08	28.57	18.27	38.65	28.35	59.87	49.87	-21.22	-21.52
3	0.51596	10.09	25.81	12.31	35.90	22.40	56.00	46.00	-20.10	-23.60
4	0.73065	10.10	24.13	11.16	34.23	21.26	56.00	46.00	-21.77	-24.74
5	6.71570	10.28	20.42	12.26	30.70	22.54	60.00	50.00	-29.30	-27.46
6	25.13354	10.51	20.33	14.23	30.84	24.74	60.00	50.00	-29.16	-25.26

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

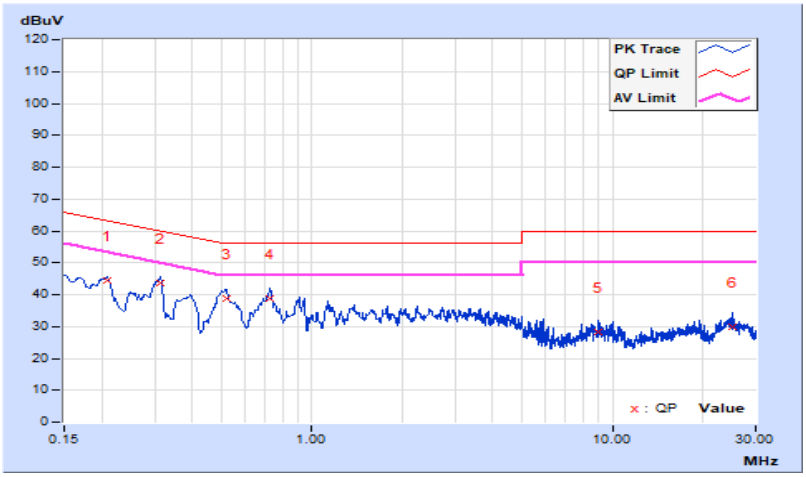


RF Mode	RFID	Channel	CH 1：13.56 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	William Su		

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	0.20959	10.07	34.18	24.26	44.25	34.33	63.22	53.22	-18.97	-18.89
2	**0.31359**	**10.08**	**33.54**	**22.40**	**43.62**	**32.48**	**59.87**	**49.87**	**-16.25**	**-17.39**
3	0.51995	10.09	28.68	16.09	38.77	26.18	56.00	46.00	-17.23	-19.82
4	0.72344	10.10	28.63	14.50	38.73	24.60	56.00	46.00	-17.27	-21.40
5	8.93414	10.33	17.93	10.44	28.26	20.77	60.00	50.00	-31.74	-29.23
6	25.08566	10.50	19.60	13.73	30.10	24.23	60.00	50.00	-29.90	-25.77

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

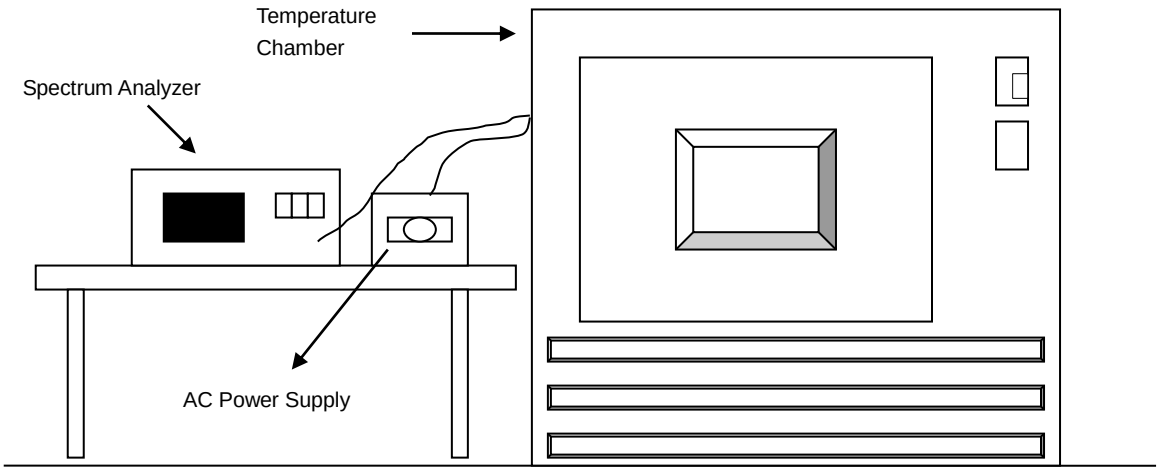


4.3 Frequency Stability

4.3.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of –20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.3.2 Test Setup



4.3.3 Test Instruments

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
AC Power Source Schaffner	Profline2105-208NSG1007	55616	N/A	N/A
PXA Signal Analyzer Keysight	N9030A	MY54490260	2023/7/13	2024/7/12
Signal Analyzer R&S	FSV40	101042	2023/9/5	2024/9/4
		101544	2023/5/9	2024/5/8
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber Terchy	MHU-225AU	920409	2023/6/26	2024/6/25

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 LK - Oven
3. Tested Date: 2023/12/15

4.3.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.

b. Turned the EUT on and coupled its output to a spectrum analyzer.

c. Turned the EUT off and set the chamber to the highest temperature specified.

d. Allowed sufficient time (approximately 30 min) for the temperature of the chamber to stabilize then turned the EUT on and measured the operating frequency.

e. Repeated step c and d with the temperature chamber set to the lowest temperature.

f. The test chamber was allowed to stabilize at +25 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

Same as Item 4.1.6.

4.3.7 Test Result

Frequency Stability Versus Temp.									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Reading (MHz)	Drift (%)	Reading (MHz)	Drift (%)	Reading (MHz)	Drift (%)	Reading (MHz)	Drift (%)
50	120	13.56005	0.00037	13.56006	0.00044	13.56005	0.00037	13.56005	0.00037
40	120	13.56002	0.00015	13.56002	0.00015	13.56002	0.00015	13.56002	0.00015
30	120	13.56006	0.00044	13.56005	0.00037	13.56005	0.00037	13.56005	0.00037
20	120	13.55997	-0.00022	13.55998	-0.00015	13.55998	-0.00015	13.55998	-0.00015
10	120	13.56003	0.00022	13.56002	0.00015	13.56003	0.00022	13.56003	0.00022
0	120	13.56006	0.00044	13.56006	0.00044	13.56007	0.00052	13.56006	0.00044
-10	120	13.55999	-0.00007	13.55998	-0.00015	13.55998	-0.00015	13.55998	-0.00015
-20	120	13.56002	0.00015	13.56002	0.00015	13.56003	0.00022	13.56002	0.00015

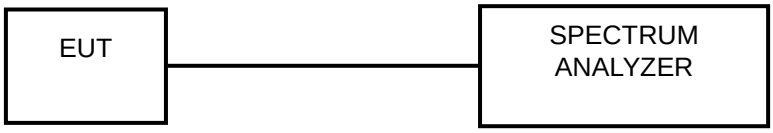
Frequency Stability Versus Voltage									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Reading (MHz)	Drift (%)	Reading (MHz)	Drift (%)	Reading (MHz)	Drift (%)	Reading (MHz)	Drift (%)
20	138	13.55997	-0.00022	13.55998	-0.00015	13.55998	-0.00015	13.55998	-0.00015
	120	13.55997	-0.00022	13.55998	-0.00015	13.55998	-0.00015	13.55998	-0.00015
	102	13.55997	-0.00022	13.55998	-0.00015	13.55998	-0.00015	13.55998	-0.00015

4.4 20dB Bandwidth

4.4.1 Limits Of 20dB Bandwidth Measurement

The 20dB bandwidth shall be specified in operating frequency band.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.3.3 to get information of above instrument.

4.4.4 Test Procedures

RBW=approximately 1~5% of the emission bandwidth and VBW ≥ 3 RBW.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

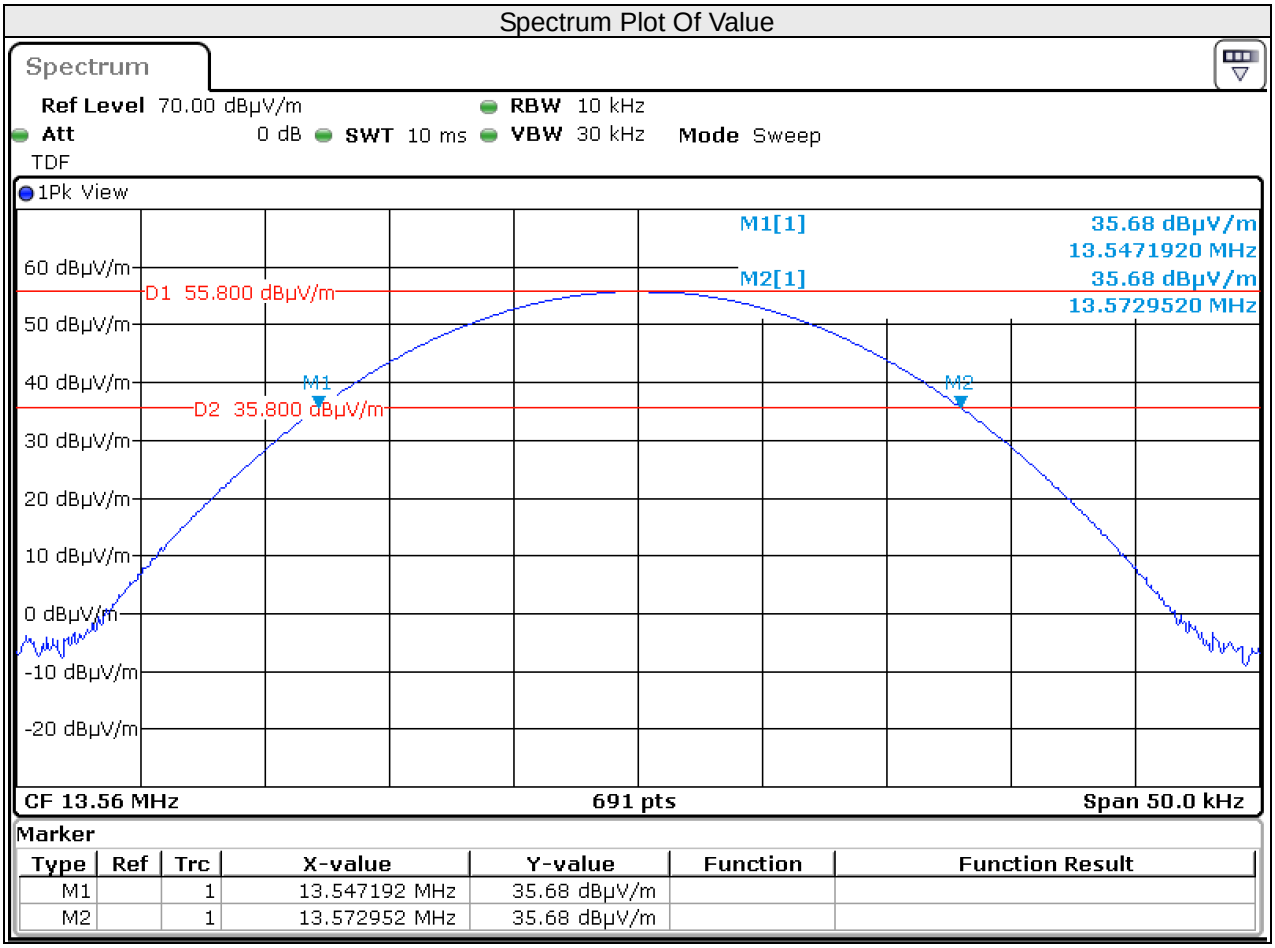
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.7 Test Results

Mode A

20dBc Point (Low)	20dBc Point (High)	Operating Frequency Band (MHz)	Pass/Fail
13.5471920 MHz	13.572952 MHz	13.110-14.010	Pass

Spectrum Plot Of Value

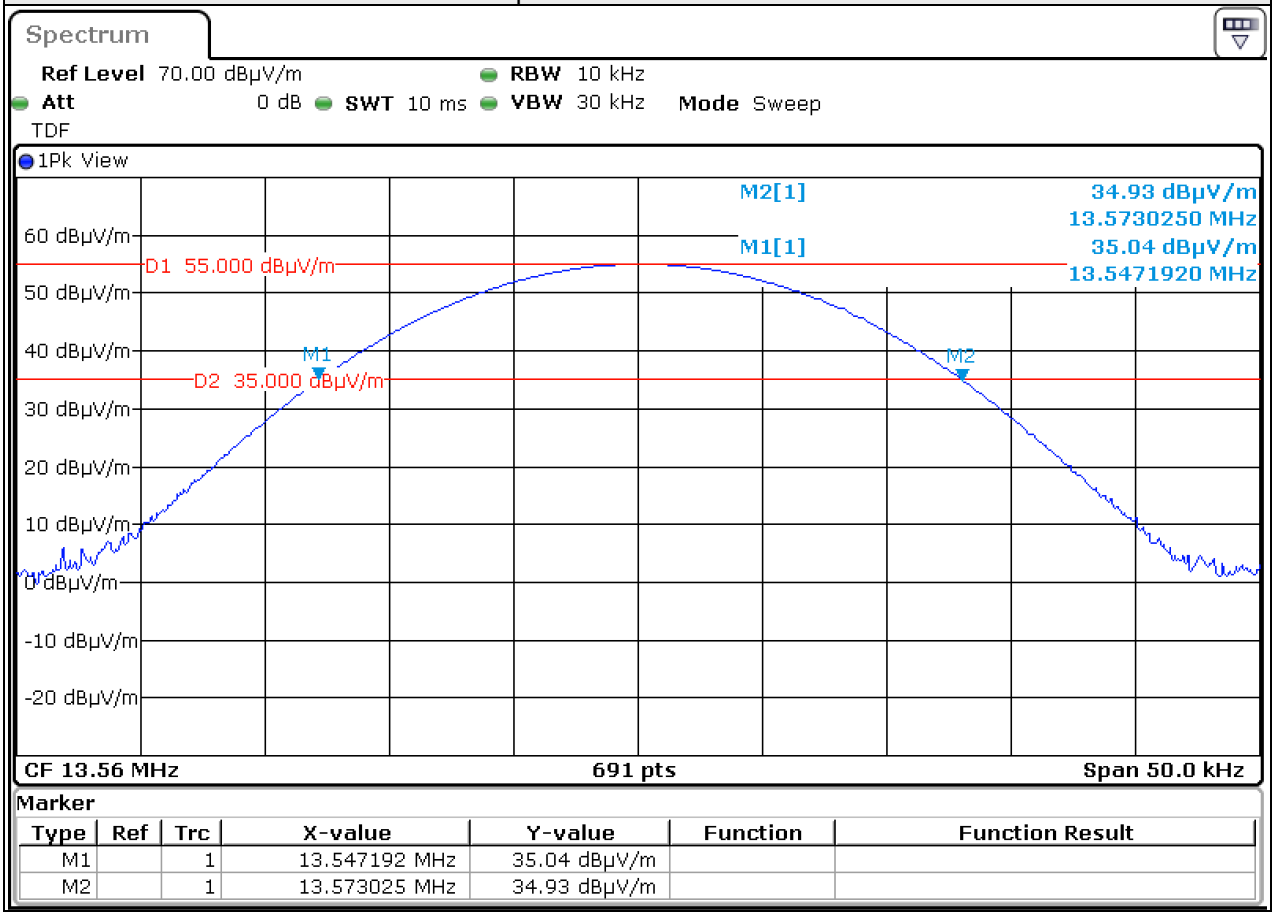


Note: The signal look like CW signal, so RBW can't be match 1~5 % OBW.

Mode B

20dBc Point (Low)	20dBc Point (High)	Operating Frequency Band (MHz)	Pass/Fail
13.547192 MHz	13.573025 MHz	13.110-14.010	Pass

Spectrum Plot Of Value



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	13.547192 MHz	35.04 dBµV/m		
M2		1	13.573025 MHz	34.93 dBµV/m		

Note: The signal look like CW signal, so RBW can't be match 1~5 % OBW.

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 and approved according to ISO/IEC 17025.

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

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Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
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Email: service.adt@tw.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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