FCC Test Report

Product Name	USRR05MA
Model No.	PX-USR-05MA
FCC ID	HTO-USRR05MA-1

Applicant	Universal Microelectronics Co Ltd
Address	3, 27th Rd., Taichung Industrial Park, Taichung, Taiwan, R.O.C.

Date of Receipt	Jul. 06, 2021
Issued Date	Mar. 30, 2022
Report No.	2170201R-RFUSOTHV06-A
Report Version	V1.0

Testing Laboratory
3023

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
This report must not be used to claim product endorsement by TAF or any agency of the government.
The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Report

Issued Date: Mar. 30, 2022
Report No.: 2170201R-RFUSOTHV06-A

Product Name	USRR05MA
Applicant	Universal Microelectronics Co Ltd
Address	3, 27th Rd., Taichung Industrial Park, Taichung, Taiwan, R.O.C.
Manufacturer	Universal Microelectronics Co Ltd
Model No.	PX-USR-05MA
FCC ID	HTO-USRR05MA-1
EUT Rated Voltage	DC 3.3V
EUT Test Voltage	DC 3.3V (Power By Test Fixture)
Trade Name	UMEC
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Jinn Chen
(Supervisor / Jinn Chen)

Tested By : Nova chu
(Senior Engineer / Nova Chu)

Approved By : Alan Chen
(Senior Engineer / Alan Chen)

TABLE OF CONTENTS

Revision History

Report No.	Version	Description	Issued Date
2170201R-RFUSOTHV06-A	V1.0	Initial issue of report.	Mar. 30, 2022

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	USRR05MA
Trade Name	UMEC
Model No.	PX-USR-05MA
FCC ID	HTO-USRR05MA-1
Frequency Range	24.162 ~ 24.238GHz
Channel Number	3
Type of Modulation	FMCW
Antenna Type	Patch Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Universal Microelectronic	PX-USR-05MA	Patch Antenna	10.10 dBi for 24GHz

Note: The antenna of EUT is conform to FCC 15.203

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	24.162 GHz	Channel 02:	24.200 GHz	Channel 03:	24.238 GHz

Note:

1. The EUT is an USRR05MA with a built-in 2.4GHz wireless transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit Mode 2: Normal mode

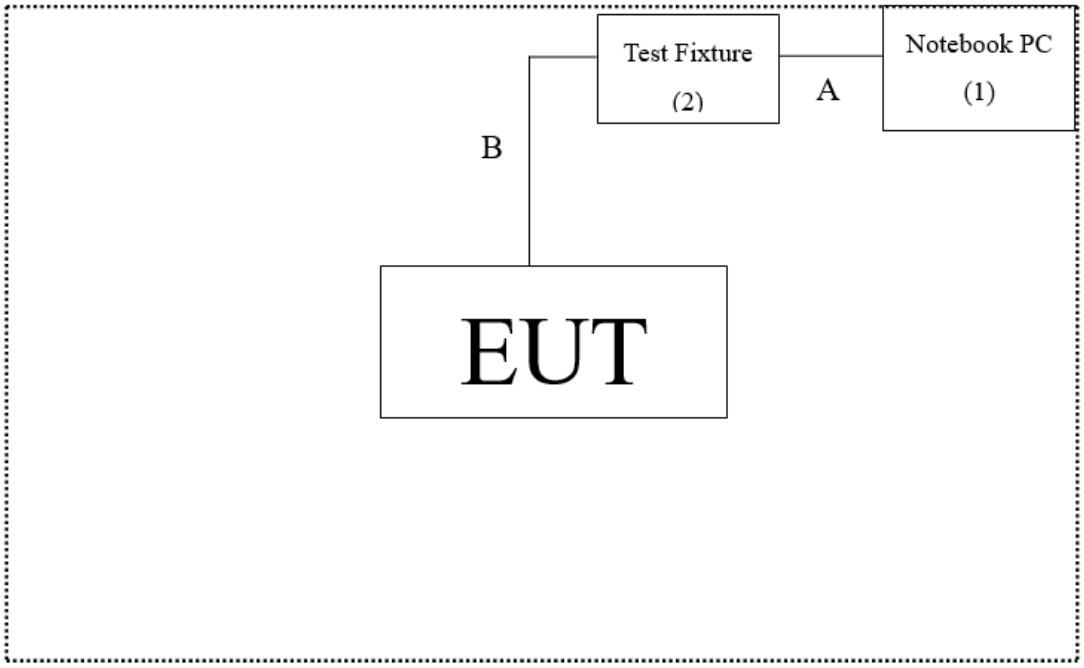
1.2. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude 5580	2HRD7H2	N/A
2	Test Fixture	umec	Umec-01	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Non-shielded, 3m
B	Signal Cable	Non-shielded, 0.4m

1.3. Configuration of Test System



1.4. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.3.

(2) Execute “USRR-Setting V2.0.2” program on the Notebook PC.

(3) Configure the test mode and the test channel

(4) Start the continuous transmit.

(5) Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Radiated Emission	Temperature (°C)	10~40 ℃	19.5℃
	Humidity (%RH)	10~90 %	85%

USA : FCC Registration Number: TW0033

Canada : IC Registration Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : http://www.dekra.com.tw

1.6. List of Test Equipment

For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021/06/19	2022/06/18
X	Two-Line V-Network	R&S	ENV216	101306	2021/04/08	2022/04/07
X	Two-Line V-Network	R&S	ENV216	101307	2021/05/04	2022/05/03
X	Coaxial Cable	SUHNER	RG400_BNC	RF001	2021/05/24	2022/05/23

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : AUDIX e3 V9.

Test Site number: 966-2

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Signal Analyzer	R&S	FSV3044	101115	2022/01/10	2023/01/09
X	Spectrum Analyzer	Keysight	N9030B	MY56320509	2021/08/06	2022/08/05
X	Horn Antenna	VDI	RCH015 (50-75GHz)	N/A	2020/11/02	2023/11/01
X	Horn Antenna	VDI	RCH010(75-110GHz)	N/A	2020/11/02	2023/11/01
X	Horn Antenna	VDI	RCH06(110-170GHz)	N/A	2020/11/02	2023/11/01
X	Horn Antenna	VDI	RCH08(90-140GHz)	N/A	2020/11/02	2023/11/01
X	Horn Antenna	VDI	RCH05(140-220GHz)	N/A	2020/11/02	2023/11/01
	Horn Antenna	VDI	RCH03(220-325GHz)	N/A	2020/11/02	2023/11/01
X	Down Convertor(SAX093)	VDI	N9029AV15(AT0-55847)	US54250106	2020/11/02	2023/11/01
X	Down Convertor(SAX092)	VDI	N9029AV10(AT0-74929)	US53250010	2020/11/02	2023/11/01
X	Down Convertor(SAX091)	VDI	N9029AV08(AT0-59571)	US53250004	2020/11/02	2023/11/01
X	Down Convertor(SAX090)	VDI	N9029AV05(AT0-60029)	US53250004	2020/11/02	2023/11/01
	Down Convertor(SAX214)	VDI	N9029AV03(AT0-57775)	US53250006	2020.11/02	2023/11/01
X	Loop Antenna	AMETEK	HLA6121	56736	2021/04.14	2022/04/13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-953	2021/01.29	2022/01/28
X	Horn Antenna	ETS-Lindgren	3117	00203799	2021/12/27	2022/12/26
X	Horn Antenna	Com-Power	AH-840	101087	2021/06.16	2022/06/15
X	Pre-Amplifier	EMCI	EMC001330	980302	2021/07.06	2022/07/05
X	Pre-Amplifier	EMCI	EMC051835SE	980632	2021/09/07	2022/09/06
X	Pre-Amplifier	EMCI	EMC05820SE	980285	2021/07/02	2022/07/01
X	Pre-Amplifier	EMCI	EMC184045SE	980369	2021/04/27	2022/04/26
X	Pre-Amplifier	EMCI	EMC102-KM-KM-600	1160314		
X	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
X	EMI Test Receiver	R&S	ESR	102792	2020/12/15	2021/12/14
X	Coaxial Cable	SGH	HA800	GD20110223-2	2021/03/03	2022/03/02
		SGH	HA800	GD20110222-4		
		SGH	SGH18	2021001-17		
		SGH	SGH18	2021001-4		
X	Fixed Attenuator	VDI	WR15ATT2R1	1-10	2019/09/03	2022/09/02
X	Direct reading Attenuator	Elmika	DA-02E	804E90-01	2019/09/03	2022/09/02
X	Direct reading Attenuator	Elmika	DA-02E	803E90-21	2019/09/03	2022/09/02
X	Direct reading Attenuator	Elmika	DA-02E	802E90-31	2019/09/03	2022/09/02

Note:
1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version: AUDIX e3 V9.

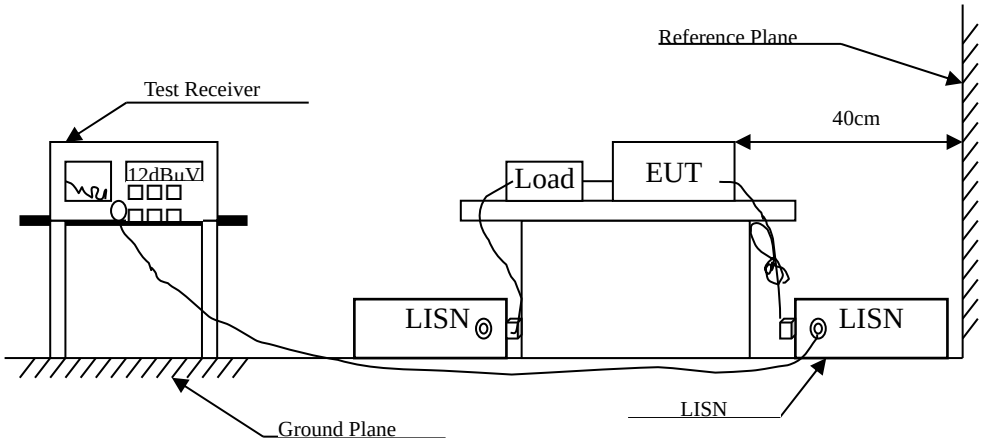
1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	**Uncertainty**	
Conducted Emission	±3.42 dB	
Radiated Emission	Under 1GHz ±4.06 dB	Above 1GHz ±3.73 dB
Band Edge	Under 1GHz ±4.06 dB	Above 1GHz ±3.73 dB
Duty Cycle	±2.31 ms	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

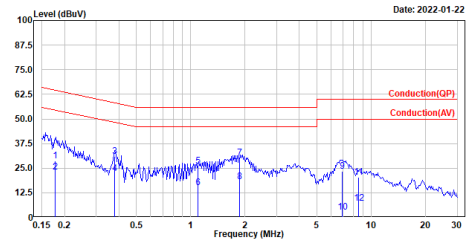
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

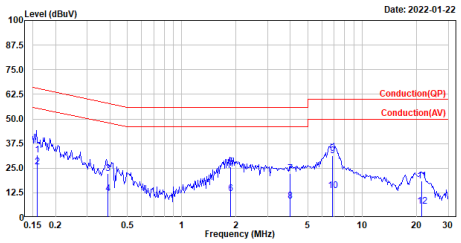
Site :SH1
Condition :Line
Mode :24.2G_TX
test by :Michael



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.177	28.51	64.61	-36.10	18.86	9.65	QP
2	0.177	22.85	54.61	-31.76	13.20	9.65	Average
3	0.379	30.94	58.30	-27.36	21.28	9.66	QP
4	0.379	22.44	48.30	-25.86	12.78	9.66	Average
5	1.102	26.17	56.00	-29.83	16.48	9.69	QP
6	1.102	15.24	46.00	-30.76	5.55	9.69	Average
7	1.868	30.13	56.00	-25.87	20.41	9.72	QP
8	1.868	17.97	46.00	-28.03	8.25	9.72	Average
9	6.883	23.50	60.00	-36.50	13.66	9.84	QP
10	6.883	2.62	50.00	-47.38	-7.22	9.84	Average
11	8.480	20.25	60.00	-39.75	10.39	9.86	QP
12	8.480	7.26	50.00	-42.74	-2.60	9.86	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

Site :SH1
Condition :Neutral
Mode :24.2G_TX
test by :Michael



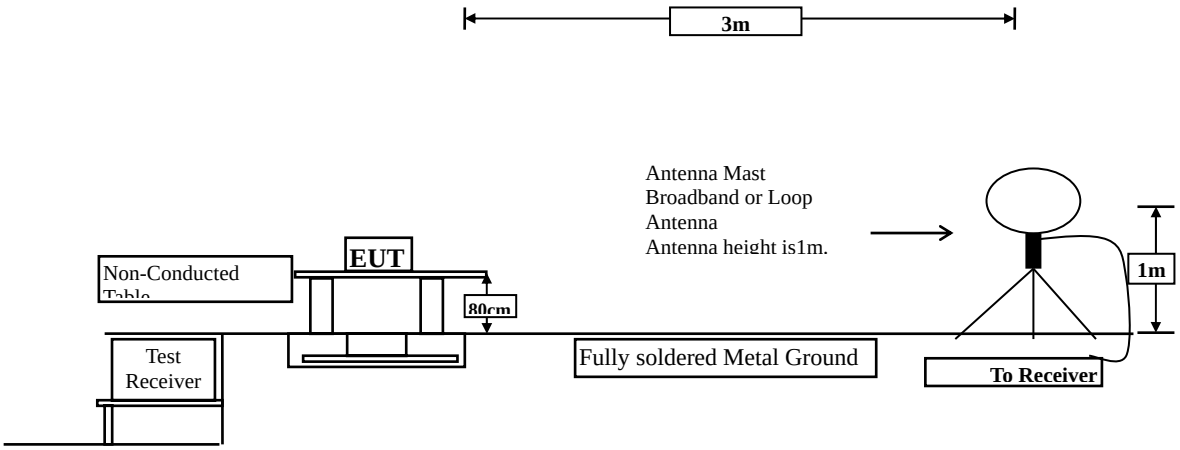
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.158	31.55	65.57	-34.02	21.88	9.67	QP
2	0.158	25.82	55.57	-29.75	16.15	9.67	Average
3	0.389	22.24	58.09	-35.85	12.57	9.67	QP
4	0.389	11.94	48.09	-36.15	2.27	9.67	Average
5	1.869	25.79	56.00	-30.21	16.06	9.73	QP
6	1.869	12.16	46.00	-33.84	2.43	9.73	Average
7	4.004	22.43	56.00	-33.57	12.65	9.78	QP
8	4.004	8.31	46.00	-37.69	-1.47	9.78	Average
9	6.865	31.25	60.00	-28.75	21.39	9.86	QP
10	6.865	13.72	50.00	-36.28	3.86	9.86	Average
11	21.291	18.32	60.00	-41.68	8.26	10.06	QP
12	21.291	5.83	50.00	-44.17	-4.23	10.06	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

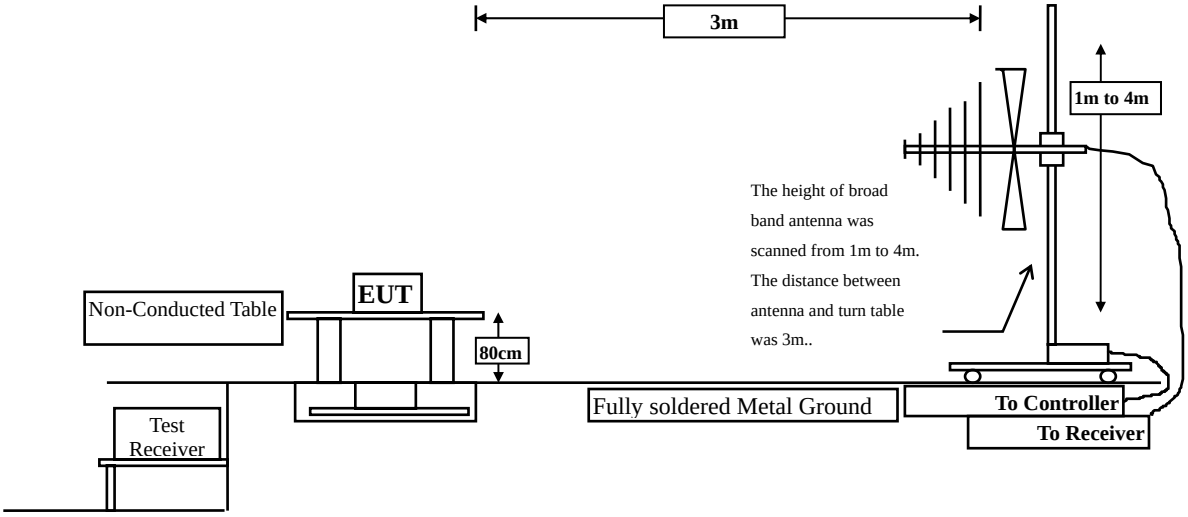
3. Radiated Emission

3.1. Test Setup

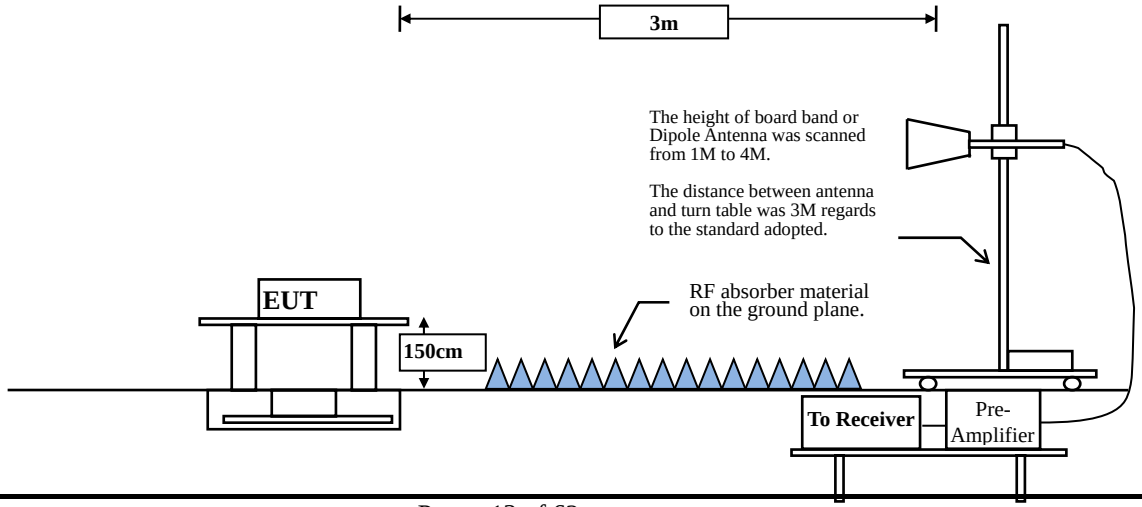
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



3.2. Limits

➢ **Fundamental and Harmonics Emission Limits**

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dBμV /m @3m)	(uV/m @3m)	(dBμV /m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54
24000-24250	250	108	2500	68

Remarks : 1. RF Voltage (dBμV /m) = 20 log RF Voltage (uV/m)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBμV /m) = 20 log E field strength (uV/m)

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.249 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level.

This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

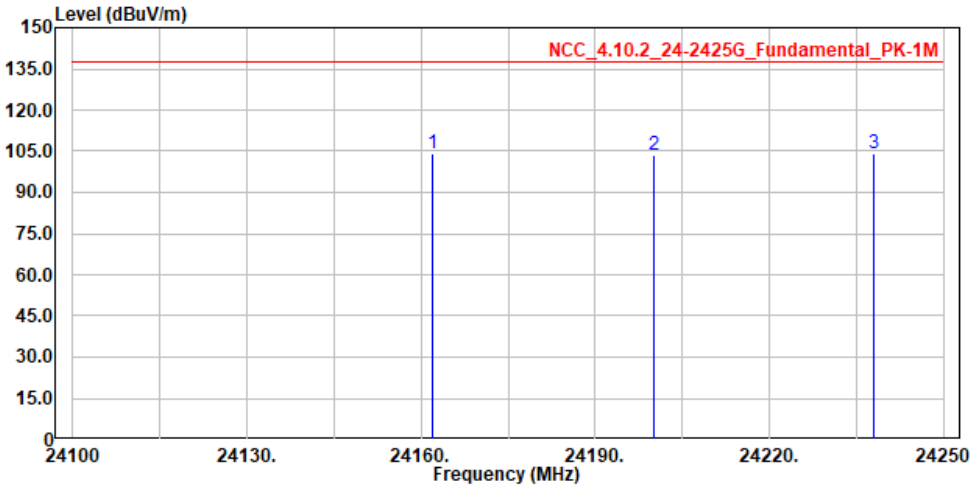
The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Test Result of Radiated Emission

```
Site      :966-2
Condition :Horizontal
Mode      :RF-TX X axis
TEST BY   :Nova Chu
```



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24162.000	104.00	137.49	-33.49	52.58	51.42	Peak
2	24200.000	103.59	137.49	-33.90	52.08	51.51	Peak
3	24238.000	103.93	137.49	-33.56	52.31	51.62	Peak

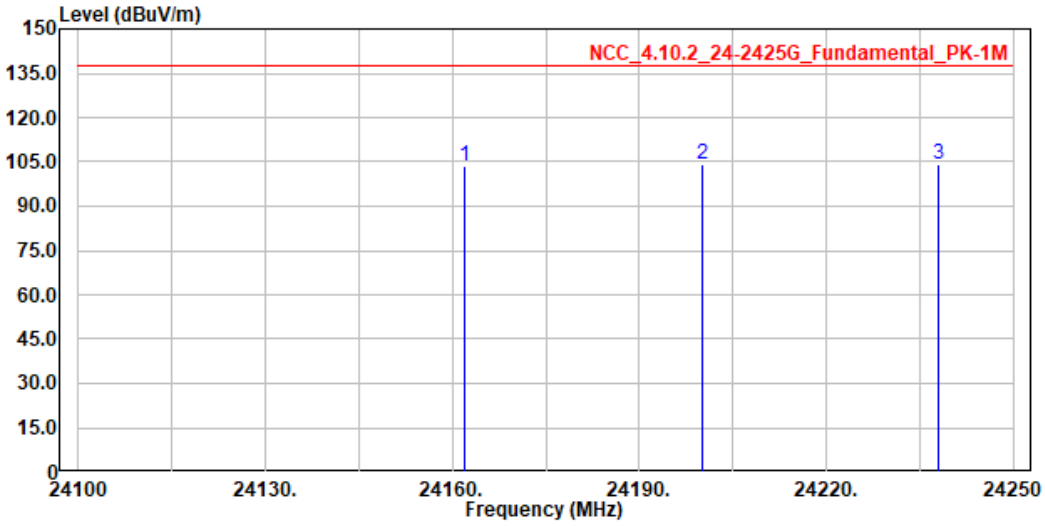
```
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
```

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)
24162	104	-33.979	70.021	-47.469	117.490
24200	103.59	-33.979	69.611	-47.879	117.490
24238	103.93	-33.979	69.951	-47.539	117.490

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX X axis
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24162.000	103.52	137.49	-33.97	52.10	51.42	Peak
2	24200.000	104.10	137.49	-33.39	52.59	51.51	Peak
3	24238.000	103.93	137.49	-33.56	52.31	51.62	Peak

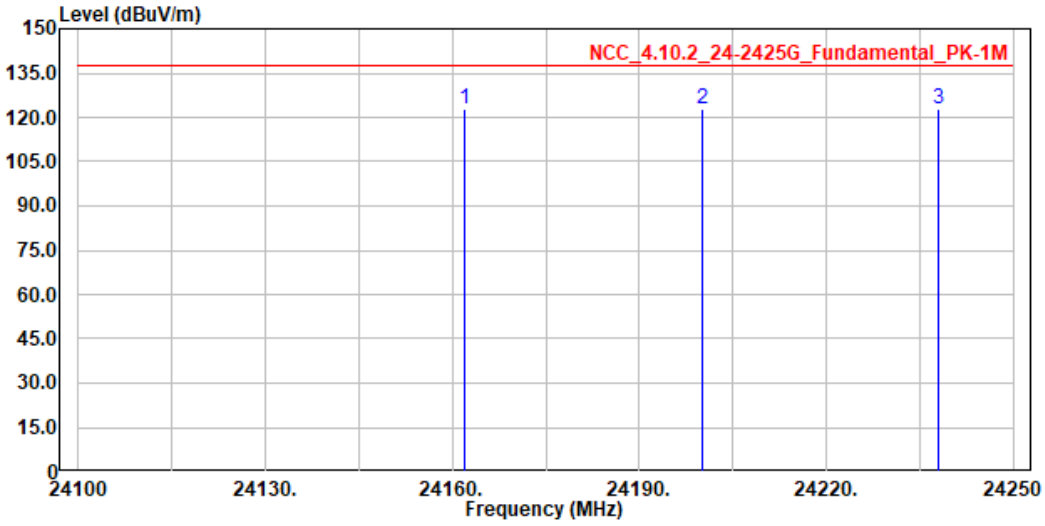
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)
2365.3	103.52	-33.979	69.541	-47.949	117.490
2390	104.1	-33.979	70.121	-47.369	117.490
2400	103.93	-33.979	69.951	-47.539	117.490

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX Y axis
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24162.000	122.98	137.49	-14.51	71.56	51.42	Peak
2	24200.000	122.93	137.49	-14.56	71.42	51.51	Peak
3	24238.000	122.90	137.49	-14.59	71.28	51.62	Peak

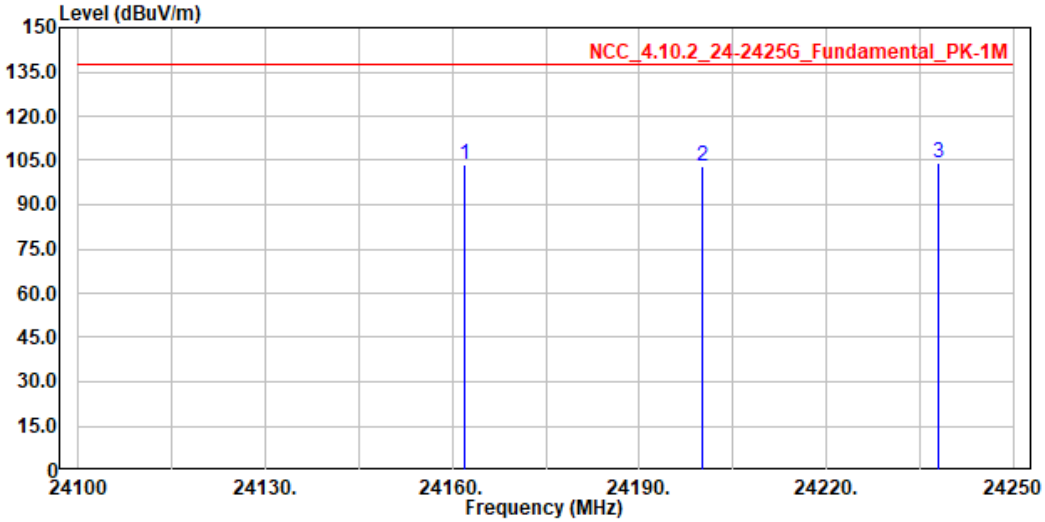
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)
24162	122.98	-33.979	89.001	-28.489	117.490
24200	122.93	-33.979	88.951	-28.539	117.490
24238	122.9	-33.979	88.921	-28.569	117.490

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX Y axis
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24162.000	103.32	137.49	-34.17	51.90	51.42	Peak
2	24200.000	103.11	137.49	-34.38	51.60	51.51	Peak
3	24238.000	103.93	137.49	-33.56	52.31	51.62	Peak

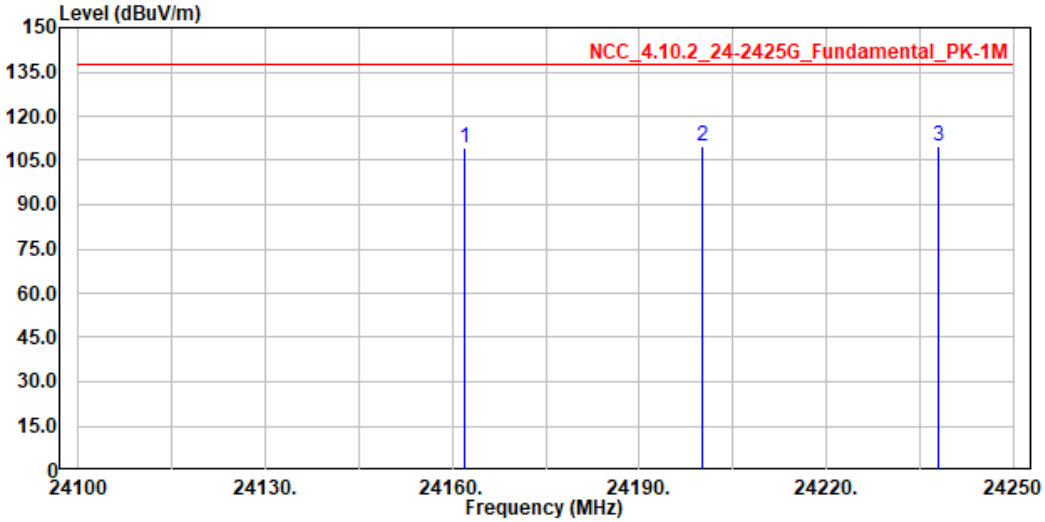
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)
24162	103.32	-33.979	69.341	-48.149	117.490
24200	103.11	-33.979	69.131	-48.359	117.490
24238	103.93	-33.979	69.951	-47.539	117.490

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX Z axis
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24162.000	109.36	137.49	-28.13	57.94	51.42	Peak
2	24200.000	109.57	137.49	-27.92	58.06	51.51	Peak
3	24238.000	109.82	137.49	-27.67	58.20	51.62	Peak

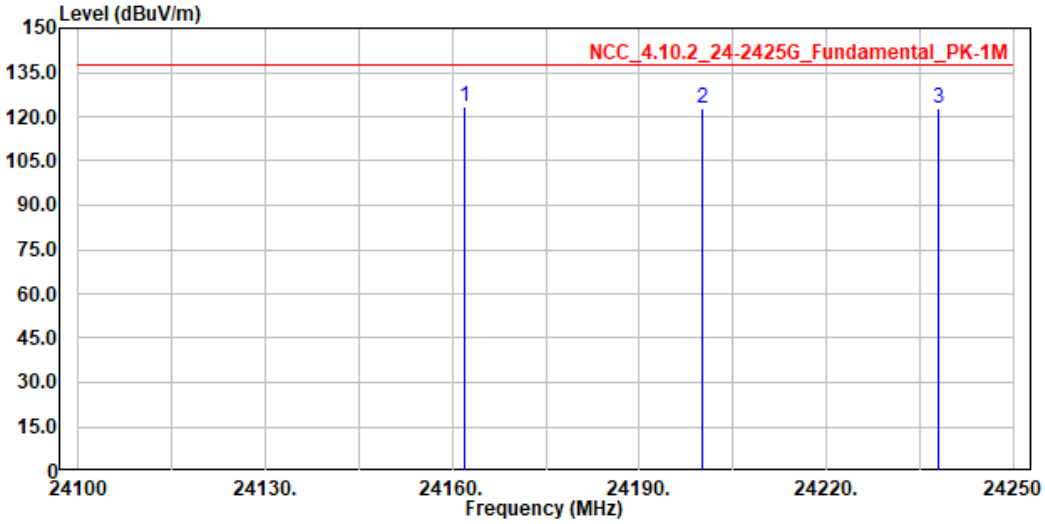
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)
24162	109.36	-33.979	75.381	-42.109	117.490
24200	109.57	-33.979	75.591	-41.899	117.490
24238	109.82	-33.979	75.841	-41.649	117.490

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX Z axis
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24162.000	123.33	137.49	-14.16	71.91	51.42	Peak
2	24200.000	123.09	137.49	-14.40	71.58	51.51	Peak
3	24238.000	123.07	137.49	-14.42	71.45	51.62	Peak

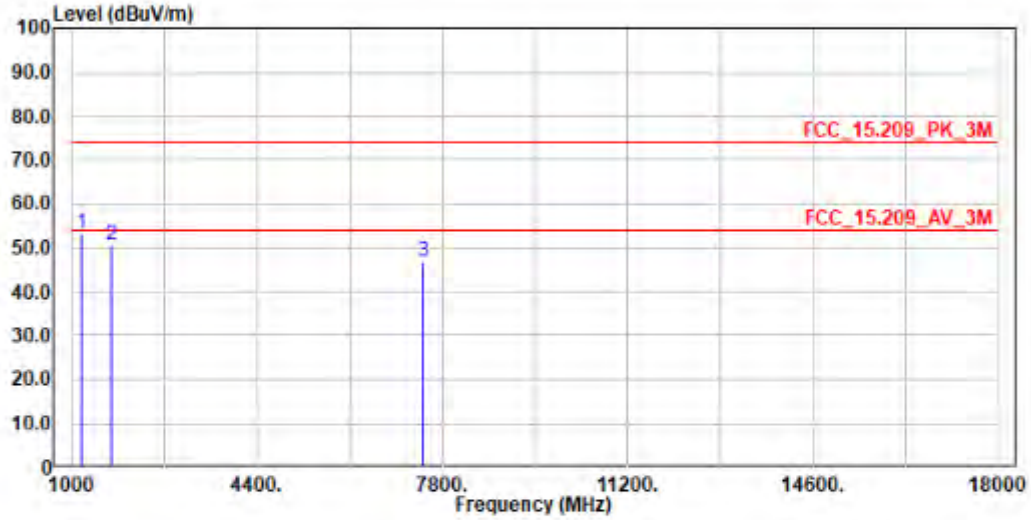
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)
24162	123.33	-33.979	89.351	-28.139	117.490
24200	123.09	-33.979	89.111	-28.379	117.490
24238	123.07	-33.979	89.091	-28.399	117.490

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :HORIZONTAL
Mode :RF-TX 24.2GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1170.000	53.20	74.00	-20.80	76.28	-23.08	Peak
2	1714.000	50.66	74.00	-23.34	72.79	-22.13	Peak
3	7460.000	46.61	74.00	-27.39	65.36	-18.75	Peak

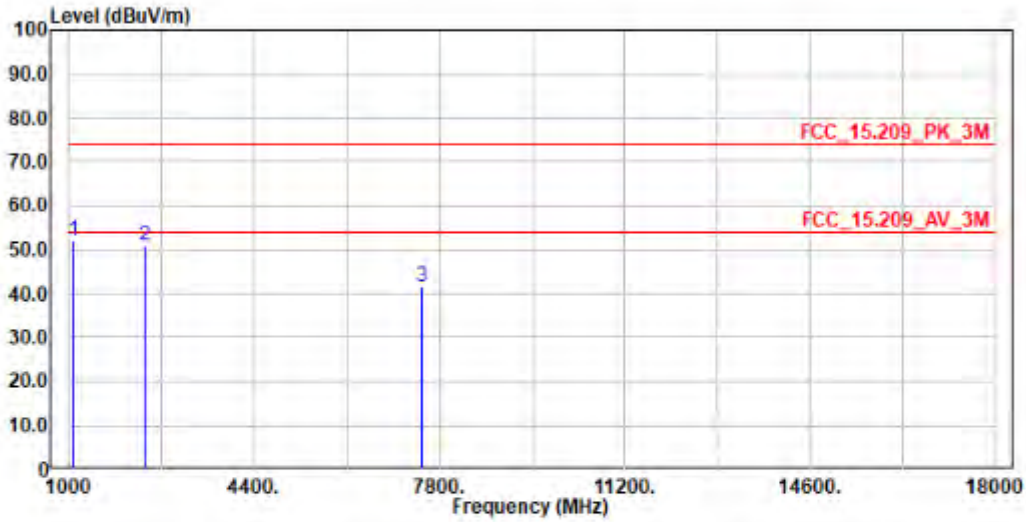
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Peak Limit	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m	dBµV/m
Average Detector:						
--	--	--	--	--	74.000	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Site :966-2
Condition :VERTICAL
Mode :RF-TX 24.2GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1085.000	52.12	74.00	-21.88	75.91	-23.79	Peak
2	2394.000	50.94	74.00	-23.06	70.74	-19.80	Peak
3	7477.000	41.64	74.00	-32.36	60.41	-18.77	Peak

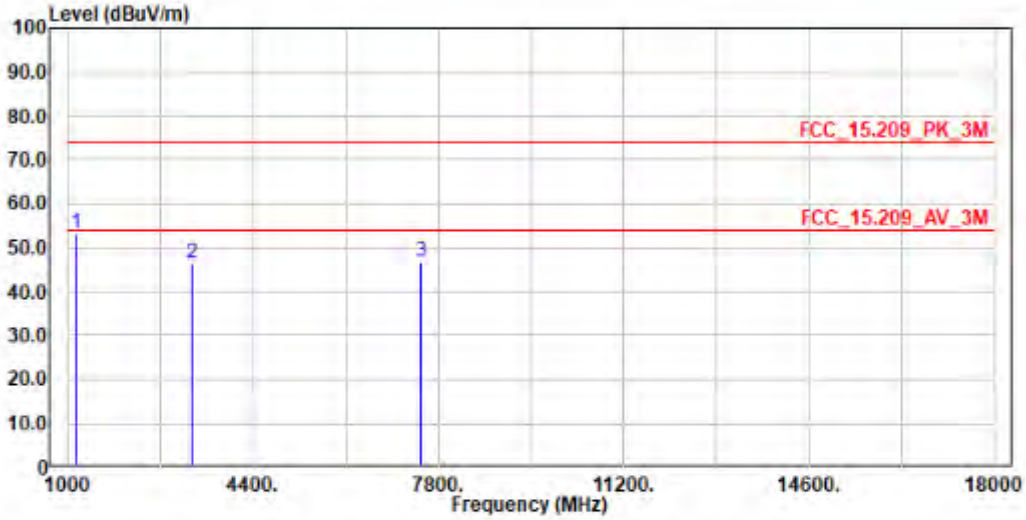
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Peak Limit	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m	dBµV/m
Average Detector:						
--	--	--	--	--	74.000	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Site :966-2
Condition :HORIZONTAL
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1153.000	53.05	74.00	-20.95	76.25	-23.20	Peak
2	3278.000	46.33	74.00	-27.67	65.47	-19.14	Peak
3	7477.000	46.85	74.00	-27.15	65.62	-18.77	Peak

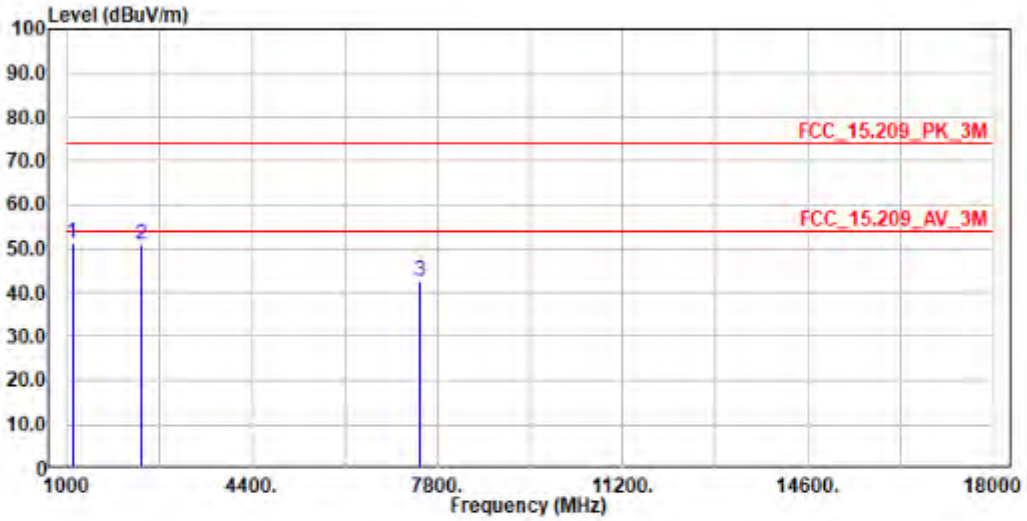
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Peak Limit	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m	dBµV/m
Average Detector:						
--	--	--	--	--	74.000	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Site :966-2
Condition :VERTICAL
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1102.000	51.37	74.00	-22.63	75.03	-23.66	Peak
2	2377.000	50.84	74.00	-23.16	70.64	-19.80	Peak
3	7477.000	42.62	74.00	-31.38	61.39	-18.77	Peak

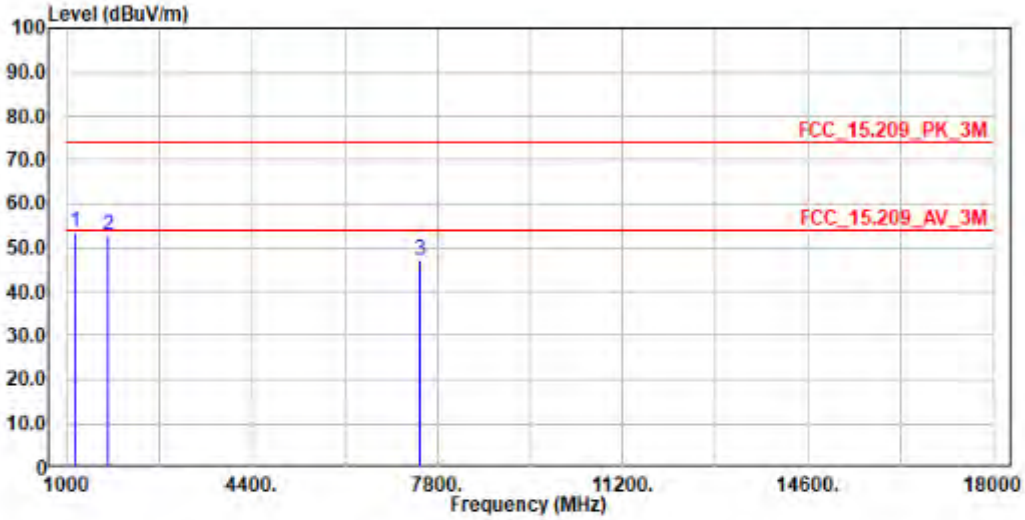
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Peak Limit	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m	dBµV/m
Average Detector:						
--	--	--	--	--	74.000	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Site :966-2
Condition :HORIZONTAL
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1153.000	53.74	74.00	-20.26	76.94	-23.20	Peak
2	1765.000	52.87	74.00	-21.13	74.66	-21.79	Peak
3	7477.000	47.28	74.00	-26.72	66.05	-18.77	Peak

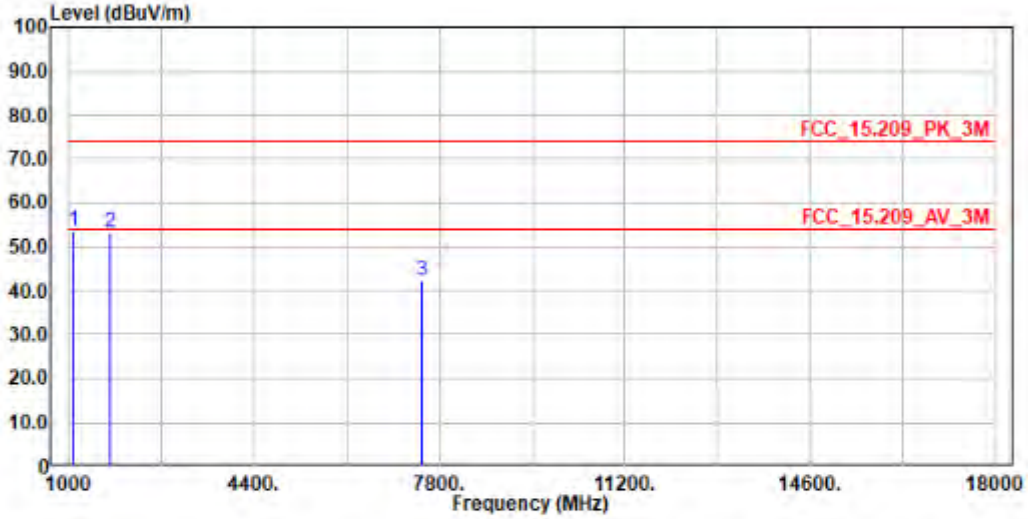
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Peak Limit	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m	dBµV/m
Average Detector:						
--	--	--	--	--	74.000	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Site :966-2
Condition :VERTICAL
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	1085.000	53.41	74.00	-20.59	77.20	-23.79	Peak
2	1748.000	53.11	74.00	-20.89	74.98	-21.87	Peak
3	7477.000	42.14	74.00	-31.86	60.91	-18.77	Peak

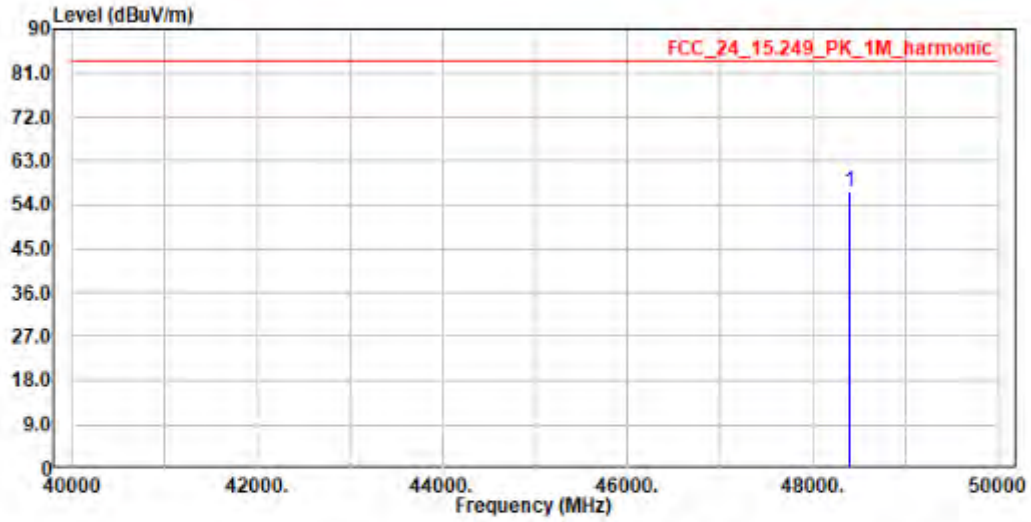
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Peak Limit	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m	dBµV/m
Average Detector:						
--	--	--	--	--	74.000	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.2GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48400.000	56.79	83.54	-26.75	52.67	4.12	Peak

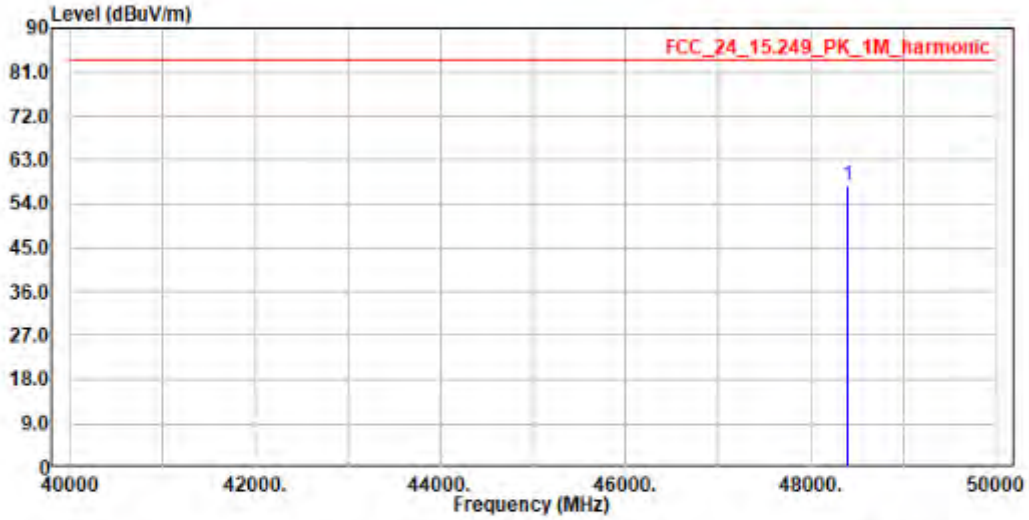
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
48324	56.98	-33.979	23.001	-40.539	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.2GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48400.000	57.78	83.54	-25.76	53.66	4.12	Peak

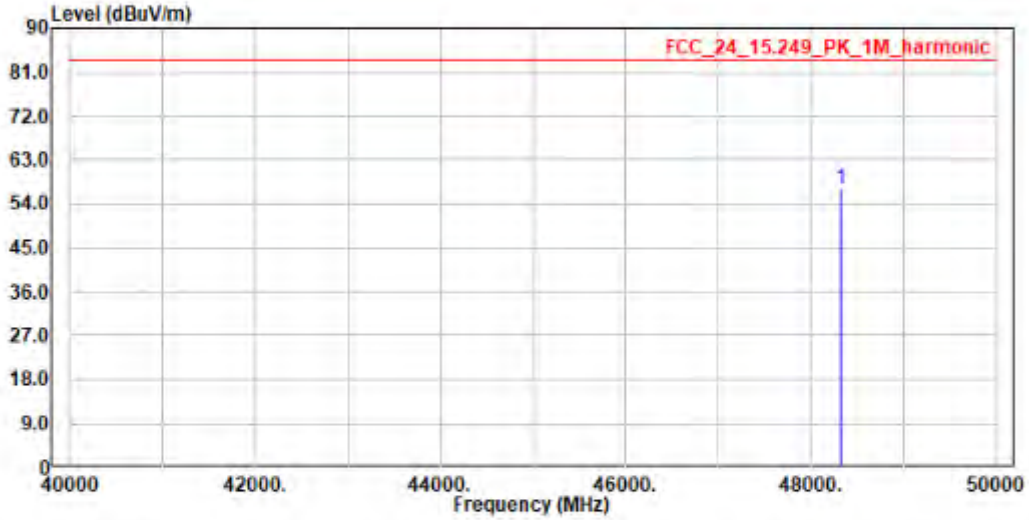
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
48324	57.67	-33.979	23.691	-39.849	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.162GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48324.000	56.98	83.54	-26.56	53.32	3.66	Peak

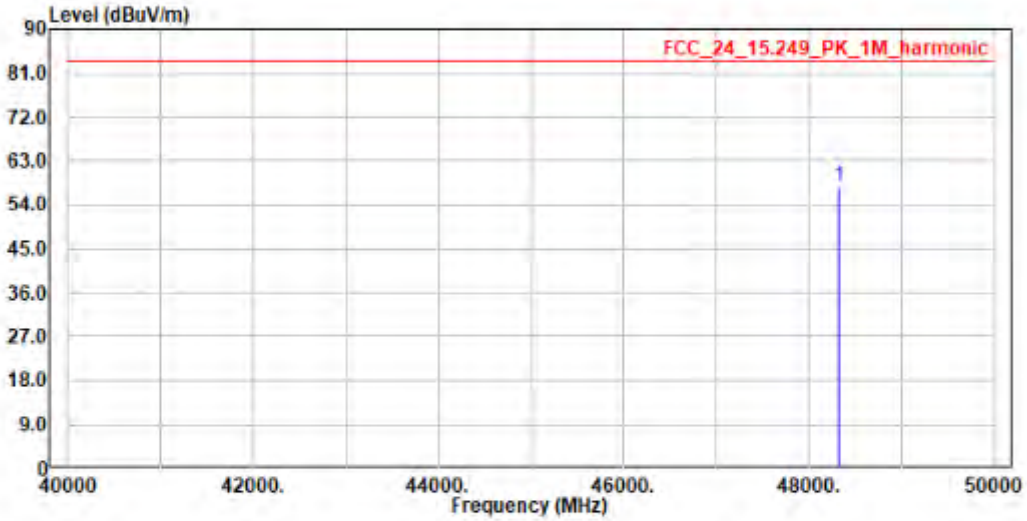
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
48400	56.79	-33.979	22.811	-40.729	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.162GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48324.000	57.67	83.54	-25.87	54.01	3.66	Peak

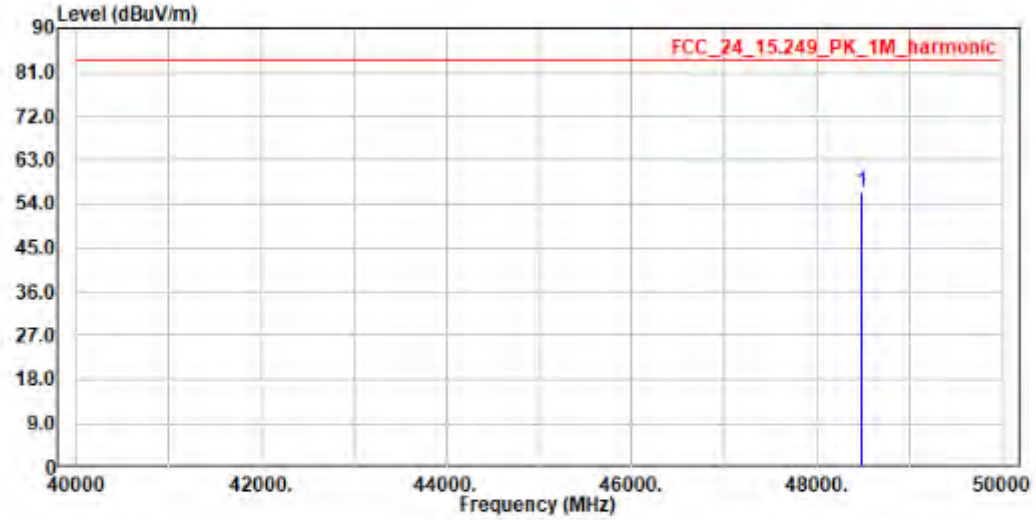
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
48400	57.78	-33.979	23.801	-39.739	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.238GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48476.000	56.40	83.54	-27.14	51.83	4.57	Peak

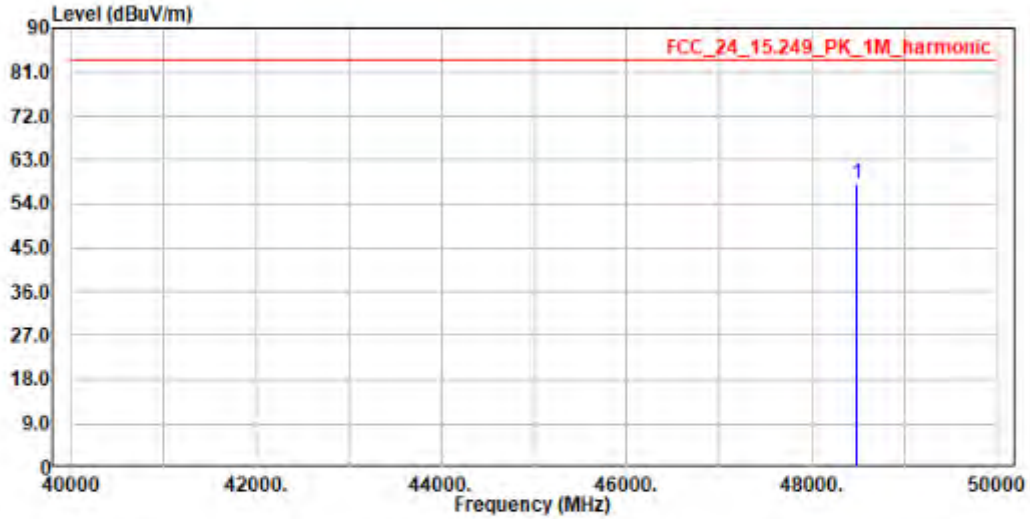
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
48476	56.4	-33.979	22.421	-41.119	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.238GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	48476.000	58.15	83.54	-25.39	53.58	4.57	Peak

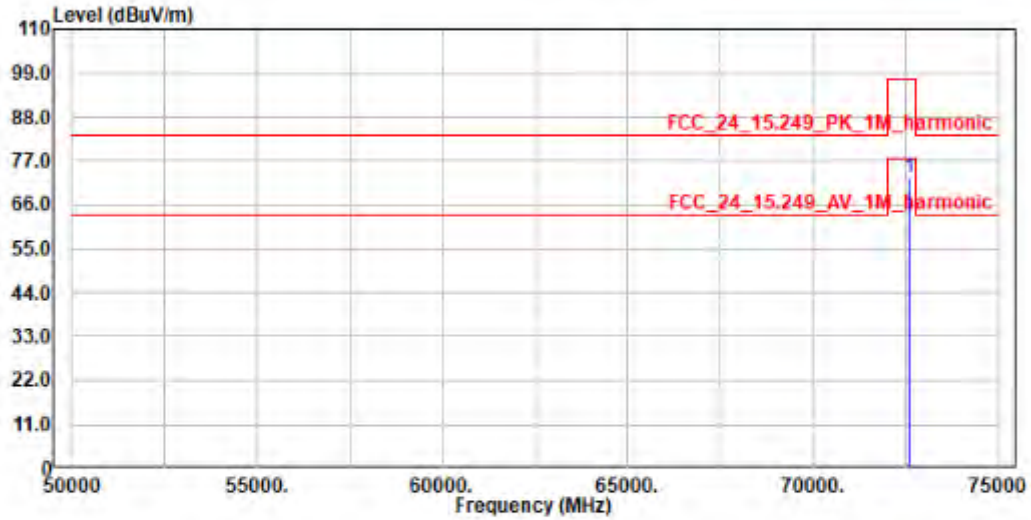
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
48476	58.15	-33.979	24.171	-39.369	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.2GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	72600.000	72.58	97.49	-24.91	13.23	59.35	Peak

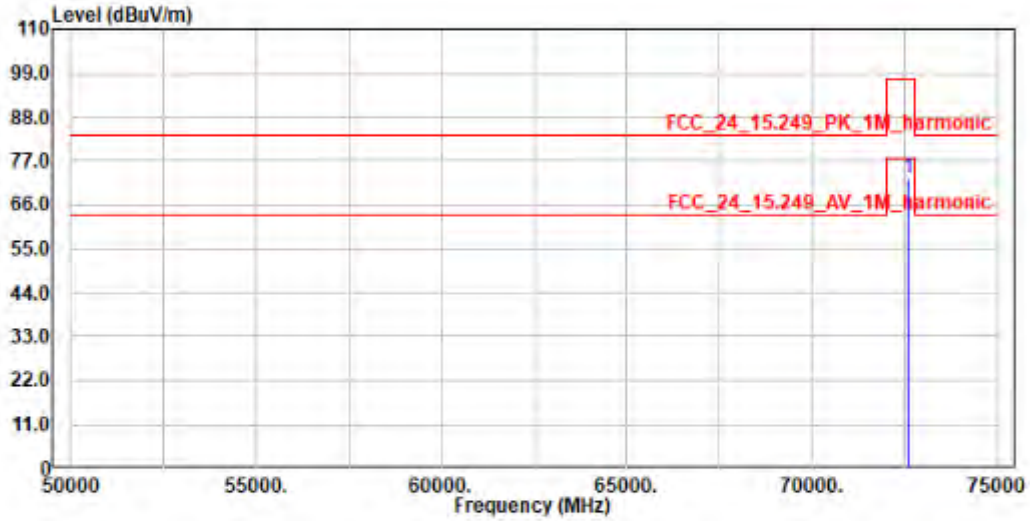
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
--	--	--	--	--	77.49

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.2GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	72600.000	72.46	97.49	-25.03	13.11	59.35	Peak

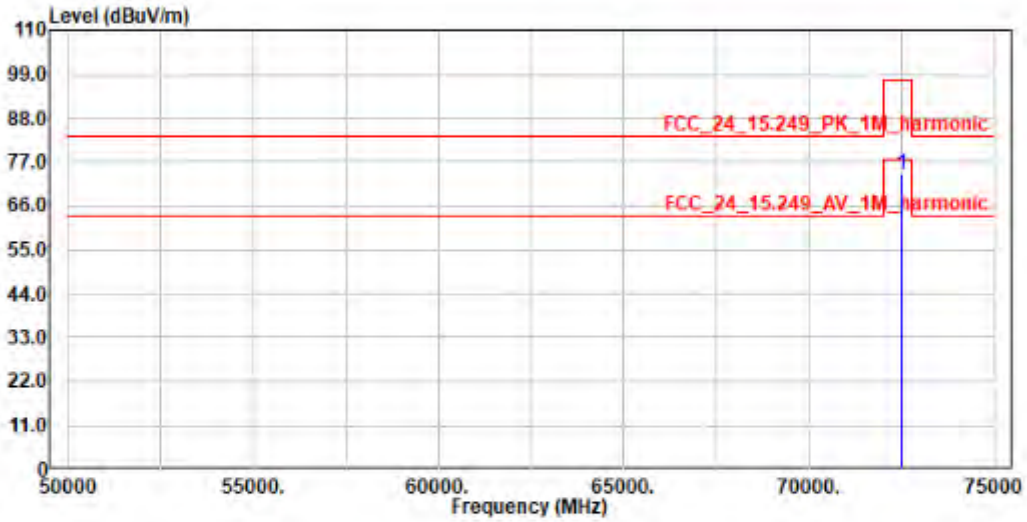
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
--	--	--	--	--	77.49

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	72486.000	74.02	97.49	-23.47	14.68	59.34	Peak

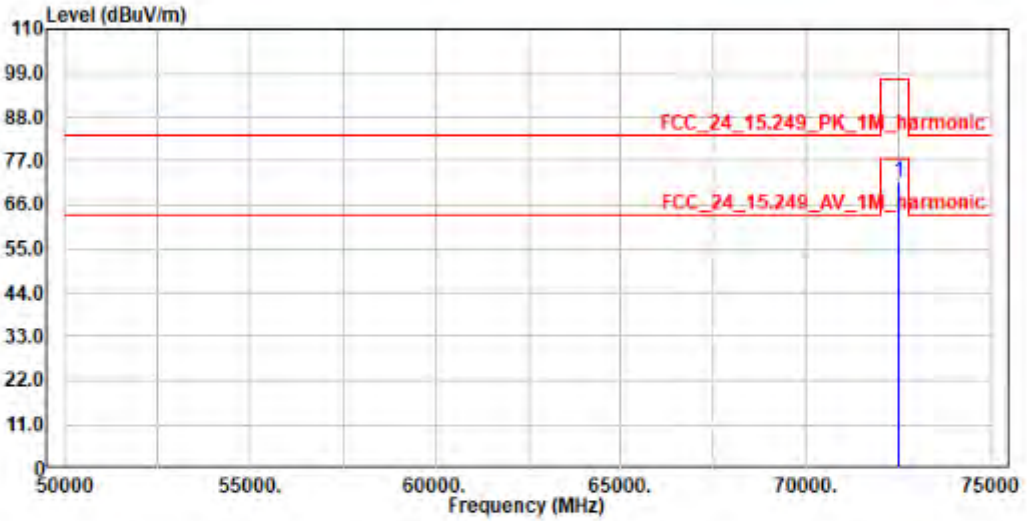
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
--	--	--	--	--	77.49

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	72486.000	71.68	97.49	-25.81	12.34	59.34	Peak

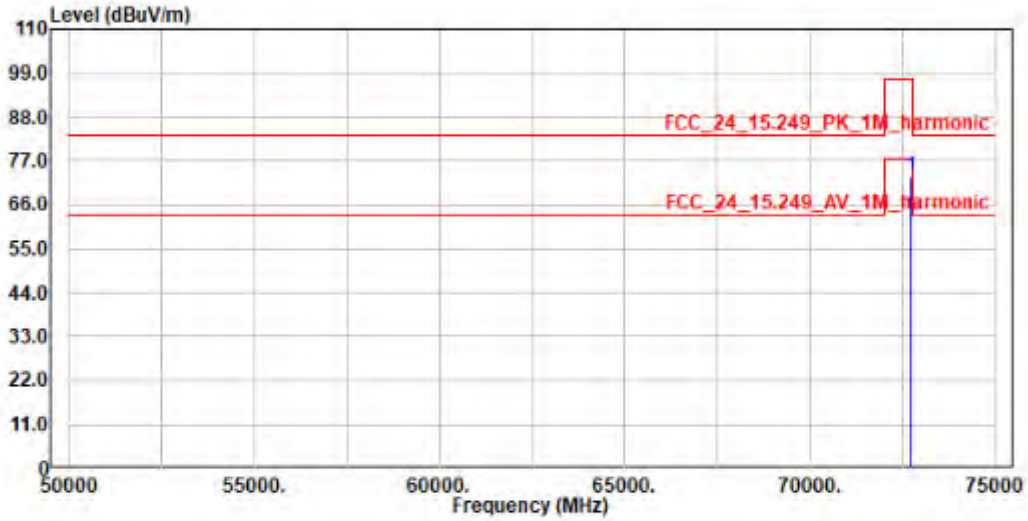
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
--	--	--	--	--	77.49

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	72714.000	73.25	97.49	-24.24	13.89	59.36	Peak

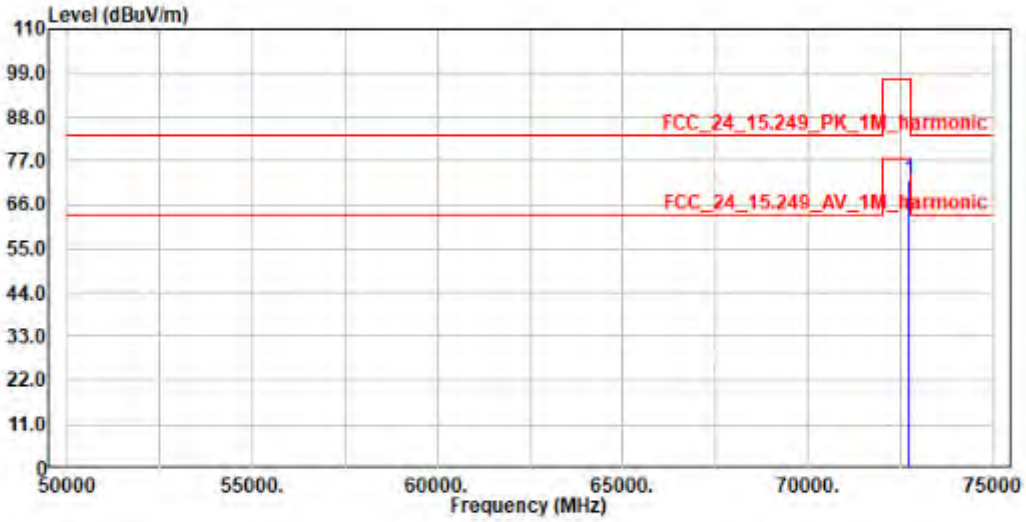
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
--	--	--	--	--	77.49

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	72714.000	72.27	97.49	-25.22	12.91	59.36	Peak

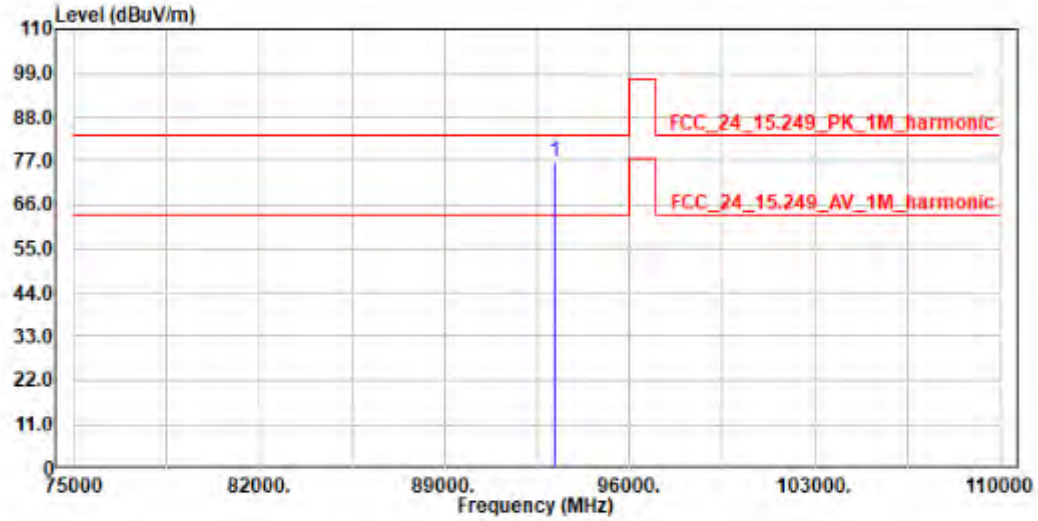
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
--	--	--	--	--	77.49

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.2GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	93165.000	76.88	83.54	-6.66	15.11	61.77	Peak

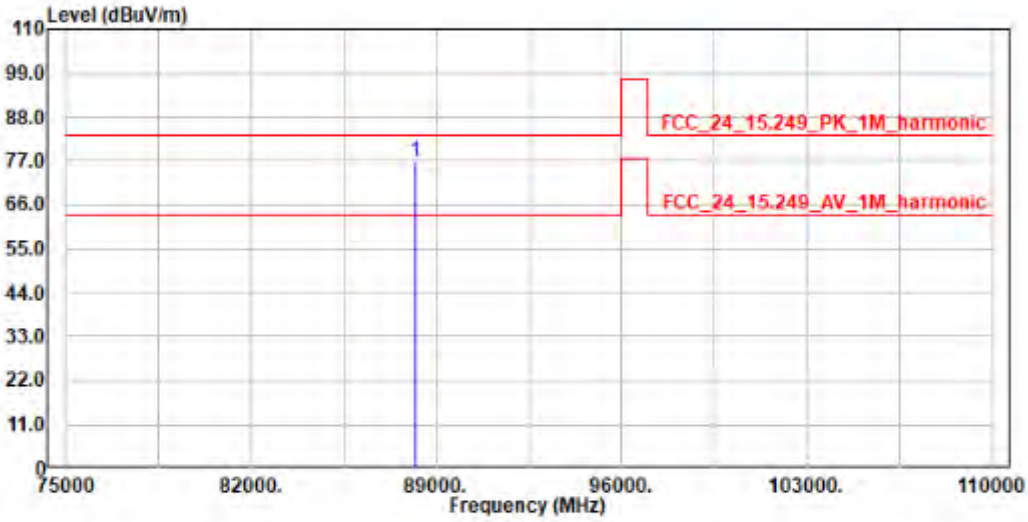
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
97610	78.55	-33.979	44.571	-18.969	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.2GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	88230.000	76.78	83.54	-6.76	15.33	61.45	Peak

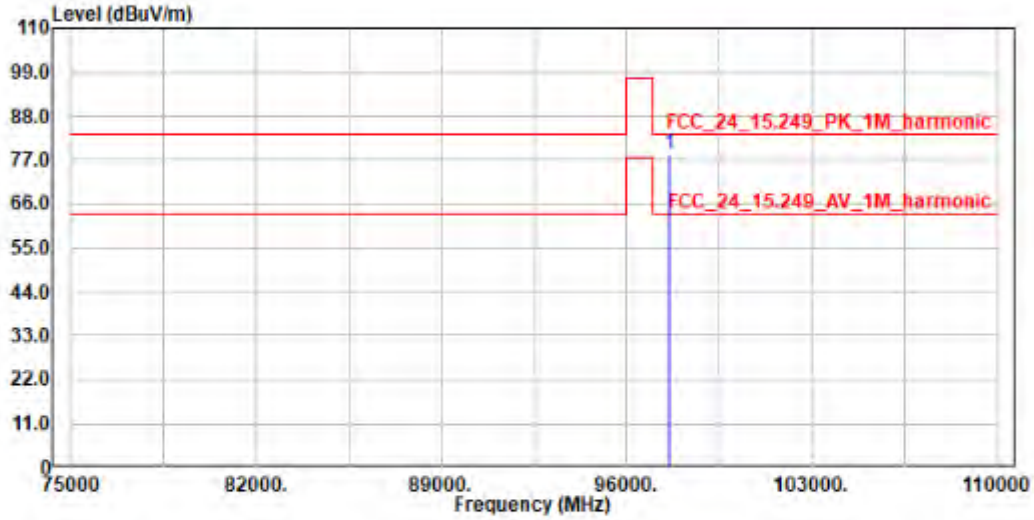
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
94670	77.24	-33.979	43.261	-20.279	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	97610.000	78.55	83.54	-4.99	14.82	63.73	Peak

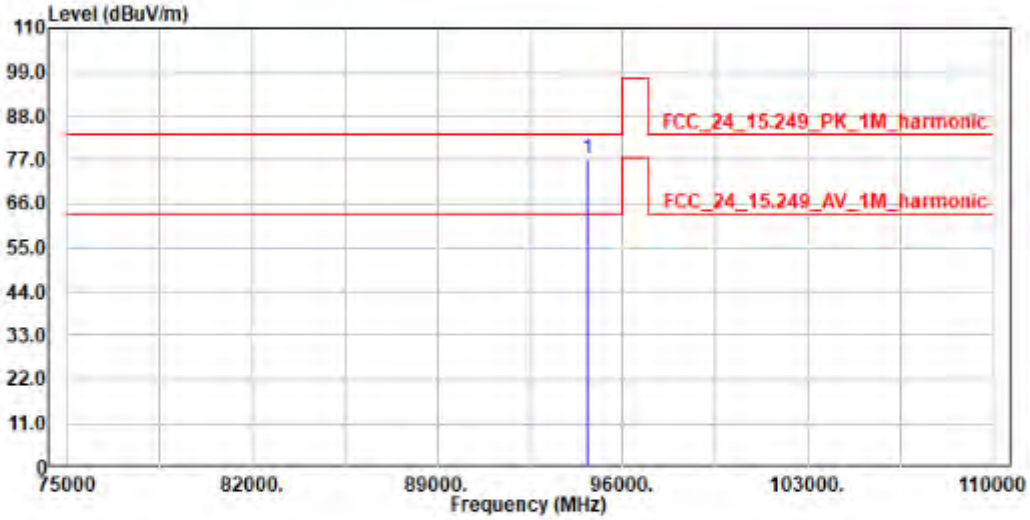
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
93165	76.88	-33.979	42.901	-20.639	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	94670.000	77.24	83.54	-6.30	15.44	61.80	Peak

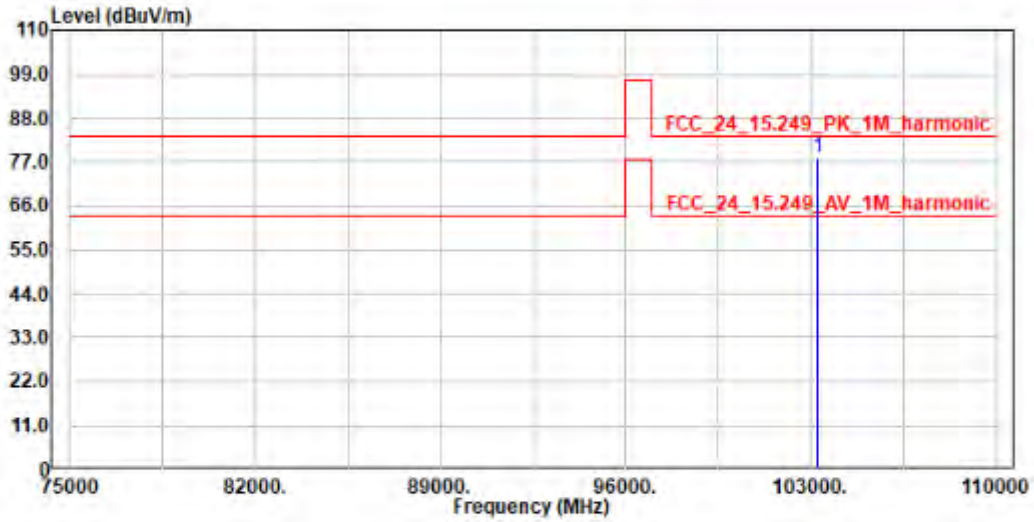
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
88230	76.78	-33.979	42.801	-20.739	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	103245.000	78.10	83.54	-5.44	15.43	62.67	Peak

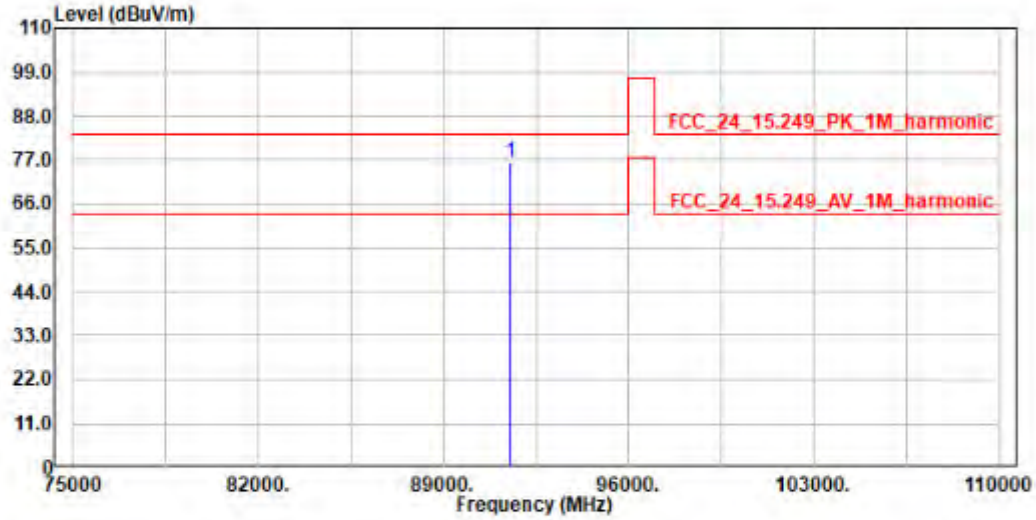
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency MHz	Peak Measurement dBµV/m	Duty Cycle Factor dB	Average Measurement dBµV/m	Margin dB	Average Limit dBµV/m
Average Detector:					
103245	78.1	-33.979	44.121	-19.419	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	91555.000	76.58	83.54	-6.96	14.99	61.59	Peak

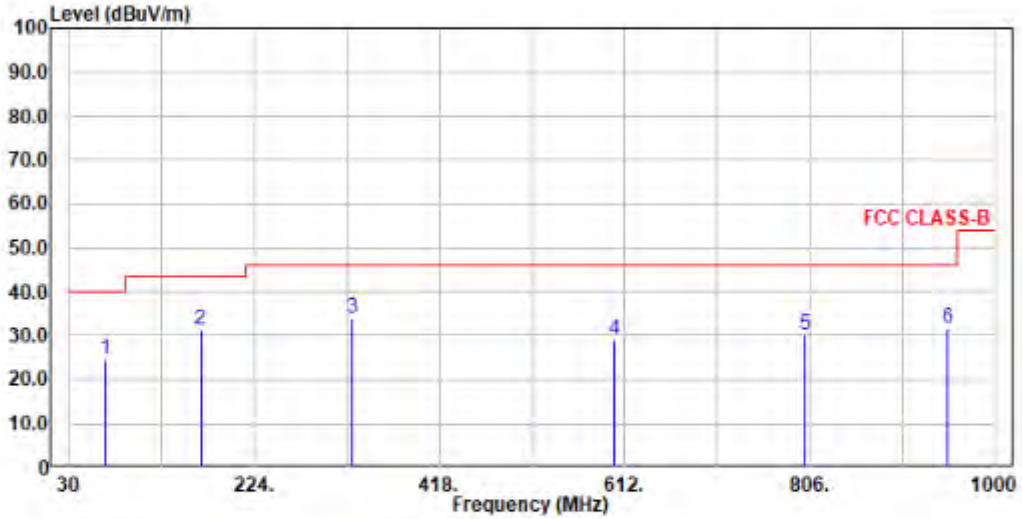
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency	Peak Measurement	Duty Cycle Factor	Average Measurement	Margin	Average Limit
MHz	dBµV/m	dB	dBµV/m	dB	dBµV/m
Average Detector:					
91555	76.58	-33.979	42.601	-20.939	63.540

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :3m ,Horizontal
Mode :RE-TX 24.2GHz
TEST BY :Nova Chu

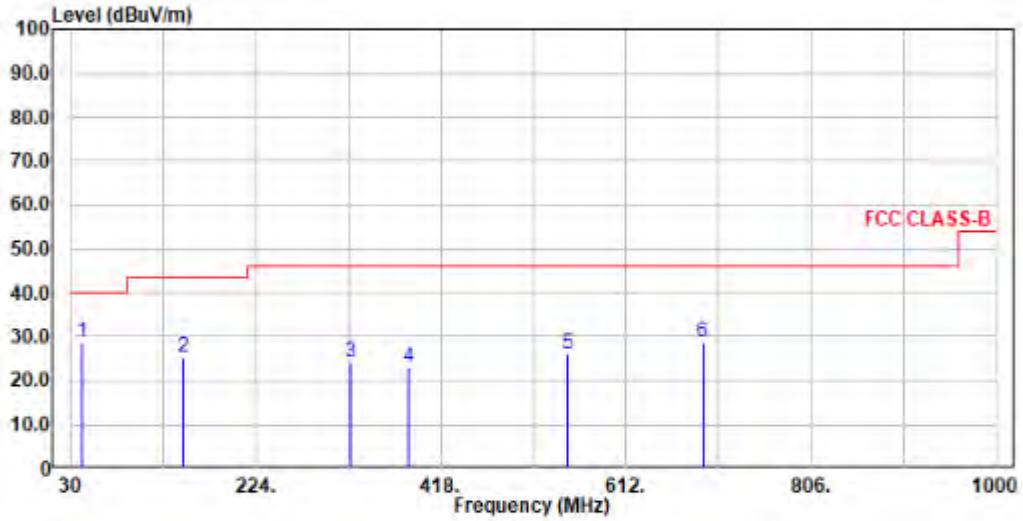


No.	Frequency	Level	Limit Line	Over Limit
	MHz	dBm	dBm	dB
1	67.957	24.69	40.00	-15.31
2	167.768	31.17	43.50	-12.33
3	326.623	33.84	46.00	-12.16
4	600.754	29.10	46.00	-16.90
5	800.377	30.35	46.00	-15.65
6	950.797	31.84	46.00	-14.16

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Site :966-2
Condition :3m ,Vertical
Mode :RE-TX 24.2GHz
TEST BY :Nova Chu

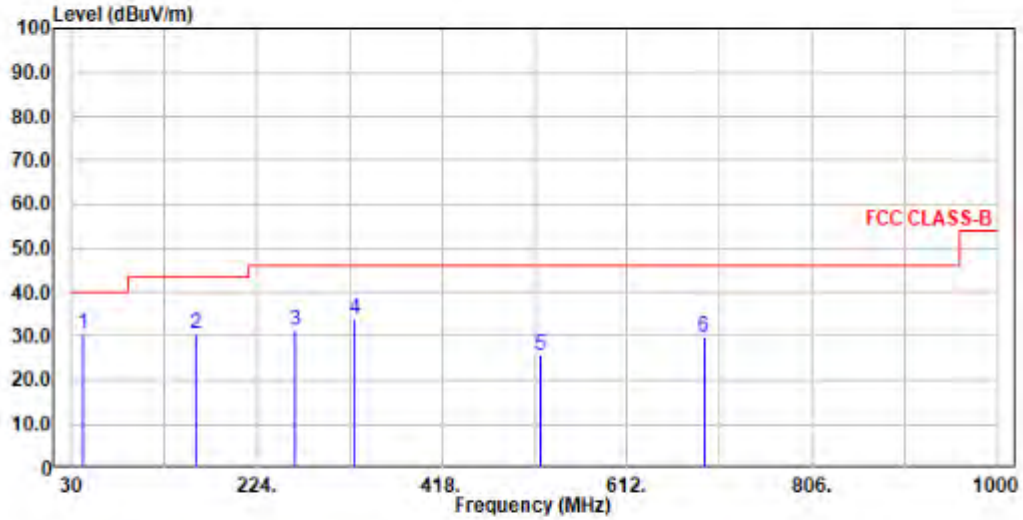


No.	Frequency	Level	Limit Line	Over Limit
	MHz	dBm	dBm	dB
1	42.652	28.71	40.00	-11.29
2	148.087	25.14	43.50	-18.36
3	322.406	24.21	46.00	-21.79
4	384.261	23.20	46.00	-22.80
5	550.145	25.87	46.00	-20.13
6	692.130	28.73	46.00	-17.27

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Site :966-2
Condition :3m ,Horizontal
Mode :RE-TX 24.162GHz
TEST BY :Nova Chu

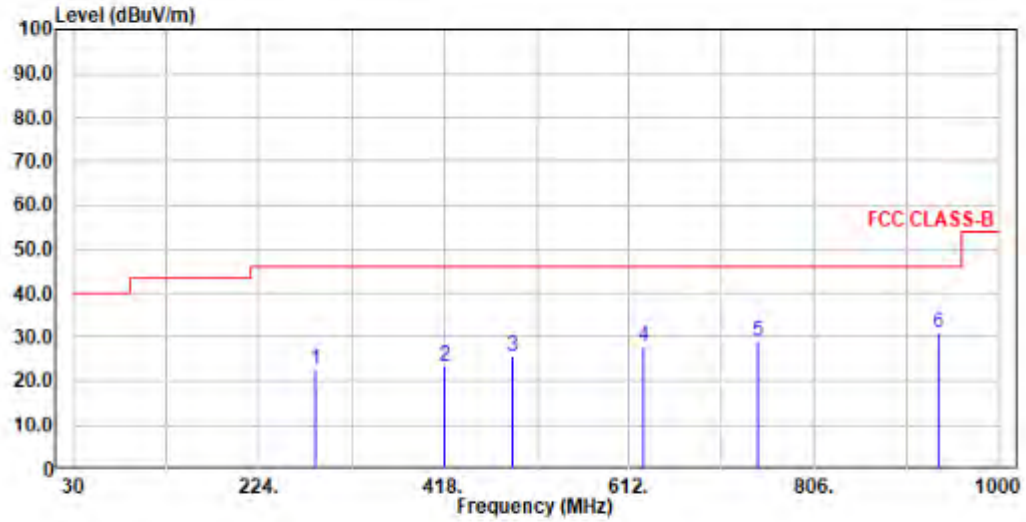


No.	Frequency	Level	Limit Line	Over Limit
	MHz	dBm	dBm	dB
1	42.652	30.63	40.00	-9.37
2	159.333	30.40	43.50	-13.10
3	263.362	31.23	46.00	-14.77
4	326.623	33.84	46.00	-12.16
5	520.623	25.62	46.00	-20.38
6	692.130	29.65	46.00	-16.35

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Site :966-2
Condition :3m ,Vertical
Mode :RE-TX 24.162GHz
TEST BY :Nova Chu

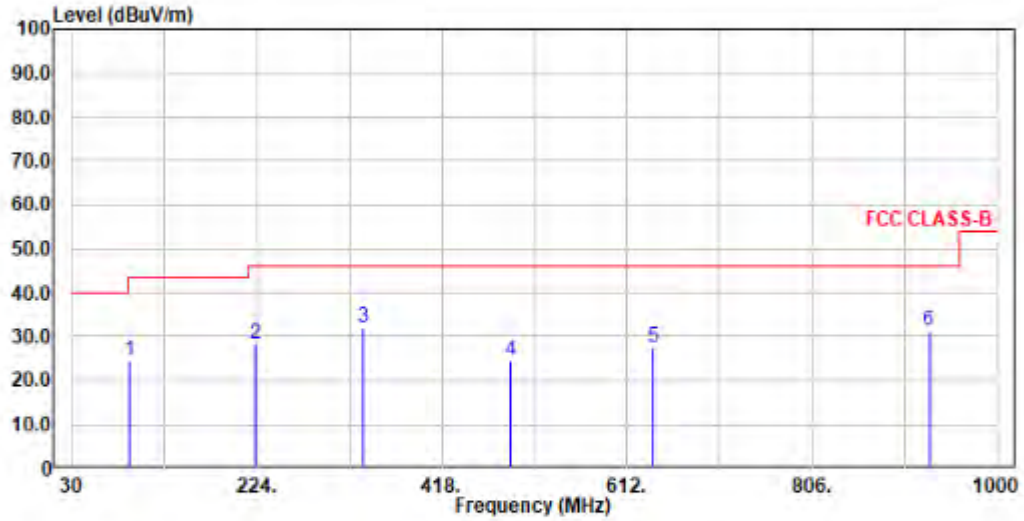


No.	Frequency	Level	Limit Line	Over Limit
	MHz	dBm	dBm	dB
1	283.044	22.53	46.00	-23.47
2	419.406	23.53	46.00	-22.47
3	489.696	25.78	46.00	-20.22
4	627.464	27.97	46.00	-18.03
5	746.957	28.92	46.00	-17.08
6	936.739	30.85	46.00	-15.15

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Site :966-2
Condition :3m ,Horizontal
Mode :RE-TX 24.238GHz
TEST BY :Nova Chu

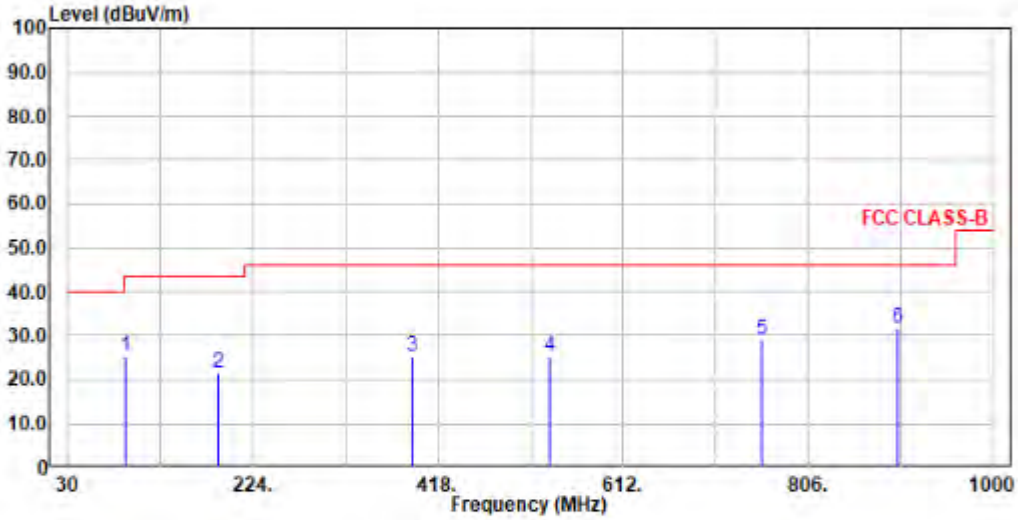


No.	Frequency	Level	Limit Line	Over Limit
	MHz	dBm	dBm	dB
1	90.449	24.45	43.50	-19.05
2	222.594	28.36	46.00	-17.64
3	335.058	31.95	46.00	-14.05
4	489.696	24.56	46.00	-21.44
5	638.710	27.43	46.00	-18.57
6	928.304	31.42	46.00	-14.58

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Site :966-2
Condition :3m ,Vertical
Mode :RE-TX 24.238GHz
TEST BY :Nova Chu



No.	Frequency	Level	Limit Line	Over Limit
	MHz	dBm	dBm	dB
1	90.449	25.37	43.50	-18.13
2	187.449	21.41	43.50	-22.09
3	391.290	25.21	46.00	-20.79
4	534.681	25.30	46.00	-20.70
5	756.797	29.03	46.00	-16.97
6	900.188	31.84	46.00	-14.16

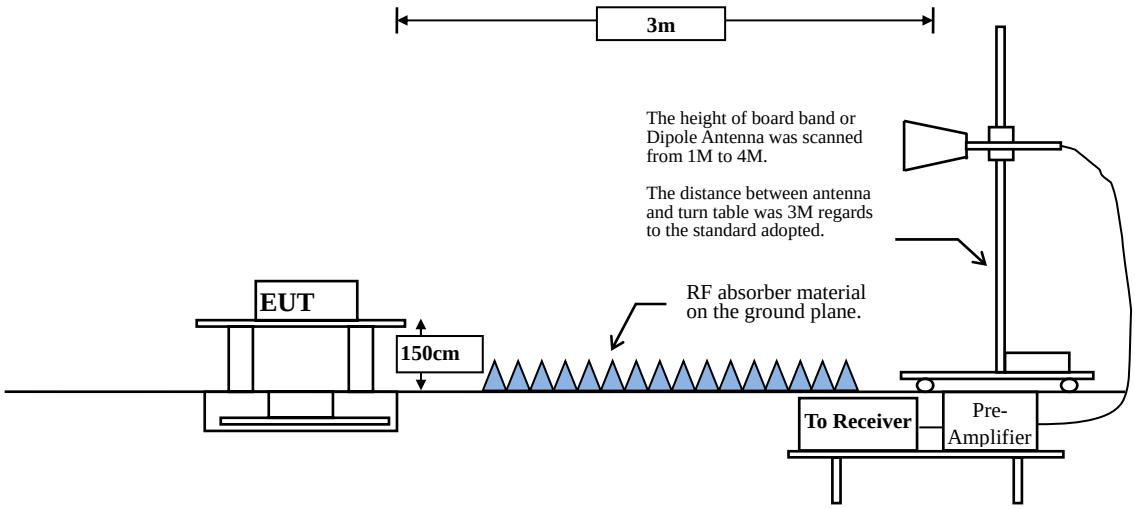
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

4. Band Edge

4.1. Test Setup

RF Radiated Measurement:



4.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

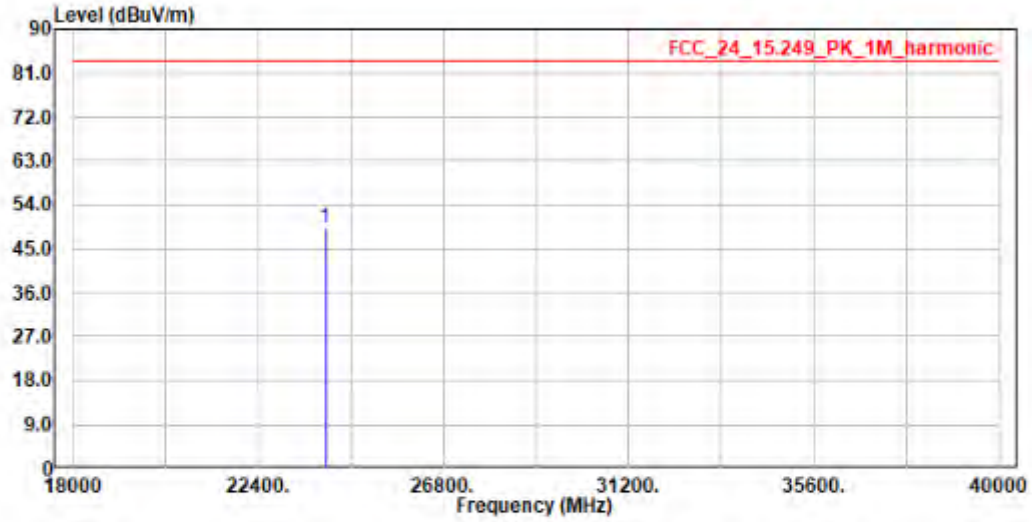
Remarks: E field strength (dBμV /m) = 20 log E field strength (uV/m)

4.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.
The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

4.4. Test Result of Band Edge

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24000.000	49.21	83.54	-34.33	32.87	16.34	Peak

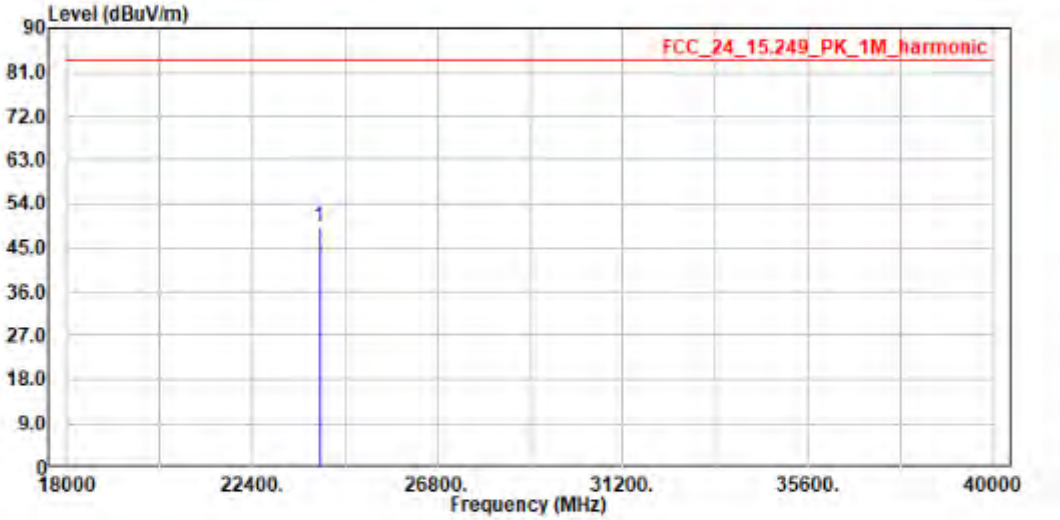
Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)	Result
24000	49.21	-33.979	15.231	-48.309	63.540	Pass

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.162GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24000.000	49.21	83.54	-34.33	32.87	16.34	Peak

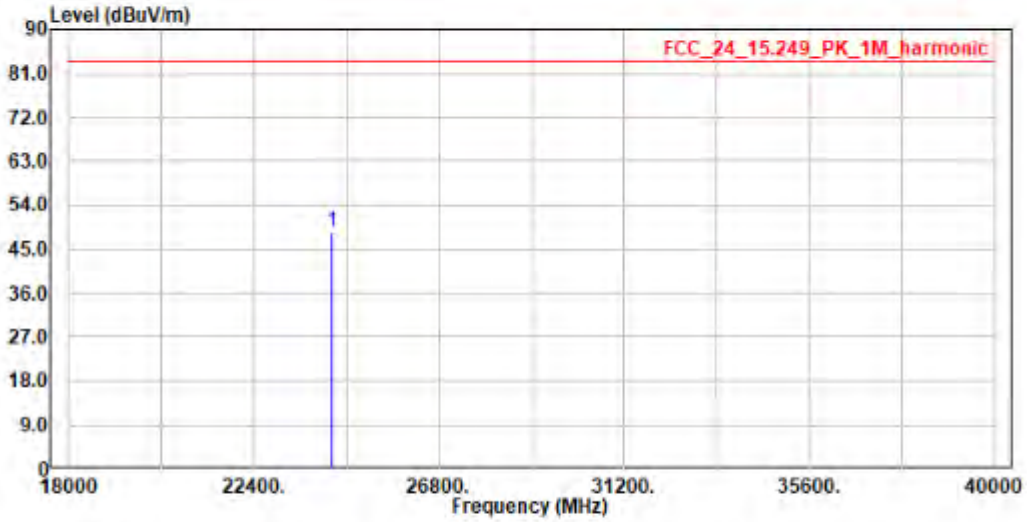
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)	Result
24000	49.21	-33.979	15.231	-48.309	63.540	Pass

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Horizontal
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24250.000	48.44	83.54	-35.10	31.33	17.11	Peak

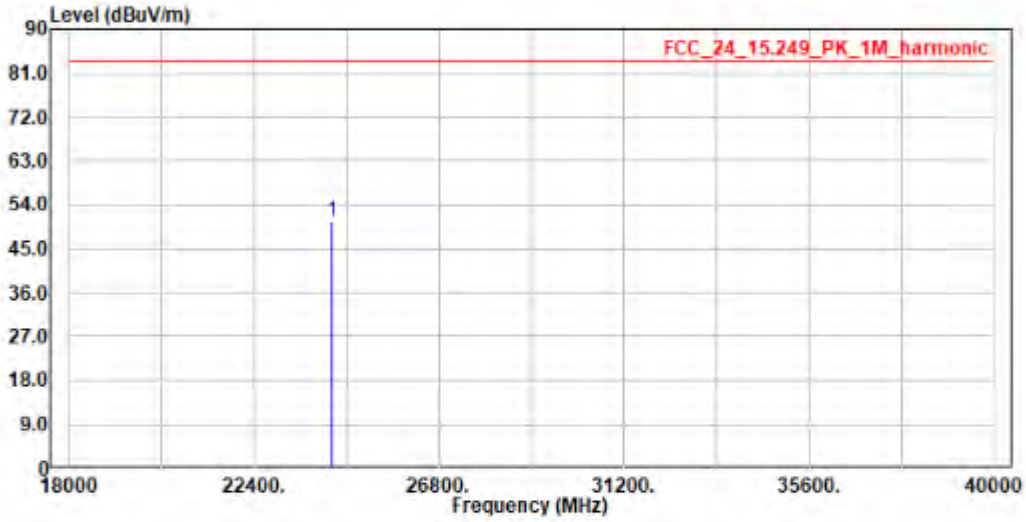
Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)	Result
24250	48.44	-33.979	14.461	-49.079	63.540	Pass

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

Site :966-2
Condition :Vertical
Mode :RF-TX 24.238GHz
TEST BY :Carlos Chen



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	24250.000	50.52	83.54	-33.02	33.41	17.11	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line

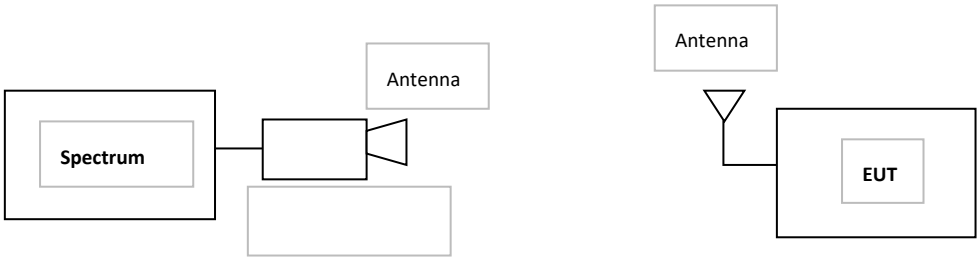
Frequency (MHz)	Peak Measurement (dBµV/m)	Duty Cycle Factor (dB)	Average Measurement (dBµV/m)	Margin (dB)	Average Limit (dBµV/m)	Result
24250	50.52	-33.979	16.541	-46.999	63.540	Pass

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.
3. Distance extrapolation factor = 20 log (specific distance 3m)/(test distance 1m)
   Limit line = specific(dBµV) + distance extrapolation factor (9.54dB)

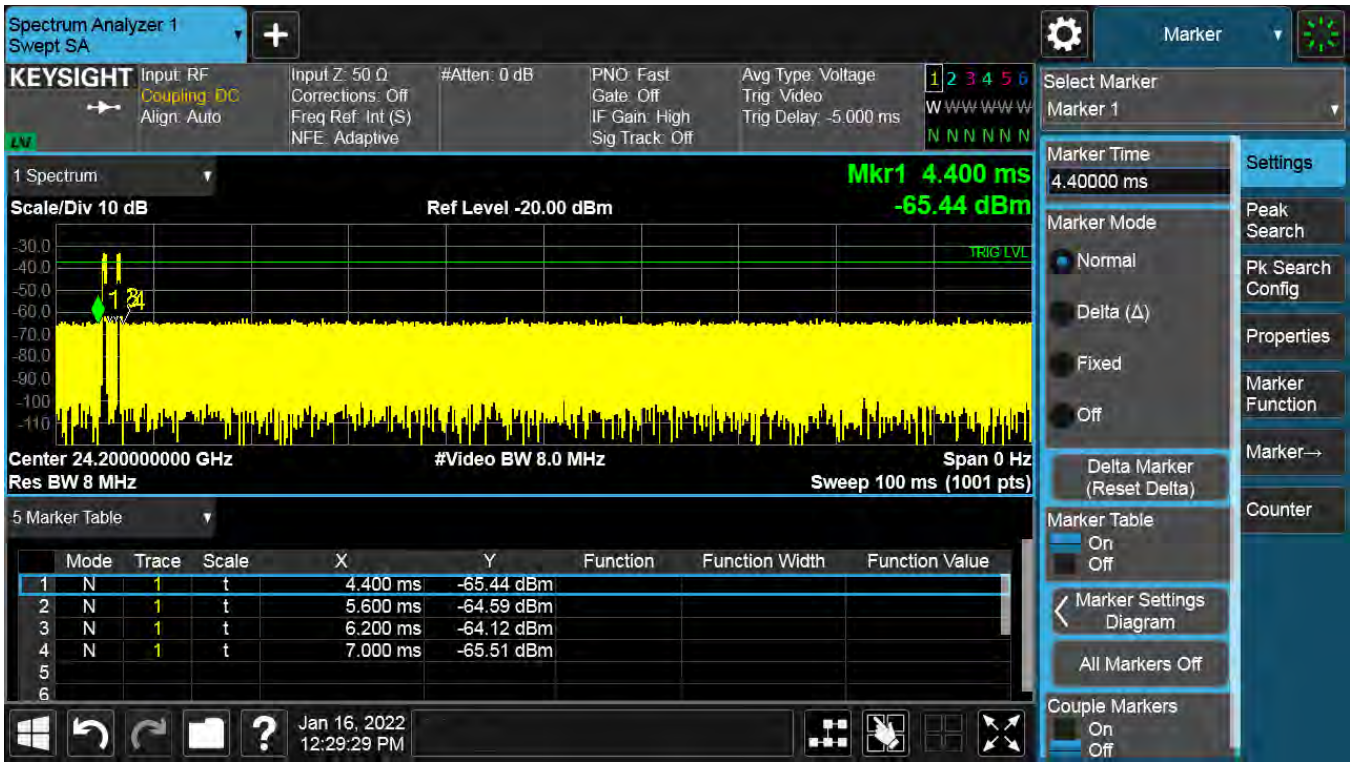
5. Duty Cycle

5.1. Test Setup



5.2. Test Result of Duty Cycle

Product : USRR05MA
Test Item : Duty Cycle Data
Test Mode : Mode 2: Normal mode



Time on of 100ms= 2ms

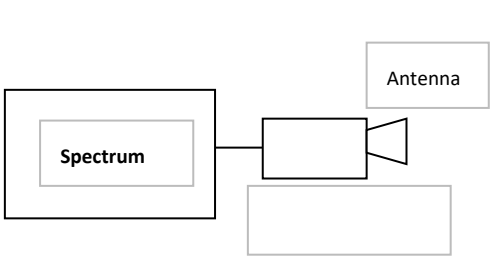
Duty Cycle=2ms / 100ms= 0.02

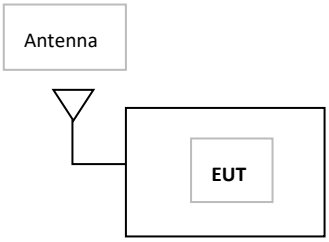
Duty Cycle correction factor= 20 LOG 0.02= -33.979 dB

Duty Cycle correction factor	**-33.979 dB**

6. 20dB Occupied Bandwidth

6.1. Test Setup





6.2. Limits

No Required

6.3. Test Result of Occupied Bandwidth

Product : USRR05MA
Test Item : Occupied Bandwidth
Test Mode : Mode 1: Transmit

Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
1	24162	4.66	--	Pass
2	24200	4.30	--	Pass
3	24238	3.30	--	Pass

7. EMI Reduction Method During Compliance Testing

No modification was made during testing.