FCC Test Report

Report No: WD-RF-R-220298-A0

Product Name	:	RF remote controller
Model Name	:	ZRC1-RF
FCC ID	:	2AUGVZRC1-RF
Applicant	:	Elite Screens Visual & Sound Co., Ltd.
Received Date	:	Jun. 02, 2022
Tested Date	:	Aug. 26, 2022 ~ Oct. 04, 2022
Applicable Standard	:	47 CFR FCC Part 15, Subpart C (Section 15.231) ANSI C63.10 : 2013

ilac-MRA TAF Testing Laboratory 2965

Wendell Industrial Co., Ltd

Wendell EMC & RF Laboratory

Caution:
This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted.
The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment.
Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.
This report must not be used to claim product endorsement by TAF or any agency of the government.

Test Report

Issued Date: October 04, 2022

Project No.: 22Q060203

Product Name	RF remote controller
Trade Name	Elite Screens
Model Name	ZRC1-RF
FCC ID	2AUGVZRC1-RF
Applicant	Elite Screens Visual & Sound Co., Ltd.
Manufacturer	Elite Screens Visual & Sound Co., Ltd.
EUT Rated Voltage	Battery 1.5V*2
EUT Test Voltage	Battery 1.5V*2
EUT Supports Radios Application	MOD 433.92MHz
Applicable Standard	47 CFR FCC Part 15, Subpart C (Section 15.231) ANSI C63.10 : 2013
Test Result	Complied

Documented : Emma Lu

(Specialist / Emma Lu)

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(Section Manager / Jack Chang)

Approved : Gary Wu

(Project Manager / Gary Wu)

Table of Contents

Document Revision History

Report No.	Issue date	Description
WD-RF-R-220298-A0	October 04, 2022	Initial report

Summary of Test Result

Ref. Std. Clause	Test Items	Result
15.203	Antenna Requirement	Pass
15.231(a)(1)	Transmit Time	Pass
15.231(b)	Radiated Emissions	Pass
15.231(c)	20dB Bandwidth	Pass
15.207	AC Conducted Emission	N/A

1 Generation Information

1.1 Applicant

Elite Screens Visual & Sound Co., Ltd.
3 F., No. 88, Wugong Rd., Xinzhuang Dist., New Taipei City 24886, Taiwan (R.O.C.)

1.2 Manufacturer

Elite Screens Visual & Sound Co., Ltd.
3 F., No. 88, Wugong Rd., Xinzhuang Dist., New Taipei City 24886, Taiwan (R.O.C.)

1.3 Description of Equipment under Test

Product Name	RF remote controller
Model No.	ZRC1-RF
FCC ID	2AUGVZRC1-RF
Frequency Range	433.92 MHz
Type of Modulation	OOK
Antenna Information	PCB Antenna
EUT Supports Radios Application	MOD 433.92MHz
EUT Rated Voltage	Battery 1.5V*2
EUT Test Voltage	Battery 1.5V*2

Channel List

Channel	Frequency (MHz)
01	433.92

Test Frequencies in each operating band

Frequency range over which the device operates in each operating band (Note 1)	Number of test frequencies required	Location of test frequencies inside the operating frequency range (Note 1,2)
≤ 1 MHz	1	near centre
> 1 MHz and ≤ 10 MHz	2	1 near high end, 1 near low end
> 10 MHz	3	1 near high end, 1 near centre, and 1 near low end

Note 1: The frequency range over which the device operates in a given operating band is the difference between the highest and lowest frequencies on which the device can be tuned within that given operating band. The frequency range can be smaller than or equal to the operating band, but cannot be greater than the operating band.

Note 2: In the third column of table 1, "near" means as close as possible to or at the centre / low end / high end of the frequency range over which the device operates.

Firmware / Software Version

1	**Product Name**	RF remote controller
2	**Model No.**	ZRC1-RF
3	**Test SW Version**	Press the button to transmit
4	**RF power setting in TEST SW**	☒ RF power setting was not able to alter during testing. ☐ RF power setting was able to alter during testing. (See the following table)

Parameters of test software setting

Type of Modulation	Channel	Frequency (MHz)	Set Value
OOK	01	433.92	Default

Test Mode

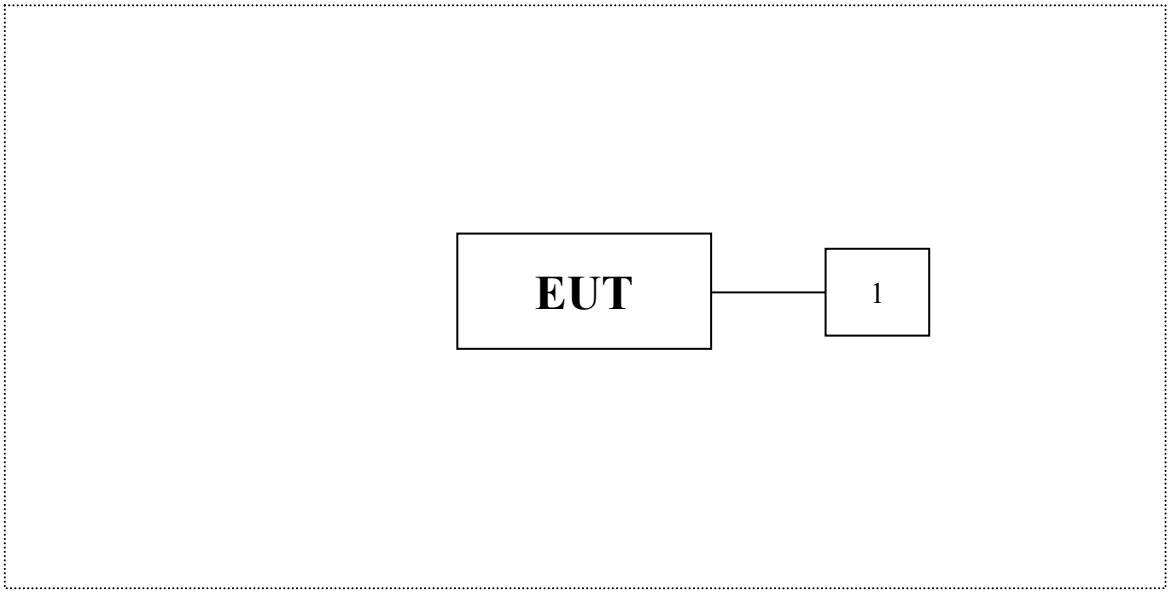
Mode 1	Transmit

Note:

1. This device is a RF remote controller with a built-in MOD 433.92MHz transmitter.
2. These tests were performed on a sample of equipment to demonstrate compliance with 47 CFR FCC Part 15, Subpart C (Section 15.231).
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the X axis worst case is shown in the report.

1.4 Configuration of Tested System

Radiation



Test Table

1.5 EUT Exercise Software

1. Setup the EUT as shown in Section 1.4
2. Turn on the power of all equipment.
3. Using tag to trigger NFC continuous transmission.
4. Verify that the EUT works properly.

1.6 Tested System Details

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

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	TRIG BOX	Elite Screens	ZRC1-trig	N/A	Non-shielded, Non-Core, 0.15m

1.7 Test Facility

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20~25
Humidity (% RH)	25-75	45~55
Barometric pressure (mbar)	860-1060	990~1020

Description: Accredited by TAF
Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

Lab Address: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Lab: Wendell EMC & RF Laboratory

Test Location: No. 119, Wugong 3rd Rd., Wugu Dist.,
New Taipei City 248, Taiwan (R.O.C.)

Designation Number: TW0025

Test Firm Registration Number: 665221

1.8 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence (level based on a coverage factor K=2)

Measurement Project	Condition	Expended Uncertainty
AC Conducted Emission	0.150 ~ 30 MHz	2.64 dB
Radiated Emission	0.009 ~ 30 MHz	± 4.2 dB
	30 ~ 1000 MHz	± 3.9 dB
	1000 ~ 18000 MHz	± 4.1 dB
	18000 ~ 40000 MHz	± 3.9 dB
RF Power, Conducted	Conducted Measuring	± 0.5 dB
Occupied Bandwidth	Conducted Measuring	± 2.4 %
Power Density	Conducted Measuring	± 1.7 dB
Duty Cycle and Dwell Time	Conducted Measuring	± 1.3 %
Conducted Unwanted Emission Strength	Conducted Measuring	± 1.8 dB
DC Power Supply	--	± 3.2 %
Temperature	--	± 1.1 ℃
Humidity	--	± 3.4 %

Note: Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

1.9 List of Test Equipment

For Conducted measurements / W08-Conducted Measurement

Equipment		Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	Spectrum analyzer	Keysight	N9010A	SG50420005	2022/08/01	2023/07/31
	Wideband Peak Power Meter	Anritsu	ML2495A	1733007	2022/09/06	2023/09/05
	Pulse Power Sensor + Precision Adaptor	Anritsu	MA2411B	1726022	2022/09/06	2023/09/05
	Temperature Chamber	TAICHY	MHK-225LK	1061121	2022/04/22	2023/04/21
	Wireless Connectivity Tester	R&S	CMW270	101307	2022/05/23	2023/05/22
	Attenuator	MVE	MVE2211-10	CT-9-056	2022/08/10	2023/08/09
	Attenuator	MVE	MVE2211-20	CT-9-057	2022/08/10	2023/08/09
	Attenuator	MVE	MVE2211-30	CT-9-058	2022/08/10	2023/08/09
	Power Divider	MVE	MVE8546	170826003	2022/08/10	2023/08/09
	Power Splitter	MVE	MVE8547	170302047	2022/08/11	2023/08/10
	DC Power Supply	GW INSTEK	GPC-3060D	GER817636	2022/08/09	2023/08/08

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with "✓" are used to measure the final test results.

For AC Conduction measurements / W08-CE

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
	EMI Test Receiver	R&S	ESR3	102309	2022/6/15	2023/6/14
	2-Line V-Network LISN	R&S	ENV216	101185	2022/6/20	2023/6/19
	LISN	SCHWARZBECK	NSLK 8127RC	05028	2022/6/20	2023/6/19
	Transient Limiter	EM Electronics Corporation	EM-7600	857	2022/6/20	2023/6/19
	50ohm Cable	EMCI	EMCCFD300-BM-BM-5000	170612	2022/6/17	2023/6/16
	50 ohm terminal impedance	HUBER+SUHNER	50 ohm terminal impedance	CT-1-109-1	2022/6/17	2023/6/16

Remark:

1. All equipments are calibrated every one year.
2. The test instruments marked with "✓" are used to measure the final test results.
3. Test Software version: FARAD EZ-EMC Ver.EMC-CON 3A1

For Radiated measurements / W08-996-2

Equipment		Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
✓	EMI Receiver	Keysight	N9038A	MY51210173	2022/08/17	2023/08/16
✓	Spectrum Analyzer	Keysight	N9010A	MY52220228	2022/08/16	2023/08/15
✓	Loop Antenna	EMCI	LPA600	277	2022/08/22	2023/08/21
✓	TRILOG super broad Antenna	Schwarzbeck	VULB 9168	VULB 9168-700 & 1421	2022/08/12	2023/08/11
✓	Horn Antenna	Schwarzbeck	BBHA 9120D	01767	2022/08/24	2023/08/23
	Horn Antenna	Schwarzbeck	BBHA 9170	703	2022/08/29	2023/08/28
✓	Pre-Amplifier	EMEC	EMC330	060774	2022/08/17	2023/08/16
	Pre-Amplifier	EMEC	EM01G18G	060648	2022/08/18	2023/08/17
✓	Pre-Amplifier	JPT	JPA0118-55-303K	1910001800055003	2022/08/18	2023/08/17
	Pre-Amplifier	EMCI	EMC184045SE	980515	2022/08/18	2023/08/17
✓	Cable	EMEC	EM-CB400	105060103	2022/08/18	2023/08/17
✓	Cable	EMEC	EM-CB400	105060102	2022/08/18	2023/08/17
✓	Cable	EMEC	EM-CB400	105060101	2022/08/18	2023/08/17
✓	RF Cable	HUBER+SUHNER	SF102	MY2752/2	2022/08/17	2023/08/16
✓	RF Cable	MVE	280280.LL266.1200	B60028C	2022/08/17	2023/08/16
	RF Cable	EMCI	EMC102-KM-KM-600	190646	2022/08/17	2023/08/16
	RF Cable	MVE	140140.LL404.700	B90014C	2022/07/28	2023/07/27
	RF Cable	MVE	140140.LL404.300	B90006C	2022/08/17	2023/08/16
	RF Filter	EMEC	BRF-2400-2500	002	2022/08/17	2023/08/16
	RF Filter	EMEC	BRF-5150-5350	104	2022/08/17	2023/08/16
	RF Filter	EMEC	BRF-5470-5725	092	2022/08/17	2023/08/16
	RF Filter	EMEC	BRF-5725-5875	091	2022/08/17	2023/08/16
	RF Filter	EMEC	HPF-2800	002	2022/08/17	2023/08/16
	RF Filter	EMEC	HPF-5850	059	2022/08/17	2023/08/16
	SMA Notch Filter	MVE	MFN-902.928.S1	190604001	2022/08/17	2023/08/16

Remark:

1. All equipments are calibrated every one year.

2. The test instruments marked with "✓" are used to measure the final test results.
3. Test Software version: FARAD EZ-EMC Ver.WD-03A1-1

2 Test Result

2.1 Antenna Requirement

2.1.1 Applicable Standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

2.1.2 Antenna Connected Construction

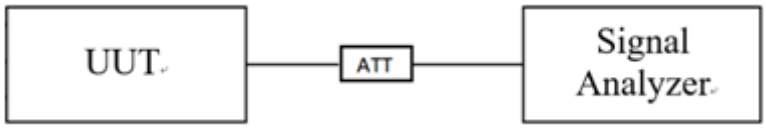
Non-standard antenna connector is used.

2.2 Transmit Time

2.2.1 Limit

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released

2.2.2 Test Setup



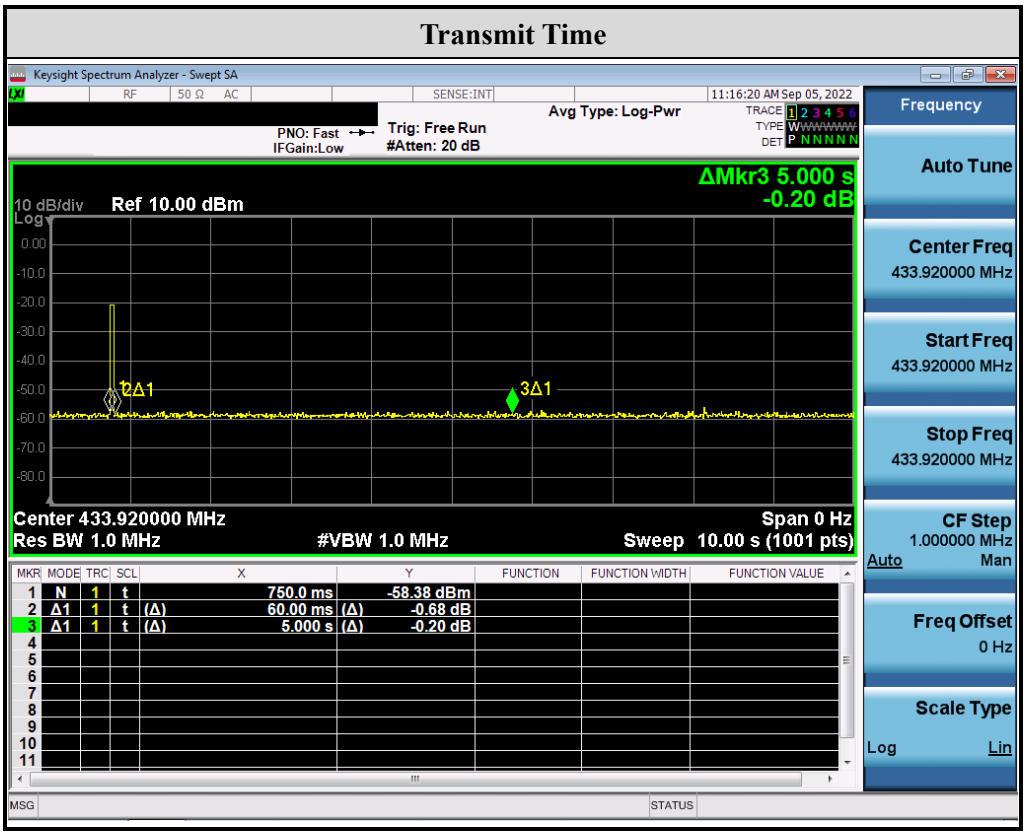
2.2.3 Test Procedure

1. Enable the EUT transmit continuously.
2. Spectrum analyzer set:
   (a) Span = 0 Hz
   (b) RBW = 1MHz
   (c) VBW = 3MHz
   (d) Sweep = 10s
   (e) Detector mode = peak
   (f) Trace mode = Clear Write
   (g) Attenuation = Auto

2.2.4 Test Result

Channel No.	Frequency (MHz)	Measurement Value (ms)	Limit (Sec)	Result
1	433.92	60.000	< 5	Pass

Transmit Time

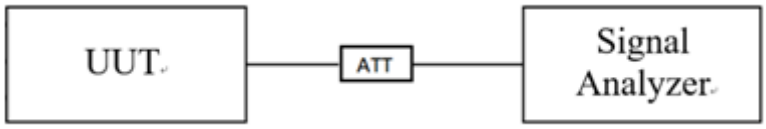


2.3 20dB Bandwidth Measurement

2.3.1 Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

2.3.2 Test Setup



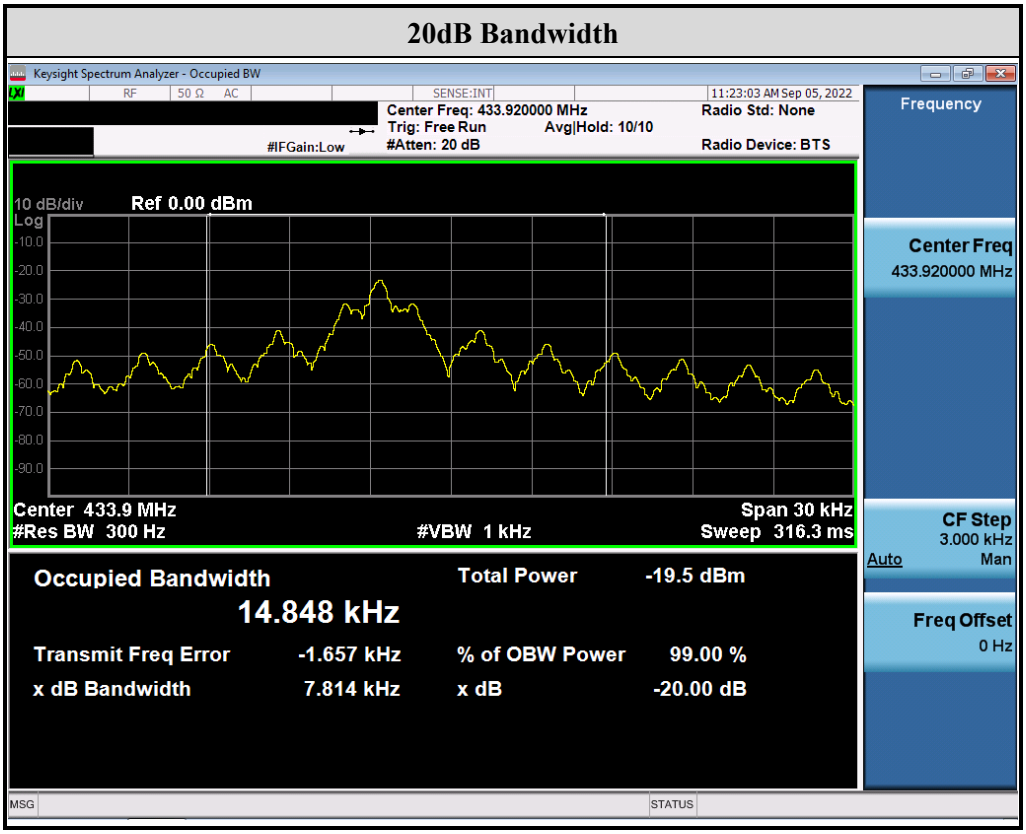
2.3.3 Test Procedure

1. Enable the EUT transmit continuously.
2. Measured the spectrum width with power higher than 20dB below carrier.
3. Spectrum analyzer set:
   (a) SPAN = 20dB BW × 2 to 5 times
   (b) RBW ≧ 20dB BW × 1 to 5 %
   (c) VBW ≧ 3 × RBW
   (d) Detection mode = Peak
   (e) Trace mode = Max Hold

2.3.4 Test Result

Channel No.	Frequency (MHz)	Measurement Value (kHz)	Limit (kHz)	Result
1	433.92	7.814	< 1084.80	Pass

Remark: Limit = 433.92 MHz * 0.25% = 1084.8 kHz



2.4 Radiated Emission

2.4.1 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts / meter)	Field Strength of Spurious Emission (microvolts / meter)
40.66 – 40.70	2,250	225
70 – 130	1,250	125
130 – 174	*1,250 to 3,750	*125 to 375
174 – 260	3,750	375
260 – 470	*3,750 to 12,500	*375 to 1,250
Above 470	12,500	1,250

Remark:

1. RF Voltage(dBμV/m) = 20 log RF Voltage(μV/m)
2. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.
3. * Linear interpolations.

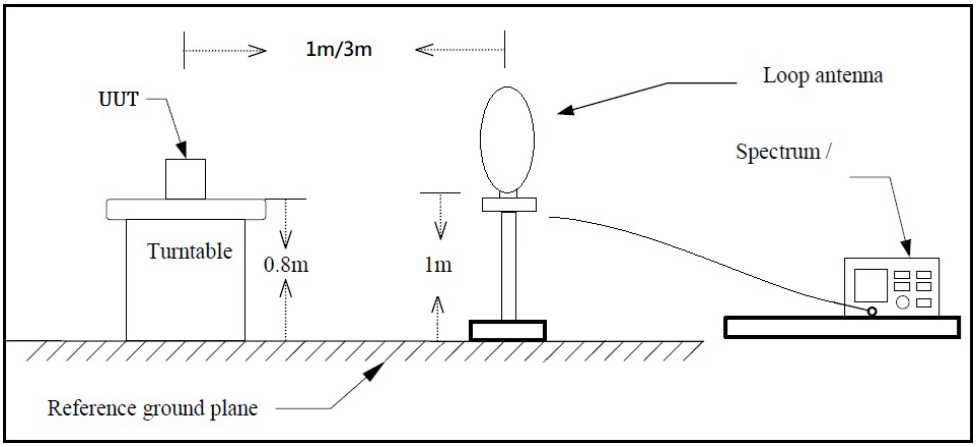
FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency (MHz)	**Field Strength (μV/m)**	**Measurement Distance (m)**
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

Remark:

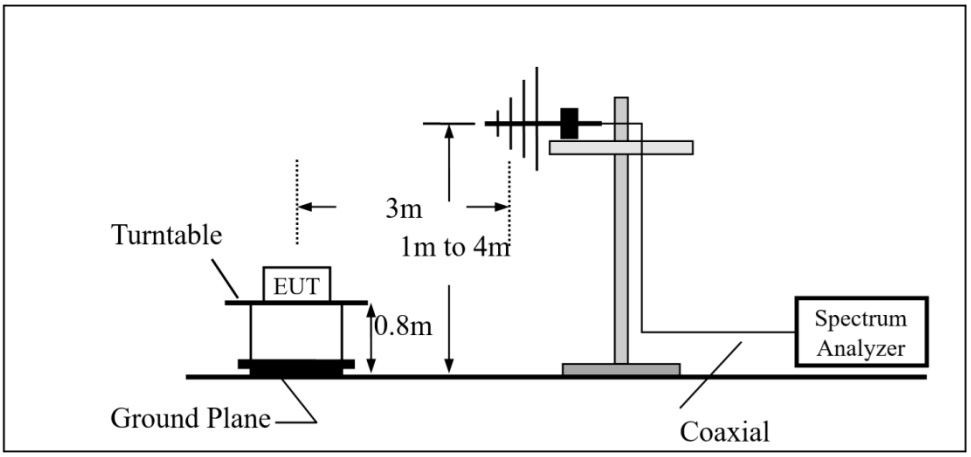
1. Emission level (dBμV/m) = 20 log Emission level (μV/m)
2. In the Above Table, the tighter limit applies at the band edges.
3. The emission limit in this paragraph is based on a measurement frequency below 1GHz instrumentation employing a quasi-peak detector.

2.4.2 Test Setup

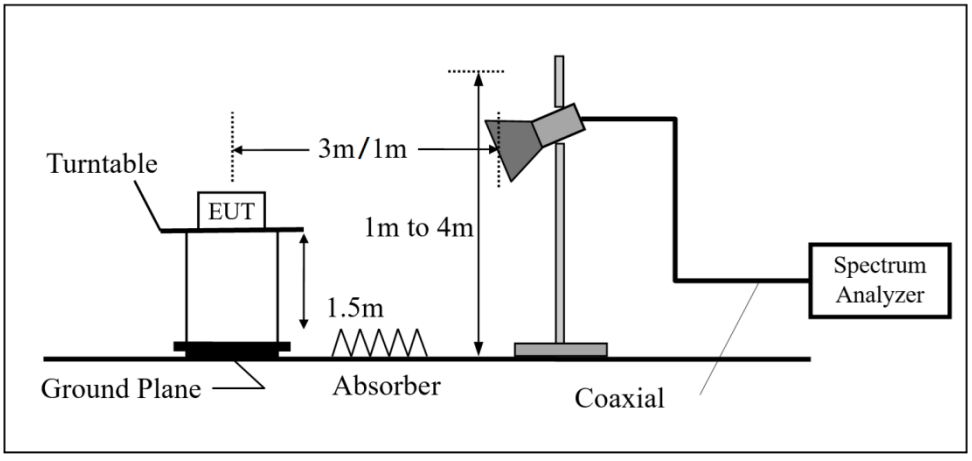
Below 30MHz



30MHz~1GHz



Above 1GHz



2.4.3 Test Procedure

The EUT was setup according to ANSI C63.10, 2013 for compliance to 47 CFR FCC Part 15, Subpart C (Section 15.231) requirements.

For Radiated emission below 30MHz

(1) The EUT was placed on the top of a rotating table 0.8 meters above the ground in a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

(3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

(4) 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.

(5) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

For Radiated emission Above 30MHz

(1) The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for the test. The table was rotated 360 degrees to determine the position of the highest radiation.

(2) The EUT was set 3 meters away from the interference-receiving antenna, the height of the antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength.

(3) Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

(4) 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.

(5) 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.

(6) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets the average limit, measurement with the average detector is unnecessary.

2.4.4 Duty cycle correction factor measurement and calculation

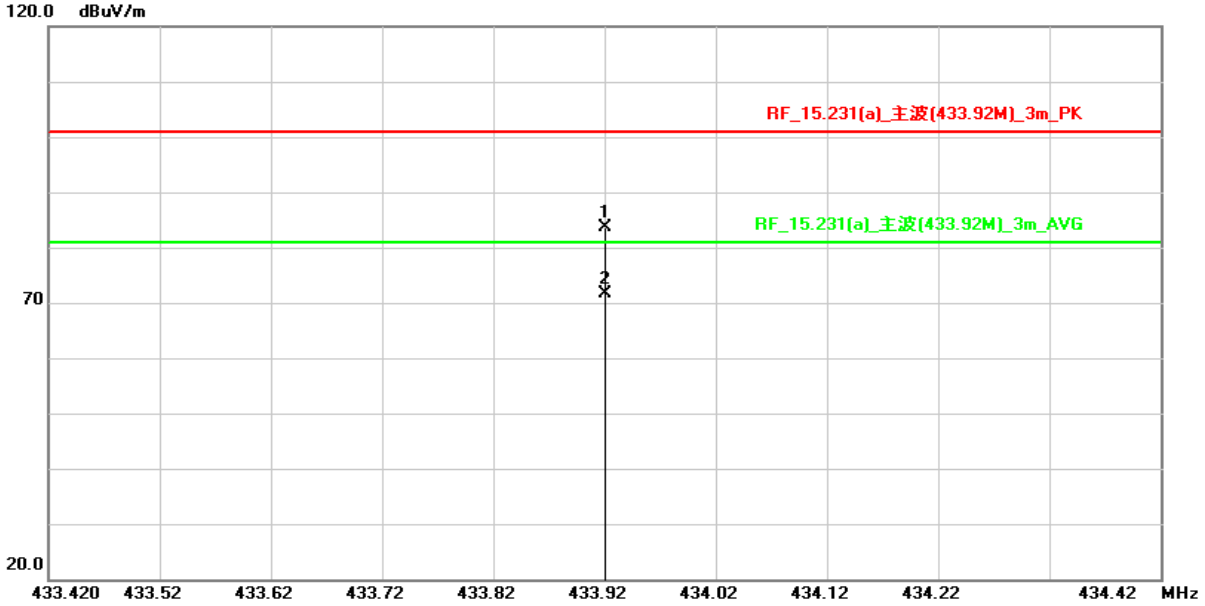
Frequency (MHz)	Period (T) (ms)	Ton (ms)	Duty Cycle Correction factor (dB)
433.92	100.00	25.20	-11.97

* For normal device：Duty cycle correction factor = 20 * log(Ton/T) = 20 * log(25.2/100) = -11.97

* Radiated Emission test：Average value Reading = Peak value Reading + Duty cycle correction factor

2.4.5 Test Result of Fundamental Measurement

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Horizontal	**Relative Humidity :**	52 %

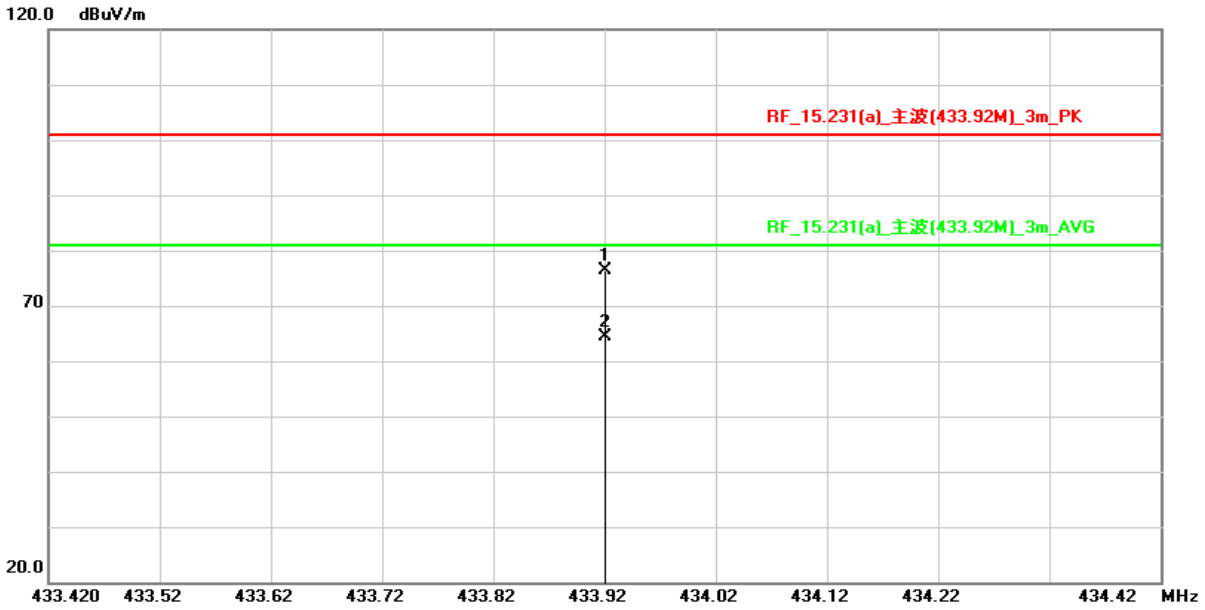


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	433.9200	89.64	-5.98	83.66	100.83	-17.17	peak
2	433.9200	77.67	-5.98	71.69	80.83	-9.14	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. Average Limit = 20 log(10977.92) = 80.82 dBμV/m
5. Peak Limit = 20 + 80.82 = 100.82 dBμV/m
6. Average value Reading = Peak value Reading+ Duty cycle correction factor

Test Mode :	Mode 1 ; Transmit	Test Date :	2022/09/27
Test Frequency :	433.92 MHz	Temperature :	23 ℃
Polarization :	Vertical	Relative Humidity :	52 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	433.9200	82.42	-5.98	76.44	100.83	-24.39	peak
2 *	433.9200	70.45	-5.98	64.47	80.83	-16.36	AVG

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. Average Limit = 20 log(10977.92) = 80.82 dBμV/m
5. Peak Limit = 20 + 80.82 = 100.82 dBμV/m
6. Average value Reading = Peak value Reading+ Duty cycle correction factor

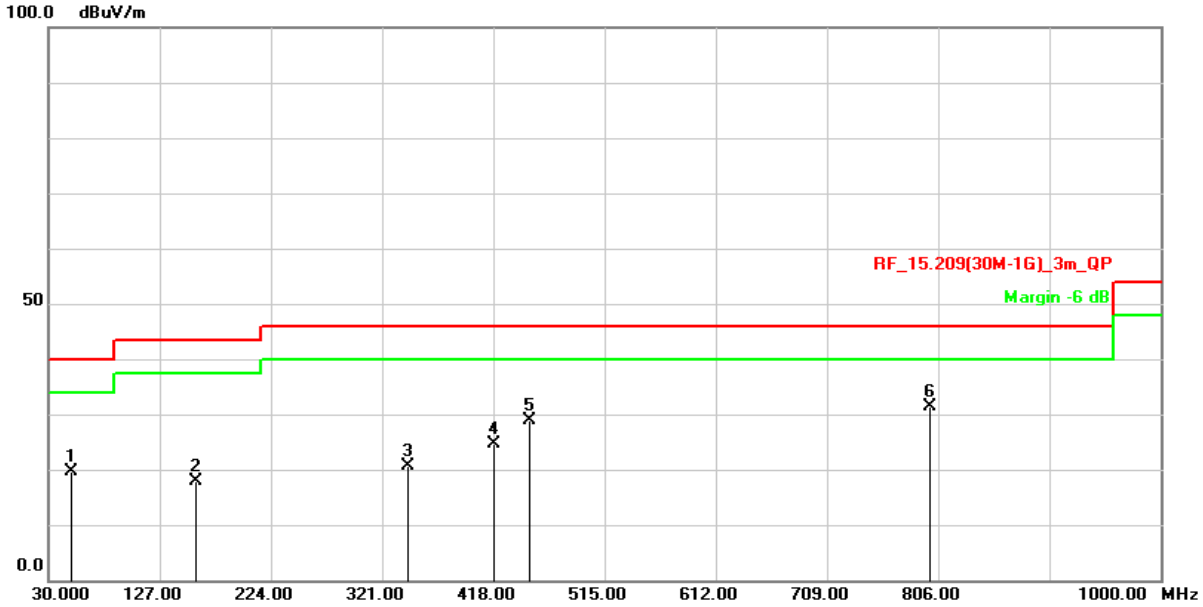
2.4.6 Test Result of Spurious emission

(1) The radiation measurement frequency is 9kHz ~ 30MHz. The interference value of this frequency range is less than the limit value of 20 dB. It is considered that the background noise value is not recorded.

(2) The radiation measurement frequency from 30MHz to 5GHz, pre-scanning in the X, Y and Z axes. The worst case (X-axis) is documented in this report.

General Emission 30MHz ~ 1GHz

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Horizontal	**Relative Humidity :**	52 %



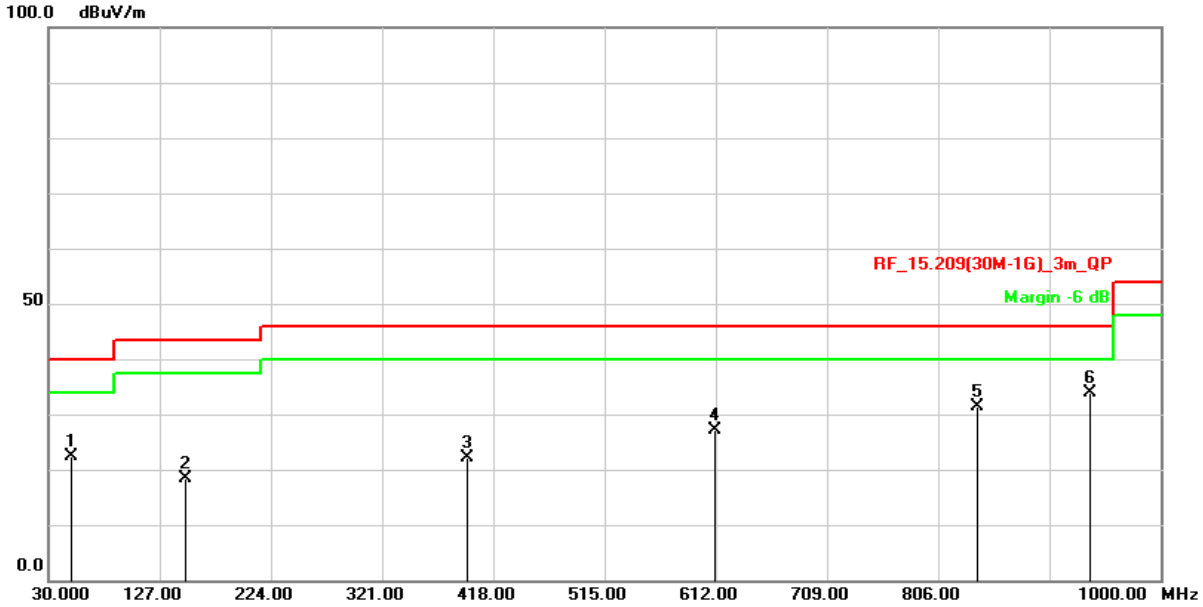
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	49.4000	30.56	-10.96	19.60	40.00	-20.40	QP
2	159.0100	28.89	-10.98	17.91	43.50	-25.59	QP
3	343.3100	29.37	-8.86	20.51	46.00	-25.49	QP
4	418.0000	31.39	-6.71	24.68	46.00	-21.32	QP
5	450.0100	34.35	-5.57	28.78	46.00	-17.22	QP
6	798.2400	29.68	1.69	31.37	46.00	-14.63	QP

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

General Emission 30MHz ~ 1GHz

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Vertical	**Relative Humidity :**	52 %



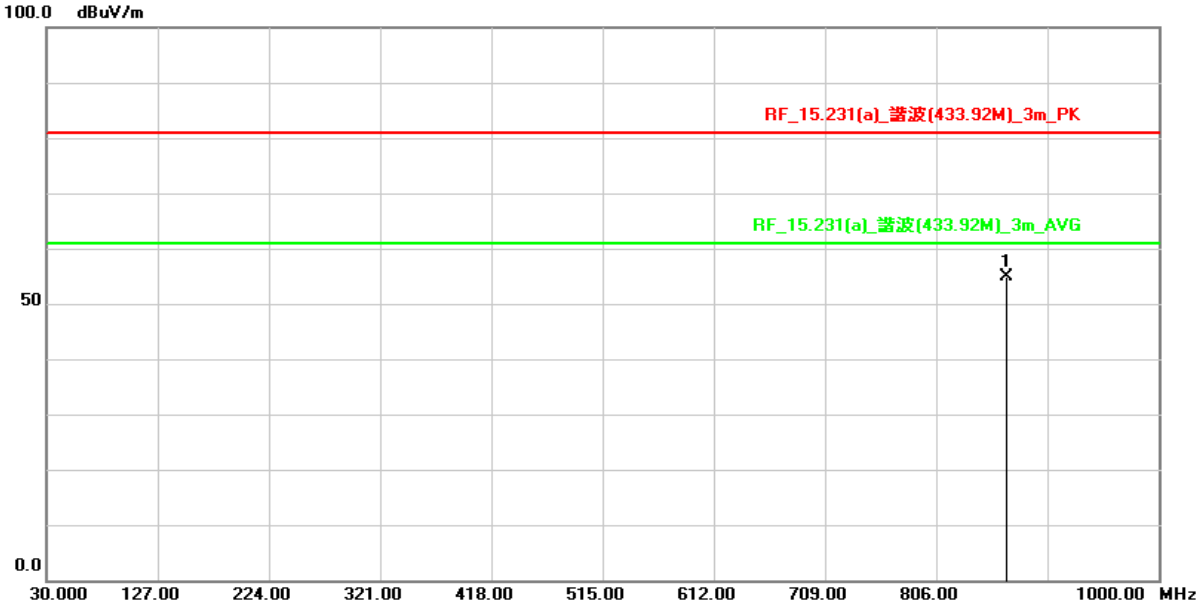
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	49.4000	33.45	-10.96	22.49	40.00	-17.51	QP
2	149.3100	29.51	-11.08	18.43	43.50	-25.07	QP
3	395.6900	29.32	-7.24	22.08	46.00	-23.92	QP
4	611.0300	28.93	-1.73	27.20	46.00	-18.80	QP
5	839.9500	29.19	2.30	31.49	46.00	-14.51	QP
6	938.8900	29.96	4.03	33.99	46.00	-12.01	QP

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Harmonic Emission 30MHz ~ 1GHz

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Horizontal	**Relative Humidity :**	52 %



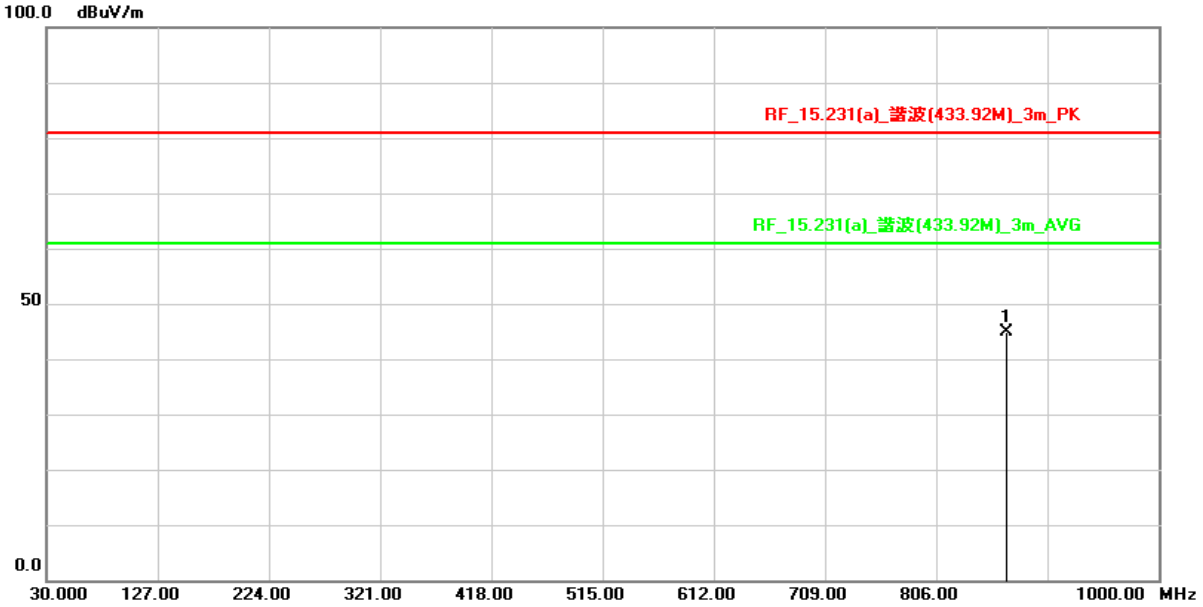
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	867.8400	52.24	2.64	54.88	80.83	-25.95	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Harmonic Emission 30MHz ~ 1GHz

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Vertical	**Relative Humidity :**	52 %



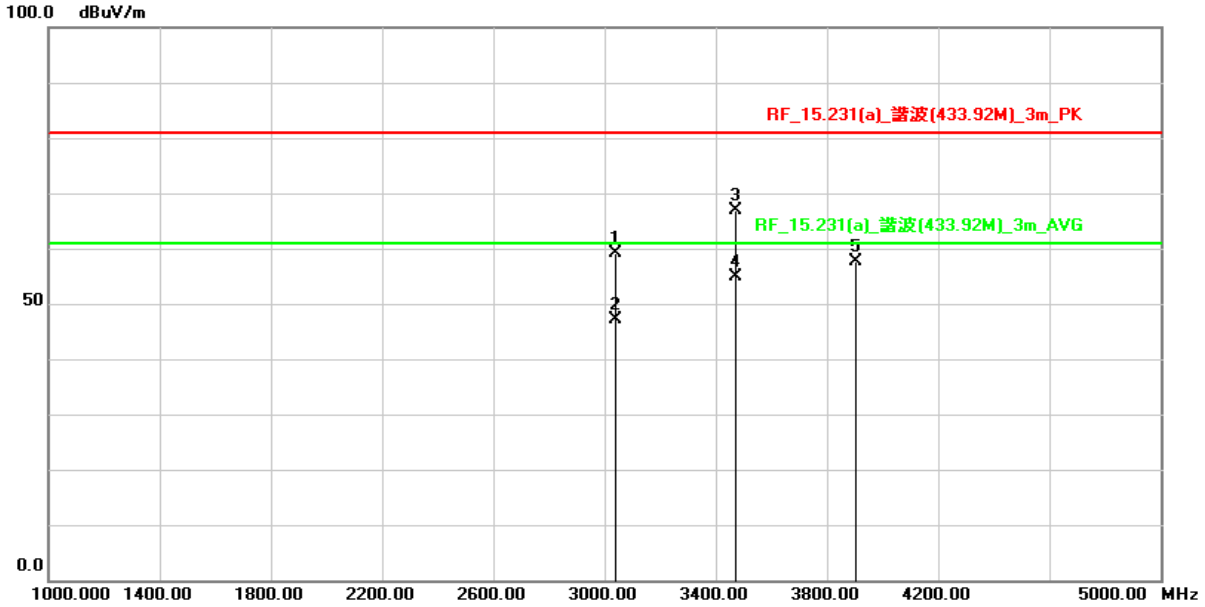
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	867.8400	42.14	2.64	44.78	80.83	-36.05	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Harmonic Emission 1GHz ~ 5GHz

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Horizontal	**Relative Humidity :**	52 %



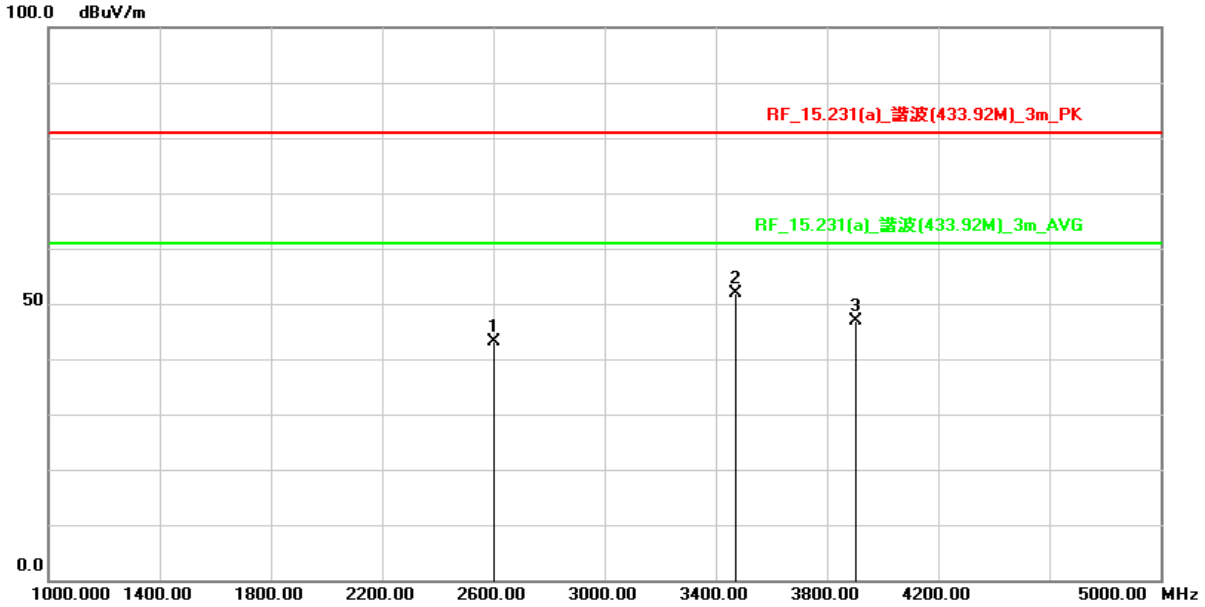
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3037.440	86.35	-27.21	59.14	80.83	-21.69	peak
2	3037.440	74.38	-27.21	47.17	60.83	-13.66	AVG
3	3471.360	92.96	-25.99	66.97	80.83	-13.86	peak
4	3471.360	80.99	-25.99	55.00	60.83	-5.83	AVG
5	3905.280	81.42	-23.68	57.74	80.83	-23.09	peak

Remark :

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

Harmonic Emission 1GHz ~ 5GHz

Test Mode :	Mode 1 ; Transmit	**Test Date :**	2022/09/27
Test Frequency :	433.92 MHz	**Temperature :**	23 ℃
Polarization :	Vertical	**Relative Humidity :**	52 %



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2603.520	71.58	-28.48	43.10	80.83	-37.73	peak
2	3471.360	77.77	-25.99	51.78	80.83	-29.05	peak
3	3905.280	70.47	-23.68	46.79	80.83	-34.04	peak

Remark：

1. Correction Factor = Antenna factor + Cable loss – Amplifier gain
2. Result Value = Reading Level + Correct Factor
3. Margin Level = Result Value – Limit Value
4. The other emission levels were very low against the limit

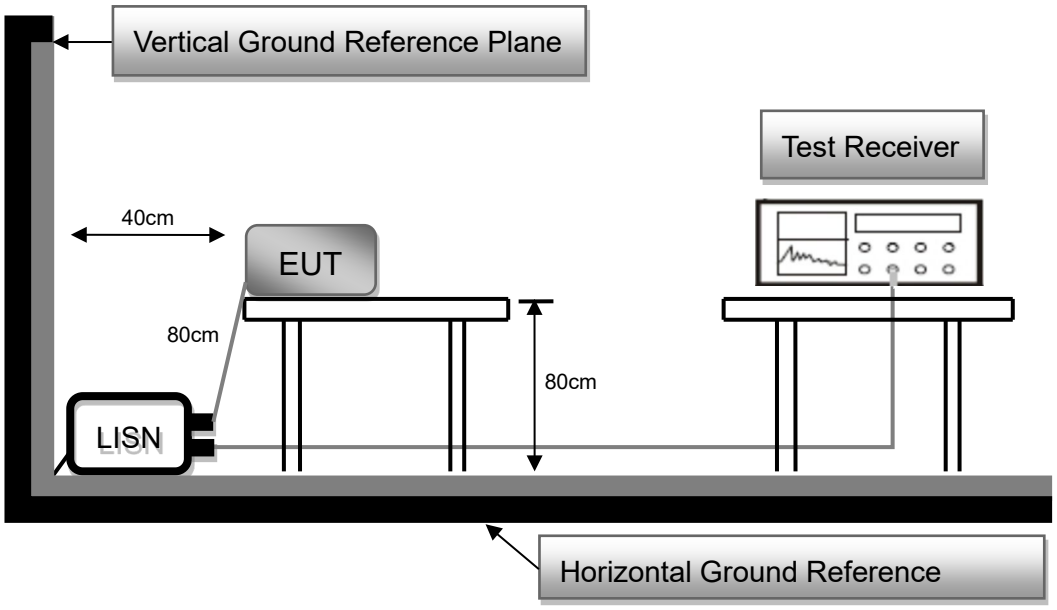
2.5 AC Conducted Emissions Measurement

2.5.1 Limit

Frequency (MHz)	FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50

*Decreases with the logarithm of the frequency

2.5.2 Test Setup



2.5.3 Test Procedure

1. The EUT was placed 0.8 meter height wooden table from the horizontal ground plane with EUT being connected to power source through a line impedance stabilization network (LISN). The LISN at least be 80 cm from nearest chassis of EUT.
2. The line impedance stabilization network (LISN) provides 50 ohm/50uH of coupling impedance for the measuring instrument. All other support equipments powered from additional LISN(s).
3. Interrelating cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle. All I/O cables were positioned to simulate typical usage.
4. All I/O cables that are not connected to a peripheral shall be bundle in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
5. The EMI test receiver connected to LISN powering the EUT. The actual test configuration, please refer to EUT test photos.
6. The receiver scanned from 150kHz to 30MHz for emissions in each of test modes. A scan was taken on both power lines, Line and Neutral, recording at least six highest emissions.
7. The EUT and cable configuration of the above highest emission levels were recorded. The Test Date of the worst case was recorded.

2.5.4 Test Result

Owing to the DC operation of EUT, this test item is not performed.

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