Industrial Internet Innovation Center (Shanghai) Co.,Ltd.

SRD TEST REPORT

PRODUCT	802.11b/g/n Wi-Fi wireless radio module
BRAND	LootPaw
MODEL	WFM200SN-LootPaw
APPLICANT	Anna Ambassador LLC d/b/a LootCo
FCC ID	2BFKJ-WFM200SN
ISSUE DATE	June 25, 2024
STANDARD(S)	FCC Part15C

Prepared by: ***Li Haisheng*** **Reviewed by:** ***Yang Fan*** **Approved by:** ***Zhang Min***

CONTENTS

1. Summary of Test Report

1.1 Test Standard(s)

No.	Test Standard	Title	Version
1	FCC Part15C	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.	--

1.2 Reference Documents

No.	Test Standard	Title	Version
1	ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
2	KDB 558074 D01 15.247 Meas Guidance v05r02	Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247	--
Note: KDB 558074 D01 15.247 Meas Guidance v05r02 is not A2LA certified.			

1.3 Summary of Test Results

No.	Measurement Items	FCC Rules	Verdict
1	Maximum Output Power	15.247(b)	Pass Note 2,Note 3
2	Peak Power Spectral Density	15.247(e)	Pass Note 2
3	6dB Occupied Bandwidth	15.247(a)	Pass Note 2
4	99% Occupied Bandwidth	N/A	Pass Note 2
5	Band Edges Compliance	15.247(d)	Pass Note 2
6	Transmitter Spurious Emission-Conducted	15.247(d)	Pass Note 2
7	Transmitter Spurious Emission-Radiated	15.247/15.205/15.209	Pass Note 2,Note 3
8	AC Powerline Conducted Emission	15.207	Pass Note 2
9	Antenna requirement	15.203/15.247(c)	Pass Note 4
NOTE 1: The WFM200SN-LootPaw manufactured by Anna Ambassador LLC is a variant product for testing. This project is a variant project based on the original report 297217-1-1.According to the Product Change Description We tested radiated spurious emission AC Powerline Conducted Emission and Maximum Output Power in the original report, and the test data was recorded in this report.			

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.3.
Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 4 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 1 of this test report.
NOTE 2:
The test data is reported by reference to 297217-1-1.
NOTE 3:
The test data in this report is validation data for the worst mode.
NOTE 4:
2.4G WLAN used a FPC antenna with max Gain 2.3dBi that complied with 15.203 Requirements

a. All the test data for each data were verified, but only the worst case was reported.

1.4 Data Provided by Applicant

No.	Item(s)	Data
1	Antenna gain of EUT	2.3 dBi
Note: The data of antenna gain is provided by the Antenna specification may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.		

2. General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4，No. 766，Jingang Road，Pudong，Shanghai，China
Telephone	021-68866880
FCC Registration No.	708870
FCC Designation No.	CN1364

2.2 Laboratory Environmental Requirements

Temperature	15℃~35℃
Relative Humidity	86kPa~106kPa
Atmospheric Pressure	86kPa~106kPa

2.3 Project Information

Project Manager	Zhangheng
Test Date	February 4,2024 to March 25, 2024

3. General Information of The Customer

3.1 Applicant

Company	Anna Ambassador LLC d/b/a LootCo
Address	1860 Southwood Lane, Clearwater, FL 33764, United States
Telephone	1-727-667-1734

3.2 Manufacturer

Company	Anna Ambassador LLC d/b/a LootCo
Address	1860 Southwood Lane, Clearwater, FL 33764, United States
Telephone	1-727-667-1734

4. General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product Name	802.11b/g/n Wi-Fi wireless radio module
Model name	WFM200SN-LootPaw
Date of Receipt	S02aa/S06aa:February 4,2024
EUT ID*	S02aa/S06aa
SN/IMEI	S02aa: 352709570799007 S06aa: N/A
Supported Radio Technology and Bands	LTE Cat-M Band 2/4/5/12/13/66/71 BT 5.0/BLE WLAN 802.11b,g,n
Hardware Version	v1
Software Version	v1
FCC ID	2BFKJ-WFM200SN
NOTE1： EUT ID is the internal identification code of the laboratory. NOTE2: Samples in the test report are provided by the customer. The test results are only applicable to the samples received by the laboratory.	

4.2 Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
EC01	Debug board	N/A	N/A
UB07	USB Cable	N/A	N/A
NOTE: *AE ID is the internal identification code of the laboratory.			

4.3 Additional Information

WLAN Frequency	2412MHz-2462MHz
WLAN Channel	CH1-11
WLAN type of modulation	802.11b: DSSS 802.11g/n: OFDM

Test frequency list:

BW_20M	Channel	1	6	11
	Freq. (MHz)	2412	2437	2462

Note: This report is for 2.4G WLAN only.

5. Test Configuration Information

5.1 Laboratory Environmental Conditions

5.1.1 Permanent Facilities

Relative Humidity	Min. = 45 %, Max. = 55 %		
Atmospheric Pressure	101kPa		
Temperature	Normal	Minimum	Maximum
	25℃	-10℃	45℃
Working Voltage of EUT	Normal	Minimum	Maximum
	3.7V	3.0V	4.2V

5.2 Test Equipments Utilized

5.2.1 Conducted Test System

No.	Name	Model	S/N	SW Version	HW Version	Manufacturer	Cal. Date	Cal. Interval
1	Test Software	TS1120	10727	V3.2.22	N/A	Tonscend	N/A	N/A
2	Automatic control unit	JS0806-2	2218060623	N/A	N/A	Tonscend	2023-05-06	1 Year
4	Spectrum Analyzer	FSQ40	200063	V4.75	N/A	R&S	2023-10-16	1 Year
5	Programmable Power Supply	Keithley 2303	4039070	N/A	N/A	Keithley	2023-06-23	1 Year

5.2.2 Radiated Emission Test System

No.	Name	Model	S/N	SW Version	HW Version	Manufacturer	Cal. Date	Cal. Interval
1	Universal Radio Communication Tester	CMU200	123126	V5.2.1	B12	R&S	2023-10-16	1 Year
2	Universal Radio Communication Tester	CMW500	104178	V3.7.20	1206.0600.00	R&S	2023-10-16	1 Year
3	EMI Test Receiver	ESU40	100307	V5.1-24-3	01	R&S	2023-12-19	1 Year
4	Trilog Antenna	VULB9162	00426	N/A	N/A	Schwarzbeck	2023-07-18	1 year
5	Double Ridged Guide Antenna	ETS-3117	00135885	N/A	N/A	ETS	2023-03-23	2 years
6	EMI Test Software	EMC32 V10.35.02	N/A	N/A	N/A	R&S	N/A	N/A
7	Horn Antenna	3160-09	LM6321	N/A	N/A	R&S	2023-07-16	1 Year
8	Horn Antenna	3160-10	LM5942	N/A	N/A	R&S	2023-07-16	1 Year
9	Loop Antenna	AL-130R	121083	N/A	N/A	COM-POWER	2023-9-13	1 Year
10	Preamplifier	SCU08F1	8320024	N/A	N/A	R&S	2023-10-16	1 Year
11	Preamplifier	SCU18	10155	N/A	N/A	R&S	2023-10-16	1 Year
12	Preamplifier	SCU26	10025	N/A	N/A	R&S	2023-10-16	1 Year
13	Preamplifier	SCU40	10020	N/A	N/A	R&S	2023-10-16	1 Year
14	2-Line V-Network	ENV216	101380	N/A	N/A	R&S	2023-12-19	1 Year
15	EMI Test Software	EMC32 V10.35.02	N/A	N/A	N/A	R&S	N/A	N/A
16	Test Receiver	ESCI	101235	V5.1-24-3	0	R&S	2023-12-19	1 Year
17	Antenna Tower	TPMDC-LF	N/A	N/A	N/A	Top Precision	N/A	N/A
18	Antenna Tower	TPMDC-HF	N/A	N/A	N/A	Top Precision	N/A	N/A

5.2.3 Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5 Ω
Temperature	Min. = 15 ℃, Max. = 35 ℃

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (9.8 meters×6.7 meters×6.7 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz

5.3 Measurement Uncertainty

Measurement Uncertainty of Conduction test

Item(s)	Frequency range	Confidence Level	Uncertainty
DTS Bandwidth	2400–2483.5MHz	95%	±1.9%
Maximum Conducted Output Power	2400–2483.5MHz	95%	± 1.18 dB
Maximum Power Spectral Density Level	2400–2483.5MHz	95%	±0.98 dB
Band-edge Compliance	2400–2483.5MHz	95%	±1.21dB
Unwanted Emissions In Non-restricted Freq Bands	9kHz-7GHz	95%	9kHz-7GHz:±1.21dB

	7GHz-40GHz	95%	7GHz-40GHz:±3.31dB

Measurement Uncertainty of Radiation test

Measurement Items	**Uncertainty(dB)**
Radiated Emission 30MHz-1000MHz	±5.10
Radiated Emission 1000MHz-18000MHz	±5.66
Radiated Emission 18000MHz-40000MHz	±5.22
AC Powerline Conducted Emission	±4.38
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

6. Test Results

6.1 Duty cycle

6.1.1 Measurement Limit

Standard	Limit (dBm)
FCC 47 Part 15.247(b)	NA

6.1.2 Test Procedure

This measurement is according to ANSI C63.10 clause 11.6

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.

b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

1) Set the center frequency of the instrument to the center frequency of the transmission.

2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

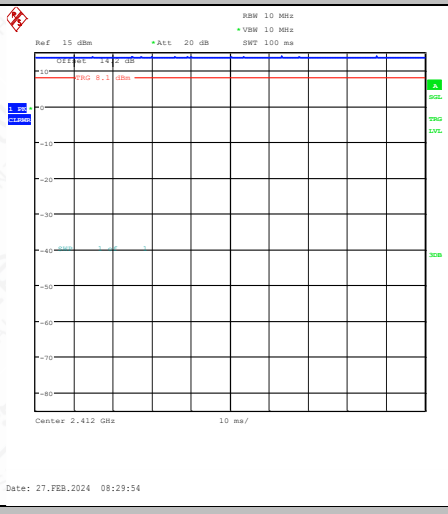
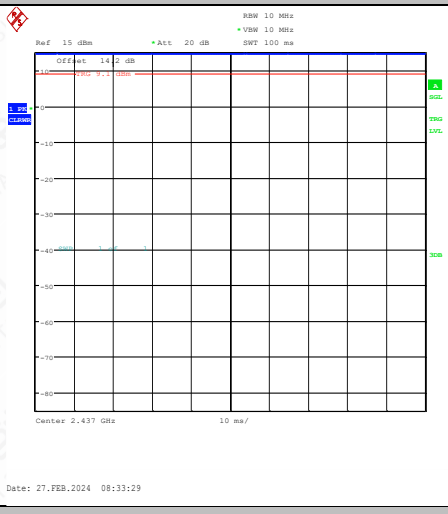
3) Set VBW ≥ RBW. Set detector = peak or average.

4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if T ≤ 16.7 μs.)

6.1.3 Measurement Results

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	100.00	100.00	100.00	0.00
11B	Ant1	2437	100.00	100.00	100.00	0.00
11B	Ant1	2462	100.00	100.00	100.00	0.00
11G	Ant1	2412	100.00	100.00	100.00	0.00
11G	Ant1	2437	100.00	100.00	100.00	0.00
11G	Ant1	2462	100.00	100.00	100.00	0.00
11N20SISO	Ant1	2412	100.00	100.00	100.00	0.00
11N20SISO	Ant1	2437	100.00	100.00	100.00	0.00
11N20SISO	Ant1	2462	100.00	100.00	100.00	0.00

Test Graphs

NTNV-11B-Ant1-2412	NTNV-11B-Ant1-2437
	
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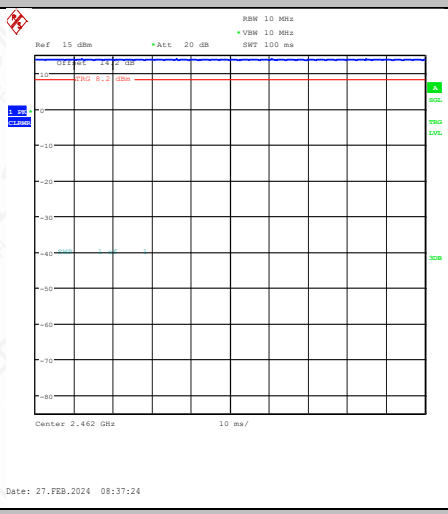	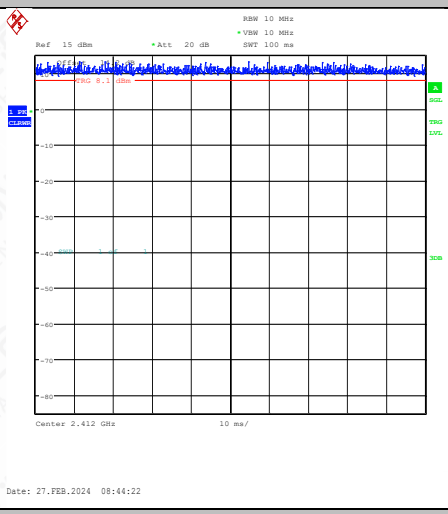
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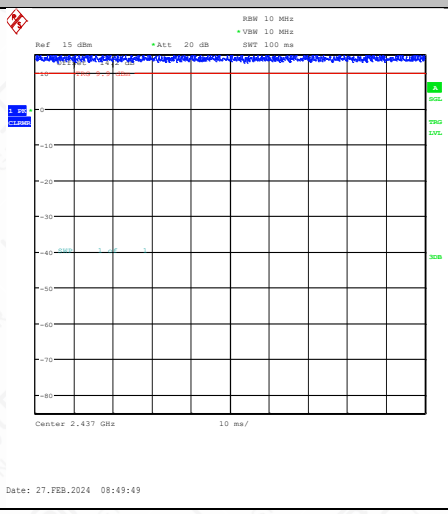	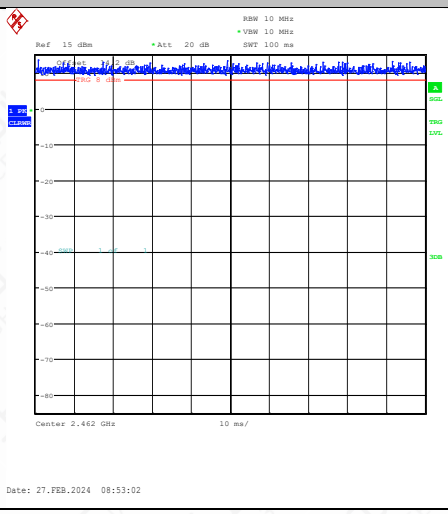

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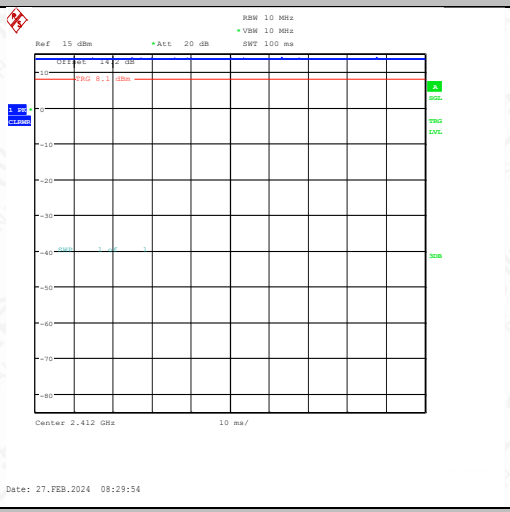	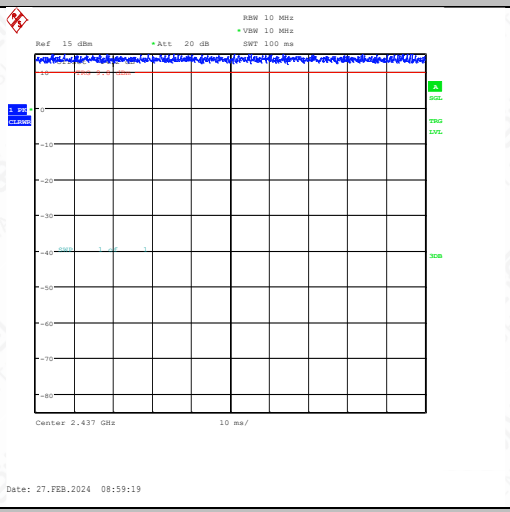
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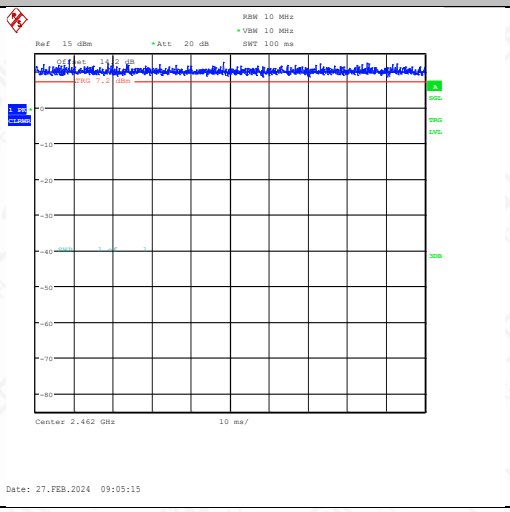
	/

6.2 99% Occupied Bandwidth

6.2.1 Measurement Limit

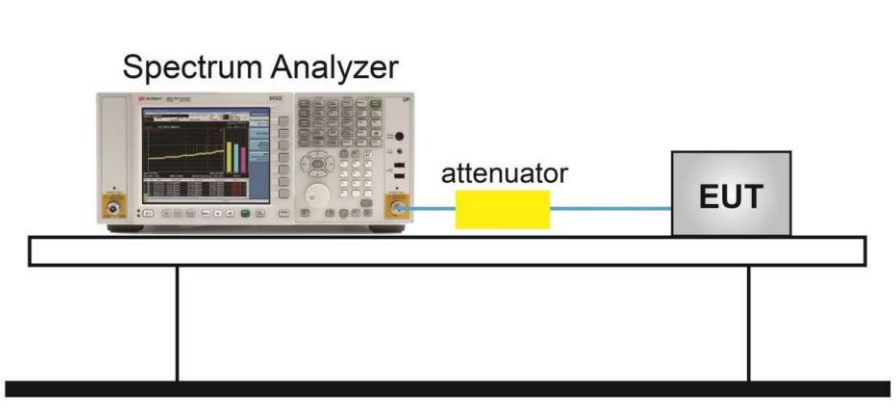
Standard	Limit
FCC 47 Part 15.247(b)	NA

6.2.2 Test procedures

The measurement is according to ANSI C63.10 clause 6.9.3.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set RBW shall be in the range of 1% to 5% of the OBW.
4. Set the VBW ≥ [3 × RBW].
5. Detector = peak.
6. Trace mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize.
9. The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

6.2.3 Test setup

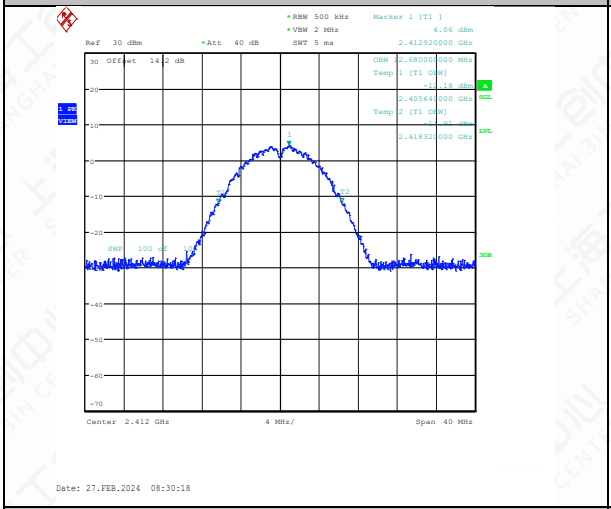
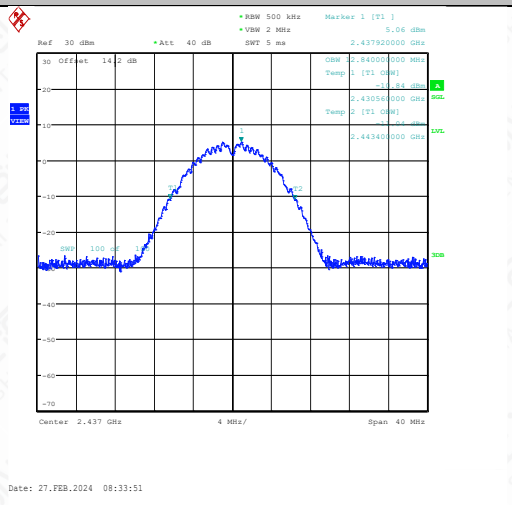
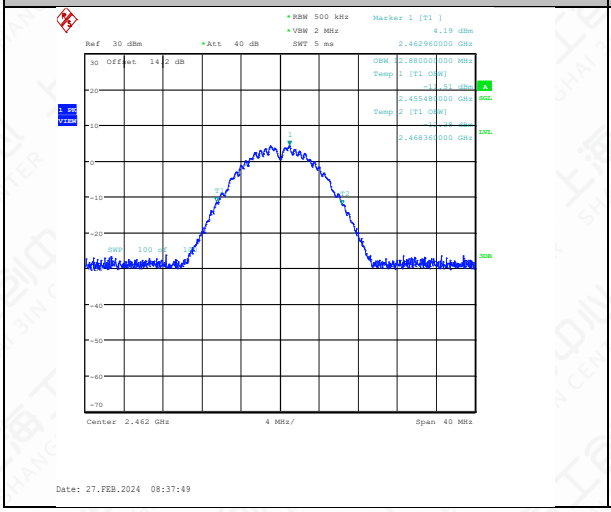
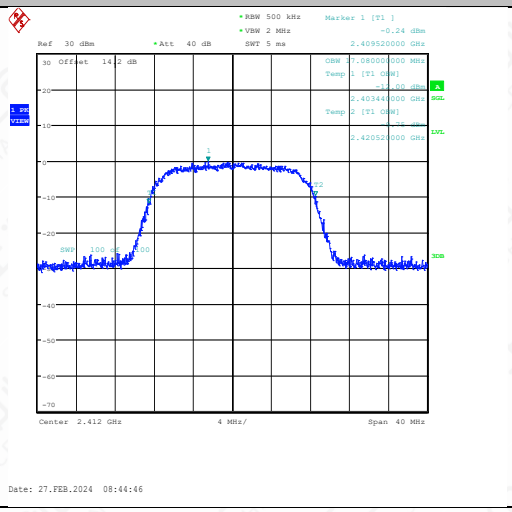


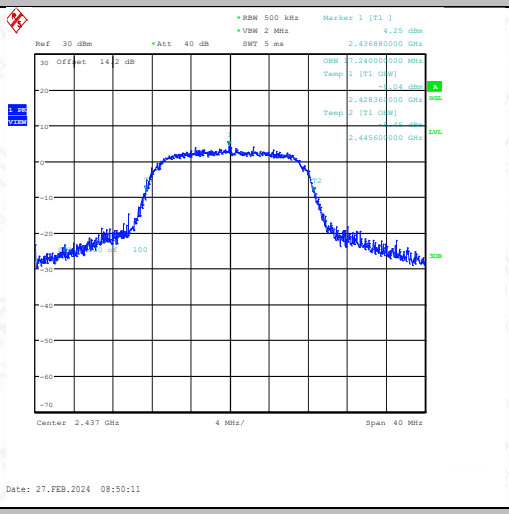
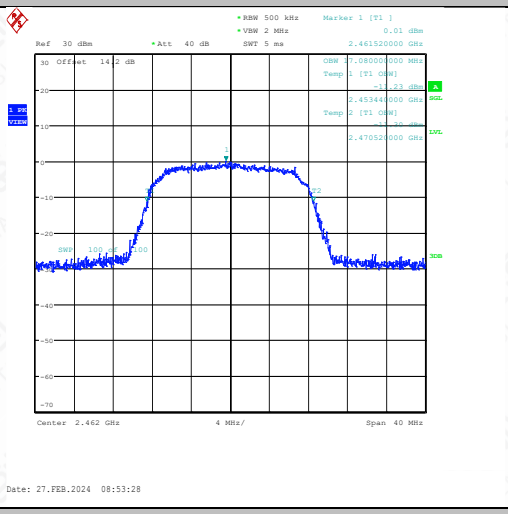
6.2.4 Measurement Result

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	12.68	2405.6400	2418.3200	---	---
11B	Ant1	2437	12.84	2430.5600	2443.4000	---	---
11B	Ant1	2462	12.88	2455.4800	2468.3600	---	---
11G	Ant1	2412	17.08	2403.4400	2420.5200	---	---
11G	Ant1	2437	17.24	2428.3600	2445.6000	---	---

11G	Ant1	2462	17.08	2453.4400	2470.5200	---	---
11N20SISO	Ant1	2412	17.92	2403.0400	2420.9600	---	---
11N20SISO	Ant1	2437	18.04	2427.9600	2446.0000	---	---
11N20SISO	Ant1	2462	18	2452.9600	2470.9600	---	---

graphs as below

11B-Ant1-2412	11B-Ant1-2437
	
11B-Ant1-2462	**11G-Ant1-2412**
	

11G-Ant1-2437	11G-Ant1-2462
	
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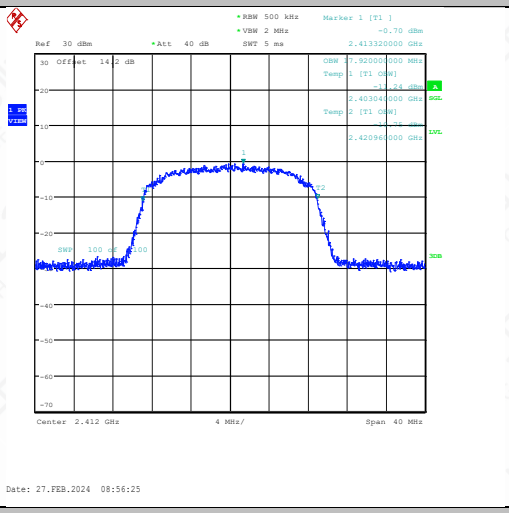	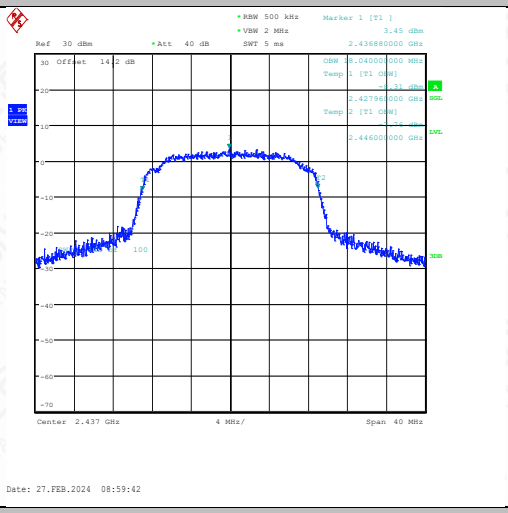
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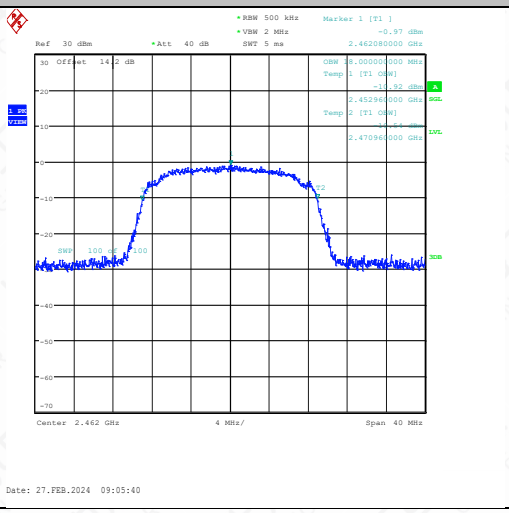
	/

6.3 Output Power-Conducted

6.3.1 Measurement Limit

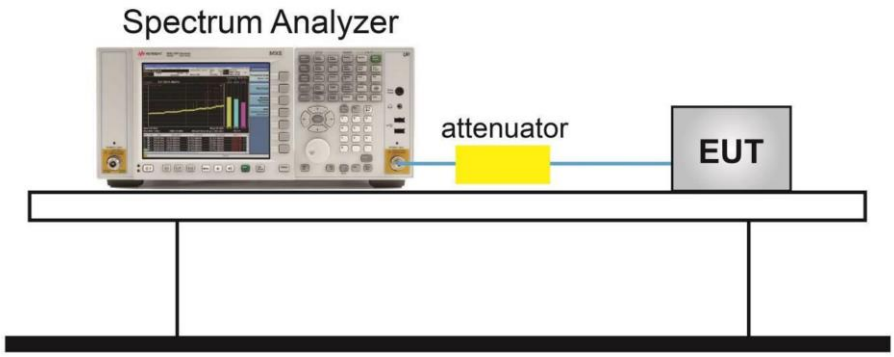
Standard	Limit (dBm)
FCC 47 Part 15.247(b)(3)	<30
Note: Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	

6.3.2 Test Procedure

The measurement is according to ANSI C63.10 clause 11.9.

1. Measure the duty cycle D of the transmitter output signal as described in 11.6.
2. Set span to at least 1.5 times the OBW.
3. Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
4. Set VBW ≥ [3 × RBW].
5. Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto.
7. Detector = RMS (i.e., power averaging), if available. Otherwise, use the sample detector mode.
8. Do not use sweep triggering. Allow the sweep to “free run.”
9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
10. Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
11. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.

6.3.3 Test setup



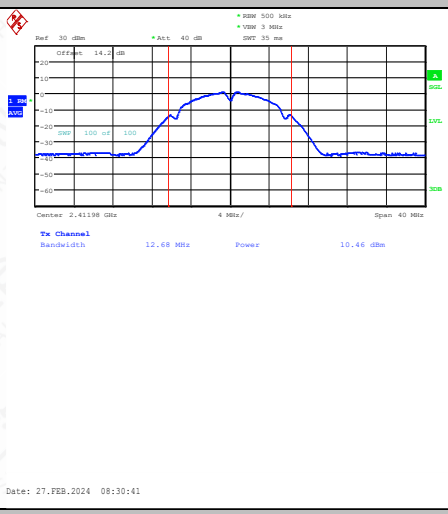
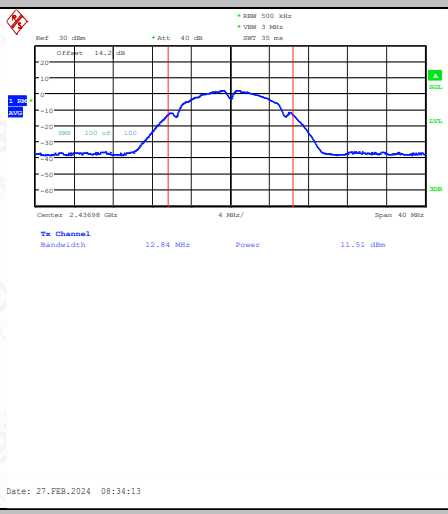
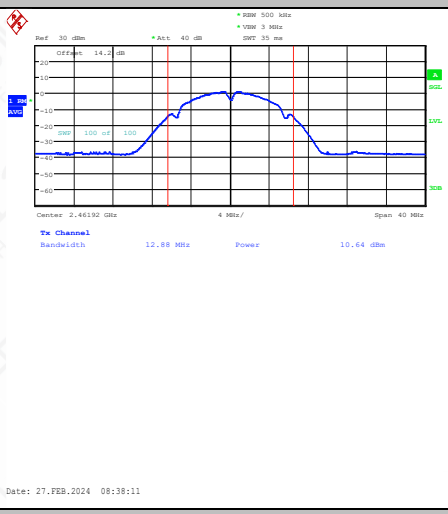
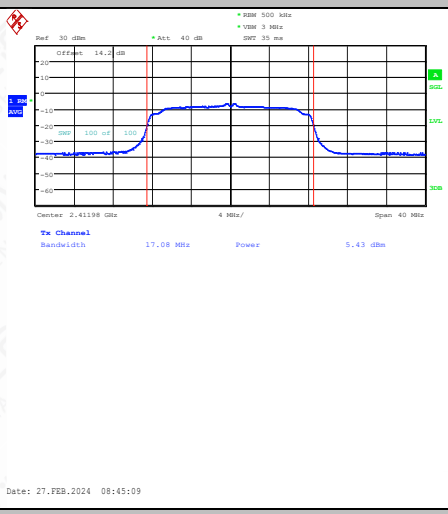
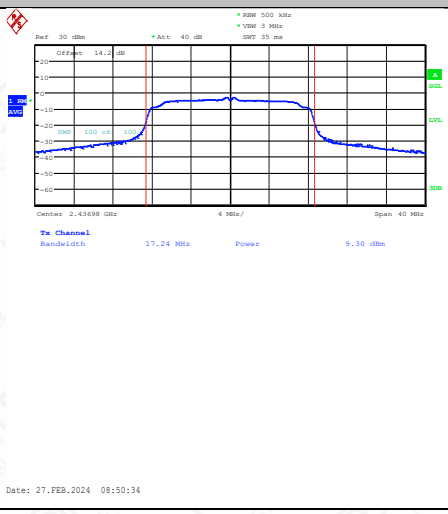
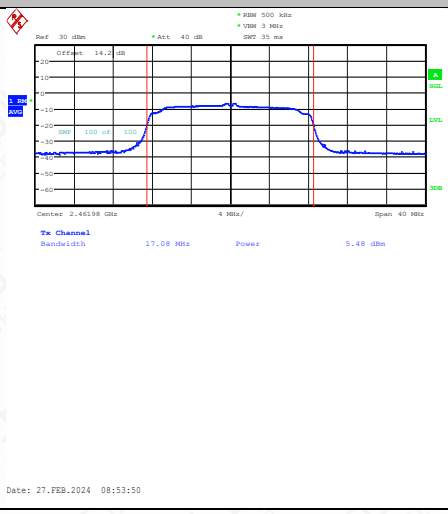
6.3.4 Measurement Results

TestMode	Antenna	Frequency [MHz]	Set Power	Power[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	Ant1	2412	N/A	10.46	≤30.00	12.76	N/A	PASS
		2437	N/A	11.51	≤30.00	13.81	N/A	PASS
		2462	N/A	10.64	≤30.00	12.94	N/A	PASS
11G	Ant1	2412	N/A	5.43	≤30.00	7.73	N/A	PASS
		2437	N/A	9.3	≤30.00	11.6	N/A	PASS
		2462	N/A	5.48	≤30.00	7.78	N/A	PASS
11N20SISO	Ant1	2412	N/A	4.91	≤30.00	7.21	N/A	PASS
		2437	N/A	8.81	≤30.00	11.11	N/A	PASS
		2462	N/A	4.95	≤30.00	7.25	N/A	PASS

Note1: The Duty Cycle Factor is compensated in the graph.

Note2: In the graph, the Center frequency = (Low frequency of 99% OBW + High frequency of 99% OBW) /2.

Test Graphs Peak

11B-Ant1-2412-PASS	11B-Ant1-2437-PASS
	
11B-Ant1-2462-PASS	**11G-Ant1-2412-PASS**
	
11G-Ant1-2437-PASS	**11G-Ant1-2462-PASS**
	

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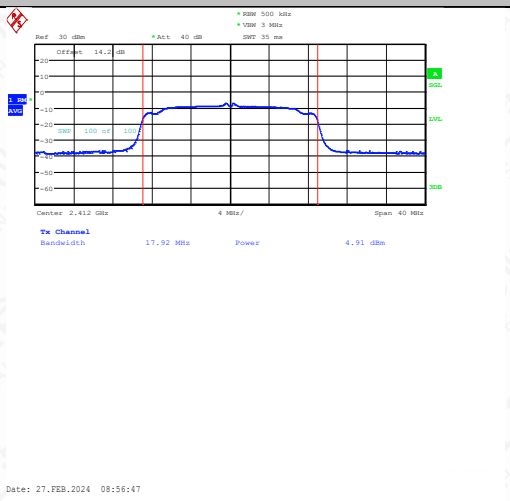	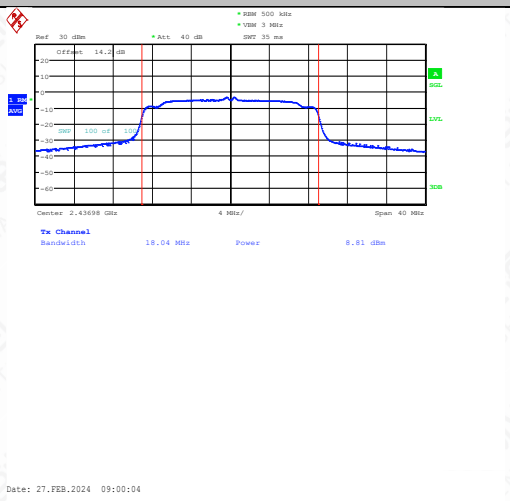
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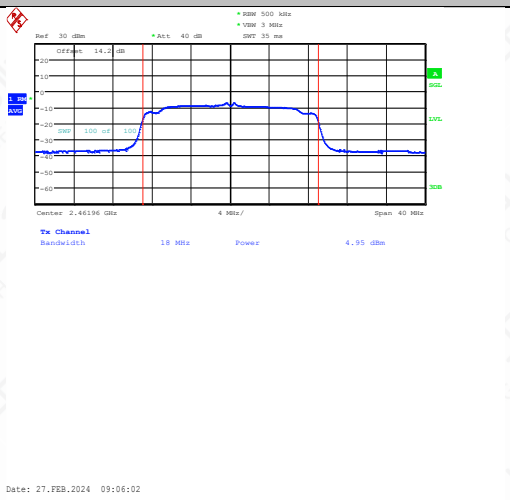
	/

6.4 Transmitter Spurious Emission-Radiated

6.4.1 Measurement Limit

According to the FCC 15.205&15.209/RSS-Gen section 8.9&1.0

6.4.2 Limit in restricted band

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009~0.49	2400/F (kHz)	129-94
0.49~1.705	24000/F (kHz)	74-63
1.705~30	30	70
30~88	100	40
88~216	150	43.5
216~960	200	46
Above 960	500	54

6.4.3 Test procedures

The measurement is according to ANSI C63.10 clause 11.11 and 11.12.

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a non-conducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m, For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.10-2013 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height varied from 1m to 4m and the EUT azimuth were varied from 0° to 360° in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Test Settings – Below 1GHz (Quasi-Peak Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 100 kHz.
3. Set the VBW = 300 kHz.
4. Detector = quasi-peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Trace was allowed to stabilize.

Test Settings – Above 1GHz (Peak Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 1MHz.

3. Set the VBW = 3MHz.
4. Detector = peak
5. Trace mode = max hold
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

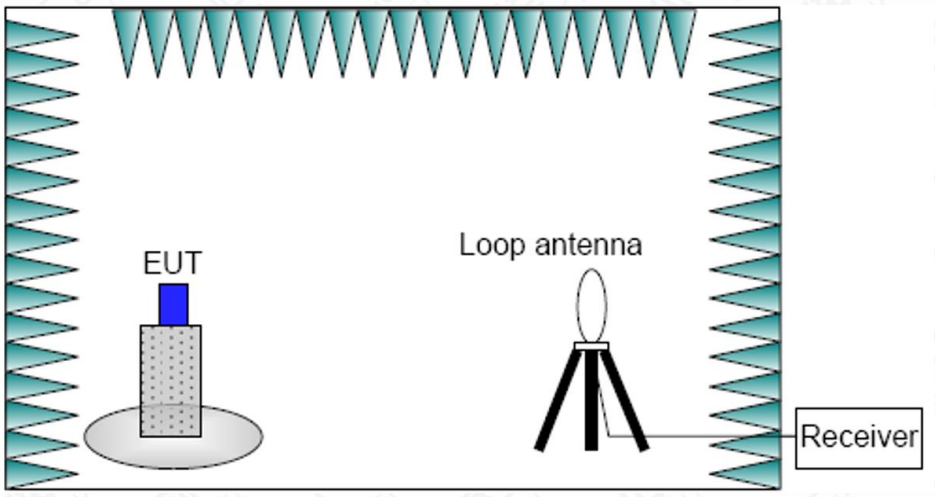
Test Settings – Above 1GHz (Average Field Strength Measurements)

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Detector = power average (RMS).
5. Number of measurement points = 1001 (Number of points must be ≥ 2 × span\\RBW)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

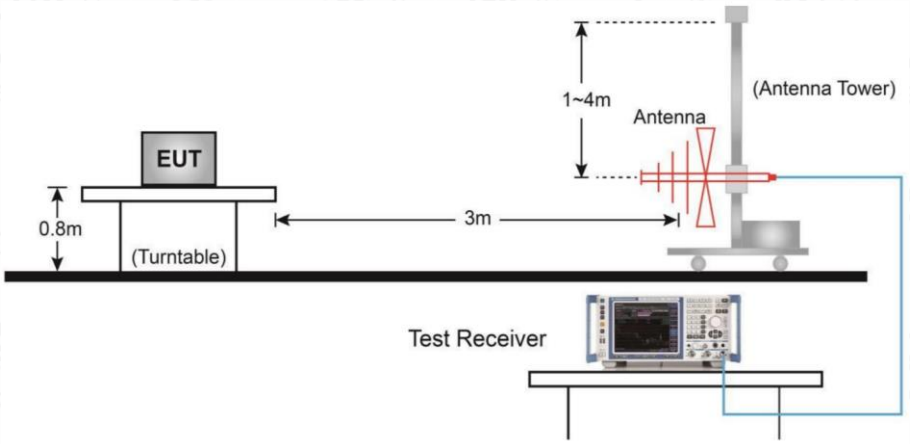
Frequency of emission	RBW/VBW	Sweep Time (s)
0.009~30	9KHz/30KHz	Auto
30~1000	100KHz/300KHz	5
1000~4000	1MHz/3MHz	15
4000~18000	1MHz/3MHz	40
18000~26500	1MHz/3MHz	20

6.4.4 Test Setup

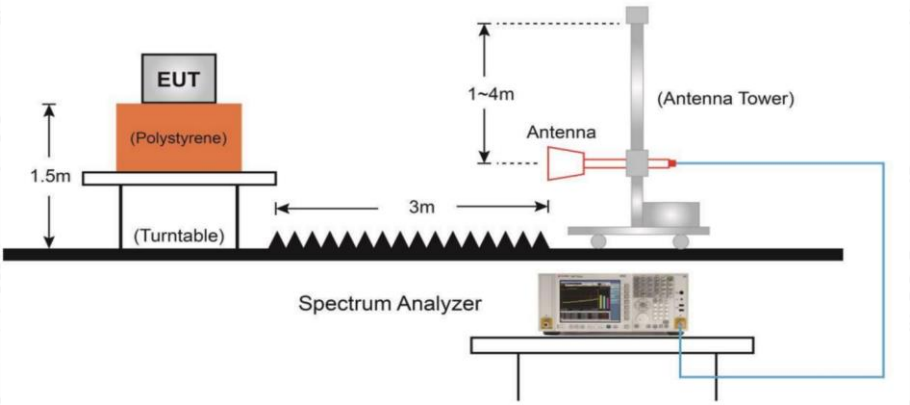
Below 30MHz Test Setup



Below 1GHz Test Setup



Above 1GHz Test Setup



6.4.5 Measurement Results

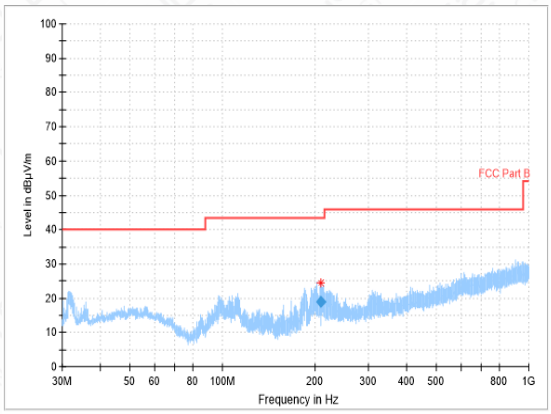
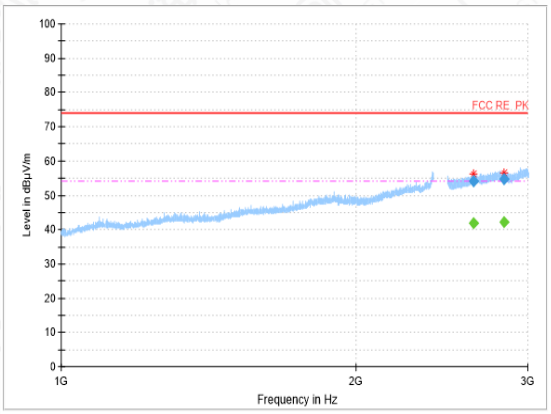
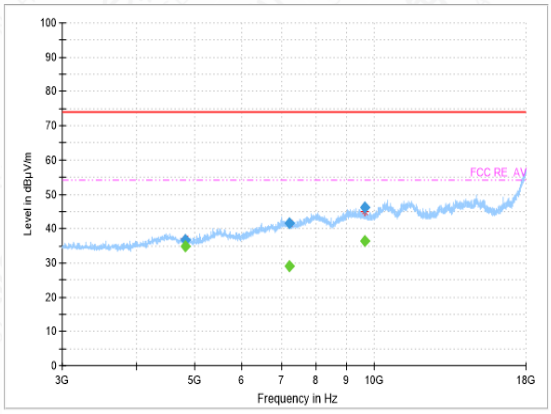
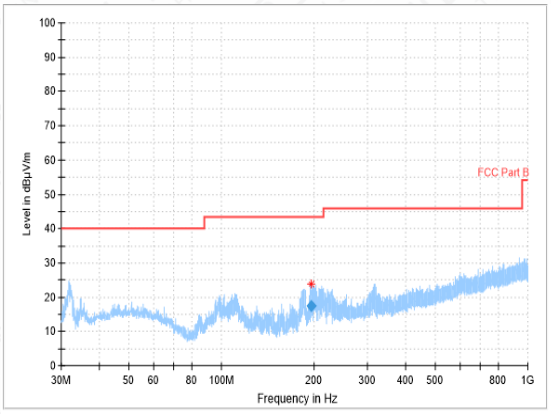
A ”reference path loss” is established and A_{Rpi} is the attenuation of “reference path loss”, and including the gain of receive antenna , the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

A_{Rpi} = Cable loss + Antenna Factor-Preamplifier gain

Result = PMea + Cable loss + Antenna Factor-Preamplifier gain = PMea + ARpi .

RSE-11B-CH1-30MHz-1GHz	RSE-11B-CH1-1GHz-3GHz
	
RSE-11B-CH1-3GHz-18GHz	RSE-11B-CH11-30MHz-1GHz
	
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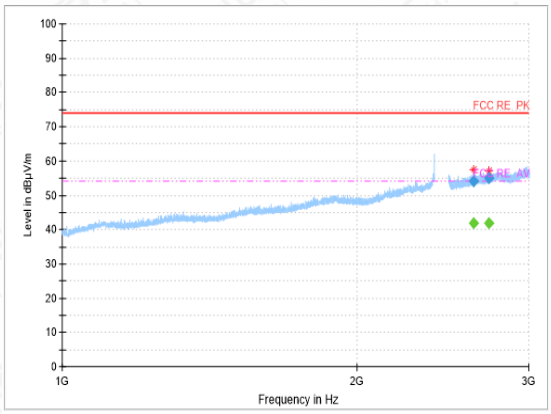
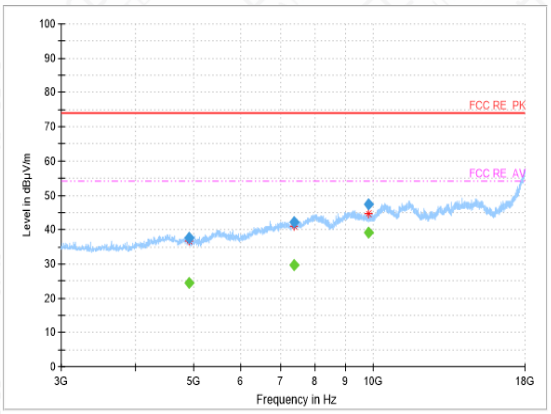
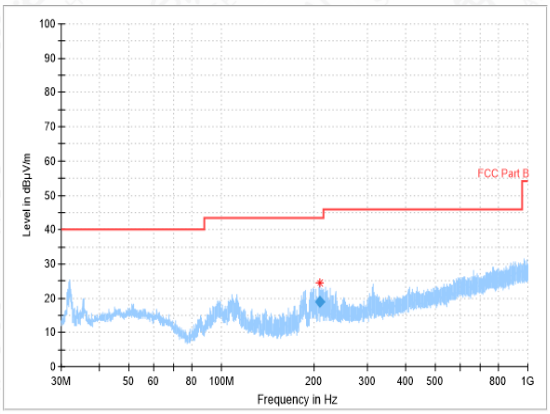
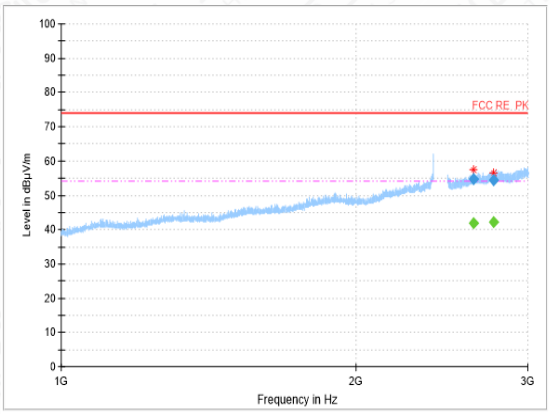
	

RSE-11G-CH1-30MHz-1GHz	RSE-11G-CH1-1GHz-3GHz
	
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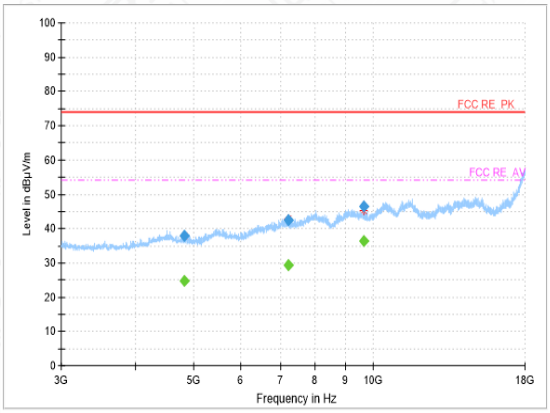	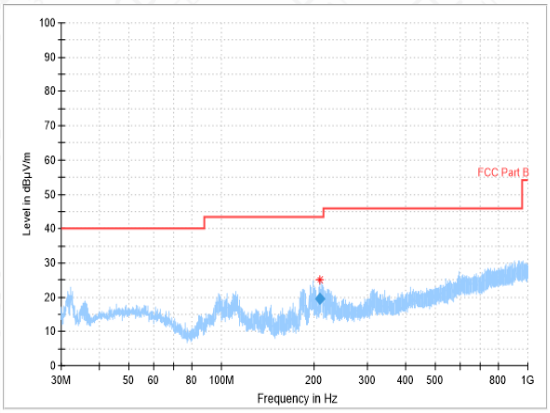
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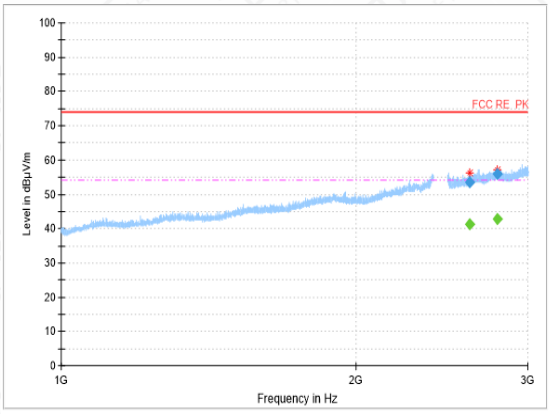
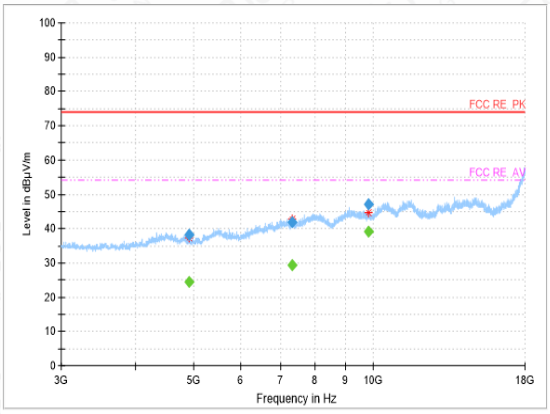
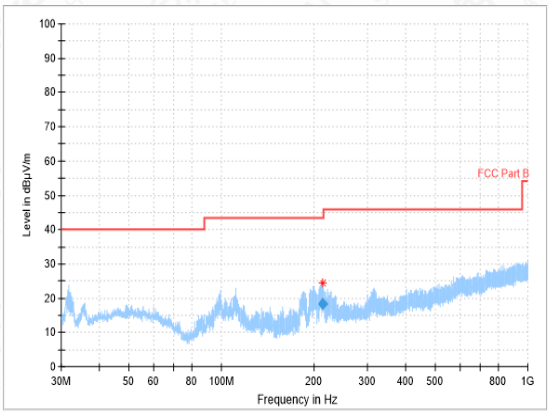
	

RSE-11N(20M)-CH1-30MHz-1GHz



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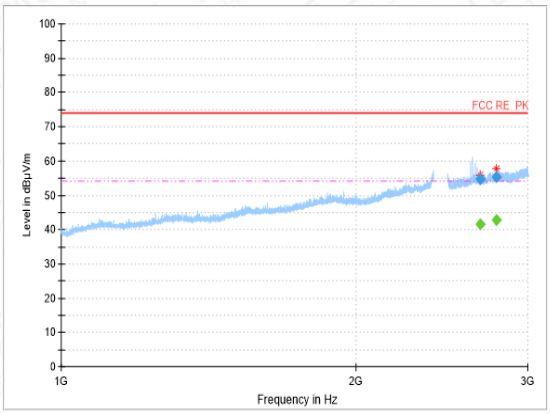
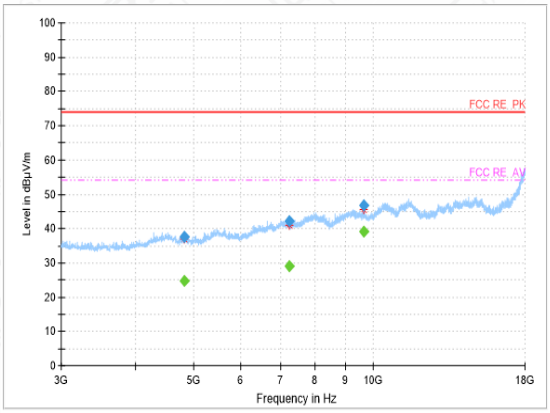


RSE-11N(20M)-CH1-3GHz-18GHz



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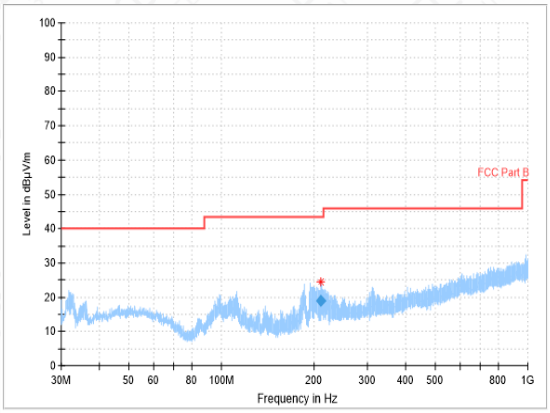

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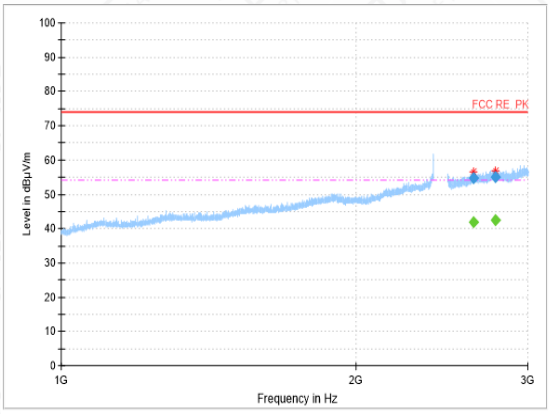

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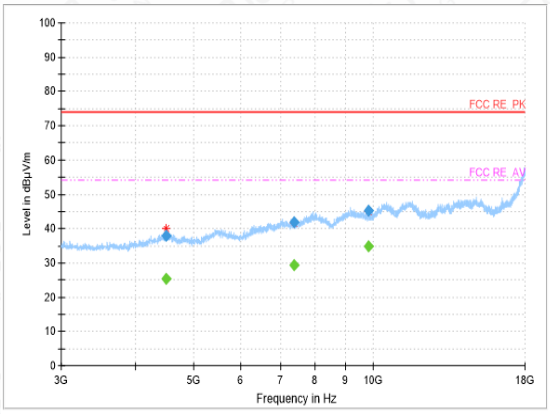
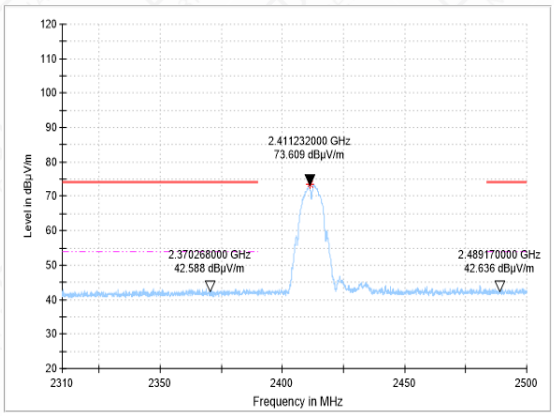
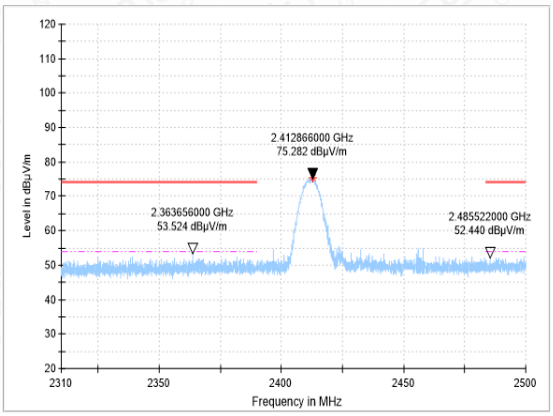


Bandedge

Bandedge-11B-CH1-AV	Bandedge-11B-CH1-PK
	
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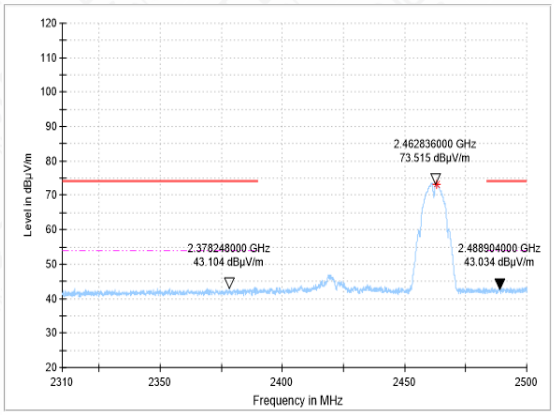	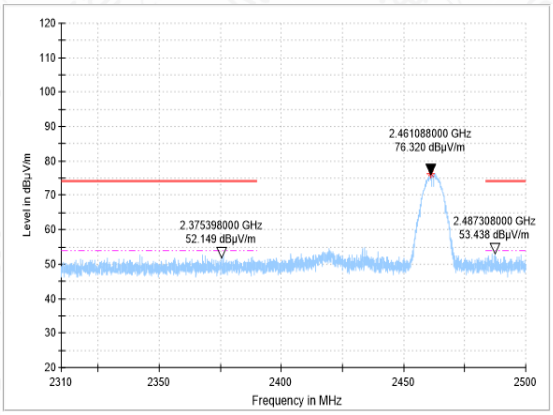
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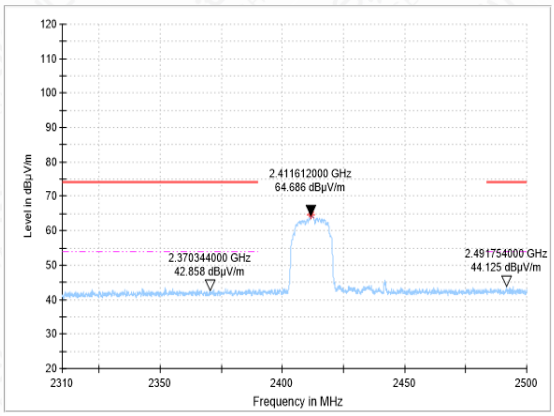	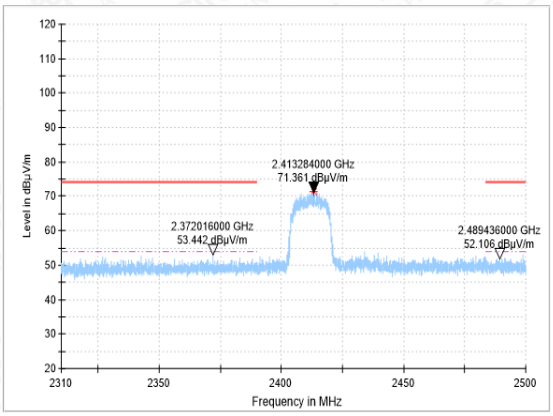

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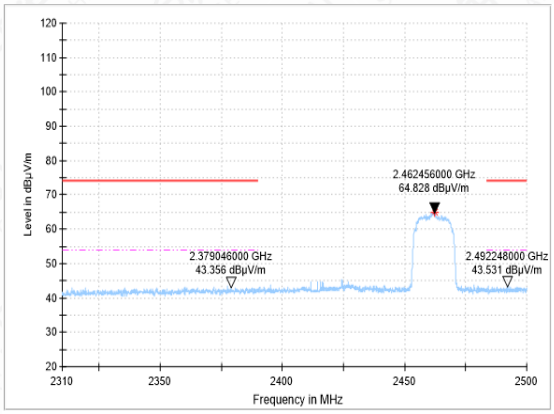

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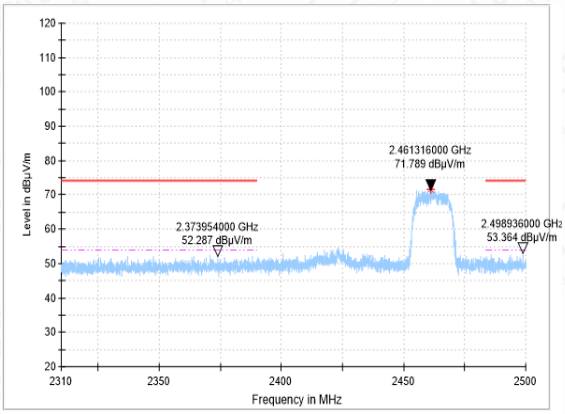
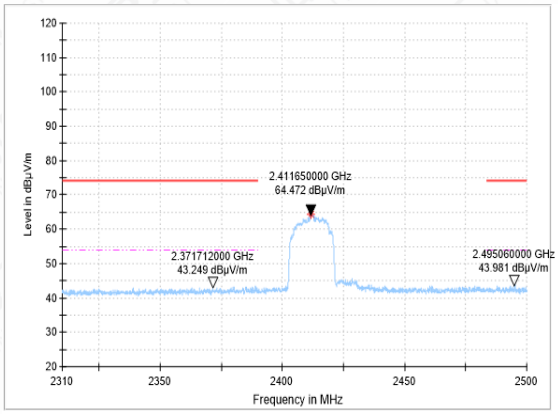


Bandedge-11N(20M)-CH1-AV



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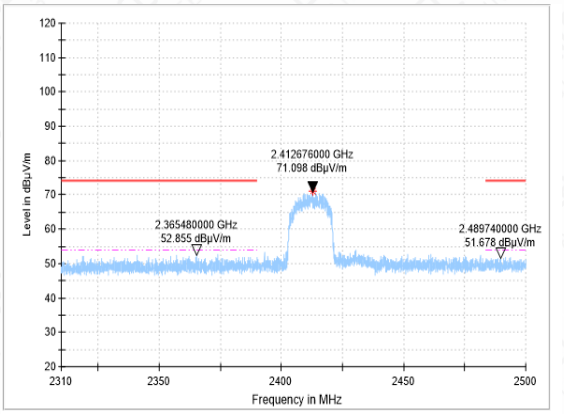

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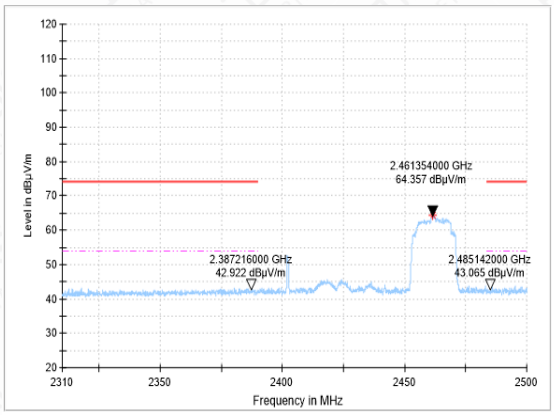

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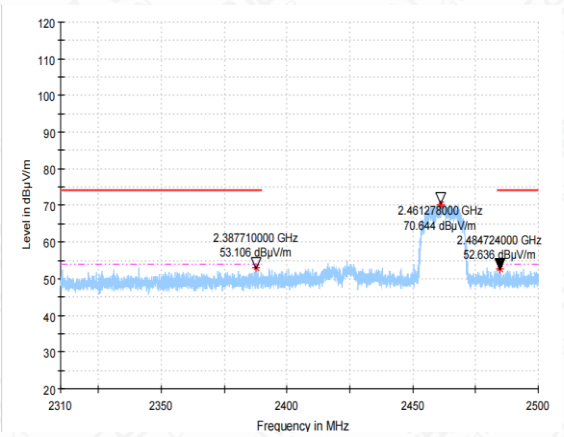


RSE-11B-CH1-30MHz-1GHz

Frequency (MHz)	QuasiPeak(dBµV/m)	ARpl (dB)	PMea (dBµV/m)	Margin(dB)	Limit(dBµV/m)	Polarity
209.5	18.94	-13	31.94	24.56	43.50	H

RSE-11B-CH1-1GHz-3GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2638.1	53.99	17	36.99	20.01	74.00	V
2833.8	54.84	18	36.84	19.16	74.00	V

RSE-11B-CH1-1GHz-3GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2638.1	41.78	17	24.78	12.22	54.00	V
2833.8	42.19	18	24.19	11.81	54.00	V

RSE-11B-CH1-3GHz-18GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4822.5	36.85	-7	43.85	37.15	74.00	V
7225.8	41.48	-2	43.48	32.52	74.00	H
9647.8	46.32	1	45.32	27.68	74.00	V

RSE-11B-CH1-3GHz-18GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4822.5	34.8	-7	41.8	19.20	54.00	V
7225.8	29.1	-2	31.1	24.90	54.00	H
9647.8	36.34	1	35.34	17.66	54.00	V

RSE-11B-CH11-30MHz-1GHz

Frequency (MHz)	QuasiPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
195.7	17.4	-13	30.4	26.10	43.50	H

RSE-11B-CH11-1GHz-3GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2635.4	54.16	17	37.16	19.84	74.00	H
2729.3	54.93	18	36.93	19.07	74.00	V

RSE-11B-CH11-1GHz-3GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2635.4	41.79	17	24.79	12.21	54.00	H
2729.3	41.76	18	23.76	12.24	54.00	V

RSE-11B-CH11-3GHz-18GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4924.6	37.56	-6	43.56	36.44	74.00	V
7385.1	42.05	-2	44.05	31.95	74.00	V
9848.0	47.44	1	46.44	26.56	74.00	H

RSE-11B-CH11-3GHz-18GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4924.6	24.49	-6	30.49	29.51	54.00	V
7385.1	29.55	-2	31.55	24.45	54.00	V
9848.0	39.02	1	38.02	14.98	54.00	H

RSE-11G-CH1-30MHz-1GHz

Frequency (MHz)	QuasiPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
209.5	19.06	-13	32.06	24.44	43.50	H

RSE-11G-CH1-1GHz-3GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2637.1	54.6	17	37.6	19.40	74.00	V
2765.3	54.55	18	36.55	19.45	74.00	H

RSE-11G-CH1-1GHz-3GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2637.1	41.78	17	24.78	12.22	54.00	V
2765.3	42.11	18	24.11	11.89	54.00	H

RSE-11G-CH1-3GHz-18GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4828.6	37.97	-7	44.97	36.03	74.00	H
7217.4	42.36	-2	44.36	31.64	74.00	V
9647.9	46.49	1	45.49	27.51	74.00	V

RSE-11G-CH1-3GHz-18GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4828.6	24.9	-7	31.9	29.10	54.00	H
7217.4	29.42	-2	31.42	24.58	54.00	V
9647.9	36.4	1	35.4	17.60	54.00	V

RSE-11G-CH11-30MHz-1GHz

Frequency (MHz)	QuasiPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
210.0	19.57	-13	32.57	23.93	43.50	H

RSE-11G-CH11-1GHz-3GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2616.9	53.63	17	36.63	20.37	74.00	V
2793.6	55.82	18	37.82	18.18	74.00	V

RSE-11G-CH11-1GHz-3GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2616.9	41.19	17	24.19	12.81	54.00	V
2793.6	42.71	18	24.71	11.29	54.00	V

RSE-11G-CH11-3GHz-18GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4917.6	38.17	-6	44.17	35.83	74.00	H
7311.1	41.79	-2	43.79	32.21	74.00	H
9848.0	47.05	1	46.05	26.95	74.00	H

RSE-11G-CH11-3GHz-18GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4917.6	24.37	-6	30.37	29.63	54.00	H
7311.1	29.49	-2	31.49	24.51	54.00	H
9848.0	39.03	1	38.03	14.97	54.00	H

RSE-11N-CH1-30MHz-1GHz

Frequency (MHz)	QuasiPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
213.4	18.4	-13	31.4	25.10	43.50	H

RSE-11N-CH1-1GHz-3GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2682.9	54.81	17	37.81	19.19	74.00	V
2787.3	55.44	18	37.44	18.56	74.00	V

RSE-11N-CH1-1GHz-3GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2682.9	41.71	17	24.71	12.29	54.00	V
2787.3	42.68	18	24.68	11.32	54.00	V

RSE-11N-CH1-3GHz-18GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4823.0	37.49	-7	44.49	36.51	74.00	H
7236.1	42.16	-2	44.16	31.84	74.00	H
9647.8	46.94	1	45.94	27.06	74.00	H

RSE-11N-CH1-3GHz-18GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4823.0	24.76	-7	31.76	29.24	54.00	H
7236.1	29.1	-2	31.1	24.90	54.00	H

9647.8	39.05	1	38.05	14.95	54.00	H

RSE-11N-CH11-30MHz-1GHz

Frequency (MHz)	QuasiPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
211.4	19.07	-13	32.07	24.43	43.50	H

RSE-11N-CH11-1GHz-3GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2638.8	54.6	17	37.6	19.40	74.00	H
2782.0	54.99	18	36.99	19.01	74.00	H

RSE-11N-CH11-1GHz-3GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
2638.8	41.78	17	24.78	12.22	54.00	H
2782.0	42.58	18	24.58	11.42	54.00	H

RSE-11N-CH11-3GHz-18GHz

Frequency (MHz)	MaxPeak(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4508.4	37.84	-8	45.84	36.16	74.00	H
7383.8	41.85	-2	43.85	32.15	74.00	V
9847.5	45.33	1	44.33	28.67	74.00	V

RSE-11N-CH11-3GHz-18GHz

Frequency (MHz)	Average(dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Margin(dB)	Limit(dBμV/m)	Polarity
4508.4	25.26	-8	33.26	28.74	54.00	H
7383.8	29.35	-2	31.35	24.65	54.00	V
9847.5	34.82	1	33.82	19.18	54.00	V

Note:

1. The out-of- limit signal in the picture is the main frequency signal.
2. Only data in worst mode is provided.
3. Sweep the whole frequency band through the range from 30MHz to the 10th harmonic of the carrier, the Emissions in the frequency band 18GHz-26.5GHz is more than 20dB below the limit are not report.

4. The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.

5. Horizontal and vertical polarity is all have been tested, the result of them is synthesized in the above data diagram.

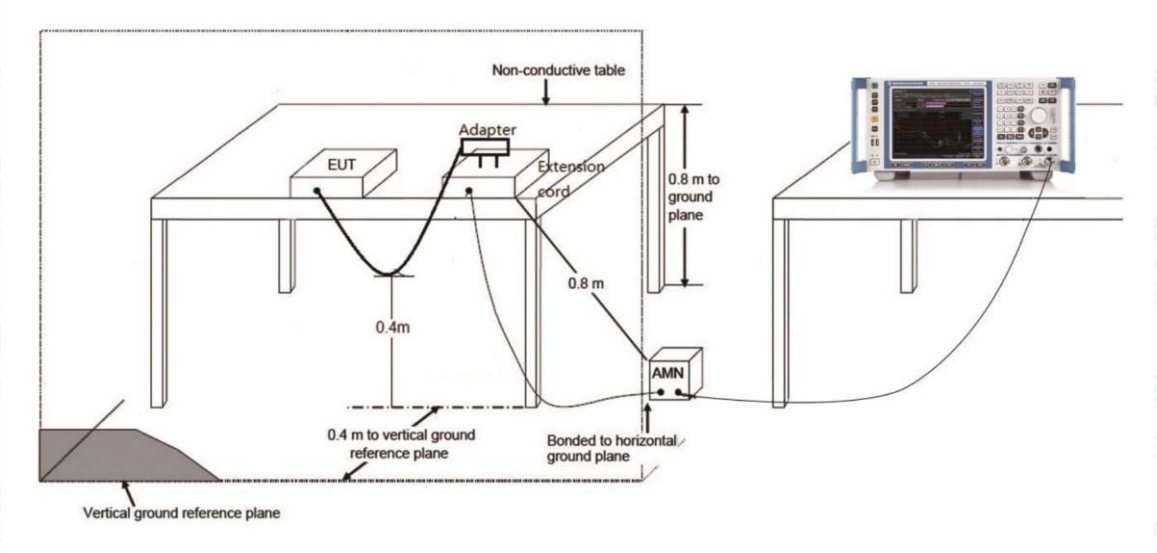
6.5 AC Powerline Conducted Emission

6.5.1 Method of Measurement: ANSI C63.10-2013-clause 6.2

1. The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
2. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
3. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
4. If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.36 Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

6.5.2 Test Setup



6.5.3 Test Condition

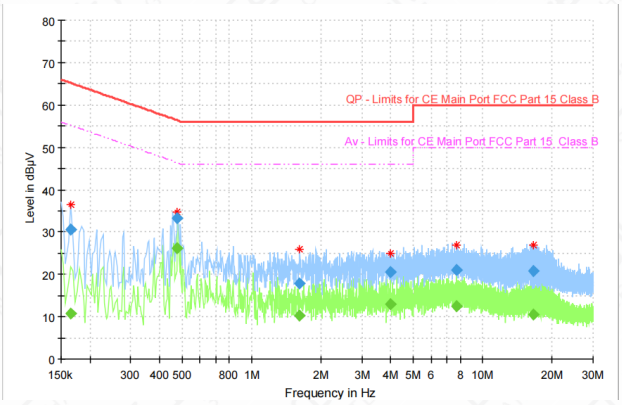
Voltage（V）	Frequency（Hz）
120	60

6.5.4 Measurement limit

(Quasi-peak-average Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Conclusion
0.15 to 0.5	66 to 56	56 to 46	P
0.5 to 5	56	46	
5 to 30	60	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			

6.5.5 Measurement Result

11B-2412MHz	/
	/

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.164925	---	10.83	55.21	44.38	15000.0	9.000	L1	ON	9.6
0.164925	30.65	---	65.21	34.56	15000.0	9.000	L1	ON	9.6
0.478350	---	26.13	46.37	20.24	15000.0	9.000	N	ON	9.4
0.478350	33.24	---	56.37	23.13	15000.0	9.000	N	ON	9.4
1.616381	---	10.31	46.00	35.69	15000.0	9.000	N	ON	9.6
1.616381	17.88	---	56.00	38.12	15000.0	9.000	N	ON	9.6
4.000650	---	13.00	46.00	33.00	15000.0	9.000	N	ON	9.7
4.000650	20.63	---	56.00	35.37	15000.0	9.000	N	ON	9.7
7.675931	20.99	---	60.00	39.01	15000.0	9.000	L1	ON	9.7
7.675931	---	12.57	50.00	37.43	15000.0	9.000	L1	ON	9.7
16.653319	20.67	---	60.00	39.33	15000.0	9.000	L1	ON	9.9
16.653319	---	10.47	50.00	39.53	15000.0	9.000	L1	ON	9.9

Note:All modes have been tested and only the worst mode is recorded in the report.

Annex A: Revised History

Version	Revised Content
V0	Initial

Annex B: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

INDUSTRIAL INTERNET INNOVATION CENTER (SHANGHAI) CO., LTD.

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 20th day of September 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2025

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

END OF REPORT