FCC TEST REPORT
FCC ID:2BARD-GPLINK2022

Report Number	**ZKT-230426L3046E-3**
Date of Test	Feb. 27, 2023 to Apr. 24, 2023
Date of issue	Apr. 24, 2023
Total number of pages	121
Test Result	PASS
Testing Laboratory	**Shenzhen ZKT Technology Co., Ltd.**
Address	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name	**SHENZHEN YIZHI RUILIAN TECHNOLOGY CO.,LTD**
Address	215, 2nd Floor, Liangji Building, Donghuan 1st Road, Longhua Stree, Longhua District, Shenzhen
Manufacturer's name	**SHENZHEN YIZHI RUILIAN TECHNOLOGY CO.,LTD**
Address	215, 2nd Floor, Liangji Building, Donghuan 1st Road, Longhua Stree, Longhua District, Shenzhen
Test specification:	
Standard	FCC CFR Title 47 Part 15 Subpart E Section 15.407 ANSI C63.10:2013 KDB 789033 D02 v02r01
Test procedure	/
Non-standard test method	N/A
Test Report Form No.	TRF-EL-113_V0
Test Report Form(s) Originator	ZKT Testing
Master TRF	Dated: 2023-04-24

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Product name	**A i car Box**
Trademark	N/A
Model/Type reference	A i car
Ratings	Input: DC 5V/2A Output: 5W

Testing procedure and testing location:

Testing Laboratory..... :	**Shenzhen ZKT Technology Co., Ltd.**
Address..... :	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature) ..... :	Jim Liu
Reviewer (name + signature)..... :	Jackson Fang
Approved (name + signature) ..... :	Lake Xie

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1. VERSION

Report No.	Version	Description	Approved
ZKT-230426L3046E-3	Rev.01	Initial issue of report	Apr. 24, 2023

2.SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.209(a), 15.407 (b)(1) 15.407 (b)(4) 15.407 (b)(8)	Spurious Radiated Emissions	PASS	
15.207	Conducted Emission	PASS	
15.407 (a)(12) 15.1049	26 dB and 99% Emission Bandwidth	PASS	
15.407(e)	6 dB bandwidth	PASS	
15.407 (a)(1) 15.407 (a)(3)	Maximum Conducted Output Power	PASS	
2.1051, 15.407(b)(1) 15.407(b)(4)	Band Edge	PASS	
15.407 (a)(1) 15.407 (a)(3)	Power Spectral Density	PASS	
2.1051, 15.407(b)	Spurious Emissions at Antenna Terminals	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report.

2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033
CAB identifier: CN0110

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %。

No.	Item	Uncertainty
1	3m camber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m camber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF power conducted	U=1.86dB
8	RF conducted Spurious Emission	U=2.2dB
9	RF Occupied Bandwidth	U=1.8dB
10	RF Power Spectral Density	U=1.75dB
11	humidity uncertainty	U=5.3%
12	Temperature uncertainty	U=0.59℃

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	A i car Box
Model No.:	A i car
Model Different.:	N/A
Sample ID:	CZ20230224-01E
Sample(s) Status:	Engineer sample
Frequency range:	U-NII-1: 5150 MHz to 5250 MHz U-NII-3: 5745 MHz to 5825 MHz
Modulation type:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac;
Transfer rate:	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40): MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40):NSS1, MCS0-MCS9 802.11ac(VHT80) :NSS1,MCS0-MCS9
Channel bandwidth:	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz 802.11ac: 20 MHz, 40 MHz, 80MHz
Channel List	Please refer to the Note 2.
Antenna Type:	WiFi chip RTL8811CU ANT 1: PCB antenna WiFi chip RTL8731BU ANT 2: PCB antenna
Antenna gain:	3dBi
Hardware Version:	H1.0
Software Version:	S1.0
Power supply:	Input: DC 5V/2A Output: 5W

Note:
For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2 OPERATION CHANNEL LIST

For U-NII-1:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190	42	5120
40	5200	46	5230	--	--
44	5220	--	--	--	--
48	5240	--	--	--	--

For U-NII-3:

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795	--	--
157	5785	--	--	--	--
161	5805	--	--	--	--

165	5825	--	--	--	--

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: During the test, the duty cycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Pretest Mode	Description
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a / n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159
Mode 3	Link Mode

Conducted Emission	
Final Test Mode	Description
Mode 3	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n 20 CH36/ CH40/ CH 48 802.11a /n 20 CH149/ CH157/ CH 165
Mode 2	802.11n 40 CH38/ CH 46 802.11n 40 CH 151 / CH 159

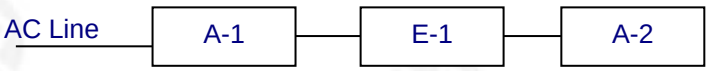
Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

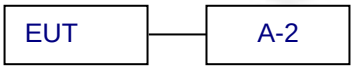
Test Software	SecureCRT
Power level setup	<10dBm

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

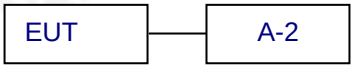
Conducted Emission



Radiated Emission



Conducted Spurious



3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	A i car Box	N/A	A i car	N/A	EUT
A-1	AC Adapter	Lenovo	ADL45WCC	N/A	Auxiliary
A-2	Notebook	Asus Computer Co., Ltd	X1502ZA1260-0D8 SXBJX10	N5N0CV10V35921 A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
/	/	/	/	/

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	Oct. 28, 2022	Oct. 27, 2023
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSQ	100363	Oct. 28, 2022	Oct. 27, 2023
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	Oct. 28, 2022	Oct. 27, 2023
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	Nov. 02, 2022	Nov. 01, 2023
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	Nov. 01, 2022	Oct. 31, 2023
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	Oct. 28, 2022	Oct. 27, 2023
7	Loop Antenna	TESEQ	HLA6121	58357	Nov. 01, 2022	Oct. 31, 2023
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	060747	Nov. 15, 2022	Nov. 14, 2023
9	Amplifier (1GHz-26.5GHz)	Agilent	8449B	3008A00315	Oct. 28, 2022	Oct. 27, 2023
10	Amplifier (500MHz-40GHz)	全聚达	DLE-161	097	Oct. 28, 2022	Oct. 27, 2023
11	Test Cable	N/A	R-01	N/A	Oct. 28, 2022	Oct. 27, 2023
12	Test Cable	N/A	R-02	N/A	Oct. 28, 2022	Oct. 27, 2023
13	Test Cable	N/A	R-03	N/A	Oct. 28, 2022	Oct. 27, 2023
14	Test Cable	N/A	RF-01	N/A	Oct. 28, 2022	Oct. 27, 2023
15	Test Cable	N/A	RF-02	N/A	Oct. 28, 2022	Oct. 27, 2023
16	Test Cable	N/A	RF-03	N/A	Oct. 28, 2022	Oct. 27, 2023
17	ESG Signal Generator	Agilent	E4421B	N/A	Oct. 21, 2022	Oct. 20, 2023
18	Signal Generator	Agilent	N5182A	N/A	Oct. 21, 2022	Oct. 20, 2023
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	Nov. 15, 2022	Nov. 14, 2023
20	Wideband Radio Communication Test	R&S	CMW500	106504	Oct. 28, 2022	Oct. 27, 2023
21	MWRF Power Meter Test system	MW	MW100-RPCB	N/A	Oct. 21, 2022	Oct. 20, 2023
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	\	\
25	Turntable	MF	MF-7802BS	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	\	\

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	Oct. 21, 2022	Oct. 20, 2023
2	LISN	CYBERTEK	EM5040A	E1850400149	Oct. 21, 2022	Oct. 20, 2023
3	Test Cable	N/A	C-01	N/A	Oct. 21, 2022	Oct. 20, 2023
4	Test Cable	N/A	C-02	N/A	Oct. 21, 2022	Oct. 20, 2023
5	Test Cable	N/A	C-03	N/A	Oct. 21, 2022	Oct. 20, 2023
6	EMI Test Receiver	R&S	ESCI3	101393	Oct. 28, 2022	Oct. 27, 2023
7	Triple-Loop Antenna	N/A	RF300	N/A	Oct. 28, 2022	Oct. 27, 2023
8	Absorbing Clamp	DZ	ZN23201	15034	Oct. 31, 2022	Oct. 30, 2023
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	\	\

4.EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:
(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled 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.

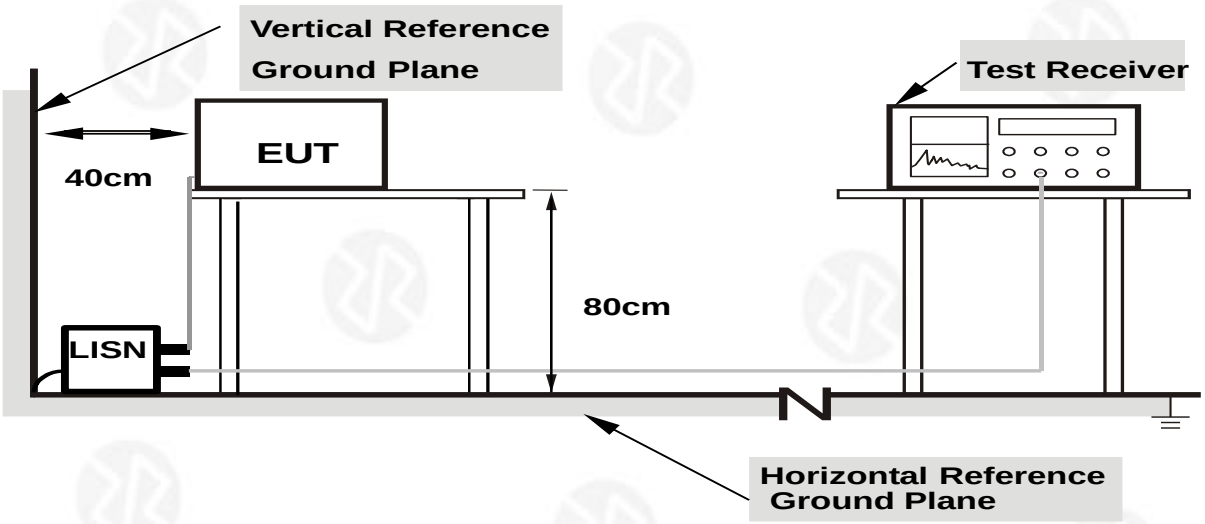
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

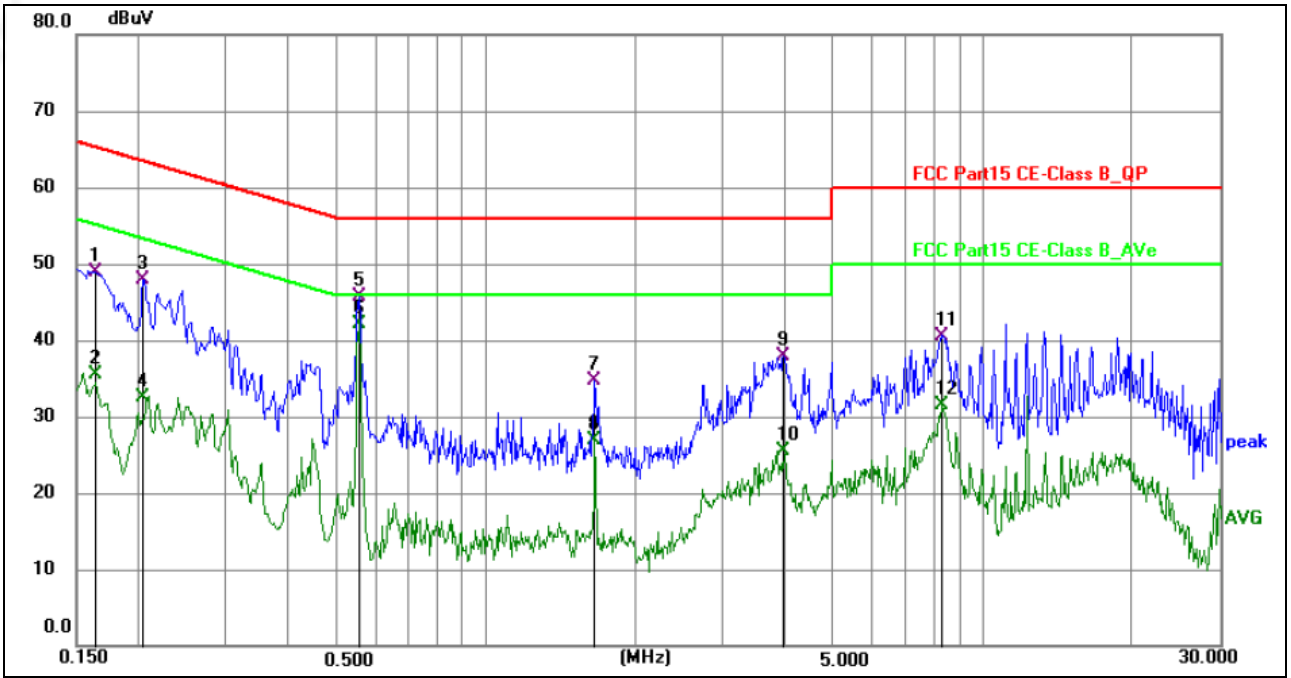
4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

4.1.6 TEST RESULT

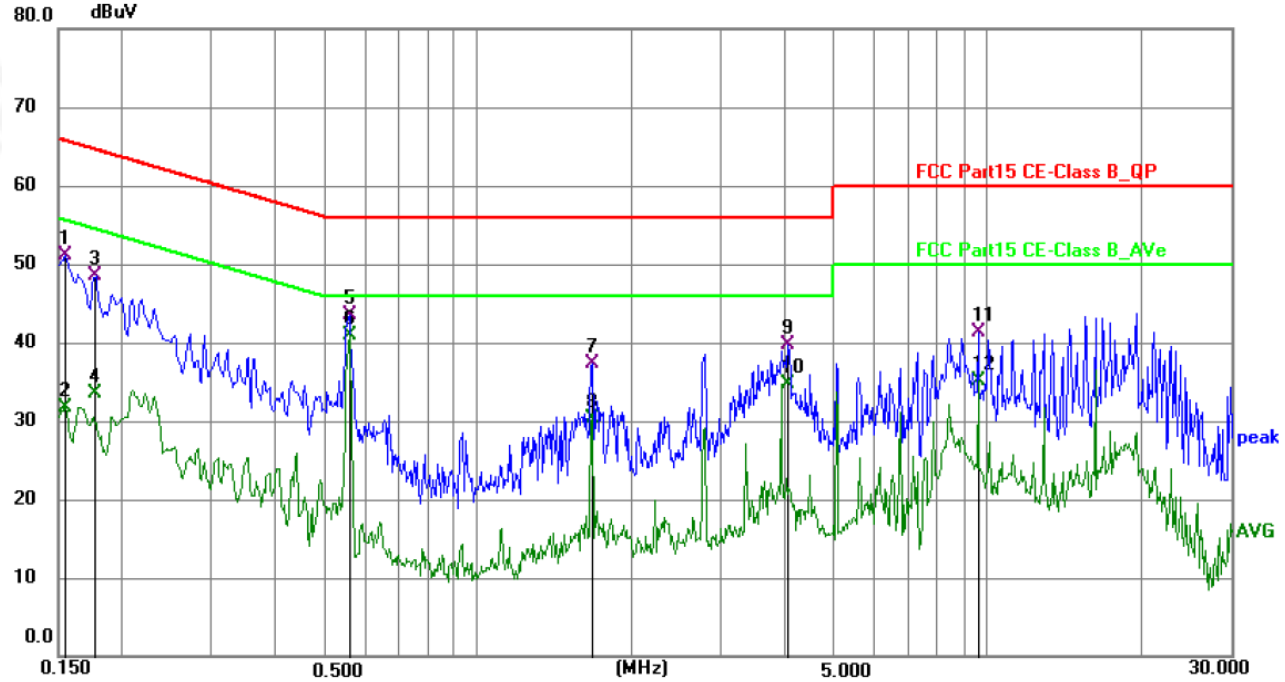
Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Phase：	L
Test Voltage ：	DC 5V from adapter AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.163500	38.69	10.12	48.81	65.28	-16.47	QP	P
2	0.163500	25.48	10.12	35.60	55.28	-19.68	AVG	P
3	0.203800	37.75	10.07	47.82	63.45	-15.63	QP	P
4	0.203800	22.51	10.07	32.58	53.45	-20.87	AVG	P
5	0.555000	35.58	10.08	45.66	56.00	-10.34	QP	P
6 *	0.555000	32.03	10.08	42.11	46.00	-3.89	AVG	P
7	1.661700	24.69	10.02	34.71	56.00	-21.29	QP	P
8	1.661700	16.93	10.02	26.95	46.00	-19.05	AVG	P
9	3.970400	28.11	9.87	37.98	56.00	-18.02	QP	P
10	3.970400	15.61	9.87	25.48	46.00	-20.52	AVG	P
11	8.276700	30.93	9.67	40.60	60.00	-19.40	QP	P
12	8.276700	21.88	9.67	31.55	50.00	-18.45	AVG	P

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Phase：	N
Test Voltage ：	DC 5V from adapter AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.154400	40.87	10.14	51.01	65.76	-14.75	QP	P
2	0.154400	21.64	10.14	31.78	55.76	-23.98	AVG	P
3	0.176800	38.48	10.10	48.58	64.63	-16.05	QP	P
4	0.176800	23.45	10.10	33.55	54.63	-21.08	AVG	P
5	0.559400	33.45	10.08	43.53	56.00	-12.47	QP	P
6 *	0.559400	30.81	10.08	40.89	46.00	-5.11	AVG	P
7	1.675400	27.34	10.02	37.36	56.00	-18.64	QP	P
8	1.675400	20.36	10.02	30.38	46.00	-15.62	AVG	P
9	4.051400	29.80	9.87	39.67	56.00	-16.33	QP	P
10	4.051400	24.74	9.87	34.61	46.00	-11.39	AVG	P
11	9.559400	31.68	9.58	41.26	60.00	-18.74	QP	P
12	9.559400	25.51	9.58	35.09	50.00	-14.91	AVG	P

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(d) and 15.209.

4.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(7): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

.

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	2400/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Remark :

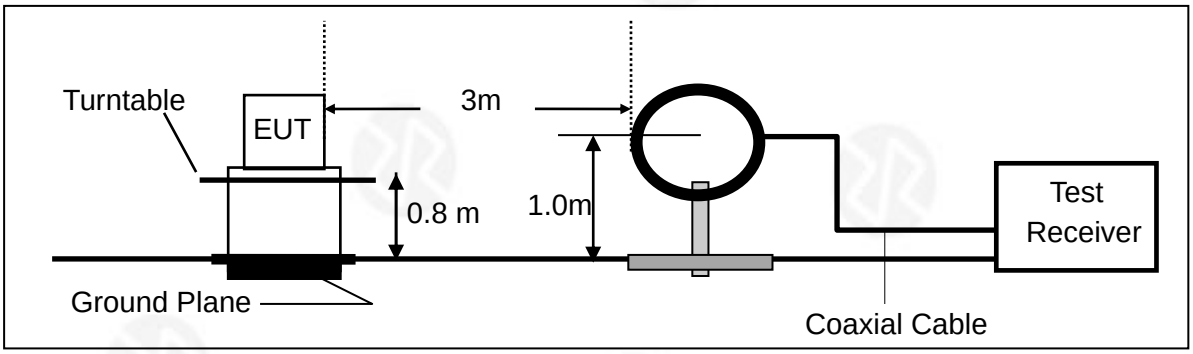
1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
   Limit line=Specific limits(dBuV) + distance extrapolation factor.

4.2.3 MEASURING INSTRUMENTS

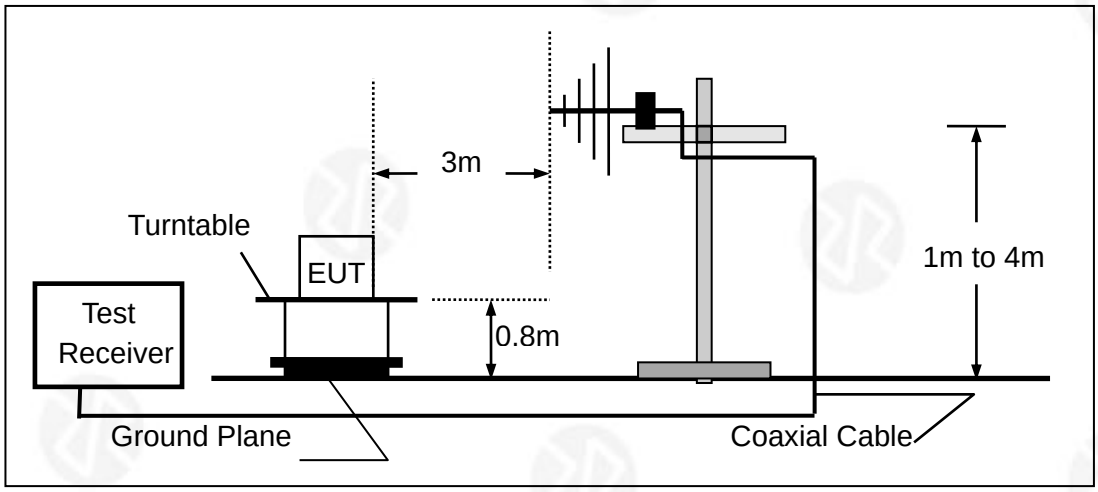
The Measuring equipment is listed in the section 6.3 of this test report.

4.2.4 TEST CONFIGURATION

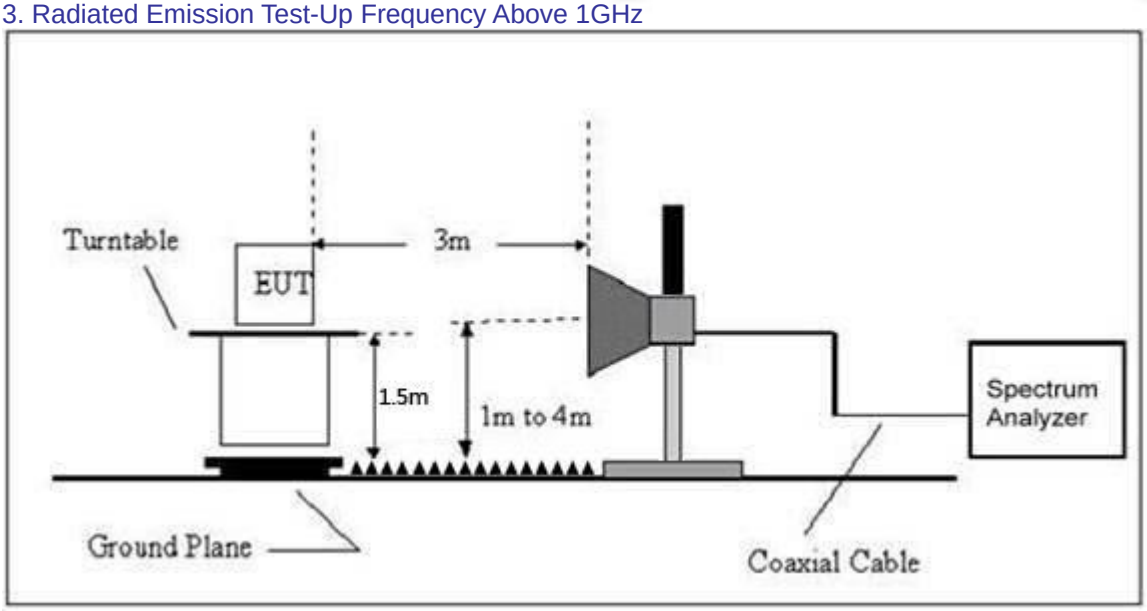
1.For radiated emissions below 30MHz



2.For radiated emissions from 30MHz to 1000MHz



3. Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m.The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.
This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT.
Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

4.2.6 TEST RESULTS

Between 9KHz – 30MHz

EUT:	A i car Box	Model Name:	A i car
Pressure:	1010 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX	Polarization:	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note:

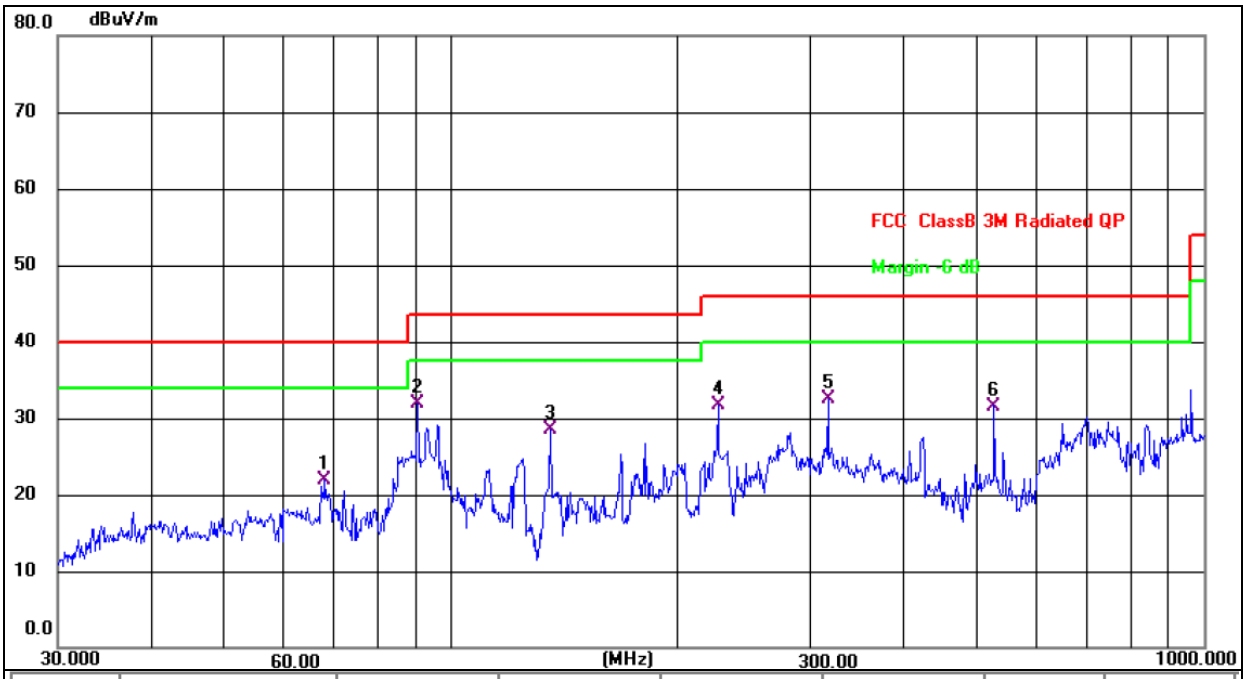
For 9kHz-30MHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

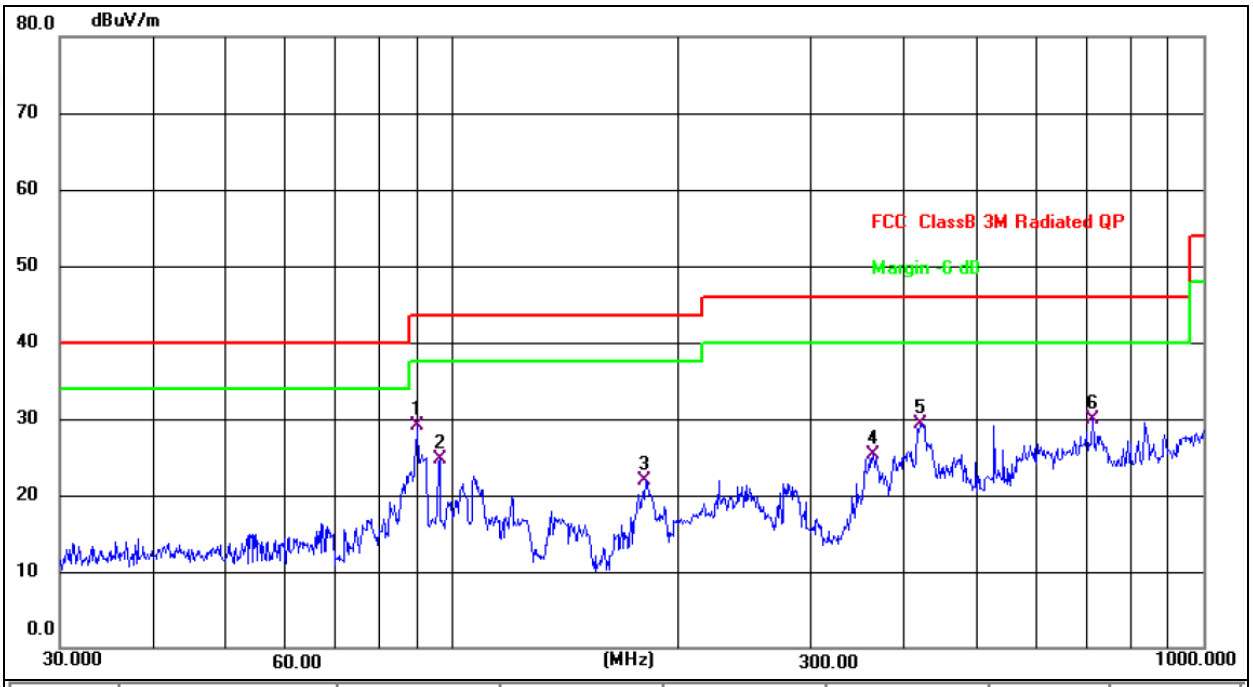
Between 30MHz – 1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Test Mode:	TX



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	67.9128	38.00	-16.04	21.96	40.00	-18.04	QP
2 *	90.2202	51.06	-19.21	31.85	43.50	-11.65	QP
3	135.5061	43.12	-14.70	28.42	43.50	-15.08	QP
4	226.0994	47.74	-16.05	31.69	46.00	-14.31	QP
5	316.5889	45.20	-12.62	32.58	46.00	-13.42	QP
6	526.3967	38.47	-6.87	31.60	46.00	-14.40	QP

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 5V from adapter AC 120V/60Hz	Test Mode:	TX



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	89.9046	48.30	-19.23	29.07	43.50	-14.43	QP
2	96.0985	43.29	-18.66	24.63	43.50	-18.87	QP
3	180.6484	37.22	-15.23	21.99	43.50	-21.51	QP
4	362.9843	36.56	-11.25	25.31	46.00	-20.69	QP
5	419.1080	39.01	-9.73	29.28	46.00	-16.72	QP
6	711.6734	32.79	-2.90	29.89	46.00	-16.11	QP

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.
3.The test data shows only the worst case 802.11n20 mode

Between 1GHz – 40GHz

Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	U-NII-1 802.11a TX		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4435.086	55.29	5.94	35.40	44.00	52.63	74.00	-21.37	Pk
Vertical	4436.240	43.32	5.94	35.40	44.00	40.66	54.00	-13.34	AV
Vertical	10371.676	63.42	8.46	39.75	44.50	67.13	74.00	-6.87	Pk
Vertical	10371.051	43.15	8.46	39.75	44.50	46.86	54.00	-7.14	AV
Vertical	15540.920	56.19	10.12	38.80	44.10	61.01	74.00	-12.99	Pk
Vertical	15540.269	43.13	10.12	38.80	42.70	49.35	54.00	-4.65	AV
Horizontal	4435.974	59.38	5.94	35.18	44.00	56.50	74.00	-17.50	Pk
Horizontal	4434.260	43.63	5.94	35.18	44.00	40.75	54.00	-13.25	AV
Horizontal	10371.598	62.36	8.46	38.71	44.50	65.03	74.00	-8.97	Pk
Horizontal	10731.585	44.31	8.46	38.71	44.50	46.98	54.00	-7.02	AV
Horizontal	15540.164	56.95	10.12	38.38	44.10	61.35	74.00	-12.65	Pk
Horizontal	15541.853	42.74	10.12	38.38	44.10	47.14	54.00	-6.86	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	4593.278	57.90	6.48	36.35	44.05	56.68	74.00	-17.32	Pk
Vertical	4593.795	42.73	6.48	36.35	44.05	41.51	54.00	-12.49	AV
Vertical	10403.323	60.63	8.47	37.88	44.51	62.47	74.00	-11.53	Pk
Vertical	10403.276	47.00	8.47	37.88	44.51	48.84	54.00	-5.16	AV
Vertical	15601.966	57.29	10.12	38.8	44.10	62.11	74.00	-11.89	Pk
Vertical	15601.030	42.91	10.12	38.8	42.70	49.13	54.00	-4.87	AV
Horizontal	4594.242	58.69	6.48	36.37	44.05	57.49	74.00	-16.51	Pk
Horizontal	4593.321	41.45	6.48	36.37	44.05	40.25	54.00	-13.75	AV
Horizontal	10401.777	62.28	8.47	38.64	44.50	64.89	74.00	-9.11	Pk
Horizontal	10401.342	48.15	8.47	38.64	44.50	50.76	54.00	-3.24	AV
Horizontal	15600.318	59.21	10.12	38.38	44.10	63.61	74.00	-10.39	Pk
Horizontal	15601.145	43.47	10.12	38.38	44.10	47.87	54.00	-6.13	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4740.966	60.21	7.10	37.24	43.50	61.05	74.00	-12.95	Pk
Vertical	4740.602	45.70	7.10	37.24	43.50	46.54	54.00	-7.46	AV
Vertical	10482.086	60.60	8.46	37.68	44.50	62.24	74.00	-11.76	Pk
Vertical	10480.633	45.88	8.46	37.68	44.50	47.52	54.00	-6.48	AV
Vertical	15720.999	58.71	10.12	38.8	44.10	63.53	74.00	-10.47	Pk
Vertical	15720.785	42.25	10.12	38.8	42.70	48.47	54.00	-5.53	AV
Horizontal	4739.152	59.36	7.10	37.24	43.50	60.20	74.00	-13.80	Pk
Horizontal	4740.343	43.42	7.10	37.24	43.50	44.26	54.00	-9.74	AV
Horizontal	10482.466	58.53	8.46	38.57	44.50	61.06	74.00	-12.94	Pk
Horizontal	10482.906	42.45	8.46	38.57	44.50	44.98	54.00	-9.02	AV
Horizontal	15720.368	57.53	10.12	38.38	44.10	61.93	74.00	-12.07	Pk
Horizontal	15722.231	42.40	10.12	38.38	44.10	46.80	54.00	-7.20	AV

Temperature：	26℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	U-NII-3 802.11a TX		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4680.203	58.79	5.94	35.40	44.00	56.13	74.00	-17.87	Pk
Vertical	4679.198	46.21	5.94	35.40	44.00	43.55	54.00	-10.45	AV
Vertical	11490.844	59.02	8.46	39.75	44.50	62.73	74.00	-11.27	Pk
Vertical	11491.129	46.57	8.46	39.75	44.50	50.28	54.00	-3.72	AV
Vertical	17235.772	57.75	10.12	38.80	44.10	62.57	74.00	-11.43	Pk
Vertical	17236.061	40.73	10.12	38.80	42.70	46.95	54.00	-7.05	AV
Horizontal	4680.848	58.38	5.94	35.18	44.00	55.50	74.00	-18.50	Pk
Horizontal	4680.535	45.58	5.94	35.18	44.00	42.70	54.00	-11.30	AV
Horizontal	11490.810	60.99	8.46	38.71	44.50	63.66	74.00	-10.34	Pk
Horizontal	11492.192	46.34	8.46	38.71	44.50	49.01	54.00	-4.99	AV
Horizontal	17235.310	60.68	10.12	38.38	44.10	65.08	74.00	-8.92	Pk
Horizontal	17235.799	44.13	10.12	38.38	44.10	48.53	54.00	-5.47	AV
middle Channel (5785 MHz)-Above 1G									
Vertical	4592.930	58.80	6.48	36.35	44.05	57.58	74.00	-16.42	Pk
Vertical	4593.133	44.62	6.48	36.35	44.05	43.40	54.00	-10.60	AV
Vertical	11570.870	60.66	8.47	37.88	44.51	62.50	74.00	-11.50	Pk
Vertical	11571.120	43.61	8.47	37.88	44.51	45.45	54.00	-8.55	AV
Vertical	17356.579	57.48	10.12	38.8	44.10	62.30	74.00	-11.70	Pk
Vertical	17356.709	41.66	10.12	38.8	42.70	47.88	54.00	-6.12	AV
Horizontal	4593.500	60.61	6.48	36.37	44.05	59.41	74.00	-14.59	Pk
Horizontal	4593.559	44.51	6.48	36.37	44.05	43.31	54.00	-10.69	AV
Horizontal	11571.137	61.59	8.47	38.64	44.50	64.20	74.00	-9.80	Pk
Horizontal	11571.030	46.72	8.47	38.64	44.50	49.33	54.00	-4.67	AV
Horizontal	17355.132	59.95	10.12	38.38	44.10	64.35	74.00	-9.65	Pk
Horizontal	17356.391	45.56	10.12	38.38	44.10	49.96	54.00	-4.04	AV
High Channel (5825 MHz)-Above 1G									
Vertical	5039.913	61.44	7.10	37.24	43.50	62.28	74.00	-11.72	Pk
Vertical	5041.005	47.92	7.10	37.24	43.50	48.76	54.00	-5.24	AV
Vertical	11651.328	57.05	8.46	37.68	44.50	58.69	74.00	-15.31	Pk
Vertical	11651.024	44.02	8.46	37.68	44.50	45.66	54.00	-8.34	AV
Vertical	17475.314	61.03	10.12	38.8	44.10	65.85	74.00	-8.15	Pk
Vertical	17475.849	41.19	10.12	38.8	42.70	47.41	54.00	-6.59	AV
Horizontal	5040.246	67.80	7.10	37.24	43.50	68.64	74.00	-5.36	Pk
Horizontal	5041.161	42.47	7.10	37.24	43.50	43.31	54.00	-10.69	AV
Horizontal	11651.306	56.91	8.46	38.57	44.50	59.44	74.00	-14.56	Pk
Horizontal	11650.484	44.52	8.46	38.57	44.50	47.05	54.00	-6.95	AV
Horizontal	17475.450	60.88	10.12	38.38	44.10	65.28	74.00	-8.72	Pk
Horizontal	17475.197	46.25	10.12	38.38	44.10	50.65	54.00	-3.35	AV

Note:
All modes have been tested, and only the worst mode 802.11a mode is mentioned in the report.

4.2.7 RADIATED BAND EDGE

For U-NII-1 802.11a mode: (CH36 5180MHz&CH48 5240MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	65.71	8.69	29.4	42.59	61.21	74	-12.79	Pk
Horizontal	5350	63.73	9.37	30.41	43.25	60.26	74	-13.74	Pk
Vertical	5150	68.01	9.21	29.4	42.59	64.03	74	-9.97	Pk
Vertical	5350	61.11	9.12	30.41	43.25	57.39	74	-16.61	Pk
Horizontal	5150	45.84	8.69	29.4	42.59	41.34	54	-12.66	AV
Horizontal	5350	50.88	8.46	30.41	43.25	46.50	54	-7.50	AV
Vertical	5150	48.30	9.21	29.4	42.59	44.32	54	-9.68	AV
Vertical	5350	50.61	9.12	30.41	43.25	46.89	54	-7.11	AV

For 802.11n20 mode: (CH36 5180MHz&CH48 5240MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	64.95	8.69	29.4	42.59	60.45	74	-13.55	Pk
Horizontal	5350	66.72	9.37	30.41	43.25	63.25	74	-10.75	Pk
Vertical	5150	65.39	9.21	29.4	42.59	61.41	74	-12.59	Pk
Vertical	5350	67.23	9.12	30.41	43.25	63.51	74	-10.49	Pk
Horizontal	5150	46.27	8.69	29.4	42.59	41.77	54	-12.23	AV
Horizontal	5350	47.26	8.46	30.41	43.25	42.88	54	-11.12	AV
Vertical	5150	50.04	9.21	29.4	42.59	46.06	54	-7.94	AV
Vertical	5350	50.18	9.12	30.41	43.25	46.46	54	-7.54	AV

For 802.11n40 mode: (CH38 5190MHz&CH46 5230MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	67.70	8.69	29.4	42.59	63.20	74	-10.80	Pk
Horizontal	5350	61.73	9.37	30.41	43.25	58.26	74	-15.74	Pk

Vertical	5150	64.85	9.21	29.4	42.59	60.87	74	-13.13	Pk
Vertical	5350	59.78	9.12	30.41	43.25	56.06	74	-17.94	Pk
Horizontal	5150	46.61	8.69	29.4	42.59	42.11	54	-11.89	AV
Horizontal	5350	46.87	8.46	30.41	43.25	42.49	54	-11.51	AV
Vertical	5150	49.94	9.21	29.4	42.59	45.96	54	-8.04	AV
Vertical	5350	50.42	9.12	30.41	43.25	46.70	54	-7.30	AV

For 802.11ac20 mode: (CH36 5180MHz&CH48 5240MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	66.73	8.69	29.4	42.59	62.23	74	-11.77	Pk
Horizontal	5350	66.40	9.37	30.41	43.25	62.93	74	-11.07	Pk
Vertical	5150	64.83	9.21	29.4	42.59	60.85	74	-13.15	Pk
Vertical	5350	68.42	9.12	30.41	43.25	64.70	74	-9.30	Pk
Horizontal	5150	46.80	8.69	29.4	42.59	42.30	54	-11.70	AV
Horizontal	5350	45.74	8.46	30.41	43.25	41.36	54	-12.64	AV
Vertical	5150	49.57	9.21	29.4	42.59	45.59	54	-8.41	AV
Vertical	5350	50.38	9.12	30.41	43.25	46.66	54	-7.34	AV

For 802.11ac40 mode: (CH38 5190MHz&CH46 5230MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	65.83	8.69	29.4	42.59	61.33	74	-12.67	Pk
Horizontal	5350	68.10	9.37	30.41	43.25	64.63	74	-9.37	Pk
Vertical	5150	65.73	9.21	29.4	42.59	61.75	74	-12.25	Pk
Vertical	5350	68.16	9.12	30.41	43.25	64.44	74	-9.56	Pk
Horizontal	5150	47.38	8.69	29.4	42.59	42.88	54	-11.12	AV
Horizontal	5350	47.01	8.46	30.41	43.25	42.63	54	-11.37	AV
Vertical	5150	50.03	9.21	29.4	42.59	46.05	54	-7.95	AV
Vertical	5350	50.44	9.12	30.41	43.25	46.72	54	-7.28	AV

For 802.11ac80 mode: (CH42 5210MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5150	66.73	8.69	29.4	42.59	62.23	74	-11.77	Pk
Horizontal	5350	66.72	9.37	30.41	43.25	63.25	74	-10.75	Pk
Vertical	5150	65.79	9.21	29.4	42.59	61.81	74	-12.19	Pk
Vertical	5350	68.31	9.12	30.41	43.25	64.59	74	-9.41	Pk
Horizontal	5150	47.97	8.69	29.4	42.59	43.47	54	-10.53	AV
Horizontal	5350	47.73	8.46	30.41	43.25	43.35	54	-10.65	AV
Vertical	5150	49.58	9.21	29.4	42.59	45.60	54	-8.40	AV
Vertical	5350	50.12	9.12	30.41	43.25	46.40	54	-7.60	AV

For U-NII-3 802.11a mode: (CH149 5745MHz&CH165 5825MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	66.95	8.69	29.4	42.59	62.45	74	-11.55	Pk
Horizontal	5850	62.55	9.37	30.41	43.25	59.08	74	-14.92	Pk
Vertical	5725	70.07	9.21	29.4	42.59	66.09	74	-7.91	Pk
Vertical	5850	61.04	9.12	30.41	43.25	57.32	74	-16.68	Pk
Horizontal	5725	46.52	8.69	29.4	42.59	42.02	54	-11.98	AV
Horizontal	5850	51.53	8.46	30.41	43.25	47.15	54	-6.85	AV
Vertical	5725	49.64	9.21	29.4	42.59	45.66	54	-8.34	AV
Vertical	5850	51.19	9.12	30.41	43.25	47.47	54	-6.53	AV

For 802.11n20 mode: (CH149 5745MHz&CH165 5825MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	68.38	8.69	29.4	42.59	63.88	74	-10.12	Pk
Horizontal	5850	63.55	9.37	30.41	43.25	60.08	74	-13.92	Pk

Vertical	5725	69.44	9.21	29.4	42.59	65.46	74	-8.54	Pk
Vertical	5850	61.85	9.12	30.41	43.25	58.13	74	-15.87	Pk
Horizontal	5725	48.20	8.69	29.4	42.59	43.70	54	-10.30	AV
Horizontal	5850	50.04	8.46	30.41	43.25	45.66	54	-8.34	AV
Vertical	5725	49.59	9.21	29.4	42.59	45.61	54	-8.39	AV
Vertical	5850	50.40	9.12	30.41	43.25	46.68	54	-7.32	AV

For 802.11n40 mode: (CH151 5755MHz&CH159 5795MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	68.47	8.69	29.4	42.59	63.97	74	-10.03	Pk
Horizontal	5850	63.64	9.37	30.41	43.25	60.17	74	-13.83	Pk
Vertical	5725	70.31	9.21	29.4	42.59	66.33	74	-7.67	Pk
Vertical	5850	59.46	9.12	30.41	43.25	55.74	74	-18.26	Pk
Horizontal	5725	47.10	8.69	29.4	42.59	42.60	54	-11.40	AV
Horizontal	5850	51.45	8.46	30.41	43.25	47.07	54	-6.93	AV
Vertical	5725	49.23	9.21	29.4	42.59	45.25	54	-8.75	AV
Vertical	5850	50.46	9.12	30.41	43.25	46.74	54	-7.26	AV

For 802.11ac20 mode: (CH149 5745MHz&CH165 825MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	67.30	8.69	29.4	42.59	62.80	74	-11.20	Pk
Horizontal	5850	62.53	9.37	30.41	43.25	59.06	74	-14.94	Pk
Vertical	5725	68.76	9.21	29.4	42.59	64.78	74	-9.22	Pk
Vertical	5850	59.98	9.12	30.41	43.25	56.26	74	-17.74	Pk
Horizontal	5725	46.52	8.69	29.4	42.59	42.02	54	-11.98	AV
Horizontal	5850	49.69	8.46	30.41	43.25	45.31	54	-8.69	AV
Vertical	5725	50.34	9.21	29.4	42.59	46.36	54	-7.64	AV
Vertical	5850	52.53	9.12	30.41	43.25	48.81	54	-5.19	AV

For 802.11ac40 mode: (CH151 5755MHz&CH159 795MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	67.97	8.69	29.4	42.59	63.47	74	-10.53	Pk
Horizontal	5850	65.36	9.37	30.41	43.25	61.89	74	-12.11	Pk
Vertical	5725	69.06	9.21	29.4	42.59	65.08	74	-8.92	Pk
Vertical	5850	60.94	9.12	30.41	43.25	57.22	74	-16.78	Pk
Horizontal	5725	47.98	8.69	29.4	42.59	43.48	54	-10.52	AV
Horizontal	5850	49.97	8.46	30.41	43.25	45.59	54	-8.41	AV
Vertical	5725	49.60	9.21	29.4	42.59	45.62	54	-8.38	AV
Vertical	5850	51.55	9.12	30.41	43.25	47.83	54	-6.17	AV

For 802.11ac80 mode: (CH155 5775MHz)

Polarization	Frequency	Read Lavel	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Over Limit	Detector Type
	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Horizontal	5725	68.54	8.69	29.4	42.59	64.04	74	-9.96	Pk
Horizontal	5850	64.81	9.37	30.41	43.25	61.34	74	-12.66	Pk
Vertical	5725	69.59	9.21	29.4	42.59	65.61	74	-8.39	Pk
Vertical	5850	60.43	9.12	30.41	43.25	56.71	74	-17.29	Pk
Horizontal	5725	47.66	8.69	29.4	42.59	43.16	54	-10.84	AV
Horizontal	5850	47.00	8.46	30.41	43.25	42.62	54	-11.38	AV
Vertical	5725	48.55	9.21	29.4	42.59	44.57	54	-9.43	AV
Vertical	5850	46.32	9.12	30.41	43.25	42.60	54	-11.40	AV

5.POWER SPECTRAL DENSITY

5.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407(3)

Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.2 TEST PROCEDURE

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP

5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

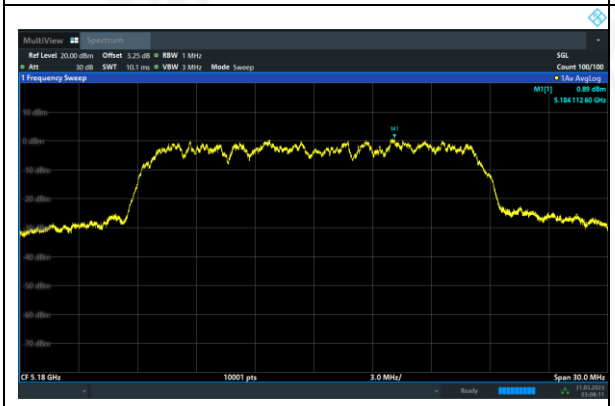
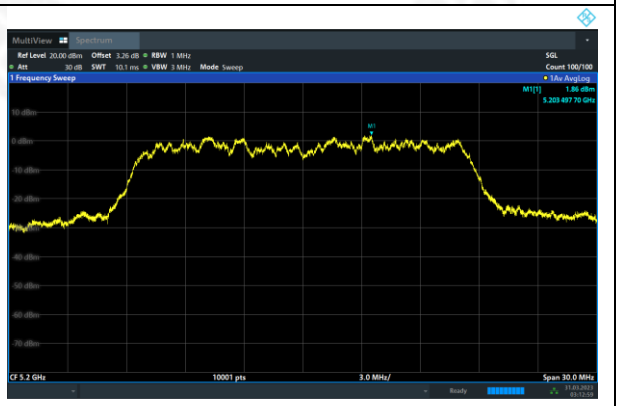
5.6 TEST RESULTS

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII -1 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
a	5180	Ant1	0.89	0	0.89	11	Pass
a	5200	Ant1	1.86	0.35	2.21	11	Pass
a	5240	Ant1	3.32	0.35	3.67	11	Pass
n20	5180	Ant1	0.29	0.28	0.57	11	Pass
n20	5200	Ant1	0.94	0.26	1.2	11	Pass
n20	5240	Ant1	2.08	0.1	2.18	11	Pass
n40	5190	Ant1	-4.99	0.79	-4.2	11	Pass
n40	5230	Ant1	-5.98	0.64	-5.34	11	Pass
ac20	5180	Ant1	1.14	0.14	1.28	11	Pass
ac20	5200	Ant1	1.35	0.2	1.55	11	Pass
ac20	5240	Ant1	3.12	0.32	3.44	11	Pass
ac40	5190	Ant1	-5.43	0.51	-4.92	11	Pass
ac40	5230	Ant1	-4.53	0.64	-3.89	11	Pass
ac80	5210	Ant1	-7.18	0.17	-7.01	11	Pass

Test plots

For U-NII-1

11a CH36	11a CH44
	
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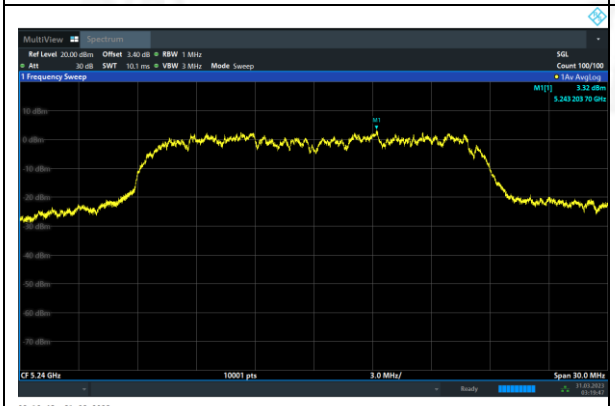	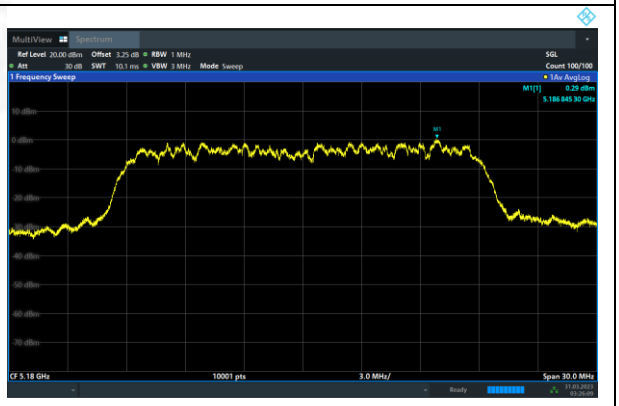
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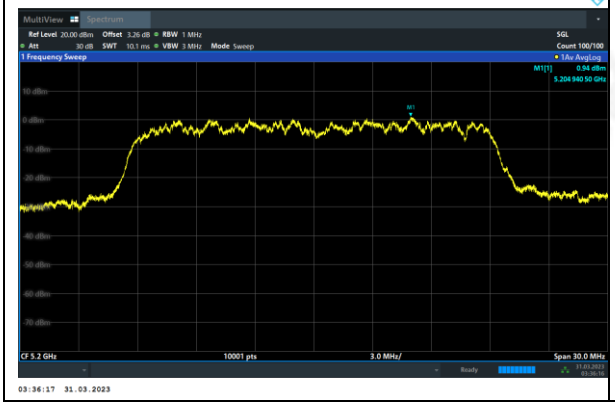
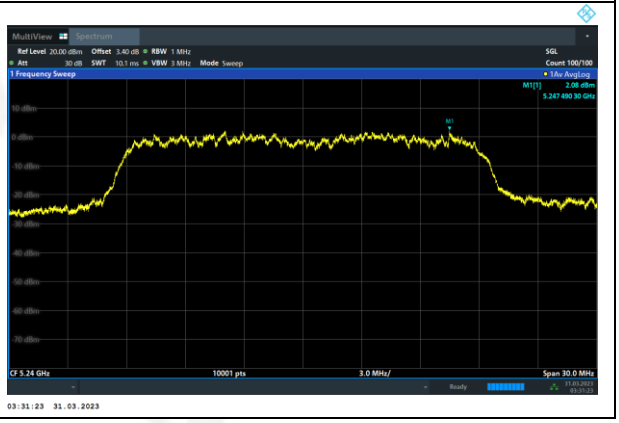
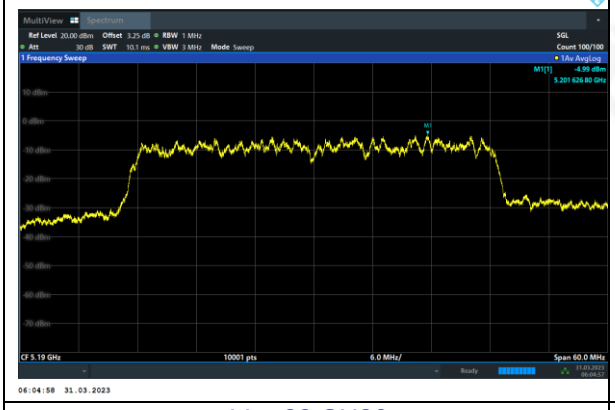
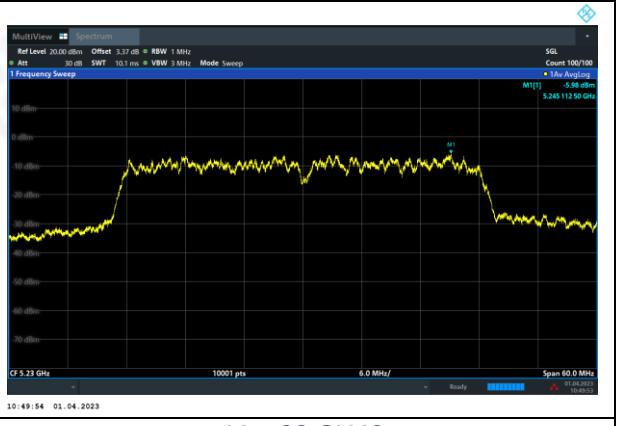
	

11n40 CH38	11n40 CH46
	
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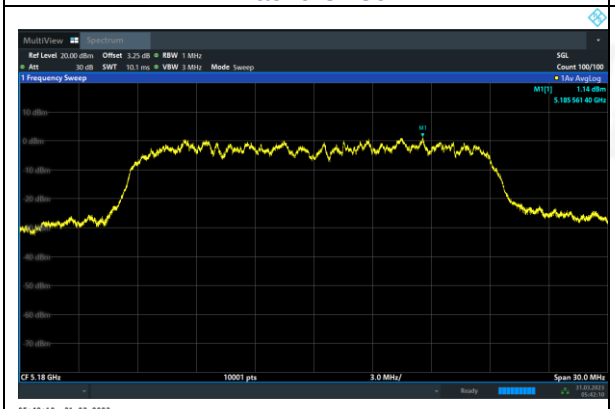	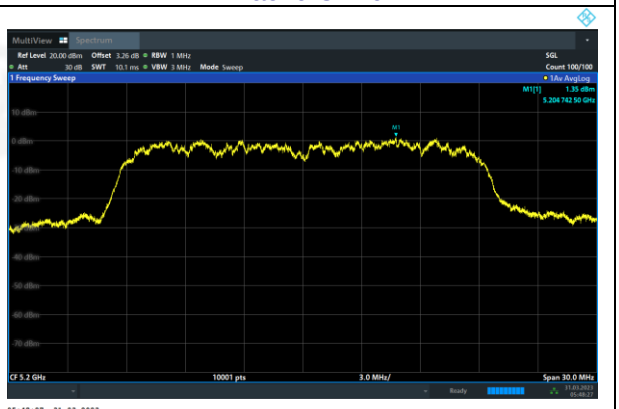
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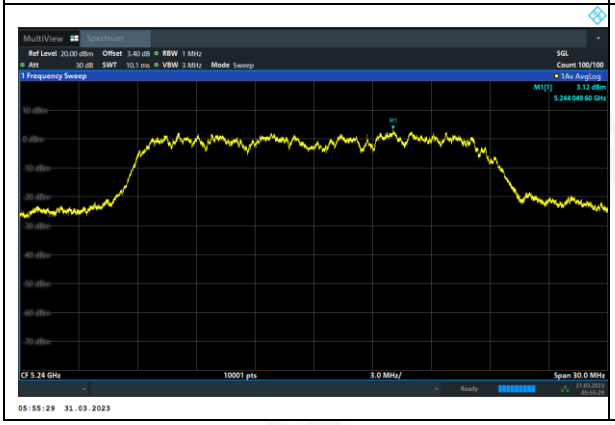
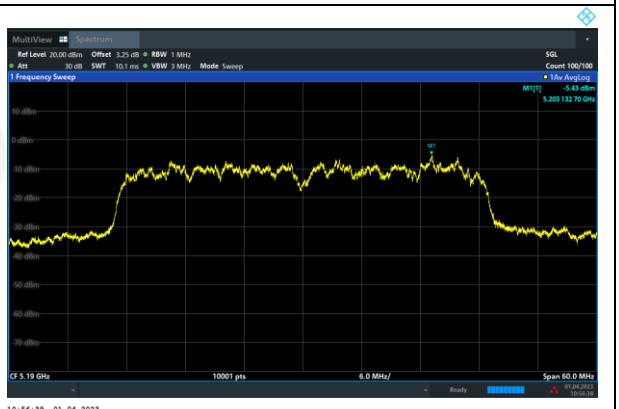
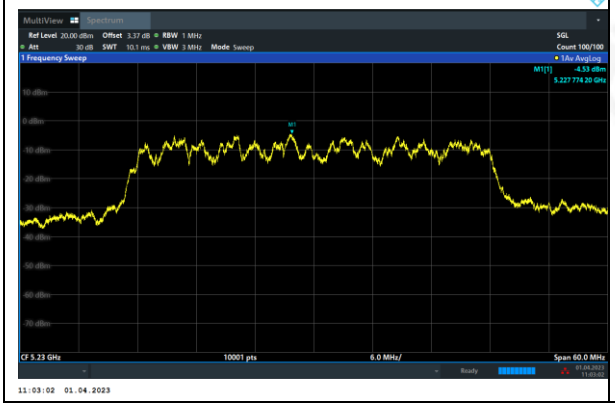
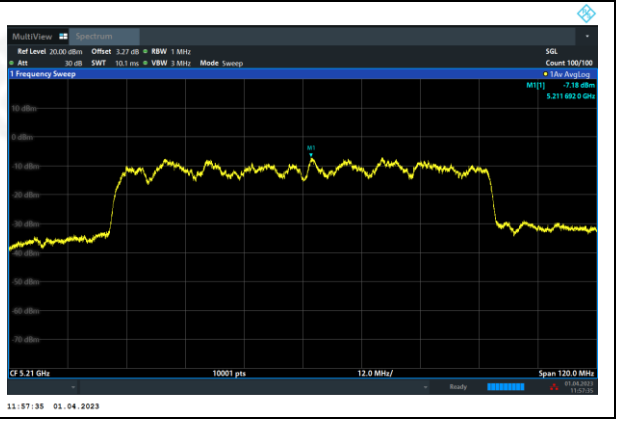
	

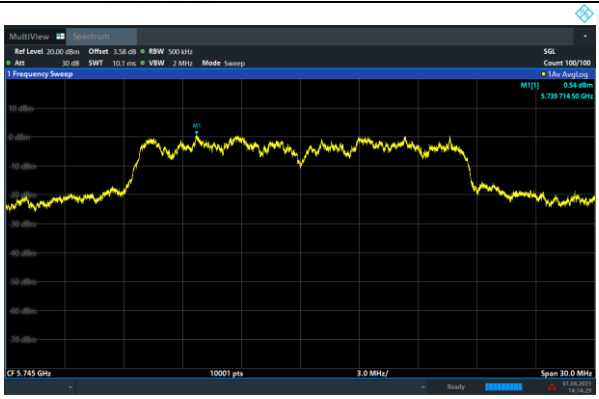
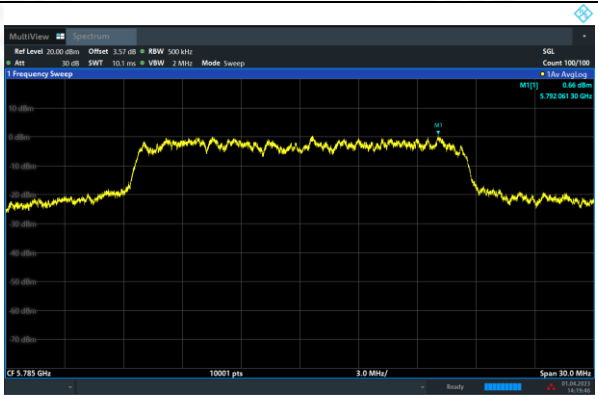
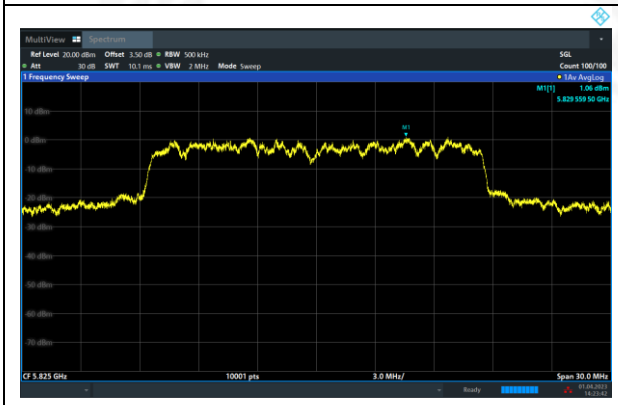
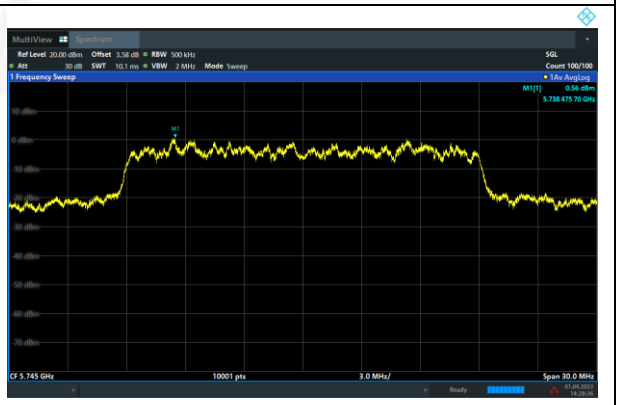
11ac40 CH46	11ac80 CH42
	

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
a	5745	Ant1	0.54	0.28	0.82	30	Pass
a	5785	Ant1	0.66	0.35	1.01	30	Pass
a	5825	Ant1	1.06	0.26	1.32	30	Pass
n20	5745	Ant1	0.56	0.33	0.89	30	Pass
n20	5785	Ant1	-0.21	0.37	0.16	30	Pass
n20	5825	Ant1	0.94	0.26	1.2	30	Pass
n40	5755	Ant1	-5.95	0.75	-5.2	30	Pass
n40	5795	Ant1	-4.41	0.43	-3.98	30	Pass
ac20	5745	Ant1	-0.09	0.18	0.09	30	Pass
ac20	5785	Ant1	0.5	0.3	0.8	30	Pass
ac20	5825	Ant1	0.56	0	0.56	30	Pass
ac40	5755	Ant1	-4.98	0.43	-4.55	30	Pass
ac40	5795	Ant1	-3.54	0.64	-2.9	30	Pass
ac80	5775	Ant1	-4.6	0.35	-4.25	30	Pass

Test plots

For U-NII-3

11a CH149	11a CH157
	
11a CH165	11n20 CH149
	
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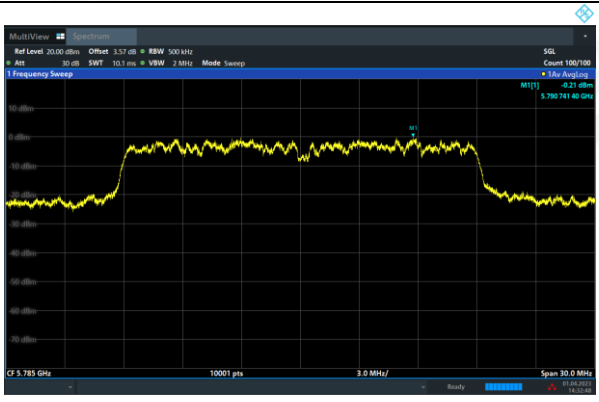
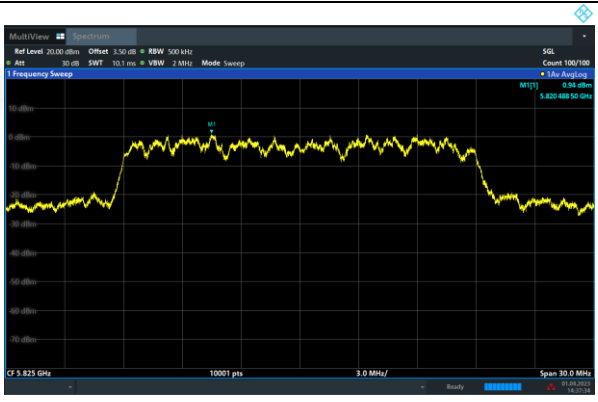
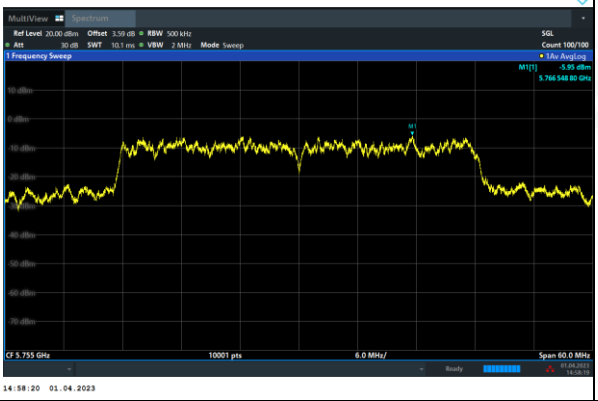
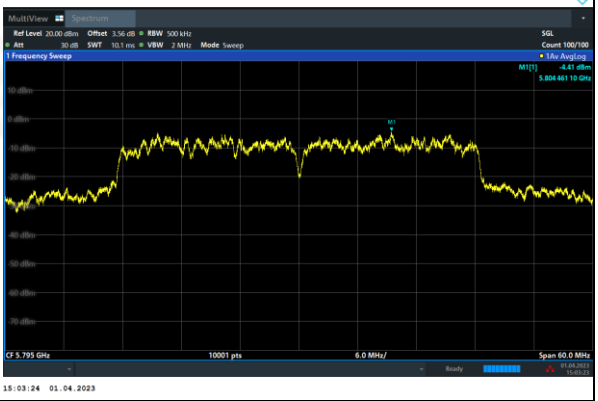
	

11n40 CH151	11n40 CH159
	
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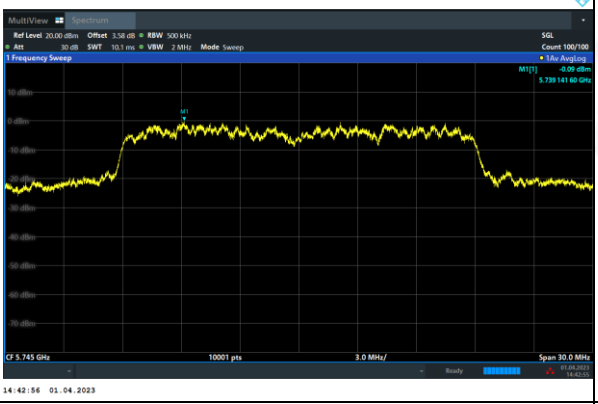	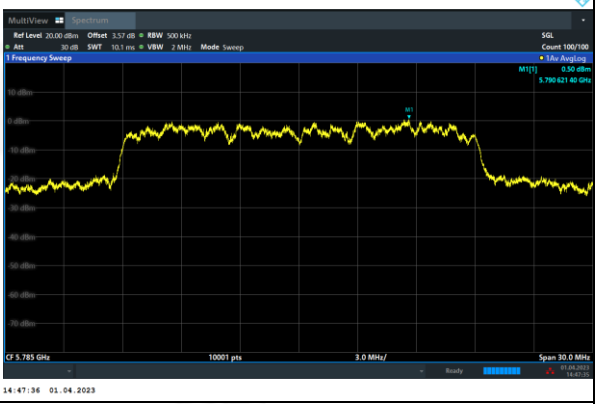
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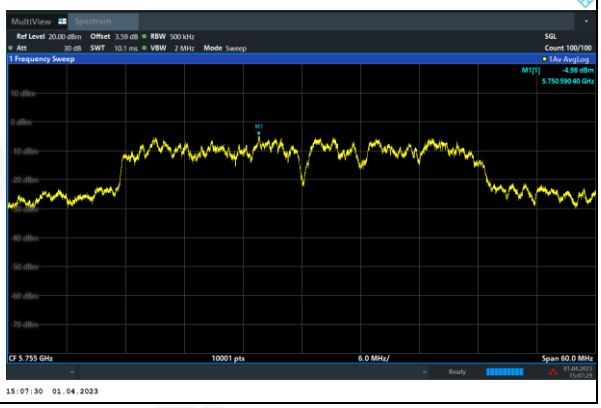
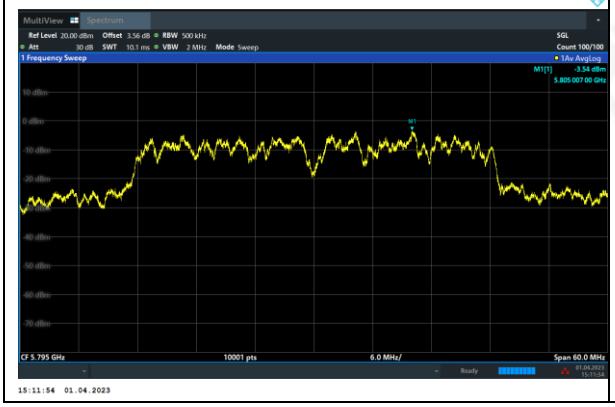
	

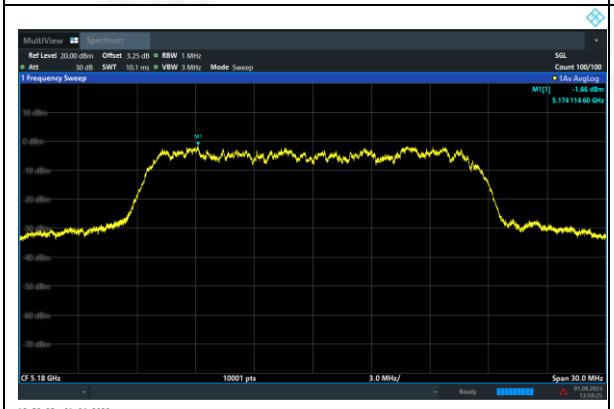
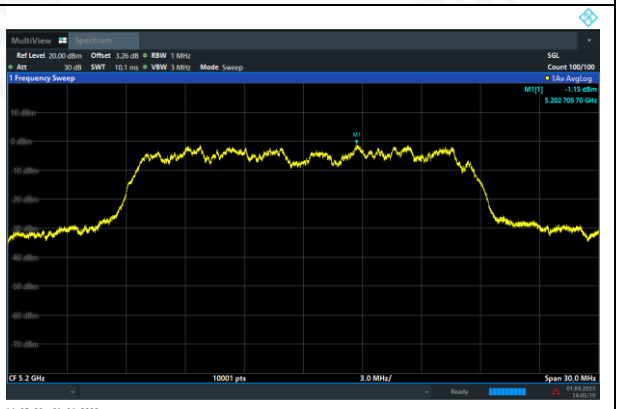
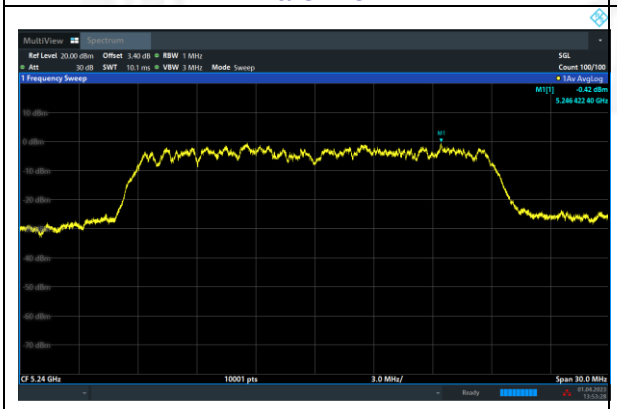
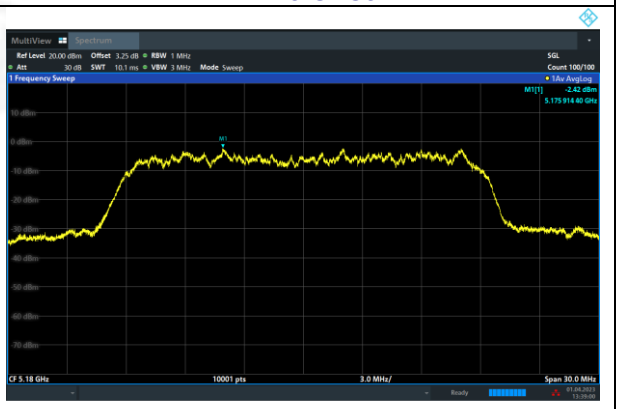
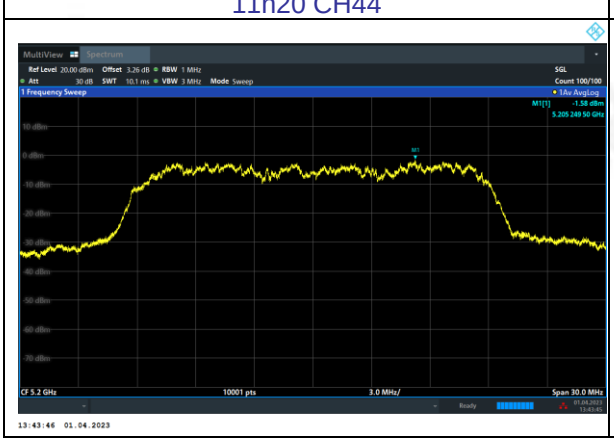
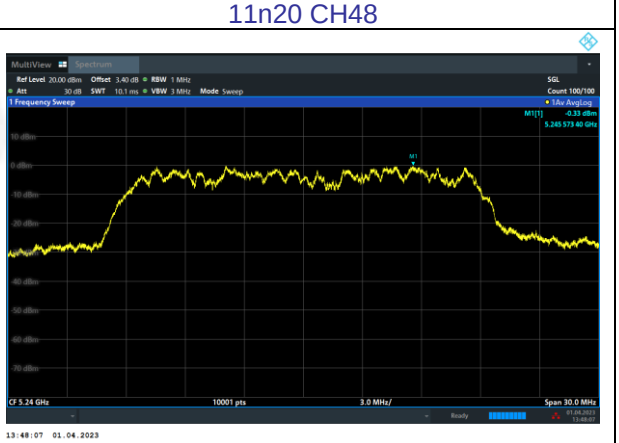
11ac40 CH159	11ac80 CH155
	

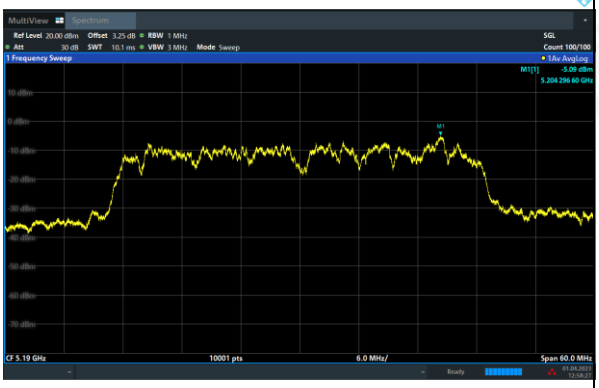
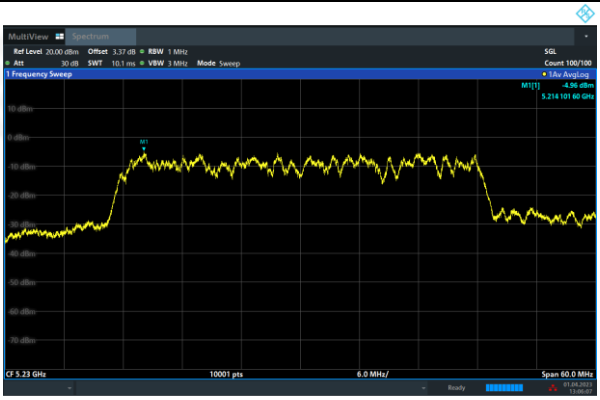
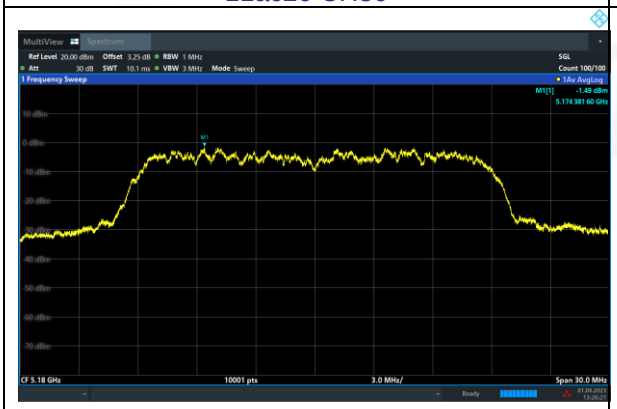
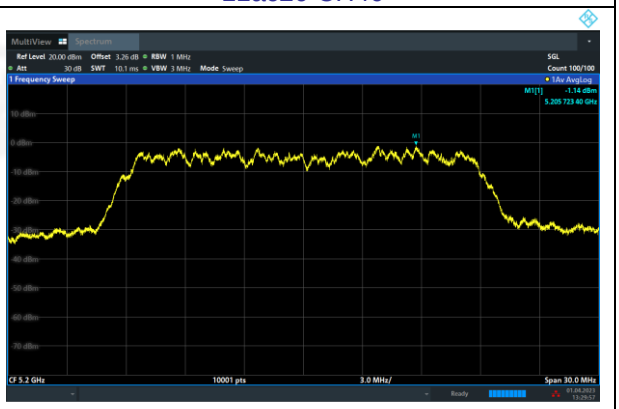
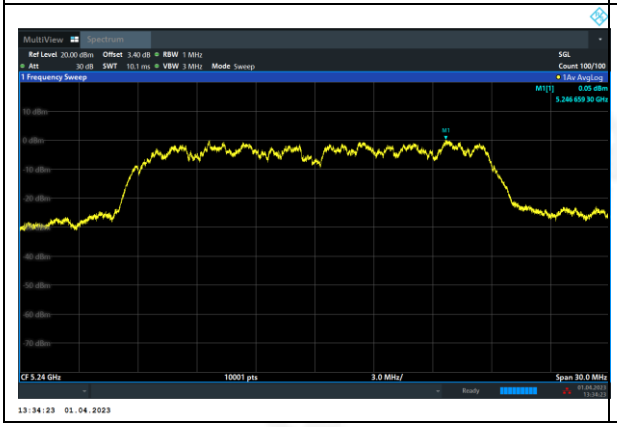
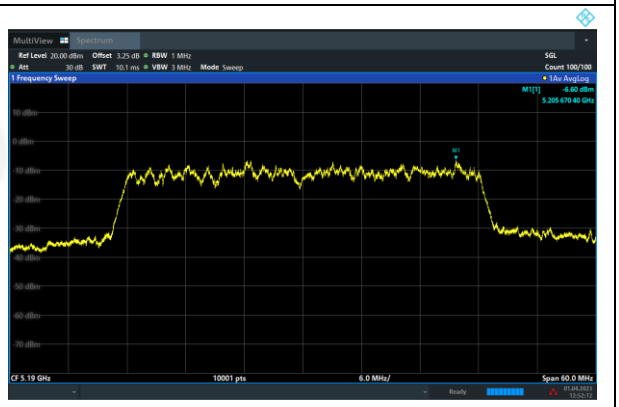
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 2 U-NII -1 802.11a/n20/n40/ac20/ac40/ac80		

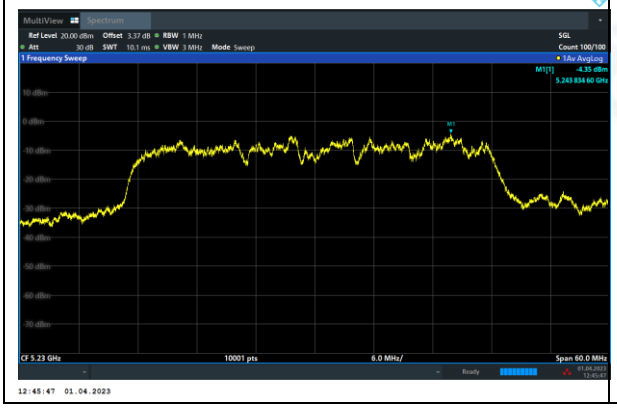
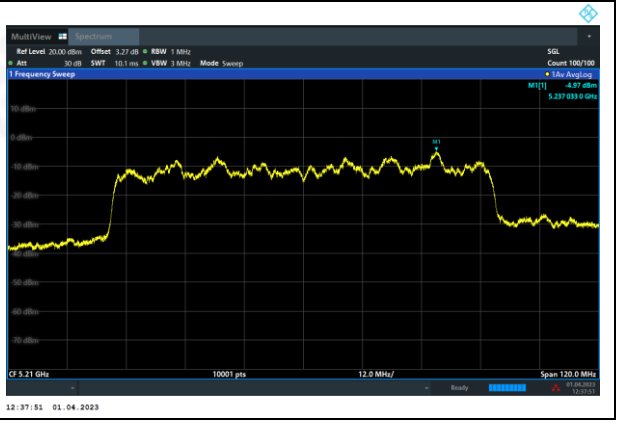
Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
a	5180	Ant2	-1.66	0.29	-1.37	11	Pass
a	5200	Ant2	-1.15	0.31	-0.84	11	Pass
a	5240	Ant2	-0.42	0	-0.42	11	Pass
n20	5180	Ant2	-2.42	0.36	-2.06	11	Pass
n20	5200	Ant2	-1.58	0.3	-1.28	11	Pass
n20	5240	Ant2	-0.33	0.33	0	11	Pass
n40	5190	Ant2	-5.09	0.75	-4.34	11	Pass
n40	5230	Ant2	-4.96	0.35	-4.61	11	Pass
ac20	5180	Ant2	-1.49	0	-1.49	11	Pass
ac20	5200	Ant2	-1.14	0.33	-0.81	11	Pass
ac20	5240	Ant2	0.05	0.26	0.31	11	Pass
ac40	5190	Ant2	-6.6	0.75	-5.85	11	Pass
ac40	5230	Ant2	-4.35	0.35	-4	11	Pass
ac80	5210	Ant2	-4.97	0.36	-4.61	11	Pass

Test plots

For U-NII-1

11a CH36	11a CH44
	
11a CH48	11n20 CH36
	
11n20 CH44	11n20 CH48
	

11n40 CH38	11n40 CH46
	
11ac20 CH36	11ac20 CH40
	
11ac20 CH48	11ac40 CH38
	

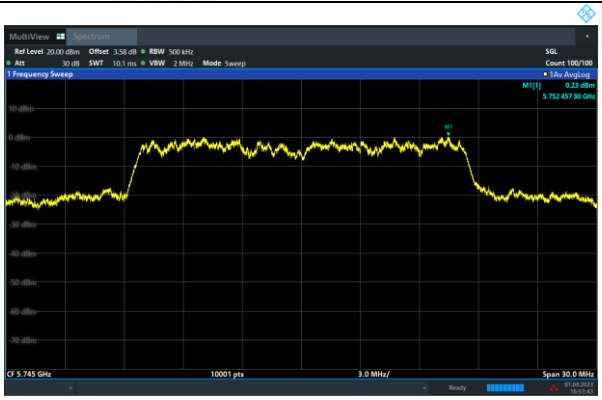
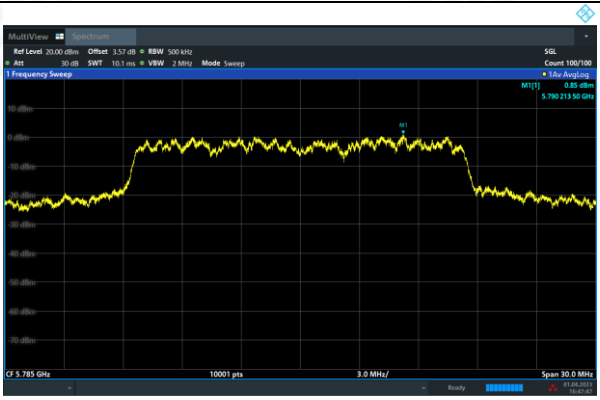
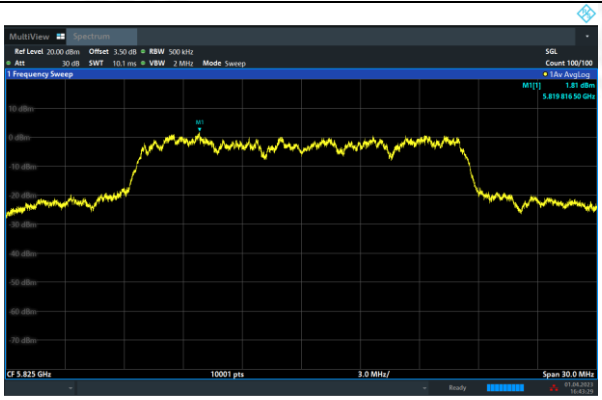
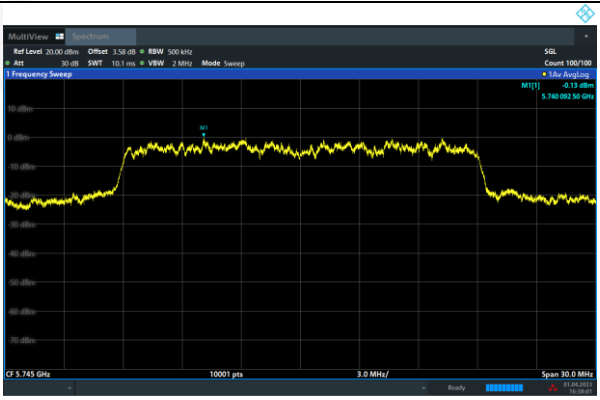
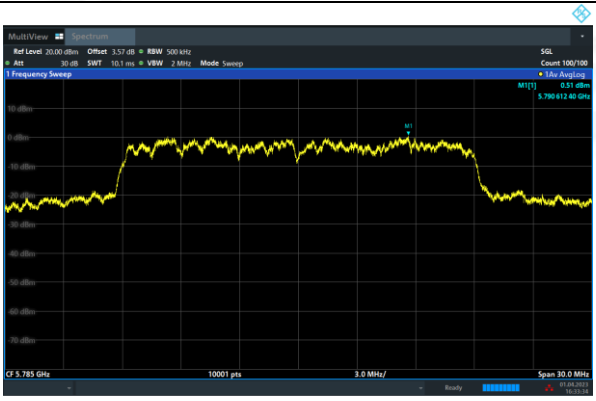
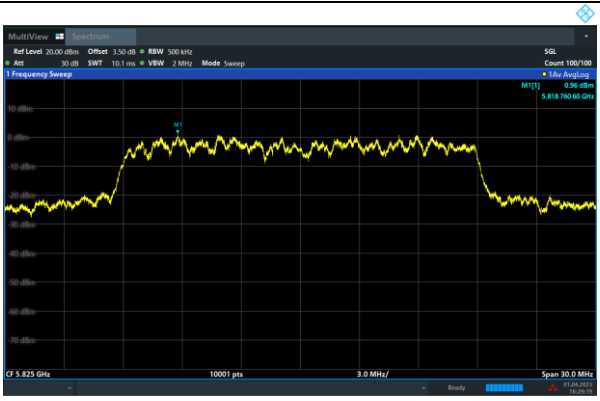
11ac40 CH46	11ac80 CH42
	

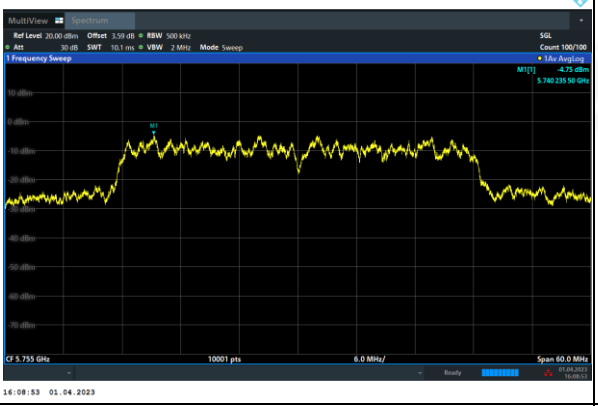
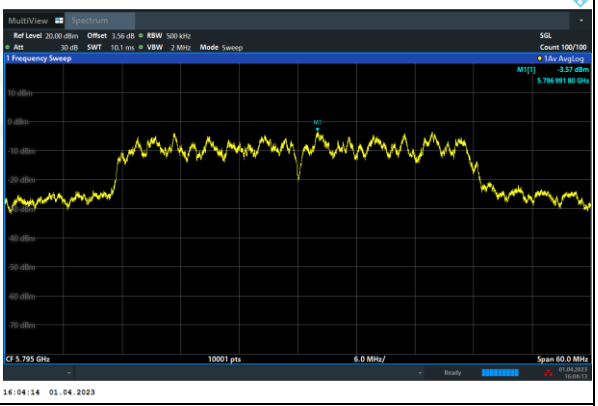
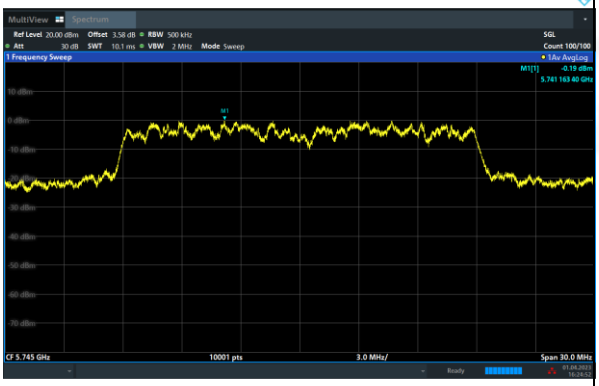
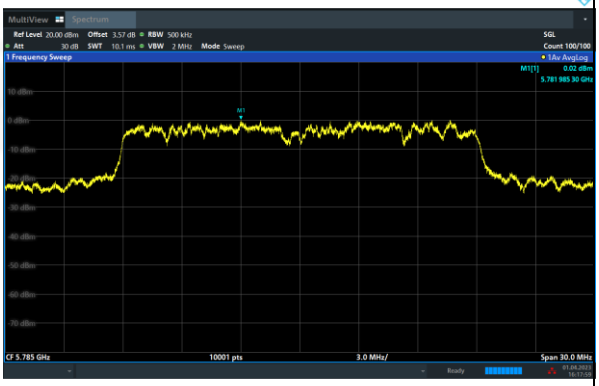
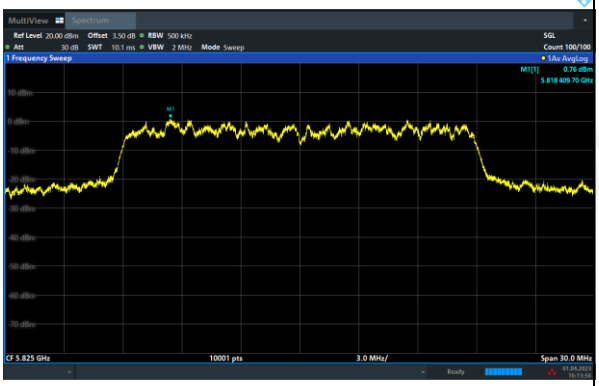
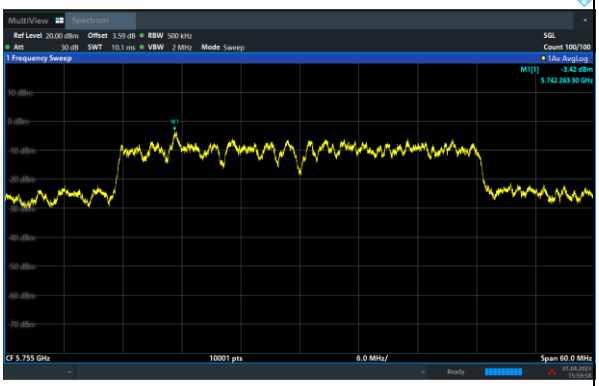
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1015 hPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 2 U-NII-3 802.11a/n20/n40/ac20/ac40/ac80		

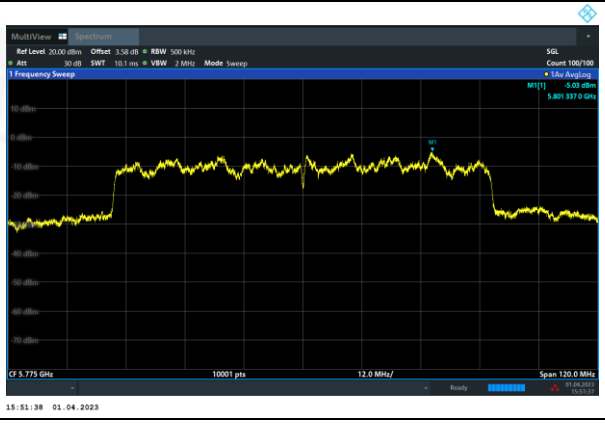
Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
a	5745	Ant2	0.23	0.09	0.32	30	Pass
a	5785	Ant2	0.85	0.18	1.03	30	Pass
a	5825	Ant2	1.81	0.31	2.12	30	Pass
n20	5745	Ant2	-0.13	0.14	0.01	30	Pass
n20	5785	Ant2	0.51	0.24	0.75	30	Pass
n20	5825	Ant2	0.96	0.31	1.27	30	Pass
n40	5755	Ant2	-4.75	0.63	-4.12	30	Pass
n40	5795	Ant2	-3.57	0.68	-2.89	30	Pass
ac20	5745	Ant2	-0.19	0.14	-0.05	30	Pass
ac20	5785	Ant2	0.02	0.37	0.39	30	Pass
ac20	5825	Ant2	0.76	0.14	0.9	30	Pass
ac40	5755	Ant2	-3.42	0.35	-3.07	30	Pass
ac40	5795	Ant2	-3.5	0.71	-2.79	30	Pass
ac80	5775	Ant2	-5.03	0.22	-4.81	30	Pass

Test plots

For U-NII-3

11a CH149	11a CH157
	
11a CH165	11n20 CH149
	
11n20 CH157	11n20 CH165
	

11n40 CH151	11n40 CH159
	
11ac20 CH149	11ac20 CH157
	
11ac20 CH165	11ac40 CH151
	

11ac40 CH159	11ac80 CH155
	

6. 26DB AND 99% EMISSION BANDWIDTH

6.1 APPLIED PROCEDURES / LIMIT

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

6.2 TEST PROCEDURE

26dB Emission bandwidth

Set RBW = approximately 1% of the emission bandwidth.

Set VBW ≥ 3*RBW

Detector = Peak.

Trace mode = Max hold.

Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

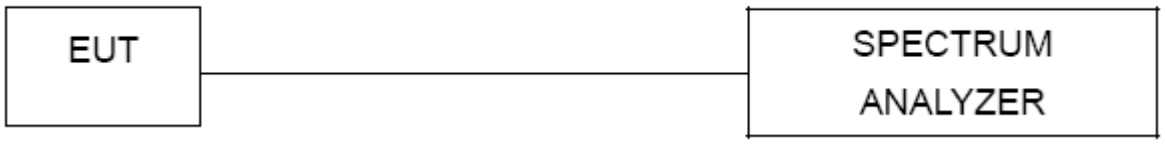
Set Span = 1.5 times to 5.0 times the OBW

Set RBW = 1% to 5% of the OBW.

Set VBW ≥ 3*RBW, Detector = Peak.

Trace mode = Max hold.

Use the 99% power bandwidth function of the instrument.



6.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

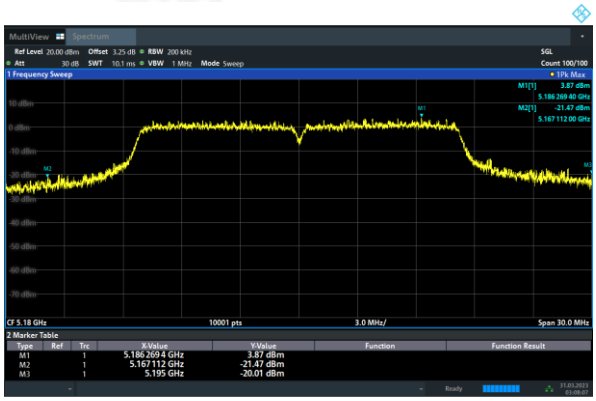
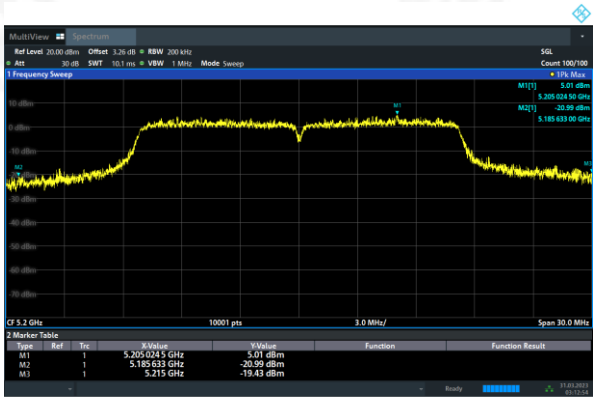
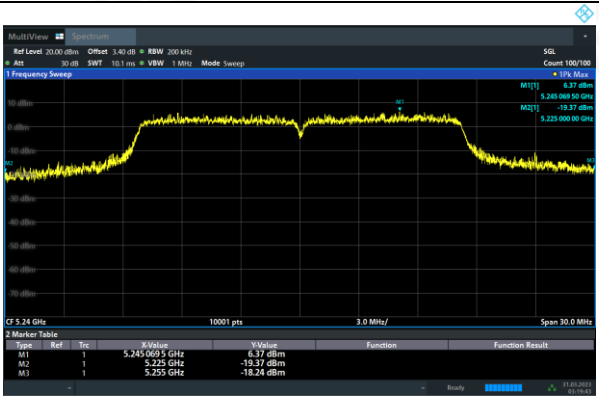
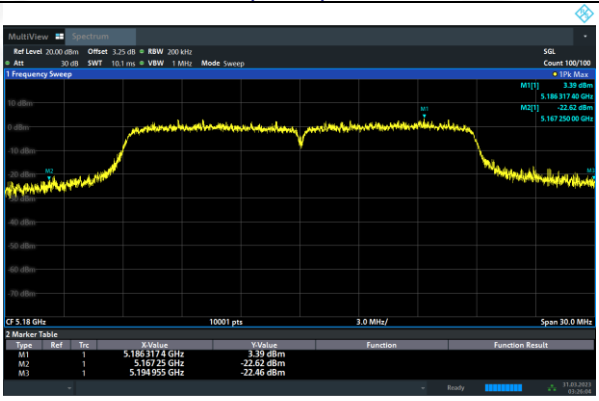
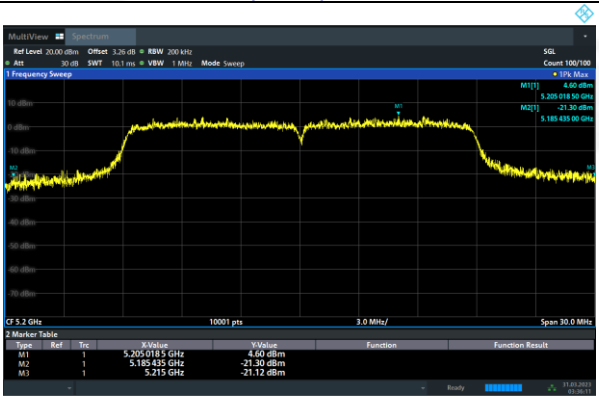
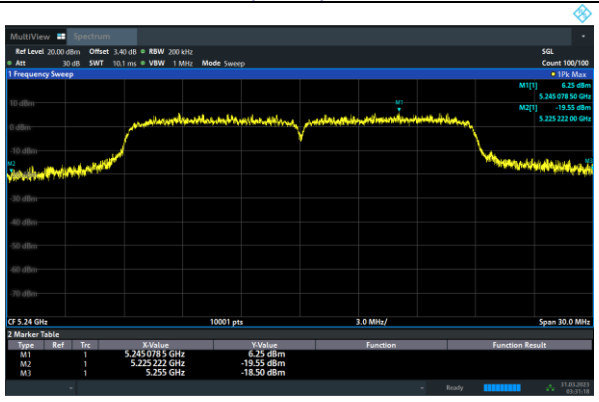
6.4 TEST RESULTS

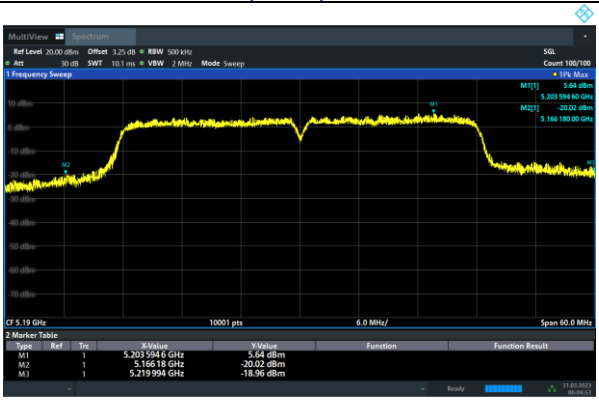
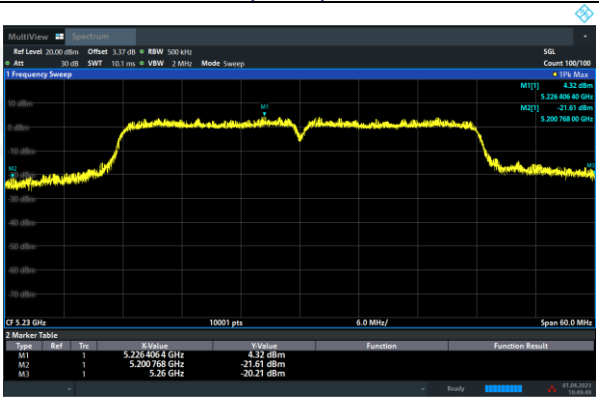
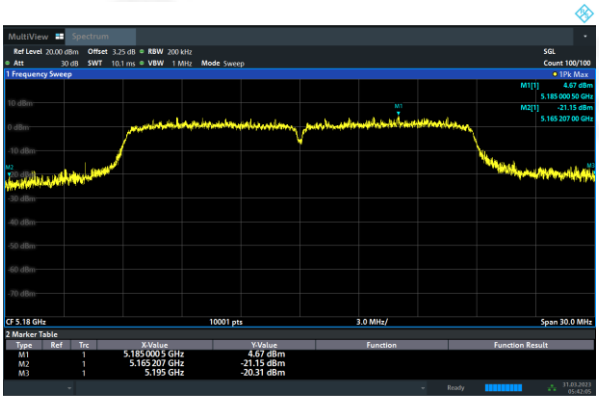
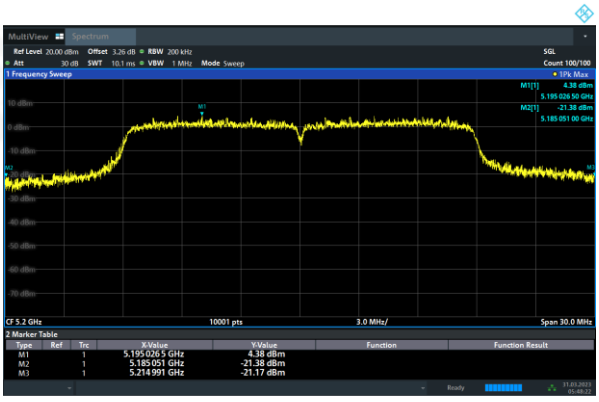
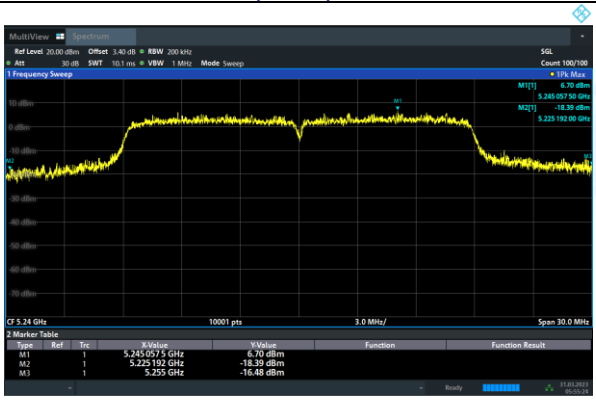
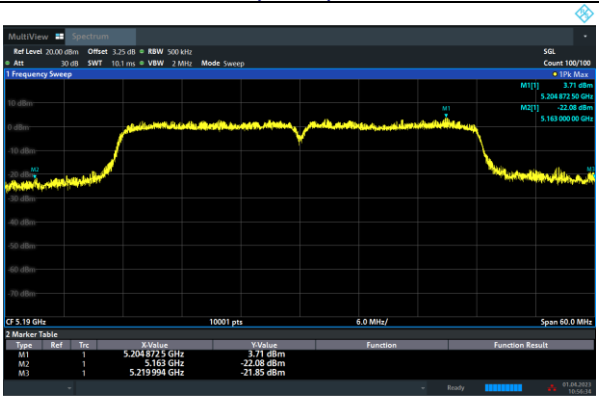
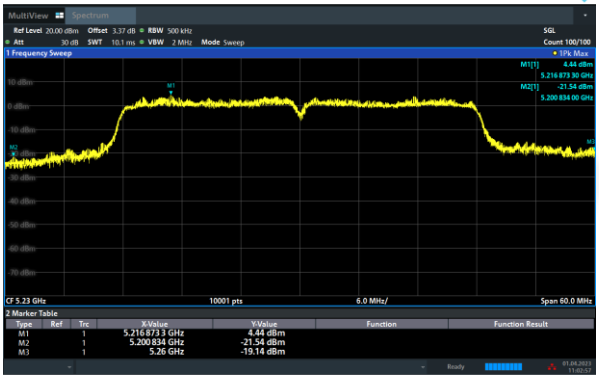
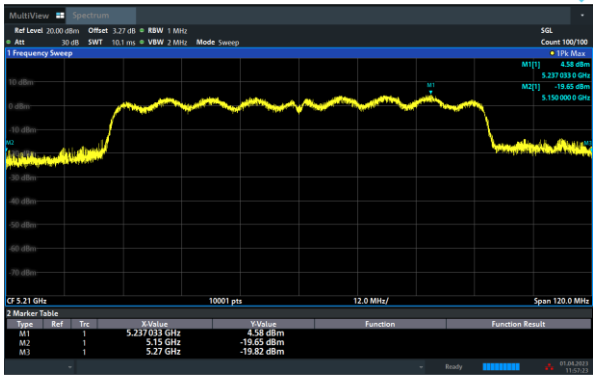
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
a	5180	Ant1	27.888	/	Pass
a	5200	Ant1	29.367	/	Pass
a	5240	Ant1	30	/	Pass
n20	5180	Ant1	27.705	/	Pass
n20	5200	Ant1	29.565	/	Pass
n20	5240	Ant1	29.778	/	Pass
n40	5190	Ant1	53.814	/	Pass
n40	5230	Ant1	59.232	/	Pass
ac20	5180	Ant1	29.793	/	Pass
ac20	5200	Ant1	29.94	/	Pass
ac20	5240	Ant1	29.808	/	Pass
ac40	5190	Ant1	56.994	/	Pass
ac40	5230	Ant1	59.166	/	Pass
ac80	5210	Ant1	120	/	Pass

Test plot:

For U-NII-1

11a CH36	11a CH40
	
11a CH48	11n (HT20) CH36
	
11n (HT20) CH40	11n (HT20) CH48
	

11n (HT40) CH38	11n (HT40) CH46
	
11ac (HT20) CH36	11ac (HT20) CH40
	
11ac (HT20) CH48	11ac (HT40) CH38
	
11ac (HT40) CH46	11ac (HT80) CH42
	

Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	DC 5V from adapter AC 120V/60Hz
Test Mode ：	ANT 1 U-NII-1 802.11a/n20/n40/ac20/ac40/ac80		

Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
a	5180	Ant1	16.871
a	5200	Ant1	17.048
a	5240	Ant1	17.715
n20	5180	Ant1	17.884
n20	5200	Ant1	17.951
n20	5240	Ant1	18.276
n40	5190	Ant1	36.56
n40	5230	Ant1	36.821
ac20	5180	Ant1	17.987
ac20	5200	Ant1	17.908
ac20	5240	Ant1	18.478
ac40	5190	Ant1	36.556
ac40	5230	Ant1	36.74
ac80	5210	Ant1	76.044