FCC TEST REPORT
FCC ID:2AL6KBL-M8852BS2

Report Number.....:	**ZKT-2310248076E-3**
Date of Test.....	Oct. 24, 2023 to Dec. 15, 2023
Date of issue.....:	Dec. 15, 2023
Total number of pages.....	139
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 Bilian Electronic Co.,Ltd.**
Address .....:	Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City
Manufacturer's name .....:	**Shenzhen Bilian Electronic Co.,Ltd.**
Address .....:	Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City
Test specification:	
Standard.....:	FCC CFR Title 47 Part 15 Subpart E Section 15.407 ANSI C63.10:2013 KDB 789033 D02 v02r01 662911 D01 Multiple Transmitter Output v02r01
Test procedure.....:	/
Non-standard test method .....:	N/A
Test Report Form No.....:	/
Test Report Form(s) Originator.....:	ZKT Testing
Master TRF .....:	Dated: 2020-01-06

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.....:	**802.11a/b/g/n/ac/ax 1200Mbps WLAN + Bluetooth v5.2 Combo SDIO Module**
Trademark .....:	N/A
Model/Type reference.....:	BL-M8852BS2
Ratings.....:	Input: 3.3V⎓1A

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

TABLE OF CONTENT

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
ZKT-2310248076E-3	Dec. 15, 2023	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Test Item	Test Requirement	Test method	Result
AC Power Line Conducted Emission	47 CFR Part 15 Subpart E Section 15.407 (b)(6)	ANSI C63.10-2013	PASS
Radiated Spurious emissions	47 CFR Part 15 Subpart E Section 15.205/15.407(b)	KDB789033	PASS
Band edge	47 CFR Part 15 Subpart E Section 15.205/15.407(b)	KDB789033	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart E Section 15.407 (a)	KDB789033	PASS
Emission Bandwidth & Occupied Bandwidth	47 CFR Part 15 Subpart E Section 15.407 (a)(e)	KDB789033	PASS
Power Spectral Density	47 CFR Part 15 Subpart E Section 15.407 (a)	KDB789033	PASS
Frequency stability	47 CFR Part 15 Subpart E Section 15.407 (g)	KDB789033	PASS
Operation in the absence of information to the transmit	47 CFR Part 15 Subpart E Section 15.407 (b)	47 CFR Part 15 Subpart E	PASS
Antenna Requirement	47 CFR Part 15 Subpart E Section 15.203	/	PASS

Remark:
Test according to ANSI C63.10-2013.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Item	Uncertainty
Occupancy bandwidth	U=±54.3Hz
Adjacent channel power	U=±1.3dB
Conducted Adjacent channel power	U=±1.38dB
Conducted output power Above 1G	U=±1.0dB
Conducted output power below 1G	U=±0.9dB
Power Spectral Density , Conduction	U=±1.0dB
Conduction spurious emissions	U=±2.8dB
Out of band emission	U=±54Hz
3m camber Radiated spurious emission(9KHz-30MHz)	U=±4.8dB
3m camber Radiated spurious emission(30MHz-1GHz)	U=±4.3dB
3m chamber Radiated spurious emission(1GHz-18GHz)	U=±4.5dB
3m chamber Radiated spurious emission(18GHz-40GHz)	U=±3.4dB
humidity uncertainty	U=±5.3%
Temperature uncertainty	U=±0.59℃
Supply voltages	U=±3%
Time	U=±5%
Conducted emission(150K-30MHz)	3.2dB

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	BL-M8852BS2
Model Description:	N/A
Wi-Fi Specification:	IEEE 802.11a/n/ac/ax
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	IEEE 802.11a/n/ac(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac/ax(80M): 5150MHz ~5250MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5250MHz ~5350 MHz/ 4 channel IEEE802.11n/ac(40M): 5250MHz ~5350 MHz/ 2 channel IEEE802.11ac/ax(80M): 5250MHz ~5350 MHz/ 1 channel IEEE 802.11a/n/ac(20M): 5470MHz ~5725 MHz/ 11 channel IEEE802.11n/ac(40M): 5470MHz ~5725 MHz/ 5 channel IEEE802.11ac/ax(80M): 5470MHz ~5725 MHz/ 2 channel IEEE 802.11a/n/ac(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac/ax(80M): 5725MHz ~5850MHz/ channel
Max. RF output power:	WiFi (5G): 17.838dBm
Type of Modulation:	WiFi (5G):, OFDM/OFDMA, DSSS, OFDM, CCK
Antenna installation:	WiFi (5G): 802.11a: External Antenna 1: 2.0dBi 802.11a: External Antenna 2: 2.0dBi
Antenna Gain:	The 5G WIFI , 802.11n20, 802.11n40, 802.11n80, 802.11ax80 can MIMO model, then the antenna gain as below: Directional gain=2.0dBi+10×log(1+1)dB=5.01dBi
Ratings:	Input: 3.3V ⎓ 1A

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	802.11a/b/g/n/ac/ax 1200Mbps WLAN + Bluetooth v5.2 Combo SDIO Module	N/A	BL-M8852BS2	See page 8	EUT
A-2	PC	N/A	ZKT-2	N/A	Ancillary

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

For 802.11a/n/ac/ax(20M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz
For 802.11a/n/ac/ax(20M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
52	5260MHz	60	5300MHz
56	5280MHz	64	5320MHz
For 802.11a/n/ac/ax(20M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
100	5500MHz	124	5620 MHz
104	5520MHz	128	5640 MHz
108	5540MHz	132	5660 MHz
112	5560MHz	136	5680MHz
116	5580MHz	140	5700MHz
120	5600 MHz		
For 802.11a/n/ac/ax(20M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz	NA	NA

For 802.11n/ac/ax(40M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz
For 802.11n/ac/ax(40M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
54	5270MHz	62	5310MHz
For 802.11n/ac/ax(40M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
102	5510MHz	126	5630MHz
110	5550MHz	134	5670MHz
118	5590MHz		
For 802.11n/ac/ax(40M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

For 802.11ac/ax(80M) Operation in the 5150MHz ~5250 MHz band			
Channel	Frequency	Channel	Frequency
42	5210MHz	NA	NA
For 802.11ac/ax(80M) Operation in the 5250MHz ~5350 MHz band			
Channel	Frequency	Channel	Frequency
58	5290MHz	NA	NA
For 802.11ac/ax(80M) Operation in the 5470MHz ~5725 MHz band			
Channel	Frequency	Channel	Frequency
106	5530MHz	122	5610 MHz
For 802.11ac/ax(80M) Operation in the 5725MHz ~5850 MHz band			
Channel	Frequency	NA	NA
155	5775MHz	NA	NA

Test mode	rate
802.11a	54M
802.11n	500M
802.11/ac/ax	500M

4.5 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac/ax(20M)	5150MHz ~5250 MHz	Channel 36	Channel 40	Channel 48
		5180MHz	5200MHz	5240MHz
802.11n/ac/ax(40M)		Channel 38	N/A	Channel 46
		5190MHz	N/A	5230MHz
802.11ac/ax(80M)		N/A	Channel 42	N/A
		N/A	5210MHz	N/A
802.11a/n/ac/ax(20M)	5250MHz ~5350 MHz	Channel 52	Channel 56	Channel 64
		5260MHz	5280MHz	5320MHz
802.11n/ac/ax(40M)		Channel 54	N/A	Channel 62
		5270MHz	N/A	5310MHz
802.11ac/ax(80M)		N/A	Channel 58	N/A
		N/A	5290MHz	N/A
802.11a/n/ac/ax(20M)	5470MHz ~5725 MHz	Channel 100	Channel 116	Channel 140
		5500MHz	5580MHz	5700MHz
802.11n/ac/ax(40M)		Channel 102	N/A	Channel 134
		5510MHz	N/A	5670MHz
802.11ac/ax(80M)		Channel 106	N/A	Channel 122
		5530MHz	N/A	5610MHz
802.11a/n/ac/ax(20M)	5725MHz ~5850 MHz	Channel 149	Channel 157	Channel 165
		5745MHz	5785MHz	5825MHz
802.11n/ac/ax(40M)		Channel 151	N/A	Channel 159
		5755MHz	N/A	5795MHz
802.11ac/ax(80M)		N/A	Channel 155	N/A
		N/A	5775MHz	N/A

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	3.3V
Normal Temperature(℃):NT	23
Low Temperature(℃):LT	0
High Temperature(℃):HT	40

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1

Conducted emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

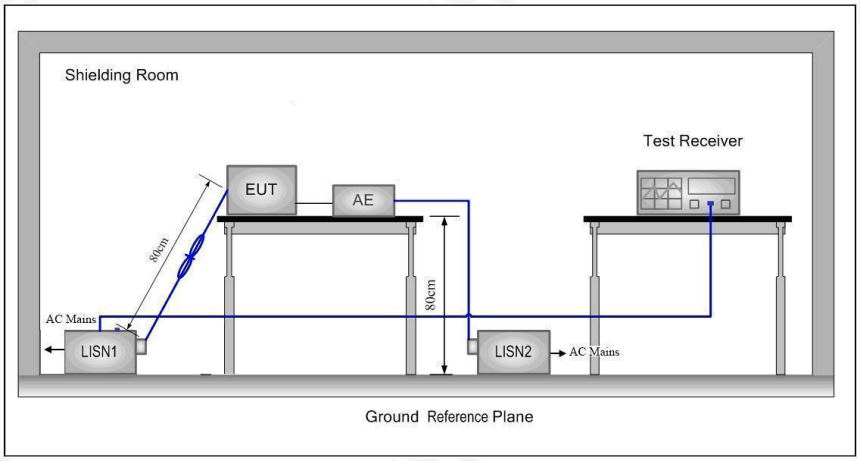
Radiation emissions& Radio Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
14	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024

15	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
16	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
21	MWRF Power Meter Test system	MW	MW100-RF CB	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
22	Power Meter	KEYSIGHT	N1912A P	N/A	A.05.00	Nov. 02, 2023	Nov. 01, 2024
23	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
24	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
25	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
26	Turntable	MF	MF-7802BS	N/A	N/A	\	\
23	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

6. AC POWER LINE CONDUCTED EMISSION

6.1 Block Diagram Of Test Setup



6.2 Limit

Table 4 – AC power-line conducted emissions limits

Frequency (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56[Note 1]	56 to 46[Note 1]
0.5 – 5	56	46
5 – 30	60	50

Note 1: The level decreases linearly with the logarithm of the frequency.

* Decreasing linearly with the logarithm of the frequency

6.3 Test procedure

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

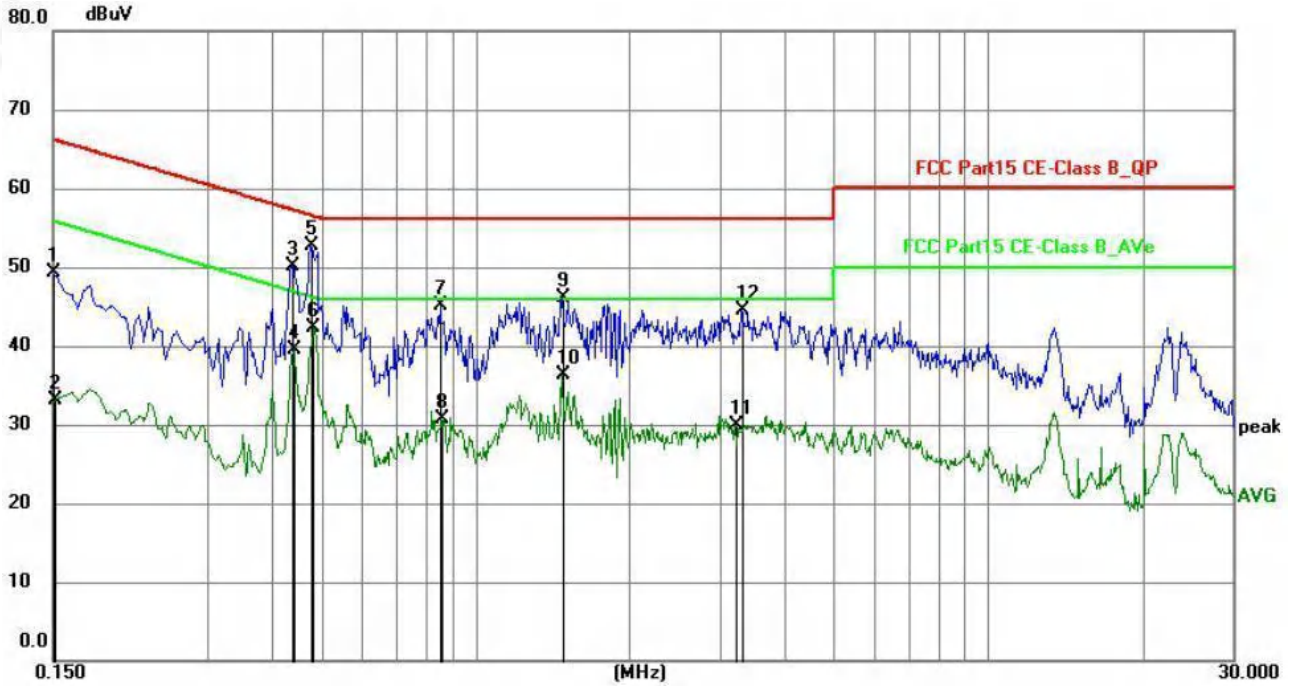
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

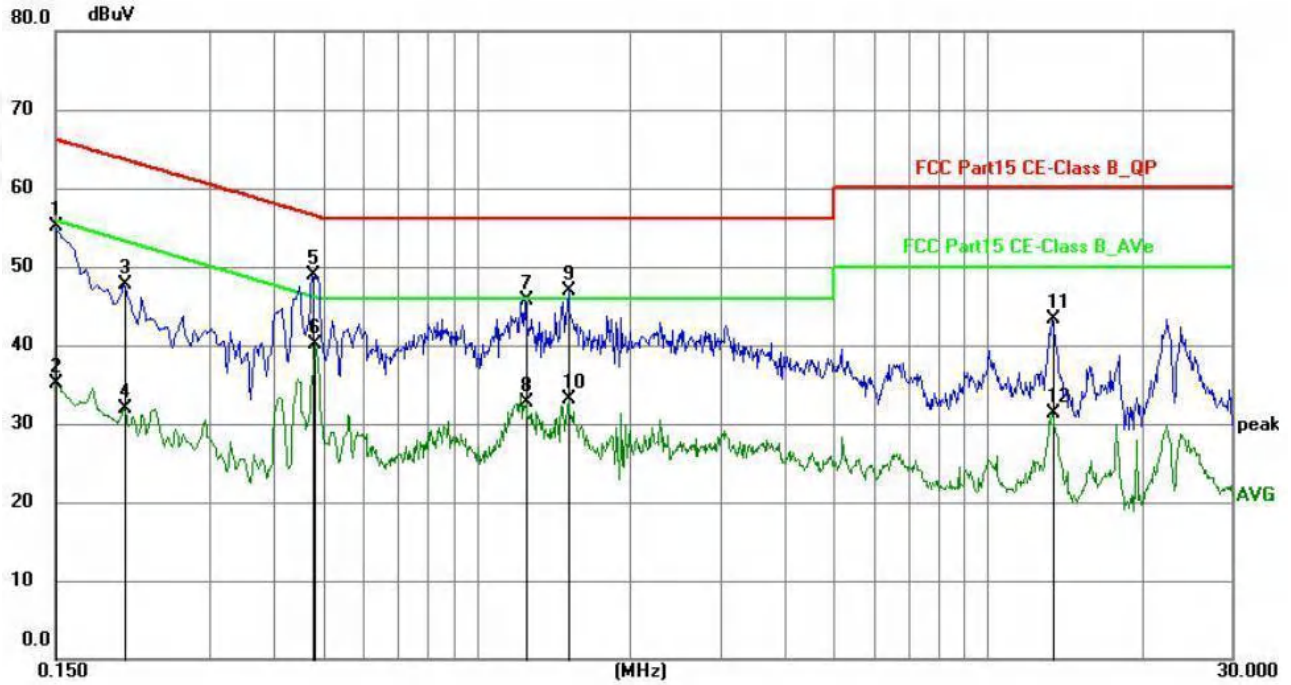
6.4 Test Result

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	L
Test Voltage:	AC 120V/60Hz	Test Mode :	802.11a TX - 5180MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	28.88	20.48	49.36	66.00	-16.64	QP	P	
2	0.1515	12.60	20.49	33.09	55.92	-22.83	AVG	P	
3	0.4380	29.54	20.57	50.11	57.10	-6.99	QP	P	
4	0.4425	19.01	20.57	39.58	47.01	-7.43	AVG	P	
5	0.4785	32.13	20.56	52.69	56.37	-3.68	QP	P	
6	0.4830	21.80	20.55	42.35	46.29	-3.94	AVG	P	
7	0.8564	24.32	20.69	45.01	56.00	-10.99	QP	P	
8	0.8609	10.08	20.69	30.77	46.00	-15.23	AVG	P	
9	1.4729	25.37	20.81	46.18	56.00	-9.82	QP	P	
10	1.4729	15.51	20.81	36.32	46.00	-9.68	AVG	P	
11	3.2145	9.20	20.79	29.99	46.00	-16.01	AVG	P	
12	3.3090	23.70	20.79	44.49	56.00	-11.51	QP	P	

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Phase：	N
Test Voltage ：	AC 120V/60Hz	Test Mode：	802.11a TX - 5180MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	34.57	20.58	55.15	66.00	-10.85	QP	P	
2	0.1500	14.59	20.58	35.17	56.00	-20.83	AVG	P	
3	0.2040	26.92	20.79	47.71	63.45	-15.74	QP	P	
4	0.2040	11.17	20.79	31.96	53.45	-21.49	AVG	P	
5	0.4785	28.21	20.70	48.91	56.37	-7.46	QP	P	
6	0.4830	19.46	20.69	40.15	46.29	-6.14	AVG	P	
7	1.2480	24.92	20.81	45.73	56.00	-10.27	QP	P	
8	1.2525	11.79	20.82	32.61	46.00	-13.39	AVG	P	
9	1.5135	26.18	20.82	47.00	56.00	-9.00	QP	P	
10	1.5135	12.19	20.82	33.01	46.00	-12.99	AVG	P	
11	13.3665	21.87	21.53	43.40	60.00	-16.60	QP	P	
12	13.3665	9.70	21.53	31.23	50.00	-18.77	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.The test data shows only the worst case ANT1 802.11aTX - 5180MHz.

7. RADIATED SPURIOUS EMISSIONS

7.1 Block Diagram Of Test Setup

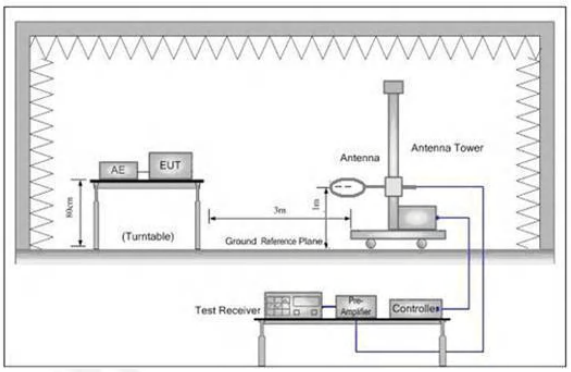


Figure 1. Below 30MHz

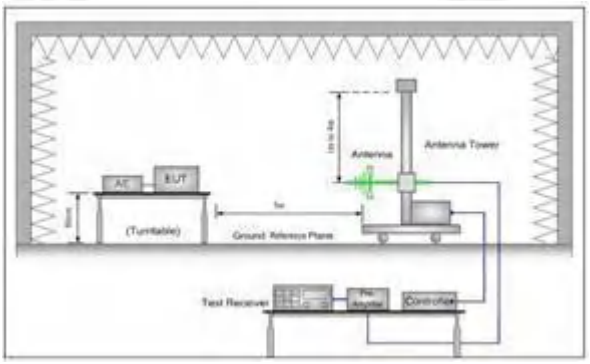


Figure 2. 30MHz to 1GHz

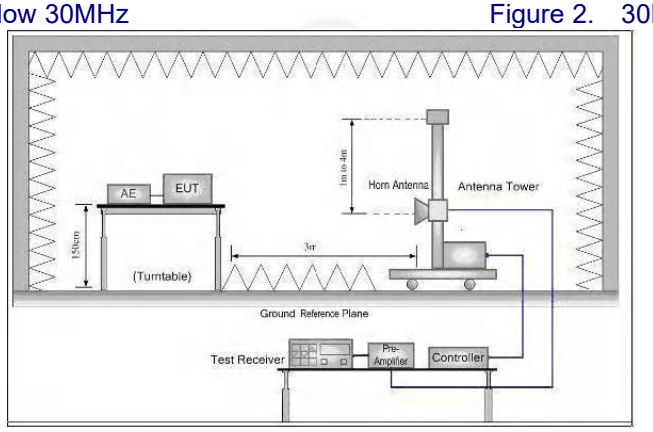


Figure 3. Above 1GHz

7.2 Limit

Spurious Emissions:

Frequency	Field strength (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	20log 2400/F (kHz) + 80	Quasi-peak	3
0.490MHz-1.705MHz	20log 24000/F (kHz) + 40	Quasi-peak	3
1.705MHz-30MHz	20log 30 + 40	Quasi-peak	3
30MHz-88MHz	40.0	Quasi-peak	3
88MHz-216MHz	43.5	Quasi-peak	3
216MHz-960MHz	46.0	Quasi-peak	3
960MHz-1GHz	54.0	Quasi-peak	3
Above 1GHz	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

If radiated measurements are performed, field strength is then converted to EIRP as follows:
(i) EIRP = ((E*d)^2) / 30
where:
• E is the field strength in V/m;
• d is the measurement distance in meters;
• EIRP is the equivalent isotropically radiated power in watts.
(ii) Working in dB units, the above equation is equivalent to:
EIRP[dBm] = E[dBμV/m] + 20 log(d[meters]) - 104.77
(iii) Or, if d is 3 meters:
EIRP[dBm] = E[dBμV/m] - 95.2

7.3 Test procedure

Below 1GHz test procedure as below:
a.The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f.If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Above 1GHz test procedure as below:
g.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).
h.Test the EUT in the lowest channel ,the middle channel ,the Highest channel
j.Repeat above procedures until all frequencies measured was complete.

Receiver set:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

7.4 Test Result

30MHz-1GHzTest Results:
Modulation : 802.11a (the worst data)
Test Channel : 5780MHz
Antenna polarity: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	!	42.6000	40.55	-6.51	34.04	40.00	-5.96	QP
2		97.1148	43.07	-9.82	33.25	43.50	-10.25	QP
3		153.2000	40.70	-5.46	35.24	43.50	-8.26	QP
4		374.6225	42.89	-3.36	39.53	46.00	-6.47	QP
5		691.9864	34.19	3.75	37.94	46.00	-8.06	QP
6	*	892.2907	34.02	6.96	40.98	46.00	-5.02	QP

Antenna polarity: V

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	!	43.7351	42.10	-6.53	35.57	40.00	-4.43	QP
2		85.8983	41.40	-10.32	31.08	40.00	-8.92	QP
3		201.0399	45.57	-9.40	36.17	43.50	-7.33	QP
4		298.2681	39.43	-5.55	33.88	46.00	-12.12	QP
5	!	596.1770	39.80	2.36	42.16	46.00	-3.84	QP
6	*	742.2586	37.71	4.67	42.38	46.00	-3.62	QP

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level

1. The margin of 9K-30MH measurement exceeds 20dB, so the test chart is not included. Test Mode: 802.11a20 (the worst)

Radiated Spurious Emission (Above 1GHz):

ANT 1

Modulation : 802.11(a) (the worst data)

Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5180MHz									
10360	40.47	16.39	56.86	74	-17.14	PK	1.14	18	H
10360	26.30	16.39	42.69	54	-11.31	AV	1.50	274	H
10360	39.29	16.39	55.68	74	-18.32	PK	1.03	240	V
10360	25.27	16.39	41.66	54	-12.34	AV	1.04	161	V
Channel:5240MHz									
10480	40.47	16.11	56.58	74	-17.42	PK	1.29	359	H
10480	25.60	16.11	41.71	54	-12.29	AV	1.14	20	H
10480	39.99	16.11	56.10	74	-17.90	PK	1.22	45	V
10480	27.28	16.11	43.39	54	-10.61	AV	1.19	277	V
Channel:5260MHz									
10520	40.66	16.39	57.05	74	-16.95	PK	1.25	309	H
10520	25.96	16.39	42.35	54	-11.65	AV	1.58	261	H
10520	41.10	16.39	57.49	74	-16.51	PK	1.14	227	V
10520	27.85	16.39	44.24	54	-9.76	AV	1.04	120	V
Channel:5320MHz									
10640	41.02	16.39	57.41	74	-16.59	PK	1.23	319	H
10640	27.88	16.39	44.27	54	-9.73	AV	1.51	285	H
10640	40.38	16.39	56.77	74	-17.23	PK	1.52	145	V
10640	26.92	16.39	43.31	54	-10.69	AV	1.28	56	V
Channel:5500MHz									
11000	40.47	16.39	56.86	74	-17.14	PK	1.34	218	H
11000	27.14	16.39	43.53	54	-10.47	AV	1.02	247	H
11000	39.38	16.39	55.77	74	-18.23	PK	1.06	246	V
11000	27.44	16.39	43.83	54	-10.17	AV	1.45	100	V

Channel:5700MHz									
11400	39.76	16.39	56.15	74	-17.85	PK	1.32	284	H
11400	25.27	16.39	41.66	54	-12.34	AV	1.01	205	H
11400	40.68	16.39	57.07	74	-16.93	PK	1.04	283	V
11400	25.64	16.39	42.03	54	-11.97	AV	1.20	238	V
Channel:5745MHz									
11490	39.90	17.46	57.36	74	-16.64	PK	1.90	120	H
11490	25.05	17.46	42.51	54	-11.49	AV	1.36	316	H
11490	39.48	17.46	56.94	74	-17.06	PK	1.07	272	V
11490	25.61	17.46	43.07	54	-10.93	AV	1.23	99	V
Channel:5825MHz									
11650	41.05	17.57	58.62	74	-15.38	PK	1.51	134	H
11650	25.93	17.57	43.50	54	-10.50	AV	1.80	215	H
11650	41.97	17.57	59.54	74	-14.46	PK	1.26	89	V
11650	27.17	17.57	44.74	54	-9.26	AV	1.19	106	V

The test data shows only the worst case ANT1.

Modulation : 802.11(n40) (the worst data)

ANT 1+ANT2

Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5190MHz									
10380	39.29	16.34	55.63	74	-18.37	PK	1.29	60	H
10380	26.40	16.34	42.74	54	-11.26	AV	1.05	9	H
10380	41.97	16.34	58.31	74	-15.69	PK	1.42	169	V
10380	25.90	16.34	42.24	54	-11.76	AV	1.53	104	V
Channel:5230MHz									
10460	39.86	16.15	56.01	74	-17.99	PK	1.09	46	H
10460	25.44	16.15	41.59	54	-12.41	AV	1.86	223	H
10460	40.42	16.15	56.57	74	-17.43	PK	1.38	339	V
10460	27.38	16.15	43.53	54	-10.47	AV	1.54	355	V
Channel:5270MHz									
10540	40.10	16.34	56.44	74	-17.56	PK	1.85	37	H
10540	25.14	16.34	41.48	54	-12.52	AV	1.61	252	H
10540	41.82	16.34	58.16	74	-15.84	PK	1.15	207	V
10540	26.95	16.34	43.29	54	-10.71	AV	1.52	271	V
Channel:5310MHz									
10620	40.53	16.34	56.87	74	-17.13	PK	1.34	290	H
10620	27.43	16.34	43.77	54	-10.23	AV	1.40	124	H
10620	40.04	16.34	56.38	74	-17.62	PK	1.39	42	V
10620	26.10	16.34	42.44	54	-11.56	AV	1.35	282	V
Channel:5510MHz									
11020	40.76	16.34	57.10	74	-16.90	PK	1.55	101	H
11020	25.41	16.34	41.75	54	-12.25	AV	1.29	96	H
11020	41.39	16.34	57.73	74	-16.27	PK	1.46	215	V
11020	27.06	16.34	43.40	54	-10.60	AV	1.14	112	V
Channel:5670MHz									
11340	39.60	16.34	55.94	74	-18.06	PK	1.32	220	H
11340	25.79	16.34	42.13	54	-11.87	AV	1.53	159	H
11340	39.12	16.34	55.46	74	-18.54	PK	1.86	137	V

11340	25.83	16.34	42.17	54	-11.83	AV	1.13	202	V

Channel:5755MHz									
11510	40.30	17.49	57.79	74	-16.21	PK	1.81	187	H
11510	27.60	17.49	45.09	54	-8.91	AV	1.53	306	H
11510	41.61	17.49	59.10	74	-14.90	PK	1.11	137	V
11510	26.39	17.49	43.88	54	-10.12	AV	1.81	155	V
Channel:5795MHz									
11590	40.83	17.52	58.35	74	-17.69	PK	1.74	299	H
11590	25.15	17.52	42.67	54	-15.65	AV	1.29	48	H
11590	39.53	17.52	57.05	74	-16.95	PK	1.01	224	V
11590	26.28	17.52	43.80	54	-10.20	AV	1.22	287	V

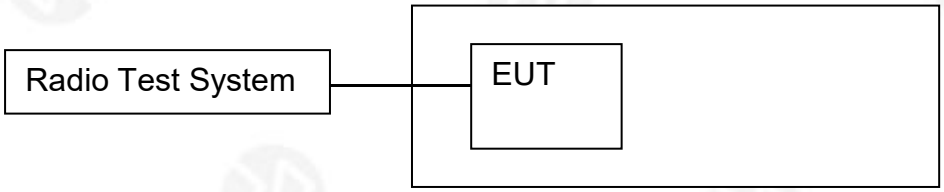
Modulation : 802.11(VH80) (the worst data)

Freq (MHz)	Rd_level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over (dB)	detector	Height	Degree	Antenna polarization
Channel:5210MHz									
10420	41.89	16.25	58.14	74	-15.86	PK	1.82	241	H
10420	25.77	16.25	42.02	54	-11.98	AV	1.80	31	H
10420	40.07	16.25	56.32	74	-17.68	PK	1.80	88	V
10420	27.09	16.25	43.34	54	-10.66	AV	1.69	244	V
Channel:5290MHz									
10580	41.49	16.25	57.74	74	-16.26	PK	1.64	30	H
10580	27.81	16.25	44.06	54	-9.94	AV	1.45	112	H
10580	41.25	16.25	57.50	74	-16.50	PK	1.85	268	V
10580	27.66	16.25	43.91	54	-10.09	AV	1.43	105	V
Channel:5530MHz									
11060	41.04	17.50	58.54	74	-15.46	PK	1.90	292	H
11060	27.61	17.50	45.11	54	-8.89	AV	1.61	171	H
11060	41.10	17.50	58.60	74	-15.40	PK	1.63	197	V
11060	25.87	17.50	43.37	54	-10.63	AV	1.64	97	V
Channel:5775MHz									
11550	41.53	17.50	59.03	74	-14.97	PK	1.16	250	H
11550	26.91	17.50	44.41	54	-9.59	AV	1.66	125	H
11550	41.01	17.50	58.51	74	-15.49	PK	1.57	111	V
11550	26.91	17.50	44.41	54	-9.59	AV	1.12	141	V

Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits
2.The EUT was tested in the low, high channel and the worst case position data was reported.
3.Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. BAND EDGE

8.1 Block Diagram Of Test Setup



8.2 Limit

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

8.3 Test procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

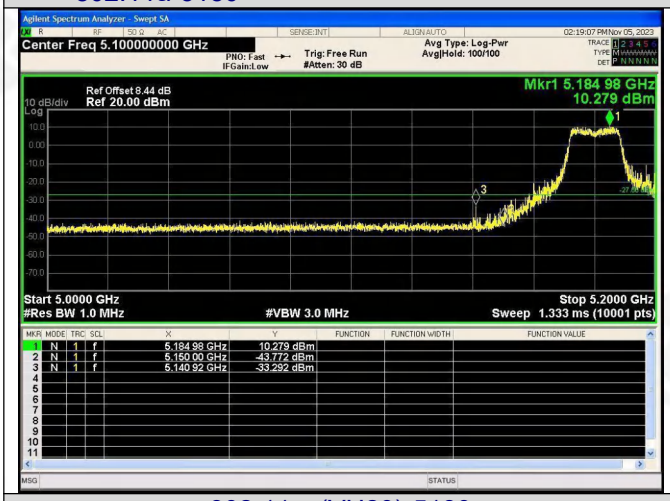
8.4 Test Result

Test Graph

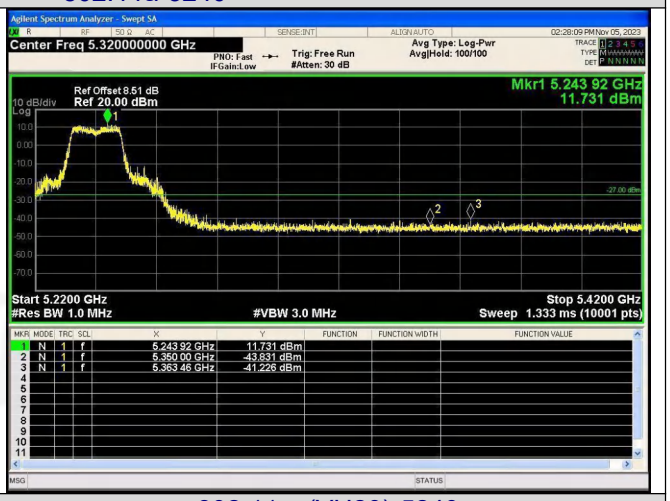
5150-5250MHz:

ANT 1

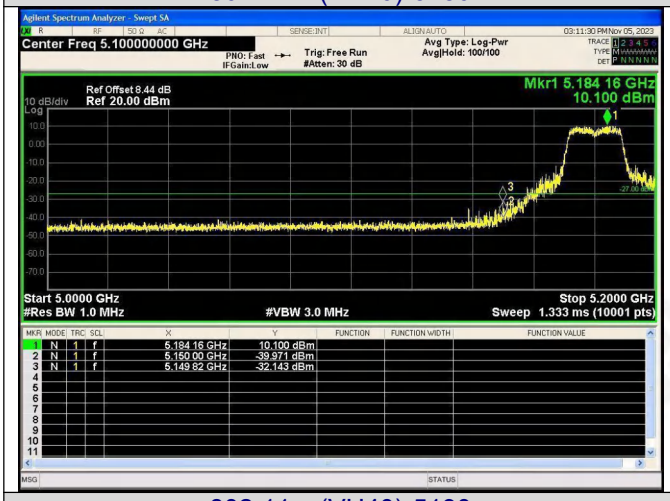
802.11a-5180



802.11a-5240



802.11ac(VH20)-5180



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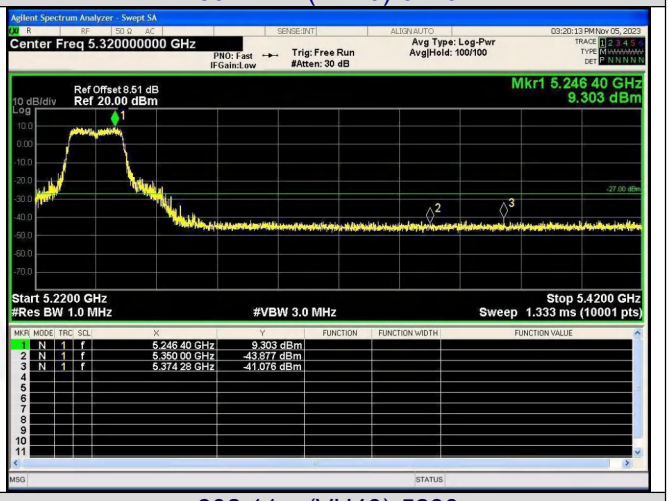

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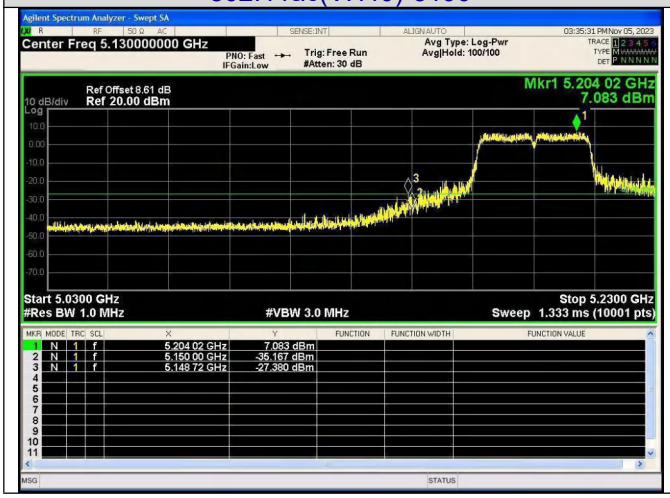

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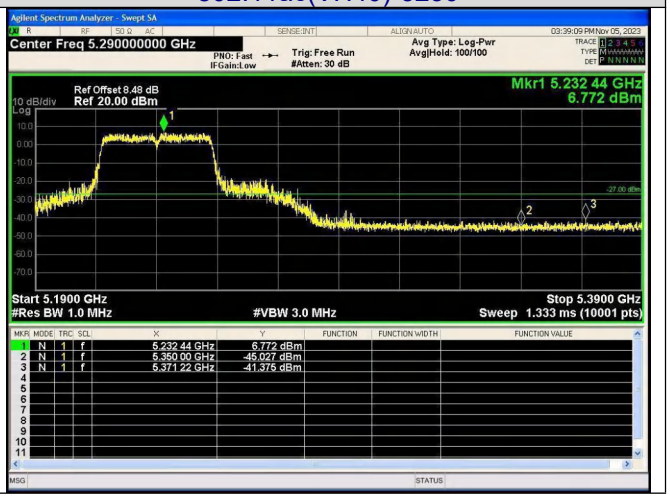

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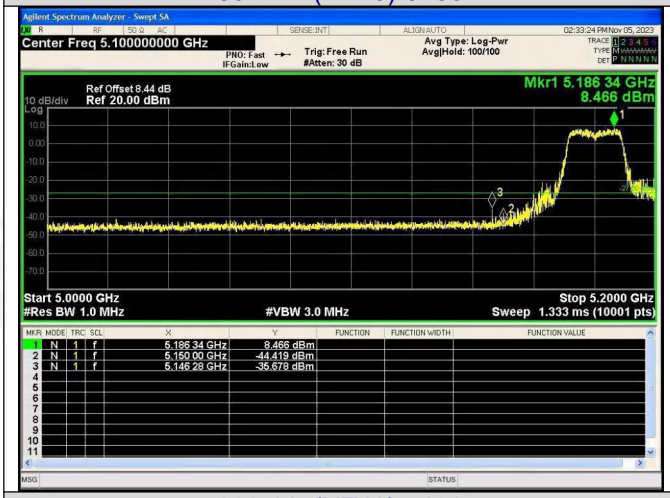

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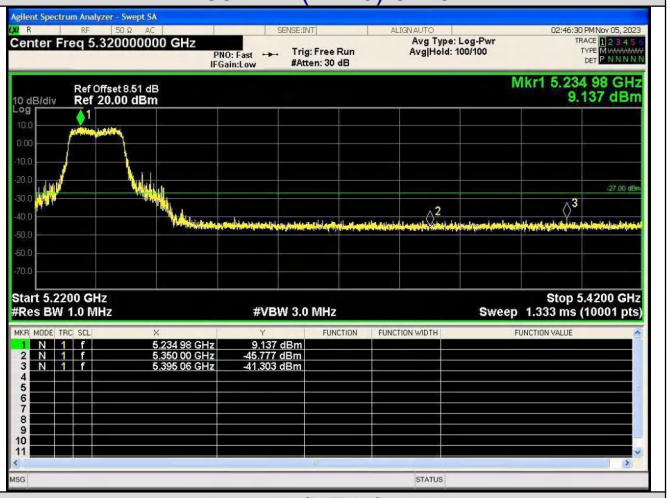

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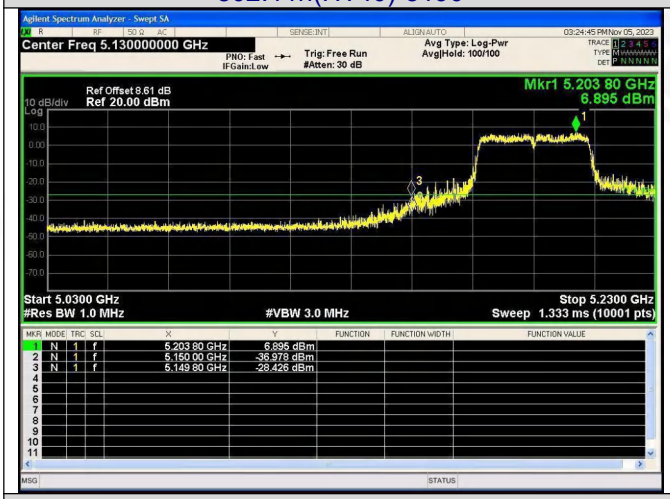

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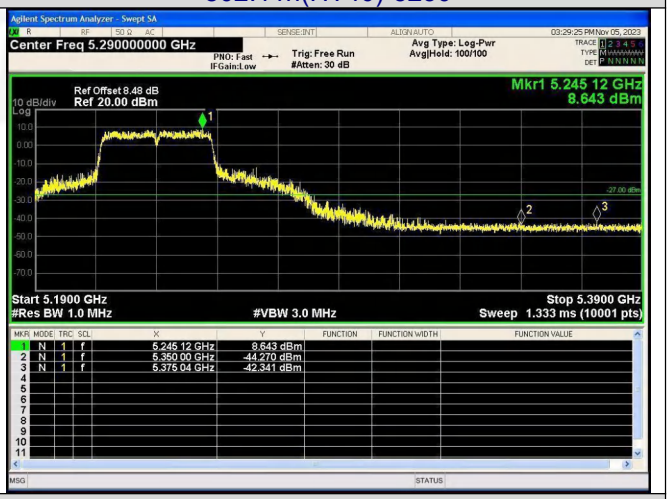

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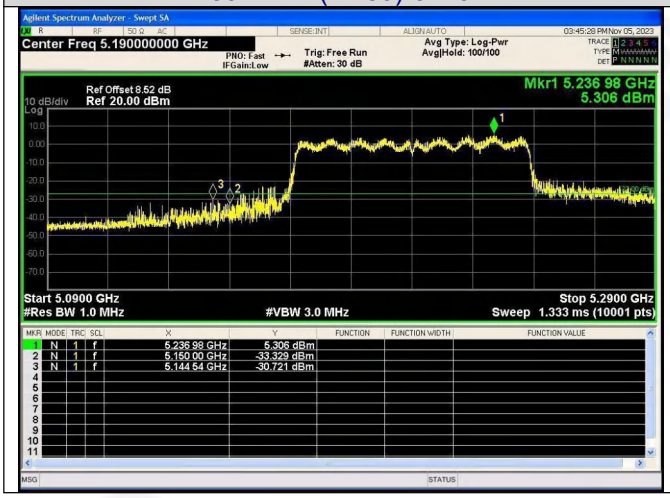
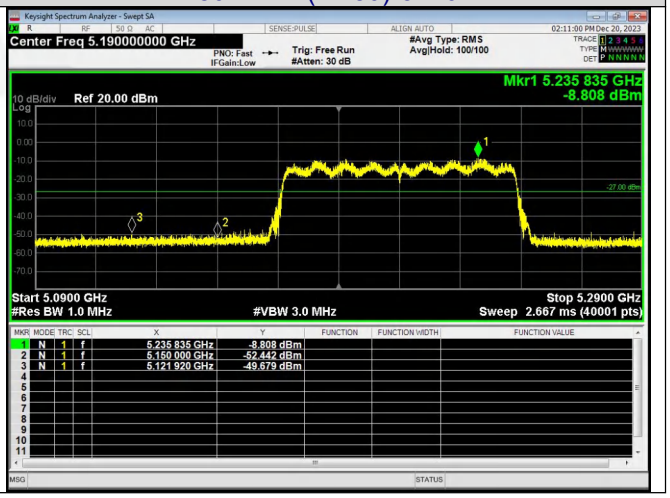
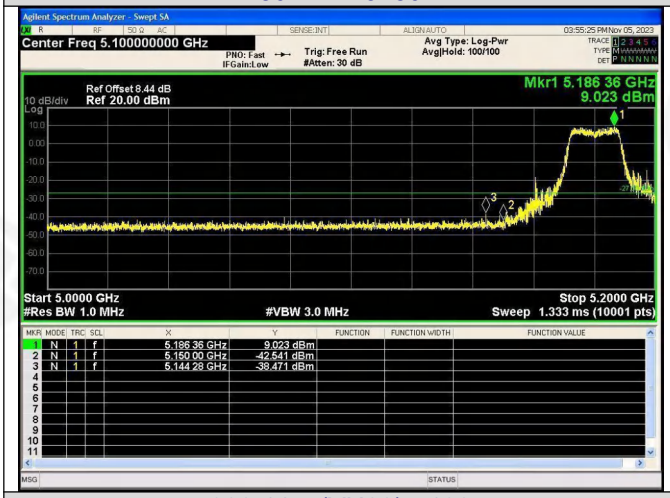


802.11ax(VH80)-5210

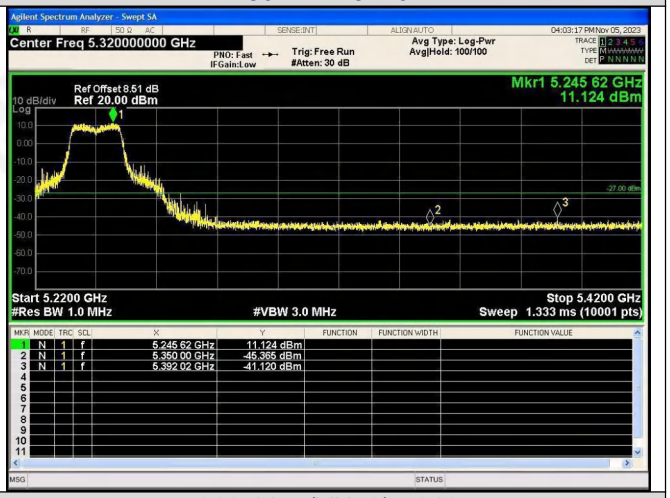


ANT 2

802.11a-5180



802.11a-5240



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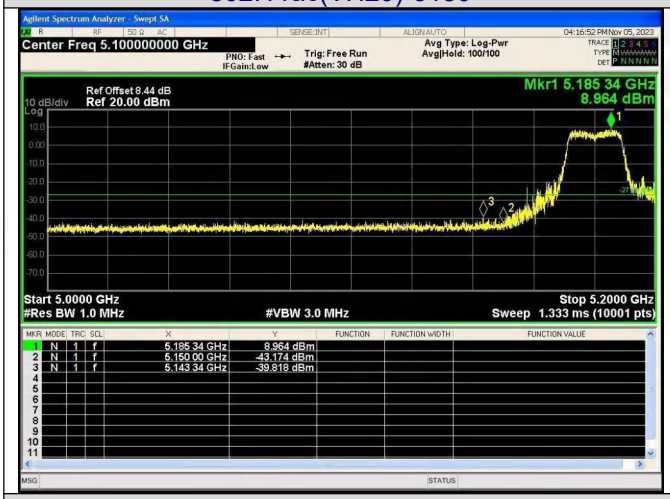
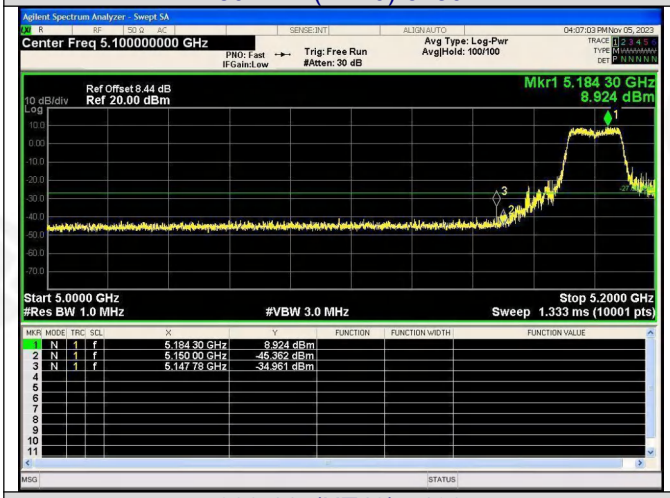


802.11ac(VH20)-5240

802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11n(HT20)-5180



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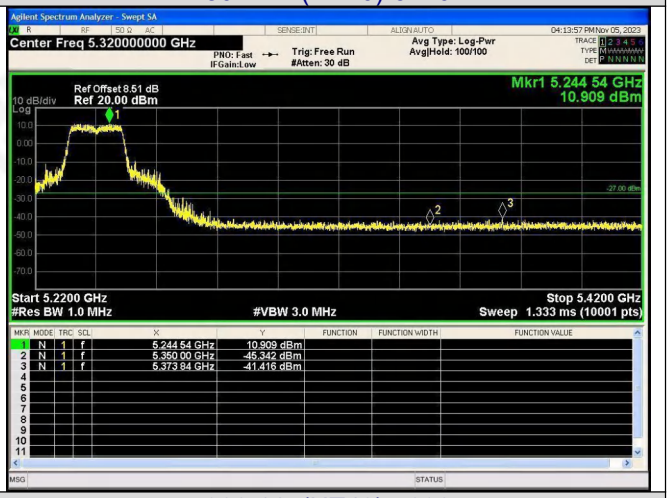

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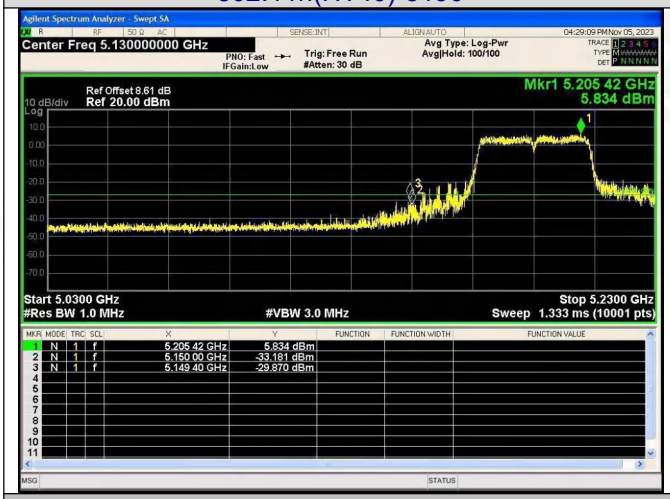

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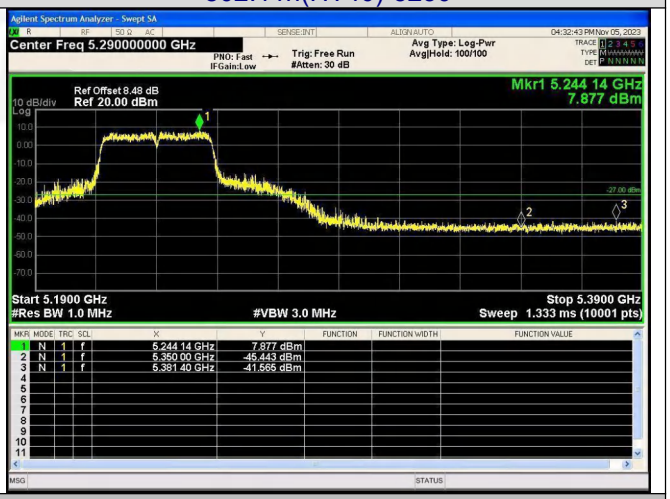

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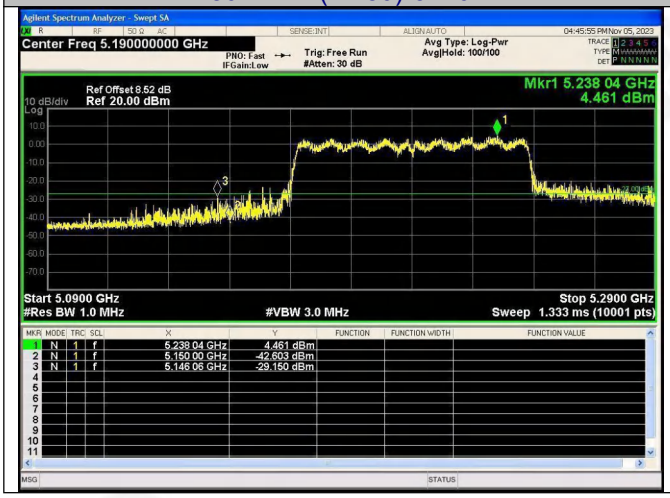

802.11ax(VH80)-5210