FCC Test Report

Application No.:	DNT2507110254R7397-09603
Applicant:	Chengdu Tommi Technology Co., Ltd.
Address of Applicant:	14th Floor, Unit 1,Building 6,No. 399, West Section of Fucheng Avenue, chengdu High-tech Zone, Sichuan Pilot Free Trade Zone, China
EUT Description:	Pisky A3 Ai Pet Patrol Pal
Model No.:	A3
FCC ID:	2A8PU-A3
Power Supply	DC 3.7V From Rechargeable Lithium Battery ; DC 12V From Adapter and Adapter Input AC 100-240V, 50/60Hz
Trade Mark:	/
Standards:	47 CFR FCC Part 2, Subpart J 47 CFR Part 15, Subpart C ANSI C63.10: 2013
Date of Receipt:	2025/7/11
Date of Test:	2025/7/11 to 2025/8/8
Date of Issue:	2025/8/11
Test Result:	**PASS**

Prepared By: Wayne.Lin (Testing Engineer)

Reviewed By: Pencils.Chen (Project Engineer)

Approved By: Steve Chen (Manager)

Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

Dongguan DN Testing Co., Ltd.
Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China
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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V2.0	/	August 11, 2025	Valid	Original Report

1 Test Summary

No.	Description of Test Item	FCC Standard Section	Results
1	6dB Bandwidth &26dB Bandwidth & 99% Occupied Bandwidth	15.407(a) 15.407(e)	PASS
2	Maximum Conducted Output Power	15.407(a)	PASS
3	Peak Power Spectral Density	15.407(a)	PASS
4	Unwanted Emissions and Band Edge	15.205 15.209 15.407(b)	PASS
5	Frequency Stability	15.407(g)	PASS
6	AC Power Line Conducted Emissions	15.207 15.407(b)(9)	PASS
7	Antenna Requirement	15.203	PASS

Note:
1. “N/A” denotes test is not applicable in this test report.

Contents

1 Test Summary 3
2 General Information 5
2.1 Test Location 5
2.2 General Description of EUT 6
2.3 Channel List 7
2.4 Test Environment and Mode 8
2.5 Power Setting of Test Software 9
2.6 Description of Support Units 9
2.7 Test Facility 9
2.8 Measurement Uncertainty (95% confidence levels, k=2) 10
2.9 Equipment List 11
3 Test results and Measurement Data 13
3.1 Antenna Requirement 13
3.2 Duty Cycle 14
3.3 26dB Emission Bandwidth 15
3.4 DTS (6 dB) Bandwidth 16
3.5 99% Occupied Bandwidth 17
3.6 Conducted Output Power 18
3.7 Power Spectral Density 19
3.8 Frequency Stability 20
1.1. Limit 20
1.2. Test Setup 20
1.3. Spectrum Analyzer Setting 20
1.4. Test Procedure 21
1.5. Test Result 21
3.9 Radiated Spurious Emissions 22
3.10 Restricted bands around fundamental frequency 30
3.11 AC Power Line Conducted Emissions 34
4 Appendix 37
Appendix A: Duty Cycle 37
Appendix B: 26dB Emission Bandwidth 43
Appendix C:Occupied channel bandwidth 49
Appendix D: Maximum conducted output power 55
Appendix E: Maximum power spectral density 56
Appendix F: Frequency Stability 62

2 General Information

2.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfa Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

2.2 General Description of EUT

Manufacturer:	Chengdu Tommi Technology Co., Ltd.
Address of Manufacturer:	14th Floor, Unit 1,Building 6,No. 399, West Section of Fucheng Avenue, chengdu High-tech Zone, Sichuan Pilot Free Trade Zone, China
EUT Description:	Pisky A3 Ai Pet Patrol Pal
Test Model No.:	A3
Additional Model(s):	/
Power Supply:	DC 3.7V From Rechargeable Lithium Battery ; DC 12V From Adapter and Adapter Input AC 100-240V, 50/60Hz
Trade Mark:	PICKFUN
Hardware Version:	V1.0
Software Version:	V1.0
Chip Type:	AIC8800M40B
Serial Number	PR2507110254R7397
IEEE 802.11 WLAN Mode Supported	☒ 802.11a (20 MHz channel bandwidth), ☒ 802.11n (20 MHz channel bandwidth) ☒ 802.11n (40 MHz channel bandwidth), ☒ 802.11ac (20 MHz channel bandwidth), ☒ 802.11ac (40 MHz channel bandwidth), ☒ 802.11ax (20 MHz channel bandwidth), ☒ 802.11ax (40 MHz channel bandwidth)
Operation Frequency:	5725MHz to 5850MHz
Type of Modulation:	OFDM/OFDMA
Sample Type:	☐ Portable Device, ☐ Module,☒ Mobile Device
Antenna Type:	☐ External, ☒ Integrated
Antenna Ports	☒ Ant 1, ☐ Ant 2, ☐ Ant 3
Smart System	☒ SISO (for 802.11a/n/ax), ☐ MIMO (for 802.11n/ac/ax), ☐ Diversity (for 802.11a).
Antenna Gain*:	☒ Provided by applicant
	2.57dBi
RF Cable*:	☒ Provided by applicant
	0.5dB(0.6~1GHz); 0.8dB(1.4~2GHz); 1.0dB(2.1~2.7GHz); 1.5dB(3~4GHz); 1.8dB(4.4~6GHz);

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2.3 Channel List

Band	Mode	Channel	Frequency (MHz)
U-NII-3	IEEE 802.11a & n HT20 & ac VHT20 & ax HE20	149	5745
		153	5765
		157	5785
		161	5805
		165	5825
	IEEE 802.11n HT40 & ac VHT40 & ax HE40	151	5755
		159	5795

Remark:

In FCC 15.31, for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table, and the selected channel to perform the test as below:

Frequency Range of Operation Operating Frequency Range (in each Band)	Number of Measurement Frequencies Required	Location of Measurement Frequency in Band of Operation
1 MHz or less	1	centre
1 MHz to 10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near centre

2.4 Test Environment and Mode

Operating Environment:	
Temperature:	20~25.0 ˚C
Humidity:	45~56 % RH
Atmospheric Pressure:	101.0~101.30 KPa
Test mode:	
Transmitting mode:	1.Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate and 802.11ax only full RU is supported.

Environment Parameter	101.0 kPa Selected Values During Tests	
Relative Humidity	44-60 % RH Ambient	
Value	**Temperature(℃)**	**Voltage(V)**
NTNV	22~25	DC 12V
LTNV	-30	DC 12V
HTNV	50	DC 12V
NTLV	22~25	DC 12V
NTHV	22~25	DC 12V

Remark:
NV: Normal Voltage
NT: Normal Temperature
LT: Low Extreme Test Temperature
HT: High Extreme Test Temperature

2.5 Power Setting of Test Software

Software Name	SecureCRTSecureFX		
Frequency(MHz)	5748	5785	5825
11A	Default	Default	Default
11N20	Default	Default	Default
11ac VHT20	Default	Default	Default
11ax HE20	Default	Default	Default
Frequency(MHz)	5795		
11N40	Default		
11ac VHT 40	Default		
11ax HE40	Default		

2.6 Description of Support Units

The EUT has been tested independent unit.

2.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

• FCC, USA

Designation Number: CN1348

• A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

• Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

2.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	DTS Bandwidth	±0.0196%
2	Maximum Conducted Output Power	±0.686 dB
3	Maximum Power Spectral Density Level	±0.743 dB
4	Band-edge Compliance	±1.328 dB
5	Unwanted Emissions In Non-restricted Freq Bands	9KHz-1GHz:±0.746dB 1GHz-26GHz: ±1.328dB

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)

2.9 Equipment List

For Connect EUT Antenna Terminal Test					
Description	Manufacturer	Model	Serial Number	Cal date	Due date
Signal Generator	Keysight	N5181A-6G	MY48180415	2024-10-25	2025-10-24
Signal Generator	Keysight	N5182B	MY57300617	2024-10-25	2025-10-24
Power supply	Keysight	E3640A	ZB2022656	2024-10-25	2025-10-24
Radio Communication Tester	R&S	CMW500	105082	2024-10-25	2025-10-24
Spectrum Analyzer	Aglient	N9010A	MY52221458	2024-10-25	2025-10-24
BT/WIFI Test Software	Tonscend	JS1120-3 V3.6.16	NA	NA	NA
RF Control Unit	Tonscend	JS0806-2	22F8060581	NA	NA
Power Sensor	Anritsu	ML2495A	2129005	2024-10-25	2025-10-24
Pulse Power Sensor	Anritsu	MA2411B	1911397	2024-10-25	2025-10-24
temperature and humidity box	SCOTEK	SCD-C40-80PRO	6866682020008	2024-10-25	2025-10-24

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESCI3	101152	2024-10-25	2025-10-24
LISN	R&S	ENV216	102874	2024-10-25	2025-10-24
ISN	R&S	ENY81-CA6	1309.8590.03	2024-10-25	2025-10-24

Test Equipment for Radiated Emission(30MHz-1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESR7	102497	2024-10-25	2025-10-24
Test Software	ETS-LINDGREN	TiLE-FULL	NA	NA	NA
RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	NA	2024-10-25	2025-10-24
Log periodic antenna	ETS-LINDGREN	VULB 9168	01475	2024-10-25	2025-10-24
Pre-amplifier	Schwarzbeck	BBV9743B	00423	2024-10-25	2025-10-24

Test Equipment for Radiated Emission(Above 1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Frequency analyser	Keysight	N9010A	MY52221458	2024-10-25	2025-10-24
RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	NA	2024-10-25	2025-10-24
Horn Antenna	ETS-LINDGREN	3117	00252567	2024-10-25	2025-10-24
Double ridged waveguide antenna	ETS-LINDGREN	3116C	00251780	2024-10-25	2025-10-24
Test Software	ETS-LINDGREN	TiLE-FULL	NA	NA	NA
Pre-amplifier	ETS-LINDGREN	3117-PA	252567	2024-10-25	2025-10-24
Pre-amplifier	ETS-LINDGREN	3116C-PA	251780	2024-10-25	2025-10-24

2.10 Assistant equipment used for test

Code	Equipment	Manufacturer	Model No.	Equipment No.
1	Adapter	PICK FUN	PS18LA120K1500CD	NA
2	Computer	acer	N22C8	EMC notebook01

3 Test results and Measurement Data

3.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
The FPC antenna is externally connected to the motherboard and no consideration of replacement. The best case gain of the antenna is 2.57dBi.	

3.2 Duty Cycle

Refer to section : **Appendix A**

Note:

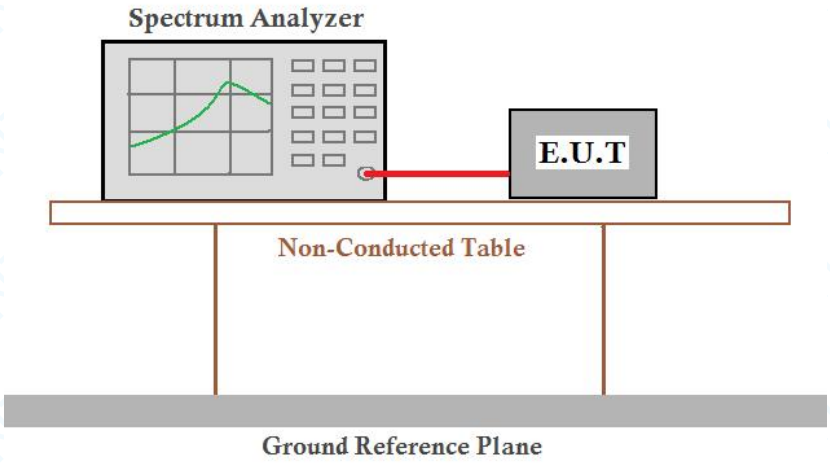
1.If duty cycle <98 %, the conducted average output power and average power spectral density should be add duty factor.

2.If duty cycle ⩾98 %,the EUT is consider to be transmitting continuously,the conducted average output power and average power spectral density no need to add duty factor(consider to be zero).

3.The conducted peak output power and peak power spectral density no need to consider duty factor.

4.The on-time time is transmission duration(T).

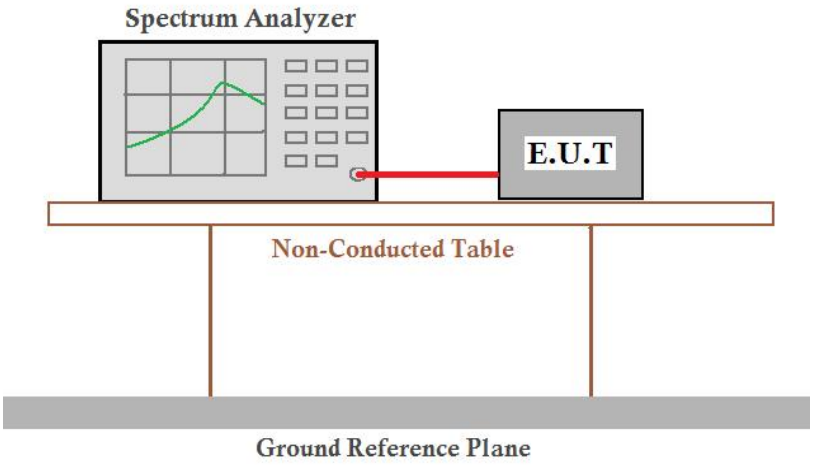
3.3 26dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40); Only the worst case is recorded in the report.
Limit	

Band	Frequency (MHz)	Test Item	Limit
U-NII-1	5150-5250	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2A	5250-5350	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2C	5470-5725	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-3	5725-5850	6dB Bandwidth&99% Occupied Bandwidth	6dB Bandwidth≥ 500KHz

The detailed test data see:**Appendix B**

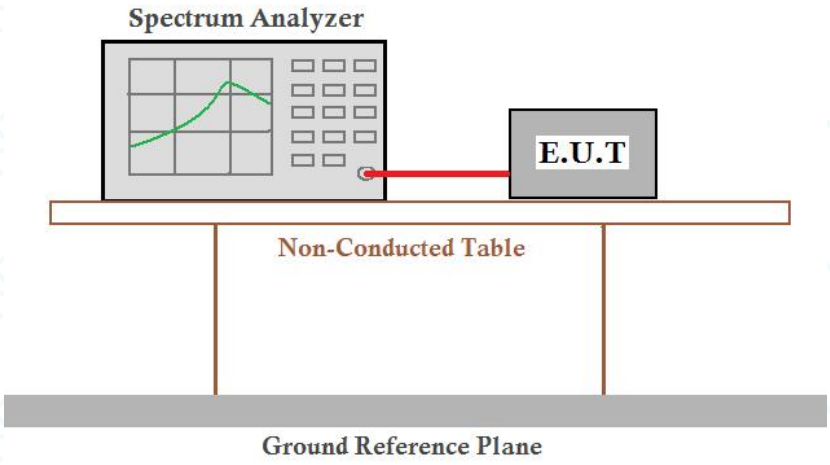
3.4 DTS (6 dB) Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(e)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40);
Limit:	

Band	Frequency (MHz)	Test Item	Limit
U-NII-1	5150-5250	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2A	5250-5350	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2C	5470-5725	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-3	5725-5850	6dB Bandwidth&99% Occupied Bandwidth	6dB Bandwidth≥ 500KHz

Test Results:	NA

3.5 99% Occupied Bandwidth

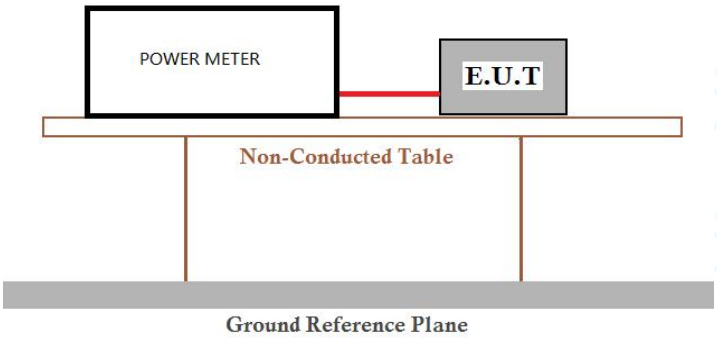
Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40); Only the worst case is recorded in the report.
Limit:	

Band	Frequency (MHz)	Test Item	Limit
U-NII-1	5150-5250	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2A	5250-5350	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-2C	5470-5725	26dB Bandwidth&99% Occupied Bandwidth	N/A
U-NII-3	5725-5850	6dB Bandwidth&99% Occupied Bandwidth	6dB Bandwidth≥ 500KHz

Test Results:	Pass

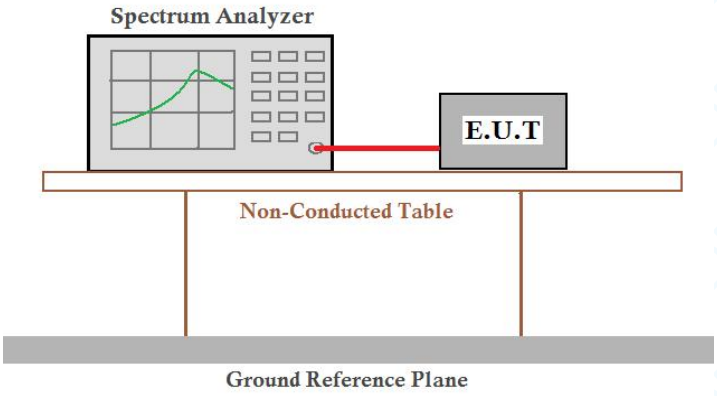
The detailed test data see: **Appendix C**

3.6 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10 :2013	
Test Setup:		
Test Instruments:	Refer to section 2.9 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40);	
Limit:	Frequency Band	Limit
	5150-5250MHz	Not exceed 250mW(24dBm)
	5250-5350MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5470-5725MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5725-5850MHz	Not exceed 1W(30dBm)
Test Results:	Pass	

The detailed test data see: **Appendix D**

3.7 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013 KDB 789033 D02 v02r01, Section F.	
Test Setup:		
Test Instruments:	Refer to section 2.9 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40);	
Limit:	Frequency Band	Limit
	5150-5250MHz	The power spectral density less than 11dBm/1MHz
	5250-5350MHz	The power spectral density less than 11dBm/1MHz
	5470-5725MHz	The power spectral density less than 11dBm/1MHz
	5725-5850MHz	The power spectral density less than <30dBm/500KHz
Test Results:	Pass	

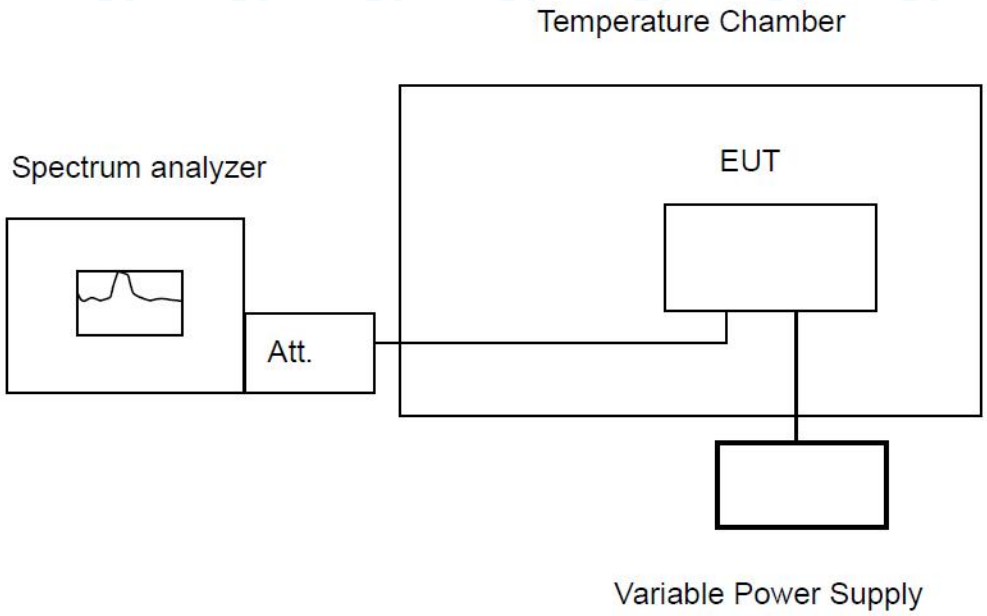
The detailed test data see: **Appendix E**

3.8 Frequency Stability

3.8.1 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

3.8.2 Test Setup



3.8.3 Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	10KHz
VBW	10KHz
Span	200KHz
Sweep Time	Auto
Detector	PEAK
Trace Mode	Max Hold

3.8.4 Test Procedure

For measurement frequency stability under temperature variation :

a. Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT.

b. Turn the EUT OFF and place it inside the environmental temperature chamber.

c. Connect EUT antenna terminal to the spectrum analyzer with RF cable.

d. Spectrum analyzer setting parameters in accordance with section 7.3.

e. Set the temperature control on the chamber to the Specified temperature and allow the oscillator heater and the chamber temperature to stabilize.

f. Turn the EUT ON with the rated voltage, and the EUT transmit continuously with maximum output power.

g. Record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized.

h. Repeat step d through step f to measured the temperature form -30℃ to +50℃ in 10℃ steps.

For frequency stability under voltage variation:

a. Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT.

b. Turn the EUT OFF and place it inside the environmental temperature chamber.

c. Connect EUT antenna terminal to the spectrum analyzer with RF cable.

d. Spectrum analyzer setting parameters in accordance with section 7.3.

e. Unless otherwise specified, set the temperature control on the chamber to the ambient room temperature (+22℃ to +25℃) and allow the oscillator heater and the chamber temperature to stabilize.

f. Turn the EUT ON with the rated voltage, and the EUT transmit continuously with maximum output power.

g. Record the operating frequency.

h. Repeat step d through step f to measured the varied from 85% to 115% of the rated voltage.

3.8.5 Test Result

Refer to section 10: Appendix F

3.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)				
Receiver Setup:	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	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz (DC⩾0.98) ⩾1/T (DC<0.98)	Average
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Remark: 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.				

Test Setup:	

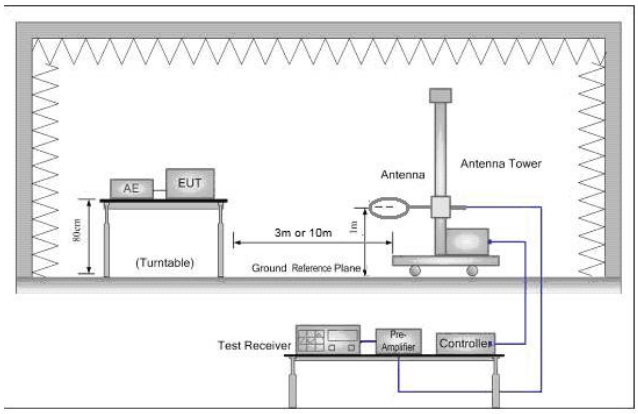


Figure 1. Below 30MHz

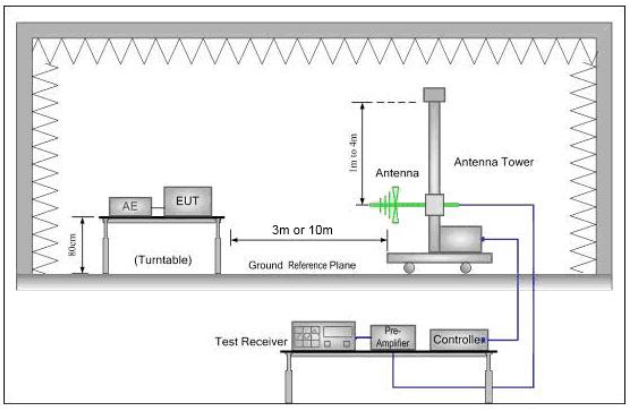


Figure 2. 30MHz to 1GHz

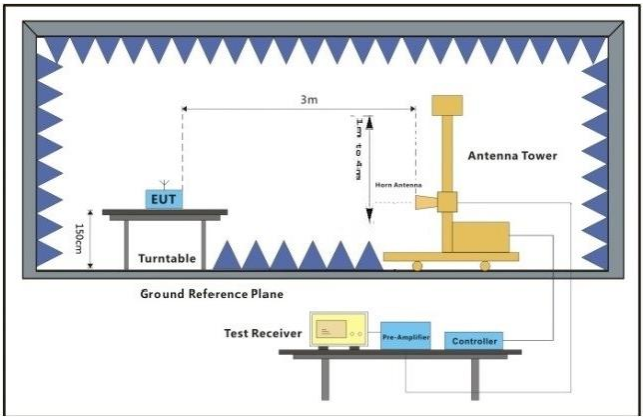


Figure 3. Above 1 GHz

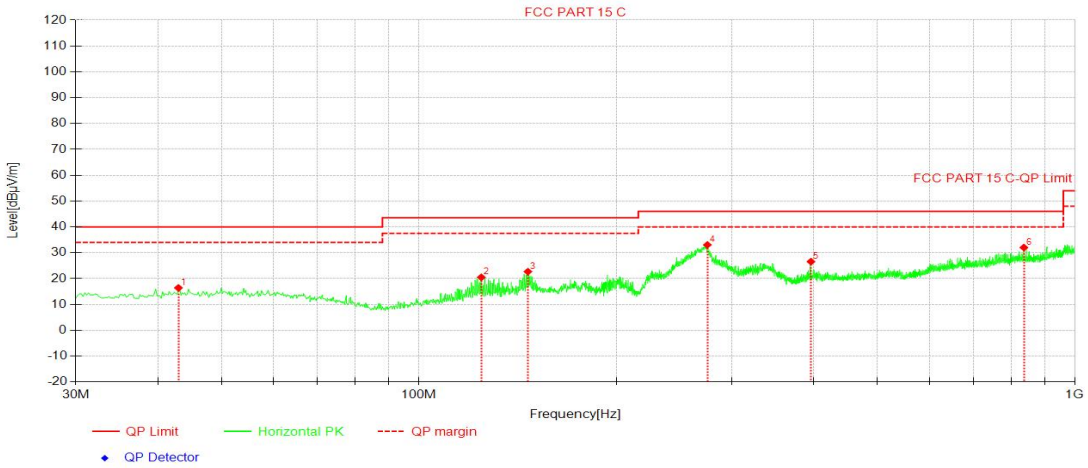
Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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 c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. 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. e. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. 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. h. Test the EUT in the lowest channel, the middle channel ,the Highest channel. i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz

	• RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ⩾ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ⩾ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Transmitting mode. Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40); For below 1GHz, through Pre-scan, find the the worst case. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details
Test Results:	Pass

Test data

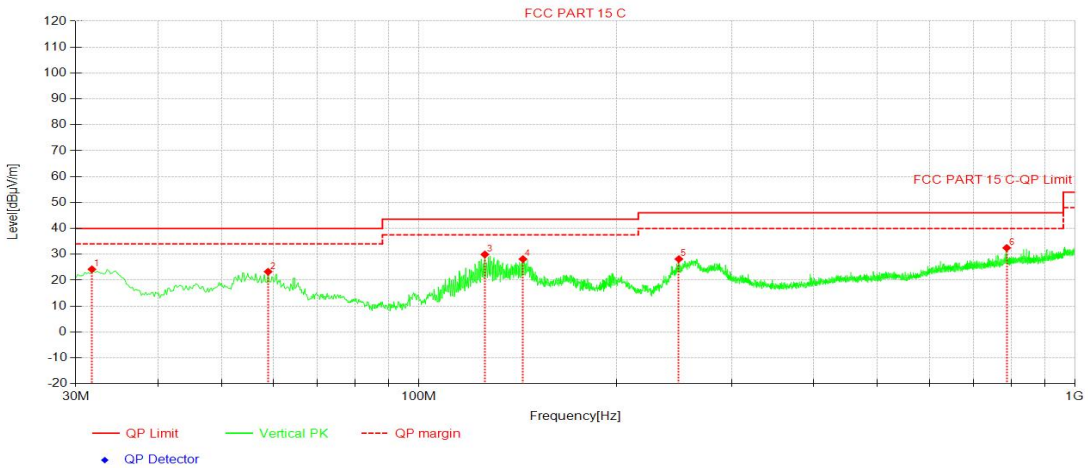
For 30-1000MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]
1	43.00	24.81	-8.41	16.40	40.00	23.60	100	179
2	124.50	30.40	-9.91	20.49	43.50	23.01	100	275
3	146.62	30.76	-8.07	22.69	43.50	20.81	100	255
4	275.27	40.79	-7.75	33.04	46.00	12.96	100	70
5	395.96	30.96	-4.39	26.57	46.00	19.43	100	319
6	836.04	27.48	4.55	32.03	46.00	13.97	100	106

Vertical :

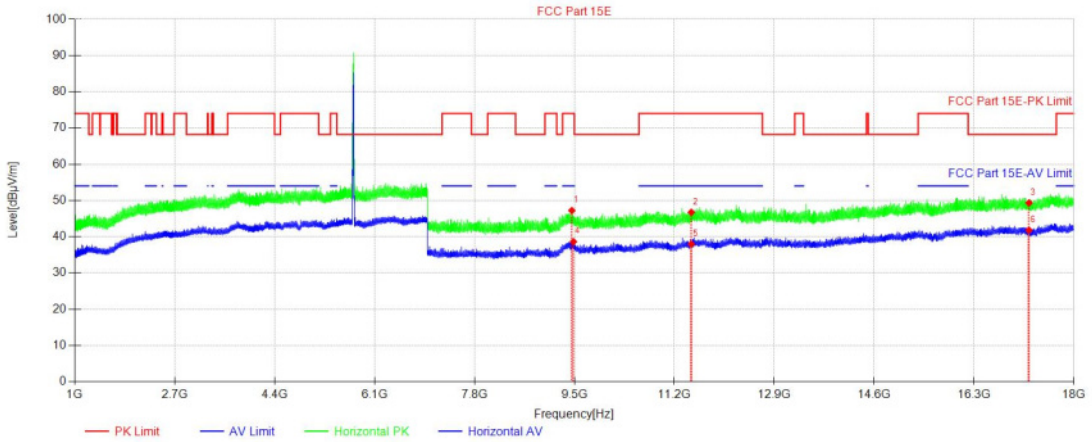


NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]
1	31.75	33.99	-9.78	24.21	40.00	15.79	100	67
2	58.91	31.92	-8.65	23.27	40.00	16.73	100	131
3	126.05	39.73	-9.79	29.94	43.50	13.56	100	358
4	144.09	36.37	-8.22	28.15	43.50	15.35	100	0
5	249.07	37.13	-8.96	28.17	46.00	17.83	100	213
6	787.14	28.44	4.04	32.48	46.00	13.52	100	359

For above 1GHz

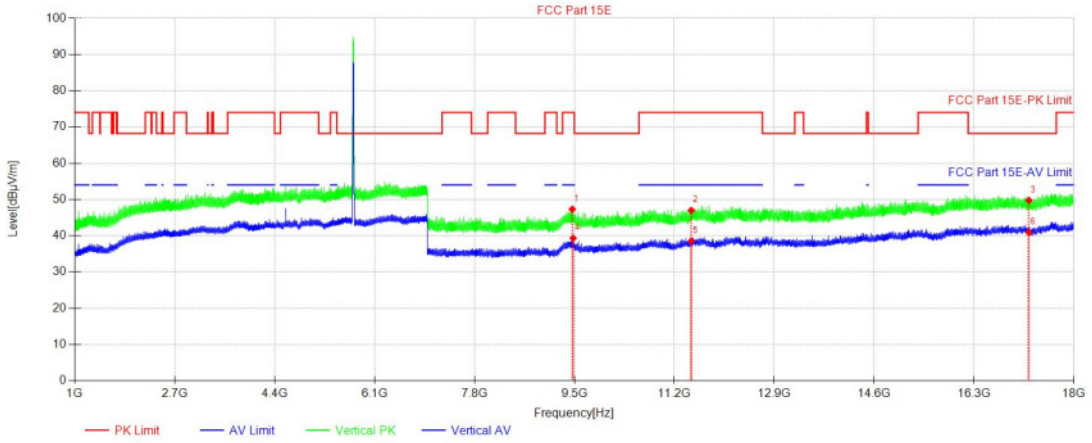
11A 5745MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	9457.50	45.76	1.47	47.23	74.00	26.77	150	82	PK
2	11490.38	44.71	2.03	46.74	74.00	27.26	150	44	PK
3	17235.25	40.47	8.86	49.33	68.20	18.87	150	200	PK
4	9484.78	37.38	1.25	38.63	54.00	15.37	150	220	AV
5	11490.38	35.95	2.03	37.98	54.00	16.02	150	44	AV
6	17235.25	32.94	8.86	41.80	54.00	12.2	150	0	AV

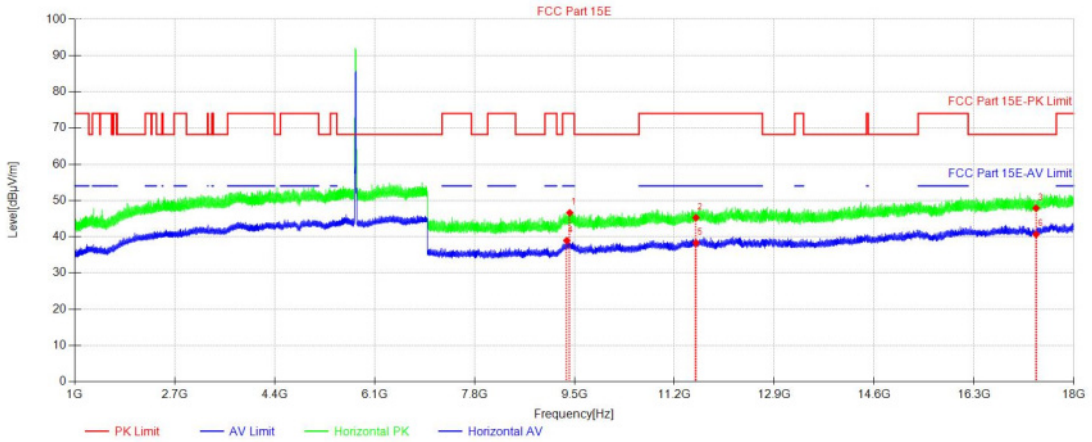
Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	9465.42	45.89	1.41	47.30	74.00	26.70	150	241	PK
2	11490.38	44.97	2.03	47.00	74.00	27.00	150	261	PK
3	17235.25	40.89	8.86	49.75	68.20	18.45	150	183	PK
4	9479.50	38.02	1.30	39.32	54.00	14.68	150	162	AV
5	11490.38	36.53	2.03	38.56	54.00	15.44	150	226	AV
6	17235.25	32.05	8.86	40.91	54.00	13.09	150	70	AV

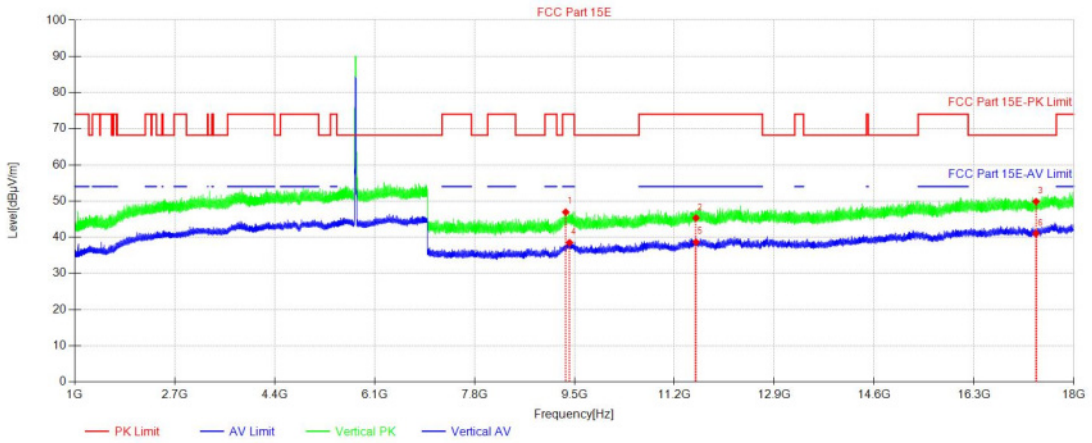
11A 5785MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	9421.86	44.85	1.76	46.61	74.00	27.39	150	45	PK
2	11570.02	42.93	2.33	45.26	74.00	28.74	150	24	PK
3	17355.37	38.92	8.97	47.89	68.20	20.31	150	24	PK
4	9371.25	37.43	1.51	38.94	54.00	15.06	150	161	AV
5	11570.02	35.96	2.33	38.29	54.00	15.71	150	6	AV
6	17355.37	31.69	8.97	40.66	54.00	13.34	150	318	AV

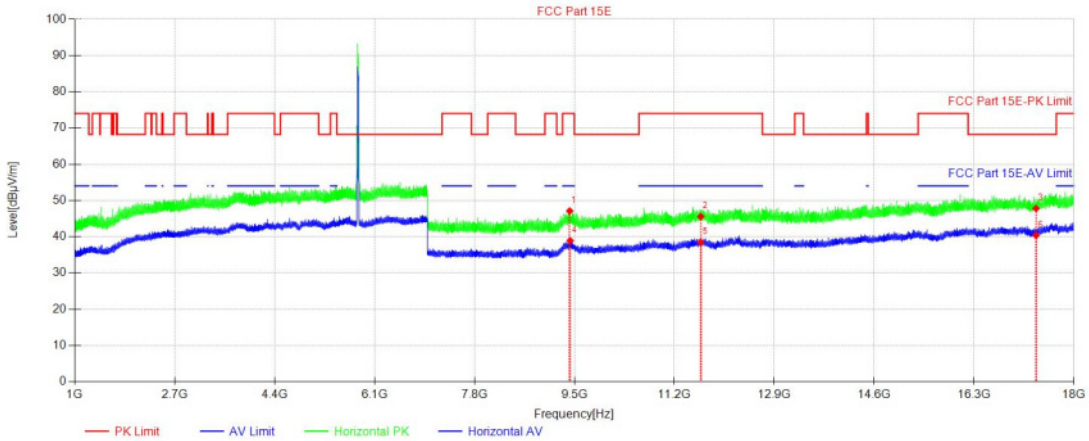
Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	9353.21	45.71	1.24	46.95	74.00	27.05	150	41	PK
2	11570.02	42.99	2.33	45.32	74.00	28.68	150	96	PK
3	17355.37	40.90	8.97	49.87	68.20	18.33	150	4	PK
4	9418.34	36.72	1.79	38.51	54.00	15.49	150	278	AV
5	11570.02	36.31	2.33	38.64	54.00	15.36	150	41	AV
6	17355.37	32.04	8.97	41.01	54.00	12.99	150	135	AV

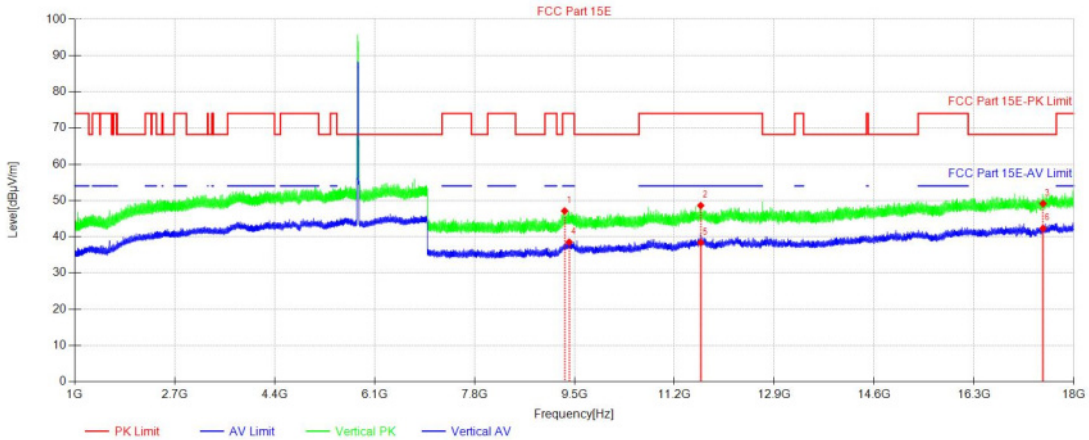
11A 5825MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	9421.42	45.35	1.76	47.11	74.00	26.89	150	201	PK
2	11650.11	43.26	2.32	45.58	74.00	28.42	150	319	PK
3	17355.37	38.84	8.97	47.81	68.20	20.39	150	319	PK
4	9428.46	37.20	1.71	38.91	54.00	15.09	150	140	AV
5	11650.11	36.15	2.32	38.47	54.00	15.53	150	339	AV
6	17355.37	31.38	8.97	40.35	-	-	150	201	AV

Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	9334.29	46.16	0.96	47.12	74.00	26.88	150	299	PK
2	11650.11	46.29	2.32	48.61	74.00	25.39	150	84	PK
3	17475.06	39.60	9.55	49.15	68.20	19.05	150	201	PK
4	9412.18	36.67	1.84	38.51	54.00	15.49	150	337	AV
5	11650.11	36.03	2.32	38.35	54.00	15.65	150	258	AV
6	17475.06	32.75	9.55	42.30	54.00	11.7	150	0	AV

Note:

1. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

   Result Level= Reading Level + Correct Factor(including Ant.Factor, Cable Factor etc.)

2. The amplitude of 9KHz to 30MHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

3. The amplitude of 18GHz to 40GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be report.

4. All channels had been pre-test, 802.11a is the worst case, only the worst case was reported.

3.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2013		
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 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	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	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])

Test Setup:

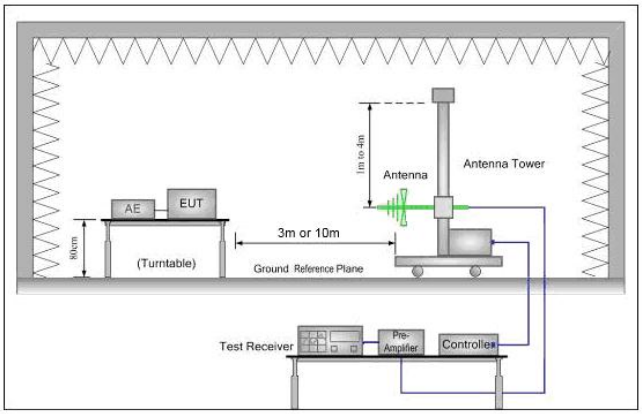


Figure 1. 30MHz to 1GHz

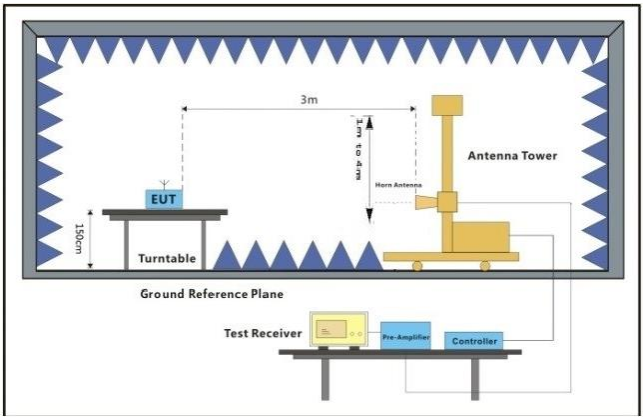


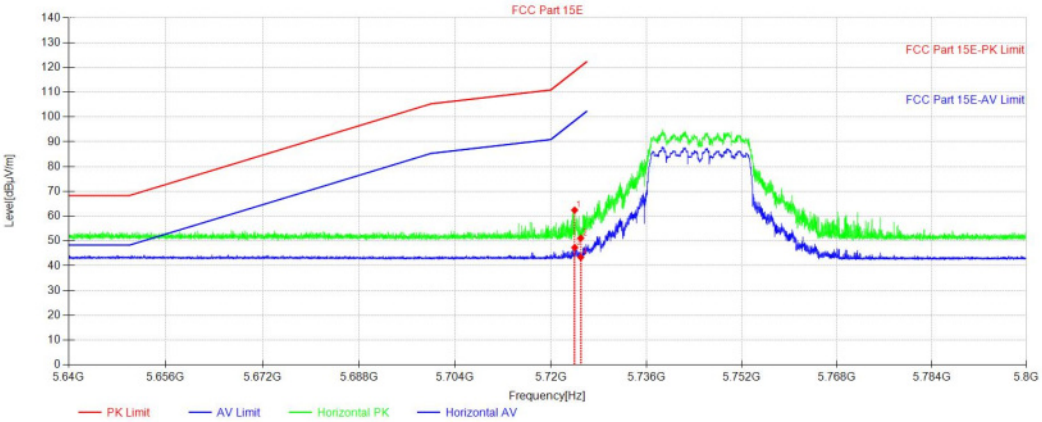
Figure 2. Above 1 GHz

Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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. c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. 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. e. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel h. Test the EUT in the lowest channel , the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ⩾ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ⩾ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge + Transmitting mode. Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ax(HE20); MCS0 of rate is the worst case of 802.11ax(HE40); Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details

Test Results:	Pass

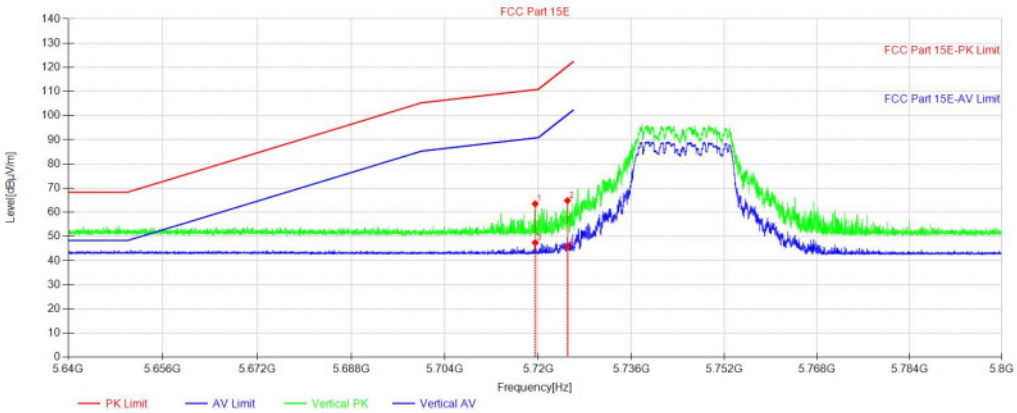
Test Date
11A 5745MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	5723.98	57.21	5.21	62.42	118.46	56.04	150	255	PK
2	5725.00	45.94	5.21	51.15	120.40	69.25	150	163	PK
3	5723.99	42.14	5.21	47.35	98.49	51.14	150	245	AV
4	5725.00	38.18	5.21	43.39	100.40	57.01	150	277	AV

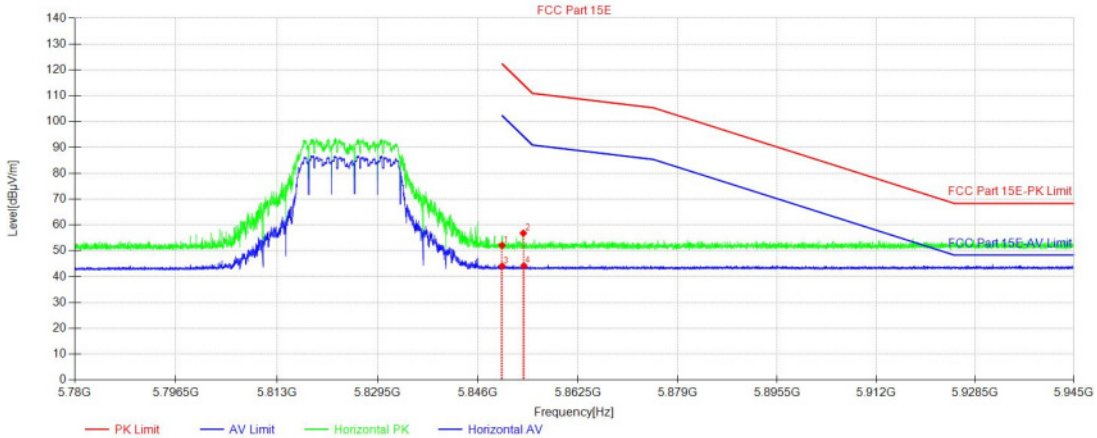
Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	5719.46	58.31	5.20	63.51	110.75	47.24	150	220	PK
2	5725.00	59.61	5.21	64.82	120.40	55.58	150	232	PK
3	5719.48	42.21	5.20	47.41	90.75	43.34	150	220	AV
4	5725.00	40.48	5.21	45.69	100.40	54.71	150	232	AV

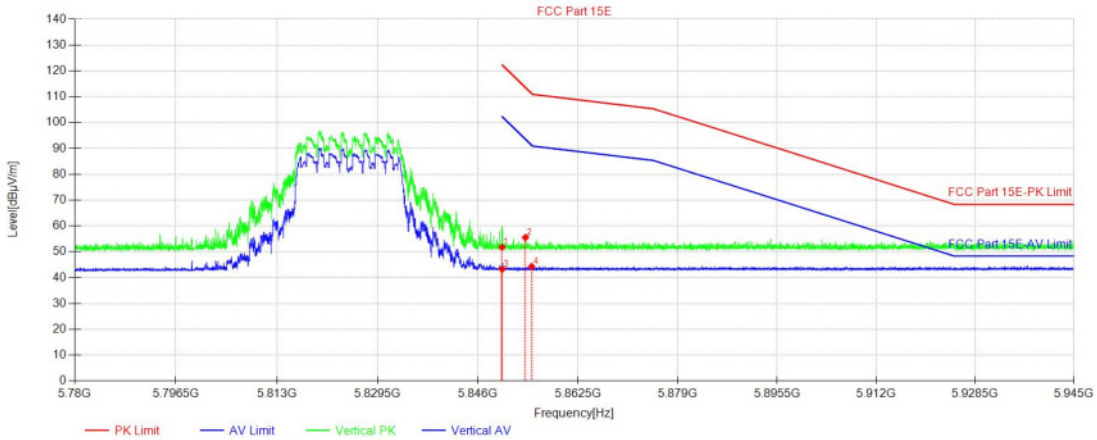
11A 5785MHz

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	5850.00	46.58	5.50	52.08	122.30	70.22	150	305	PK
2	5853.50	51.28	5.51	56.79	114.32	57.53	150	220	PK
3	5850.00	38.61	5.50	44.11	102.30	58.19	150	204	AV
4	5853.60	38.68	5.51	44.19	94.10	49.91	150	131	AV

Vertical:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	AV Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	5850.00	46.28	5.50	51.78	122.30	70.52	150	357	PK
2	5853.84	50.00	5.51	55.51	113.53	58.02	150	231	PK
3	5850.00	37.74	5.50	43.24	102.30	59.06	150	102	AV
4	5854.88	38.78	5.51	44.29	91.16	46.87	150	357	AV

1. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including Ant.Factor and the Cable Factor etc.), The basic equation is as follows:

Result Level= Reading Level + Correct Factor(including Ant.Factor, Cable Factor etc.)

2. All channels had been pre-test, 802.11a is the worst case, only the worst case was reported.

3.11 AC Power Line Conducted Emissions

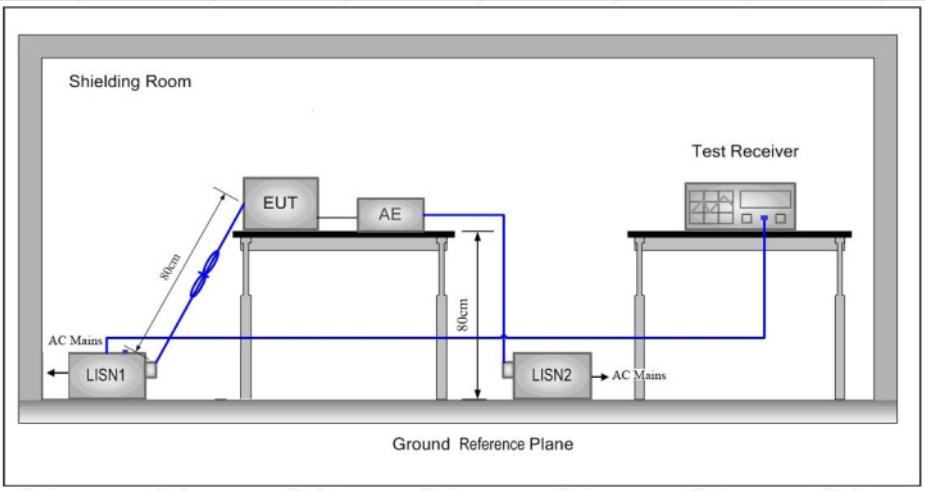
Test Requirement:	47 CFR Part 15 Section 15.407(b)
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Limit:	

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

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. 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 2013 on conducted measurement.

Test Setup:



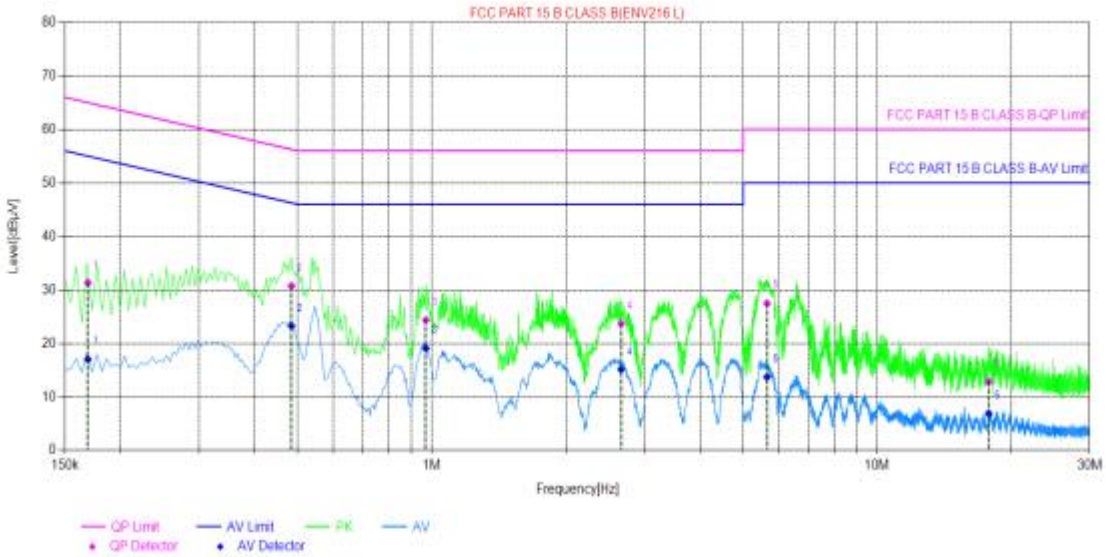
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel. Charge + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the 6.5Mbps of rate of 802.11n(HT20) at lowest

	channel is the worst case. Charge + Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details
Test Results:	Pass

Measurement Data

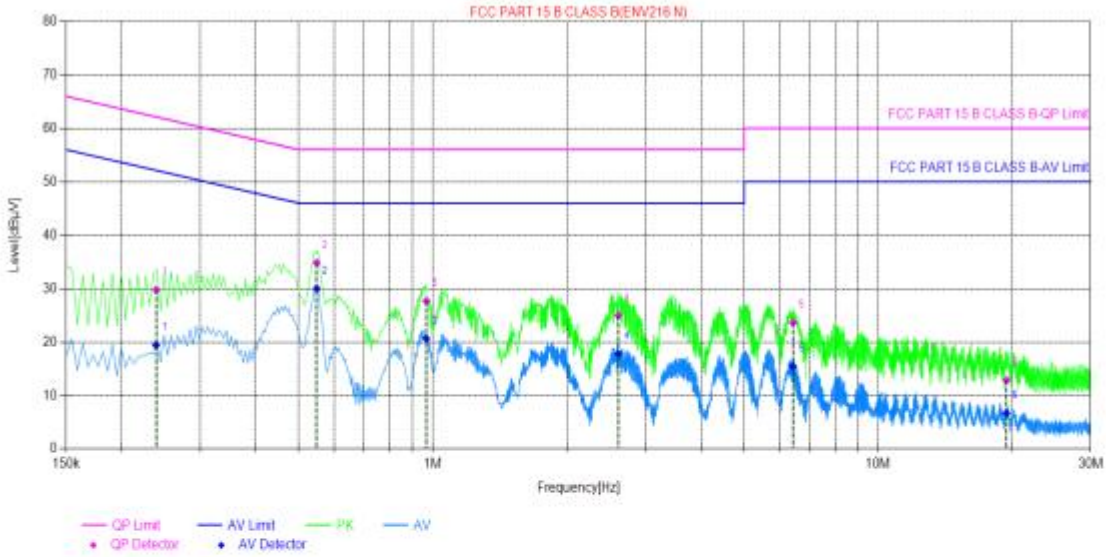
An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1688	9.91	31.34	65.02	33.68	17.01	55.02	38.01	PASS
2	0.4836	9.86	30.75	56.28	25.53	23.27	46.28	23.01	PASS
3	0.9691	9.72	24.37	56.00	31.63	19.08	46.00	26.92	PASS
4	2.6604	9.73	23.70	56.00	32.30	15.14	46.00	30.86	PASS
5	5.6562	9.81	27.47	60.00	32.53	13.73	50.00	36.27	PASS
6	17.7930	10.06	12.84	60.00	47.16	6.89	50.00	43.11	PASS

Neutral Line:



Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.2390	9.87	29.78	62.13	32.35	19.42	52.13	32.71	PASS
2	0.5484	9.75	34.84	56.00	21.16	30.00	46.00	16.00	PASS
3	0.9664	9.70	27.67	56.00	28.33	20.67	46.00	25.33	PASS
4	2.6082	9.83	24.98	56.00	31.02	17.82	46.00	28.18	PASS
5	6.4369	9.98	23.63	60.00	36.37	15.45	50.00	34.55	PASS
6	19.4163	10.05	12.83	60.00	47.17	6.68	50.00	43.32	PASS

Remark:

1. The 802.11A is the worse case.
2. The following Quasi-Peak and Average measurements were performed on the EUT:
3. The Measurement (Result Level) is calculated by Reading Level adding the Correct Factor(maybe including LISN Factor and the Cable Factor etc.), The basic equation is as follows:

Result Level= Reading Level + Correct Factor(including LISN Factor, Cable Factor etc.)

4 Appendix

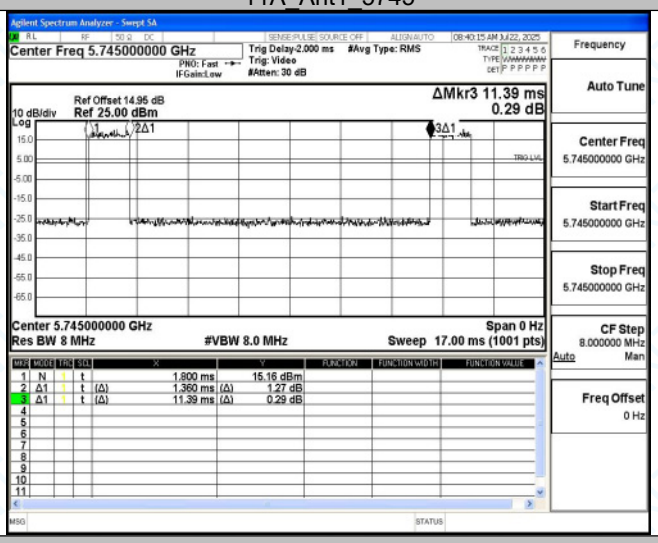
Appendix A: Duty Cycle

Test Result

Test Mode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11A	Ant1	5745	1.36	11.39	11.94	---	---
		5785	1.36	11.39	11.94	---	---
		5825	1.37	11.39	12.03	---	---
11N20SISO	Ant1	5745	1.28	11.31	11.32	---	---
		5785	1.30	11.31	11.49	---	---
		5825	1.27	11.30	11.24	---	---
11N40SISO	Ant1	5755	0.65	10.68	6.09	---	---
		5795	0.64	10.65	6.01	---	---
11AC40SISO	Ant1	5755	0.63	10.66	5.91	---	---
		5795	0.63	10.66	5.91	---	---
11AX20SISO	Ant1	5745	1.00	11.03	9.07	---	---
		5785	1.00	11.03	9.07	---	---
		5825	1.01	11.04	9.15	---	---
11AX40SISO	Ant1	5755	0.53	10.56	5.02	---	---
		5795	0.53	10.56	5.02	---	---

Test Graphs

11A_Ant1_5745



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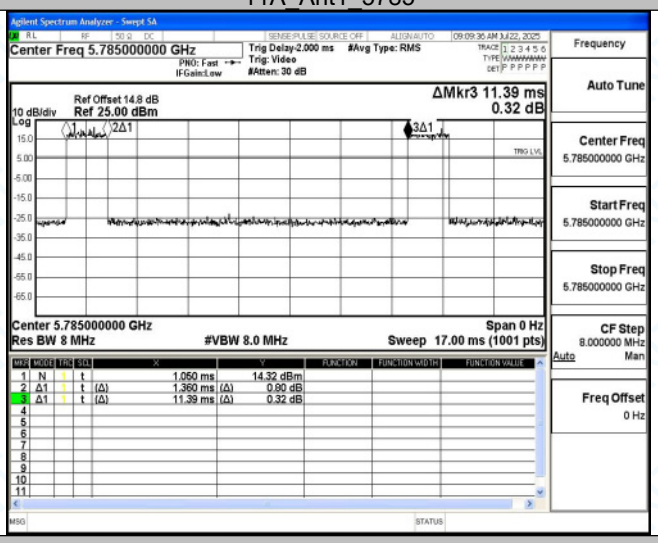
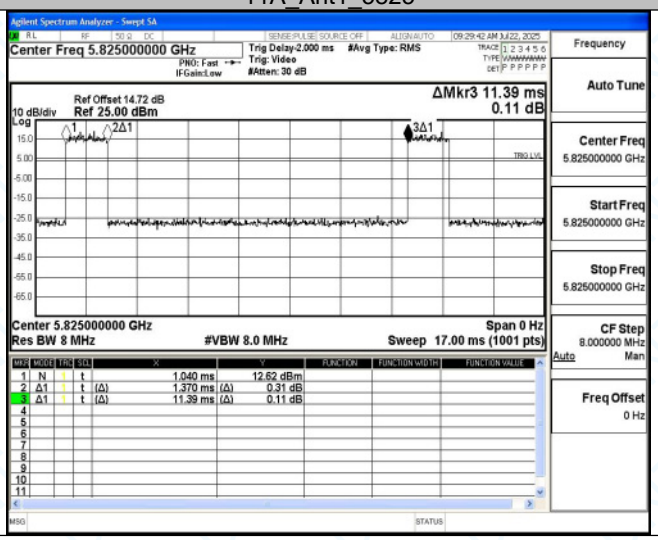


11A_Ant1_5825



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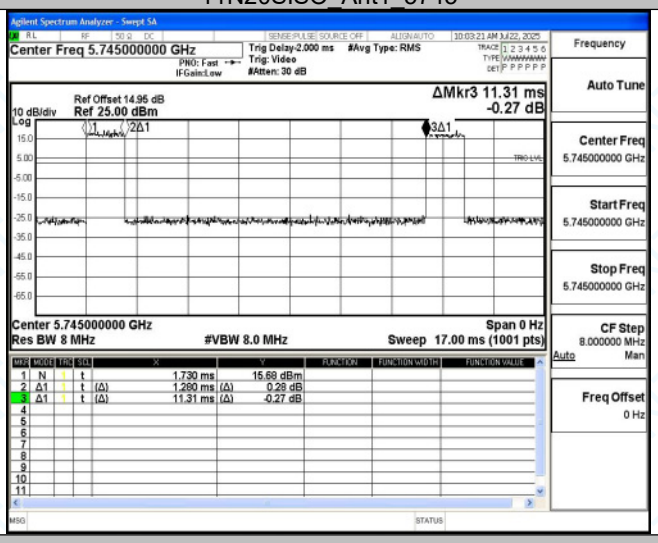

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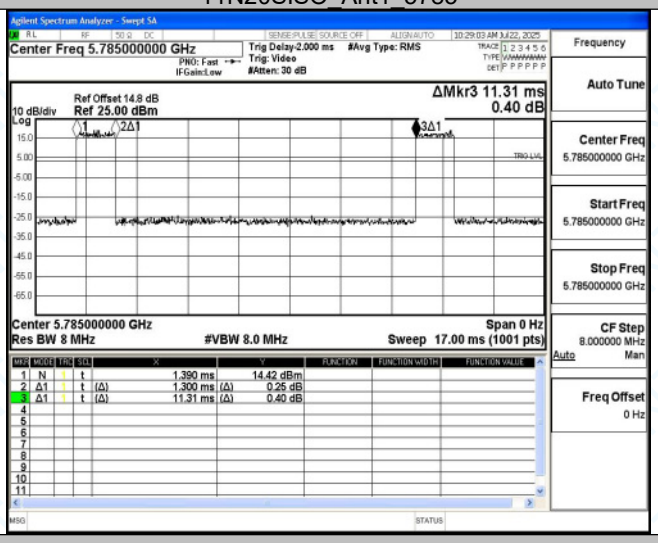

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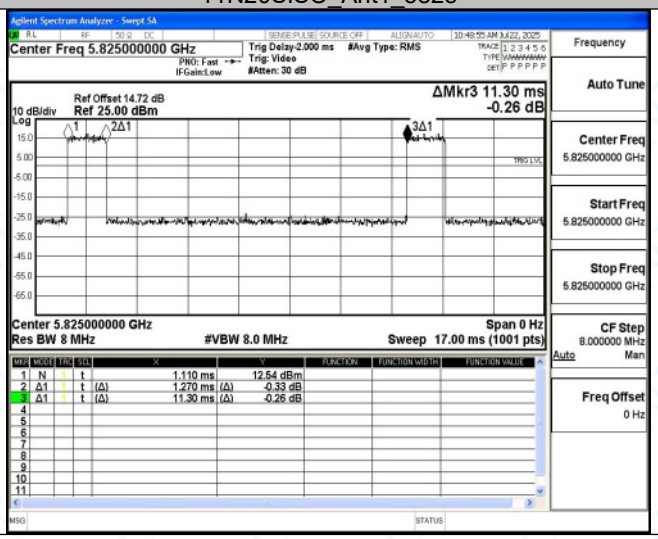
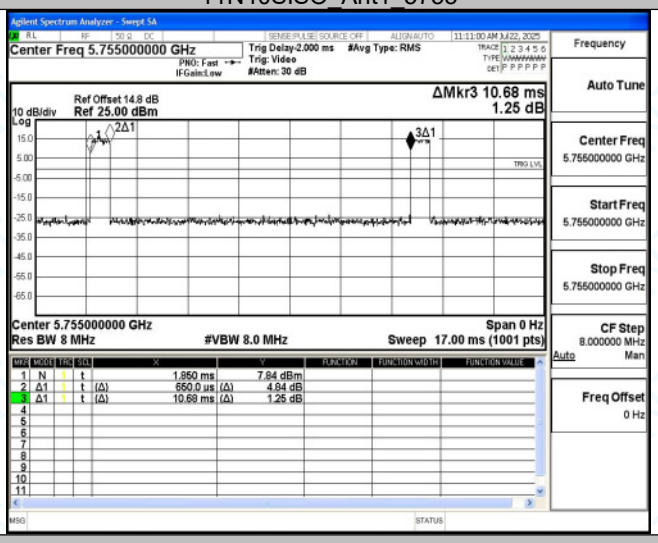


11N40SISO_Ant1_5755



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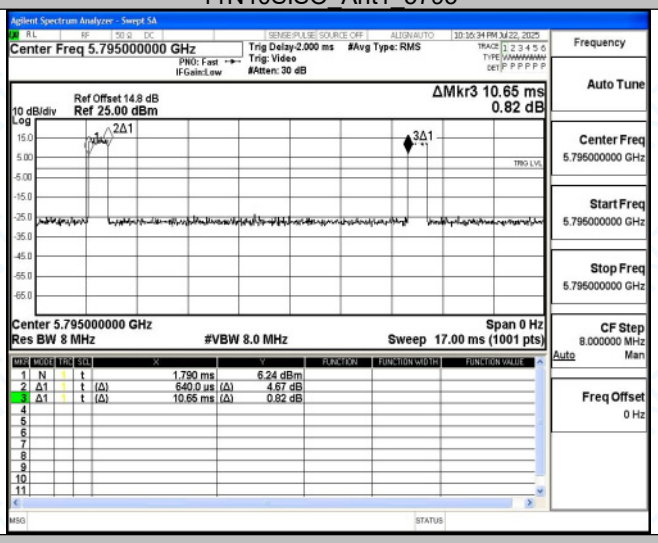

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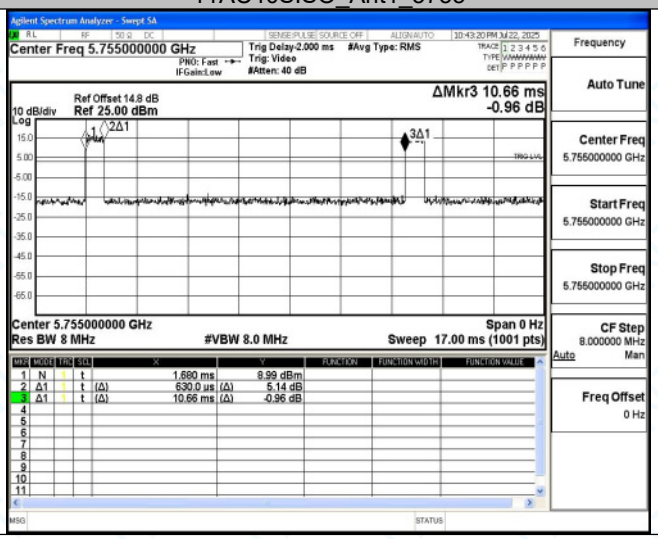

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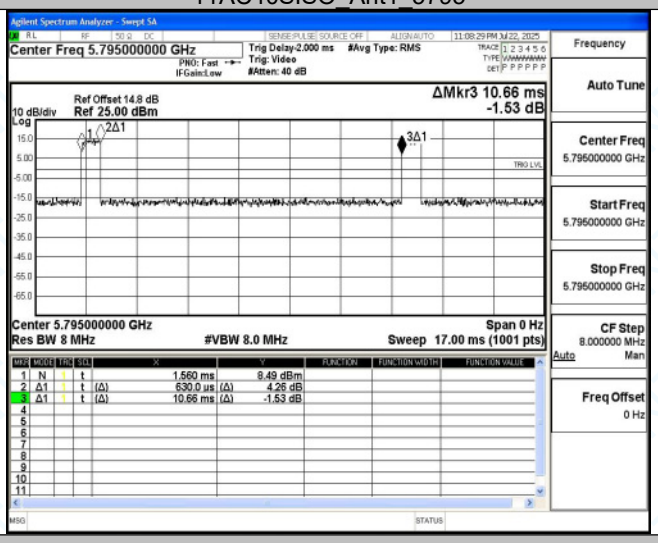
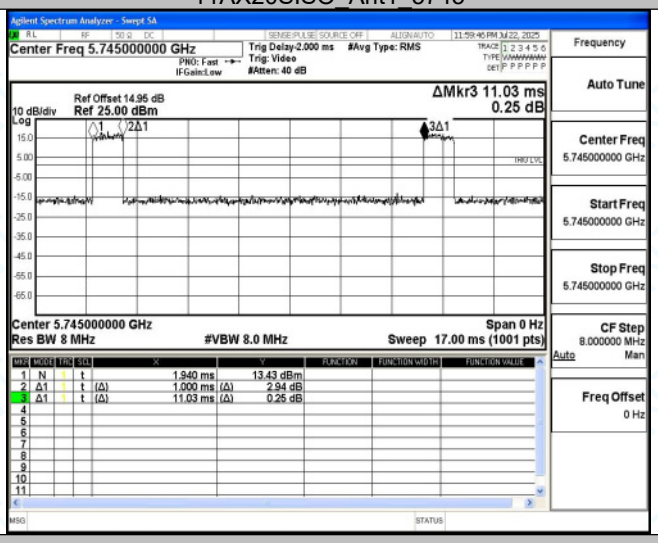
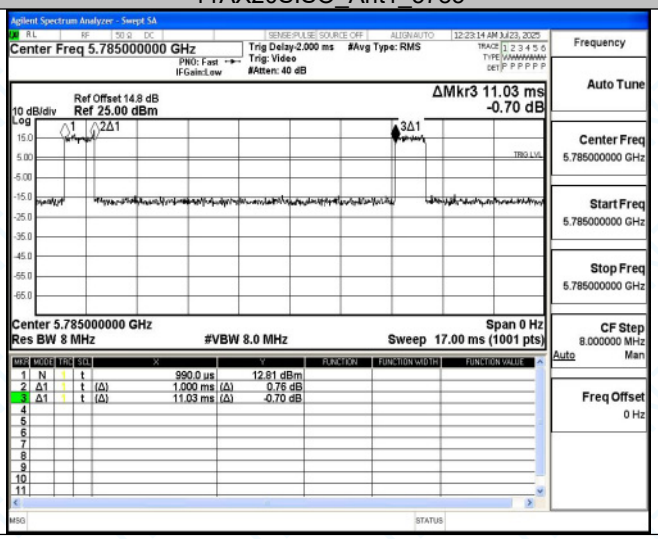


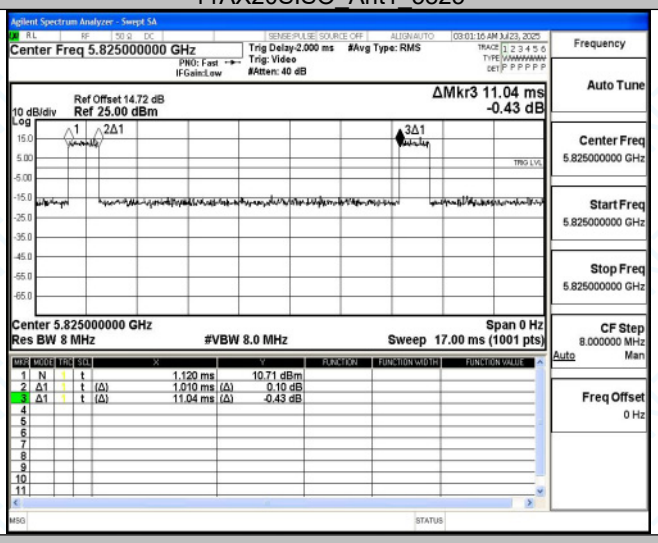
11AX20SISO_Ant1_5745



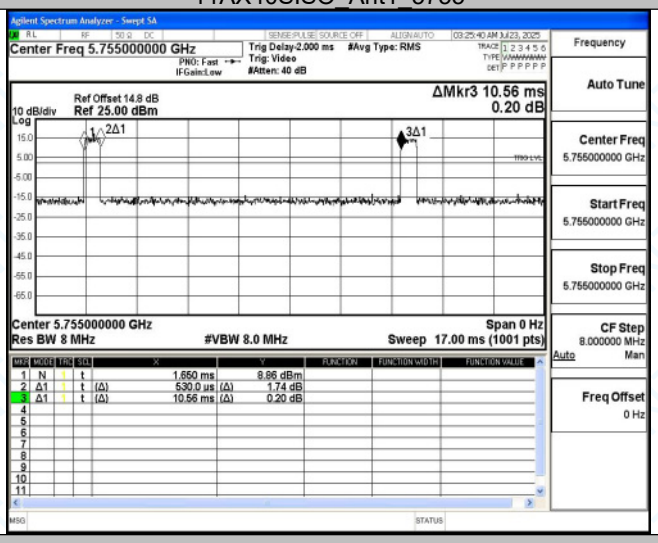
11AX20SISO_Ant1_5785



11AX20SISO_Ant1_5825



11AX40SISO_Ant1_5755



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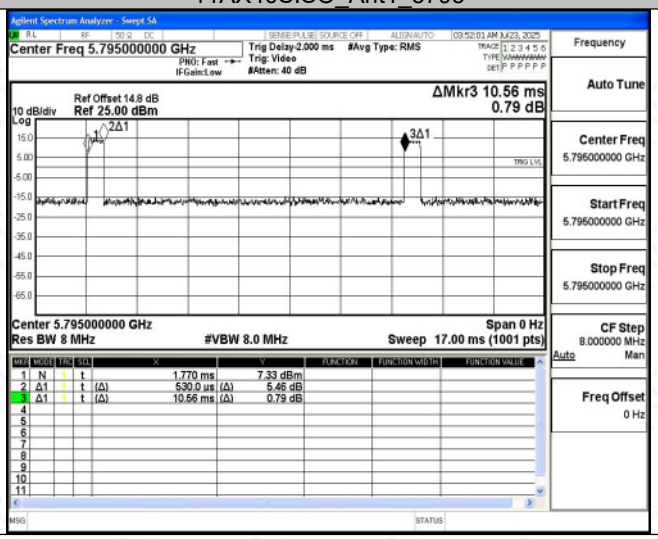


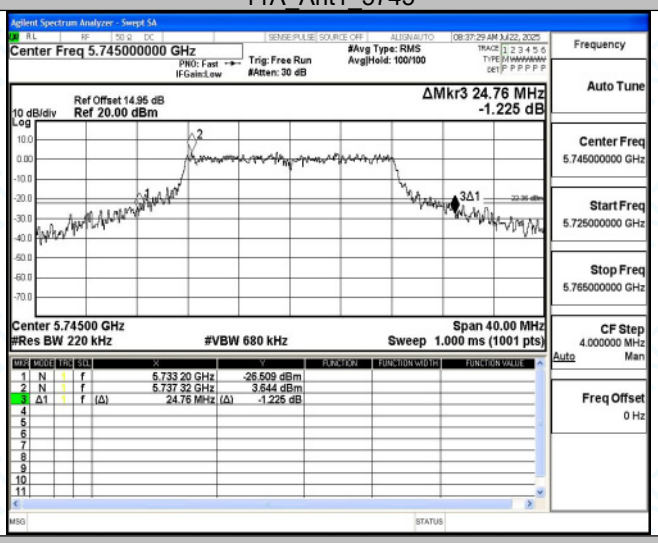
Appendix B: 26dB Emission Bandwidth

Test Result

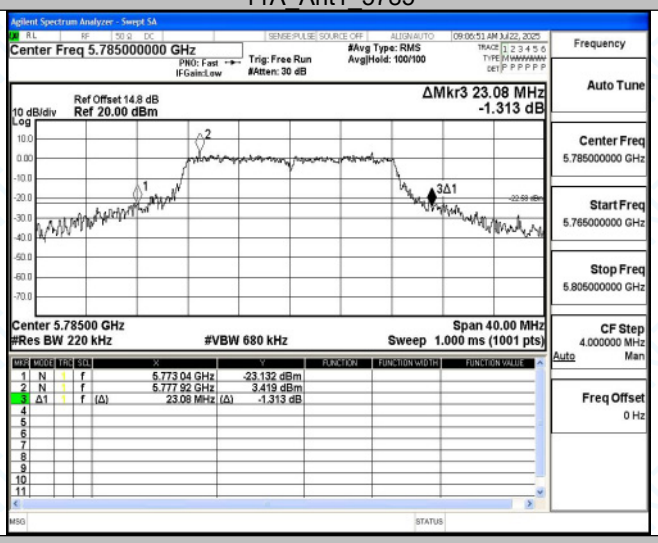
TestMode	Antenna	Freq(MHz)	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	24.760	5733.200	5757.960	---	---
		5785	23.080	5773.040	5796.120	---	---
		5825	24.240	5812.560	5836.800	---	---
11N20SISO	Ant1	5745	24.120	5732.760	5756.880	---	---
		5785	26.560	5772.040	5798.600	---	---
		5825	25.840	5811.640	5837.480	---	---
11N40SISO	Ant1	5755	43.520	5733.160	5776.680	---	---
		5795	45.840	5771.240	5817.080	---	---
11AC40SISO	Ant1	5755	51.040	5725.720	5776.760	---	---
		5795	55.600	5762.680	5818.280	---	---
11AX20SISO	Ant1	5745	26.960	5732.120	5759.080	---	---
		5785	25.440	5771.840	5797.280	---	---
		5825	27.040	5812.240	5839.280	---	---
11AX40SISO	Ant1	5755	43.600	5733.000	5776.600	---	---
		5795	41.280	5775.720	5817.000	---	---

Test Graphs

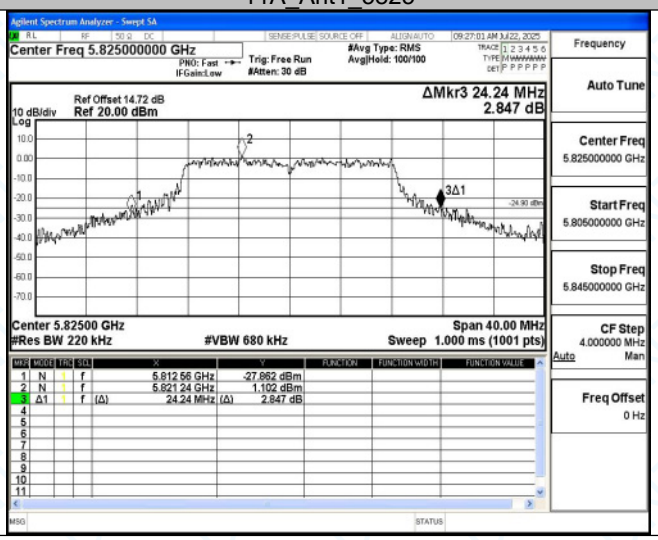
11A_Ant1_5745



11A_Ant1_5785



11A_Ant1_5825



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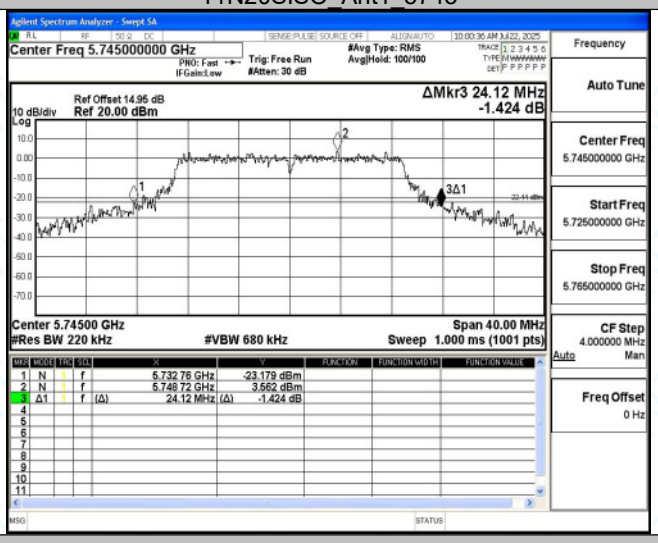

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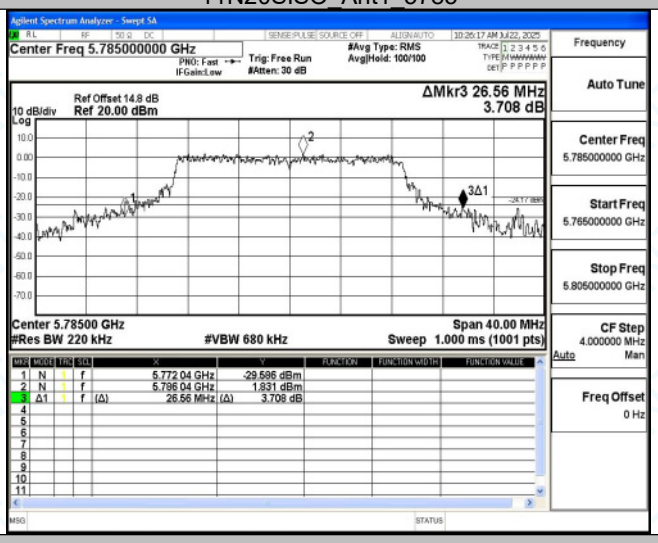
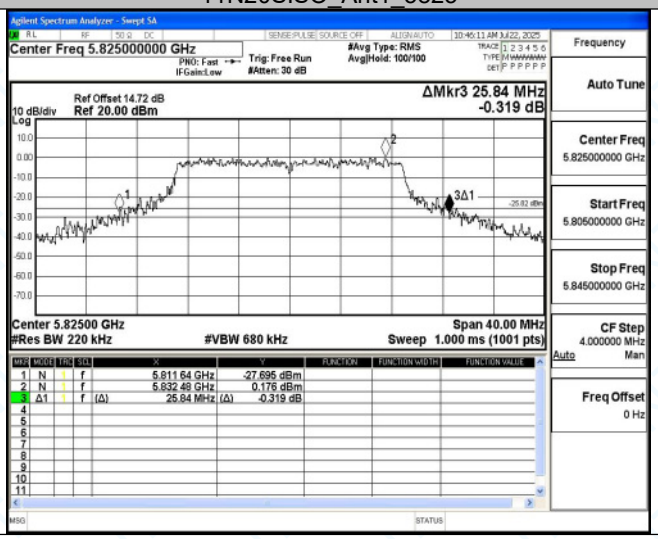
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