FCC Test Report

Application No.:	DNT2602280172R00313-01490
Applicant:	Shenzhen Green Giant Energy Technology Development Co.,Ltd
Address of Applicant:	Room 203,Building B,Minle Science Industrial Park,Minzhi St.,LonghuaDist.Shenzhen
EUT Description:	Wireless Direct Mirroring Box
Model No.:	S9
FCC ID:	2A77D-S9
Power Supply	DC 5V
Trade Mark:	/
Standards:	47 CFR FCC Part 2, Subpart J 47 CFR Part 15, Subpart E ANSI C63.10: 2020
Date of Receipt:	2026/02/28
Date of Test:	2026/03/01 to 2026/03/25
Date of Issue:	2026/03/26
Test Result:	**PASS**

Prepared By: Gale . Lin (Testing Engineer)

Reviewed By: Wayne . Lin (Project Engineer)

Approved By: Yeise 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.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar.26, 2026	Valid	Original Report

1 Test Summary

No.	Description of Test Item	FCC Standard Section	Results
1	26dB Bandwidth	15.407(a) 15.407(e)	N/A
1	6dB 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.

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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:	Gali Lin

2.2 General Description of EUT

Manufacturer:	Shenzhen Green Giant Energy Technology Development Co.,Ltd
Address of Manufacturer:	Room 203,Building B,Minle Science Industrial Park,Minzhi St.,LonghuaDist.Shenzhen
EUT Description:	Wireless Direct Mirroring Box
Test Model No.:	S9
Additional Model(s):	/
Power Supply:	DC 5V
Trade Mark:	/
Hardware Version:	V1.0
Software Version:	V1.0
Chip Type:	AM9421
Serial number	PR2602280172R00313
IEEE 802.11 WLAN Mode Supported	☒ 802.11a (20 MHz channel bandwidth), ☒ 802.11n (20 MHz channel bandwidth).
Operation Frequency:	U-NII-3: 5745 MHz~5825 MHz
Type of Modulation:	OFDM
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), ☐ MIMO (for 802.11n/ac/ax), ☐ Diversity (for 802.11a).
Antenna Gain*:	☒ Provided by applicant
	4.81dBi
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)
UNII-3	IEEE 802.11a & n HT20	149	5745
		153	5765
		157	5785
		161	5805
		165	5825

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:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

2.5 Power Setting of Test Software

Software Name	MP Tool		
Frequency(MHz)	5745	5785	5825
11a	8	8	8
11n20	8	8	8

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	2025-10-21	2026-10-20
Signal Generator	Keysight	N5182B	MY57300617	2025-10-21	2026-10-20
Power supply	Keysight	E3640A	ZB2022656	2025-10-21	2026-10-20
Radio Communication Tester	R&S	CMW500	105082	2025-10-21	2026-10-20
Spectrum Analyzer	Aglient	N9010A	MY52220200	2025-10-21	2026-10-20
BT/WIFI Test Software	Tonscend	JS1120 V3.1.83	NA	NA	NA
RF Control Unit	Tonscend	JS0806-2	22F8060581	NA	NA
Power Sensor	Anritsu	ML2495A	2129005	2025-10-21	2026-10-20
Pulse Power Sensor	Anritsu	MA2411B	1911397	2025-10-21	2026-10-20
temperature and humidity box	SCOTEK	SCD-C40-80PRO	6866682020008	2025-10-21	2026-10-20
RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	NA	2025-10-21	2026-10-20

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESCI3	101152	2025-10-21	2026-10-20
LISN	R&S	ENV216	102874	2025-10-21	2026-10-20
ISN	R&S	ENY81-CA6	1309.8590.03	2025-10-21	2026-10-20
RF Cable	ETS-LINDGREN	Cable-CE TS01	/	2025-10-21	2026-10-20

Test Equipment for Radiated Emission(30MHz-1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESR7	102497	2025-10-21	2026-10-20
Test Software	Tonscend	JS32-RE	NA	NA	NA
RF Cable	ETS-LINDGREN	RE Cable-TS01	NA	2025-10-21	2026-10-20
Log periodic antenna	ETS-LINDGREN	VULB 9168	01475	2025-10-21	2026-10-20

Pre-amplifier	Schwarzbeck	BBV9743B	00423	2025-10-21	2026-10-20
Attenuator 1	Shanghai Huaxiang	TS2-6-18-A	22061803	2025-5-6	2026-5-5
Attenuator 2	Shanghai Huaxiang	TS2-6-6-A	230927163	2025-5-6	2026-5-5

Test Equipment for Radiated Emission(Above 1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Frequency analyser	Keysight	N9010A	MY52221458	2025-10-21	2026-10-20
RF Cable	ETS-LINDGREN	RE Cable-TS02	NA	2025-10-21	2026-10-20
Horn Antenna	ETS-LINDGREN	3117	00252567	2025-10-21	2026-10-20
Double ridged waveguide antenna	ETS-LINDGREN	3116C	00251780	2025-10-21	2026-10-20
Test Software	Tonscend	JS32-RE	NA	NA	NA
Pre-amplifier	ETS-LINDGREN	3117-PA	252567	2025-10-21	2026-10-20
Pre-amplifier	ETS-LINDGREN	3116C-PA	251780	2025-10-21	2026-10-20

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 antenna is integrated to the motherboard, The best case gain of the antenna is 4.81dBi.	

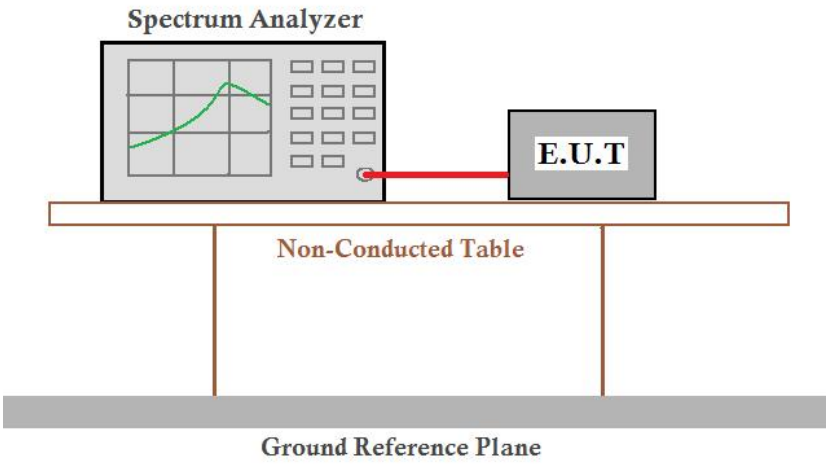
3.2 Duty Cycle

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).

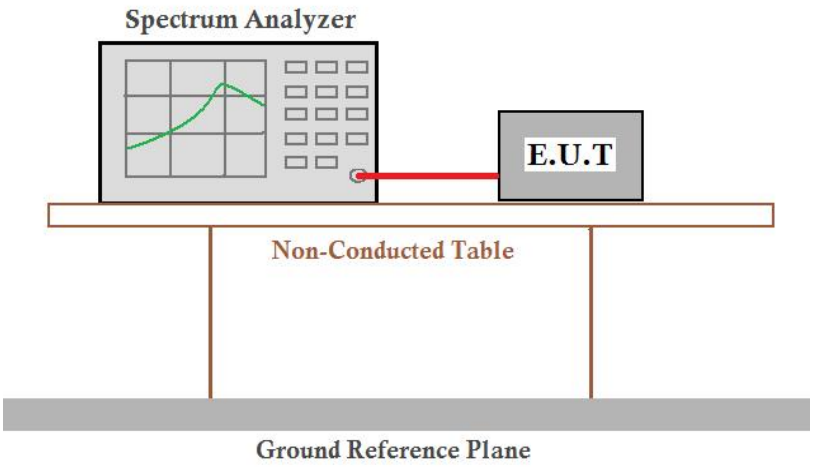
3.3 Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2020
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 worst case of all modulations. 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:N/A

3.4 DTS (6 dB) Bandwidth

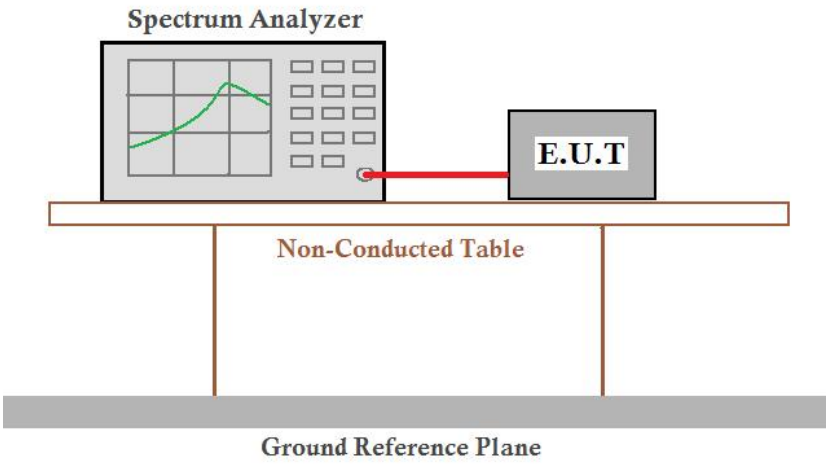
Test Requirement:	47 CFR Part 15 Section 15.407(e)
Test Method:	ANSI C63.10: 2020
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the worst case of all modulations. Only 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 B**

3.5 99% Occupied Bandwidth

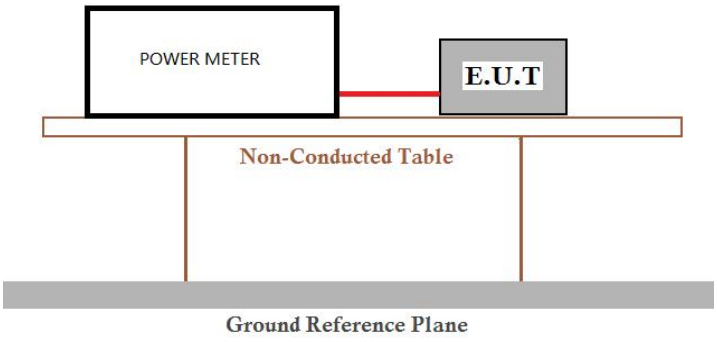
Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2020
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the worst case of all modulations. Only 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

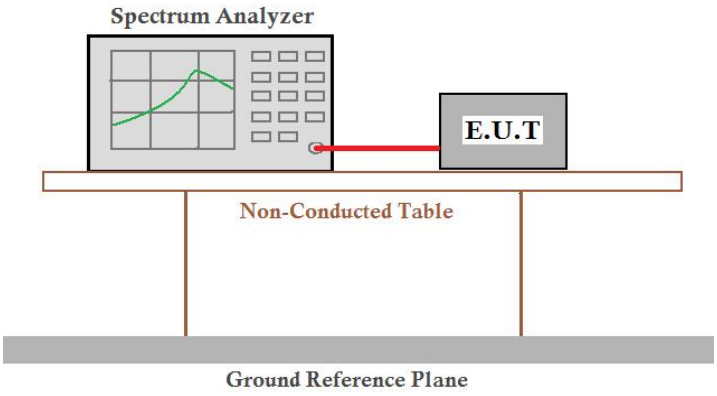
The detailed test data see: **Appendix C**

3.6 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2020	
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 worst case of all modulations. Only the worst case is recorded in the report.	
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: 2020 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 worst case of all modulations. Only the worst case is recorded in the report.	
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 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)				
Test Method:	ANSI C63.10: 2020				
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:	

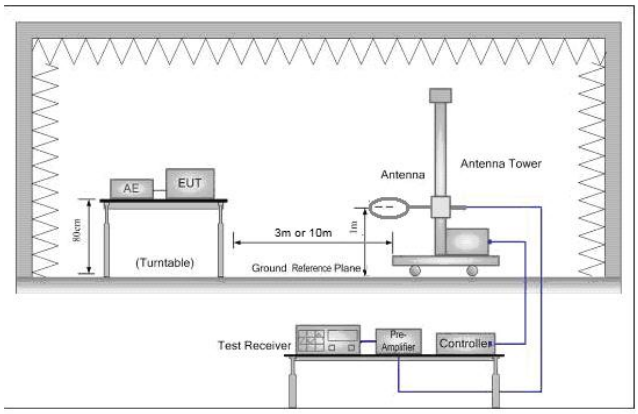


Figure 1. Below 30MHz

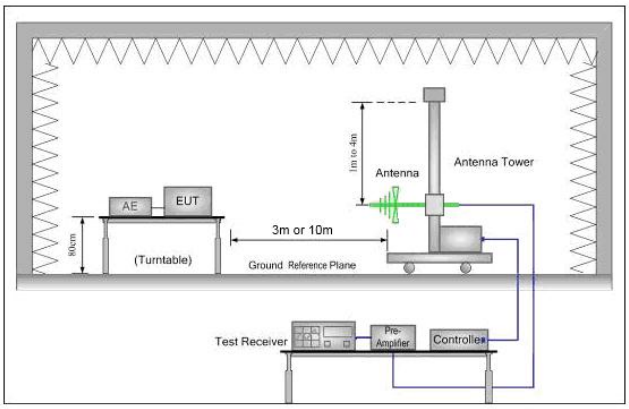


Figure 2. 30MHz to 1GHz

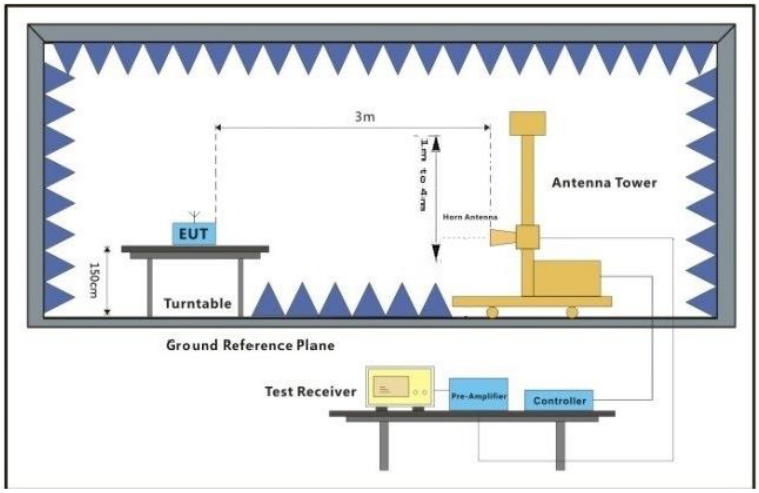


Figure 3. Above 1 GHz

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.

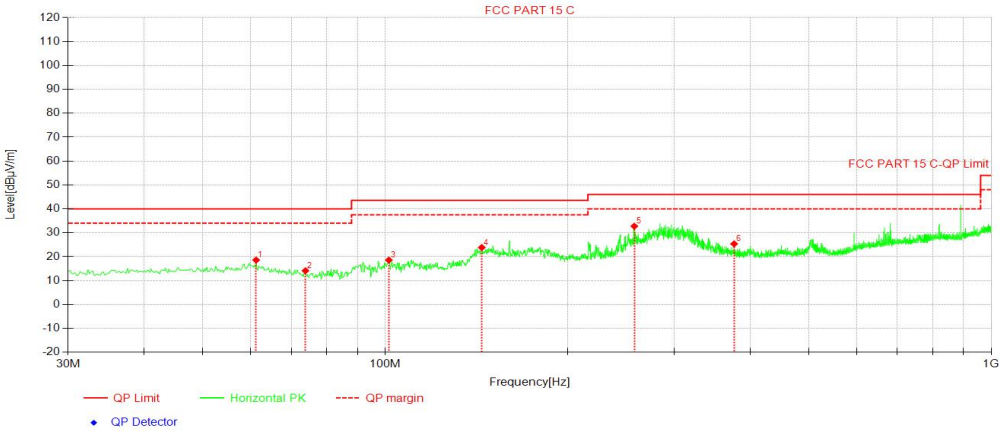
	j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ⩾ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = 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 worst case of all modulations. Only the worst case is recorded in the report. 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

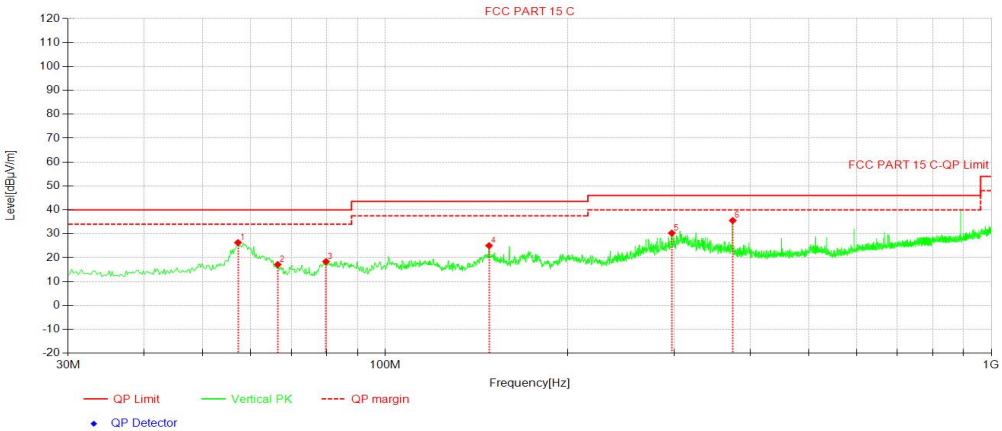
5.8G

Horizontal:



NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	61.24	27.49	-8.91	18.58	40.00	21.42	200	192	PK
2	73.85	25.03	-10.92	14.11	40.00	25.89	200	133	PK
3	101.41	30.98	-12.41	18.57	43.50	24.93	200	84	PK
4	144.29	32.04	-8.21	23.83	43.50	19.67	200	75	PK
5	257.61	41.45	-8.70	32.75	46.00	13.25	100	57	PK
6	376.36	30.28	-4.93	25.35	46.00	20.65	200	34	PK

Vertical :

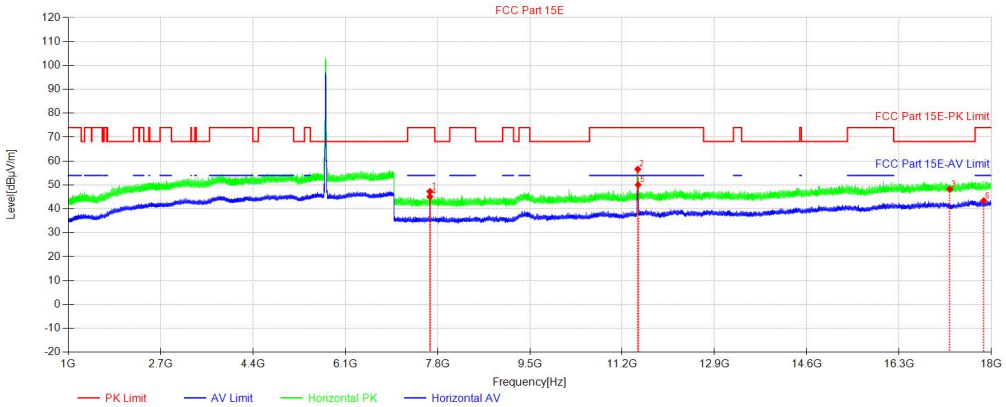


NO.	Freq. [MHz]	Reading Level [dBμV]	Correct Factor [dB/m]	Result Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	57.17	34.78	-8.48	26.30	40.00	13.70	100	242	PK
2	66.48	26.64	-9.53	17.11	40.00	22.89	100	307	PK
3	79.87	30.87	-12.51	18.36	40.00	21.64	100	262	PK
4	148.36	32.99	-7.97	25.02	43.50	18.48	100	39	PK
5	297.00	37.35	-7.08	30.27	46.00	15.73	100	213	PK
6	374.42	40.53	-5.00	35.53	46.00	10.47	100	20	PK

For above 1GHz

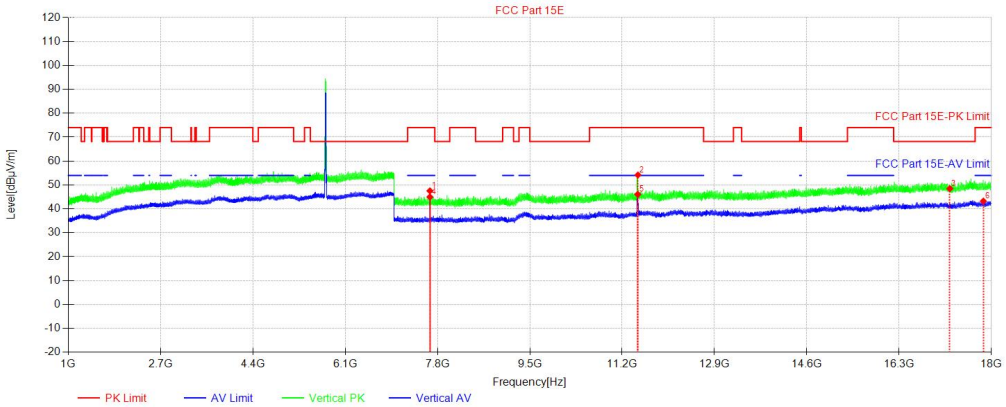
5.8G 11A 5745MHz

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	7660.03	48.39	-1.14	47.25	74.00	26.75	150	70	PK
2	11489.06	54.57	2.03	56.60	74.00	17.40	150	166	PK
3	17235.25	39.41	8.86	48.27	68.20	19.93	150	0	PK
4	7660.47	46.21	-1.14	45.07	54.00	8.93	150	70	AV
5	11494.78	48.02	2.05	50.07	54.00	3.93	150	70	AV
6	17858.75	33.12	10.31	43.43	54.00	10.57	150	108	AV

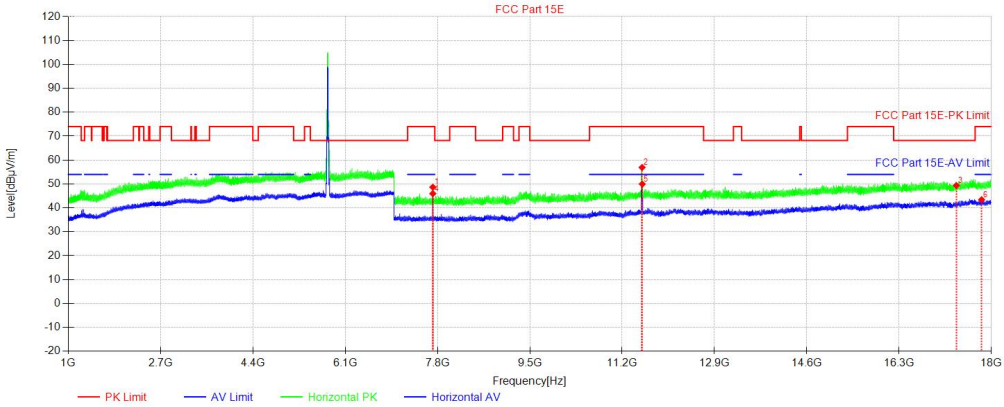
Vertical:



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	7660.03	48.69	-1.14	47.55	74.00	26.45	150	84	PK
2	11490.82	52.14	2.03	54.17	74.00	19.83	150	201	PK
3	17235.25	39.61	8.86	48.47	68.20	19.73	150	260	PK
4	7660.47	46.12	-1.14	44.98	54.00	9.02	150	104	AV
5	11488.18	44.03	2.03	46.06	54.00	7.94	150	220	AV
6	17852.15	32.96	10.29	43.25	54.00	10.75	150	240	AV

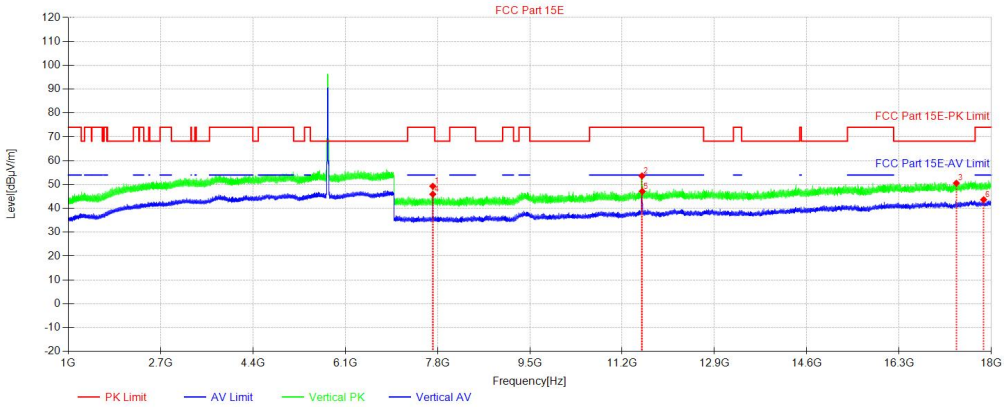
5.8G 11A 5785MHz

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	7713.27	49.75	-1.08	48.67	74.00	25.33	150	62	PK
2	11567.38	54.58	2.32	56.90	74.00	17.10	150	42	PK
3	17355.37	40.40	8.97	49.37	68.20	18.83	150	78	PK
4	7713.71	47.03	-1.08	45.95	54.00	8.05	150	62	AV
5	11570.90	47.62	2.34	49.96	54.00	4.04	150	62	AV
6	17820.03	33.22	10.20	43.42	54.00	10.58	150	42	AV

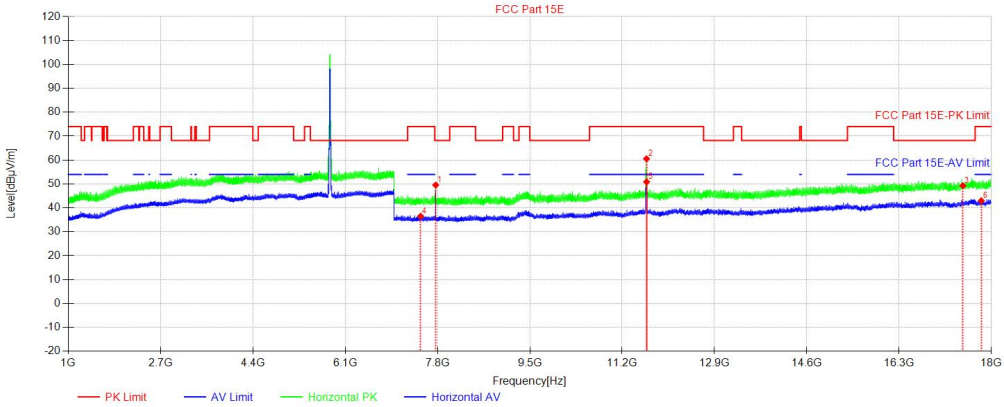
Vertical:



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	7713.27	50.36	-1.08	49.28	74.00	24.72	150	86	PK
2	11565.62	51.30	2.31	53.61	74.00	20.39	150	86	PK
3	17355.37	41.60	8.97	50.57	68.20	17.63	150	67	PK
4	7713.71	47.01	-1.08	45.93	54.00	8.07	150	86	AV
5	11570.02	44.80	2.33	47.13	54.00	6.87	150	204	AV
6	17857.87	33.34	10.31	43.65	54.00	10.35	150	144	AV

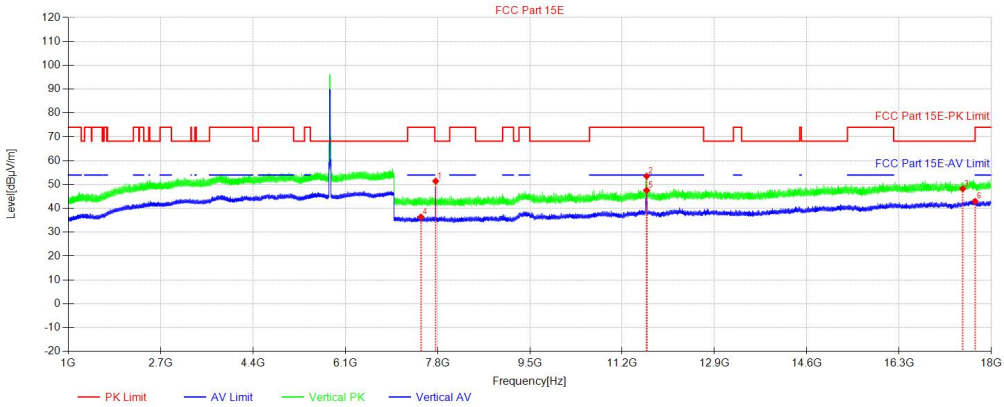
5.8G 11A 5825MHz

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	7766.51	50.56	-1.01	49.55	68.20	18.65	150	59	PK
2	11649.67	58.21	2.32	60.53	74.00	13.47	150	177	PK
3	17475.06	39.72	9.55	49.27	68.20	18.93	150	59	PK
4	7490.18	37.64	-1.16	36.48	54.00	17.52	150	318	AV
5	11650.11	48.54	2.32	50.86	54.00	3.14	150	177	AV
6	17815.19	32.80	10.18	42.98	54.00	11.02	150	356	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	7766.51	52.43	-1.01	51.42	68.20	16.78	150	86	PK
2	11650.99	51.19	2.32	53.51	74.00	20.49	150	123	PK
3	17475.06	38.69	9.55	48.24	68.20	19.96	150	276	PK
4	7495.90	37.55	-1.16	36.39	54.00	17.61	150	144	AV
5	11651.43	45.27	2.32	47.59	54.00	6.41	150	123	AV
6	17701.23	32.66	10.27	42.93	54.00	11.07	150	356	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.

3.9 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2020		
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:

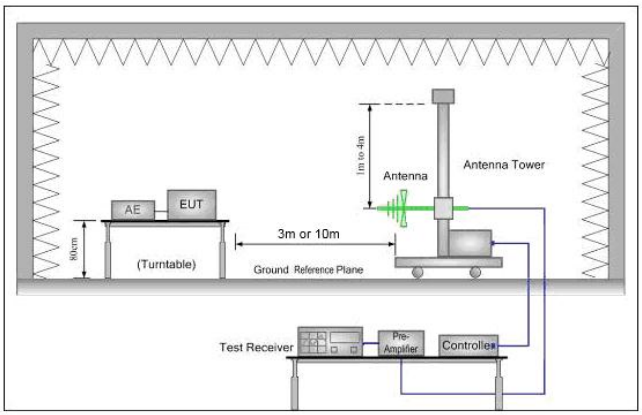


Figure 1. 30MHz to 1GHz

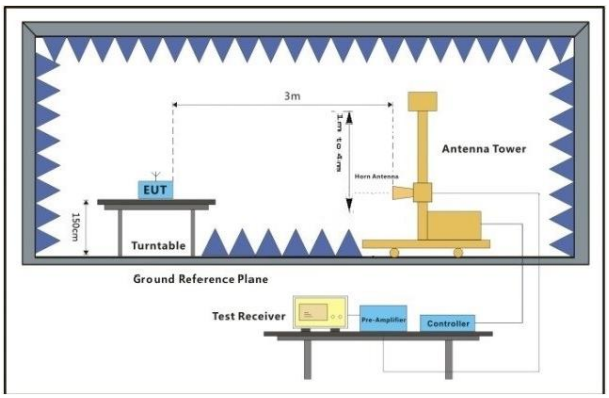
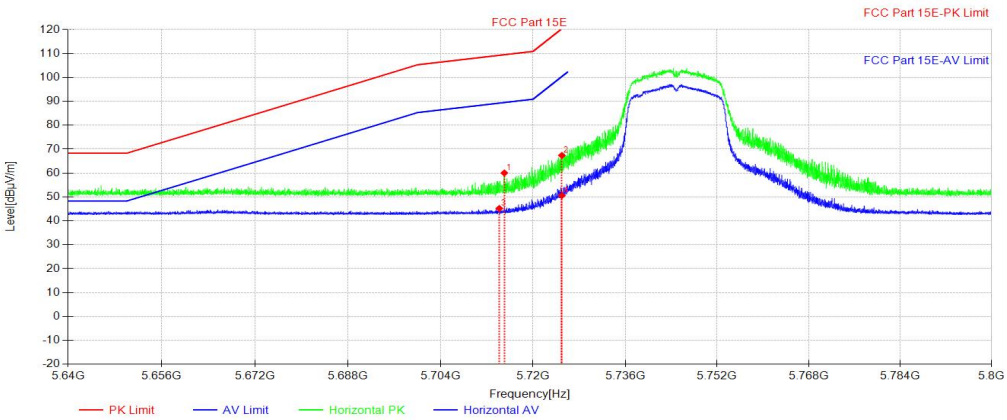


Figure 2. Above 1 GHz

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 worst case of all modulations. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 2.9 for details
Test Results:	Pass

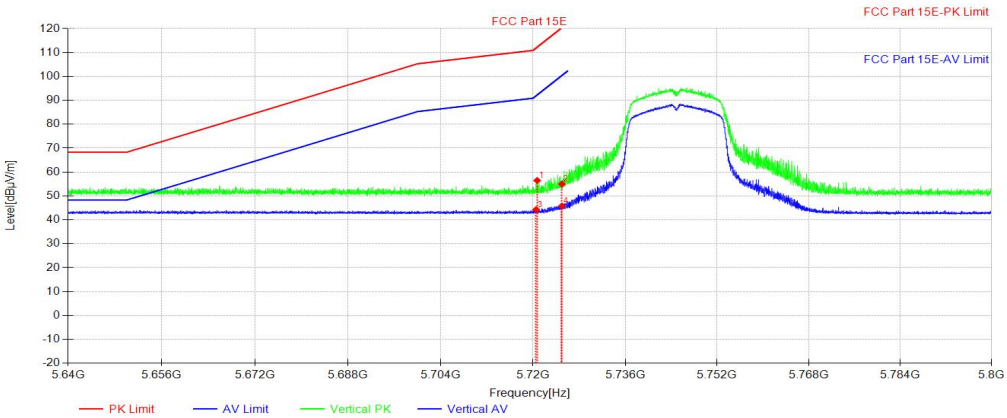
Test Date
5.8G 11A 5745MHz

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	5715.03	54.84	5.19	60.03	109.51	49.48	150	318	PK
2	5725.00	62.15	5.21	67.36	120.40	53.04	150	318	PK
3	5714.15	40.02	5.18	45.20	89.26	44.06	150	318	AV
4	5725.00	45.39	5.21	50.60	100.40	49.80	150	318	AV

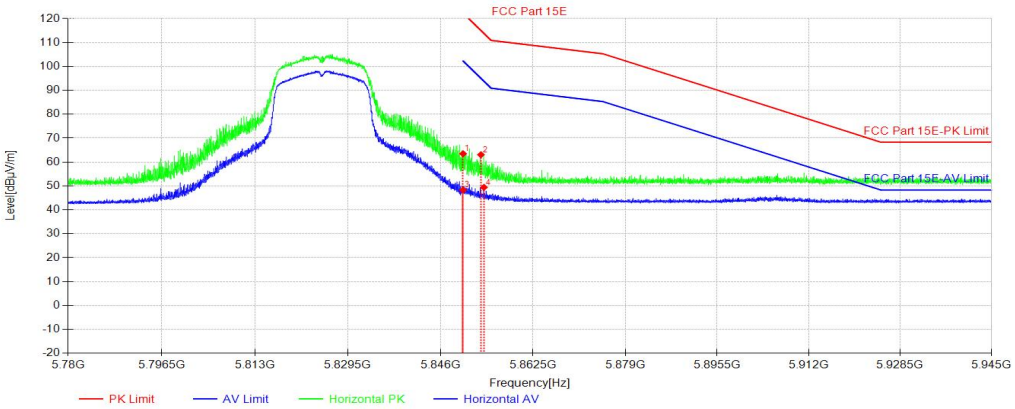
Vertical:



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	5720.71	51.28	5.20	56.48	112.25	55.77	150	75	PK
2	5725.00	49.77	5.21	54.98	120.40	65.42	150	95	PK
3	5720.54	39.08	5.20	44.28	91.92	47.64	150	108	AV
4	5725.00	40.53	5.21	45.74	100.40	54.66	150	95	AV

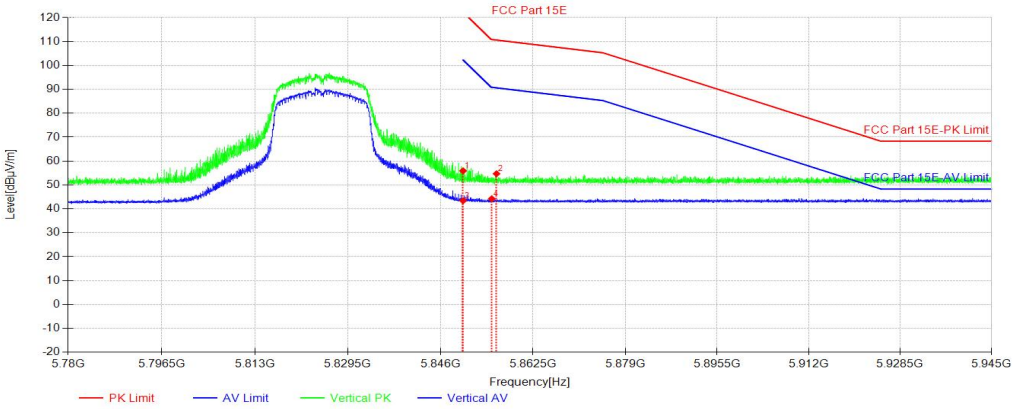
5.8G 11A 5825MHz

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	5850.00	57.99	5.50	63.49	122.30	58.81	150	319	PK
2	5853.18	57.56	5.51	63.07	115.04	51.97	150	319	PK
3	5850.00	42.80	5.50	48.30	102.30	54.00	150	101	AV
4	5853.73	43.92	5.51	49.43	93.80	44.37	150	319	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	50.41	5.50	55.91	122.30	66.39	150	26	PK
2	5855.97	49.18	5.51	54.69	110.63	55.94	150	97	PK
3	5850.00	37.91	5.50	43.41	102.30	58.89	150	313	AV
4	5855.12	38.72	5.51	44.23	90.87	46.64	150	53	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.

3.10 AC Power Line Conducted Emissions

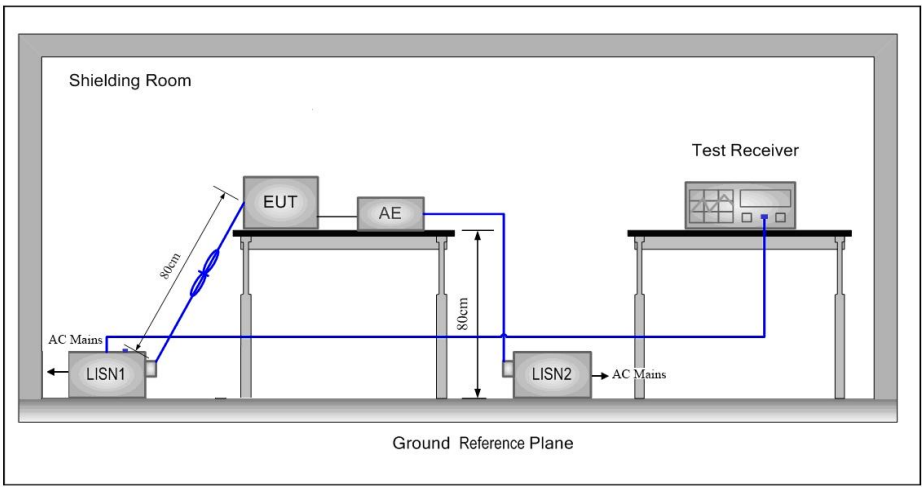
Test Requirement:	47 CFR Part 15 Section 15.407(b)
Test Method:	ANSI C63.10: 2020
Test Frequency Range:	150kHz to 30MHz
Limit:	

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:



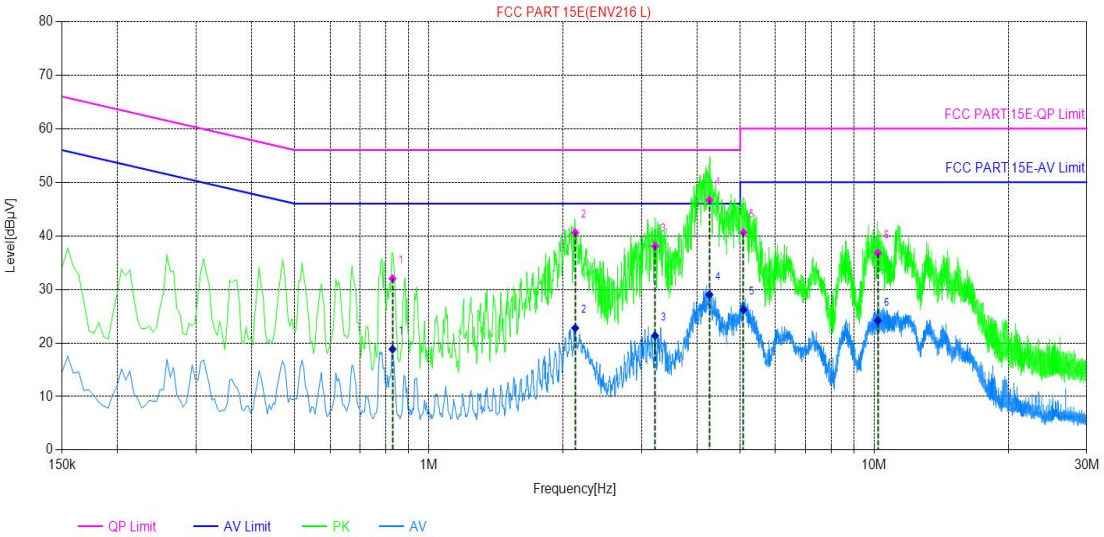
Exploratory Test Mode: Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.

	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

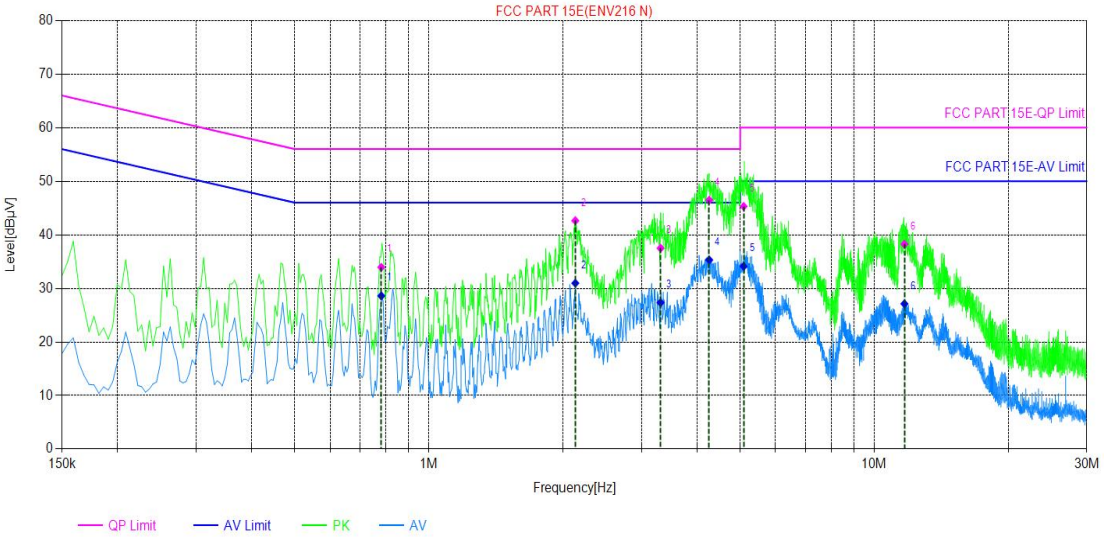
An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

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	0.8285	9.74	32.01	56.00	23.99	18.83	46.00	27.17	PASS
2	2.1305	9.74	40.59	56.00	15.41	22.79	46.00	23.21	PASS
3	3.2192	9.74	38.08	56.00	17.92	21.36	46.00	24.64	PASS
4	4.2639	9.77	46.70	56.00	9.30	29.01	46.00	16.99	PASS
5	5.0848	9.80	40.64	60.00	19.36	26.19	50.00	23.81	PASS
6	10.1869	9.86	36.78	60.00	23.22	24.17	50.00	25.83	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	0.7816	9.81	33.94	56.00	22.06	28.60	46.00	17.40	PASS
2	2.1317	9.79	42.64	56.00	13.36	30.97	46.00	15.03	PASS
3	3.3128	9.90	37.50	56.00	18.50	27.35	46.00	18.65	PASS
4	4.2600	9.97	46.47	56.00	9.53	35.31	46.00	10.69	PASS
5	5.0890	9.98	45.30	60.00	14.70	34.11	50.00	15.89	PASS
6	11.6879	9.84	38.25	60.00	21.75	27.12	50.00	22.88	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

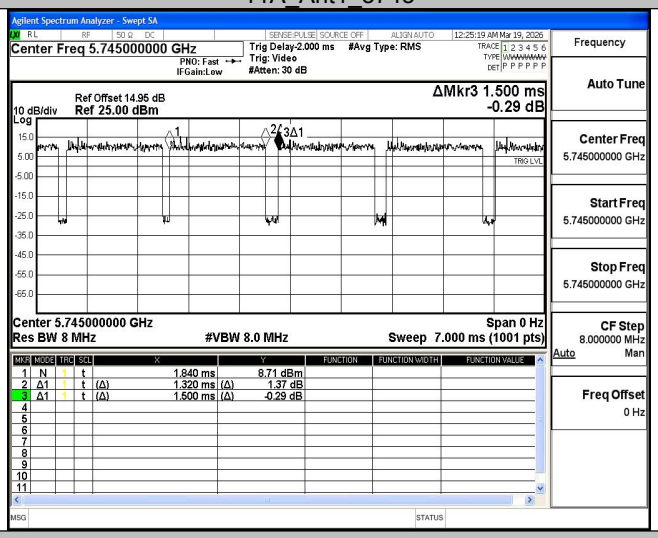
Appendix A: Duty Cycle

Test Result

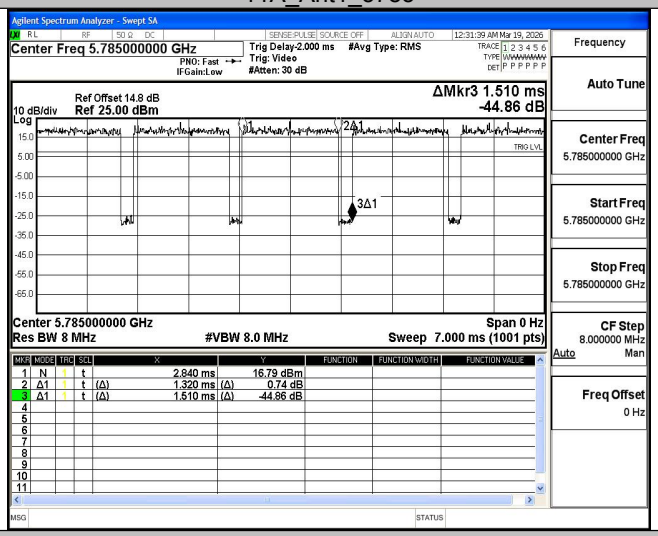
TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11A	Ant1	5745	1.32	1.50	88.00	---	---
		5785	1.32	1.51	87.42	---	---
		5825	1.32	1.48	89.19	---	---
11N20SISO	Ant1	5745	1.31	1.55	84.52	---	---
		5785	1.32	1.53	86.27	---	---
		5825	1.32	1.54	85.71	---	---

Test Graphs

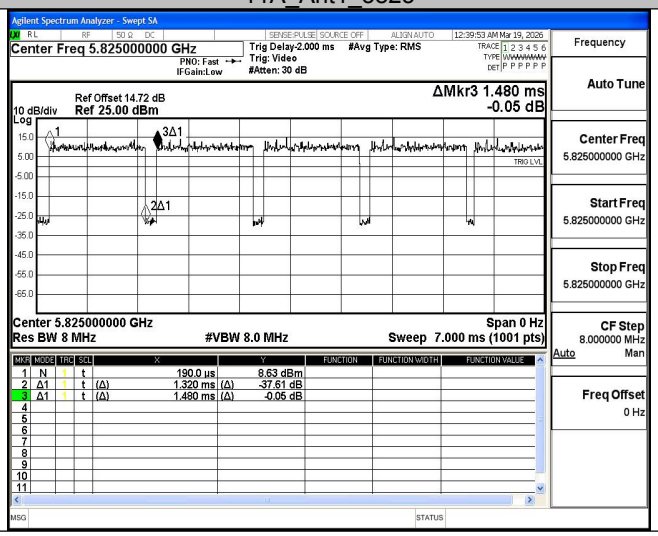
11A_Ant1_5745



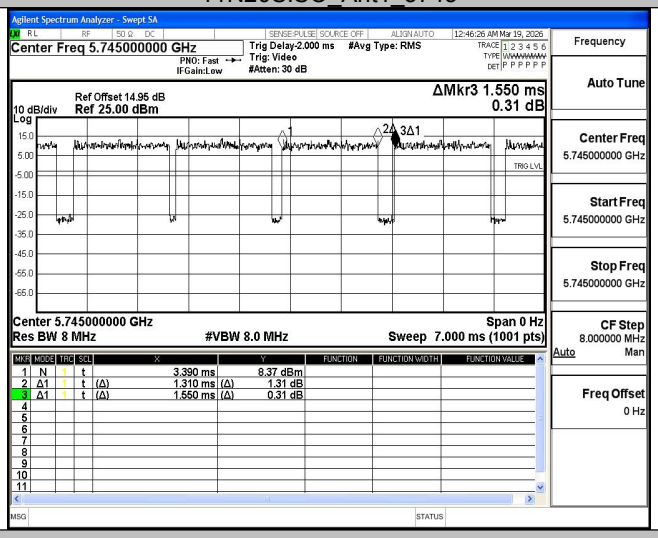
11A_Ant1_5785



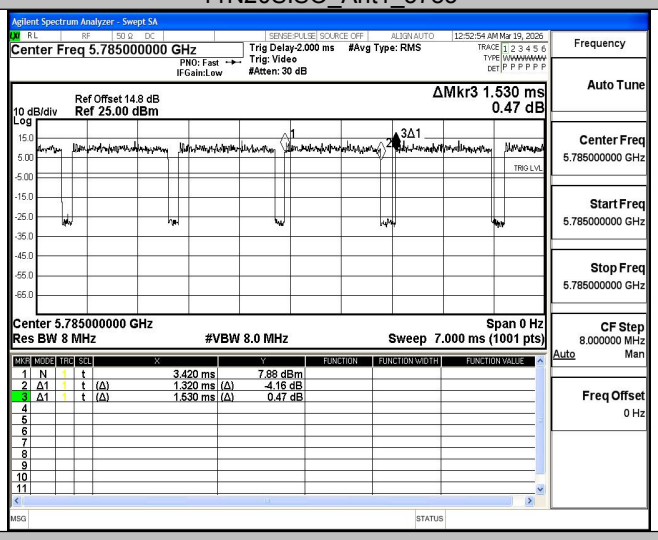
11A_Ant1_5825



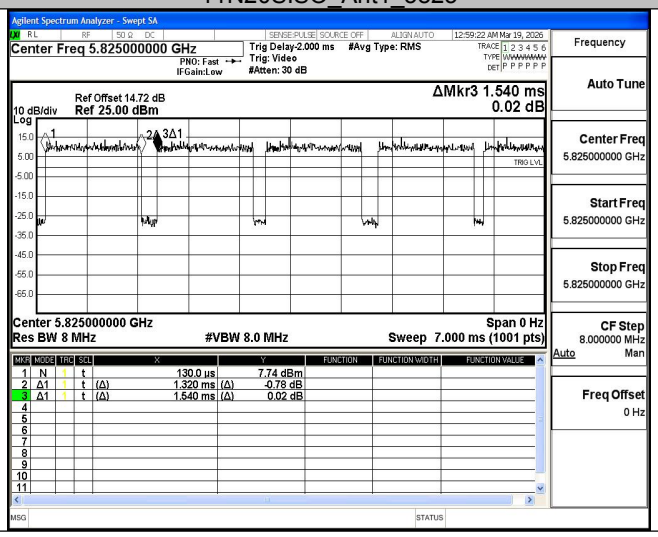
11N20SISO_Ant1_5745



11N20SISO_Ant1_5785



11N20SISO_Ant1_5825



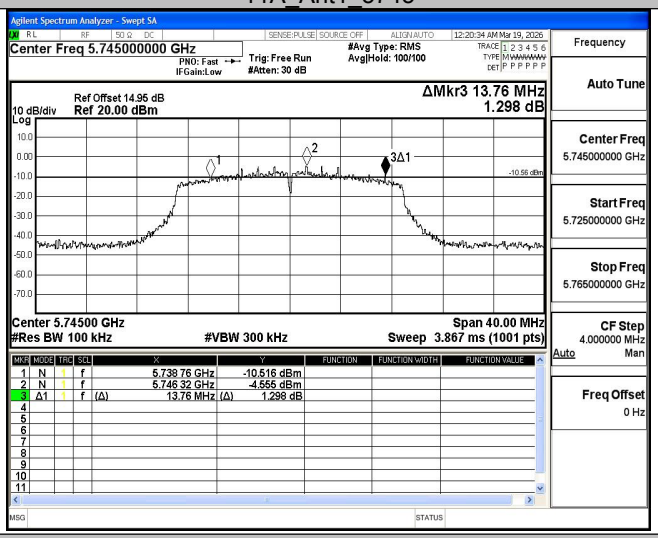
Appendix B: 6dB Emission Bandwidth

Test Result

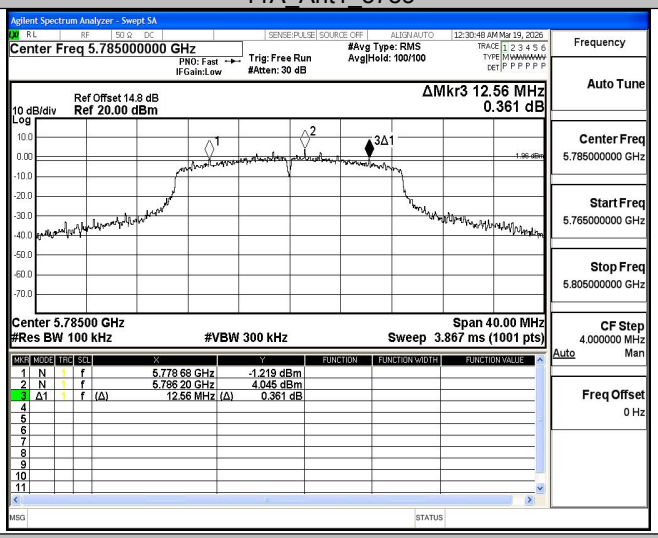
TestMode	Antenna	Freq(MHz)	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	13.760	5738.760	5752.520	0.5	PASS
		5785	12.560	5778.680	5791.240	0.5	PASS
		5825	15.080	5817.480	5832.560	0.5	PASS
11N20SISO	Ant1	5745	15.080	5737.480	5752.560	0.5	PASS
		5785	13.160	5779.360	5792.520	0.5	PASS
		5825	12.960	5818.360	5831.320	0.5	PASS

Test Graphs

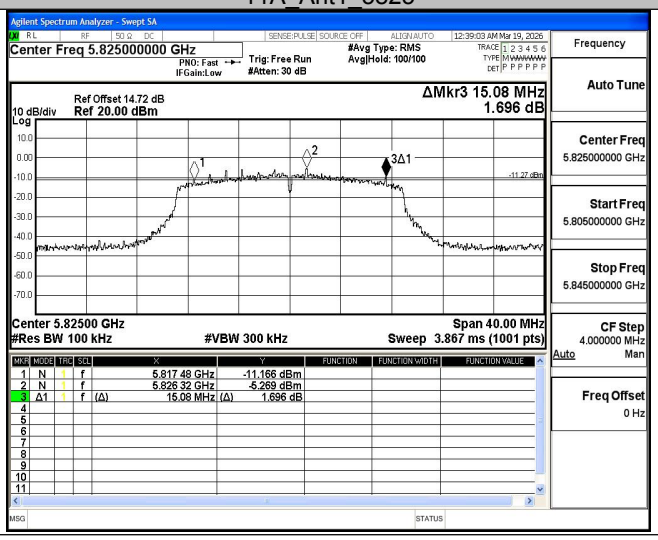
11A_Ant1_5745



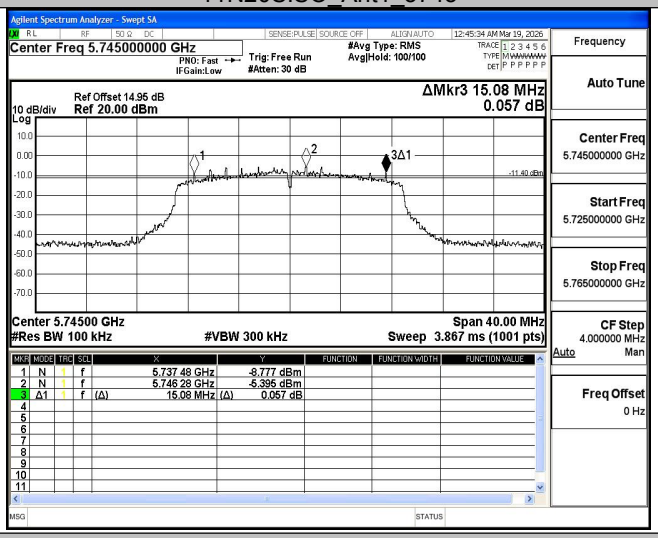
11A_Ant1_5785



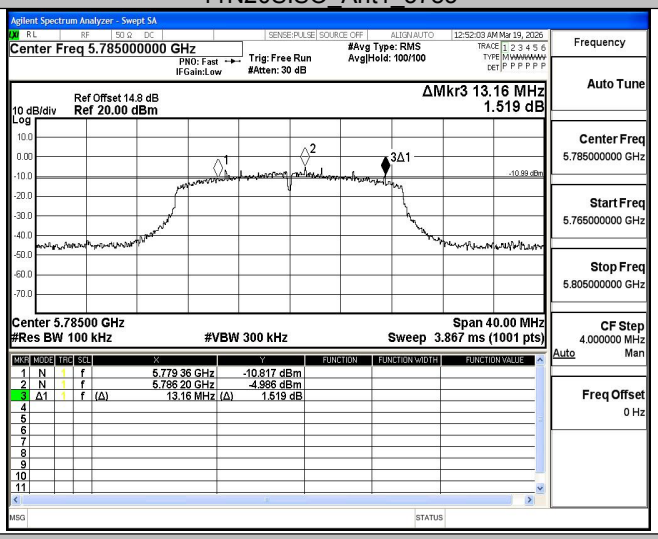
11A_Ant1_5825



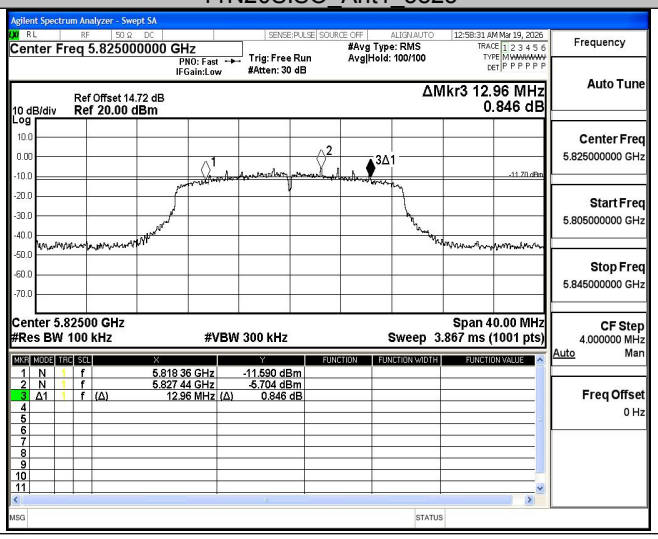
11N20SISO_Ant1_5745



11N20SISO_Ant1_5785



11N20SISO_Ant1_5825



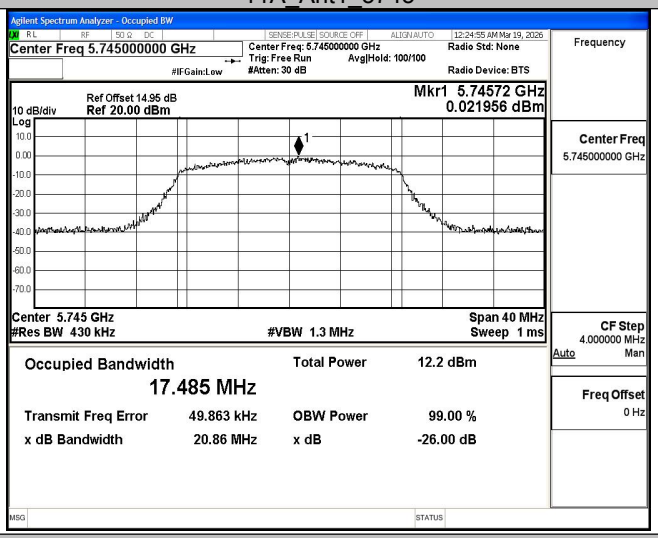
Appendix C:Occupied channel bandwidth

Test Result

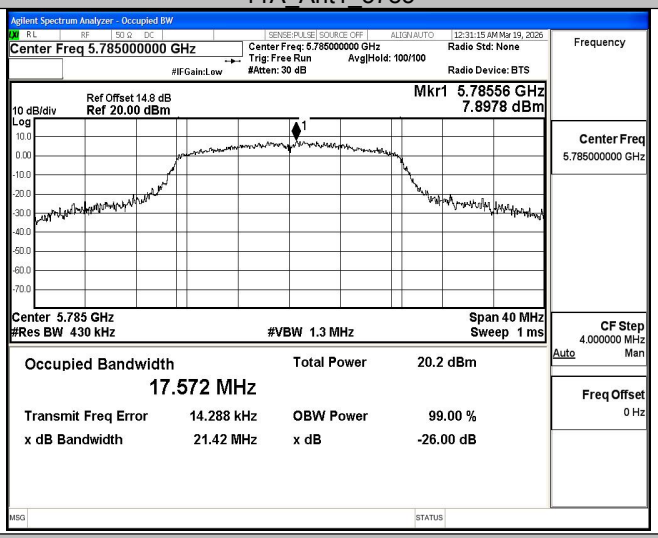
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	17.485	5736.3074	5753.7924	---	---
		5785	17.572	5776.2283	5793.8003	---	---
		5825	17.474	5816.3159	5833.7899	---	---
11N20SISO	Ant1	5745	17.505	5736.2456	5753.7506	---	---
		5785	17.529	5776.2517	5793.7807	---	---
		5825	17.526	5816.2401	5833.7661	---	---

Test Graphs

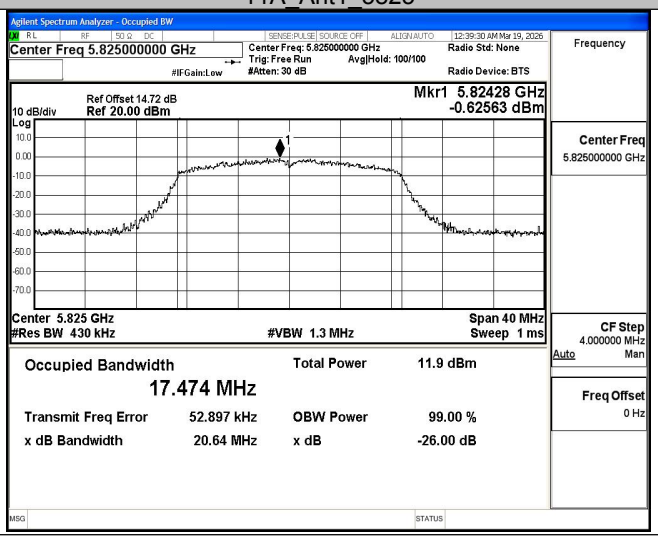
11A_Ant1_5745



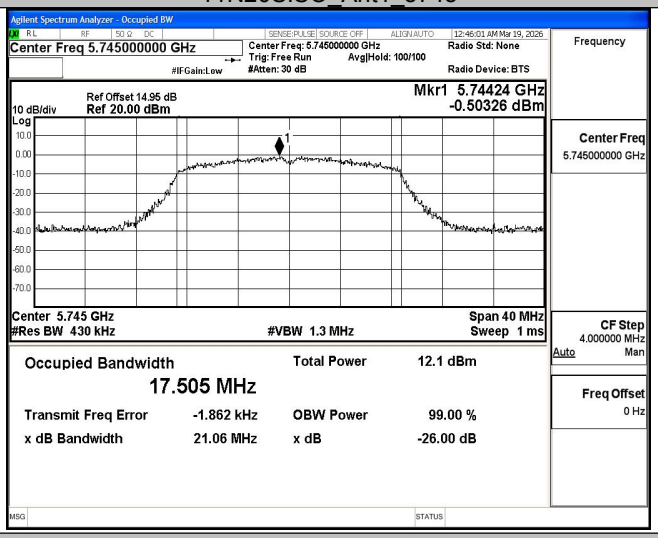
11A_Ant1_5785



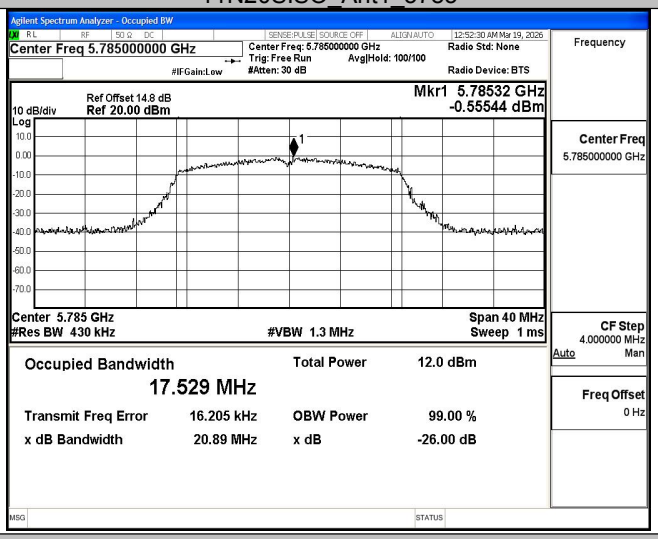
11A_Ant1_5825



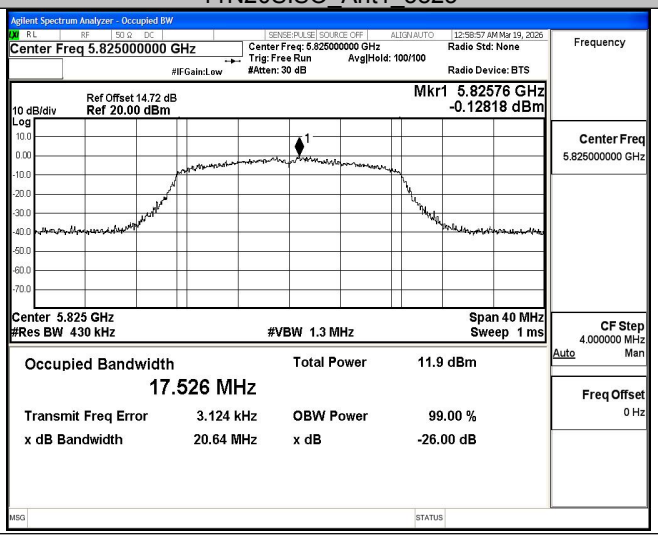
11N20SISO_Ant1_5745



11N20SISO_Ant1_5785



11N20SISO_Ant1_5825



Appendix D: Maximum conducted output power

Test Result

Test Mode	Antenna	Freq(MHz)	Channel Power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	5745	5.54	88.00	0.56	6.10	≤30.00	PASS
		5785	5.37	87.42	0.58	5.95	≤30.00	PASS
		5825	5.29	89.19	0.50	5.79	≤30.00	PASS
11N20SISO	Ant1	5745	5.57	84.52	0.73	6.30	≤30.00	PASS
		5785	5.28	86.27	0.64	5.92	≤30.00	PASS
		5825	5.25	85.71	0.67	5.92	≤30.00	PASS

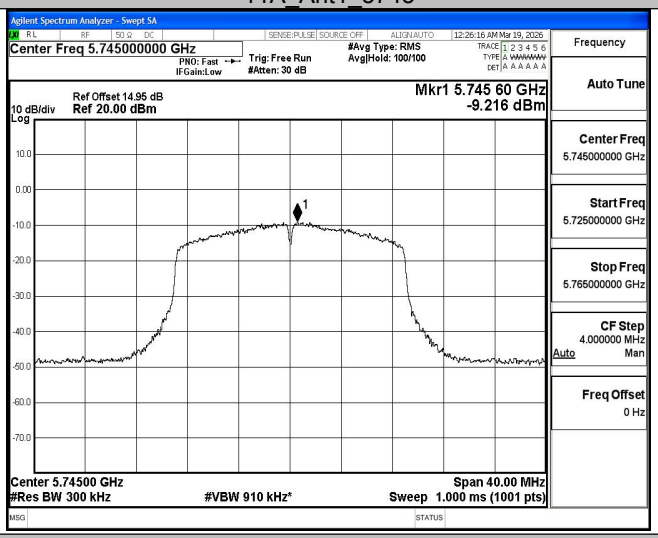
Appendix E: Maximum power spectral density

Test Result

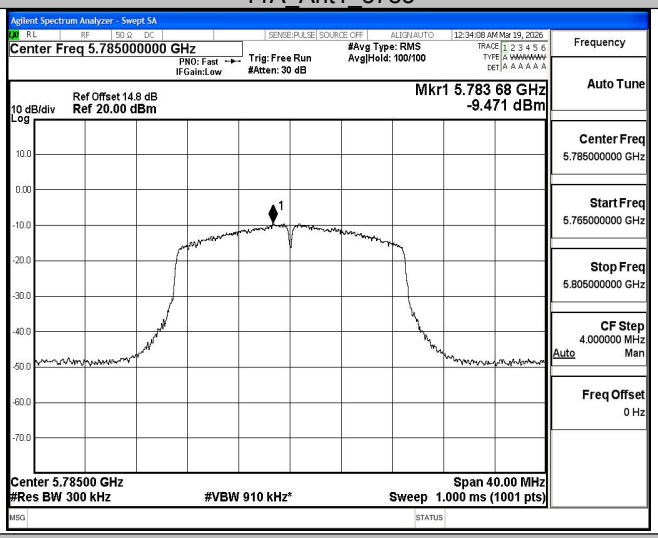
TestMode	Antenna	Freq (MHz)	Raw Data [dBm/MHz]	DC Factor	RBW Factor	Result [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	Ant1	5745	-9.22	0.56	2.22	-6.44	≤30.00	PASS
		5785	-9.47	0.58	2.22	-6.67	≤30.00	PASS
		5825	-9.52	0.50	2.22	-6.80	≤30.00	PASS
11N20SISO	Ant1	5745	-9.08	0.73	2.22	-6.13	≤30.00	PASS
		5785	-9.76	0.64	2.22	-6.90	≤30.00	PASS
		5825	-9.45	0.67	2.22	-6.56	≤30.00	PASS

Test Graphs

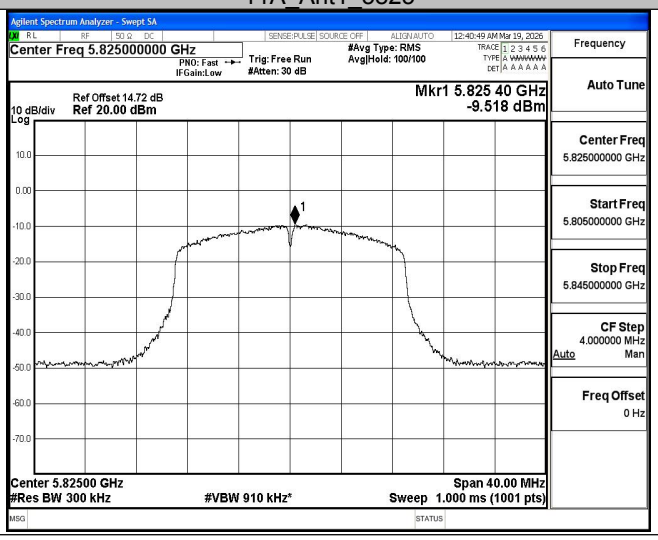
11A_Ant1_5745



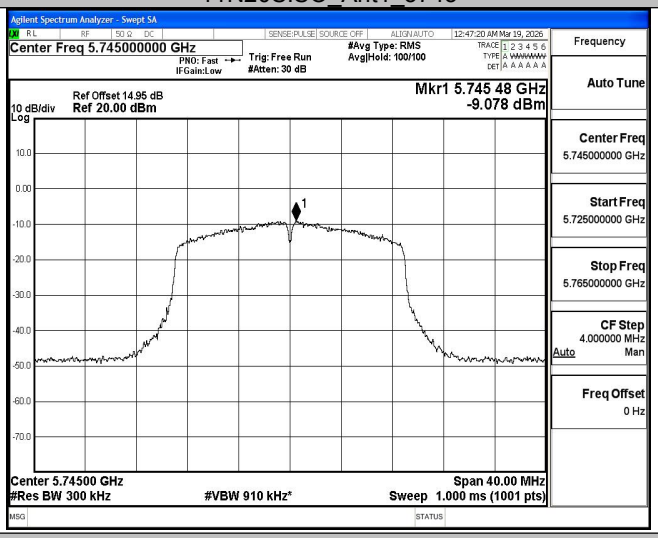
11A_Ant1_5785



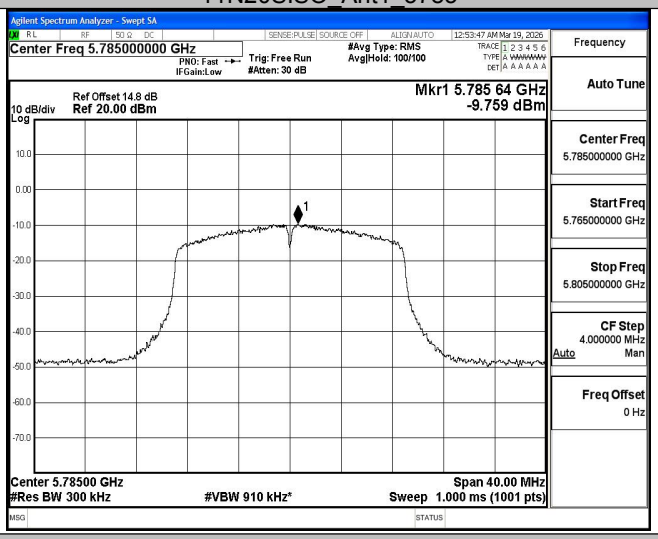
11A_Ant1_5825



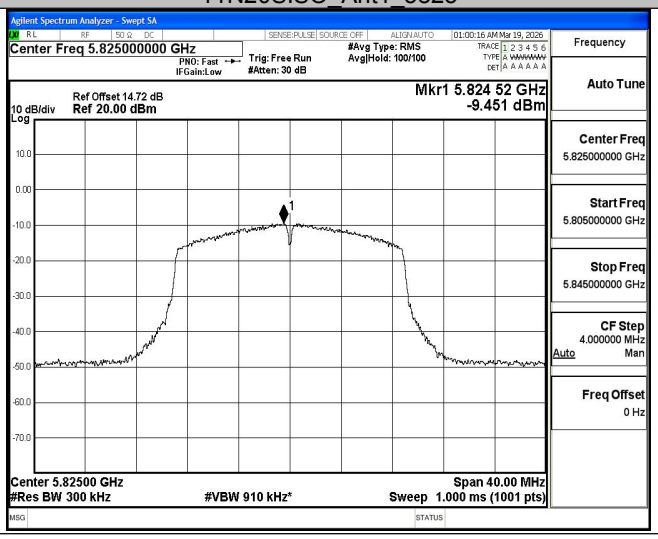
11N20SISO_Ant1_5745



11N20SISO_Ant1_5785



11N20SISO_Ant1_5825



Appendix F: Frequency Stability

Test Result

Voltage								
TestMode	Antenna	Freq(MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5745	NV	NT	20000.00	3.481288	20	PASS
			LV	NT	-20000.00	-3.481288	20	PASS
			HV	NT	20000.00	3.481288	20	PASS
		5785	NV	NT	40000.00	6.914434	20	PASS
			LV	NT	0.00	0.000000	20	PASS
			HV	NT	-40000.00	-6.914434	20	PASS
		5825	NV	NT	0.00	0.000000	20	PASS
			LV	NT	-20000.00	-3.433476	20	PASS
			HV	NT	0.00	0.000000	20	PASS
11N20SISO	Ant1	5745	NV	NT	-60000.00	-10.443864	20	PASS
			LV	NT	-40000.00	-6.962576	20	PASS
			HV	NT	-60000.00	-10.443864	20	PASS
		5785	NV	NT	-40000.00	-6.914434	20	PASS
			LV	NT	-40000.00	-6.914434	20	PASS
			HV	NT	-40000.00	-6.914434	20	PASS
		5825	NV	NT	-40000.00	-6.866953	20	PASS
			LV	NT	100000.00	17.167382	20	PASS
			HV	NT	0.00	0.000000	20	PASS

Temperature								
TestMode	Antenna	Freq(MHz)	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11A	Ant1	5745	NV	-30	-20000.00	-3.481288	20	PASS
			NV	-20	20000.00	3.481288	20	PASS
			NV	-10	0.00	0.000000	20	PASS
			NV	0	-20000.00	-3.481288	20	PASS
			NV	10	-20000.00	-3.481288	20	PASS
			NV	20	-20000.00	-3.481288	20	PASS
			NV	30	-20000.00	-3.481288	20	PASS
			NV	40	-60000.00	-10.443864	20	PASS
			NV	50	-20000.00	-3.481288	20	PASS
		5785	NV	-30	-20000.00	-3.457217	20	PASS
			NV	-20	-40000.00	-6.914434	20	PASS
			NV	-10	-40000.00	-6.914434	20	PASS
			NV	0	-40000.00	-6.914434	20	PASS
			NV	10	-40000.00	-6.914434	20	PASS
			NV	20	-60000.00	-10.371651	20	PASS
			NV	30	-20000.00	-3.457217	20	PASS
			NV	40	0.00	0.000000	20	PASS
			NV	50	0.00	0.000000	20	PASS
		5825	NV	-30	-20000.00	-3.433476	20	PASS
			NV	-20	-40000.00	-6.866953	20	PASS
			NV	-10	-20000.00	-3.433476	20	PASS
			NV	0	-40000.00	-6.866953	20	PASS
			NV	10	-20000.00	-3.433476	20	PASS
			NV	20	-80000.00	-13.733906	20	PASS
			NV	30	-80000.00	-13.733906	20	PASS
			NV	40	-40000.00	-6.866953	20	PASS
			NV	50	-40000.00	-6.866953	20	PASS
11N20SISO	Ant1	5745	NV	-30	-60000.00	-10.443864	20	PASS
			NV	-20	-20000.00	-3.481288	20	PASS
			NV	-10	-20000.00	-3.481288	20	PASS
			NV	0	-20000.00	-3.481288	20	PASS
			NV	10	0.00	0.000000	20	PASS

			NV	20	-40000.00	-6.962576	20	PASS
			NV	30	-40000.00	-6.962576	20	PASS
			NV	40	-20000.00	-3.481288	20	PASS
			NV	50	0.00	0.000000	20	PASS
		5785	NV	-30	-60000.00	-10.371651	20	PASS
			NV	-20	-40000.00	-6.914434	20	PASS
			NV	-10	0.00	0.000000	20	PASS
			NV	0	-60000.00	-10.371651	20	PASS
			NV	10	-40000.00	-6.914434	20	PASS
			NV	20	-40000.00	-6.914434	20	PASS
			NV	30	0.00	0.000000	20	PASS
			NV	40	-40000.00	-6.914434	20	PASS
			NV	50	-20000.00	-3.457217	20	PASS
		5825	NV	-30	-40000.00	-6.866953	20	PASS
			NV	-20	-40000.00	-6.866953	20	PASS
			NV	-10	-60000.00	-10.300429	20	PASS
			NV	0	0.00	0.000000	20	PASS
			NV	10	-40000.00	-6.866953	20	PASS
			NV	20	-20000.00	-3.433476	20	PASS
			NV	30	20000.00	3.433476	20	PASS
			NV	40	-80000.00	-13.733906	20	PASS
			NV	50	-20000.00	-3.433476	20	PASS

The End Report