Shenzhen Huaxia Testing Technology Co., Ltd

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report Template Version: V05
Report Template Revision Date: 2018-07-06

Test Report

Report No.:	CQASZ20251202954E-02
Applicant:	Shenzhen PioCreat 3d Technology Co., Ltd.
Address of Applicant:	3rd Floor, Building 1, No. 156 Huawang Road,Lang kou Community, Dalang Street, Longhua District,shenzhen,China
Equipment Under Test (EUT):	
Product:	3D Printer
Model No.:	PioNext Mini, PioNext Ultra
Teat Model No.:	PioNext Mini
Brand Name:	N/A
FCC ID:	2A2DOPIONEXT-MINI
Standards:	47 CFR Part 15, Subpart E
	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Date of Receipt:	2025-12-17
Date of Test:	2025-12-17 to 2025-12-31
Date of Issue:	2026-01-13
Test Result:	**PASS***

*In the configuration tested, the EUT complied with the standards specified above.

Tested By: lewis zhou

(Lewis Zhou)

Reviewed By: Timo Lei

(Timo Lei)

Approved By:

(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20251202954E-02	Rev.01	Initial report	2026-01-13

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart E Section 15.207	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Maximum Conducted Output Power	47 CFR Part 15 Subpart C Section 15.407 (a)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Emission Bandwidth	47 CFR Part 15 Subpart C Section 15.407 (a)(e)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Maximum Power Spectral Density	47 CFR Part 15 Subpart E Section 15.407 (a)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Band Edge Measurements	47 CFR Part 15 Subpart C Section 15.209 &15.407(b)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Frequency stability	47 CFR Part 15 Subpart E Section 15.407 (g)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Operation in the absence of information to the transmit	47 CFR Part 15 Subpart E Section 15.407 (c)	47 CFR Part 15 Subpart E	PASS
Radiated Spurious Emissions	47 CFR Part 15 Subpart E Section 15.407 (b)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

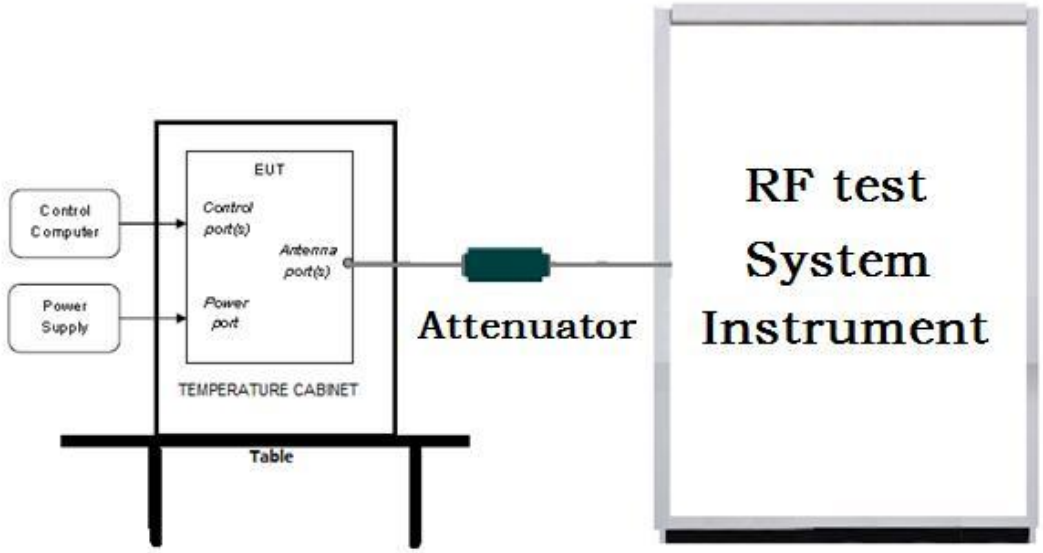
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radiated Frequency.
CH: In this whole report CH means channel.
Volt: In this whole report Volt means Voltage.
Temp: In this whole report Temp means Temperature.
Humid: In this whole report Humid means humidity.
Press: In this whole report Press means Pressure.
N/A: In this whole report not application

3 Content

4 Test Requirement

4.1 Test setup

4.1.1 For Conducted test setup



4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

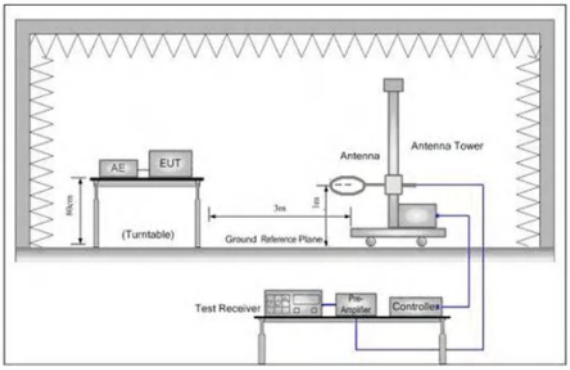


Figure 1. Below 30MHz

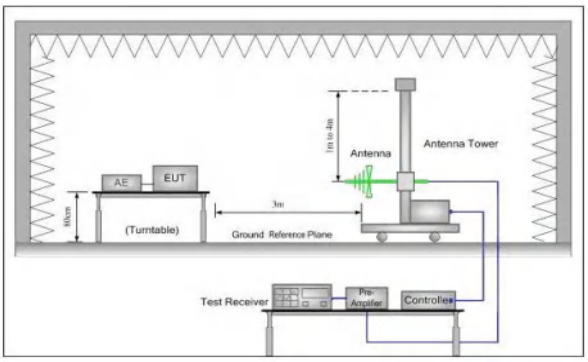


Figure 2. 30MHz to 1GHz

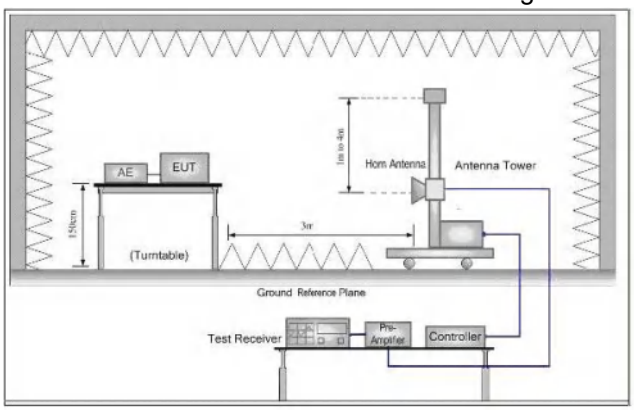
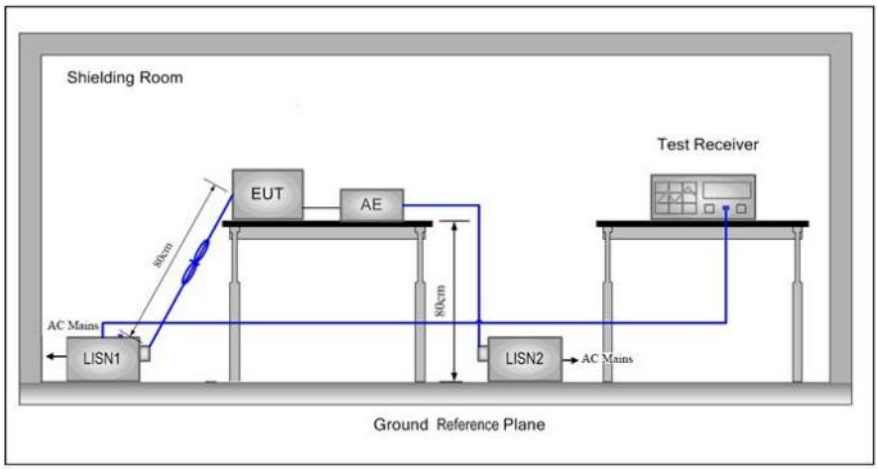


Figure 3. Above 1GHz

4.1.3 For Conducted Emissions test setup

Conducted Emissions setup



4.2 Test Environment

Operating Environment:		
Conducted Emissions:		
Temperature:	25.6 °C	
Humidity:	60 % RH	
Atmospheric Pressure:	1009 mbar	
Radiated Emissions:		
Temperature:	25.5 °C	
Humidity:	54 % RH	
Atmospheric Pressure:	1009mbar	
Radio conducted item test (RF Conducted test room):		
Temperature:	25.3 °C	
Humidity:	50 % RH	
Atmospheric Pressure:	1009 mbar	
Test Condition	Temperature (°C)	Voltage (V)
TN/VN	+15 to +35	120
TL/VL	-30	108
TH/VL	50	108
TL/VH	-30	132
TH/VH	50	132

Remark:

1)The EUT just work in such extreme temperature of -30 °C to 50 °C and the extreme voltage of 108V to 132V, so here the EUT is tested in the temperature of -30 °C to 50 °C and the voltage of 108V to 132V.

2)VN: Normal Voltage; TN: Normal Temperature;

TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;

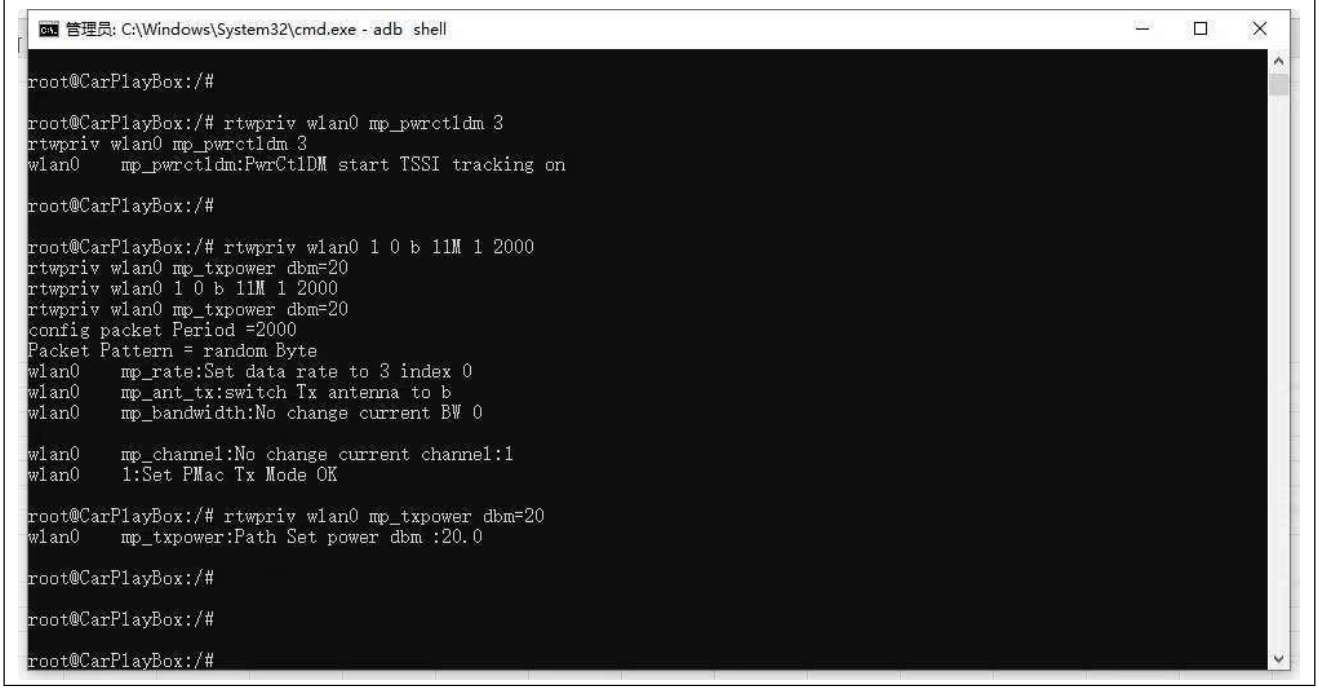
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

4.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac(20M)	5150MHz ~5250 MHz	Channel 36	Channel 40	Channel 48
		5180MHz	5200MHz	5240MHz
802.11n/ac(40M)	5150MHz ~5250 MHz	Channel 38	N/A	Channel 46
		5190MHz	N/A	5230MHz
802.11n/ac(80M)	5150MHz ~5250 MHz	N/A	Channel 42	N/A
		N/A	5210MHz	N/A

Run Software:



Test mode:

Pre-scan under all rate at lowest channel for Ant1

Through Pre-scan, 6Mbps is the worst case of 802.11a (20M); MCS0 is the worst case of 802.11n (20M); MCS0 is the worst case of 802.11ac (20M); MCS0 is the worst case of 802.11n(40M); MCS0 is the worst case of 802.11ac (40M); MCS0 is the worst case of 802.11n(80M); MCS0 is the worst case of 802.11ac (80M)

5 General Information

5.1 Client Information

Applicant:	Shenzhen PioCreat 3d Technology Co., Ltd.
Address of Applicant:	3rd Floor, Building 1, No. 156 Huawang Road,Lang kou Community, Dalang Street, Longhua District,shenzhen,China
Manufacturer:	Shenzhen PioCreat 3d Technology Co., Ltd.
Address of Manufacturer:	3rd Floor, Building 1, No. 156 Huawang Road,Lang kou Community, Dalang Street, Longhua District,shenzhen,China
Factory:	Shenzhen PioCreat 3d Technology Co., Ltd.
Address of Factory:	3rd Floor, Building 1, No. 156 Huawang Road,Lang kou Community, Dalang Street, Longhua District,shenzhen,China

5.2 General Description of EUT

Product Name:	3D Printer
Model No.:	PioNext Mini, PioNext Ultra
Test Model No.:	PioNext Mini
Trade Mark:	N/A
Software Version:	V1.0
Hardware Version:	V1.1
Power Supply:	Power supply DC24V form adapter
	Adapter: Model:AK120WG-2400500W1 Input:100-240V~50/60Hz 2.0A Output:24V⎓5.0A 120.0W
EUT Supports Radios application:	U-NII-1: 5.15-5.25GHz
EUT Type:	Client devices

5.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11a/n/ac(20M): 5150MHz ~5250 MHz IEEE802.11n/ac(40M): 5150MHz ~5250 MHz IEEE802.11ac(80M): 5150MHz ~5250 MHz
Channel Numbers:	IEEE 802.11a/n/ac(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac(80M): 5150MHz ~5250MHz/ 1 channel
Type of Modulation:	IEEE for 802.11a/n/ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
Sample Type:	☒ Mobile ☐ Portable
Test Software of EUT:	Adb
Antenna Type:	FPC antenna
Antenna gain:	4.09dBi
Cable loss:	1.0 dB

Operation Frequency each of channel

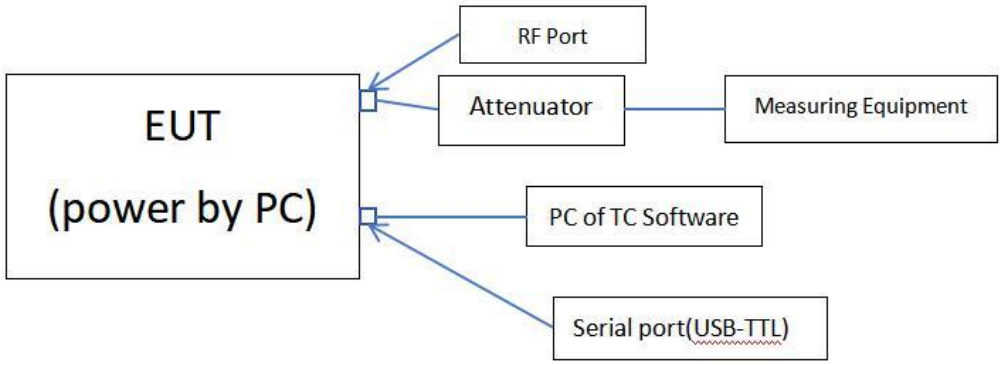
(U-NII-1) 5180MHz-5240MHz				
Bandwidth	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**
20MHz	**36**	**5180**	**40**	**5200**
	44	**5220**	**48**	**5240**
40MHz	**38**	**5190**	**46**	**5230**
80MHz	**42**	**5210**	**/**	**/**

5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

5.5 Test configuration



5.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua New District, Shenzhen, Guangdong, China

5.7 Test Facility

• A2LA (Certificate No. 4742.01)

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• FCC Registration No.: 522263

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

5.8 Deviation from Standards

None.

5.9 Abnormalities from Standard Conditions

None.

5.10 Other Information Requested by the Customer

None.

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

No.	Item	Measurement Uncertainty
1	Radio Frequency	3×10^{-8}
2	RF power, conducted	0.86dB
3	Radiated Spurious emission test	5.12dB (Below 1GHz)
		4.6dB (Above 1GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.8°C
6	Humidity test	2.0%
7	DC power voltages	0.5%

6 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU26	CQA-038	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU40	CQA-075	2025/9/1	2026/8/31
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2025/9/1	2026/8/31
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2025/9/1	2026/8/31
Preamplifier	EMCI	EMC184055SE	CQA-089	2025/9/1	2026/8/31
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	VULB 9163	CQA-101	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2025/9/1	2026/8/31
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2025/9/1	2026/8/31
Antenna Connector	CQA	RFC-01	CQA-080	2025/9/1	2026/8/31
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2025/9/1	2026/8/31
Power meter	R&S	NRVD	CQA-029	2025/9/1	2026/8/31
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2025/9/1	2026/8/31
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
LISN	R&S	ENV216	CQA-003	2025/9/1	2026/8/31
Coaxial cable	CQA	N/A	CQA-C009	2025/9/1	2026/8/31
DC power	KEYSIGHT	E3631A	CQA-028	2025/9/1	2026/8/31
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU26	CQA-038	2025/9/1	2026/8/31
Universal Radio Communication Tester	R&S	CMW500	CQA-022	2025/9/1	2026/8/31

Test software:

	Manufacturer	Software brand	Software version
Radiated Emissions test software	Tonscend	JS1120-3	Version:8
Conducted Emissions test software	Audix	e3	Version:9
RF Conducted test software	Audix	e3	V3.5.39

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15E	Subpart C-Intentional Radiators
2	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024	American National Standard for Testing Unlicesed Wireless Devices
3	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15, subpart E

Appendix A): Emission Bandwidth

26dB Emission bandwidth

Test Requirement: 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II C 1

6 dB bandwidth (5.725-5.85 GHz band)

Test Requirement 47 CFR Part 15, Subpart C 15.407 (e)

Test Method: KDB 789033 D02 II C 2

Limit: ≥500 kHz

Test Procedure:

a) Set RBW = approximately 1% of the emission bandwidth.

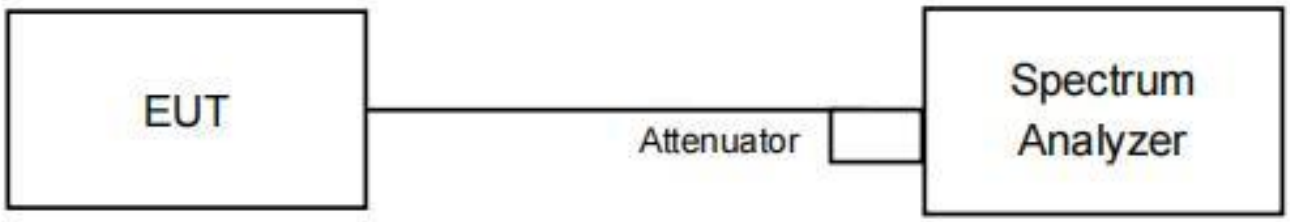
b) Set the VBW > RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Test Setup Diagram

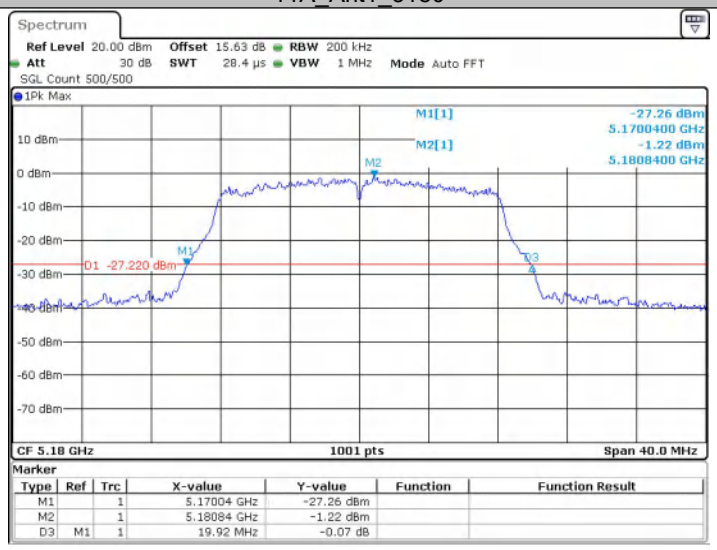


Result Table

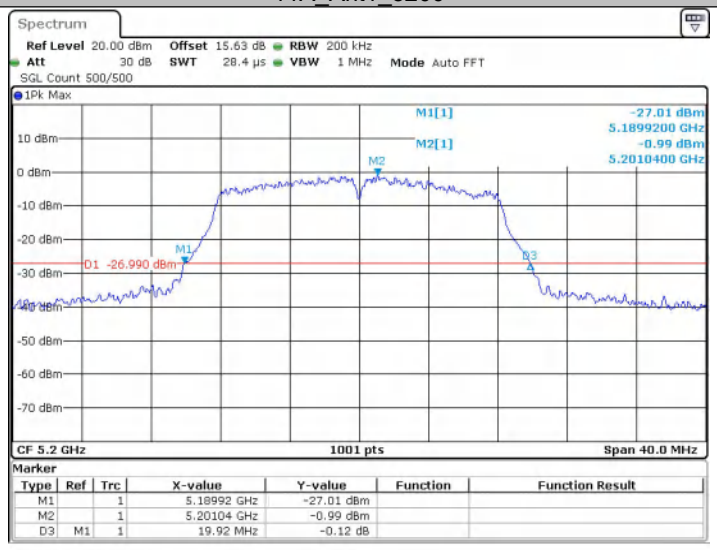
TestMode	Freq(MHz)	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	19.92	5170.04	5189.96	---	---
	5200	19.92	5189.92	5209.84	---	---
	5240	20.24	5229.92	5250.16	---	---
11N20SISO	5180	19.72	5170.08	5189.80	---	---
	5200	19.84	5190.04	5209.88	---	---
	5240	20.12	5229.96	5250.08	---	---
11N40SISO	5190	40.72	5169.52	5210.24	---	---
	5230	41.68	5208.88	5250.56	---	---
11AC20SISO	5180	20.28	5169.84	5190.12	---	---
	5200	20.16	5189.80	5209.96	---	---
	5240	20.32	5229.88	5250.20	---	---
11AC40SISO	5190	40.32	5169.68	5210.00	---	---
	5230	41.84	5209.12	5250.96	---	---
11AC80SISO	5210	80.64	5169.52	5250.16	---	---

Test Graph

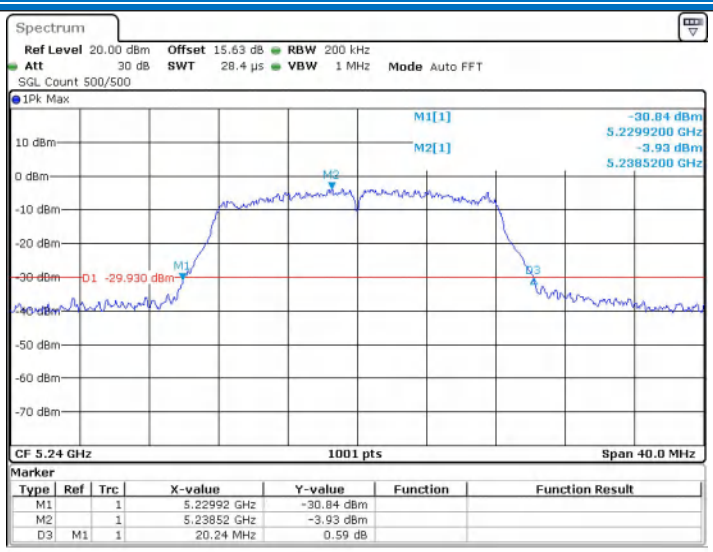
11A_Ant1_5180



11A_Ant1_5200

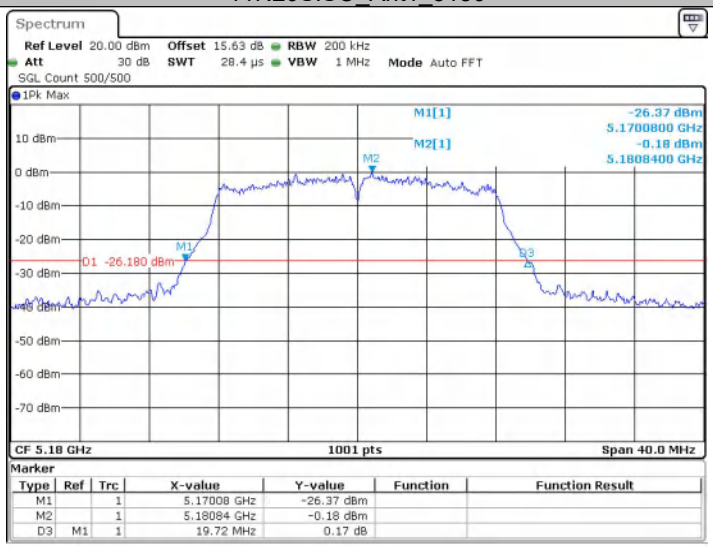


11A_Ant1_5240



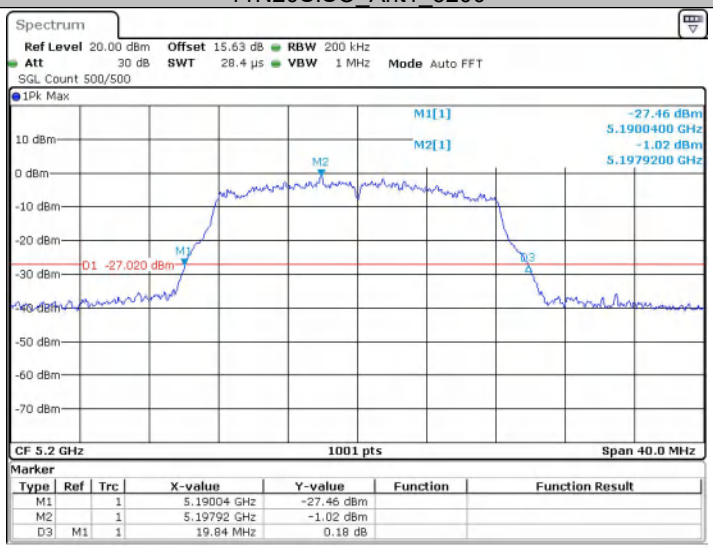
Date: 25.DEC.2025 16:28:58

11N20SISO_Ant1_5180



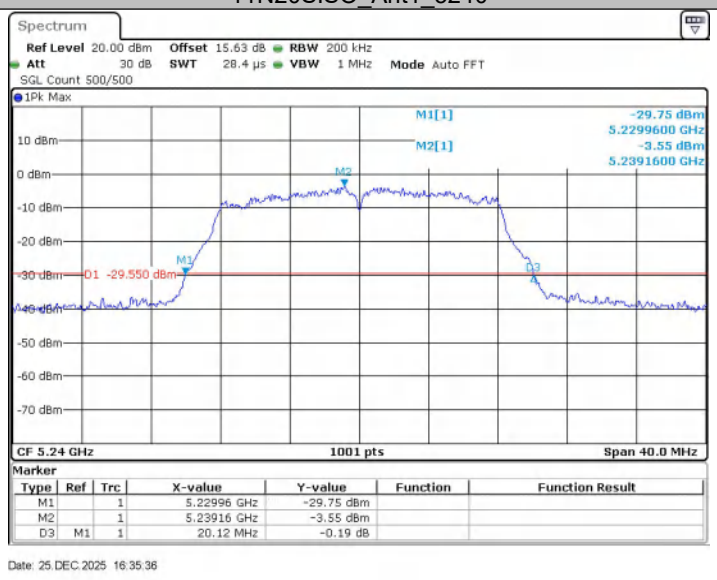
Date: 25.DEC.2025 16:31:37

11N20SISO_Ant1_5200

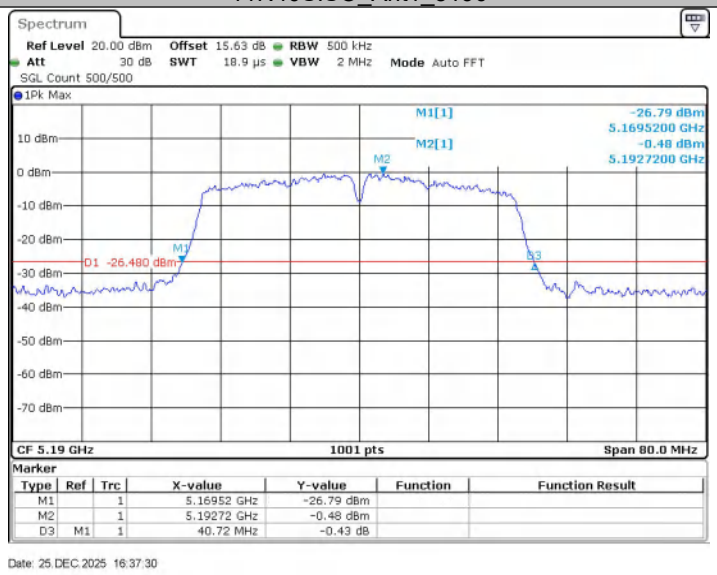


Date: 25.DEC.2025 16:34:07

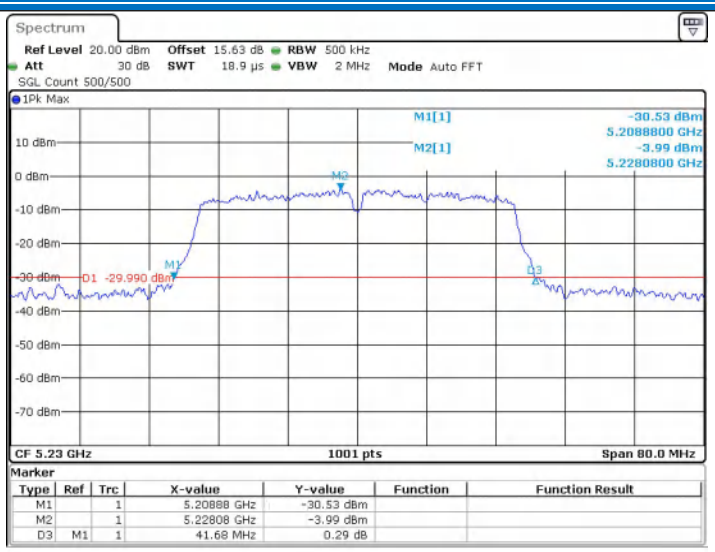
11N20SISO_Ant1_5240



11N40SISO_Ant1_5190

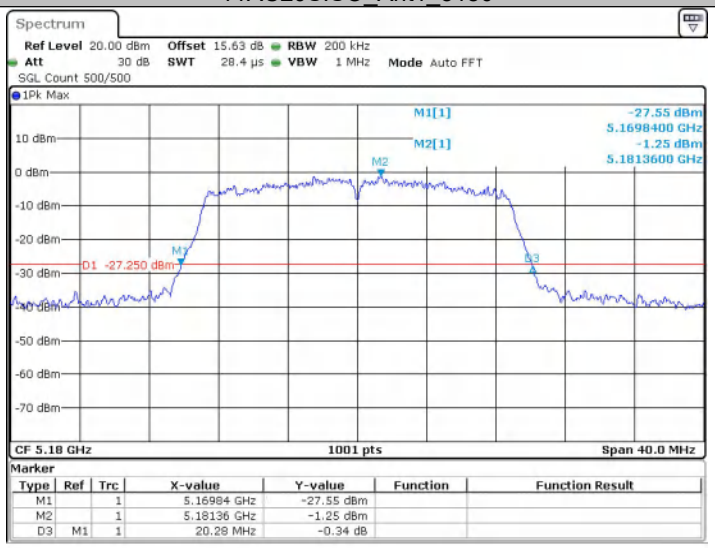


11N40SISO_Ant1_5230



Date: 25.DEC.2025 16:41:27

11AC20SISO_Ant1_5180

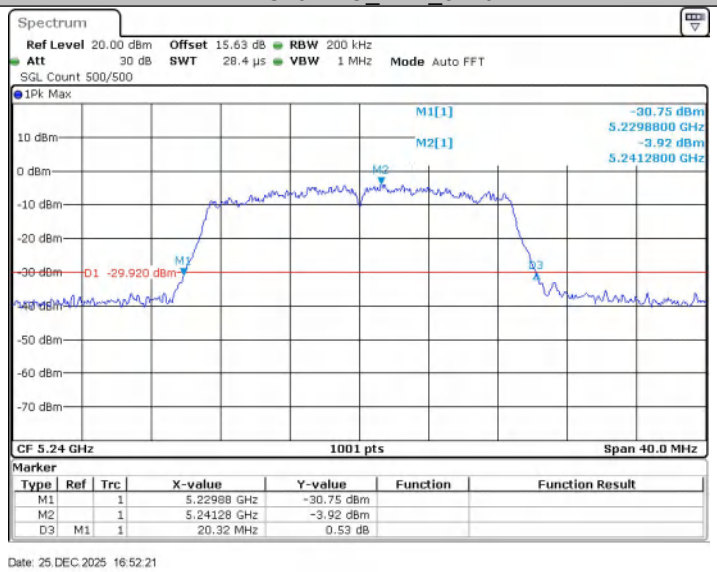


Date: 25.DEC.2025 16:45:14

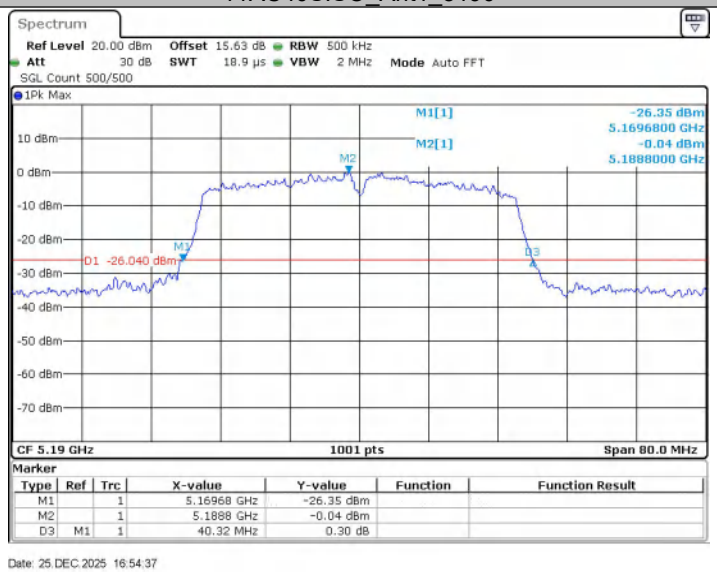
11AC20SISO_Ant1_5200

Date: 25.DEC.2025 16:47:45

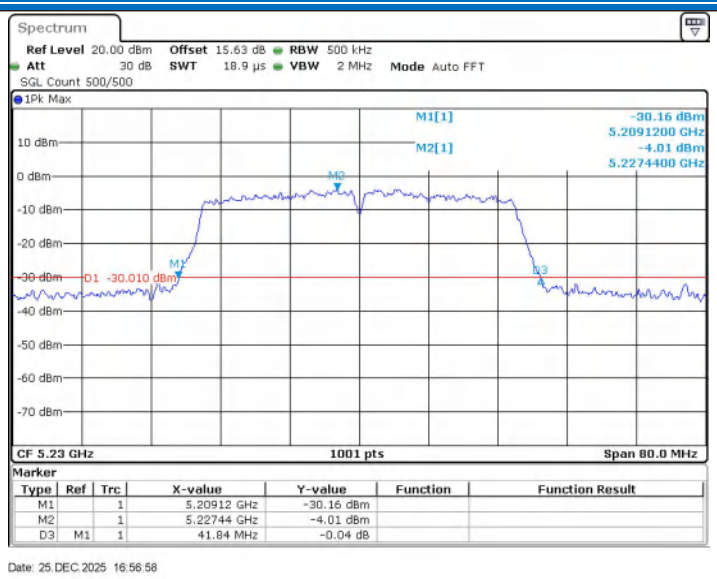
11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190

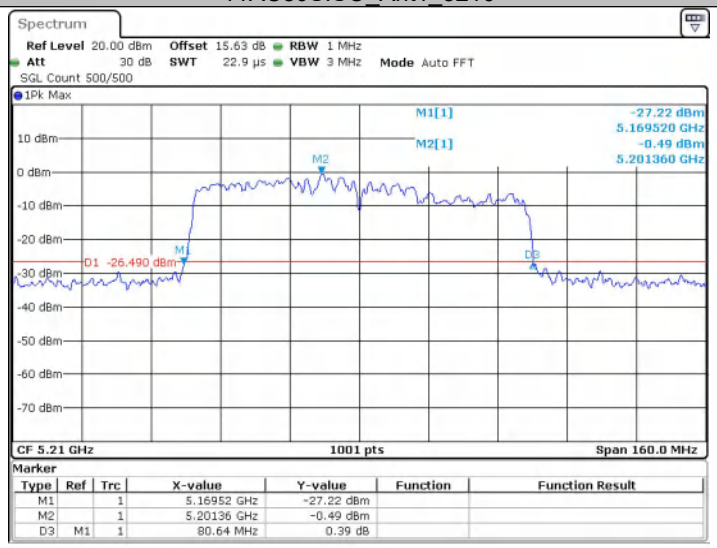


11AC40SISO_Ant1_5230



Date: 25.DEC.2025 16:56:58

11AC80SISO_Ant1_5210



Date: 25.DEC.2025 16:59:03

Appendix B): Maximum Conduct Output Power

1.Duty Cycle (x)

Test Requirement KDB 789033 D02 II B 1

Test Method: KDB 789033 II B 1

Test Procedure:

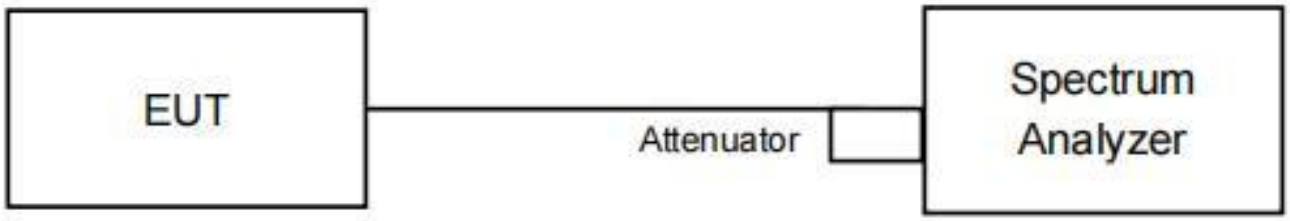
Set RBW = 20MHz

Set VBW = 20MHz

Set detector = peak.

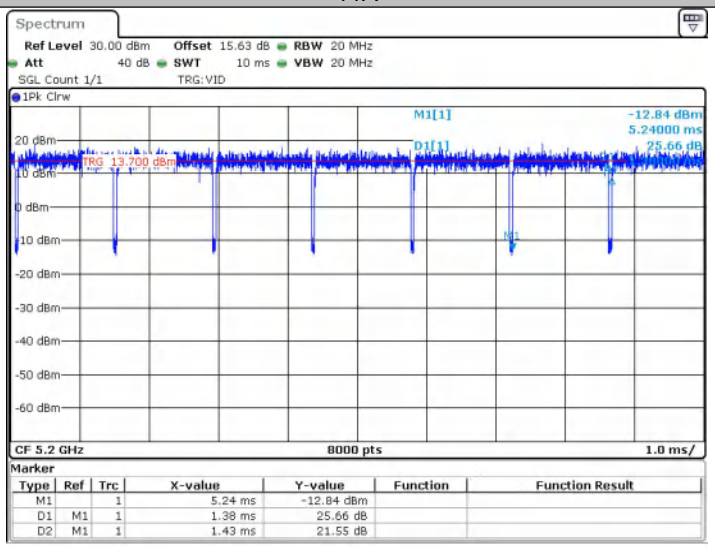
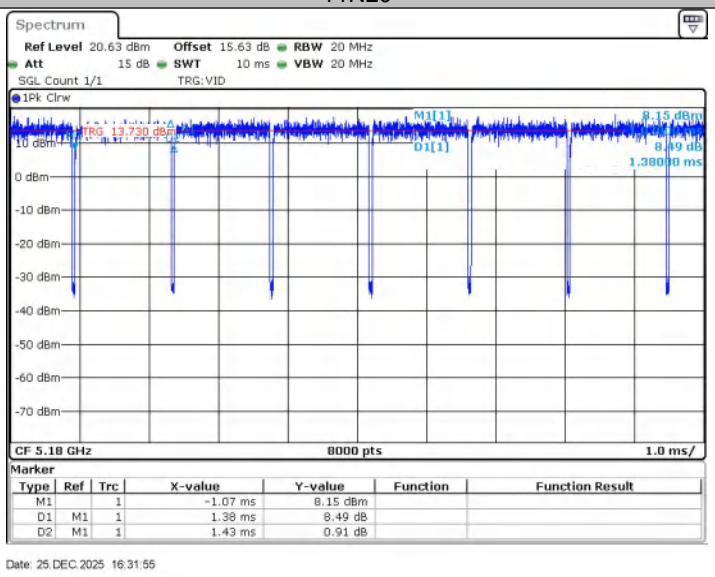
Set span =0Hz

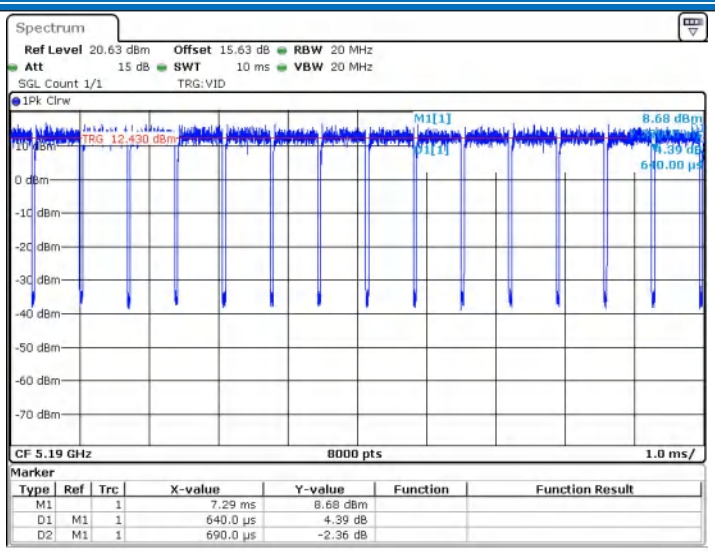
Test Setup Diagram



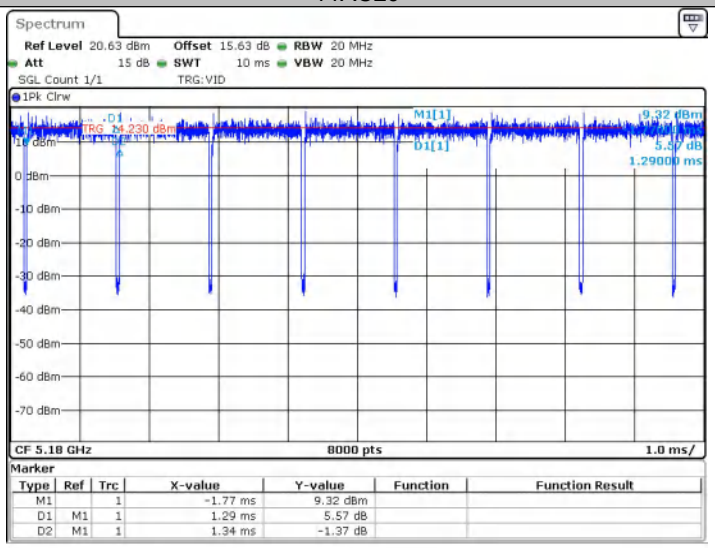
Measurement Data

Test Mode	Antenna	Duty Cycle[%]	10log(1/x) Factor[dB]
11A	Ant1	96.50	0.15
11N20	Ant1	96.50	0.15
11N40	Ant1	92.75	0.33
11AC20	Ant1	96.27	0.17
11AC40	Ant1	92.75	0.33
11AC80	Ant1	97.22	0.12

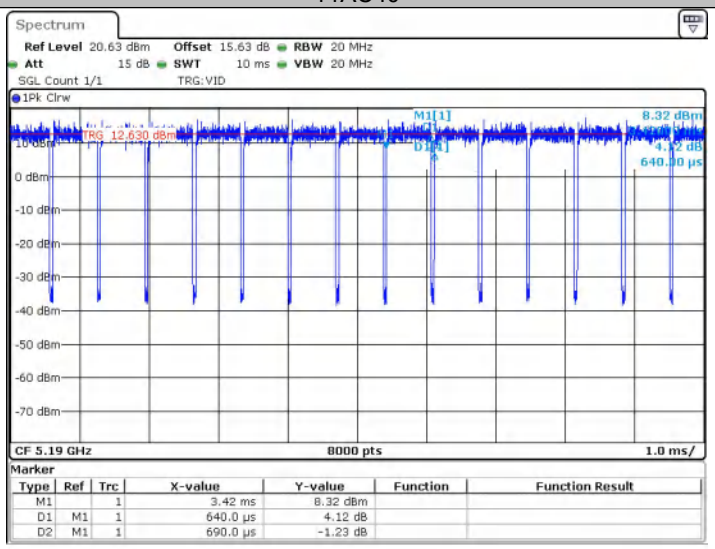
11A

11N20

11N40



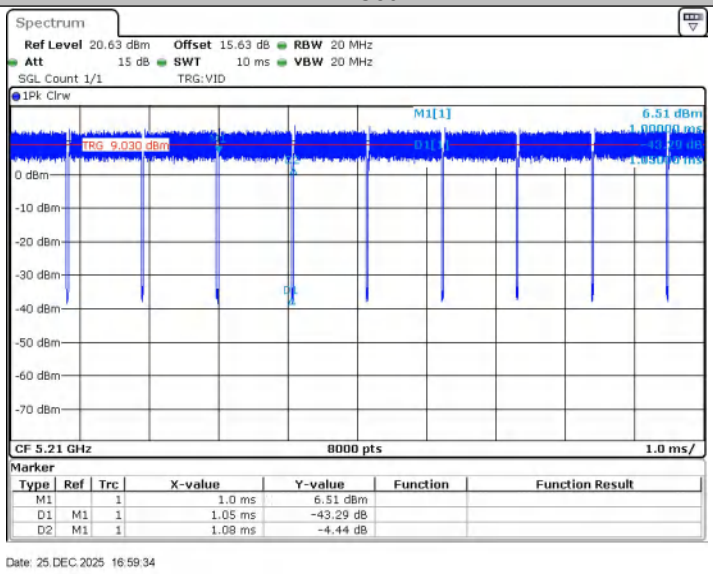
11AC20



11AC40



11AC80


Spectrum
Ref Level 20.63 dBm Offset 15.63 dB RBW 20 MHz
Att 15 dB SWT 10 ms VBW 20 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] 6.51 dBm
TRG 9.030 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 5.21 GHz 8000 pts 1.0 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 1.0 ms 6.51 dBm
D1 M1 1 1.05 ms -43.29 dB
D2 M1 1 1.08 ms -4.44 dB
Date: 25.DEC.2025 16:59:34

2. Maximum Conducted Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

Frequency band(MHz)	Limit
5150-5250	≤1W(30dBm) for master device
	≤250mW(24dBm) for client device
5250-5350	≤250mW(24dBm) for client device or 11dBm+10logB*
5470-5725	≤250mW(24dBm) for client device or 11dBm+10logB*
5725-5850	≤1W(30dBm)
Remark:	* Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Procedure:

Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

(1) Set RBW = 1 MHz.

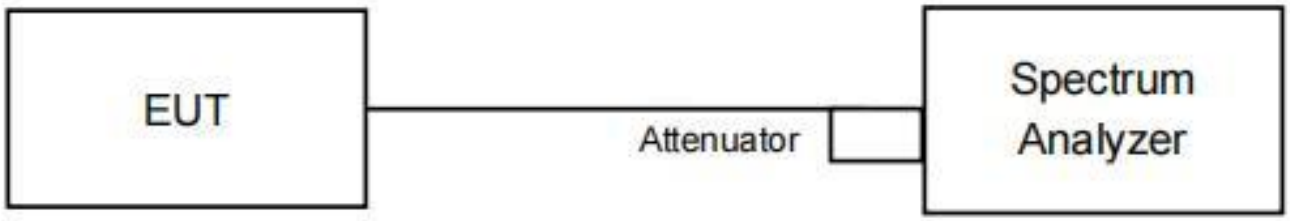
(2) Set VBW ≥ 3 MHz.

(3) Detector = power average

(4) Sweep time = auto.

(5) Add duty cycle to the measured average power.

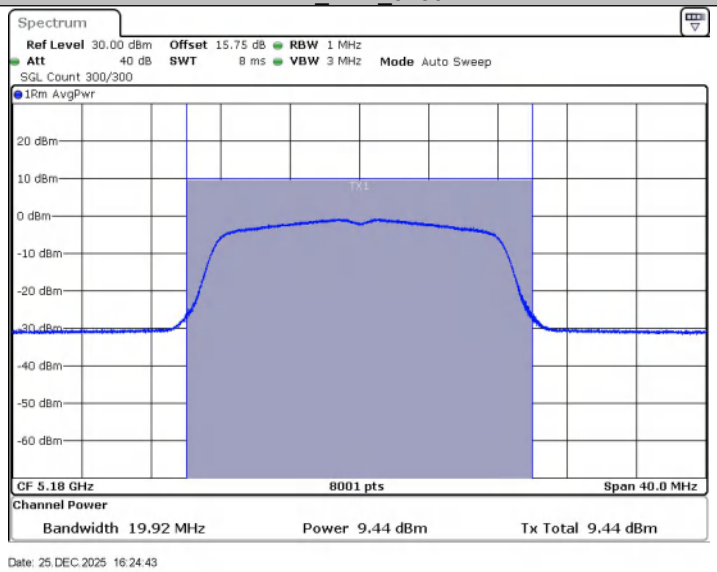
Test Setup Diagram



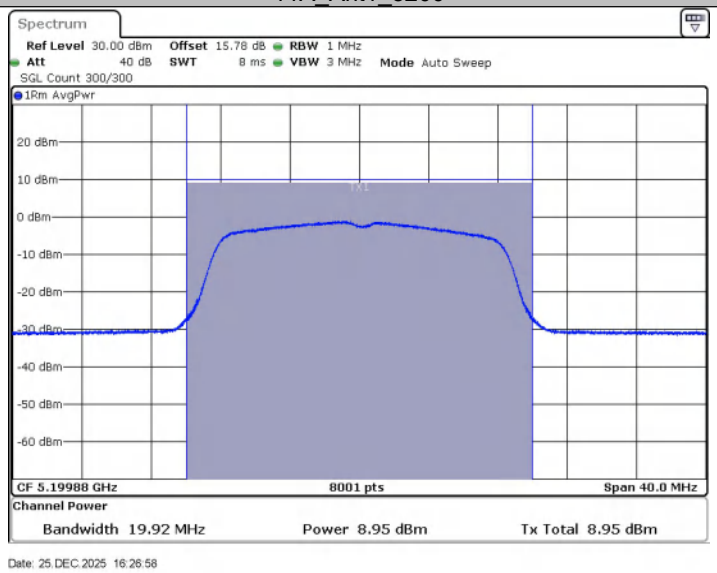
Measurement Data

Test Mode	Antenna	Freq(MHz)	Result [dBm]	Verdict
11A	Ant1	5180	9.44	PASS
		5200	8.95	PASS
		5240	6.85	PASS
11N20SISO	Ant1	5180	9.00	PASS
		5200	8.37	PASS
		5240	6.33	PASS
11N40SISO	Ant1	5190	8.77	PASS
		5230	6.02	PASS
11AC20SISO	Ant1	5180	8.92	PASS
		5200	8.54	PASS
		5240	6.18	PASS
11AC40SISO	Ant1	5190	8.72	PASS
		5230	5.87	PASS
11AC80SISO	Ant1	5210	7.19	PASS

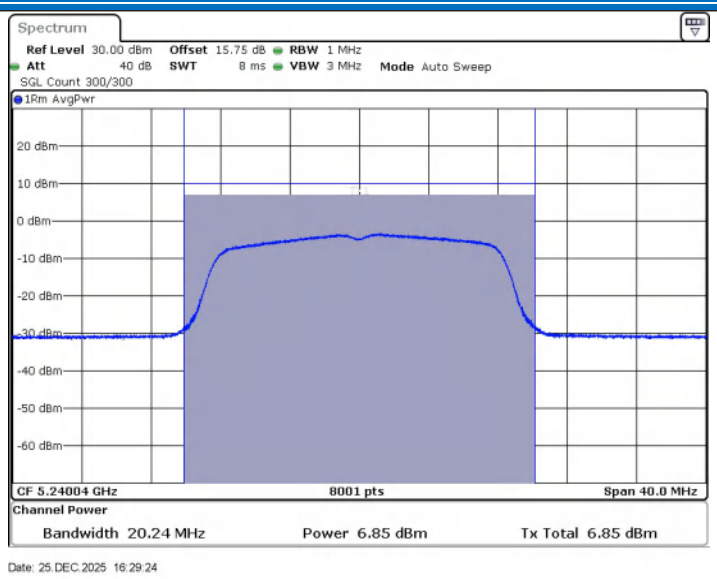
11A_Ant1_5180



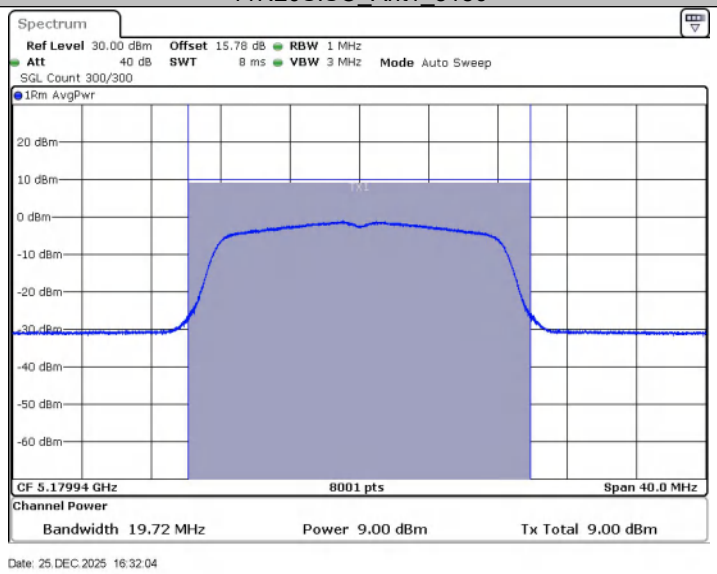
11A_Ant1_5200



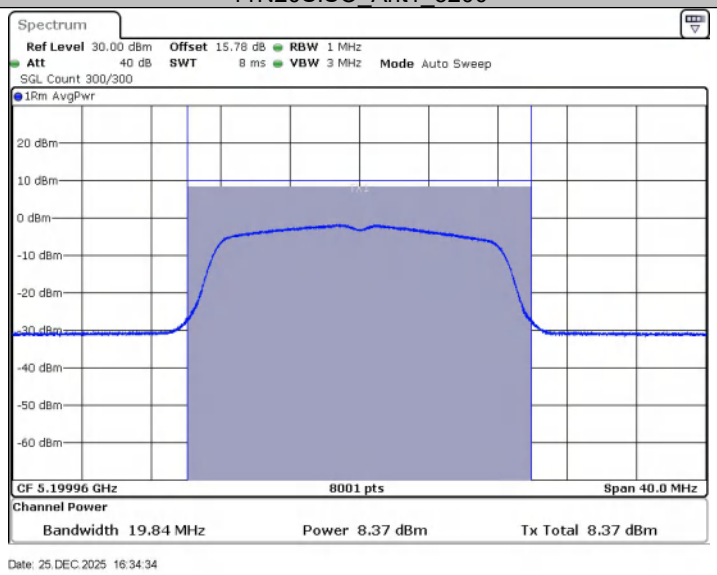
11A_Ant1_5240



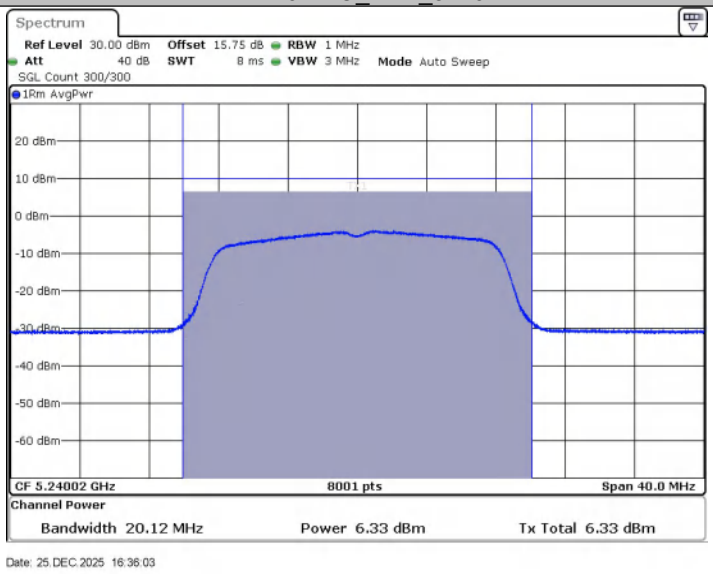
11N20SISO_Ant1_5180



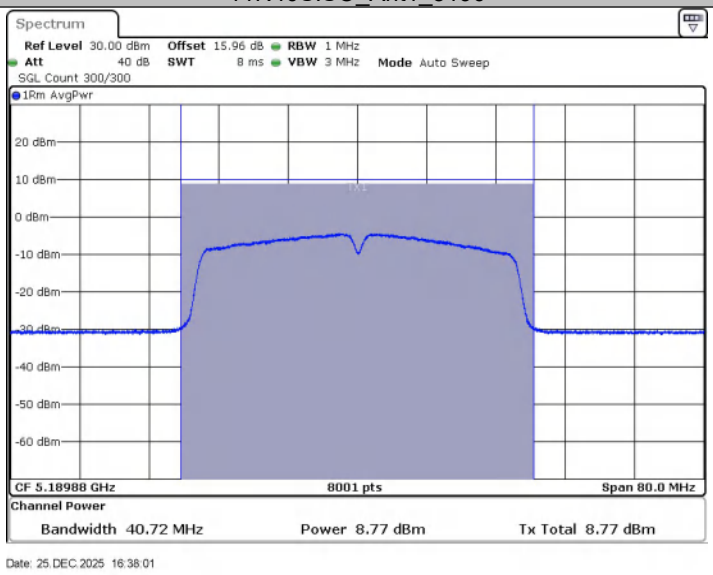
11N20SISO_Ant1_5200



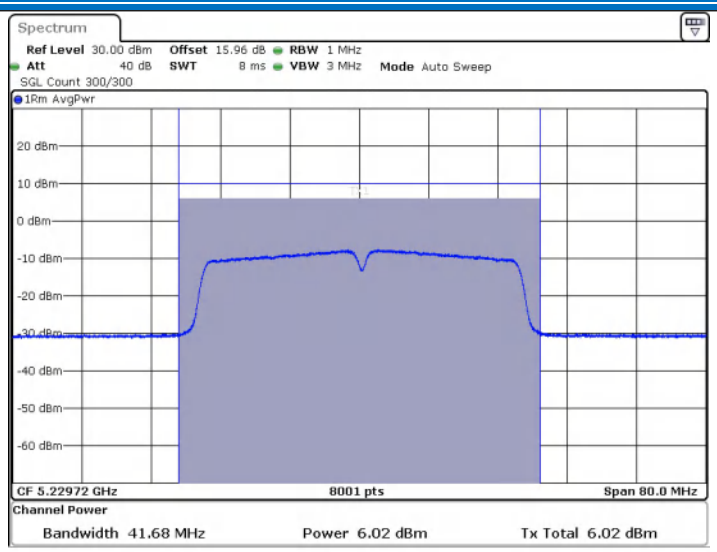
11N20SISO_Ant1_5240



11N40SISO_Ant1_5190

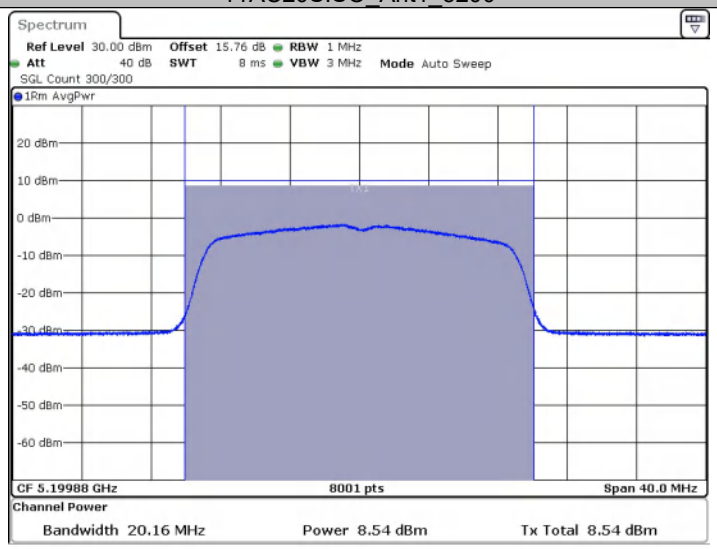


11N40SISO_Ant1_5230

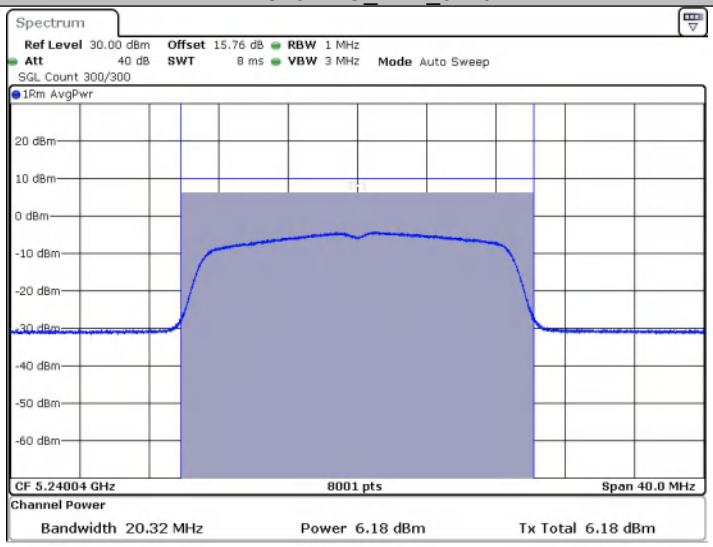


11AC20SISO_Ant1_5180

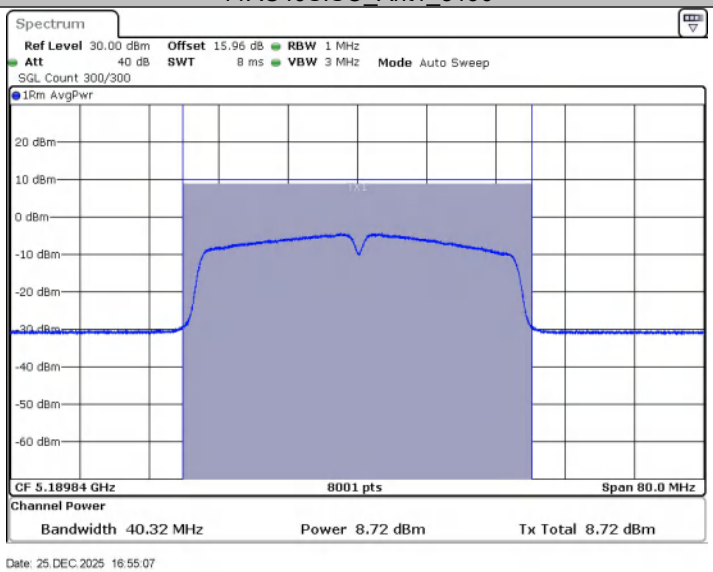
11AC20SISO_Ant1_5200



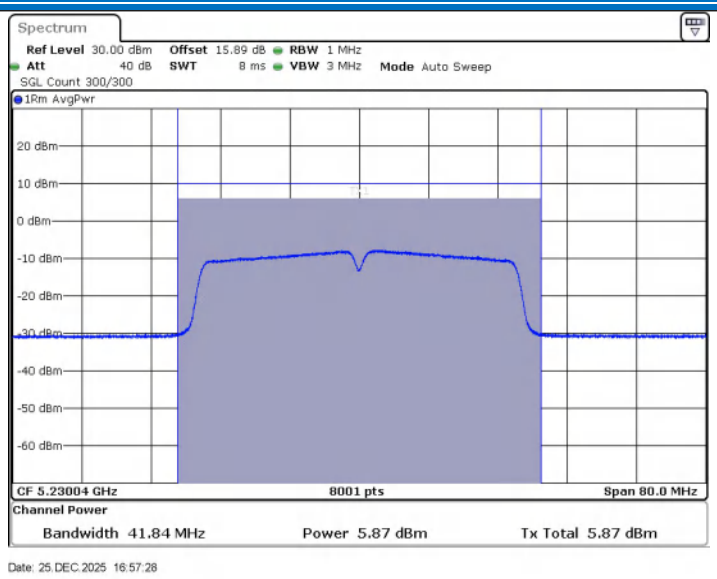
11AC20SISO_Ant1_5240



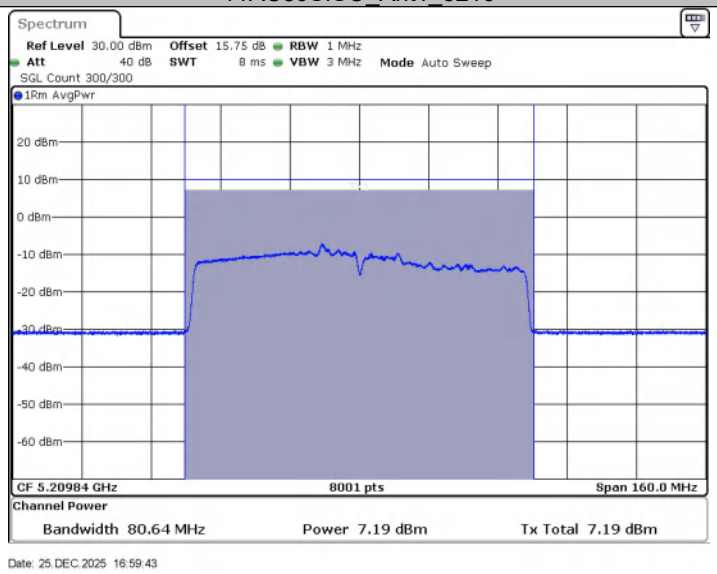
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Remark:
Av.Power=Meas.Level+10 log (1/duty cycle)
E.i.r.p=Av.Power+G,
G = antenna gain in dBi.

Appendix C): Maximum Power Spectral Density

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II F

Test Procedure:

For 5150-5725MHz:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on operation frequency individually.
3. Set RBW = 1MHz.
4. Set the VBW ≥3*RBW. Detector = Peak. Trace mode = max hold.

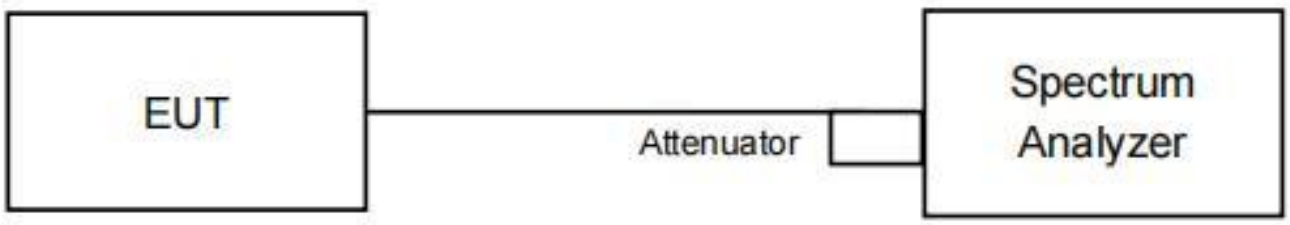
For 5725-5850MHz:

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on operation frequency individually.
3. Set RBW = 500KHz.
4. Set the VBW ≥3*RBW. Detector = Peak. Trace mode = max hold.

Limit:

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.

Test Setup Diagram

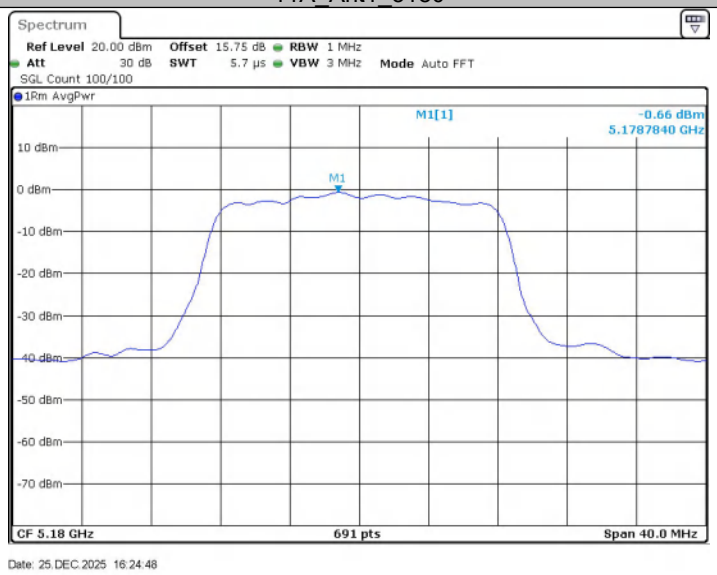
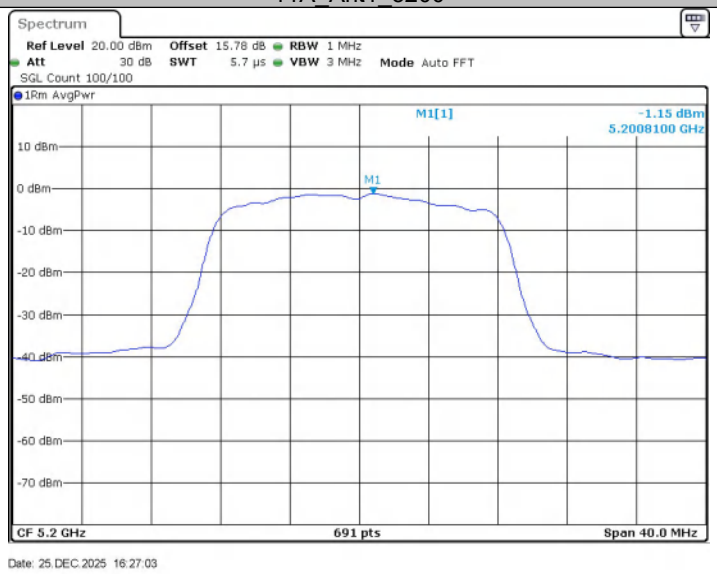


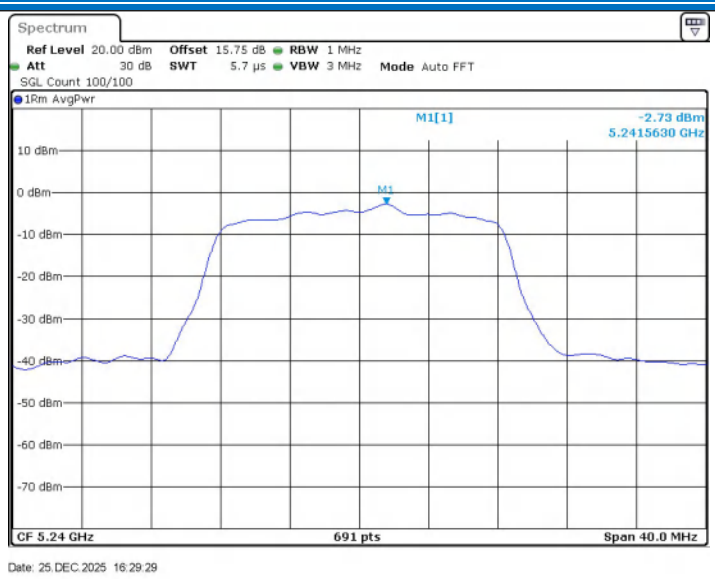
Result Table

TestMode	Freq(MHz)	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	5180	-0.66	≤11.00	PASS
	5200	-1.15	≤11.00	PASS
	5240	-2.73	≤11.00	PASS
11N20SISO	5180	-1.47	≤11.00	PASS
	5200	-1.72	≤11.00	PASS
	5240	-4.25	≤11.00	PASS
11N40SISO	5190	-4.68	≤11.00	PASS
	5230	-7.69	≤11.00	PASS
11AC20SISO	5180	-2.38	≤11.00	PASS
	5200	-1.38	≤11.00	PASS
	5240	-4.30	≤11.00	PASS
11AC40SISO	5190	-4.74	≤11.00	PASS
	5230	-7.73	≤11.00	PASS
11AC80SISO	5210	-7.20	≤11.00	PASS

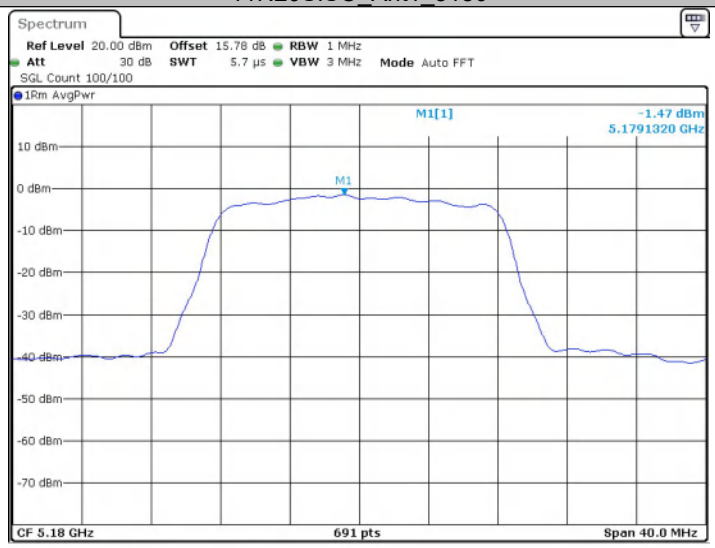
Remark:

PSD = Meas PSD + Duty Cycle Factor

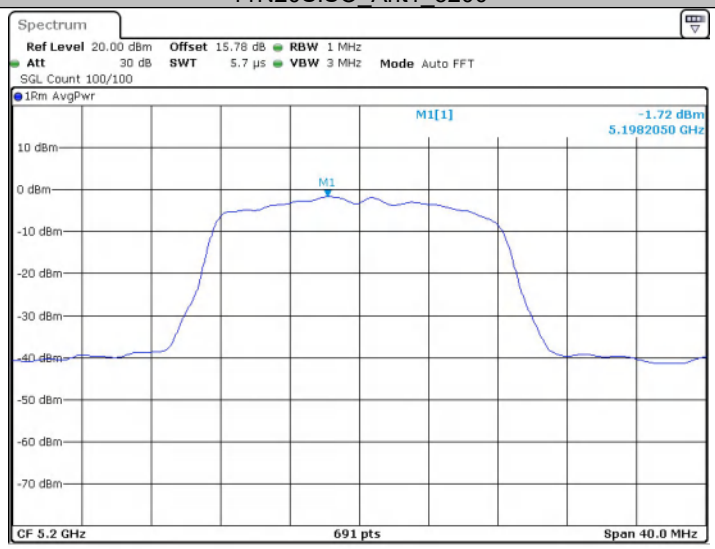
11A_Ant1_5180

11A_Ant1_5200

11A_Ant1_5240



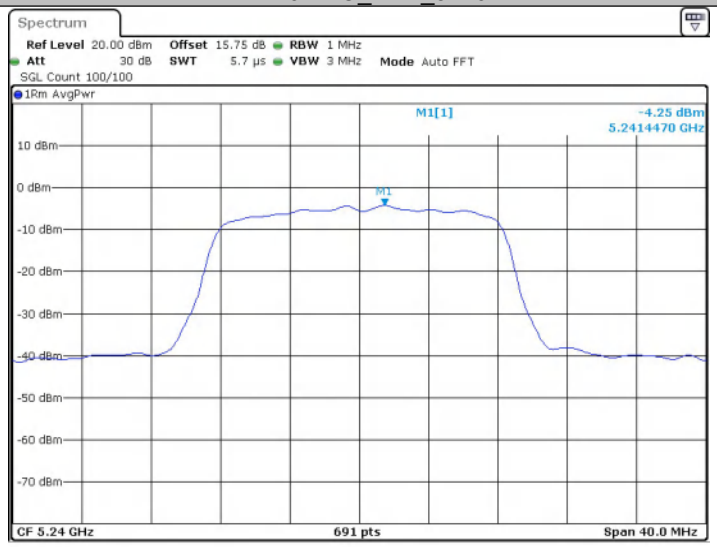
11N20SISO_Ant1_5180



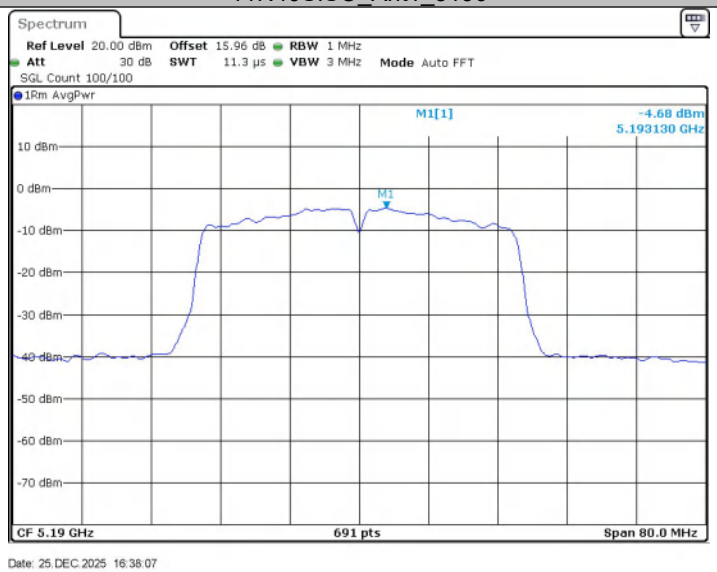
11N20SISO_Ant1_5200



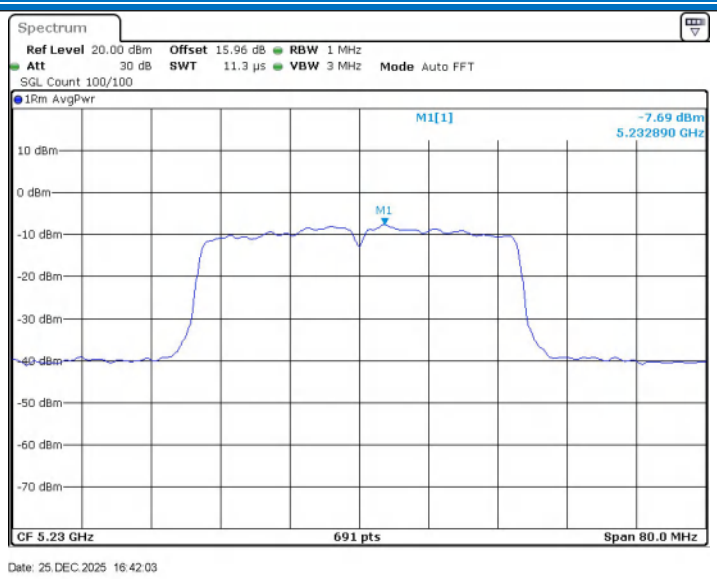
11N20SISO_Ant1_5240



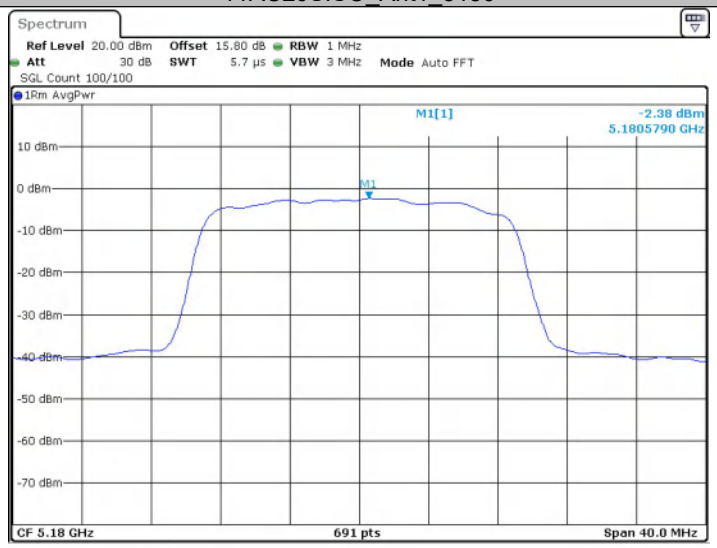
11N40SISO_Ant1_5190



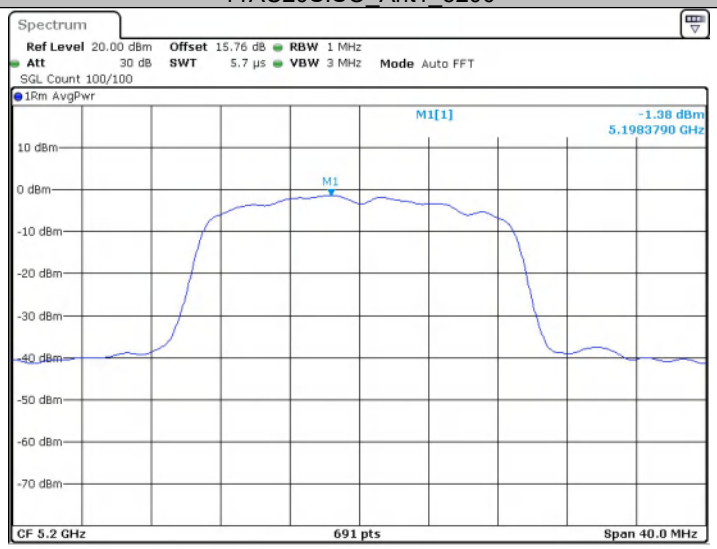
11N40SISO_Ant1_5230



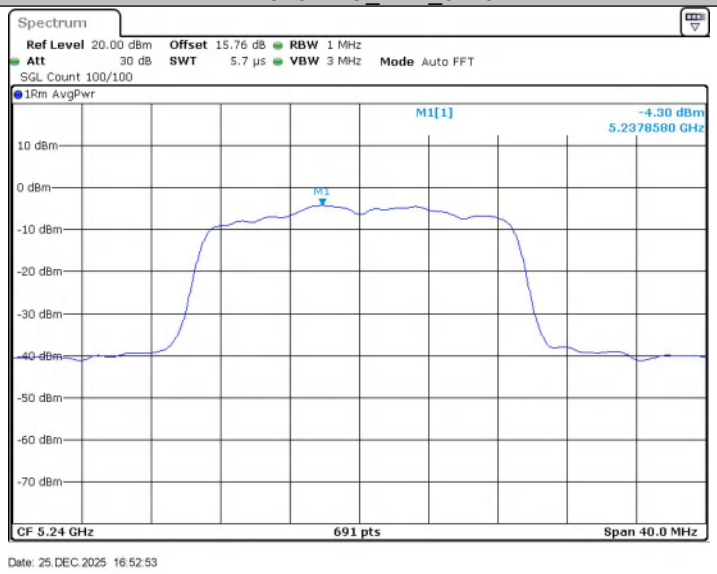
11AC20SISO_Ant1_5180



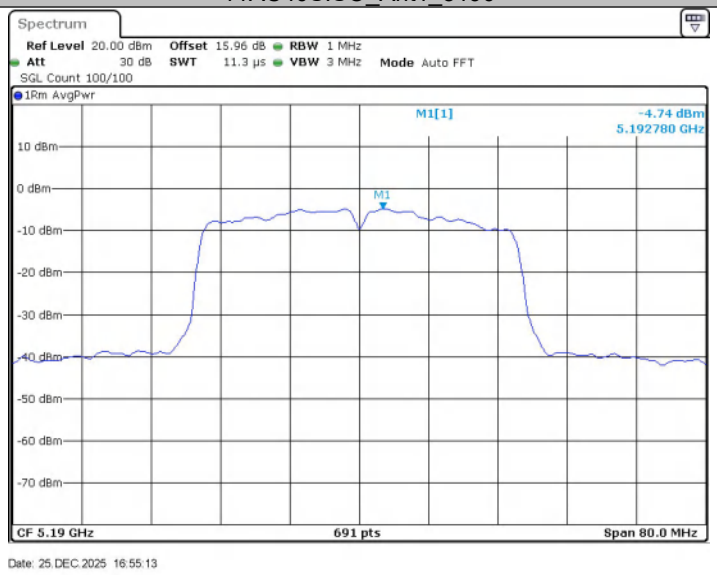
11AC20SISO_Ant1_5200



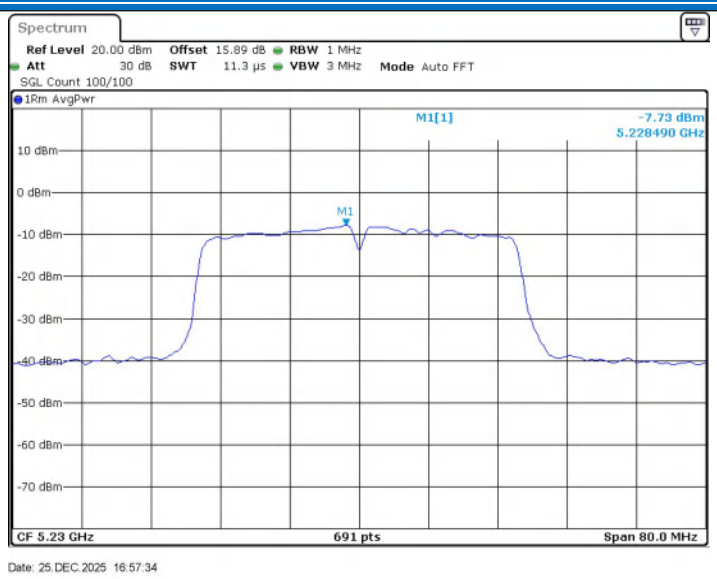
11AC20SISO_Ant1_5240



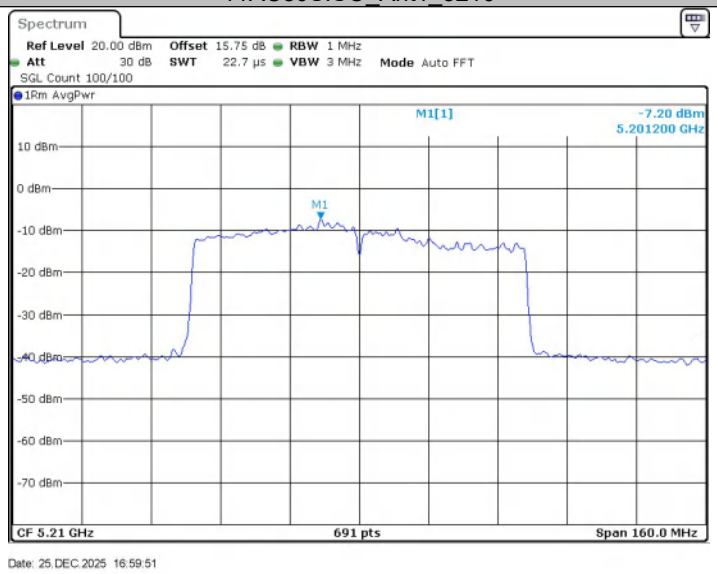
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



Appendix D): Band Edge Measurements

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.407(b)

Test Method: KDB 789033 D02 II G

Test Procedure:

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

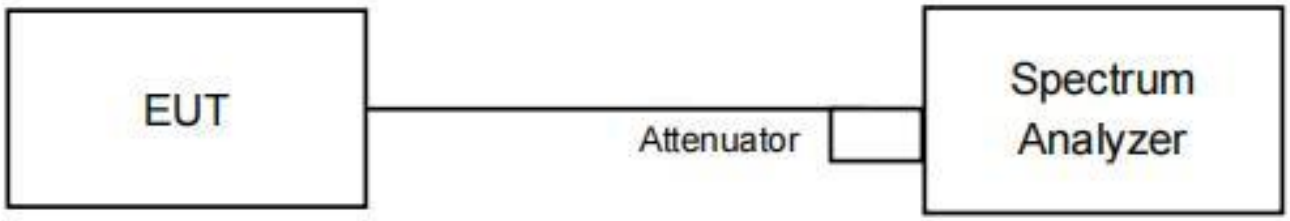
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

Limit:

For transmitters operating in the 5.15-5.25 GHz band:	All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m).
For transmitters operating in the 5.25-5.35 GHz band:	All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m).
For transmitters operating in the 5.47-5.725 GHz band:	All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz (68.2dBuV/m).
For transmitters operating in the 5.725-5.85 GHz band:	(i) All emissions shall be limited to a level of −27 dBm/MHz (68.2dBuV/m) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz (105.2dBuV/m) at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz (110.8dBuV/m) at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz (122.2dBuV/m) at the band edge.

Test Setup Diagram

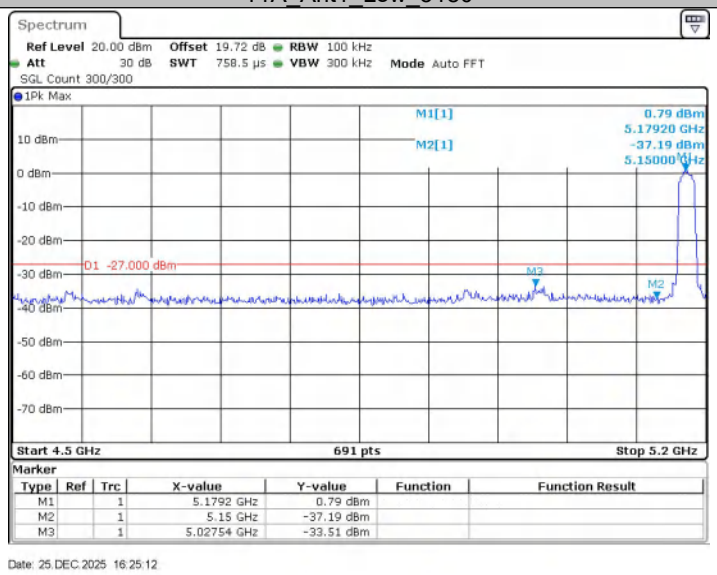


7.1.1 Test Result B1

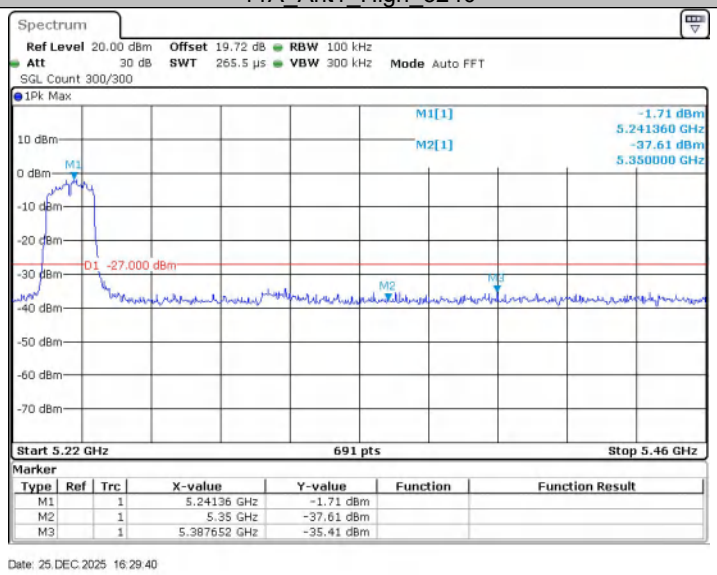
TestMode	ChName	Freq(MHz)	Result[dBm]	Limit[dBm]	Verdict
11A	Low	5180	-33.51	≤-27	PASS
	High	5240	-35.41	≤-27	PASS
11N20SISO	Low	5180	-33.88	≤-27	PASS
	High	5240	-35.07	≤-27	PASS
11N40SISO	Low	5190	-33.85	≤-27	PASS
	High	5230	-34.87	≤-27	PASS
11AC20SISO	Low	5180	-33.94	≤-27	PASS
	High	5240	-34.83	≤-27	PASS
11AC40SISO	Low	5190	-34.11	≤-27	PASS
	High	5230	-35.12	≤-27	PASS
11AC80SISO	Low	5210	-33.97	≤-27	PASS
	High	5210	-35.49	≤-27	PASS

7.1.2 Test Graphs B1

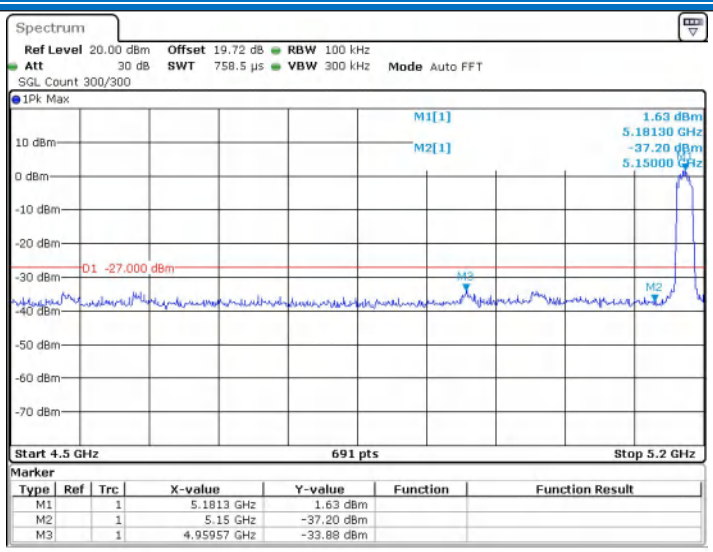
11A_Ant1_Low_5180



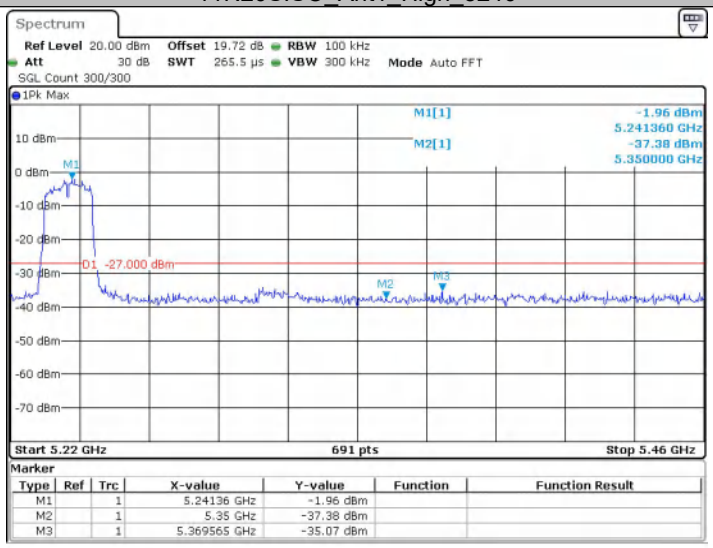
11A_Ant1_High_5240



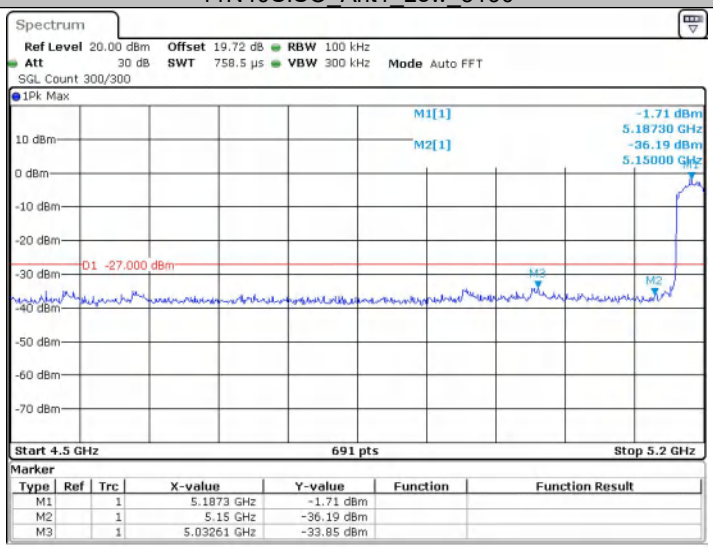
11N20SISO_Ant1_Low_5180



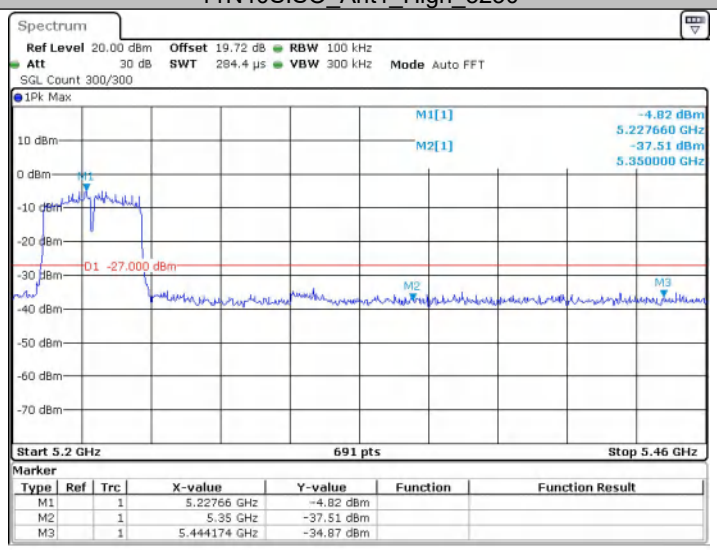
11N20SISO_Ant1_High_5240



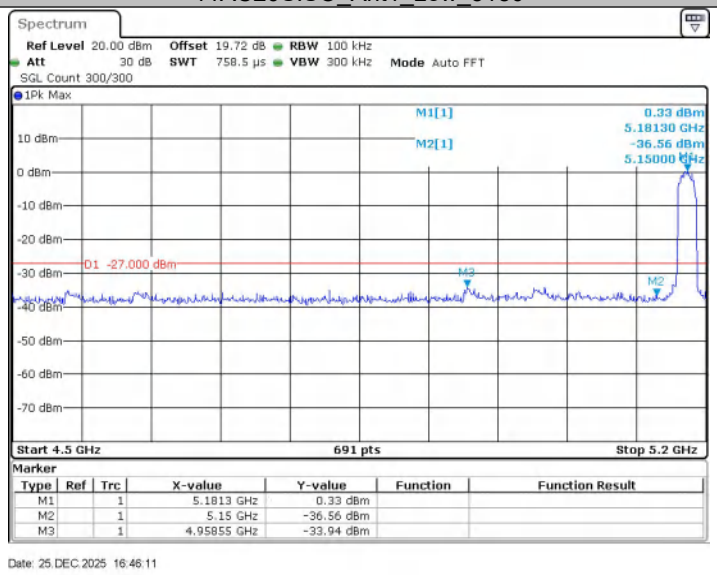
11N40SISO_Ant1_Low_5190



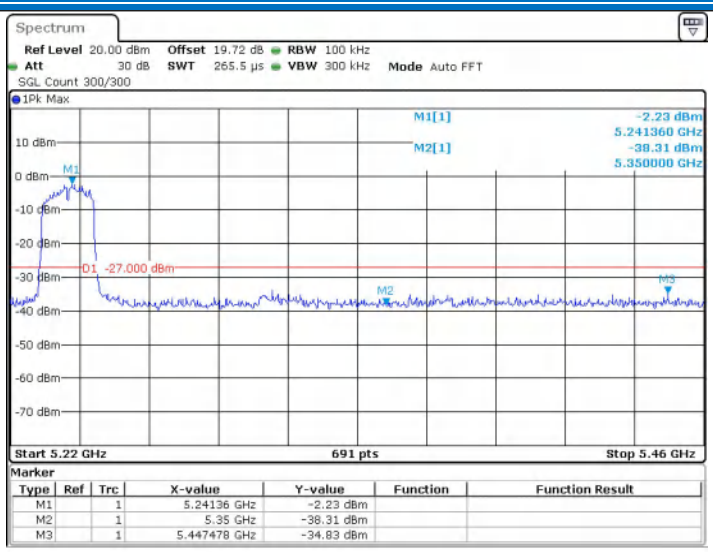
11N40SISO_Ant1_High_5230



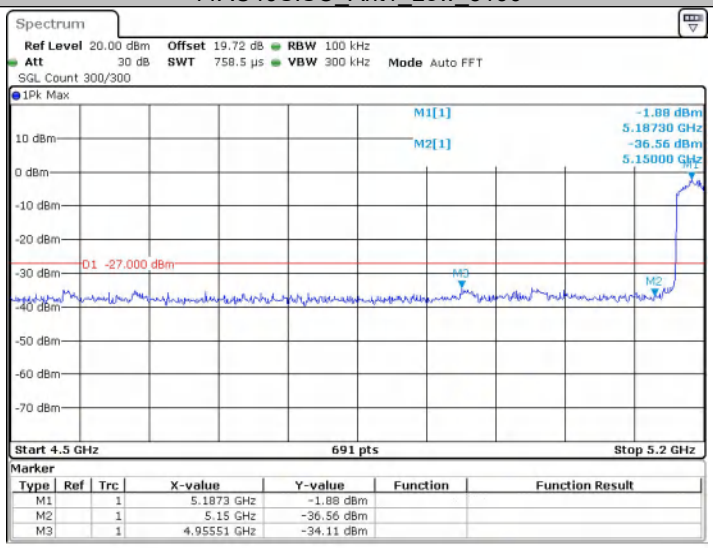
11AC20SISO_Ant1_Low_5180



11AC20SISO_Ant1_High_5240

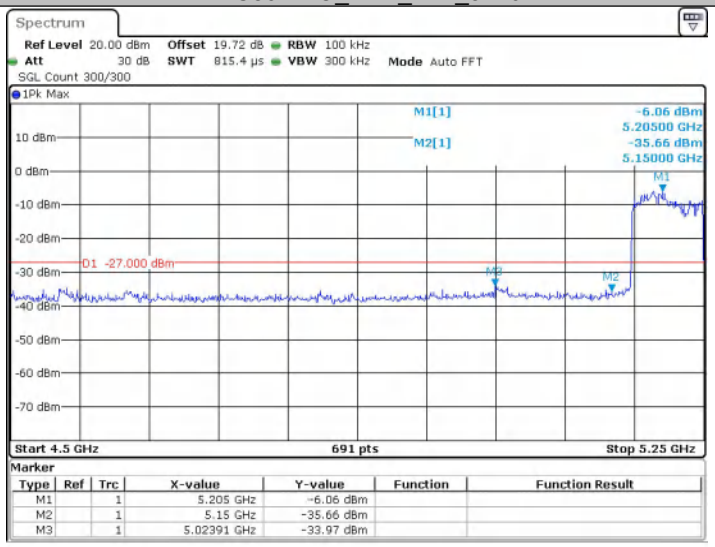


11AC40SISO_Ant1_Low_5190

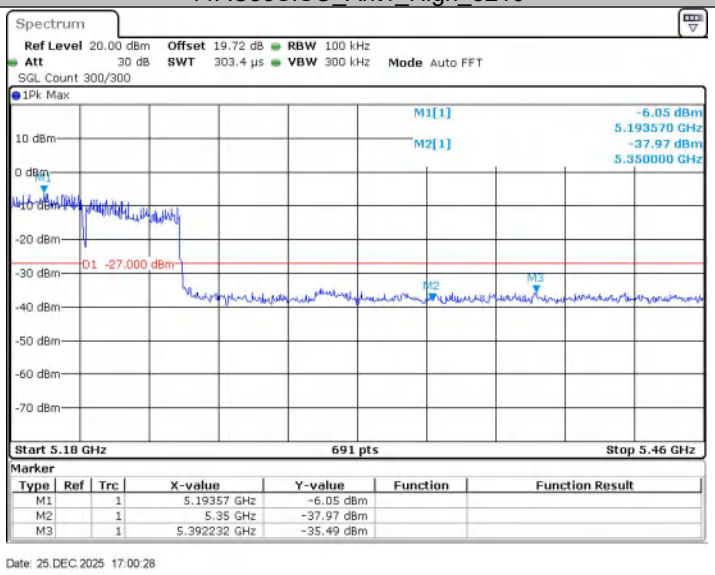


11AC40SISO_Ant1_High_5230

11AC80SISO_Ant1_Low_5210



11AC80SISO_Ant1_High_5210



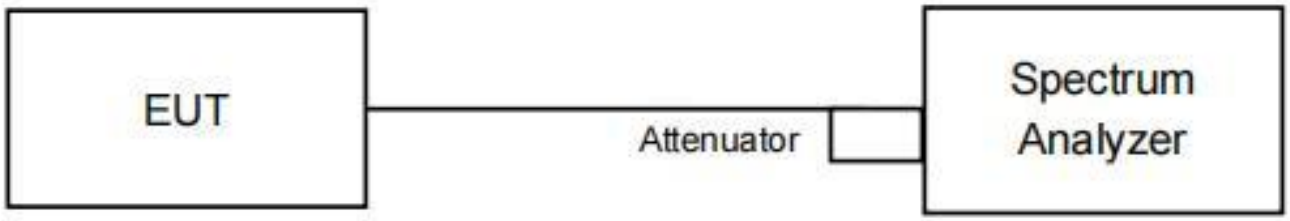
Appendix E): Frequency Stability

Test Requirement 47 CFR Part 15, Subpart C 15.407 (g)

Test Method: ANSI C63.10 (2020) Section 6.8

Limit:The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

Test Setup Diagram



Measurement Data

Frequency Stability Versus Temp.			
Operating Frequency: 5240 MHz			
Temp (℃)	Volta ge	Measured Frequency (MHz)	Limit (MHz)
50	VN(120V)	5240.12	5150-5250
40		5240.61	5150-5250
30		5240.35	5150-5250
20		5240.41	5150-5250
10		5240.83	5150-5250
0		5240.65	5150-5250
-10		5240.52	5150-5250
-30		5240.51	5150-5250

Frequency Stability Versus Temp.			
Operating Frequency: 5210 MHz			
Temp.	Volta ge	Measured Frequency (MHz)	Limit (MHz)
TN	VL(108V)	5210.51	5150-5250
	VN(120V)	5210.62	5150-5250
	VH(132V)	5210.33	5150-5250

Note: All the modulation and channels had been tested, but only the worst data recorded in the report.

Appendix F): Antenna Requirement

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.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:	
The antenna is FPC antenna. The connection/connection type between the antenna to the EUT's antenna port is: unique coupling. This is either permanently attachment or a unique coupling that satisfies the requirement.	

Appendix G): Operation in the absence of information to the transmit

15.407(c) requirement: The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.
Operation in the absence of information to the transmit
While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

Appendix H): AC Power Line Conducted Emission

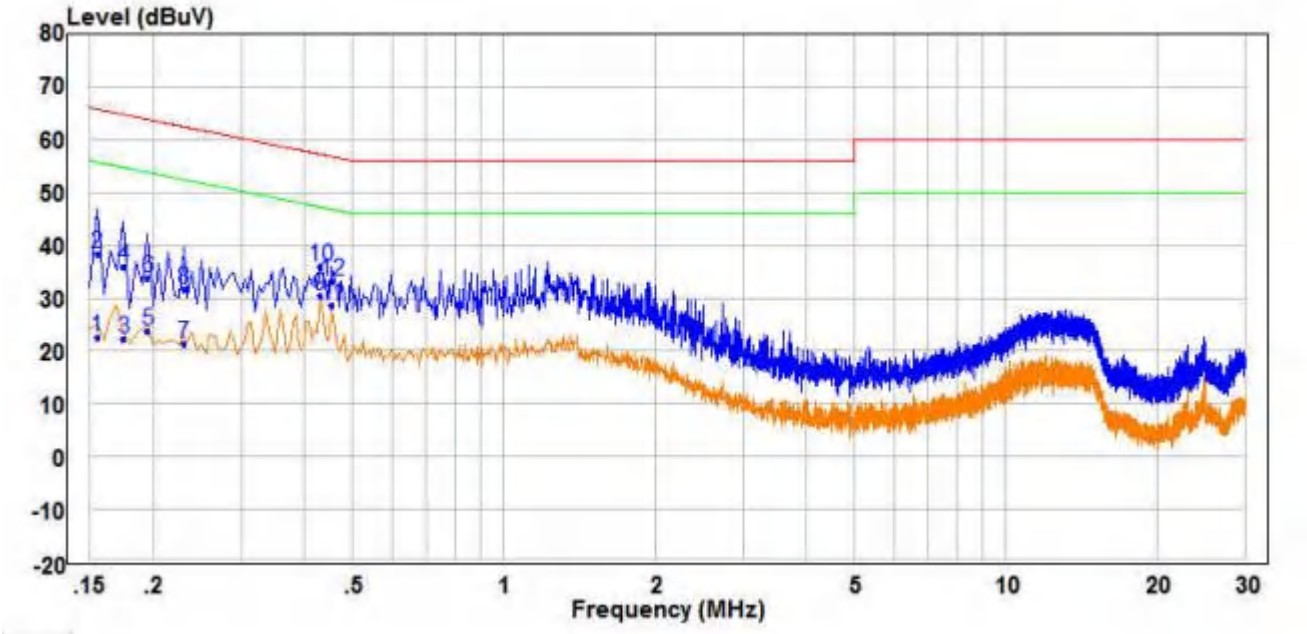
<table>
<tr><td>Test Procedure:</td><td>Test frequency range :150KHz-30MHz
1)The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr>
<tr><th>Quasi-peak</th><th>Average</th></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
</table>
* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.
NOTE : The lower limit is applicable at the transition frequency</td></tr>
</table>

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

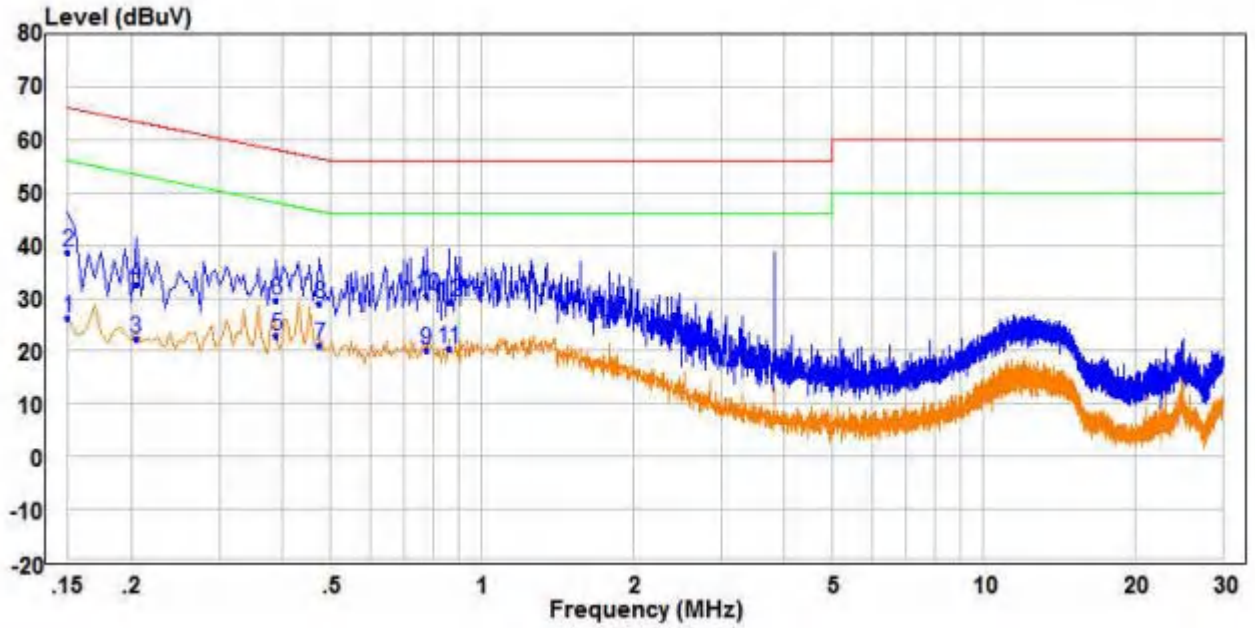
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.155	12.79	9.69	22.48	55.73	-33.25	Average	Line
2		0.155	28.58	9.69	38.27	65.73	-27.46	QP	Line
3		0.175	12.70	9.65	22.35	54.72	-32.37	Average	Line
4		0.175	26.19	9.65	35.84	64.72	-28.88	QP	Line
5		0.195	14.09	9.62	23.71	53.82	-30.11	Average	Line
6		0.195	24.25	9.62	33.87	63.82	-29.95	QP	Line
7		0.230	11.73	9.57	21.30	52.45	-31.15	Average	Line
8		0.230	21.98	9.57	31.55	62.45	-30.90	QP	Line
9	PP	0.430	20.86	9.64	30.50	47.25	-16.75	Average	Line
10	QP	0.430	26.23	9.64	35.87	57.25	-21.38	QP	Line
11		0.455	18.96	9.66	28.62	46.78	-18.16	Average	Line
12		0.455	23.56	9.66	33.22	56.78	-23.56	QP	Line

Neutral line:



		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.150	16.47	9.70	26.17	56.00	-29.83	Average	Neutral
2		0.150	29.08	9.70	38.78	66.00	-27.22	QP	Neutral
3		0.205	12.51	9.60	22.11	53.41	-31.30	Average	Neutral
4		0.205	22.86	9.60	32.46	63.41	-30.95	QP	Neutral
5	PP	0.390	13.16	9.59	22.75	48.06	-25.31	Average	Neutral
6		0.390	20.08	9.59	29.67	58.06	-28.39	QP	Neutral
7		0.475	11.38	9.68	21.06	46.43	-25.37	Average	Neutral
8		0.475	19.34	9.68	29.02	56.43	-27.41	QP	Neutral
9		0.775	10.39	9.85	20.24	46.00	-25.76	Average	Neutral
10	QP	0.775	20.50	9.85	30.35	56.00	-25.65	QP	Neutral
11		0.860	10.54	9.79	20.33	46.00	-25.67	Average	Neutral
12		0.860	19.55	9.79	29.34	56.00	-26.66	QP	Neutral

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. The 6Mbps of rate of 802.11A_5240 is the worst case, only the worst data recorded in the report.

Appendix I): Restricted bands around fundamental frequency (Radiated Emission)

Receiver Setup:

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

Test Procedure:

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. 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

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
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.

Limit:

Frequency	Limit (dBμV/m @3cm)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test plot as follows:

Worse case mode:		802.11a		Test channel:		36			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5150.00	58.57	-3.63	54.94	74	-19.06	peak	H	1.5	77
5150.00	44.77	-3.63	41.14	54	-12.86	AVG	H	1.5	337
5150.00	59.64	-3.63	56.01	74	-17.99	peak	V	1.5	119
5150.00	46.78	-3.63	43.15	54	-10.85	AVG	V	1.5	357

Worse case mode:		802.11a		Test channel:		48			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5350.00	58.62	-3.59	55.03	74	-18.97	peak	H	1.5	298
5350.00	44.94	-3.59	41.35	54	-12.65	AVG	H	1.5	61
5350.00	59.83	-3.59	56.24	74	-17.76	peak	V	1.5	274
5350.00	46.82	-3.59	43.23	54	-10.77	AVG	V	1.5	108

Worse case mode:		802.11n(HT20)		Test channel:		36			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5150.00	59.19	-3.63	55.56	74	-18.44	peak	H	1.5	286
5150.00	44.53	-3.63	40.90	54	-13.10	AVG	H	1.5	255
5150.00	60.00	-3.63	56.37	74	-17.63	peak	V	1.5	45
5150.00	46.34	-3.63	42.71	54	-11.29	AVG	V	1.5	340

Worse case mode:		802.11n(HT20)		Test channel:		48			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5350.00	59.13	-3.59	55.54	74	-18.46	peak	H	1.5	98
5350.00	44.11	-3.59	40.52	54	-13.48	AVG	H	1.5	115
5350.00	59.57	-3.59	55.98	74	-18.02	peak	V	1.5	273
5350.00	46.38	-3.59	42.79	54	-11.21	AVG	V	1.5	145

Worse case mode:		802.11n(HT40)		Test channel:		38			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5150.00	58.31	-3.63	54.68	74	-19.32	peak	H	1.5	273
5150.00	44.77	-3.63	41.14	54	-12.86	AVG	H	1.5	287
5150.00	59.34	-3.63	55.71	74	-18.29	peak	V	1.5	62
5150.00	46.54	-3.63	42.91	54	-11.09	AVG	V	1.5	81

Worse case mode:		802.11n(HT40)		Test channel:		46			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5350.00	58.75	-3.59	55.16	74	-18.84	peak	H	1.5	101
5350.00	44.81	-3.59	41.22	54	-12.78	AVG	H	1.5	117
5350.00	59.34	-3.59	55.75	74	-18.25	peak	V	1.5	150
5350.00	46.44	-3.59	42.85	54	-11.15	AVG	V	1.5	80

Worse case mode:		802.11ac(VHT20)		Test channel:		36			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5150.00	58.88	-3.63	55.25	74	-18.75	peak	H	1.5	156
5150.00	43.99	-3.63	40.36	54	-13.64	AVG	H	1.5	88
5150.00	60.19	-3.63	56.56	74	-17.44	peak	V	1.5	228
5150.00	46.55	-3.63	42.92	54	-11.08	AVG	V	1.5	208

Worse case mode:		802.11ac(VHT20)		Test channel:		48			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5350.00	58.97	-3.59	55.38	74	-18.62	peak	H	1.5	21
5350.00	44.45	-3.59	40.86	54	-13.14	AVG	H	1.5	183
5350.00	59.90	-3.59	56.31	74	-17.69	peak	V	1.5	340
5350.00	46.69	-3.59	43.10	54	-10.90	AVG	V	1.5	316

Worse case mode:		802.11ac(VHT40)		Test channel:		38			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5150.00	58.38	-3.63	54.75	74	-19.25	peak	H	1.5	55
5150.00	44.16	-3.63	40.53	54	-13.47	AVG	H	1.5	15
5150.00	59.47	-3.63	55.84	74	-18.16	peak	V	1.5	87
5150.00	46.76	-3.63	43.13	54	-10.87	AVG	V	1.5	132

Worse case mode:		802.11ac(VHT40)		Test channel:		46			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5350.00	58.39	-3.59	54.80	74	-19.20	peak	H	1.5	65
5350.00	44.88	-3.59	41.29	54	-12.71	AVG	H	1.5	228
5350.00	59.45	-3.59	55.86	74	-18.14	peak	V	1.5	37
5350.00	46.98	-3.59	43.39	54	-10.61	AVG	V	1.5	197

Worse case mode:		802.11ac(VHT80)		Test channel:		42			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5150.00	59.21	-3.63	55.58	74	-18.42	peak	H	1.5	139
5150.00	44.46	-3.63	40.83	54	-13.17	AVG	H	1.5	281
5150.00	59.99	-3.63	56.36	74	-17.64	peak	V	1.5	102
5150.00	46.42	-3.63	42.79	54	-11.21	AVG	V	1.5	334

Note:
1) Through Pre-scan transmitting mode with all kind of modulation and data rate, Only the worst case is recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading - Correct Factor
Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix J): Radiated Spurious Emissions

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	Average

Test Procedure:

Below 1GHz test procedure as below:

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

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre)
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.

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/cm)	Remark	Measurement distance (cm)
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

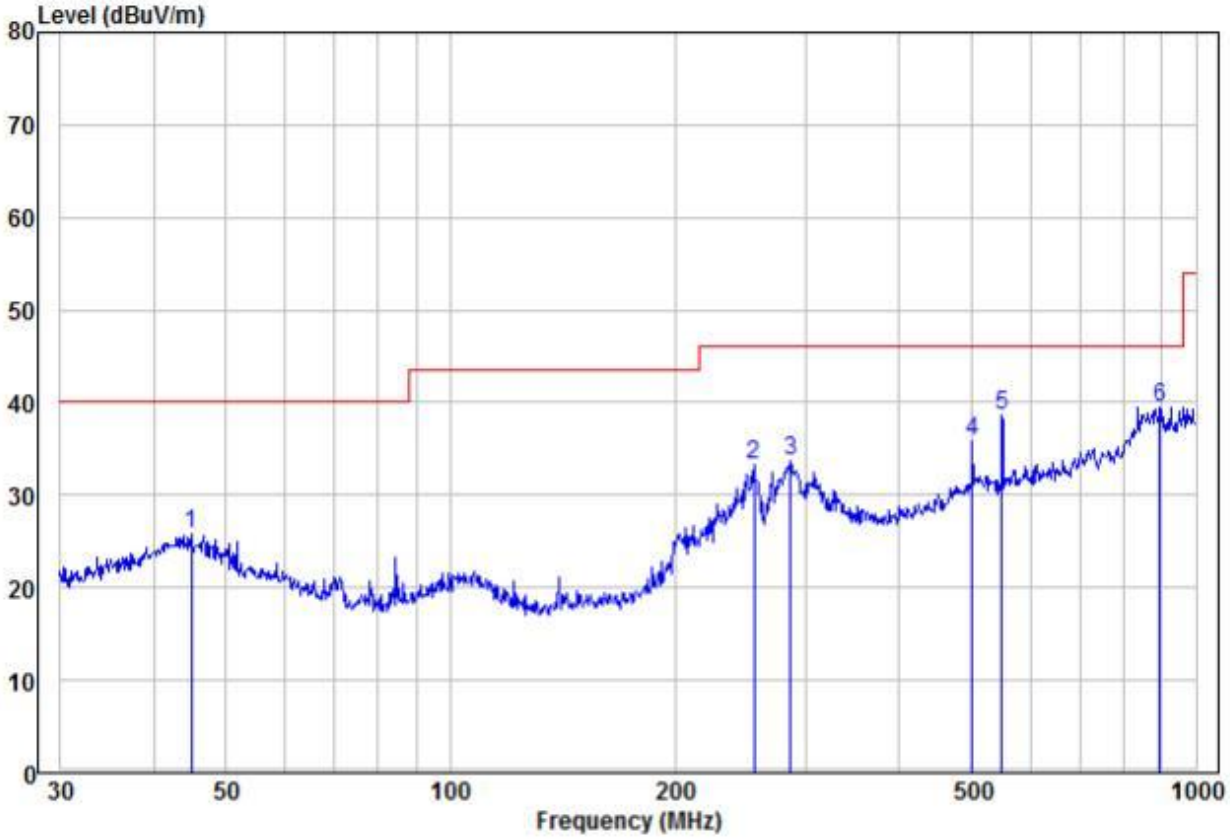
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test result: PASS

Test Data:

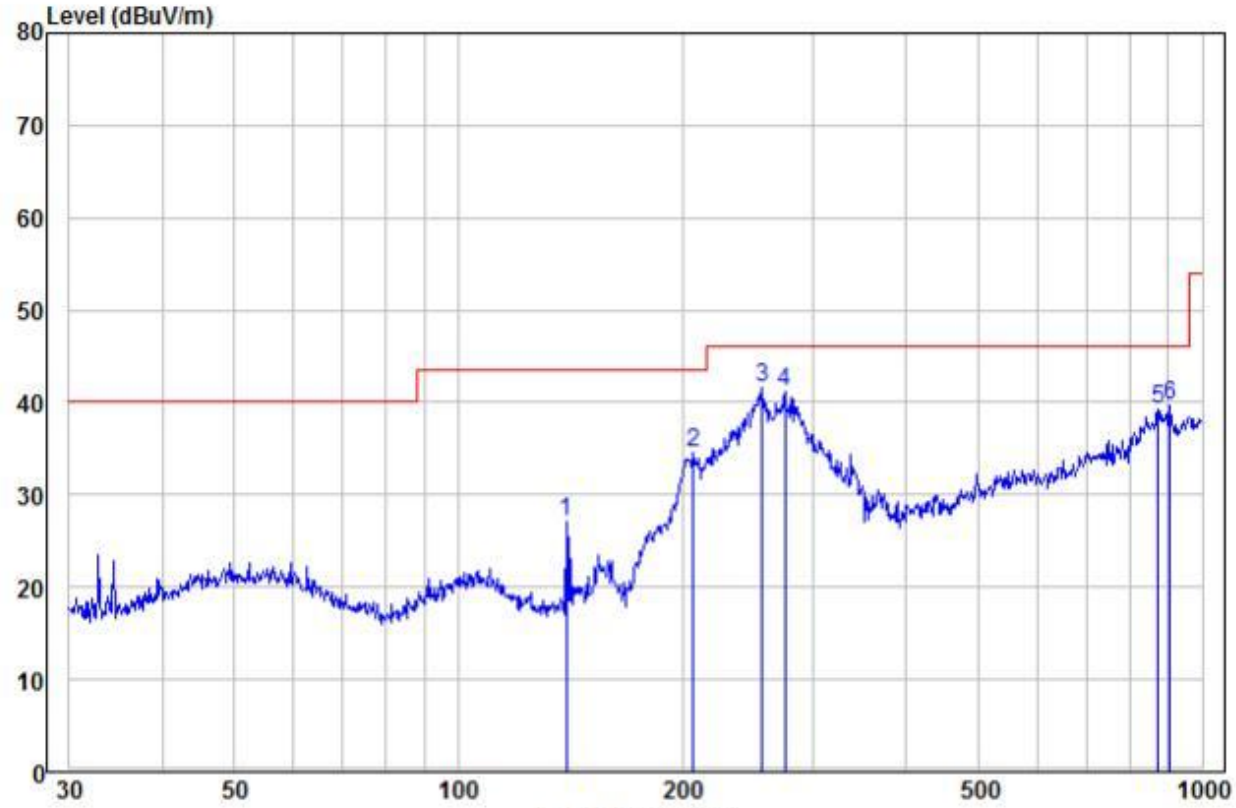
Radiated Emission below 1GHz

30MHz~1GHz		
Test mode:	Transmitting (802.11a 36CH)	Vertical



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase	APos	TPos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB			cm	deg
1	44.90	13.82	12.03	25.85	40.00	-14.15	Peak	VERTICAL	100	11
2	255.62	17.38	15.85	33.23	46.00	-12.77	Peak	VERTICAL	100	59
3	285.98	17.09	16.55	33.64	46.00	-12.36	Peak	VERTICAL	100	199
4	501.18	14.87	20.94	35.81	46.00	-10.19	Peak	VERTICAL	100	207
5	549.02	16.92	21.60	38.52	46.00	-7.48	Peak	VERTICAL	100	288
6 pp	893.86	10.19	29.20	39.39	46.00	-6.61	Peak	VERTICAL	100	333

Test mode:	Transmitting (802.11a 36CH)	Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase	APos	TPos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB			cm	deg
1	139.85	18.72	8.36	27.08	43.50	-16.42	Peak	HORIZONTAL	100	62
2	207.12	22.10	12.52	34.62	43.50	-8.88	Peak	HORIZONTAL	100	104
3 pp	256.52	25.68	15.87	41.55	46.00	-4.45	Peak	HORIZONTAL	100	133
4	275.16	24.90	16.30	41.20	46.00	-4.80	Peak	HORIZONTAL	100	208
5	872.18	10.48	28.84	39.32	46.00	-6.68	Peak	HORIZONTAL	100	309
6	906.48	11.46	28.18	39.64	46.00	-6.36	Peak	HORIZONTAL	100	311

Transmitter Emission above 1GHz

Test mode:	802.11a(6Mbps)			Test channel:		36 CH			
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Over (dB)	Detect or Type	Ant. Pol. H/V	Antenna Height (m)	Table Angle (Degree)
10360	52.38	2.26	54.64	74	-19.36	peak	H	1.5	61
10360	37.56	2.26	39.82	54	-14.18	AVG	H	1.5	171
15540	50.83	3.75	54.58	74	-19.42	peak	H	1.5	309
15540	38.22	3.75	41.97	54	-12.03	AVG	H	1.5	161
10360	54.57	2.26	56.83	74	-17.17	peak	V	1.5	65
10360	39.38	2.26	41.64	54	-12.36	AVG	V	1.5	84
15540	51.58	3.75	55.33	74	-18.67	peak	V	1.5	135
15540	35.05	3.75	38.80	54	-15.20	AVG	V	1.5	54

Test mode:	802.11a(6Mbps)		Test channel:		36 CH			
Frequency (MHz)	Emission Level (dBμV/m)	Emission Level (dBm/m)	Limits (dBm/m)	Over (dB)	Detect or Type	Ant. Pol. H/V	Antenna Height (m)	Table Angle (Degree)
10360	54.64	-40.52	-27	-13.52	peak	H	1.5	61
15540	54.58	-40.58	-27	-13.58	peak	H	1.5	309
10360	56.83	-38.33	-27	-11.33	peak	V	1.5	65
15540	55.33	-39.83	-27	-12.83	peak	V	1.5	135

Test mode:	802.11a(6Mbps)			Test channel:		40 CH			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
10400	53.15	2.29	55.44	74	-18.56	peak	H	1.5	183
10400	36.63	2.29	38.92	54	-15.08	AVG	H	1.5	71
15600	51.61	3.77	55.38	74	-18.62	peak	H	1.5	317
15600	37.16	3.77	40.93	54	-13.07	AVG	H	1.5	346
10400	55.39	2.29	57.68	74	-16.32	peak	V	1.5	72
10400	39.95	2.29	42.24	54	-11.76	AVG	V	1.5	230
15600	50.90	3.77	54.67	74	-19.33	peak	V	1.5	4
15600	35.05	3.77	38.82	54	-15.18	AVG	V	1.5	74

Test mode:	802.11a(6Mbps)		Test channel:		40 CH			
Frequency	Emission Level	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV/m)	(dBm/m)	(dBm/m)	(dB)		H/V	(m)	(Degree)
10360	55.44	-39.72	-27	-12.72	peak	H	1.5	183
15540	55.38	-39.78	-27	-12.78	peak	H	1.5	317
10360	57.68	-37.48	-27	-10.48	peak	V	1.5	72
15540	54.67	-40.49	-27	-13.49	peak	V	1.5	4

Test mode:	802.11a(6Mbps)			Test channel:		48 CH			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol. H/V	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)			(m)	(Degree)
10480	52.63	2.31	54.94	74	-19.06	peak	H	1.5	360
10480	36.80	2.31	39.11	54	-14.89	AVG	H	1.5	113
15720	48.98	3.79	52.77	74	-21.23	peak	H	1.5	360
15720	36.39	3.79	40.18	54	-13.82	AVG	H	1.5	74
10480	54.15	2.31	56.46	74	-17.54	peak	V	1.5	335
10480	36.77	2.31	39.08	54	-14.92	AVG	V	1.5	284
15720	49.90	3.79	53.69	74	-20.31	peak	V	1.5	181
15720	35.16	3.79	38.95	54	-15.05	AVG	V	1.5	253

Test mode:	802.11a(6Mbps)		Test channel:		48 CH			
Frequency	Emission Level	Emission Level	Limits	Over	Detector Type	Ant. Pol. H/V	Antenna Height	Table Angle
(MHz)	(dBμV/m)	(dBm/m)	(dBm/m)	(dB)			(m)	(Degree)
10480	54.94	-40.22	-27	-13.22	peak	H	1.5	360
15720	52.77	-42.39	-27	-15.39	peak	H	1.5	360
10480	56.46	-38.70	-27	-11.7	peak	V	1.5	335
15720	53.69	-41.47	-27	-14.47	peak	V	1.5	181

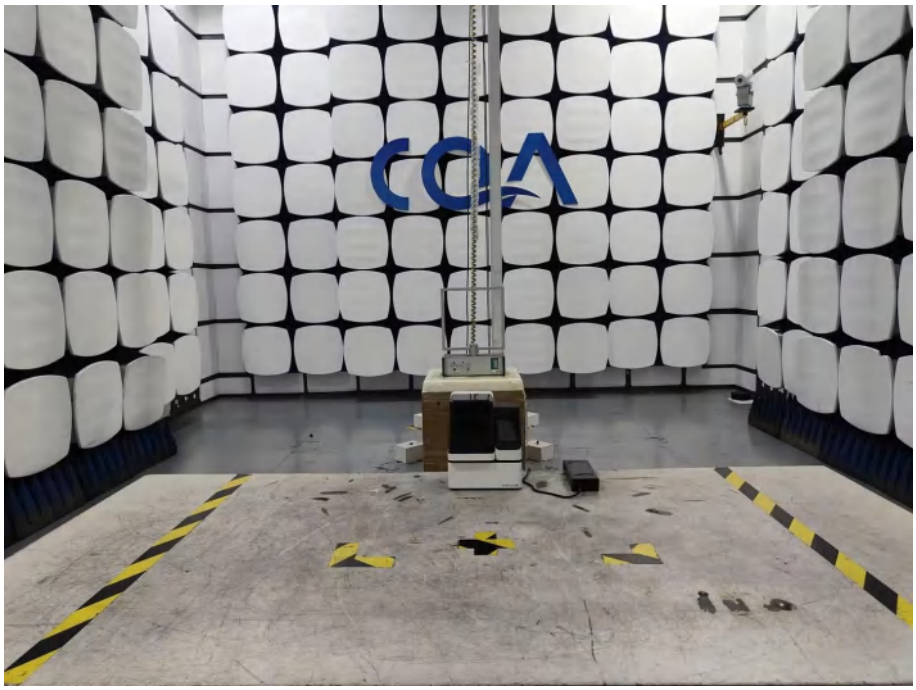
Remark:

1) The 802.11a 6Mbps of rate is the worst case, only the worst data recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3) Scan from 9kHz to 40GHz,The disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

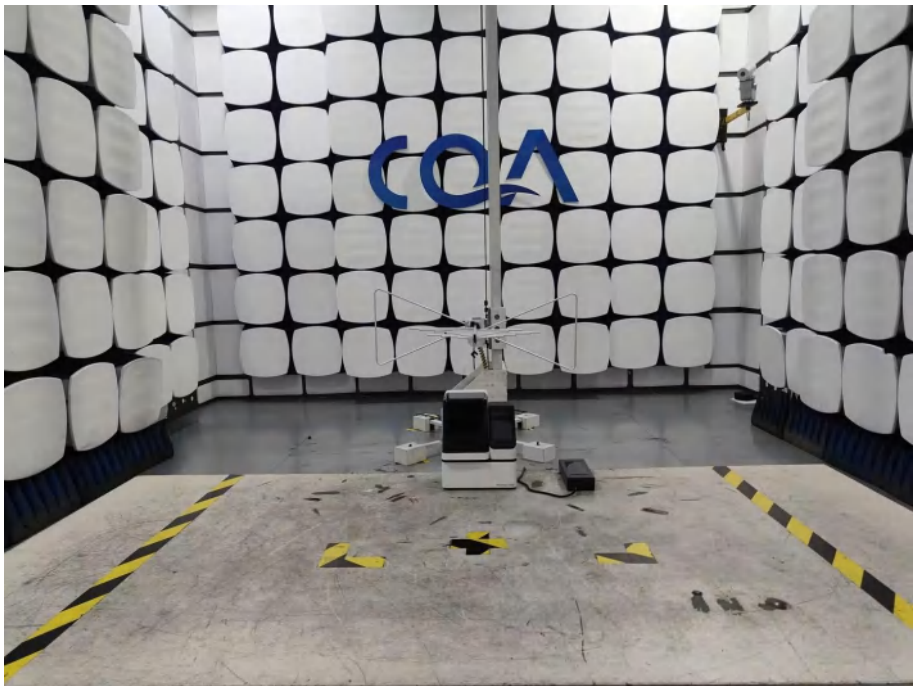
8 Photographs - EUT Test Setup

8.1 Radiated Spurious Emission

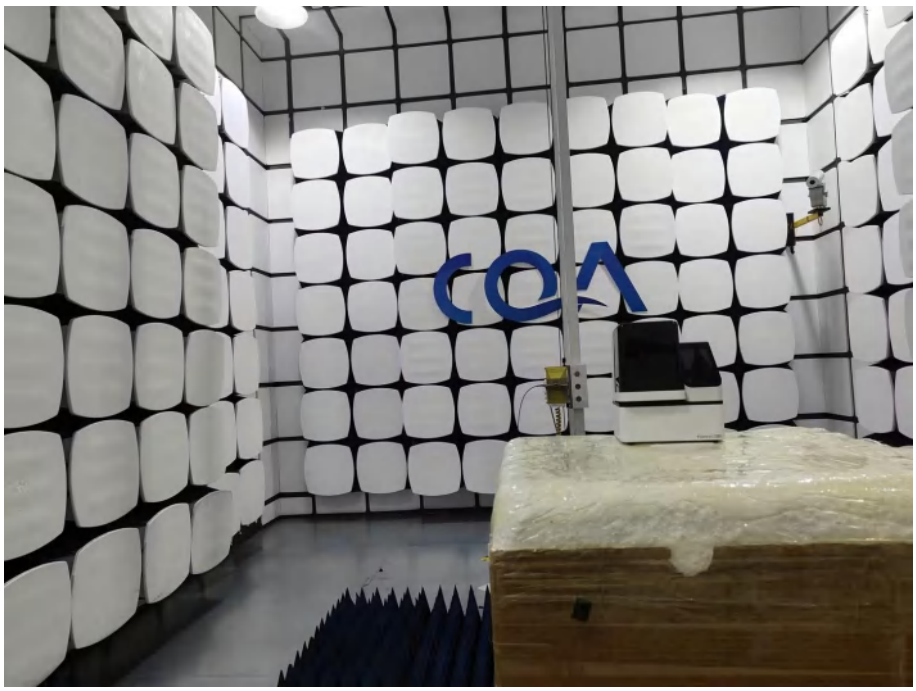
9kHz~30MHz:



30MHz~1GHz:

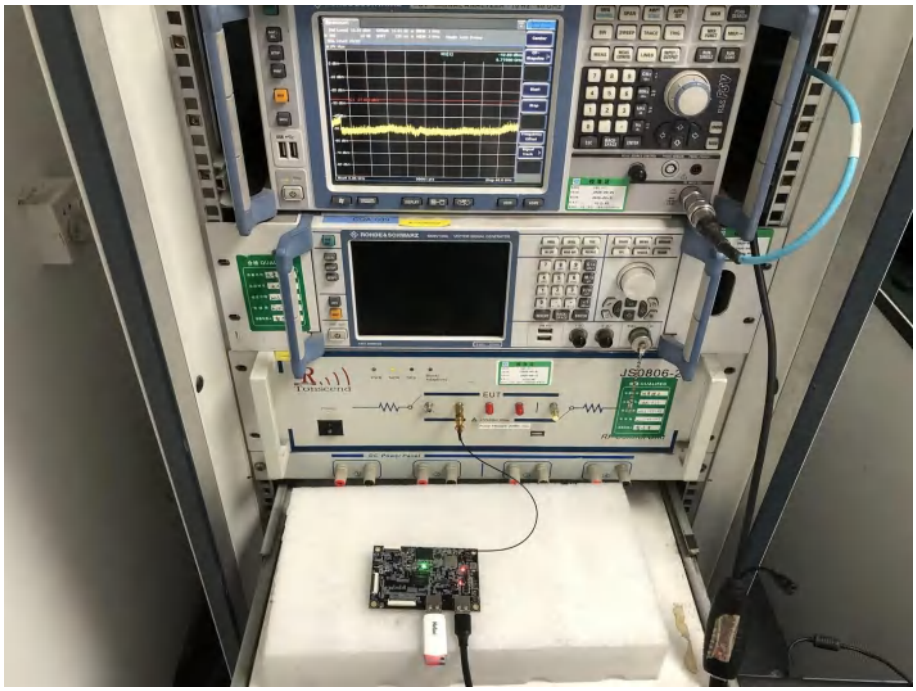


Above 1GHz:



8.2 Conducted Emission

8.3 RF Conducted measurement



9 Photographs - EUT Constructional Details

Refer to PHOTOGRAPHS OF EUT for CQASZ20251202954E-01.

*** END OF REPORT ***