TEST REPORT

Applicant:	NETPRISMA INC.
EUT Description:	Multi-mode Smart LTE Module with Wi-Fi & Bluetooth
Model Tested:	SUE200-LD
Model Covered:	SUE209-LD
Brand:	Vrileg
FCC ID:	2BEY3SUE200LDA
Standards:	FCC 47 CFR Part 15 Subpart E
Date of Receipt:	2025/03/03
Date of Test:	2025/03/03 to 2025/04/10
Date of Issue:	2025/04/14

TOWE. Tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. Without written approval of TOWE, the test report shall not be reproduced except in full.

ACCREDITED
CERTIFICATE #7088.01

Huang Kun
Approved By:

Chen Chengfu
Reviewed By:

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Revision History

Rev.	Issue Date	Description	Revised by
01	2025/04/14	Original	Chen Chengfu

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Product Differentiation Statement

SUE209-LD shares the same hardware design and supports same bands with SUE200-LD. The only difference between the two models is the operating system. The different OS is as below:

Module	SUE200-LD	SUE209-LD
System	Android	Linux

Above changes won't impact the protocol and RF performance for all frequency bands.

So, only the test data for Model No.(SUE200-LD) was presented in the report.

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Summary of Test Results

Clause	FCC Part	Test Items	Test Bands	Result
4.1	§15.203	Antenna Requirement	---	PASS
4.2	§15.407(g)	Frequency Stability	---	---
4.3	§15.207	AC Power Line Conducted Emission	Section 2.2	N/A
4.4	§15.407(a)(1)(iv) §15.407(a)(2) §15.407(a)(3)(i)	Maximum Conducted Output Power	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.5	§KDB 789033 II.C.1	Emission Bandwidth	U-NII-1 U-NII-2A U-NII-2C	Reporting purposes only
4.6	§15.407(e)	Minimum Emission Bandwidth	U-NII-3	PASS
4.7	§KDB 789033 II.D	Occupied Bandwidth	U-NII-1 U-NII-2A U-NII-2C U-NII-3	Reporting purposes only
4.8	§5.407(a)(1)(iv) §15.407(a)(2) §15.407(a)(3)(i)	Maximum Power Spectral Density	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.9	§15.407(b) §15.209(d)	Unwanted Emissions	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS

Test Method: ANSI C63.10:2020, KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Remark:
1. Pass is EUT meets standard requirements.
2. The EUT is DC power supply, “N/A” denotes “not applicable”.

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1 General Description

1.1 Lab Information

1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014
Tel.: +86-755-27212361
Contact Email: info@towewireless.com

1.1.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Has been recognized as an accredited testing laboratory. Designation Number: CN1353.

ISED CAB identifier: CN0152
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. Has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0152
Company Number: 31000

1.2 Client Information

1.2.1 Applicant

Applicant:	NETPRISMA INC.
Address:	1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES

1.2.2 Manufacturer

Manufacturer:	NETPRISMA INC.
Address:	1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES

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1.3 Product Information

EUT Description:	Multi-mode Smart LTE Module with Wi-Fi & Bluetooth			
Model Tested:	SUE200-LD			
Model Covered:	SUE209-LD			
Brand:	Vrileg			
Hardware Version:	R1.0			
Software Version:	SUE200LDDA1301 SUE209LDDA6001			
SN:	RF Conducted	D1C25AM1T000076		
	RSE	D1C25AM1T000064 E1C24KH0E000020		
Modulation Type:	802.11a&n:	OFDM-BPSK, QPSK, 16QAM, 64QAM		
	802.11ac:	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM		
Smart System:	☒SISO:	802.11a/n/ac	/	
	☐MIMO:	802.11n/ac	( )TX( )RX	
	☐CDD:	802.11a	( )TX( )RX	
EUT Function	☒Client	☐Outdoor AP	☐Indoor AP	☐Fixed P2P AP
DFS Function:	☐Master ☐Slave with radar detection ☒Slave without radar detection			
Frequency Range:	U-NII-1:	5150 ~ 5250MHz		
	U-NII-2A:	5250 ~ 5350MHz		
	U-NII-2C:	5470 ~ 5725MHz		
	U-NII-3:	5725 ~ 5850MHz		
Channel Frequency:	20M BWch.:	U-NII-1:	5180 ~ 5240MHz	4 Channels
		U-NII-2A:	5260 ~ 5320MHz	4 Channels
		U-NII-2C:	5500 ~ 5700MHz	11 Channels
		U-NII-3:	5745 ~ 5825MHz	5 Channels
		Straddle Channel:	5720MHz	1 Channel
	40M BWch.:	U-NII-1:	5190 ~ 5230MHz	2 Channels
		U-NII-2A:	5270 ~ 5310MHz	2 Channels
		U-NII-2C:	5510 ~ 5670MHz	5 Channels
		U-NII-3:	5755 ~ 5795MHz	2 Channels
		Straddle Channel:	5710MHz	1 Channel
	80M BWch.:	U-NII-1:	5210MHz	1 Channel
		U-NII-2A:	5290MHz	1 Channel
		U-NII-2C:	5530 ~ 5610MHz	2 Channels
		U-NII-3:	5775MHz	1 Channel
		Straddle Channel:	5690MHz	1 Channel
Antenna Type:	☒ External, ☐ Integrated			
Antenna Gain:	Frequency Range	Ant0 (dBi)		
	U-NII-1:	-0.67		
	U-NII-2A:	-0.19		

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	U-NII-2C:	1.28
	U-NII-3:	1.1
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.		

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2 Test Configuration

2.1 Test Channel

Frequency Channels for U-NII-1							
Channel	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz
38	5190MHz	42	5210MHz	46	5230MHz	/	

Remark:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	**Test Channel**	**Test Frequency**
802.11a/n20 /ac20	The Lowest channel (CH36)	5180MHz
	The Middle channel (CH40)	5200MHz
	The Highest channel (CH48)	5240MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11n40 /ac40	The Lowest channel (CH38)	5190MHz
	The Highest channel (CH46)	5230MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11ac80	The Middle channel (CH42)	5210MHz

Frequency Channels for U-NII-2A							
Channel	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**
52	5260MHz	56	5280MHz	60	5300MHz	64	5320MHz
54	5270MHz	58	5290MHz	62	5310MHz	/	

Remark:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	**Test Channel**	**Test Frequency**
802.11a/n20 /ac20	The Lowest channel (CH52)	5260MHz
	The Middle channel (CH60)	5300MHz
	The Highest channel (CH64)	5320MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11n40 /ac40	The Lowest channel (CH54)	5270MHz
	The Highest channel (CH62)	5310MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11ac80	The Middle channel (CH58)	5290MHz

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Frequency Channels for U-NII-2C							
Channel	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**
100	5500MHz	110	5550MHz	120	5600MHz	132	5660MHz
102	5510MHz	112	5560MHz	122	5610MHz	134	5670MHz
104	5520MHz	114	5570MHz	124	5620MHz	136	5680MHz
106	5530MHz	116	5580MHz	126	5630MHz	140	5700MHz
108	5540MHz	118	5590MHz	128	5640MHz	/	

Remark:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	**Test Channel**	**Test Frequency**
802.11a/n20 /ac20	The Lowest channel (CH100)	5500MHz
	The Middle channel (CH116)	5580MHz
	The Highest channel (CH140)	5700MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11n40 /ac40	The Lowest channel (CH102)	5510MHz
	The Middle channel (CH118)	5590MHz
	The Highest channel (CH134)	5670MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11ac80	The Lowest channel (CH106)	5530MHz
	The Highest channel (CH122)	5610MHz

Frequency Channels for U-NII-3							
Channel	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**	**Channel**	**Frequency**
149	5745MHz	153	5765MHz	157	5785MHz	161	5805MHz
151	5755MHz	155	5775MHz	159	5795MHz	165	5825MHz

Remark:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Modulation Type	**Test Channel**	**Test Frequency**
802.11a/n20 /ac20	The Lowest channel (CH149)	5745MHz
	The Middle channel (CH157)	5785MHz
	The Highest channel (CH165)	5825MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11n40 /ac40	The Lowest channel (CH151)	5755MHz
	The Highest channel (CH159)	5795MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11ac80	The Middle channel (CH155)	5775MHz

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Straddle Channel		
Modulation Type	**Test Channel**	**Test Frequency**
802.11a/n20 /ac20	The channel (CH144)	5720MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11n40/ac40	The channel (CH142)	5710MHz
Modulation Type	**Test Channel**	**Test Frequency**
802.11ac80	The channel (CH138)	5690MHz

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2.2 Worst-case configuration and Mode

Modulation Type	SISO - Data Rate	MIMO - Data Rate
802.11a	6 Mbps	NA
802.11n20	MCS0 (6.5 Mbps)	NA
802.11n40	MCS0 (13.5 Mbps)	NA
802.11ac20	MCS0 (6.5 Mbps)	NA
802.11ac40	MCS0 (13.5 Mbps)	NA
802.11ac80	MCS0 (29.3 Mbps)	NA
Transmitting mode:	Keep the EUT was programmed to be in continuously transmitting mode.	
Normal Link:	Keep the EUT operation to normal function.	

2.3 Support Unit used in test

Description	Manufacturer	Model	Serial Number
Development Board	NETPRISMA INC.	SMART-EVB-G5	/
Development Board	NETPRISMA INC.	SUE200-LD-TE-A	/
Remark: all above the information of table are provided by client.			

2.4 Test Environment

Temperature:	Normal: 15℃ ~ 35℃
Humidity:	45-56 % RH Ambient
Voltage:	DC 3.8V (Module Input)
Remark: The testing environment is within the scope of the EUT user manual and meets the requirements of the standard testing environment.	

2.5 Test RF Cable

For all conducted test items: The offset level is set spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.

2.6 Modifications

No modifications were made during testing.

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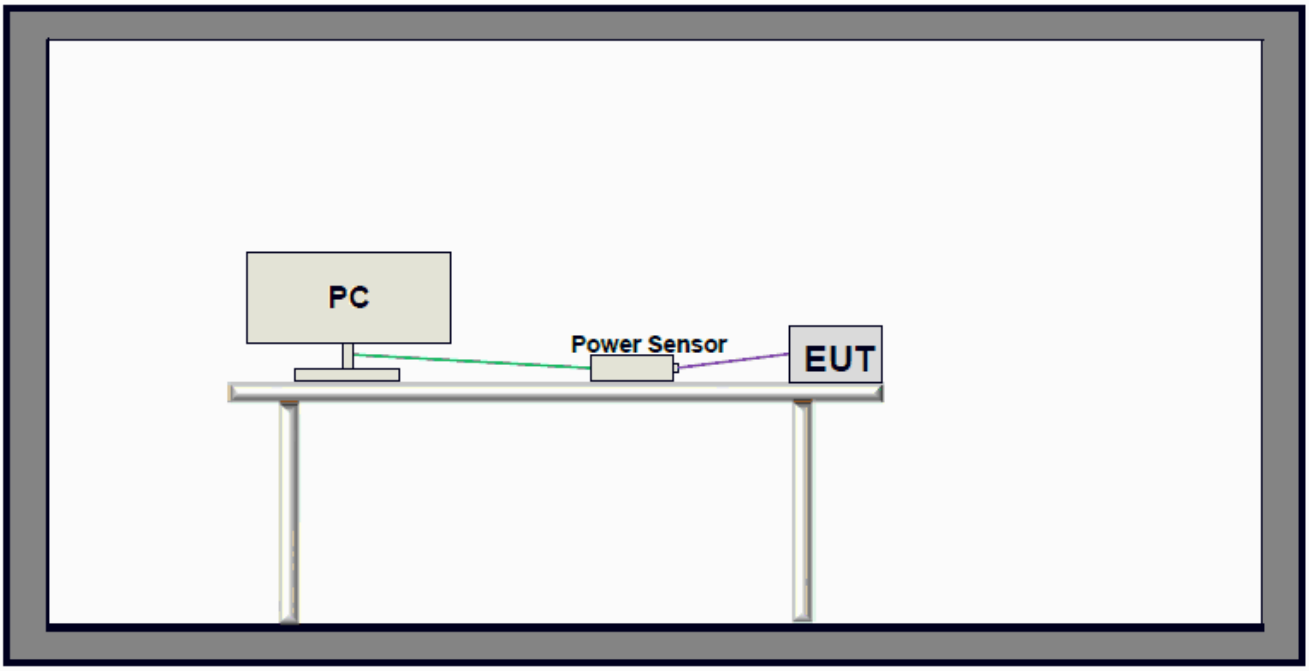
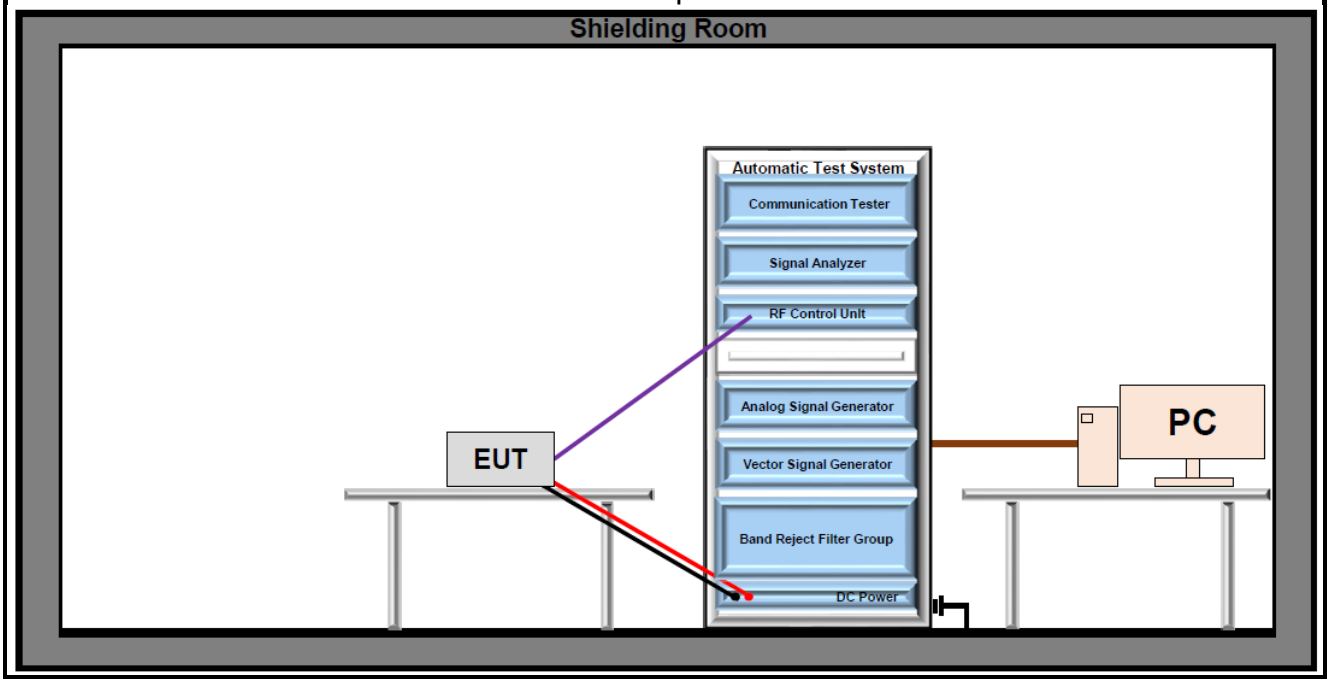
2.7 Test Setup Diagram

2.7.1 Conducted Configuration

Setup 1



Setup 2



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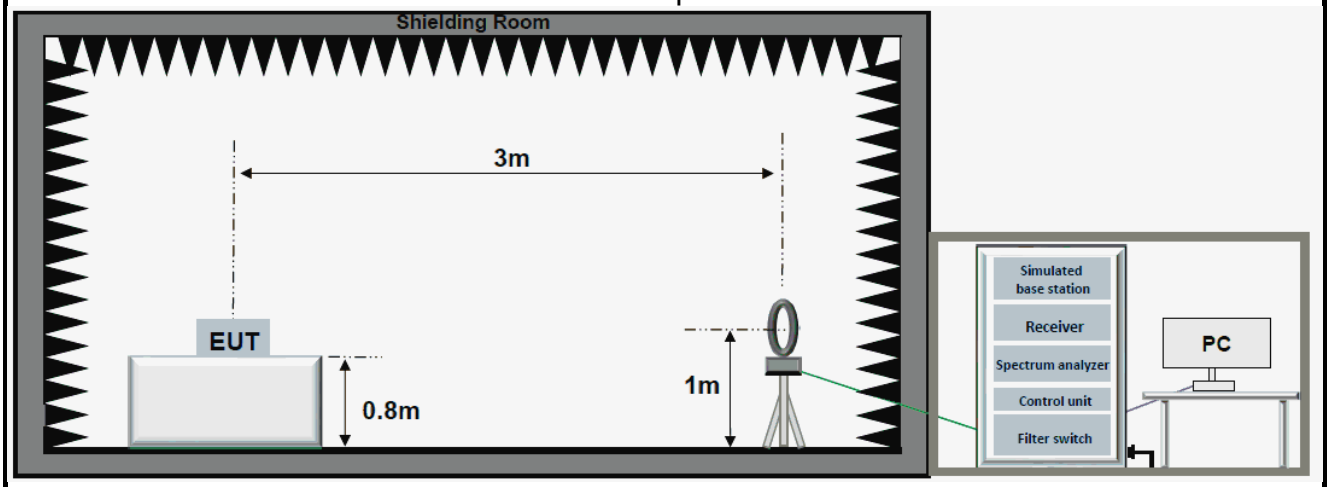
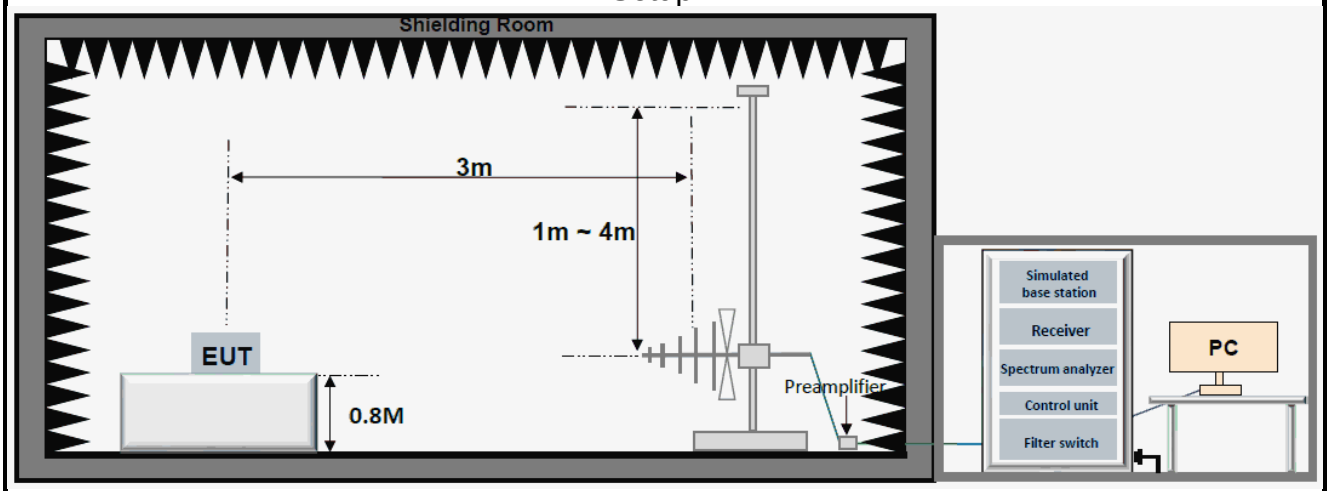
2.7.2 Radiated Configuration

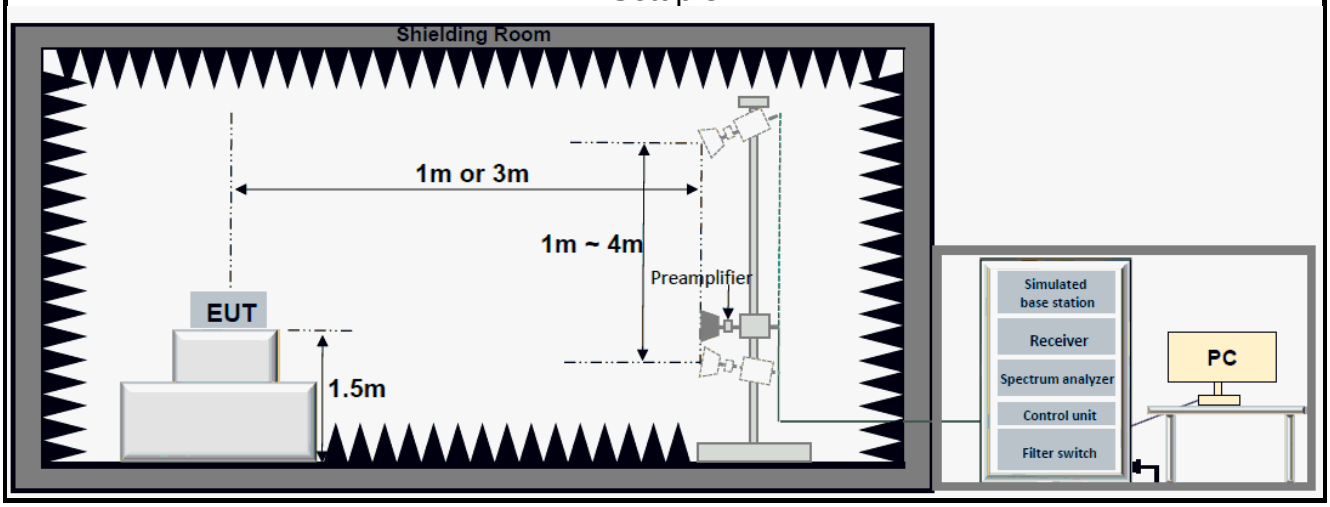
Setup 1



Setup 2



Setup 3



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3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable to recognized national standards.

3.1 Test Equipment List

Description	Manufacturer	Model	S.N.	Last Due	Cal Due
Signal Analyzer	Keysight	N9020A	US46470429	2024/03/25	2025/03/24
				2025/03/14	2026/03/13
Power Sensor	Anritsu	MA24408A	12520	2024/05/30	2025/05/29
Measurement Software	Tonscend	TS1120-3	10659	N/A	N/A

Radiated Emission					
Description	**Manufacturer**	**Model**	**S.N.**	**Last Due**	**Cal Due**
Biconic Logarithmic Periodic Antennas	Schwarzbeck	VULB9163	1643	2023/06/25	2025/06/24
Double-Ridged Horn Antennas	Schwarzbeck	BBHA 9120D	2809	2023/06/25	2025/06/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	1290	2023/06/25	2025/06/24
Loop Antenna	Schwarzbeck	FMZB 1519C	1519C-028	2023/06/29	2025/06/28
Signal Analyzer	Keysight	N9020A	MY49100252	2024/03/25	2025/03/24
				2025/03/11	2026/03/10
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY63440541	2024/05/30	2025/05/29
Wideband Radio Communication Tester	R&S	CMW500	150645	2024/03/25	2025/03/24
				2025/03/11	2026/03/10
Low Noise Amplifier	Tonscend	TAP9K3G40	AP23A8060273	2023/04/08	2025/04/07
				2025/03/11	2027/03/10
Low Noise Amplifier	Tonscend	TAP01018050	AP22G806258	2023/04/08	2025/04/07
				2025/03/11	2027/03/10
Low Noise Amplifier	Tonscend	TAP18040048	AP22G806247	2023/04/08	2025/04/07
				2025/03/11	2027/03/10
Hygrometer	BINGYU	HTC-1	N/A	2023/06/01	2025/05/31
Test Software	Tonscend	TS+	Version: 5.0.0	N/A	N/A

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3.2 Measurement Uncertainty

Parameter	U_{lab}
Frequency Error	679.98Hz
Output Power	0.76dB
Conducted Spurious Emissions	2.22dB
Radiated Emissions(9kHz~30MHz)	2.40dB
Radiated Emissions(30MHz~1000MHz)	4.66dB
Radiated Emissions(1GHz~18GHz)	5.42dB
Radiated Emissions(18GHz~40GHz)	5.46dB

Uncertainty figures are valid to a confidence level of 95%

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4 Test Results

4.1 Antenna Requirement

Standard Applicable:	47 CFR Part 15C Section 15.203
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.	
The antenna gain and type as provided by the manufacturer are as follows: The antenna Type is External. With maximum gain is U-NII-1: -0.67dBi; U-NII-2A: -0.19dBi; U-NII-2C: 1.28dBi; U-NII-3: 1.1dBi; Antenna Anti-Replacement Construction: An embedded-in antenna design is used.	

4.2 Frequency Stability

Standard Applicable:	47 CFR Part 15C Section 15.407(g)
Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.	

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4.3 Maximum Conducted Output Power

Limits

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.
For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.2.b (Other Channel)
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.3.b(Straddle Channel)

Test Settings

1. PM-G:
   Set to the maximum power setting and enable the EUT transmit continuously.
   The power output was measured on the EUT antenna port using RF Cable with attenuator connected to a power meter via wideband power sensor. Peak output power was read directly from power meter.
   Measure and record the results in the test report.
2. SA:
   RBW = 1MHz
   VBW ≥ 3MHz
   Span = Encompass the EBW (or, alternatively, the entire 99% occupied bandwidth)
   Sweep = Auto
   Detector = power averaging (rms)

Test Setup

Refer to section 2.7.1 Setup 1 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

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

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4.4 Emission Bandwidth

Limits

None, for reporting purposes only.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.C.1.

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
3. RBW = 1% - 5%(99%BW)
4. VBW = 3 times the RBW
5. Sweep = Auto
6. Detector = Peak
7. Trace = Max hold
8. The trace was allowed to stabilize
9. Measure and record the results in the test report.

Test Notes

The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X= 26. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.

Test Setup

Refer to section 2.7.1 Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

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

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4.5 Minimum Emission Bandwidth

Limits

Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.C.2.

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
3. RBW = 100kHz(DTS)
4. VBW = 3 times the RBW
5. Sweep = Auto
6. Detector = Peak
7. Trace = Max hold
8. The trace was allowed to stabilize
9. Measure and record the results in the test report.

Test Notes

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Setup

Refer to section 2.7.1- Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

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

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4.6 Occupied Bandwidth

Limits

None, for reporting purposes only.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.D.

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously.
2. The transmitter output is connected to a spectrum analyzer:
3. RBW = 1% - 5%(99%BW)
4. VBW = 3 times the RBW
5. Sweep = Auto
6. Detector = Peak
7. Trace = Max hold
8. The trace was allowed to stabilize
9. Measure and record the results in the test report.

Test Setup

Refer to section 2.7.1- Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

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

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4.7 Maximum Power Spectral Density

Limits

For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band.
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1-megahertz band.
For the band 5.725-5.85 GHz, he maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

Test Procedure

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.F

Test Settings

1. Set to the maximum power setting and enable the EUT transmit continuously
2. The transmitter output is connected to a spectrum analyzer
3. RBW = 1MHz (for 5.15−5.25 GHz, 5.25−5.35 GHz, and 5.47−5.725 GHz)
4. RBW = 500kHz (for 5.725−5.85 GHz)
5. VBW ≥ 3 times RBW
6. Sweep = Auto
7. Detector = Peak
8. Trace = Max hold
9. The trace was allowed to stabilize
10. Measure and record the results in the test report.

Test Setup

Refer to section 2.7.1- Setup 2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

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

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4.8 Unwanted Emissions

Limits

Spurious emissions are permitted in an of the frequency bands:

MHz	MHz	MHz	MHz	GHz	GHz
0.090 - 0.110	12.29 - 12.293	149.9 - 150.05	1660 - 1710	4.5 - 5.15	14.47 - 14.5
0.495 - 0.505	12.51975 - 1252025	156.52475 - 156.52525	1718.8 - 1722.2	5.35 - 5.46	15.35 - 16.2
2.1735 - 2.1905	12.5767 - 12.57725	156.7 - 156.9	2200 - 2300	7.25 - 7.75	17.7 - 21.4
4.125 - 128	13.36 - 13.41	162.0125 - 167.17	2310 - 2390	8.025 - 8.5	22.01 - 23.12
4.17725 - 4.17775	16.42 - 16.423	167.72 - 173.2	2483.5 - 2500	9.0 - 9.2	23.6 - 24.0
4.20725 - 4.20775	16.69475 - 16.69525	240 - 285	2655 - 2900	9.3 - 9.5	31.2 - 31.8
6.215 - 6.218	1680425 - 1680475	322 - 335.4	3260 - 3267	10.6 - 12.7	36.43 - 36.5
6.26775 - 6.26825	25.5 - 25.67	399.9 - 410	3332 - 3339	13.25 - 13.4	
6.31175 - 6.31225	37.5 - 38.25	608 - 614	3345.8 - 3358		
8.291 - 8.294	73 - 74.6	960 - 1240	3600 - 4400		
8.362 - 8.366	74.8 - 75.2	1300 - 1427			
8.37625 - 8.38675	108 - 121.94	1435 - 1626.5			
8.41425 - 8.41475	123 - 138	1645.5 - 1646.5			

Radiated disturbance of an intentional radiator:

Frequency	Field strength (μV/m)	Limit (dBμV/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	74.0	Peak	3
		54.0	Average	

Un-restricted band emissions above 1GHz 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.
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.
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.
For transmitters operating solely in the 5.725-5.850 GHz band:
All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz 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 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 at the band edge.

Test Procedure

ANSI C63.10:2020 Section 6.4 & 6.5 & 6.6.
KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.G.3 ~ 6.

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Test Settings

1. For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the reference ground plane.
2. For radiated emissions measurements performed at frequencies above 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80cm above the ground plane.
3. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1m to 4m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e, field strength or received power), when orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25cm.
4. For each suspected emission, the EUT was ranged its worst case and then tune the antenna tower(from 1~4m) and turntable(from 0~360°) find the maximum reading. Preamplifier and a high pass filter are used for the test in order get better signal level comply with the guidelines.
5. The simulated base station was set to force the EUT to its maximum transmitting power.
6. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
7. spectrum analyzer setting:

   Measurements Below 1000MHz: RBW = 120 kHz; VBW ≥ 300 kHz; Detector = Peak

   Measurements Above 1000MHz: RBW = 1 MHz; VBW ≥ 3 MHz; Detector = Peak

   Average Measurements Above 1000MHz:

   RBW = 1 MHz, VBW ≥ 1/T, with peak detector for average measurements.
8. The field strength is calculated by adding the Antenna Factor, Cable Factor. The basic equation with a sample calculation is as follows:

   Level = Reading(dBμV) + AF(dB/m) + Factor(dB):

   AF = Antenna Factor(dB/m)

   Factor = Cable Factor(dB) - Preamplifier gain(dB)

   Margin = Limit(dBμV/m) – Level(dBμV/m)
9. Repeat above procedures until all frequencies measured was complete.
10. Measure and record the results in the test report.

Test Notes

1. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
2. Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. the disturbance between 9kHz to 30MHz, 30MHz-1GHz and 18GHz to 40GHz was very low. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded, so only the harmonics had been displayed.
3. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Test Setup

Refer to section 2.7.2 for details.

Measuring Instruments

The measuring equipment is listed in the section 3.1 of this test report.

Test Result

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

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5 Test Setup Photos

The detailed test data see: **Appendix-C BTWIFI Setup Photos**

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Appendix

Emission Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a	Ant0	5180	22.880	5168.760	5191.640	---	---
11a	Ant0	5200	22.560	5189.000	5211.560	---	---
11a	Ant0	5240	20.960	5229.560	5250.520	---	---
11a	Ant0	5260	22.200	5249.000	5271.200	---	---
11a	Ant0	5300	22.280	5288.880	5311.160	---	---
11a	Ant0	5320	22.600	5309.040	5331.640	---	---
11a	Ant0	5500	22.920	5488.720	5511.640	---	---
11a	Ant0	5580	21.640	5569.480	5591.120	---	---
11a	Ant0	5720_UNII-2C	16	5709.000	5725	---	---
11a	Ant0	5720_UNII-3	5.8	5725	5730.800	---	---
11a	Ant0	5745	21.000	5734.680	5755.680	---	---
11a	Ant0	5785	22.640	5773.960	5796.600	---	---
11a	Ant0	5825	21.600	5814.480	5836.080	---	---
11n20SISO	Ant0	5180	22.040	5168.920	5190.960	---	---
11n20SISO	Ant0	5200	22.360	5189.040	5211.400	---	---
11n20SISO	Ant0	5240	22.440	5229.040	5251.480	---	---
11n20SISO	Ant0	5260	21.560	5249.320	5270.880	---	---
11n20SISO	Ant0	5300	22.480	5288.680	5311.160	---	---
11n20SISO	Ant0	5320	23.160	5308.560	5331.720	---	---
11n20SISO	Ant0	5500	21.840	5489.040	5510.880	---	---
11n20SISO	Ant0	5580	22.560	5568.760	5591.320	---	---
11n20SISO	Ant0	5720_UNII-2C	16.24	5708.760	5725	---	---
11n20SISO	Ant0	5720_UNII-3	6	5725	5731.000	---	---
11n20SISO	Ant0	5745	22.000	5734.040	5756.040	---	---
11n20SISO	Ant0	5785	22.520	5773.600	5796.120	---	---
11n20SISO	Ant0	5825	21.720	5813.960	5835.680	---	---
11n40SISO	Ant0	5190	41.440	5169.280	5210.720	---	---
11n40SISO	Ant0	5230	41.360	5209.200	5250.560	---	---
11n40SISO	Ant0	5270	40.960	5249.520	5290.480	---	---
11n40SISO	Ant0	5310	40.720	5289.840	5330.560	---	---
11n40SISO	Ant0	5510	41.200	5489.200	5530.400	---	---
11n40SISO	Ant0	5590	40.880	5569.680	5610.560	---	---
11n40SISO	Ant0	5710_UNII-2C	35.4	5689.600	5725	---	---
11n40SISO	Ant0	5710_UNII-3	5.56	5725	5730.560	---	---
11n40SISO	Ant0	5755	41.040	5734.520	5775.560	---	---
11n40SISO	Ant0	5795	41.040	5774.520	5815.560	---	---
11ac20SISO	Ant0	5180	22.880	5168.600	5191.480	---	---
11ac20SISO	Ant0	5200	22.400	5188.520	5210.920	---	---
11ac20SISO	Ant0	5240	22.840	5228.840	5251.680	---	---
11ac20SISO	Ant0	5260	22.560	5248.960	5271.520	---	---
11ac20SISO	Ant0	5300	22.520	5288.760	5311.280	---	---
11ac20SISO	Ant0	5320	21.680	5308.960	5330.640	---	---
11ac20SISO	Ant0	5500	22.160	5489.000	5511.160	---	---
11ac20SISO	Ant0	5580	22.480	5568.880	5591.360	---	---
11ac20SISO	Ant0	5720_UNII-2C	16.4	5708.600	5725	---	---
11ac20SISO	Ant0	5720_UNII-3	5.76	5725	5730.760	---	---
11ac20SISO	Ant0	5745	22.040	5733.960	5756.000	---	---
11ac20SISO	Ant0	5785	22.360	5774.000	5796.360	---	---
11ac20SISO	Ant0	5825	22.880	5813.680	5836.560	---	---
11ac40SISO	Ant0	5190	40.720	5169.600	5210.320	---	---
11ac40SISO	Ant0	5230	41.360	5209.200	5250.560	---	---
11ac40SISO	Ant0	5270	41.680	5249.120	5290.800	---	---
11ac40SISO	Ant0	5310	40.880	5289.840	5330.720	---	---
11ac40SISO	Ant0	5510	41.760	5489.200	5530.960	---	---
11ac40SISO	Ant0	5590	40.720	5569.840	5610.560	---	---
11ac40SISO	Ant0	5710_UNII-2C	35.64	5689.360	5725	---	---

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11ac40SISO	Ant0	5710_UNII-3	5.88	5725	5730.880	---	---
11ac40SISO	Ant0	5755	41.280	5734.360	5775.640	---	---
11ac40SISO	Ant0	5795	40.720	5774.520	5815.240	---	---
11ac80SISO	Ant0	5210	93.440	5159.920	5253.360	---	---
11ac80SISO	Ant0	5290	93.440	5241.680	5335.120	---	---
11ac80SISO	Ant0	5530	94.880	5478.960	5573.840	---	---
11ac80SISO	Ant0	5610	90.880	5566.480	5657.360	---	---
11ac80SISO	Ant0	5690	95.360	5639.920	5735.280	---	---
11ac80SISO	Ant0	5690_UNII-2C	85.08	5639.920	5725	---	---
11ac80SISO	Ant0	5690_UNII-3	10.28	5725	5735.280	---	---
11ac80SISO	Ant0	5775	101.760	5716.760	5818.520	---	---

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Test Graphs

11a-Ant0-5180

11a-Ant0-5200

11a-Ant0-5240

11a-Ant0-5260

11a-Ant0-5300

11a-Ant0-5320

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11a-Ant0-5500

11a-Ant0-5580

11a-Ant0-5720

11a-Ant0-5745

11a-Ant0-5785

11a-Ant0-5825

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11n20SISO-Ant0-5180

11n20SISO-Ant0-5200

11n20SISO-Ant0-5240

11n20SISO-Ant0-5260

11n20SISO-Ant0-5300

11n20SISO-Ant0-5320

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11n20SISO-Ant0-5500

11n20SISO-Ant0-5580

11n20SISO-Ant0-5720

11n20SISO-Ant0-5745

11n20SISO-Ant0-5785

11n20SISO-Ant0-5825

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11n40SISO-Ant0-5190

11n40SISO-Ant0-5230

11n40SISO-Ant0-5270

11n40SISO-Ant0-5310

11n40SISO-Ant0-5510

11n40SISO-Ant0-5590

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11n40SISO-Ant0-5710

11n40SISO-Ant0-5755

11n40SISO-Ant0-5795

11ac20SISO-Ant0-5180

11ac20SISO-Ant0-5200

11ac20SISO-Ant0-5240

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11ac20SISO-Ant0-5260

11ac20SISO-Ant0-5300

11ac20SISO-Ant0-5320

11ac20SISO-Ant0-5500

11ac20SISO-Ant0-5580

11ac20SISO-Ant0-5720

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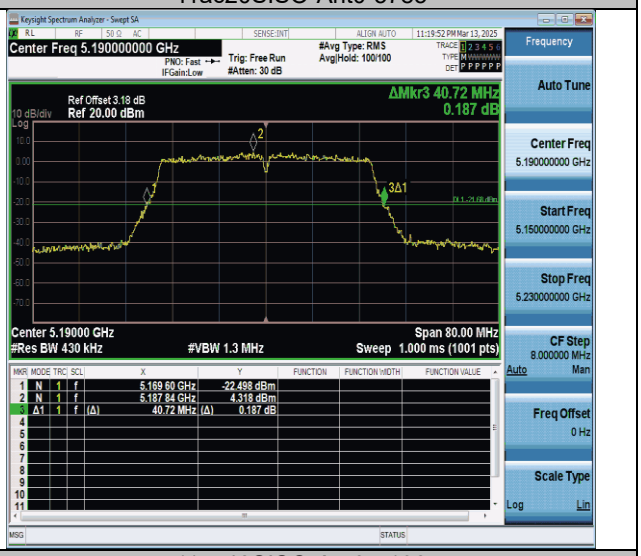
11ac20SISO-Ant0-5745

11ac20SISO-Ant0-5785

11ac20SISO-Ant0-5825



11ac40SISO-Ant0-5190

11ac40SISO-Ant0-5230

11ac40SISO-Ant0-5270

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11ac40SISO-Ant0-5310

11ac40SISO-Ant0-5510

11ac40SISO-Ant0-5590

11ac40SISO-Ant0-5710

11ac40SISO-Ant0-5755

11ac40SISO-Ant0-5795

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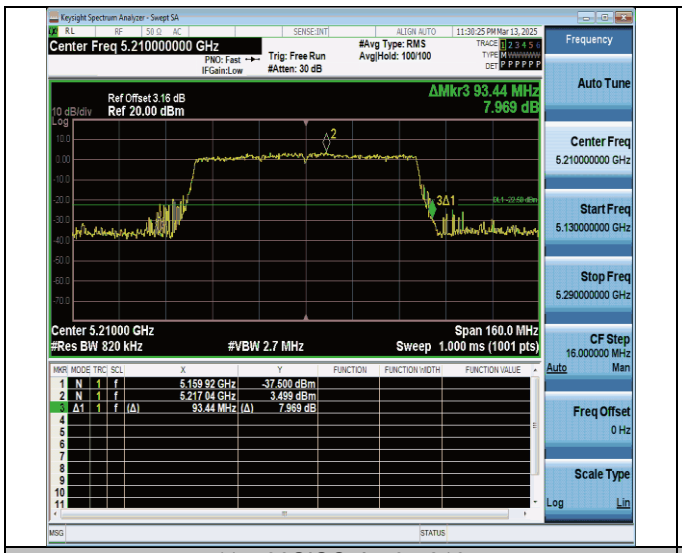

11ac80SISO-Ant0-5210

11ac80SISO-Ant0-5290

11ac80SISO-Ant0-5530

11ac80SISO-Ant0-5610

11ac80SISO-Ant0-5690

11ac80SISO-Ant0-5775

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Occupied channel bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a	Ant0	5180	16.871	5171.5825	5188.4535	---	---
11a	Ant0	5200	16.840	5191.6010	5208.4410	---	---
11a	Ant0	5240	16.892	5231.5597	5248.4517	---	---
11a	Ant0	5260	16.860	5251.5826	5268.4426	---	---
11a	Ant0	5300	16.869	5291.5666	5308.4356	---	---
11a	Ant0	5320	16.883	5311.5845	5328.4675	---	---
11a	Ant0	5500	16.899	5491.5374	5508.4364	---	---
11a	Ant0	5580	16.868	5571.5489	5588.4169	---	---
11a	Ant0	5720_UNII-2C	13.448	5711.5525	5725	---	---
11a	Ant0	5720_UNII-3	3.435	5725	5728.4355	---	---
11a	Ant0	5745	16.834	5736.5667	5753.4007	---	---
11a	Ant0	5785	16.859	5776.5684	5793.4274	---	---
11a	Ant0	5825	16.858	5816.5615	5833.4195	---	---
11n20SISO	Ant0	5180	18.010	5171.0045	5189.0145	---	---
11n20SISO	Ant0	5200	18.001	5191.0342	5209.0352	---	---
11n20SISO	Ant0	5240	18.031	5231.0282	5249.0592	---	---
11n20SISO	Ant0	5260	18.026	5251.0334	5269.0594	---	---
11n20SISO	Ant0	5300	18.047	5291.0095	5309.0565	---	---
11n20SISO	Ant0	5320	18.032	5311.0096	5329.0416	---	---
11n20SISO	Ant0	5500	18.051	5490.9853	5509.0363	---	---
11n20SISO	Ant0	5580	18.041	5570.9967	5589.0377	---	---
11n20SISO	Ant0	5720_UNII-2C	14.005	5710.9947	5725	---	---
11n20SISO	Ant0	5720_UNII-3	4.046	5725	5729.0457	---	---
11n20SISO	Ant0	5745	17.991	5735.9941	5753.9851	---	---
11n20SISO	Ant0	5785	17.979	5776.0332	5794.0122	---	---
11n20SISO	Ant0	5825	18.022	5816.0092	5834.0312	---	---
11n40SISO	Ant0	5190	36.476	5171.8591	5208.3351	---	---
11n40SISO	Ant0	5230	36.427	5211.8788	5248.3058	---	---
11n40SISO	Ant0	5270	36.426	5251.8470	5288.2730	---	---
11n40SISO	Ant0	5310	36.493	5291.8370	5328.3300	---	---
11n40SISO	Ant0	5510	36.445	5491.7969	5528.2419	---	---
11n40SISO	Ant0	5590	36.452	5571.8279	5608.2799	---	---
11n40SISO	Ant0	5710_UNII-2C	33.188	5691.8117	5725	---	---
11n40SISO	Ant0	5710_UNII-3	3.318	5725	5728.3177	---	---
11n40SISO	Ant0	5755	36.438	5736.8050	5773.2430	---	---
11n40SISO	Ant0	5795	36.404	5776.8114	5813.2154	---	---
11ac20SISO	Ant0	5180	18.064	5171.0064	5189.0704	---	---
11ac20SISO	Ant0	5200	18.015	5191.0131	5209.0281	---	---
11ac20SISO	Ant0	5240	18.028	5231.0181	5249.0461	---	---
11ac20SISO	Ant0	5260	18.028	5251.0145	5269.0425	---	---
11ac20SISO	Ant0	5300	18.035	5290.9972	5309.0322	---	---
11ac20SISO	Ant0	5320	18.063	5311.0058	5329.0688	---	---
11ac20SISO	Ant0	5500	18.049	5490.9966	5509.0456	---	---
11ac20SISO	Ant0	5580	18.042	5570.9962	5589.0382	---	---
11ac20SISO	Ant0	5720_UNII-2C	13.986	5711.0144	5725	---	---
11ac20SISO	Ant0	5720_UNII-3	4.018	5725	5729.0184	---	---
11ac20SISO	Ant0	5745	17.995	5736.0111	5754.0061	---	---
11ac20SISO	Ant0	5785	17.976	5776.0293	5794.0053	---	---
11ac20SISO	Ant0	5825	18.009	5816.0148	5834.0238	---	---
11ac40SISO	Ant0	5190	36.385	5171.8662	5208.2512	---	---
11ac40SISO	Ant0	5230	36.414	5211.8906	5248.3046	---	---
11ac40SISO	Ant0	5270	36.386	5251.8676	5288.2536	---	---
11ac40SISO	Ant0	5310	36.406	5291.8301	5328.2361	---	---
11ac40SISO	Ant0	5510	36.388	5491.8103	5528.1983	---	---
11ac40SISO	Ant0	5590	36.401	5571.8346	5608.2356	---	---
11ac40SISO	Ant0	5710_UNII-2C	33.181	5691.8194	5725	---	---
11ac40SISO	Ant0	5710_UNII-3	3.236	5725	5728.2364	---	---
11ac40SISO	Ant0	5755	36.384	5736.8262	5773.2102	---	---
11ac40SISO	Ant0	5795	36.351	5776.8291	5813.1801	---	---
11ac80SISO	Ant0	5210	76.039	5172.1376	5248.1766	---	---
11ac80SISO	Ant0	5290	75.952	5252.1425	5328.0945	---	---
11ac80SISO	Ant0	5530	76.029	5491.8717	5567.9007	---	---

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11ac80SISO	Ant0	5610	75.969	5571.9846	5647.9536	---	---
11ac80SISO	Ant0	5690	76.122	5651.8644	5727.9864	---	---
11ac80SISO	Ant0	5690_UNII-2C	73.136	5651.8644	5725	---	---
11ac80SISO	Ant0	5690_UNII-3	2.986	5725	5727.9864	---	---
11ac80SISO	Ant0	5775	76.086	5736.8428	5812.9288	---	---

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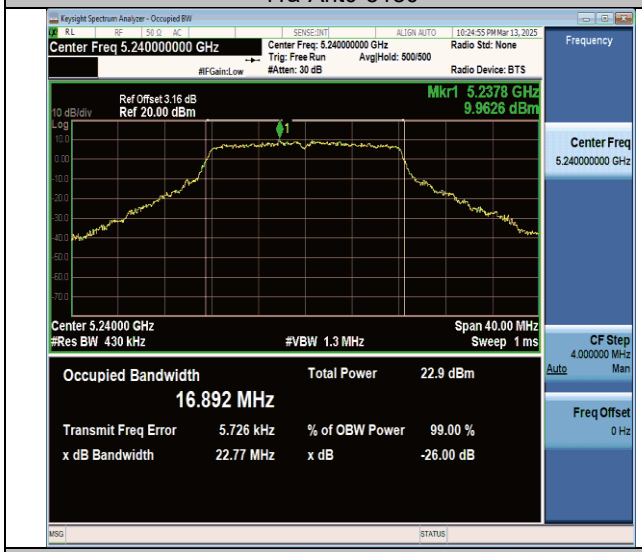
Test Graphs

11a-Ant0-5180

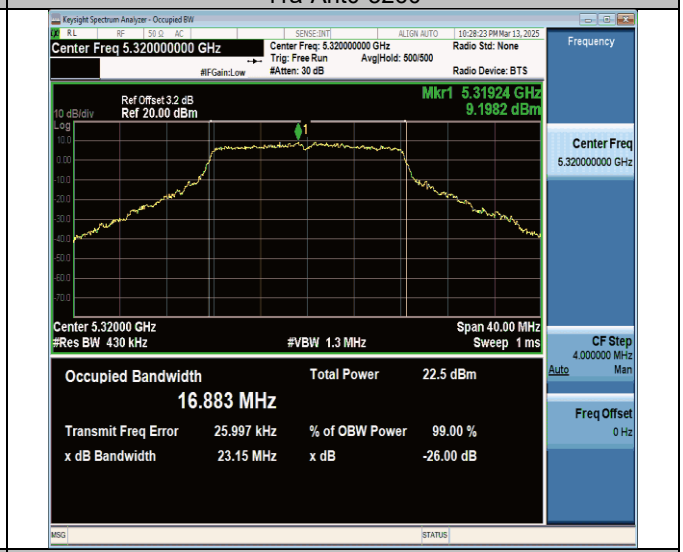
11a-Ant0-5200



11a-Ant0-5240

11a-Ant0-5260

11a-Ant0-5300



11a-Ant0-5320

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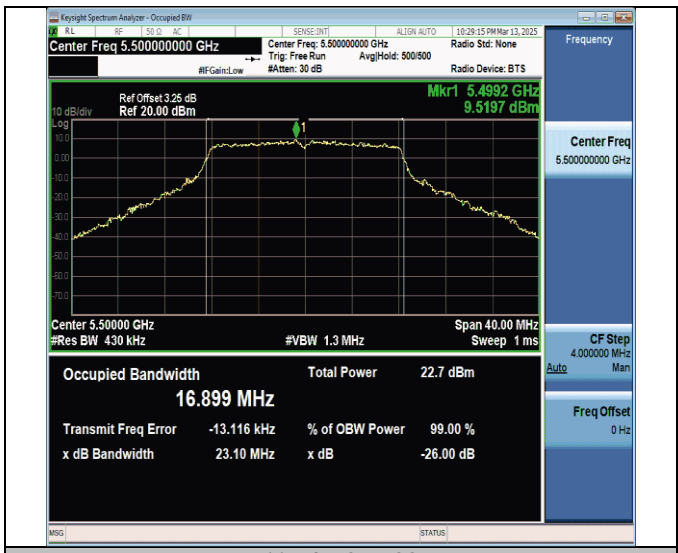
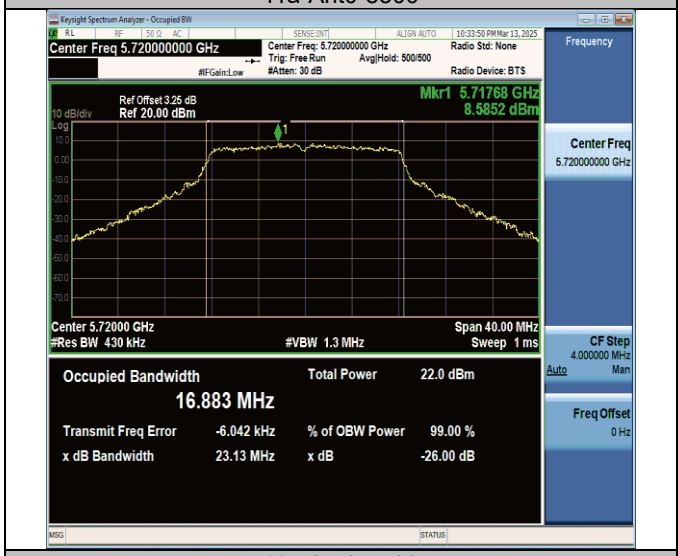


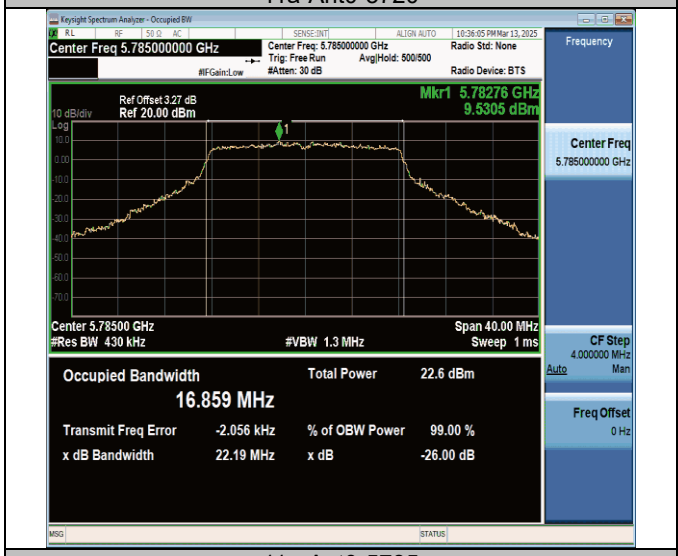
11a-Ant0-5500

11a-Ant0-5580

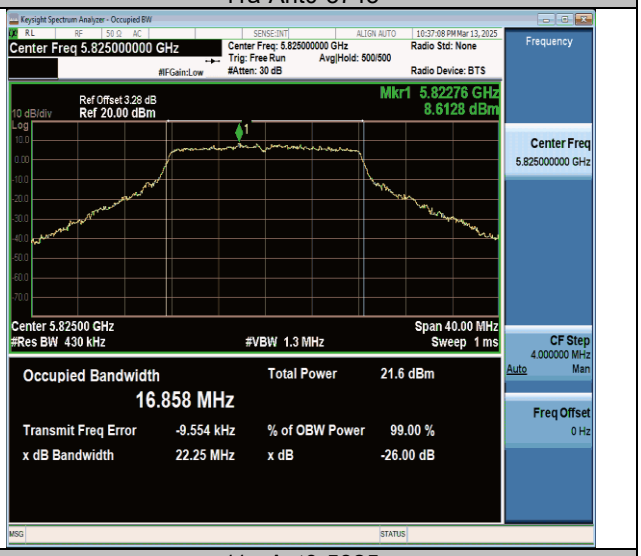


11a-Ant0-5720

11a-Ant0-5745



11a-Ant0-5785



11a-Ant0-5825

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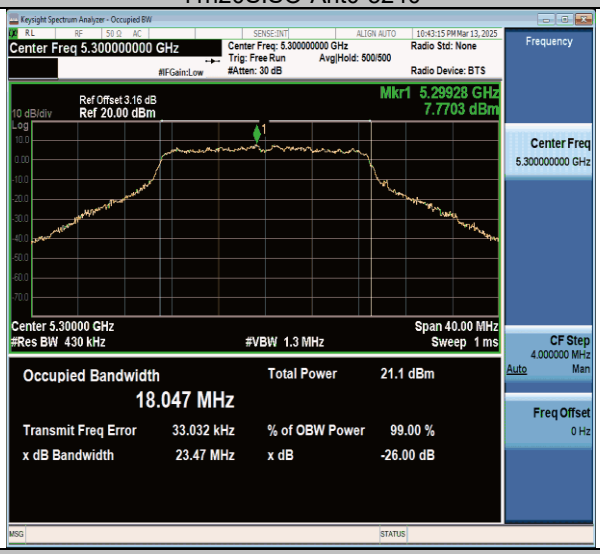
11n20SISO-Ant0-5200

11n20SISO-Ant0-5240

11n20SISO-Ant0-5260



11n20SISO-Ant0-5300

11n20SISO-Ant0-5320

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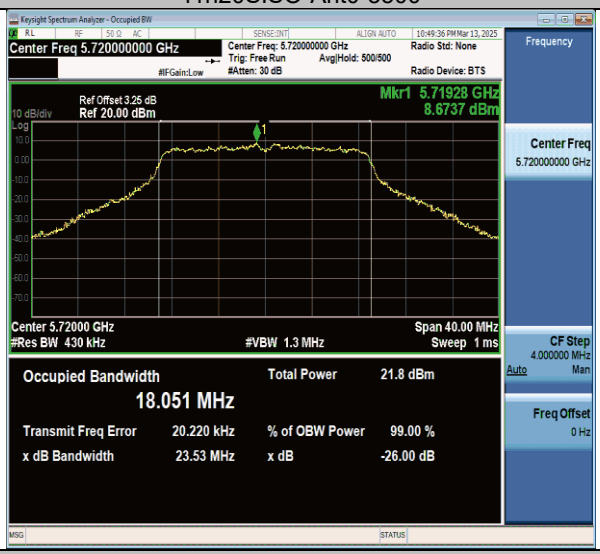
11n20SISO-Ant0-5500

11n20SISO-Ant0-5580



11n20SISO-Ant0-5720

11n20SISO-Ant0-5745

11n20SISO-Ant0-5785

11n20SISO-Ant0-5825

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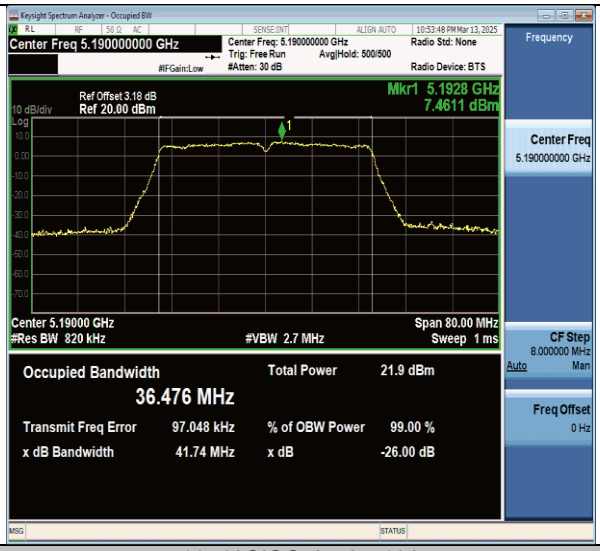
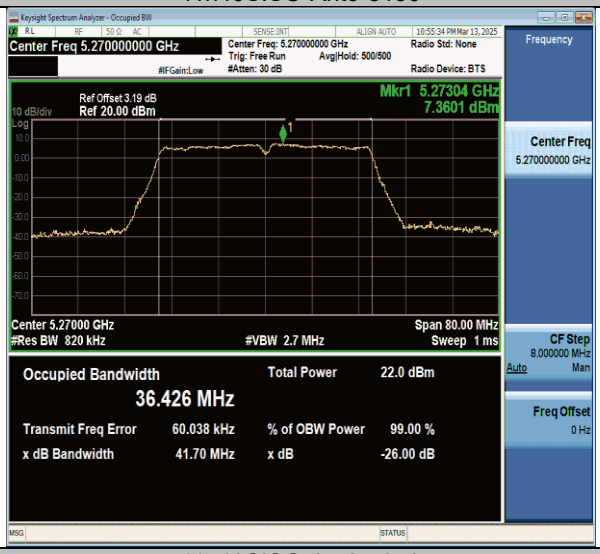


11n40SISO-Ant0-5190

11n40SISO-Ant0-5230



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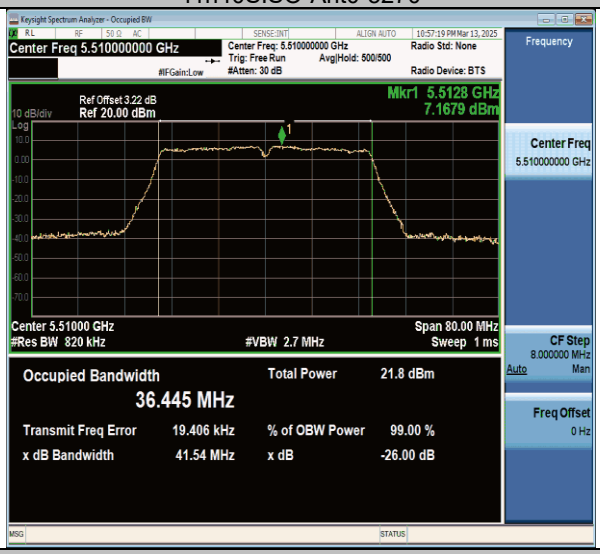
11n40SISO-Ant0-5310



11n40SISO-Ant0-5510

11n40SISO-Ant0-5590

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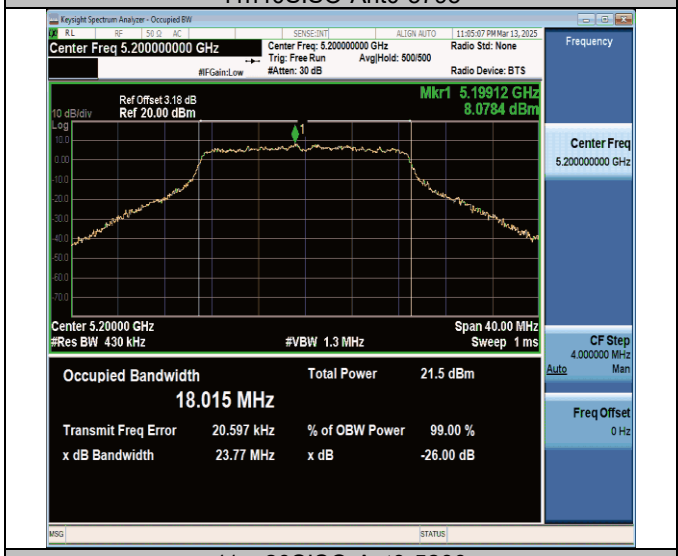
11n40SISO-Ant0-5755

11n40SISO-Ant0-5795

11ac20SISO-Ant0-5180



11ac20SISO-Ant0-5200

11ac20SISO-Ant0-5240

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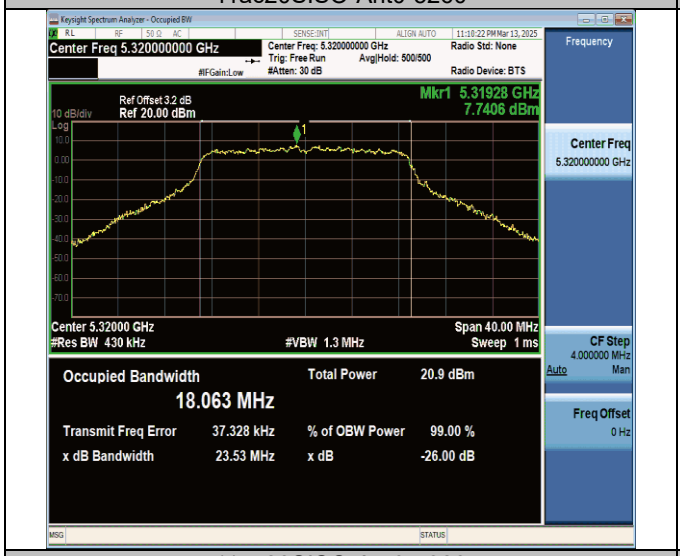
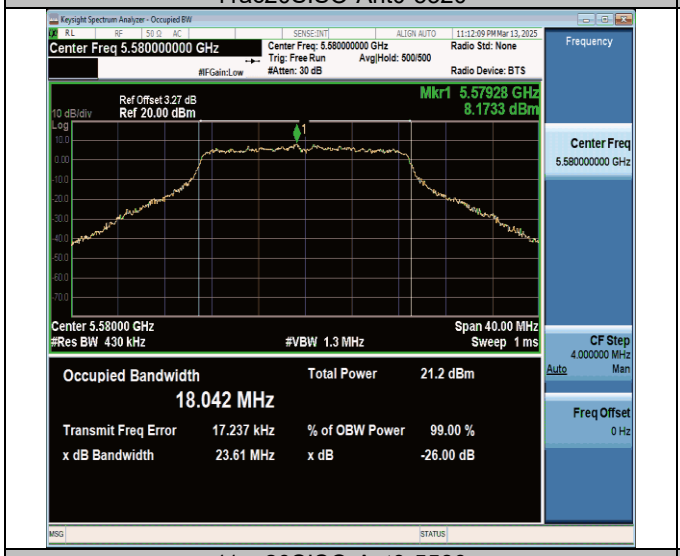
11ac20SISO-Ant0-5260

11ac20SISO-Ant0-5300

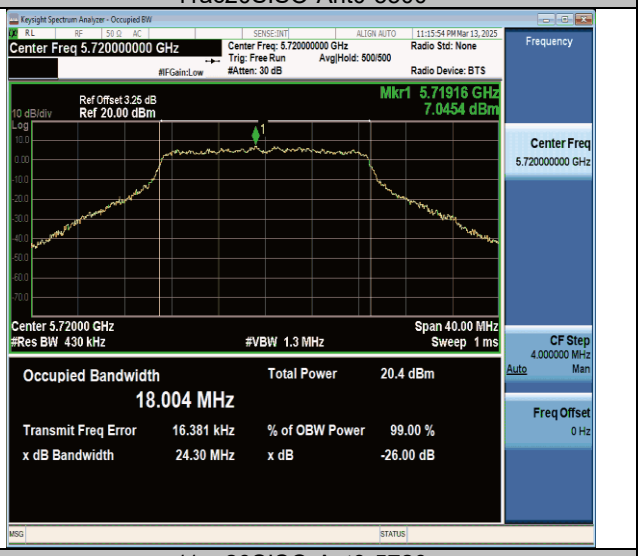


11ac20SISO-Ant0-5320

11ac20SISO-Ant0-5500



11ac20SISO-Ant0-5580



11ac20SISO-Ant0-5720

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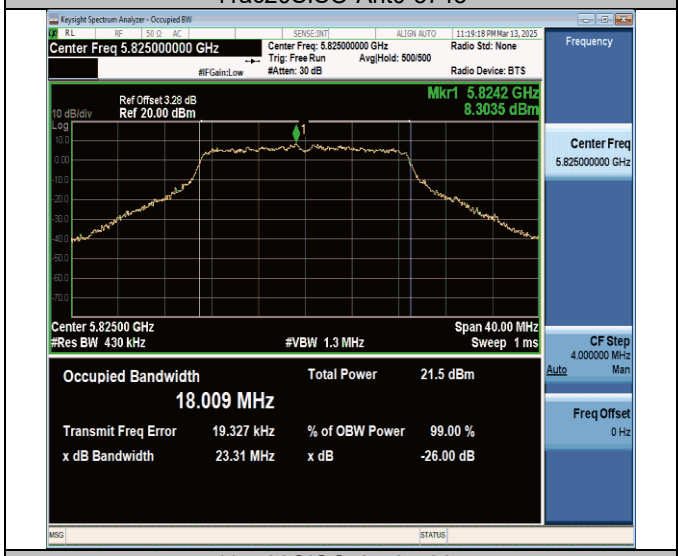
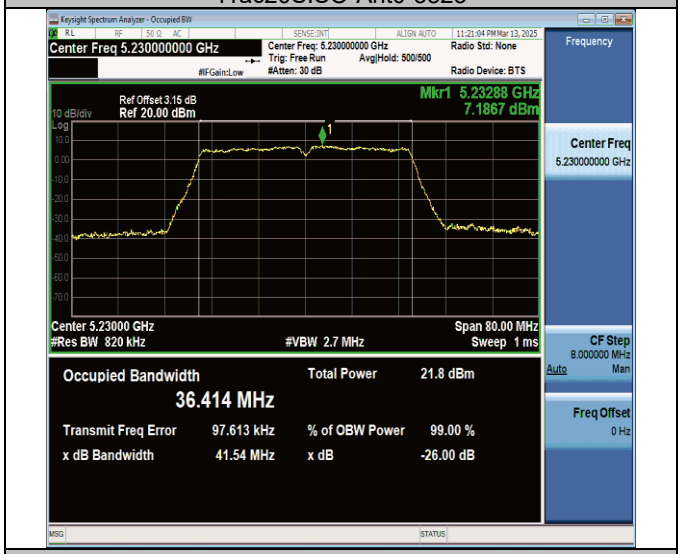
11ac20SISO-Ant0-5745

11ac20SISO-Ant0-5785



11ac20SISO-Ant0-5825

11ac40SISO-Ant0-5190



11ac40SISO-Ant0-5230

11ac40SISO-Ant0-5270

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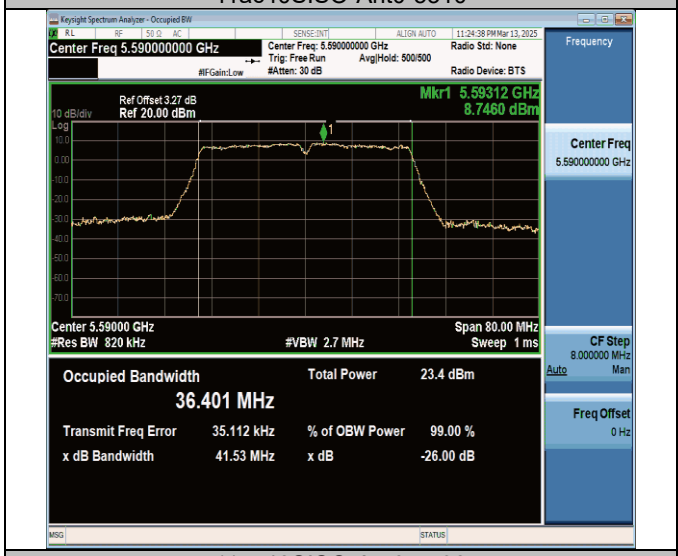
11ac40SISO-Ant0-5310

11ac40SISO-Ant0-5510



11ac40SISO-Ant0-5590

11ac40SISO-Ant0-5710

11ac40SISO-Ant0-5755

11ac40SISO-Ant0-5795

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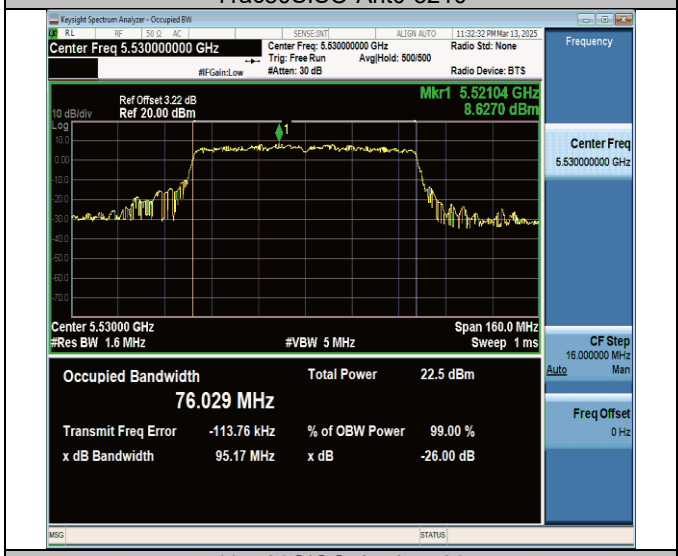
11ac80SISO-Ant0-5210

11ac80SISO-Ant0-5290



11ac80SISO-Ant0-5530

11ac80SISO-Ant0-5610

11ac80SISO-Ant0-5690

11ac80SISO-Ant0-5775

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Min emission bandwidth

Test Result B4

TestMode	Antenna	Frequency[MHz]	6dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a	Ant0	5720	12.480	5713.760	5726.240	---	---
11a	Ant0	5720_UNII-2C	11.24	5713.760	5725	---	---
11a	Ant0	5720_UNII-3	1.24	5725	5726.240	0.5	PASS
11a	Ant0	5745	14.960	5737.560	5752.520	0.5	PASS
11a	Ant0	5785	15.560	5777.200	5792.760	0.5	PASS
11a	Ant0	5825	15.080	5817.400	5832.480	0.5	PASS
11n20SISO	Ant0	5720	16.760	5711.600	5728.360	---	---
11n20SISO	Ant0	5720_UNII-2C	13.4	5711.600	5725	---	---
11n20SISO	Ant0	5720_UNII-3	3.36	5725	5728.360	0.5	PASS
11n20SISO	Ant0	5745	16.760	5736.600	5753.360	0.5	PASS
11n20SISO	Ant0	5785	15.720	5777.400	5793.120	0.5	PASS
11n20SISO	Ant0	5825	16.520	5816.600	5833.120	0.5	PASS
11n40SISO	Ant0	5710	35.440	5692.160	5727.600	---	---
11n40SISO	Ant0	5710_UNII-2C	32.84	5692.160	5725	---	---
11n40SISO	Ant0	5710_UNII-3	2.6	5725	5727.600	0.5	PASS
11n40SISO	Ant0	5755	35.360	5737.160	5772.520	0.5	PASS
11n40SISO	Ant0	5795	35.760	5776.840	5812.600	0.5	PASS
11ac20SISO	Ant0	5720	13.760	5712.440	5726.200	---	---
11ac20SISO	Ant0	5720_UNII-2C	12.56	5712.440	5725	---	---
11ac20SISO	Ant0	5720_UNII-3	1.2	5725	5726.200	0.5	PASS
11ac20SISO	Ant0	5745	15.000	5737.520	5752.520	0.5	PASS
11ac20SISO	Ant0	5785	16.240	5776.840	5793.080	0.5	PASS
11ac20SISO	Ant0	5825	13.800	5818.680	5832.480	0.5	PASS
11ac40SISO	Ant0	5710	35.760	5691.840	5727.600	---	---
11ac40SISO	Ant0	5710_UNII-2C	33.16	5691.840	5725	---	---
11ac40SISO	Ant0	5710_UNII-3	2.6	5725	5727.600	0.5	PASS
11ac40SISO	Ant0	5755	35.440	5737.080	5772.520	0.5	PASS
11ac40SISO	Ant0	5795	35.040	5777.240	5812.280	0.5	PASS
11ac80SISO	Ant0	5690	75.360	5652.240	5727.600	---	---
11ac80SISO	Ant0	5690_UNII-2C	72.76	5652.240	5725	---	---
11ac80SISO	Ant0	5690_UNII-3	2.6	5725	5727.600	0.5	PASS
11ac80SISO	Ant0	5775	75.360	5737.240	5812.600	0.5	PASS

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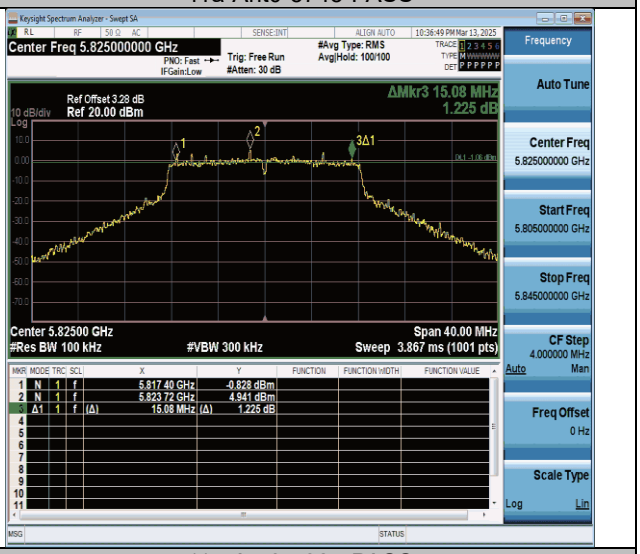
Test Graphs B4

11a-Ant0-5720

11a-Ant0-5745-PASS

11a-Ant0-5785-PASS



11a-Ant0-5825-PASS

11n20SISO-Ant0-5720

11n20SISO-Ant0-5745-PASS

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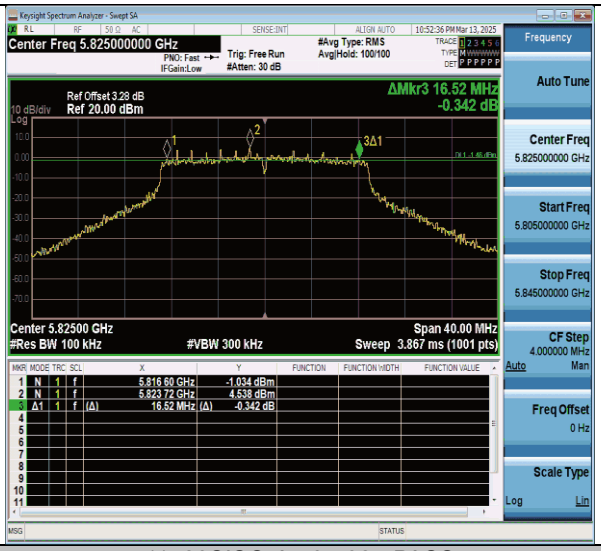
11n20SISO-Ant0-5785-PASS



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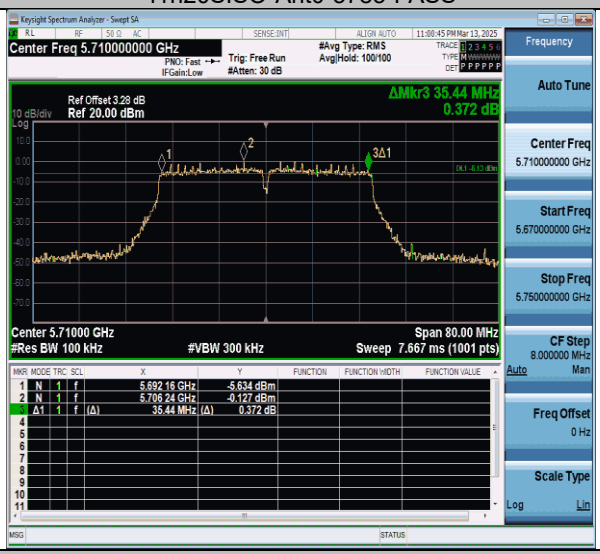
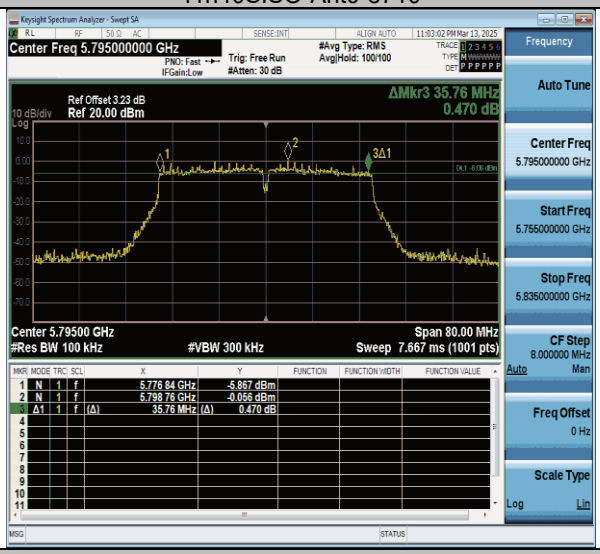


11n40SISO-Ant0-5710

11n40SISO-Ant0-5755-PASS



11n40SISO-Ant0-5795-PASS

11ac20SISO-Ant0-5720

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