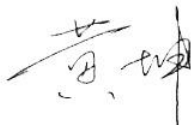


TEST REPORT

Applicant: INGENICO
EUT Description: LTE Module
Model: INGE808-NA
Brand: INGENICO
FCC ID: XKB-INGE808NA
Standards: FCC 47 CFR Part 15 Subpart E
Date of Receipt: 2024/09/04
Date of Test: 2024/09/04 to 2024/10/11
Date of Issue: 2024/10/11

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.



Huangkun
Approved By:



ChenChengfu
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2024/10/11	Original	ChenChengfu

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	§15.407(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
4.4	§KDB 789033 II.C.1	Emission Bandwidth	U-NII-1 U-NII-2A U-NII-2C	Reporting purposes only
4.5	§15.407(e)	Minimum Emission Bandwidth	U-NII-3	PASS
4.6	§KDB 789033 II.D	Occupied Bandwidth	U-NII-1 U-NII-2A U-NII-2C U-NII-3	Reporting purposes only
4.7	§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
4.8	§15.407(b) §15.209(d)	Unwanted Emissions	U-NII-1 U-NII-2A U-NII-2C U-NII-3	PASS
4.9	§15.207	AC Power Line Conducted Emission	Section 2.2	N/A

Test Method:

ANSI C63.10-2013,
KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Remark:

Pass is EUT meets standard requirements.

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:	INGENICO
Address:	9 Avenue de la gare - Rovaltain TGV , Valence Cedex 9,N/A France 26958

1.2.2 Manufacturer

Manufacturer:	INGENICO
Address:	9 Avenue de la gare - Rovaltain TGV , Valence Cedex 9,N/A France 26958

1.3 Product Information

EUT Description:	LTE Module			
Model No.:	INGE808-NA			
Brand:	INGENICO			
Hardware Version:	V1.0.4			
Software Version:	INGE808-NA-Q62.01.119			
IMEI:	RF Conducted	357116790000403		
	RSE	357116790000346 357116790000528		
	RBE	357116790000528		
Modulation Type:	802.11a&n:	OFDM-BPSK, QPSK, 16QAM, 64QAM		
	802.11ac:	OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM		
Smart System:	<input checked="" type="checkbox"/> SISO:	802.11a/n/ac	/	
	<input type="checkbox"/> MIMO:	802.11n/ac	()TX()RX	
	<input type="checkbox"/> CDD:	802.11a	()TX()RX	
EUT Function	<input type="checkbox"/> Client	<input type="checkbox"/> Outdoor AP	<input checked="" type="checkbox"/> Indoor AP <input type="checkbox"/> Fixed P2P AP	
DFS Function:	<input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> 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
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.				

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 (CH56)			5280MHz			
	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			

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

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 (CH120)	5600MHz
	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

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

2.2 Worst-case configuration and Mode

Modulation Type	SISO - Data Rate	MIMO()TX()RX Data Rate
802.11a	6 Mbps	N/A
802.11n20	MCS0 (6.5 Mbps)	N/A
802.11n40	MCS0 (13.5 Mbps)	N/A
802.11ac20	MCS0 (6.5 Mbps)	N/A
802.11ac40	MCS0 (13.5 Mbps)	N/A
802.11ac80	MCS0 (29.3 Mbps)	N/A
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 *	INGENICO	ADP-SQ808-EAU-00-00	/

Remark: * the information of table is provided by client.

2.4 Test Environment

Temperature:	Normal: 15°C ~ 35°C
Humidity:	45-56 % RH Ambient
Voltage:	DC 3.8V

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.

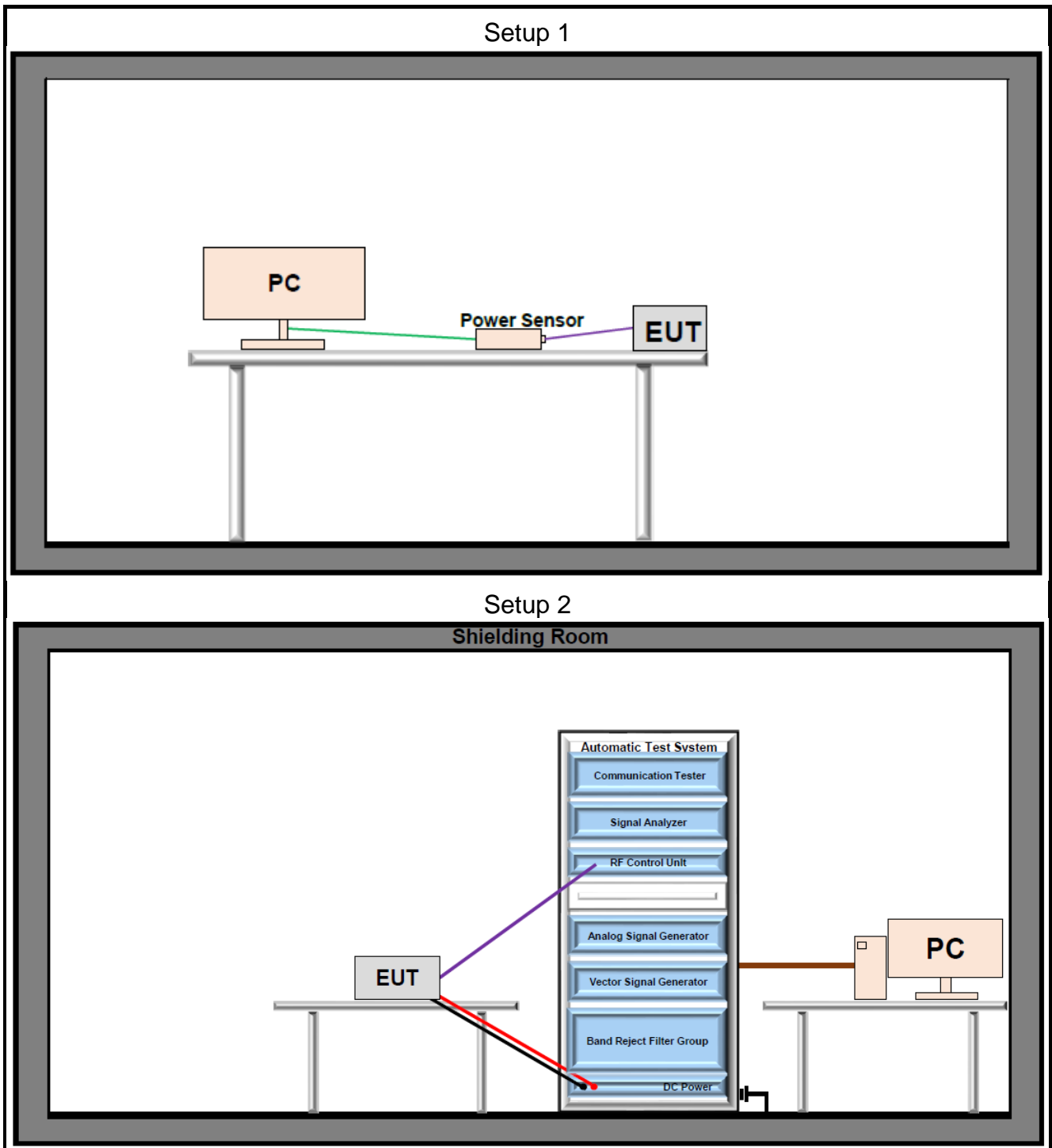
Offset = RF cable loss + attenuator factor.

2.6 Modifications

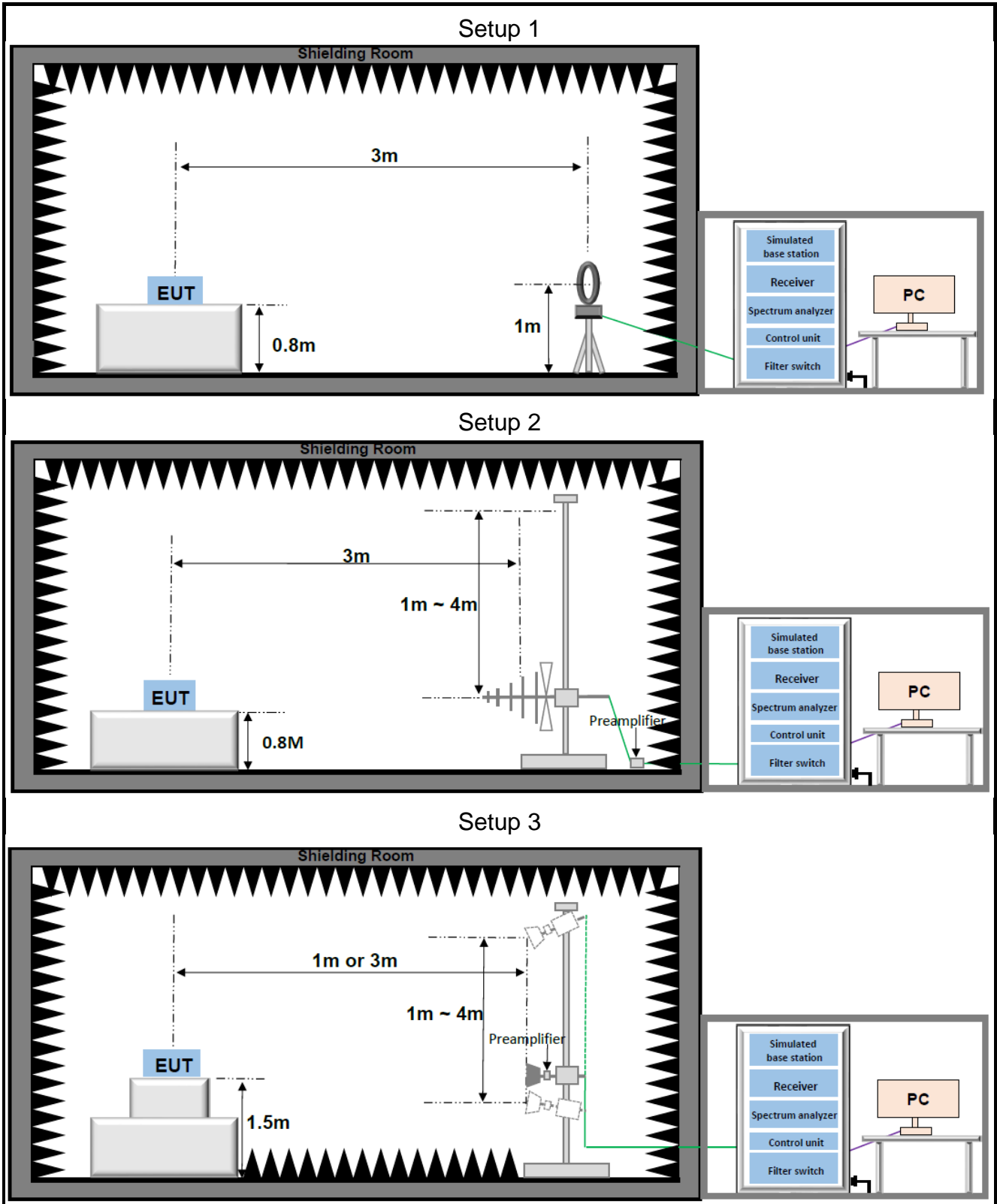
No modifications were made during testing.

2.7 Test Setup Diagram

2.7.1 Conducted Configuration



2.7.2 Radiated Configuration



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

RF03					
Description	Manufacturer	Model	SN	Last Due	Cal Due
Signal Analyzer	Keysight	N9020A	US46470429	2024/03/25	2025/03/24
Vector Signal Generator	R&S	SMM100A	549353	2024/05/30	2025/05/29
RF Control Unit	Tonscend	JS0806-2	23C80620671	2024/05/30	2025/05/29
Power Sensor	Anritsu	MA24408A	12520	2024/05/30	2025/05/29
Measurement Software	Tonscend	JS1120-3 V3.5.39	10776	N/A	N/A

Radiated Emission					
Description	Manufacturer	Model	SN	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
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
Low Noise Amplifier	Tonscend	TAP9K3G40	AP23A8060273	2023/04/08	2025/04/07
Low Noise Amplifier	Tonscend	TAP01018050	AP22G806258	2023/04/08	2025/04/07
Low Noise Amplifier	Tonscend	TAP18040048	AP22G806247	2023/04/08	2025/04/07
Hygrometer	BINGYU	HTC-1	N/A	2023/06/01	2025/05/31
Test Software	Tonscend	TS+ V5.0.0	N/A	N/A	N/A

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~18GHHz)	5.42dB
Radiated Emissions(18GHz~40GHHz)	5.46dB

Uncertainty figures are valid to a confidence level of 95%

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 5150 ~ 5250MHz:4.29dBi; 5250 ~ 5350MHz:4.43dBi; 5470 ~ 5725MHz:3.68dBi; 5725 ~ 5850MHz:1.47dBi; 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.	

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 $11 \text{ dBm} + 10 \log B$, 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 \geq 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**.

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**.

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**.

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**.

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, the 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 \geq 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**.

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 - 12.52025	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 C63.10:2013 Section 6.4 & 6.5 & 6.6.

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.G.3 ~ 6.

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 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**.

5 Test Setup Photos

The detailed test data see: **Test Setup Photos**

Appendix

Emission Bandwidth Test Result

TestMode	Antenna	Frequency[MHz]	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11a	Ant1	5180	26.080	5167.320	5193.400	---	---
11a	Ant1	5200	26.160	5187.640	5213.800	---	---
11a	Ant1	5240	28.280	5224.720	5253.000	---	---
11a	Ant1	5260	29.320	5246.400	5275.720	---	---
11a	Ant1	5280	28.480	5266.120	5294.600	---	---
11a	Ant1	5300	25.600	5288.240	5313.840	---	---
11a	Ant1	5320	27.800	5307.440	5335.240	---	---
11a	Ant1	5500	21.680	5489.080	5510.760	---	---
11a	Ant1	5600	24.840	5586.920	5611.760	---	---
11a	Ant1	5700	24.040	5688.320	5712.360	---	---
11a	Ant1	5720	33.080	5703.240	5736.320	---	---
11a	Ant1	5720 UNII-2C	21.76	5703.240	5725	---	---
11a	Ant1	5720 UNII-3	11.32	5725	5736.320	---	---
11a	Ant1	5745	21.480	5734.120	5755.600	---	---
11a	Ant1	5785	22.000	5773.720	5795.720	---	---
11a	Ant1	5825	23.480	5813.720	5837.200	---	---
11n20SISO	Ant1	5180	31.240	5167.080	5198.320	---	---
11n20SISO	Ant1	5200	29.920	5186.040	5215.960	---	---
11n20SISO	Ant1	5240	29.320	5226.080	5255.400	---	---
11n20SISO	Ant1	5260	30.520	5245.440	5275.960	---	---
11n20SISO	Ant1	5300	29.200	5286.000	5315.200	---	---
11n20SISO	Ant1	5320	31.080	5304.360	5335.440	---	---
11n20SISO	Ant1	5500	23.320	5488.000	5511.320	---	---
11n20SISO	Ant1	5600	23.080	5587.960	5611.040	---	---
11n20SISO	Ant1	5700	26.640	5686.200	5712.840	---	---
11n20SISO	Ant1	5720	23.800	5708.600	5732.400	---	---
11n20SISO	Ant1	5720 UNII-2C	16.4	5708.600	5725	---	---
11n20SISO	Ant1	5720 UNII-3	7.4	5725	5732.400	---	---
11n20SISO	Ant1	5745	22.520	5733.880	5756.400	---	---
11n20SISO	Ant1	5785	23.240	5773.960	5797.200	---	---
11n20SISO	Ant1	5825	25.360	5812.360	5837.720	---	---
11n40SISO	Ant1	5190	48.640	5168.080	5216.720	---	---
11n40SISO	Ant1	5230	56.800	5202.320	5259.120	---	---
11n40SISO	Ant1	5270	60.160	5240.320	5300.480	---	---
11n40SISO	Ant1	5310	49.760	5286.880	5336.640	---	---
11n40SISO	Ant1	5510	49.760	5484.880	5534.640	---	---
11n40SISO	Ant1	5590	47.440	5567.200	5614.640	---	---
11n40SISO	Ant1	5670	46.560	5646.640	5693.200	---	---
11n40SISO	Ant1	5710	44.000	5688.320	5732.320	---	---
11n40SISO	Ant1	5710 UNII-2C	36.68	5688.320	5725	---	---
11n40SISO	Ant1	5710 UNII-3	7.32	5725	5732.320	---	---
11n40SISO	Ant1	5755	45.360	5731.800	5777.160	---	---
11n40SISO	Ant1	5795	44.400	5771.880	5816.280	---	---
11ac20SISO	Ant1	5180	21.800	5169.160	5190.960	---	---
11ac20SISO	Ant1	5200	21.880	5188.920	5210.800	---	---
11ac20SISO	Ant1	5240	21.800	5229.000	5250.800	---	---
11ac20SISO	Ant1	5260	21.600	5249.160	5270.760	---	---
11ac20SISO	Ant1	5300	21.880	5289.040	5310.920	---	---
11ac20SISO	Ant1	5320	21.480	5309.240	5330.720	---	---
11ac20SISO	Ant1	5500	22.000	5488.960	5510.960	---	---
11ac20SISO	Ant1	5600	21.600	5589.160	5610.760	---	---
11ac20SISO	Ant1	5700	21.840	5689.120	5710.960	---	---
11ac20SISO	Ant1	5720	31.160	5704.840	5736.000	---	---
11ac20SISO	Ant1	5720 UNII-2C	20.16	5704.840	5725	---	---
11ac20SISO	Ant1	5720 UNII-3	11	5725	5736.000	---	---
11ac20SISO	Ant1	5745	21.760	5734.000	5755.760	---	---

11ac20SISO	Ant1	5785	21.640	5773.960	5795.600	---	---
11ac20SISO	Ant1	5825	21.840	5814.000	5835.840	---	---
11ac40SISO	Ant1	5190	41.920	5168.880	5210.800	---	---
11ac40SISO	Ant1	5230	42.480	5208.000	5250.480	---	---
11ac40SISO	Ant1	5270	42.720	5248.080	5290.800	---	---
11ac40SISO	Ant1	5310	41.600	5288.960	5330.560	---	---
11ac40SISO	Ant1	5510	41.840	5488.640	5530.480	---	---
11ac40SISO	Ant1	5590	42.800	5568.000	5610.800	---	---
11ac40SISO	Ant1	5670	42.480	5648.160	5690.640	---	---
11ac40SISO	Ant1	5710	42.800	5687.920	5730.720	---	---
11ac40SISO	Ant1	5710 UNII-2C	37.08	5687.920	5725	---	---
11ac40SISO	Ant1	5710 UNII-3	5.72	5725	5730.720	---	---
11ac40SISO	Ant1	5755	41.760	5733.960	5775.720	---	---
11ac40SISO	Ant1	5795	43.040	5772.840	5815.880	---	---
11ac80SISO	Ant1	5210	82.720	5168.880	5251.600	---	---
11ac80SISO	Ant1	5290	84.320	5248.400	5332.720	---	---
11ac80SISO	Ant1	5530	83.680	5488.400	5572.080	---	---
11ac80SISO	Ant1	5610	82.400	5569.040	5651.440	---	---
11ac80SISO	Ant1	5690	103.520	5636.720	5740.240	---	---
11ac80SISO	Ant1	5690 UNII-2C	88.28	5636.720	5725	---	---
11ac80SISO	Ant1	5690 UNII-3	15.24	5725	5740.240	---	---
11ac80SISO	Ant1	5775	83.040	5734.040	5817.080	---	---

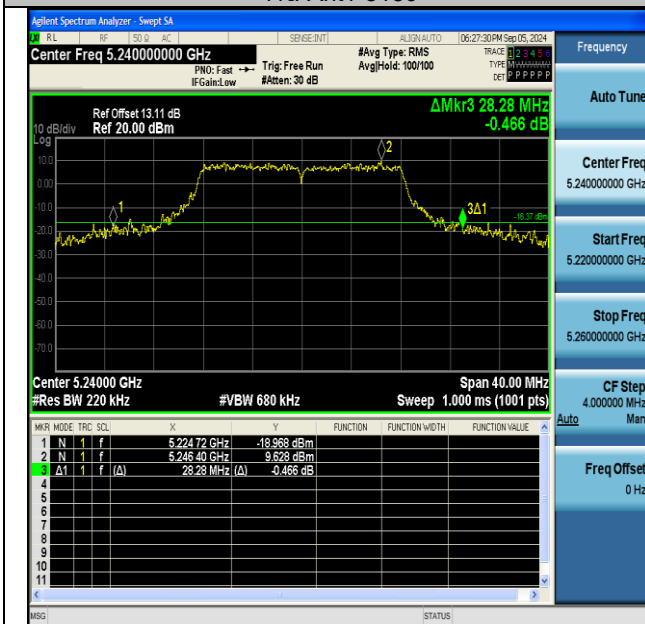
Test Graphs



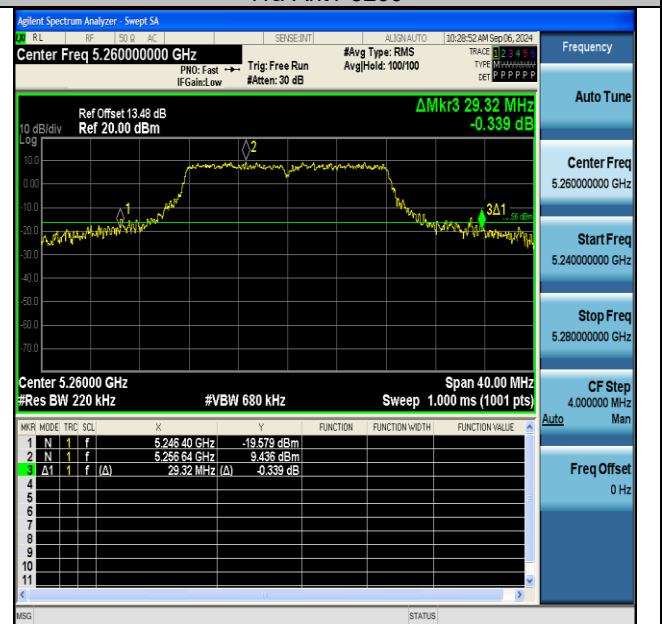
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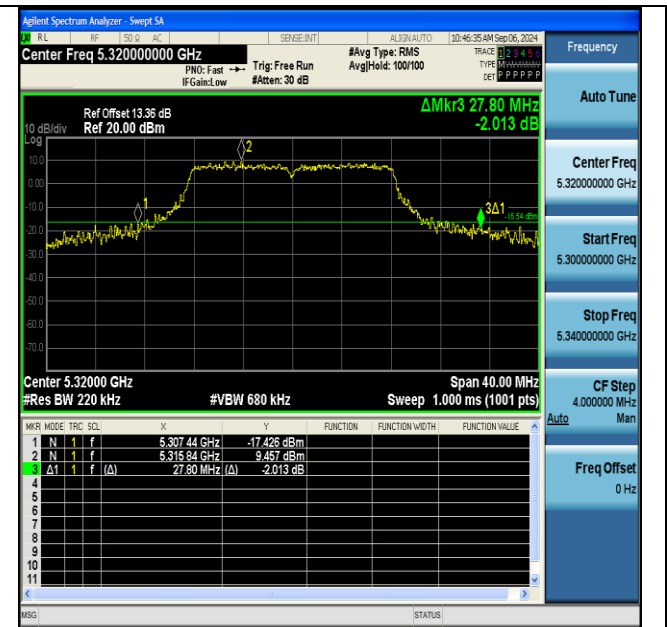
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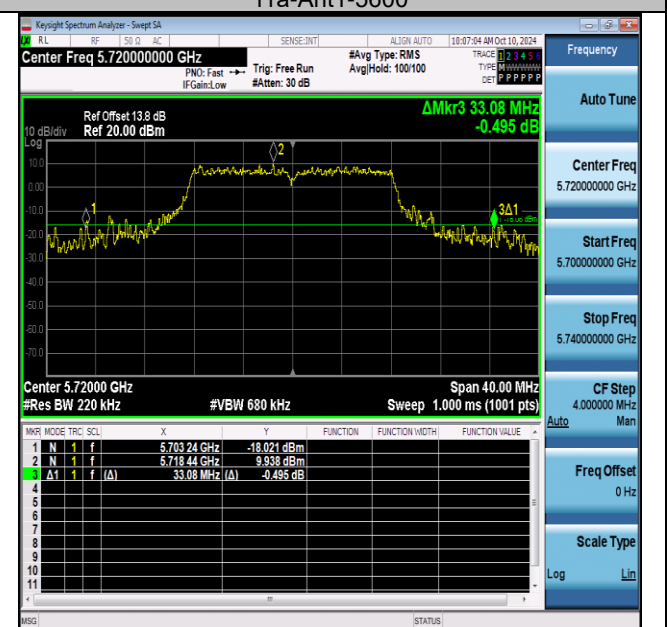
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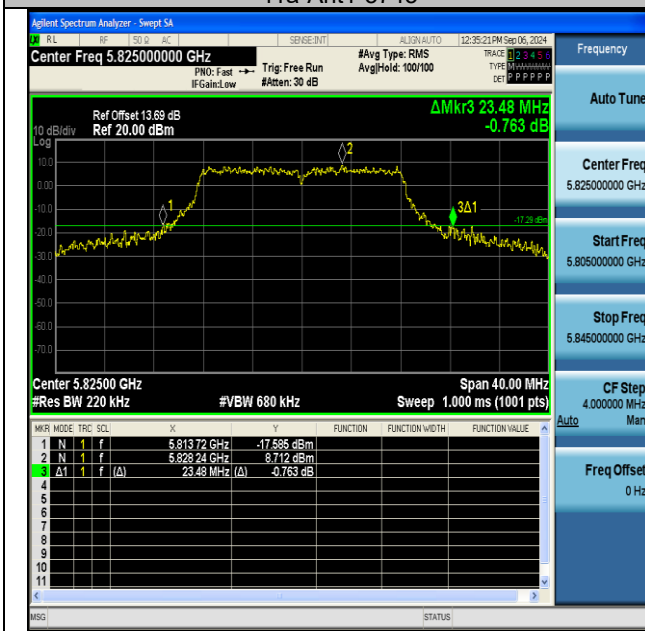
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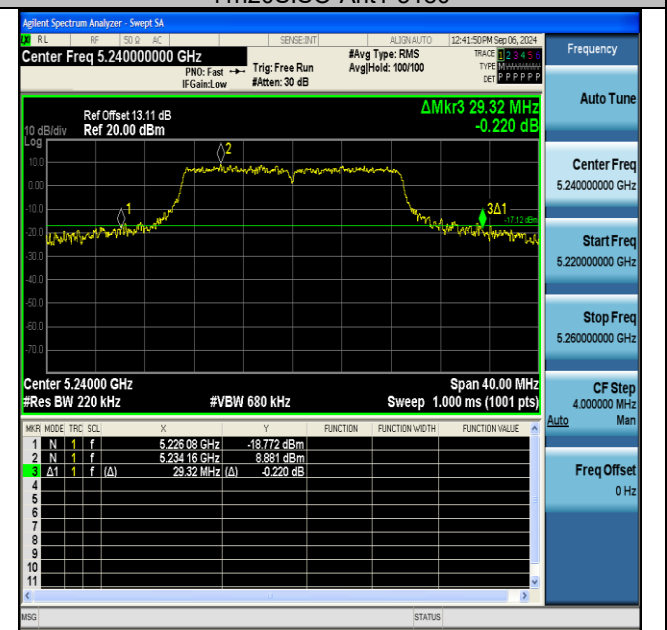
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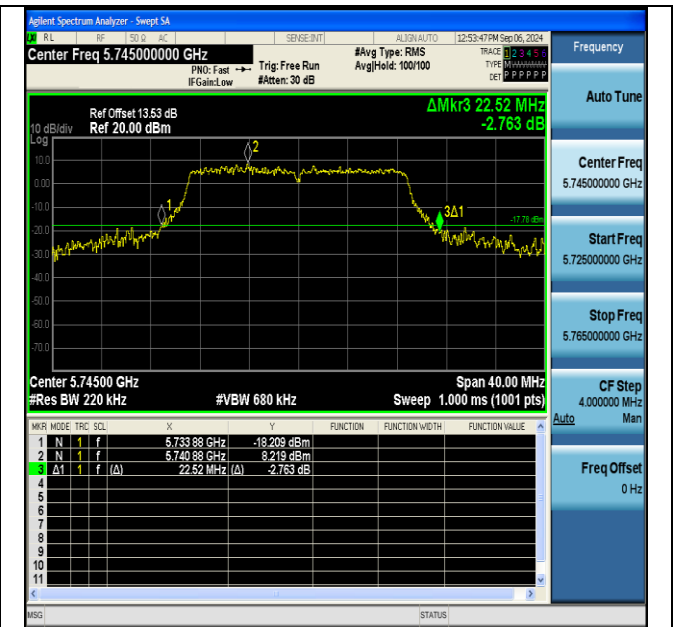
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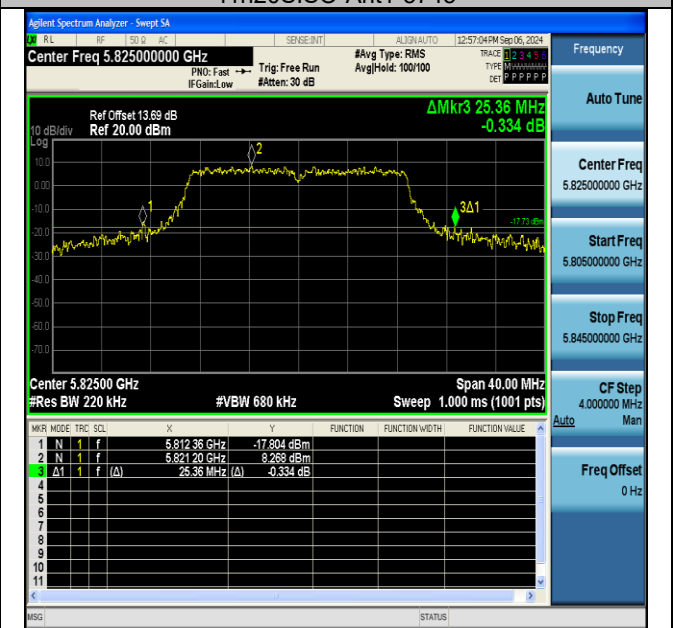
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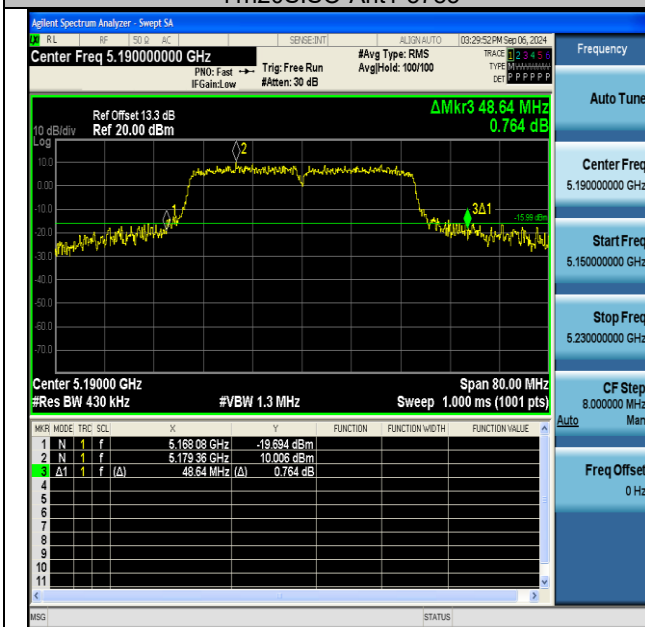
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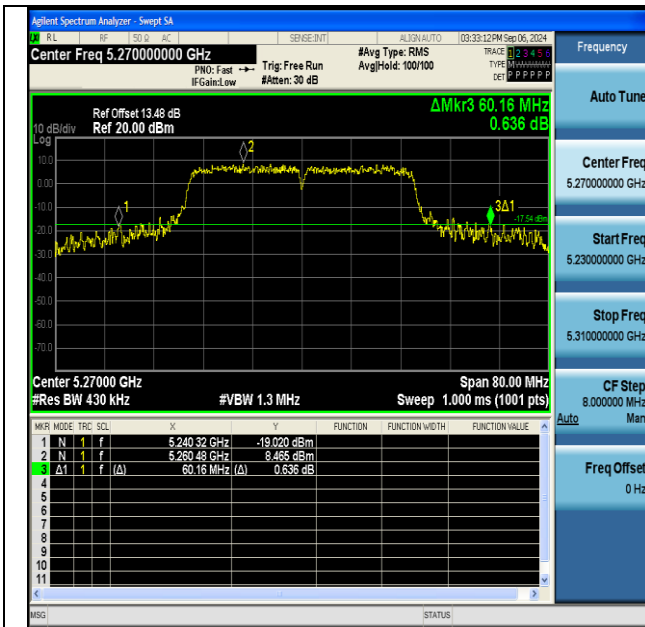
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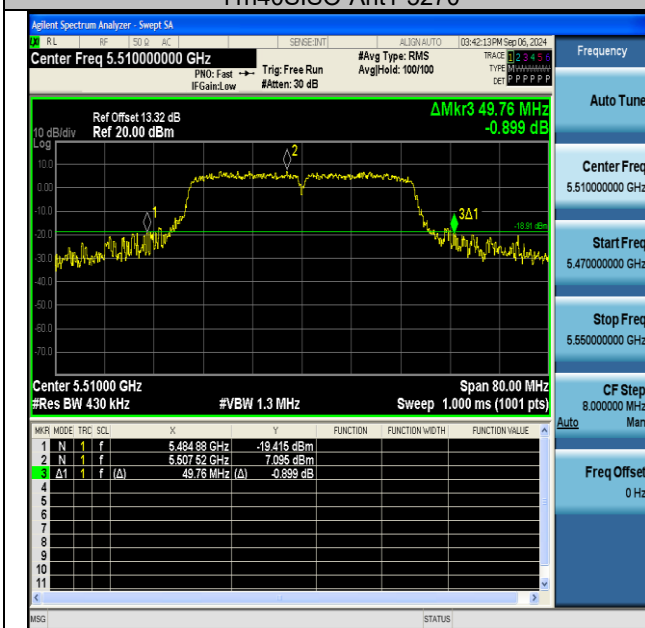
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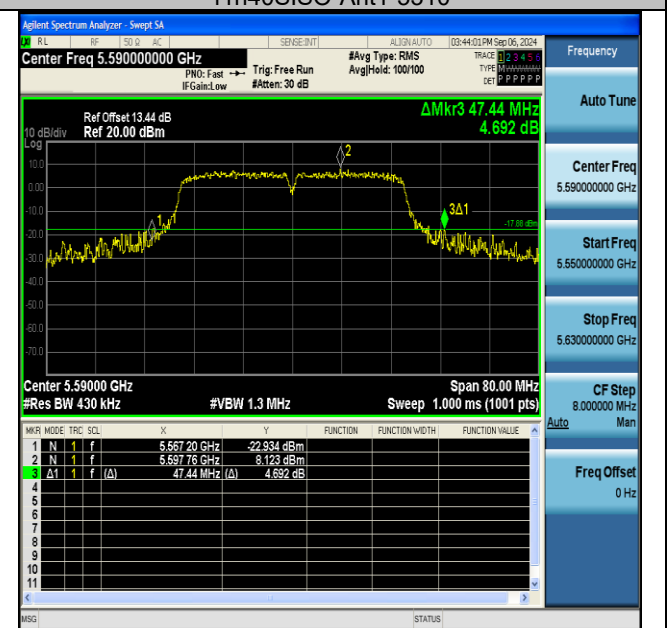
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11n40SISO-Ant1-5710



11n40SISO-Ant1-5755



11n40SISO-Ant1-5795



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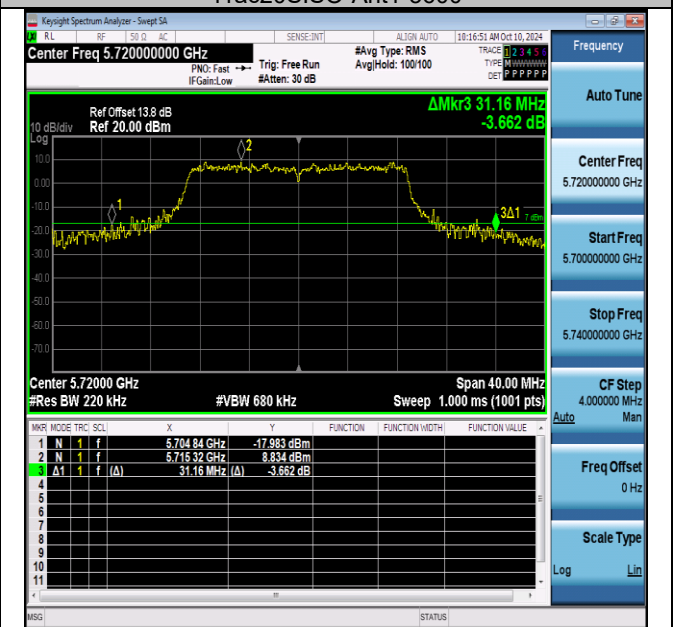
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11ac40SISO-Ant1-5190



11ac40SISO-Ant1-5230



11ac40SISO-Ant1-5270



11ac40SISO-Ant1-5310



11ac40SISO-Ant1-5510



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