

TEST REPORT

Applicant: Shenzhen Tinno Mobile Technology Corp.
EUT Description: 5G Feature Phone
Model Tested: U205AA
Model Covered: U205AC
FCC ID: XD6U205AA
Standards: FCC 47 CFR Part 15 Subpart E
Date of Receipt: 2025/10/13
Date of Test: 2025/10/13 to 2025/12/12
Date of Issue: 2025/12/12

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.



Jim Huang
Approved By:



Carey Chen
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2025/12/12	Original	Carey Chen

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	PASS
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	§15.407(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: Pass is EUT meets standard requirements.				

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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:	Shenzhen Tinno Mobile Technology Corp.
Address:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC

1.2.2 Manufacturer

Manufacturer:	Shenzhen Tinno Mobile Technology Corp.
Address:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen ,PRC

1.3 Product Information

EUT Description:	5G Feature Phone			
Model Tested:	U205AA			
Model Covered:	U205AC			
Hardware Version:	V1.0 (for U205AA) V1.0 (for U205AC)			
Software Version:	U205AAV01.22.10 (for U205AA) U205ACV01.15.10 (for U205AC)			
IMEI:	RF Conducted	867065080001238		
	RSE & AC power line	Sample 1: 867065080018844 Sample 2: 867065080020162		
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
	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
	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
Antenna Type:	PIFA Antenna			
Antenna Gain:	Ant4 (dBi)			
	2.8			
Remark: 1.The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description. 2.Please refer to the "U205AA & U205AC Product Change Description" provided by the customer for specific model differences.				

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			

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 (CH116)	5580MHz
	The Highest channel (CH140)	5700MHz
802.11a/ac20	The Lowest adjacent channel (CH104)	5520MHz
	The Highest adjacent channel (CH136)	5680MHz
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

2.2 Worst-case configuration and Mode

Modulation Type	SISO - Data Rate	CDD/MIMO()TX()RX Data Rate
802.11a	6 Mbps	12 Mbps
802.11n20	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)
802.11n40	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)
802.11ac20	MCS0 (6.5 Mbps)	MCS0 (13 Mbps)
802.11ac40	MCS0 (13.5 Mbps)	MCS0 (27 Mbps)
802.11ac80	MCS0 (29.3 Mbps)	MCS0 (58.6 Mbps)
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
Laptop	Lenovo	Thinkbook 14 G4+IAP	YX05AZ13

2.4 Test Environment

Temperature:	Normal: 15°C ~ 35°C
Humidity:	45 ~ 56 % RH Ambient
Voltage:	DC 3.85V
AC Voltage:	AC 120V/60Hz for Conducted Emissions
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.

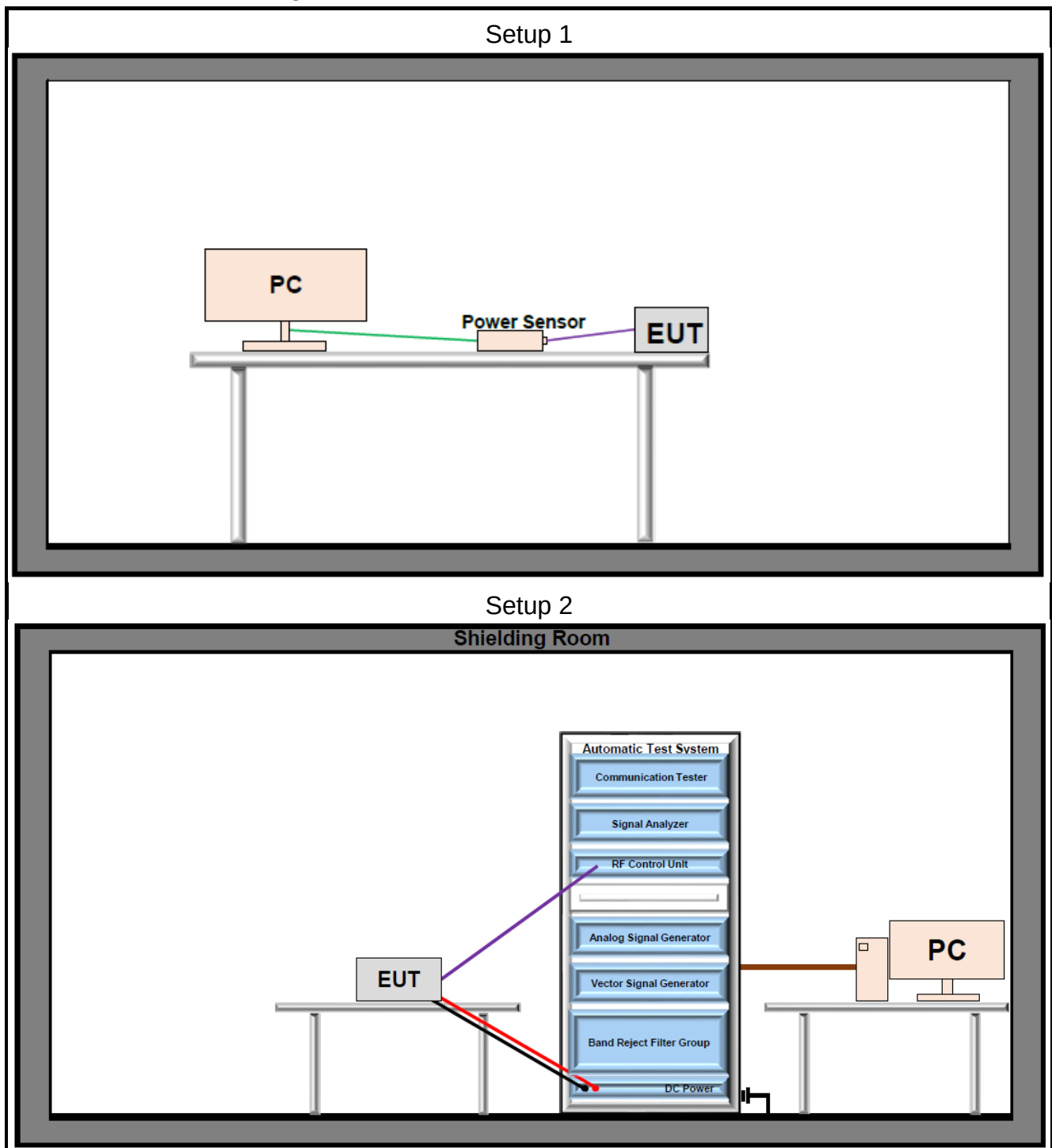
Offset = RF cable loss + attenuator factor.

2.6 Modifications

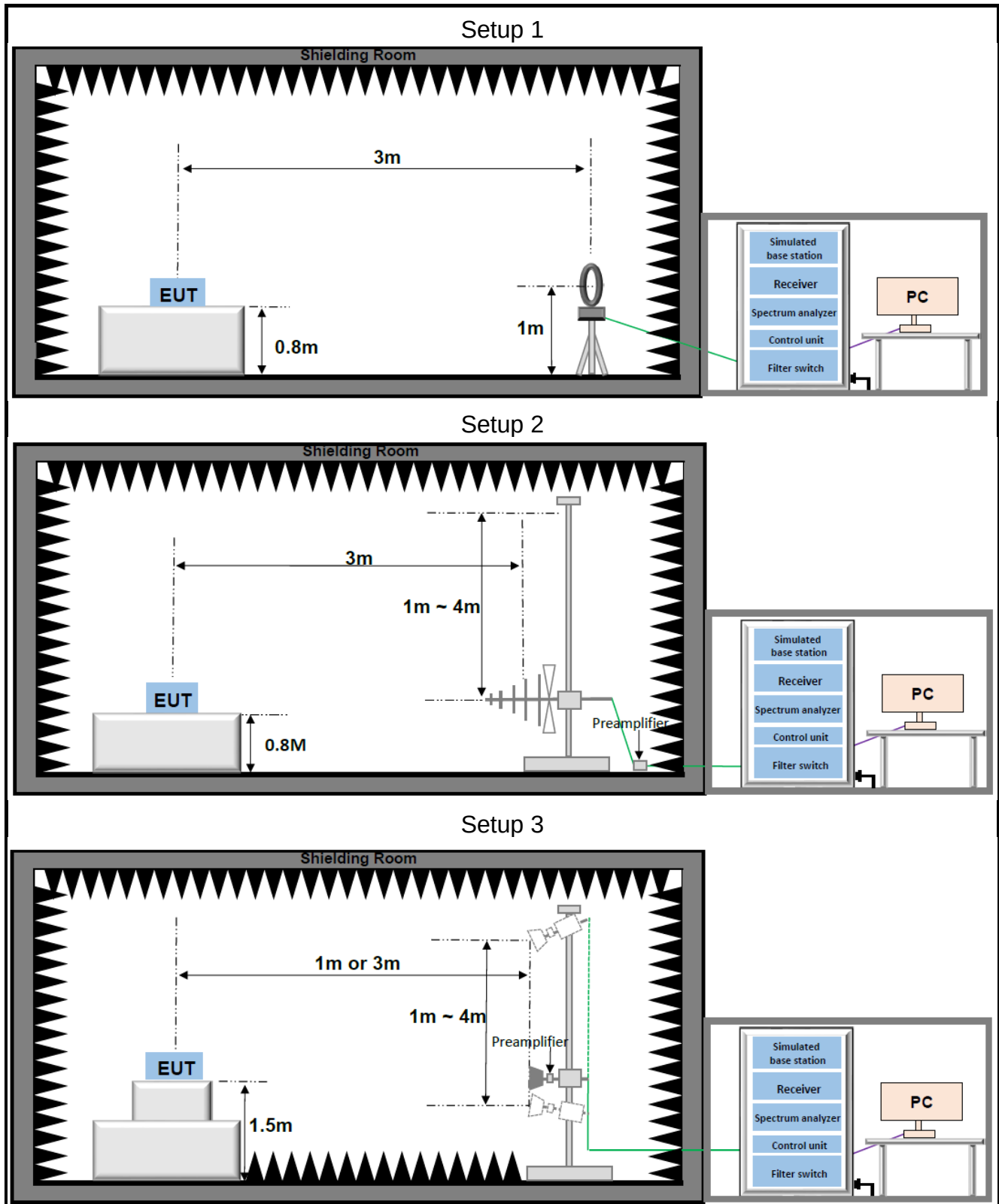
No modifications were made during testing.

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

RF Conducted					
Description	Manufacturer	Model	S.N.	Last Due	Cal Due
Signal Analyzer	Keysight	N9020A	US46470429	2025/03/14	2026/03/13
Signal Generator	R&S	SMR20	101027	2025/03/11	2026/03/10
Vector Signal Generator	R&S	SMM100A	549353	2025/05/29	2026/05/28
Power Sensor	Anritsu	MA24408A	12520	2025/05/29	2026/05/28
RF Control Unit	Tonscend	JS0806-2	23C80620671	2025/05/29	2026/05/28
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY63440541	2025/05/29	2026/05/28
Attenuator	Yin Saige	SMA-10dBm	N/A	N/A	N/A
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	2026/06/24
Double-Ridged Horn Antennas	Schwarzbeck	BBHA 9120D	2809	2023/06/25	2026/06/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	1290	2023/06/25	2026/06/24
Loop Antenna	Schwarzbeck	FMZB 1519C	1519C-028	2023/06/29	2026/06/28
Signal Analyzer	Keysight	N9020A	MY49100252	2025/03/11	2026/03/10
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY63440541	2025/05/29	2026/05/28
Wideband Radio Communication Tester	R&S	CMW500	150645	2025/03/11	2026/03/10
Low Noise Amplifier	Tonscend	TAP9K3G40	AP23A8060273	2025/03/11	2027/03/10
Low Noise Amplifier	Tonscend	TAP01018050	AP22G806258	2025/03/11	2027/03/10
Low Noise Amplifier	Tonscend	TAP18040048	AP22G806247	2025/03/11	2027/03/10
Hygrometer	BINGYU	HTC-1	N/A	2025/07/25	2026/07/24
Band Reject Filter Group	Townshend	JS0806-F	23A806F0652	N/A	N/A
Test Software	Tonscend	TS+	Version: 5.0.0	N/A	N/A

Conducted Emission					
Description	Manufacturer	Model	S.N.	Last Due	Cal Due
EMI Tester Receiver	Rohde & Schwarz	ESR3	103108	2025/05/29	2026/05/28
LISN	Rohde & Schwarz	ENV 216	102836	2025/01/04	2026/01/03
Test software	Rohde & Schwarz	ELEKTRA V4.61	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
Conducted Emissions(150kHz~30MHz)	2.43dB
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%

4 Test Results

4.1 Antenna Requirement

Standard Applicable:	47 CFR Part 15E 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 PIFA Antenna. With Antenna gain is 2.8dBi. Antenna Anti-Replacement Construction: An embedded-in antenna design is used.	

4.2 Frequency Stability

Standard Applicable:	47 CFR Part 15E 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 AC Power Line Conducted Emissions

Limits

Frequency range (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

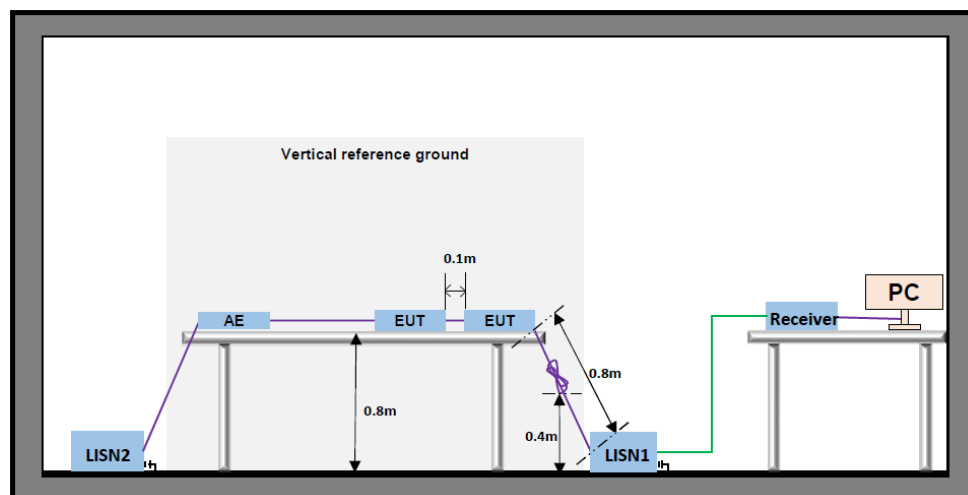
Test Procedure

ANSI C63.10:2020, Section 6.2.

Test Settings

1. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ 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.
2. 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.
3. 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.
4. Set the test-receiver system to Peak detect function and specified bandwidth (if bandwidth =9kHz) with maximum hold mode. Then measurement is also conducted by average detector and Quasi-Peak detector function respectively
5. Both sides of AC line are checked for maximum conducted interference. 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.

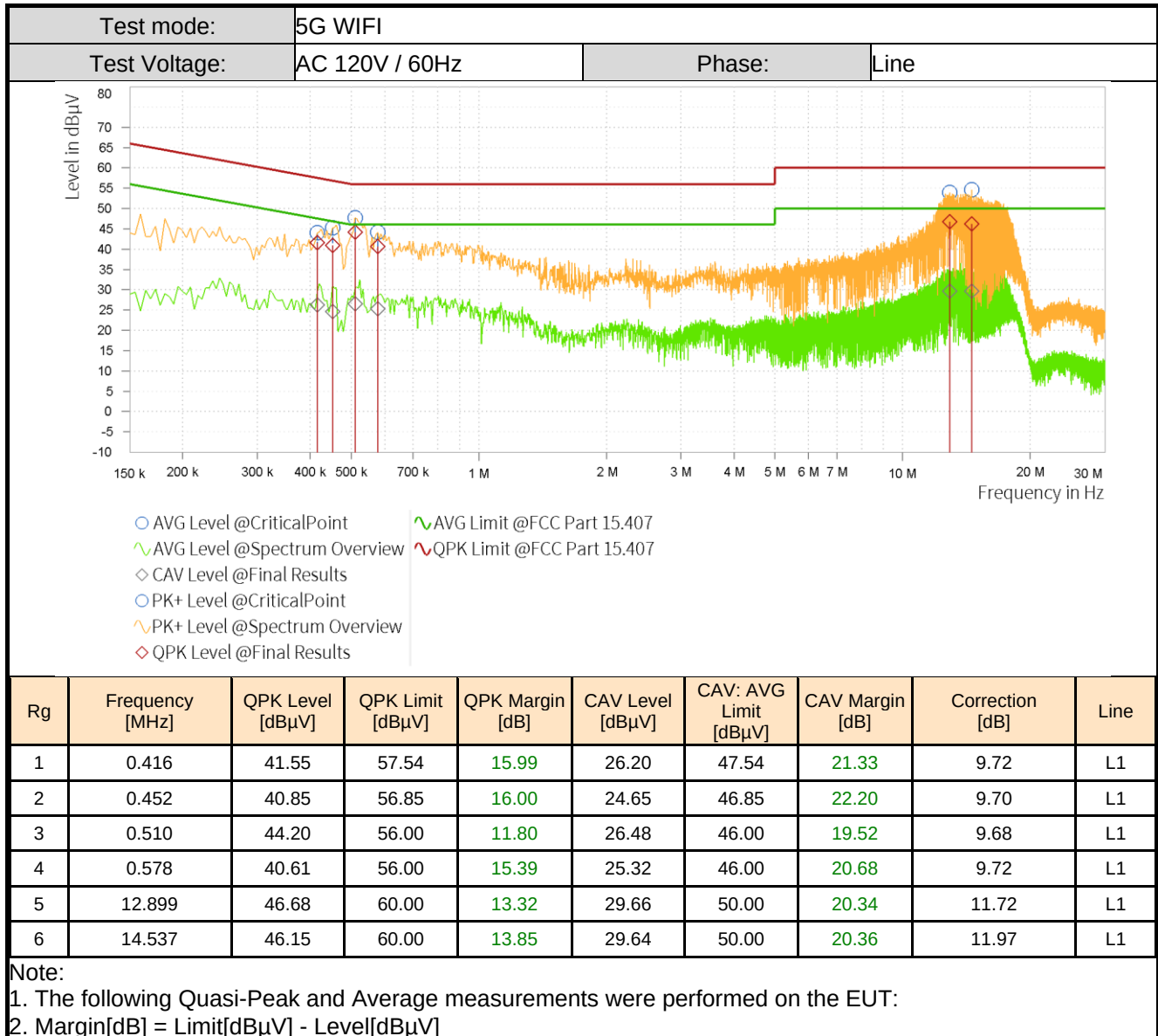
Test Setup

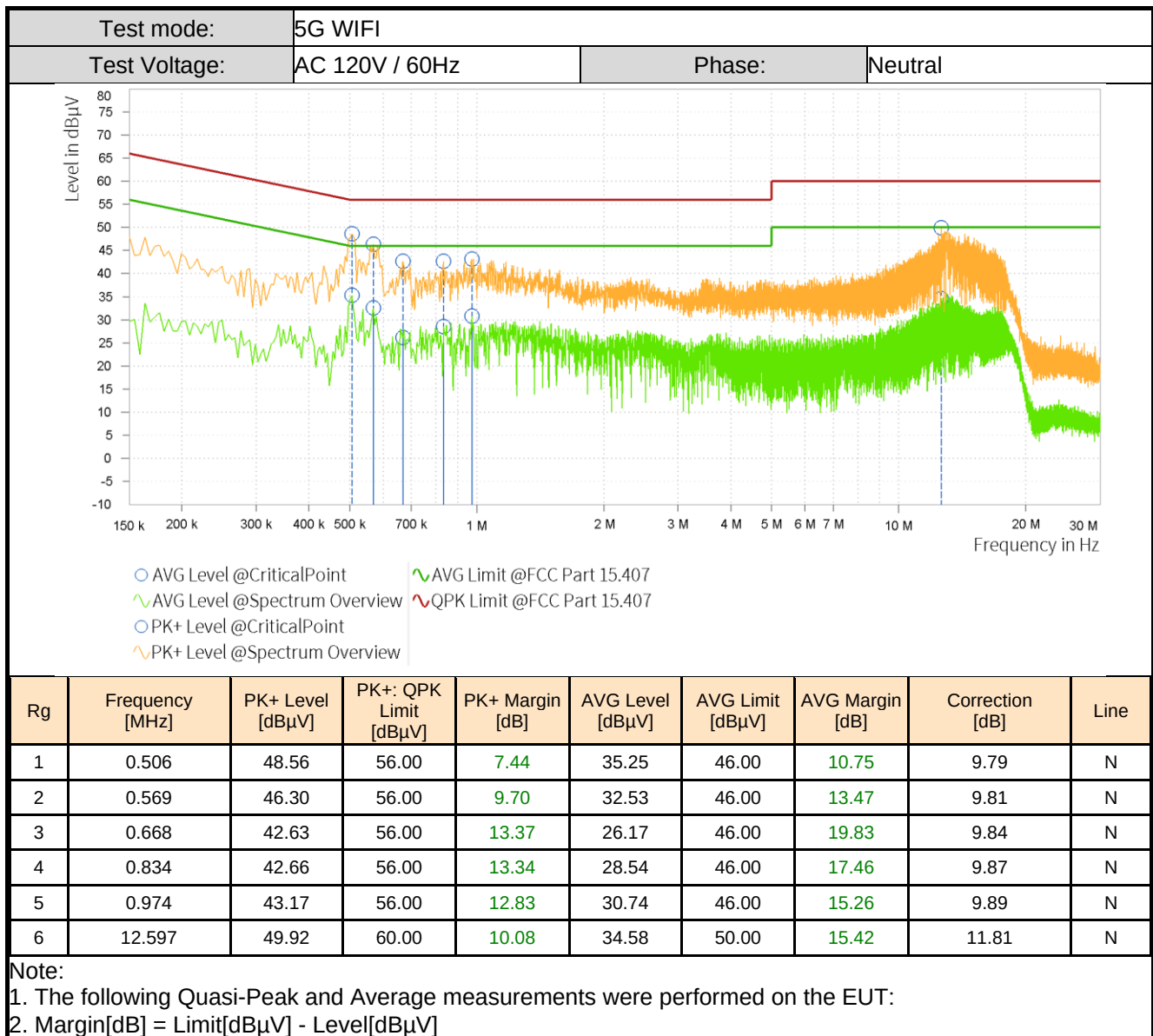


Measuring Instruments

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

Test Result:





4.4 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.3.b (Other Channel)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II.E.2.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 an attenuator connected to a power sensor. Output power was read directly from the power sensor.
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**.

4.5 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**.

4.6 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**.

4.7 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**.

4.8 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**.

4.9 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 ($\mu\text{V/m}$)	Limit (dB $\mu\text{V/m}$)	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.

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) + Factor(dB):
Factor = Cable Factor(dB) + AF(dB/m) - Preamplifier gain(dB)
AF = Antenna Factor(dB/m)
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. These frequencies which near "-" should be ignored because they are Fundamental frequency.

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: **Appendix-E BTWIFI Setup Photos**

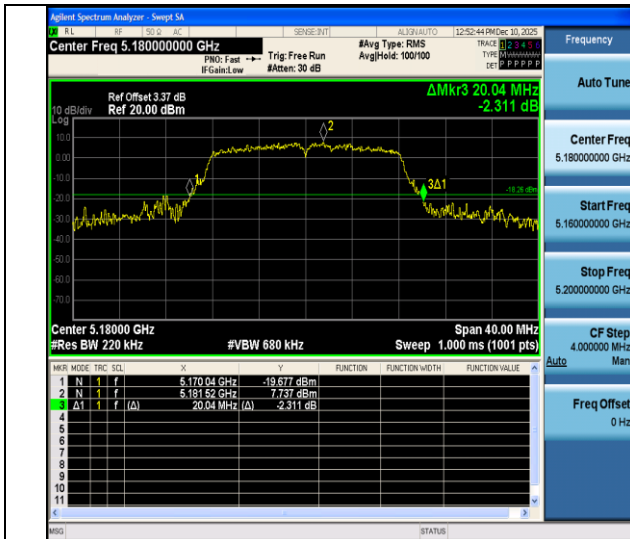
Appendix

Emission Bandwidth Test Result

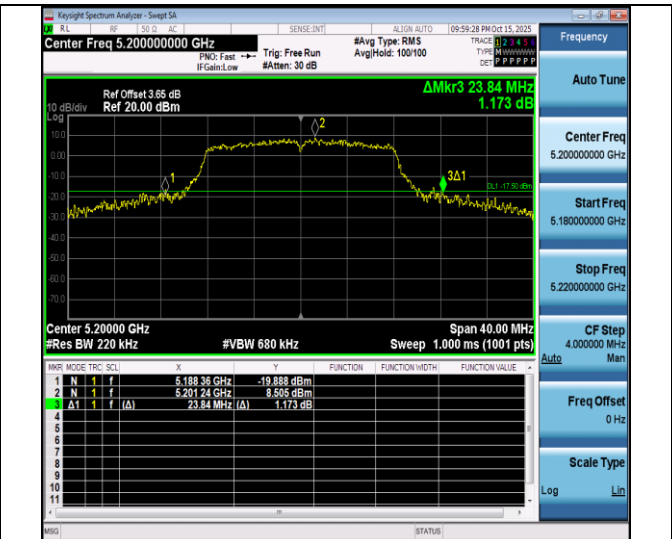
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11a	Ant4	5180	20.040	5170.040	5190.080	---	---
11a	Ant4	5200	23.840	5188.360	5212.200	---	---
11a	Ant4	5240	23.240	5227.640	5250.880	---	---
11a	Ant4	5260	22.560	5249.360	5271.920	---	---
11a	Ant4	5300	21.840	5289.800	5311.640	---	---
11a	Ant4	5320	19.840	5310.120	5329.960	---	---
11a	Ant4	5500	19.840	5490.040	5509.880	---	---
11a	Ant4	5520	20.320	5509.800	5530.120	---	---
11a	Ant4	5600	26.200	5588.240	5614.440	---	---
11a	Ant4	5680	22.280	5669.400	5691.680	---	---
11a	Ant4	5700	19.680	5690.080	5709.760	---	---
11a	Ant4	5745	21.200	5733.680	5754.880	---	---
11a	Ant4	5785	21.400	5774.240	5795.640	---	---
11a	Ant4	5825	25.720	5813.960	5839.680	---	---
11n20SISO	Ant4	5180	22.520	5168.800	5191.320	---	---
11n20SISO	Ant4	5200	25.120	5187.280	5212.400	---	---
11n20SISO	Ant4	5240	24.960	5228.280	5253.240	---	---
11n20SISO	Ant4	5260	24.000	5247.120	5271.120	---	---
11n20SISO	Ant4	5300	24.200	5288.040	5312.240	---	---
11n20SISO	Ant4	5320	26.520	5308.600	5335.120	---	---
11n20SISO	Ant4	5500	24.000	5488.120	5512.120	---	---
11n20SISO	Ant4	5600	25.400	5585.840	5611.240	---	---
11n20SISO	Ant4	5700	24.480	5687.600	5712.080	---	---
11n20SISO	Ant4	5745	24.000	5731.880	5755.880	---	---
11n20SISO	Ant4	5785	26.040	5771.400	5797.440	---	---
11n20SISO	Ant4	5825	24.920	5813.080	5838.000	---	---
11n40SISO	Ant4	5190	61.920	5159.440	5221.360	---	---
11n40SISO	Ant4	5230	53.840	5200.960	5254.800	---	---
11n40SISO	Ant4	5270	63.920	5237.600	5301.520	---	---
11n40SISO	Ant4	5310	52.160	5289.120	5341.280	---	---
11n40SISO	Ant4	5510	62.240	5478.960	5541.200	---	---
11n40SISO	Ant4	5590	62.480	5558.960	5621.440	---	---
11n40SISO	Ant4	5670	55.920	5642.320	5698.240	---	---
11n40SISO	Ant4	5755	56.800	5722.440	5779.240	---	---
11n40SISO	Ant4	5795	43.680	5772.840	5816.520	---	---
11ac20SISO	Ant4	5180	20.120	5170.000	5190.120	---	---
11ac20SISO	Ant4	5200	23.360	5189.000	5212.360	---	---
11ac20SISO	Ant4	5240	24.680	5227.520	5252.200	---	---
11ac20SISO	Ant4	5260	25.160	5248.040	5273.200	---	---
11ac20SISO	Ant4	5300	24.680	5289.320	5314.000	---	---
11ac20SISO	Ant4	5320	20.320	5309.920	5330.240	---	---
11ac20SISO	Ant4	5500	20.240	5489.920	5510.160	---	---
11ac20SISO	Ant4	5520	23.040	5507.080	5530.120	---	---
11ac20SISO	Ant4	5600	22.880	5589.600	5612.480	---	---
11ac20SISO	Ant4	5680	21.960	5668.120	5690.080	---	---
11ac20SISO	Ant4	5700	20.200	5690.000	5710.200	---	---
11ac20SISO	Ant4	5745	21.920	5733.520	5755.440	---	---
11ac20SISO	Ant4	5785	21.000	5774.400	5795.400	---	---
11ac20SISO	Ant4	5825	24.760	5813.520	5838.280	---	---
11ac40SISO	Ant4	5190	40.080	5170.000	5210.080	---	---
11ac40SISO	Ant4	5230	40.400	5209.840	5250.240	---	---
11ac40SISO	Ant4	5270	43.040	5250.000	5293.040	---	---
11ac40SISO	Ant4	5310	39.840	5290.320	5330.160	---	---
11ac40SISO	Ant4	5510	40.480	5489.840	5530.320	---	---
11ac40SISO	Ant4	5550	41.200	5529.040	5570.240	---	---
11ac40SISO	Ant4	5590	40.400	5569.840	5610.240	---	---

11ac40SISO	Ant4	5670	40.160	5650.000	5690.160	---	---
11ac40SISO	Ant4	5755	41.200	5733.960	5775.160	---	---
11ac40SISO	Ant4	5795	40.320	5774.920	5815.240	---	---
11ac80SISO	Ant4	5210	80.320	5170.000	5250.320	---	---
11ac80SISO	Ant4	5290	80.640	5249.840	5330.480	---	---
11ac80SISO	Ant4	5530	80.960	5489.520	5570.480	---	---
11ac80SISO	Ant4	5610	80.320	5569.680	5650.000	---	---
11ac80SISO	Ant4	5775	89.280	5726.040	5815.320	---	---

Test Graphs



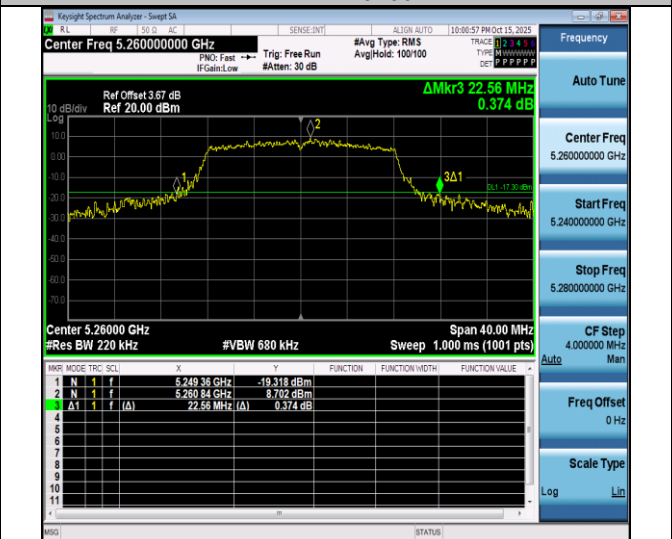
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11a-Ant4-5200



11a-Ant4-5240



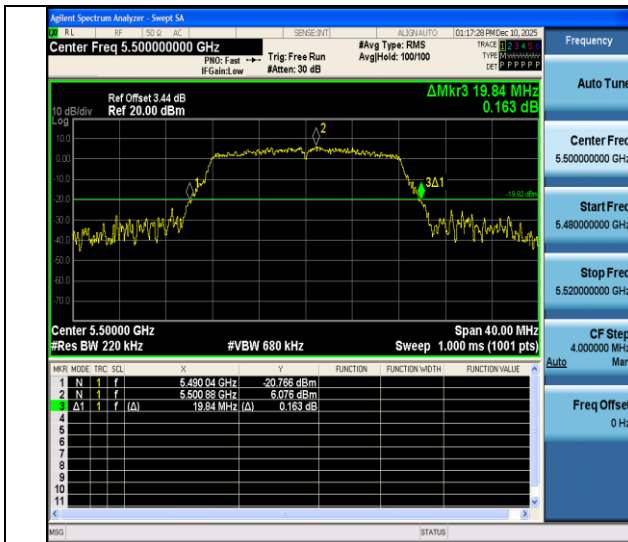
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11a-Ant4-5320



11a-Ant4-5500



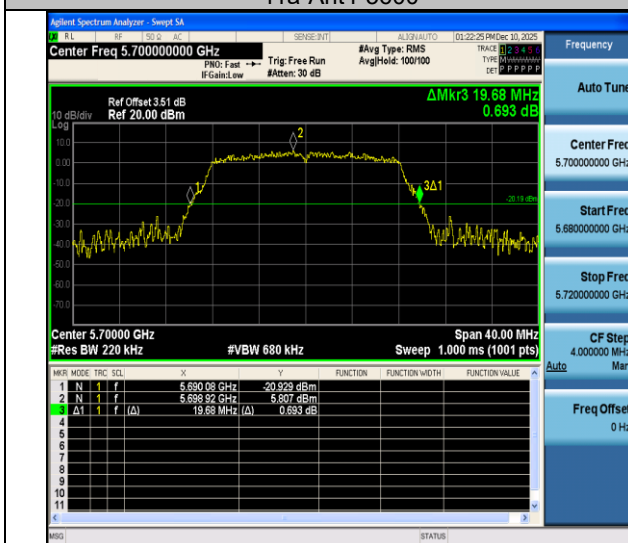
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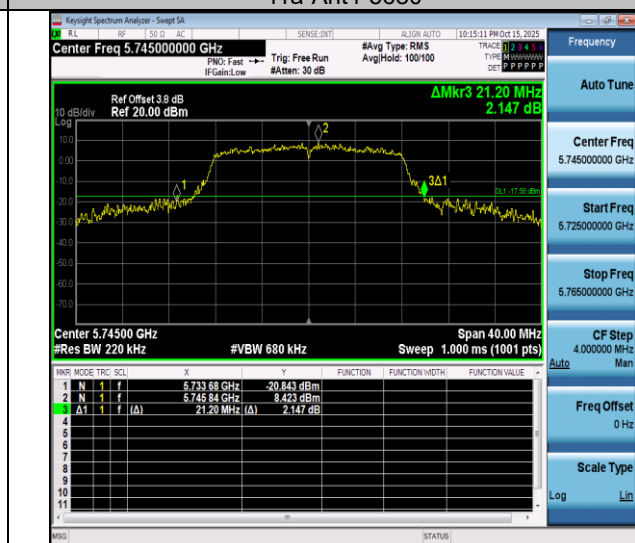
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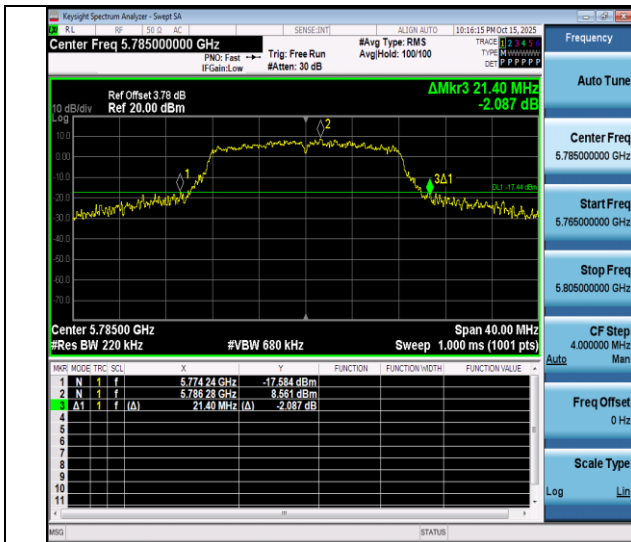
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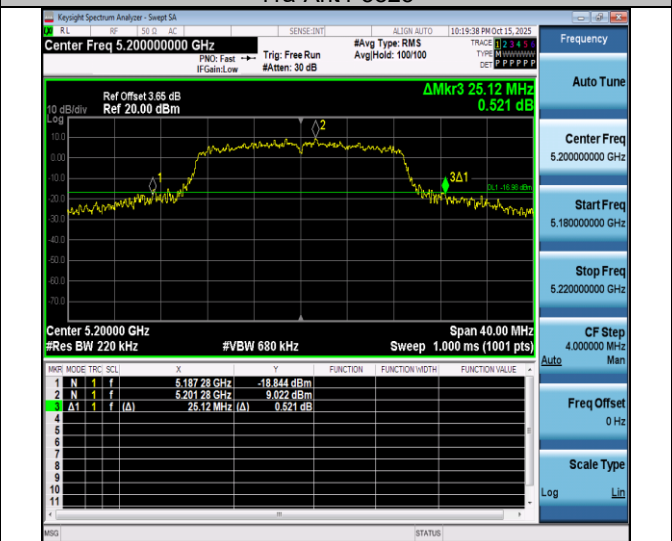
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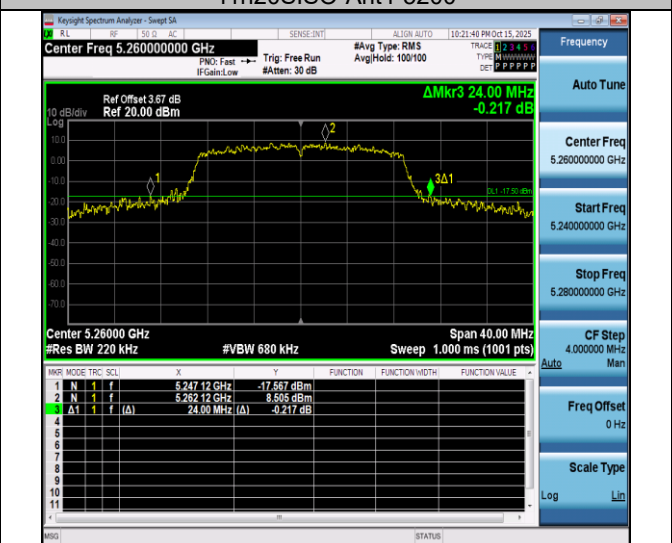
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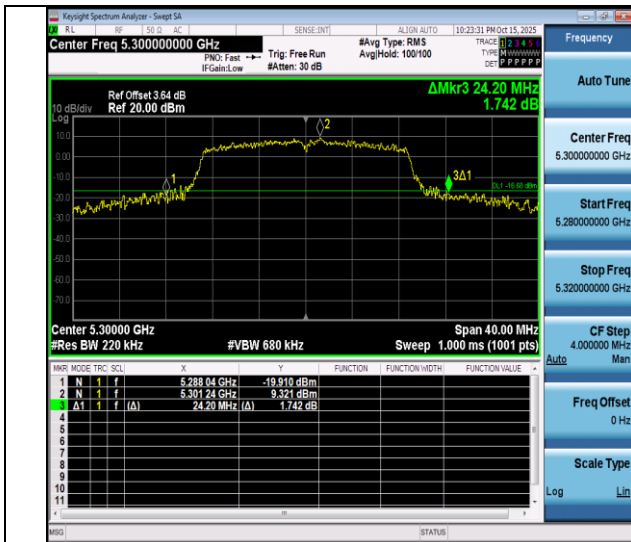
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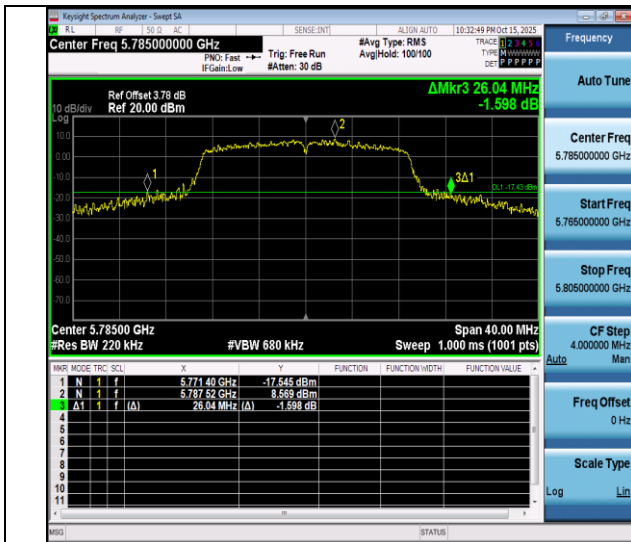
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11n20SISO-Ant4-5700



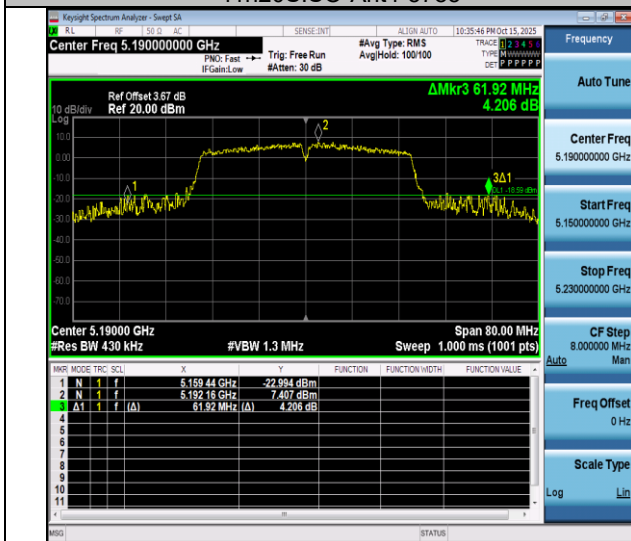
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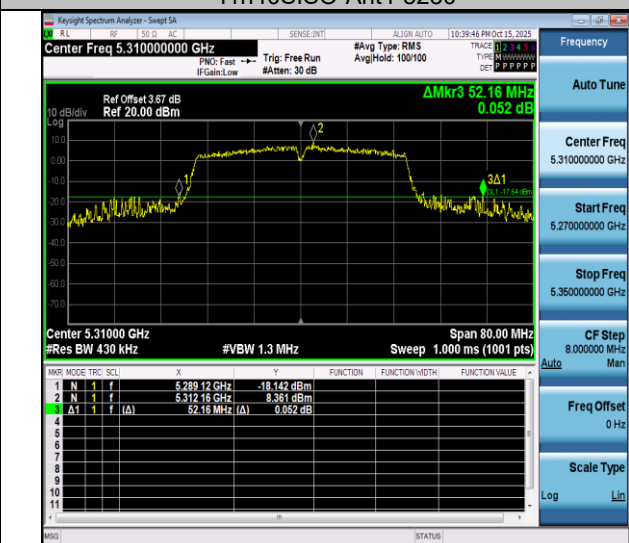
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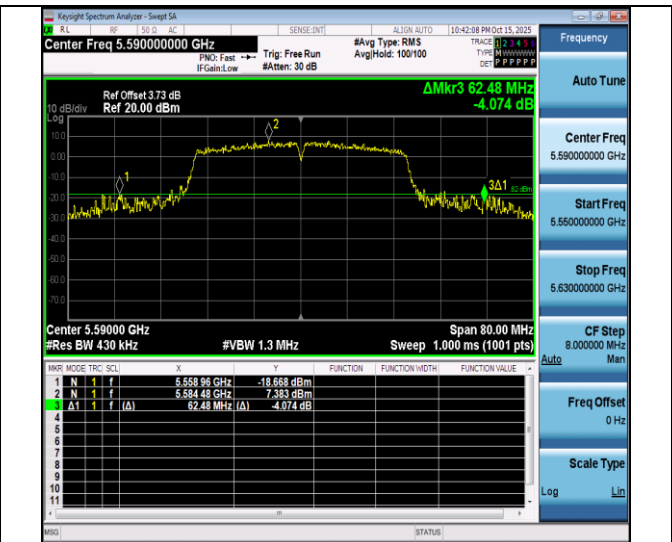
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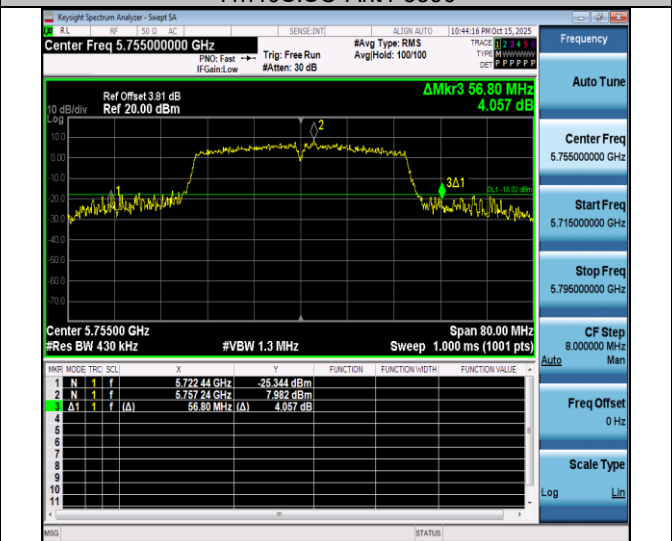
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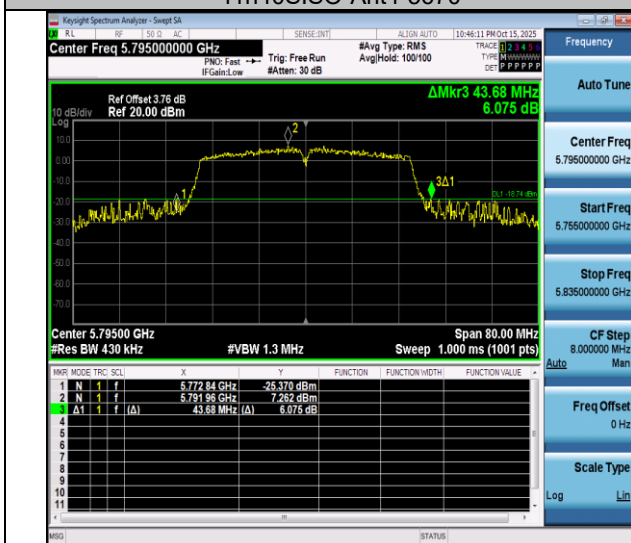
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