



RF Test Report

- Applicant: Quectel Wireless Solutions Company Limited
- Address: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233 China
- Product: Wi-Fi & Bluetooth Module
- Model No.: FCS962N-LP
- Brand Name: QUECTEL
- FCC ID: XMR25FCS962NLP
- Standards: FCC CFR47 Part 15E
- Report No.: PD20240166-R3D
- **Issue Date:** 2025/03/04
- Test Result: PASS *
 - * Testing performed at Hefei Panwin Technology Co., Ltd. on the above equipment indicates the product meets the requirements of the relevant standards.

Jerry Zhong

Reviewed By: Jerry Zhang

Ster Jung

Approved By: Alec Yang

Hefei Panwin Technology Co., Ltd.

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Revision History

Report No.	Version	Description	Issue Date	Note
PD20240166-R3D	1	Initial Report	2025/03/04	Valid



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Summary of Test Results

No.	Test Case	FCC Rules	Verdict
1	Occupied Bandwidth Measurement	15.407(e)	PASS
2	Maximum Conducted Output Power Measurement	15.407(a)	PASS
3	Power Spectral Density Measurement	15.407(a)	PASS
4	Unwanted Emissions Measurement	15.407(b)	PASS
5	AC Conducted Emission Measurement	15.207	NA
6	Antenna Requirements	15.203 & 15.407(a)	PASS
7	Frequency Stability ^{Note1}	15.407(g)	NA

Date of Testing: 2024/12/13 to 2025/03/03

Date of Sample Received: 2024/12/10

• We, Hefei Panwin Technology Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with the procedures given in applied standard(s) in **Section 2.3** of this report and shown compliance with the applicable technical standards.

All indications of PASS/FAIL in this report are based on interpretations and/or observations of test results.
Measurement Uncertainties were not taken into account and are published for informational purposes only.
Note1: 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 users manual.



1 General Information

1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with " Δ " are subcontracted projects.

1.2 Test Facility

A2LA (Certificate Number: 6849.01)

Hefei Panwin Technology Co., Ltd. has been accredited by American Association for Laboratory Accreditation to perform measurement.

FCC (Designation Number: CN1361, Test Firm Registration Number: 473156)

Hefei Panwin Technology Co., Ltd. has been accredited on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Laboratory

Company Name	Hefei Panwin Technology Co., Ltd.	
Address	Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China	
Telephone	+86-0551-63811775	
Post Code	230031	



2 General Description of Equipment under Test

2.1 Details of Application

Applicant	Quectel Wireless Solutions Company Limited
Applicant Address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233 China
Manufacturer	Quectel Wireless Solutions Company Limited
Manufacturer Address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233 China

2.2 General Information

Product	Wi-Fi & Bluetooth Module
Model	FCS962N-LP
SN	Conducted: D1824IP0W000188;
	Radiated: D1824IP0W000291 & D1824IP0W000196
Hardware Version	R1.0
Software Version	1
Antenna Type	External Antenna
Max. Conducted Power	Wi-Fi 5G: 18.88dBm
	802.11a
WLAN Mode Supported:	802.11n 20M
WLAN Mode Supported:	802.11ac 20M
	802.11ax 20M
	5150MHz to 5250MHz: -0.70dBi
Antenna Gain	5250MHz to 5350MHz: -0.80dBi
Antenna Gam	5470MHz to 5725MHz: -1.20dBi
	5725MHz to 5850MHz: -1.50dBi
Directional Gain	NA
	U-NII-1(5150MHz-5250MHz)
Test Band	U-NII-2A(5250MHz-5350MHz)
Test Band	U-NII-2C(5470MHz-5725MHz)
	U-NII-3(5725MHz-5850MHz)
Operating voltage	Typical 3.3Vdc
Modulation Type	802.11a/n/ac/ax: BPSK,QPSK,16QAM,64QAM,256QAM,1024QAM



Note: The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

2.3 Application Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart E
- FCC KDB 789033 D02 General UN II Test Procedures New Rules v02r01
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.

2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



3 Test Condition

3.1 Test Configuration

Test mode

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). The worst cases were recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes (Z, X, Y axis), receiver antenna polarization (horizontal and vertical), the worst emission was found in Z position and the worst case was recorded. This report presents the data for the worst polarity.

Test Mode	Data Rate(Mbps)
802.11a	6
802.11n 20M	MCS0
802.11ac 20M	MCS0
802.11ax 20M	MCS0



3.2 Wireless Technology and Frequency Range

Wireless Technology	Band	width	Channel	Frequency	
		20MHz	36	5180 MHz	
			40	5200 MHz	
	U-NII-1		44	5220 MHz	
			48	5240 MHz	
			52	5260 MHz	
	U-NII-2A	20MHz	56	5280 MHz	
	U-NII-ZA	20101112	60	5300 MHz	
			64	5320 MHz	
			100	5500 MHz	
			104	5520 MHz	
			108	5540 MHz	
	U-NII-2C	20MHz	112	5560 MHz	
Wi-Fi			116	5580 MHz	
			120	5600 MHz	
			124	5620 MHz	
			128	5640 MHz	
			132	5660 MHz	
			136	5680 MHz	
			140	5700 MHz	
			144	5720 MHz	
			149	5745 MHz	
			153	5765 MHz	
	U-NII-3	20MHz	157	5785 MHz	
			161	5805 MHz	
			165	5825 MHz	
Does this device suppo	rt TPC function?	□ Yes		⊠ No	
Does this device suppo	rt TDWR band?	⊠ Yes		🗆 No	



3.3 Equipment List

Conducted

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
Spectrum Analyzer	KEYSIGHT	N9020B	PWC0048	1 Year	2025/09/11
RF Control Unit	Tonseced	JS0806-2	PWC0055	1	/
DC Power	Keysight	E3640A	PWC0027	1 Year	2025/09/12
DC Power	Keysight	E3640A	PWC0046	1 Year	2025/09/12
Shielded Chamber	Maorui	MR543	PWC0041	3 Years	2026/08/26
Test Software	Tonseced	JS1120-3 V3.2.22	1	1	/

Radiated

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
EMI Test Receiver	R&S	ESR7	PWB0023	1 Year	2025/09/11
Spectrum Analyzer	R&S	FSV3044	PWB0024	1 Year	2025/09/11
Loop Antenna	R&S	HFH2-Z2E	PWB0026	1 Year	2025/09/13
TRILOG Broadband	Schwarzbeck	VULB9162	PWB0029	1 Year	2025/09/09
Double-Ridged Guide Antenna	ETS-Lindgren	3117	PWB0031	1 Year	2025/09/26
k Type Horn Antenna	Steatite Antennas	QMS-00880	PWB0035	1 Year	2025/09/08
Pre-Amplifier	R&S	SCU40F1	PWB0036	1 Year	2025/09/11
Pre-Amplifier	COM-MW	DLNA8	PWB0094	1 Year	2025/09/11
Pre-Amplifier	R&S	SCU18F	PWB0034	1 Year	2025/09/11
Pre-Amplifier	R&S	OSP220 (OSP-B155G)	PWB0042	1 Year	2025/09/11
Anechoic Chamber	ETS.LINDGREN	Fact 3-2m	PWB0003	3 Years	2026/06/05
Test Software	Tonscend	JS36	/	/	/



3.4 Support Equipment List

Equipment	Manufacturer	Description	Model	Serial Number
Antenna	QUECTEL	External Wi-Fi/BT Antenna	YEBT038WFA	/
EVB	QUECTEL	1	Q1-C1950	1.E1C24A21H000170 2.E1N24G52C000030 3.E1N24G52C000028
Adapter	STH	Output:12V/5A	P60EB120500	/
RF cable	/	2.4G:0.5dB; 5G:1.00dB	/	/

3.5 Test Uncertainty

No.	Parameter	Uncertainty
1	Emission Bandwidth	1.9%
2	Occupied channel bandwidth	1.9%
3	Min emission bandwidth	1.9%
4	Unwanted Emissions Measurement	9kHz-7GHz: 1.21dB
4		7GHz-40GHz: 3.31dB
5	Padiated Pand Edges and Sourious Emission	Below 1GHz: 4.88 dB
5	Radiated Band Edges and Spurious Emission	Above 1GHz: 5.06 dB
6	Temperature	3 °C
7	Humidity	1.3 %
8	Supply voltages	0.006 V



4 Test Items Description

Ambient condition

Shielded Chamber

Temperature [°C]	22.1 to 25.4
Humidity [%RH]	26 to 39
Pressure [kPa]	102.3 to 103.4

Anechoic Chamber

Temperature [°C]	21.2 to 24.8
Humidity [%RH]	30 to 41
Pressure [kPa]	101.0 to 102.9

4.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

4.1.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

The minimum 6 dB bandwidth shall be at least 500 kHz 26dB and 99% Occupied bandwidth are reporting only.

4.1.2 Measuring Instruments

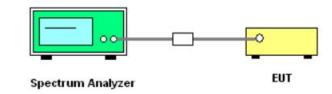
The measuring equipment is listed in the section 3.3 of this test report.

4.1.3 Test Procedures

- 1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01Section C) Emission bandwidth.
- 2. For 6dB BW, Set RBW = 100kHz.For 26dB BW, Set RBW = approximately 1% of the emission bandwidth.For 99% OBW, Set RBW = 1% to 5% of the OBW.
- 3. For 26dB BW. Set the VBW > RBW.
 - For 6dB BW & 99% OBW. Set the VBW \ge 3 × RBW
- 4. Detector = Peak.
- 5. Trace mode = max hold
- 6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.Compare this with the RBW setting of the analyzer, Readjust RBW and repeat measurements needed until the RBW/EBW ratio is approximately 1%.
- 7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set1% to 5% of the OBW and set the Video bandwidth (VBW) ≥ 3* RBW.
- 8. Measure and record the results in the test report.



4.1.4 Test Setup



4.1.5 Test Results

See ANNEX A.1.



4.2 Maximum Conducted Output Power Measurement

4.2.1 Limit of Maximum Conducted Output Power

<FCC 14 -30 CFR 15.407>

For the band 5.15–5.25 GHz.

(i) For an outdoor access point operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U–NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U–NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) 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. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2)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. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3)For the band 5.725–5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



4.2.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep):

1. Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire

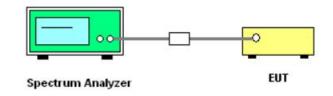
99% occupied bandwidth) of the signal.

- 2. Set RBW = 1 MHz.
- 3. Set VBW \geq 3 MHz.
- 4. Number of points in sweep $\ge 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\le \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
- 5. Sweep time = auto.
- 6. Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
- 7. If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."</p>
- 8. Trace average at least 100 traces in power averaging (rms) mode.

9. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.



4.2.4 Test Setup



4.2.5 Test Result of Maximum Conducted Output Power

Please refer to ANNEX A.2.



4.3 Power Spectral Density Measurement

4.3.1 Limit of Power Spectral Density

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2)/Part 15.407(a)(3

For an indoor access point operating in the band 5.15–5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

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 5.25-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any1 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.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section F) Maximum power spectral density.

1.Measure the duty cycle.

2.Set span to encompass the entire emission bandwidth (EBW) of the signal.

3.Set RBW \geq 1/T, where T is defined in II.B.I.a).

4.Set VBW ≥ 3 RBW.

5.If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

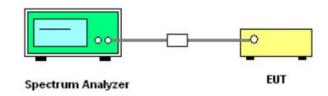
6.If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

7. Care must be taken to ensure that the measurements are performed during a period of continuous



transmission or are corrected upward for duty cycle.

4.3.4 Test Setup



4.3.5 Test Result of Power Spectral Density

Please refer to ANNEX A.3.



4.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

4.4.1 Limit of Unwanted Emissions

 For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of-27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5725 MHz band: all emissions outside of the 5470-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) 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 15.6dBm/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.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30-88	100	3
88 -216	150	3
216 - 960	200	3
Above 960	500	3



EIRP (dBm)	Field Strength at 3m (dB μ V/m)				
- 27	68.2				

Note: The following formula is used to convert the EIRP to field strength.

 $EIRP = E_{Meas} + 20log (d_{Meas}) - 104.7$

where

EIRP is the equivalent isotropically radiated power, in dBm

 E_{Meas} is the field strength of the emission at the measurement distance, in $dB_{\mu}V/m$

 d_{Meas} is the measurement distance, in m

4.4.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

4.4.3 Test Procedures

 The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section G) Unwanted emissions measurement.

(1)Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2)Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW= 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3)Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
- 2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- 4.. The antenna is a broadband antenna and its height is adjusted between one meter and four.



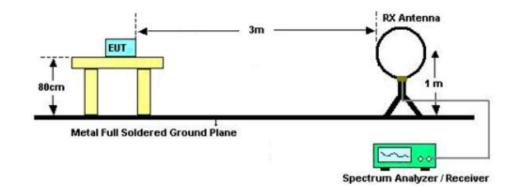
meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.

- 5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

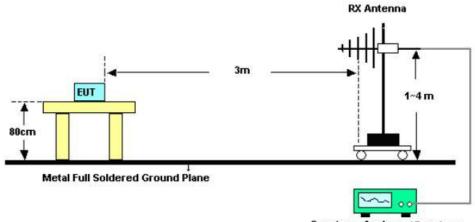


4.4.4 Test Setup

For radiated emissions below 30MHz

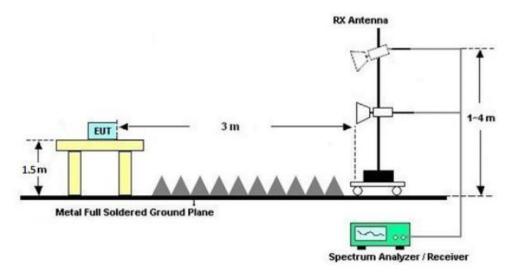


For radiated emissions from 30MHz to 1GHz



Spectrum Analyzer / Receiver

For radiated emissions above 1GHz





4.4.5Test Results of Radiated Spurious Emissions (9 kHz - 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

4.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to ANNEX B.1.

4.4.7 Test Result of Radiated Spurious Emissions (30MHz - 10th Harmonic or 40GHz whichever is lower)

Please refer to ANNEX B.1

4.4.8 Duty Cycle

Please refer to ANNEX A.4.



4.5 AC Conducted Emission Measurement

4.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBµV)				
	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.

4.5.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test.

4.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.

2. Connect EUT to the power mains through a line impedance stabilization network (LISN).

3. All the support units are connecting to the other LISN.

4. The LISN provides 50 ohm coupling impedance for the measuring instrument.

5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.

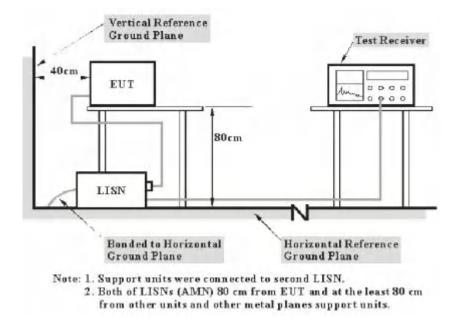
6. Both sides of AC line were checked for maximum conducted interference.

7. The frequency range from 150 kHz to 30 MHz was searched.

8. 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.



4.5.4 Test Setup



4.5.5 Uncertainty Measurement

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT. The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

CASE	Uncertainty				
Continuous Emission (AC port)	2.92 dB				

4.5.6 Test Result

Remark:The product is DC powered, this test item is not applicable.



4.6 Antenna Requirements

4.6.1 Standard Applicable

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.6.2 Antenna Anti-Replacement Construction

The antenna is External on the main PCB and no consideration of replacement. The best case gain of the antenna is -0.70dBi.

----- THE END ------



ANNEX A: Test Results of Conducted Test

A.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

Test Result_26dB Bandwidth

Test Mode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.160	5170.160	5190.320		
11A	Ant1	5220	20.840	5209.600	5230.440		
11A	Ant1	5240	20.760	5229.800	5250.560		
11A	Ant1	5260	20.440	5249.760	5270.200		
11A	Ant1	5300	20.000	5289.800	5309.800		
11A	Ant1	5320	20.800	5309.320	5330.120		
11A	Ant1	5500	20.960	5489.640	5510.600		
11A	Ant1	5580	20.080	5569.920	5590.000		
11A	Ant1	5700	20.200	5690.000	5710.200		
11A	Ant1	5720	21.000	5709.480	5730.480		
11A	Ant1	5720_UNII-2C	15.52	5709.480	5725		
11A	Ant1	5720_UNII-3	5.48	5725	5730.480		
11A	Ant1	5745	20.720	5734.560	5755.280		
11A	Ant1	5785	20.360	5774.640	5795.000		
11A	Ant1	5825	20.080	5814.760	5834.840		
11N20SISO	Ant1	5180	20.880	5169.520	5190.400		
11N20SISO	Ant1	5220	20.960	5209.440	5230.400		
11N20SISO	Ant1	5240	20.520	5229.640	5250.160		
11N20SISO	Ant1	5260	20.560	5249.600	5270.160		
11N20SISO	Ant1	5300	21.400	5289.280	5310.680		
11N20SISO	Ant1	5320	20.560	5309.720	5330.280		
11N20SISO	Ant1	5500	20.560	5489.800	5510.360		
11N20SISO	Ant1	5580	20.960	5569.480	5590.440		
11N20SISO	Ant1	5700	20.440	5689.720	5710.160		
11N20SISO	Ant1	5720	20.720	5709.520	5730.240		
11N20SISO	Ant1	5720_UNII-2C	15.48	5709.520	5725		
11N20SISO	Ant1	5720_UNII-3	5.24	5725	5730.240		
11N20SISO	Ant1	5745	20.520	5734.800	5755.320		
11N20SISO	Ant1	5785	20.600	5774.640	5795.240		
11N20SISO	Ant1	5825	21.480	5814.320	5835.800		
11AC20SISO	Ant1	5180	20.520	5169.680	5190.200		
11AC20SISO	Ant1	5220	21.200	5209.360	5230.560		
11AC20SISO	Ant1	5240	21.080	5229.480	5250.560		



Test Report

11AC20SISO	Ant1	5260	20.680	5249.560	5270.240	
11AC20SISO	Ant1	5300	20.800	5289.840	5310.640	
11AC20SISO	Ant1	5320	20.640	5309.760	5330.400	
11AC20SISO	Ant1	5500	21.160	5489.440	5510.600	
11AC20SISO	Ant1	5580	21.040	5569.320	5590.360	
11AC20SISO	Ant1	5700	21.200	5689.240	5710.440	
11AC20SISO	Ant1	5720	20.600	5709.760	5730.360	
11AC20SISO	Ant1	5720_UNII-2C	15.24	5709.760	5725	
11AC20SISO	Ant1	5720_UNII-3	5.36	5725	5730.360	
11AC20SISO	Ant1	5745	20.720	5734.600	5755.320	
11AC20SISO	Ant1	5785	21.200	5774.400	5795.600	
11AC20SISO	Ant1	5825	20.600	5814.680	5835.280	
11AX20SISO	Ant1	5180	20.480	5169.680	5190.160	
11AX20SISO	Ant1	5220	20.600	5209.680	5230.280	
11AX20SISO	Ant1	5240	21.040	5229.320	5250.360	
11AX20SISO	Ant1	5260	21.280	5249.360	5270.640	
11AX20SISO	Ant1	5300	21.320	5289.320	5310.640	
11AX20SISO	Ant1	5320	21.000	5309.480	5330.480	
11AX20SISO	Ant1	5500	21.160	5489.560	5510.720	
11AX20SISO	Ant1	5580	20.920	5569.480	5590.400	
11AX20SISO	Ant1	5700	20.880	5689.520	5710.400	
11AX20SISO	Ant1	5720	21.040	5709.360	5730.400	
11AX20SISO	Ant1	5720_UNII-2C	15.64	5709.360	5725	
11AX20SISO	Ant1	5720_UNII-3	5.4	5725	5730.400	
11AX20SISO	Ant1	5745	21.040	5734.400	5755.440	
11AX20SISO	Ant1	5785	20.760	5774.880	5795.640	
11AX20SISO	Ant1	5825	20.320	5814.800	5835.120	

Test Result for AX Part RU_26dB Bandwidth

Test	Antenna	Frequency	Ru	Ru	26db BW	FL	FH	Limit	Verdict
Mode	Antenna	[MHz]	Size	Index	[MHz]	[MHz]	[MHz]	[MHz]	verdict
11AX20SISO	Ant1	5180	26Tone	RU0	14.440	5169.360	5183.800		
11AX20SISO	Ant1	5180	52Tone	RU37	19.640	5169.400	5189.040		
11AX20SISO	Ant1	5180	106Tone	RU53	17.920	5169.560	5187.480		
11AX20SISO	Ant1	5220	26Tone	RU4	10.240	5212.920	5223.160		
11AX20SISO	Ant1	5220	52Tone	RU39	17.160	5211.640	5228.800		
11AX20SISO	Ant1	5220	106Tone	RU53	20.200	5209.440	5229.640		
11AX20SISO	Ant1	5240	26Tone	RU8	12.400	5238.320	5250.720		
11AX20SISO	Ant1	5240	52Tone	RU40	7.840	5242.600	5250.440		



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11AX20SISO	Ant1	5240	106Tone	RU54	15.800	5234.800	5250.600	
11AX20SISO	Ant1	5260	26Tone	RU0	14.040	5249.440	5263.480	
11AX20SISO	Ant1	5260	52Tone	RU37	19.320	5249.400	5268.720	
11AX20SISO	Ant1	5260	106Tone	RU53	20.040	5249.440	5269.480	
11AX20SISO	Ant1	5300	26Tone	RU4	12.920	5290.920	5303.840	
11AX20SISO	Ant1	5300	52Tone	RU39	14.520	5294.920	5309.440	
11AX20SISO	Ant1	5300	106Tone	RU53	18.400	5289.640	5308.040	
11AX20SISO	Ant1	5320	26Tone	RU8	18.800	5311.800	5330.600	
11AX20SISO	Ant1	5320	52Tone	RU40	10.480	5320.040	5330.520	
11AX20SISO	Ant1	5320	106Tone	RU54	17.840	5312.480	5330.320	
11AX20SISO	Ant1	5500	26Tone	RU0	16.000	5489.440	5505.440	
11AX20SISO	Ant1	5500	52Tone	RU37	8.640	5489.520	5498.160	
11AX20SISO	Ant1	5500	106Tone	RU53	19.360	5489.320	5508.680	
11AX20SISO	Ant1	5580	26Tone	RU4	13.120	5572.600	5585.720	
11AX20SISO	Ant1	5580	52Tone	RU39	10.080	5577.920	5588.000	
11AX20SISO	Ant1	5580	106Tone	RU53	15.080	5569.400	5584.480	
11AX20SISO	Ant1	5700	26Tone	RU8	18.800	5691.680	5710.480	
11AX20SISO	Ant1	5700	52Tone	RU40	14.320	5696.360	5710.680	
11AX20SISO	Ant1	5700	106Tone	RU54	13.240	5697.080	5710.320	
11AX20SISO	Ant1	5745	26Tone	RU0	14.120	5734.640	5748.760	
11AX20SISO	Ant1	5745	52Tone	RU37	18.560	5734.600	5753.160	
11AX20SISO	Ant1	5745	106Tone	RU53	19.880	5734.280	5754.160	
11AX20SISO	Ant1	5785	26Tone	RU4	7.040	5781.080	5788.120	
11AX20SISO	Ant1	5785	52Tone	RU39	10.680	5782.120	5792.800	
11AX20SISO	Ant1	5785	106Tone	RU53	14.080	5774.280	5788.360	
11AX20SISO	Ant1	5825	26Tone	RU8	15.760	5819.560	5835.320	
11AX20SISO	Ant1	5825	52Tone	RU40	19.480	5816.000	5835.480	
11AX20SISO	Ant1	5825	106Tone	RU54	18.880	5816.720	5835.600	

Test Result_6dB Bandwidth

U-NII-3

Test Mode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	10.160	5739.880	5750.040	0.5	PASS
11A	Ant1	5785	13.480	5777.360	5790.840	0.5	PASS
11A	Ant1	5825	15.600	5817.120	5832.720	0.5	PASS
11N20SISO	Ant1	5745	8.560	5738.680	5747.240	0.5	PASS
11N20SISO	Ant1	5785	12.600	5779.920	5792.520	0.5	PASS
11N20SISO	Ant1	5825	9.760	5818.680	5828.440	0.5	PASS
11AC20SISO	Ant1	5745	6.160	5741.320	5747.480	0.5	PASS



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-							
11AC20SISO	Ant1	5785	14.080	5776.840	5790.920	0.5	PASS
11AC20SISO	Ant1	5825	14.960	5817.520	5832.480	0.5	PASS
11AX20SISO	Ant1	5745	15.160	5738.600	5753.760	0.5	PASS
11AX20SISO	Ant1	5785	15.120	5778.600	5793.720	0.5	PASS
11AX20SISO	Ant1	5825	13.080	5816.640	5829.720	0.5	PASS

Test Result_99% Bandwidth

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.763	5171.5872	5188.3502		
11A	Ant1	5220	16.733	5211.5649	5228.2979		
11A	Ant1	5240	16.710	5231.6576	5248.3676		
11A	Ant1	5260	16.840	5251.5954	5268.4354		
11A	Ant1	5300	16.757	5291.6146	5308.3716		
11A	Ant1	5320	16.757	5311.5265	5328.2835		
11A	Ant1	5500	16.802	5491.6091	5508.4111		
11A	Ant1	5580	16.721	5571.5888	5588.3098		
11A	Ant1	5700	16.605	5691.6756	5708.2806		
11A	Ant1	5720	16.771	5711.5307	5728.3017		
11A	Ant1	5720_UNII-2C	13.469	5711.5307	5725		
11A	Ant1	5720_UNII-3	3.302	5725	5728.3017		
11A	Ant1	5745	16.827	5736.5846	5753.4116		
11A	Ant1	5785	16.818	5776.5553	5793.3733		
11A	Ant1	5825	16.938	5816.4572	5833.3952		
11N20SISO	Ant1	5180	17.943	5170.9741	5188.9171		
11N20SISO	Ant1	5220	17.986	5210.9913	5228.9773		
11N20SISO	Ant1	5240	17.891	5231.0187	5248.9097		
11N20SISO	Ant1	5260	17.744	5251.1238	5268.8678		
11N20SISO	Ant1	5300	17.877	5291.0905	5308.9675		
11N20SISO	Ant1	5320	17.968	5310.9956	5328.9636		
11N20SISO	Ant1	5500	17.812	5491.1100	5508.9220		
11N20SISO	Ant1	5580	17.972	5571.0018	5588.9738		
11N20SISO	Ant1	5700	17.800	5691.1152	5708.9152		
11N20SISO	Ant1	5720	17.872	5711.0198	5728.8918		
11N20SISO	Ant1	5720_UNII-2C	13.98	5711.0198	5725		
11N20SISO	Ant1	5720_UNII-3	3.892	5725	5728.8918		
11N20SISO	Ant1	5745	17.859	5736.0771	5753.9361		
11N20SISO	Ant1	5785	17.918	5775.9795	5793.8975		
11N20SISO	Ant1	5825	17.821	5816.0858	5833.9068		
11AC20SISO	Ant1	5180	17.919	5171.0172	5188.9362		



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11AC20SISO	Ant1	5220	17.913	5211.0296	5228.9426	
11AC20SISO	Ant1	5240	17.913	5231.0019	5248.9149	
11AC20SISO	Ant1	5260	17.930	5251.0046	5268.9346	
11AC20SISO	Ant1	5300	17.954	5291.0612	5309.0152	
11AC20SISO	Ant1	5320	17.887	5311.0324	5328.9194	
11AC20SISO	Ant1	5500	17.933	5491.0308	5508.9638	
11AC20SISO	Ant1	5580	17.812	5571.1153	5588.9273	
11AC20SISO	Ant1	5700	17.843	5691.0600	5708.9030	
11AC20SISO	Ant1	5720	17.939	5711.0088	5728.9478	
11AC20SISO	Ant1	5720_UNII-2C	13.991	5711.0088	5725	
11AC20SISO	Ant1	5720_UNII-3	3.948	5725	5728.9478	
11AC20SISO	Ant1	5745	17.933	5736.0226	5753.9556	
11AC20SISO	Ant1	5785	17.811	5776.0472	5793.8582	
11AC20SISO	Ant1	5825	17.795	5816.0603	5833.8553	
11AX20SISO	Ant1	5180	19.004	5170.4596	5189.4636	
11AX20SISO	Ant1	5220	18.958	5210.5277	5229.4857	
11AX20SISO	Ant1	5240	19.076	5230.4418	5249.5178	
11AX20SISO	Ant1	5260	19.039	5250.4996	5269.5386	
11AX20SISO	Ant1	5300	19.027	5290.4252	5309.4522	
11AX20SISO	Ant1	5320	19.040	5310.4448	5329.4848	
11AX20SISO	Ant1	5500	18.971	5490.4719	5509.4429	
11AX20SISO	Ant1	5580	19.019	5570.4957	5589.5147	
11AX20SISO	Ant1	5700	19.015	5690.4722	5709.4872	
11AX20SISO	Ant1	5720	19.101	5710.4220	5729.5230	
11AX20SISO	Ant1	5720_UNII-2C	14.578	5710.4220	5725	
11AX20SISO	Ant1	5720_UNII-3	4.523	5725	5729.5230	
11AX20SISO	Ant1	5745	18.963	5735.4950	5754.4580	
11AX20SISO	Ant1	5785	19.038	5775.4551	5794.4931	
11AX20SISO	Ant1	5825	19.030	5815.4963	5834.5263	

Test Result for AX Part RU_99% Bandwidth

Test	Antonno		Ru	Ru		FL	FH	Limit	Vordiot
Mode	Antenna	Frequency[MHz]	Size	Index	OCB [MHz]	[MHz]	[MHz]	[MHz]	Verdict
11AX20SISO	Ant1	5180	26Tone	RU0	18.435	5170.1691	5188.6041		
11AX20SISO	Ant1	5180	52Tone	RU37	12.505	5170.2252	5182.7302		
11AX20SISO	Ant1	5180	106Tone	RU53	16.809	5170.3429	5187.1519		
11AX20SISO	Ant1	5220	26Tone	RU4	5.2796	5217.1231	5222.4027		
11AX20SISO	Ant1	5220	52Tone	RU39	14.592	5212.1562	5226.7482		
11AX20SISO	Ant1	5220	106Tone	RU53	17.203	5210.3479	5227.5509		

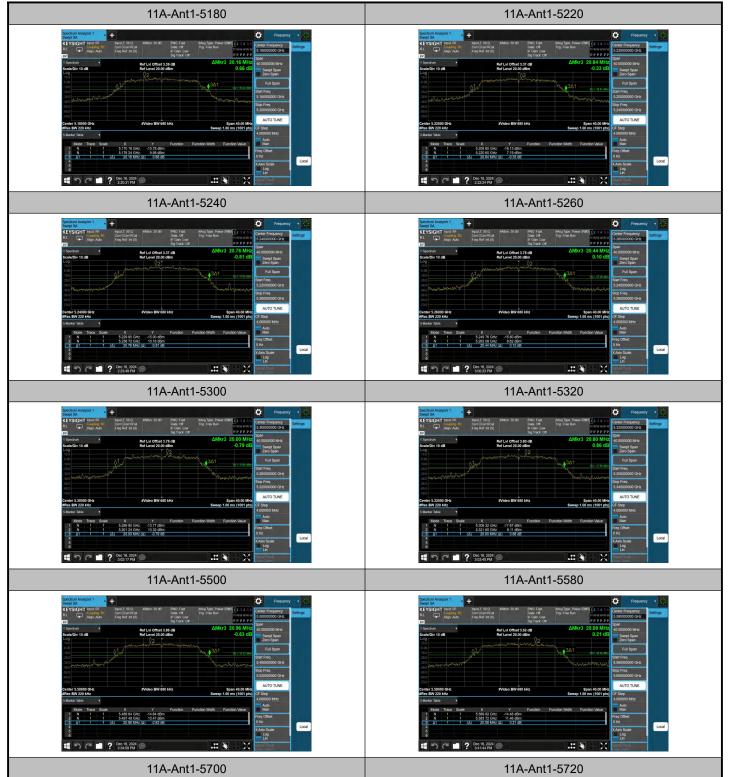


Test Report

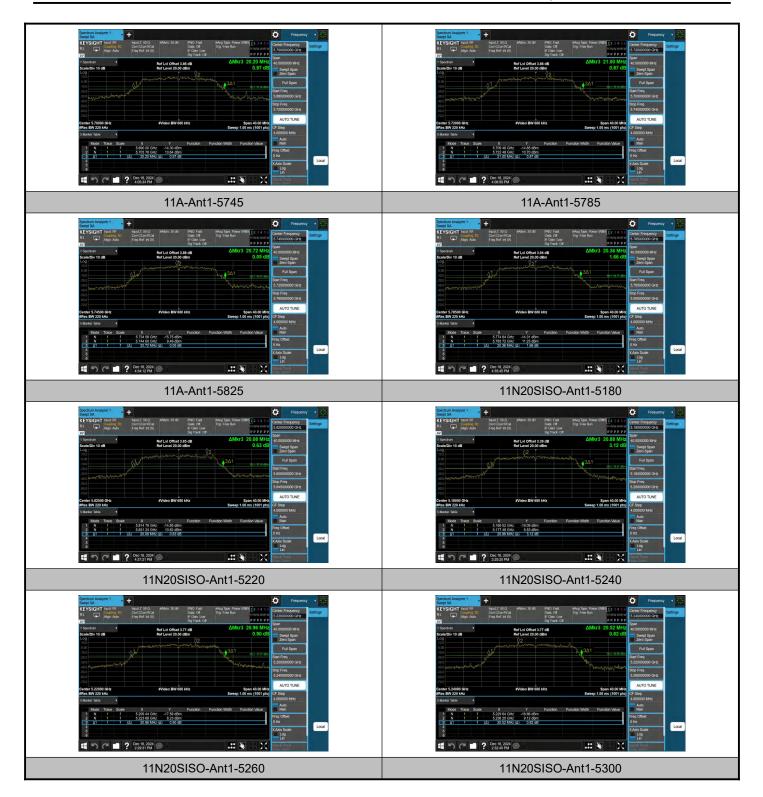
11AX20SISO	Ant1	5240	26Tone	RU8	18.118	5231.7409	5249.8589	
11AX20SISO	Ant1	5240	52Tone	RU40	10.188	5239.5885	5249.7765	
11AX20SISO	Ant1	5240	106Tone	RU54	17.859	5231.7970	5249.6560	
11AX20SISO	Ant1	5260	26Tone	RU0	4.9437	5250.0790	5255.0227	
11AX20SISO	Ant1	5260	52Tone	RU37	13.371	5250.2124	5263.5834	
11AX20SISO	Ant1	5260	106Tone	RU53	15.487	5250.3542	5265.8412	
11AX20SISO	Ant1	5300	26Tone	RU4	11.504	5291.4043	5302.9083	
11AX20SISO	Ant1	5300	52Tone	RU39	12.182	5294.9225	5307.1045	
11AX20SISO	Ant1	5300	106Tone	RU53	17.840	5290.3572	5308.1972	
11AX20SISO	Ant1	5320	26Tone	RU8	16.474	5313.5302	5330.0042	
11AX20SISO	Ant1	5320	52Tone	RU40	18.338	5311.3518	5329.6898	
11AX20SISO	Ant1	5320	106Tone	RU54	18.161	5311.4428	5329.6038	
11AX20SISO	Ant1	5500	26Tone	RU0	4.7467	5490.0702	5494.8169	
11AX20SISO	Ant1	5500	52Tone	RU37	5.6358	5490.2597	5495.8955	
11AX20SISO	Ant1	5500	106Tone	RU53	10.184	5490.3018	5500.4858	
11AX20SISO	Ant1	5580	26Tone	RU4	10.241	5572.2752	5582.5162	
11AX20SISO	Ant1	5580	52Tone	RU39	12.169	5573.5974	5585.7664	
11AX20SISO	Ant1	5580	106Tone	RU53	14.846	5570.3470	5585.1930	
11AX20SISO	Ant1	5700	26Tone	RU8	16.252	5693.5880	5709.8400	
11AX20SISO	Ant1	5700	52Tone	RU40	17.367	5692.3634	5709.7304	
11AX20SISO	Ant1	5700	106Tone	RU54	8.8837	5700.7655	5709.6492	
11AX20SISO	Ant1	5745	26Tone	RU0	4.2426	5735.0086	5739.2512	
11AX20SISO	Ant1	5745	52Tone	RU37	15.625	5735.2882	5750.9132	
11AX20SISO	Ant1	5745	106Tone	RU53	12.027	5735.2963	5747.3233	
11AX20SISO	Ant1	5785	26Tone	RU4	13.115	5779.8198	5792.9348	
11AX20SISO	Ant1	5785	52Tone	RU39	5.8764	5785.1387	5791.0151	
11AX20SISO	Ant1	5785	106Tone	RU53	18.221	5775.3148	5793.5358	
11AX20SISO	Ant1	5825	26Tone	RU8	4.4901	5830.3156	5834.8057	
11AX20SISO	Ant1	5825	52Tone	RU40	16.171	5818.5587	5834.7297	
11AX20SISO	Ant1	5825	106Tone	RU54	16.175	5818.4477	5834.6227	



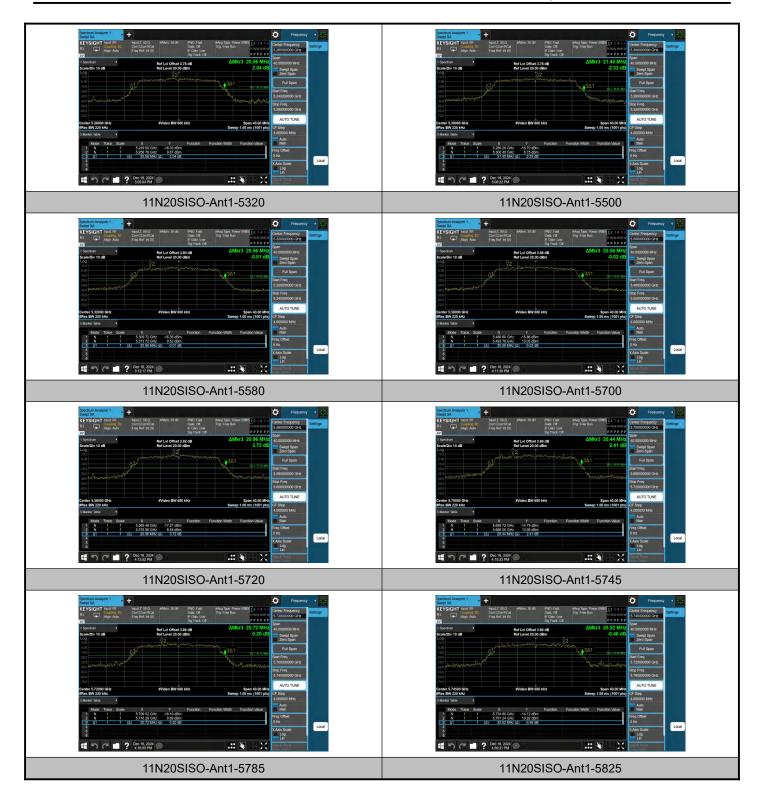
Test Graphs_26dB Bandwidth



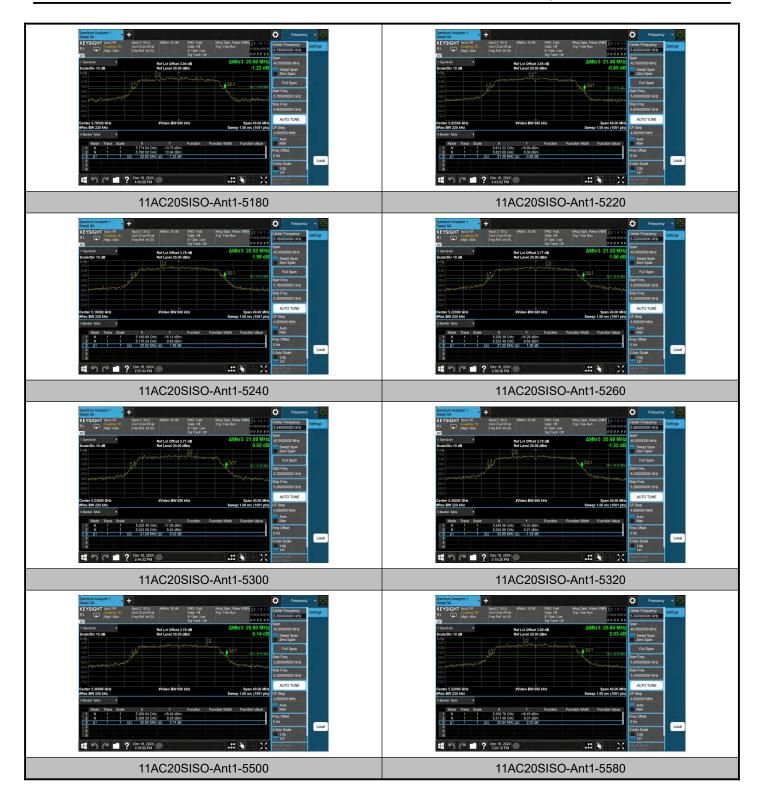




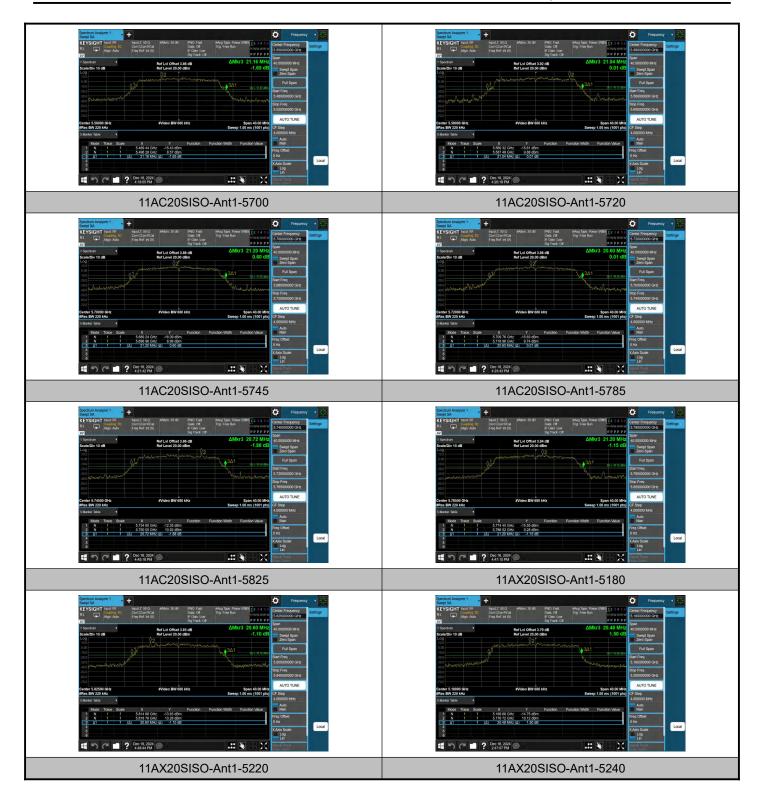




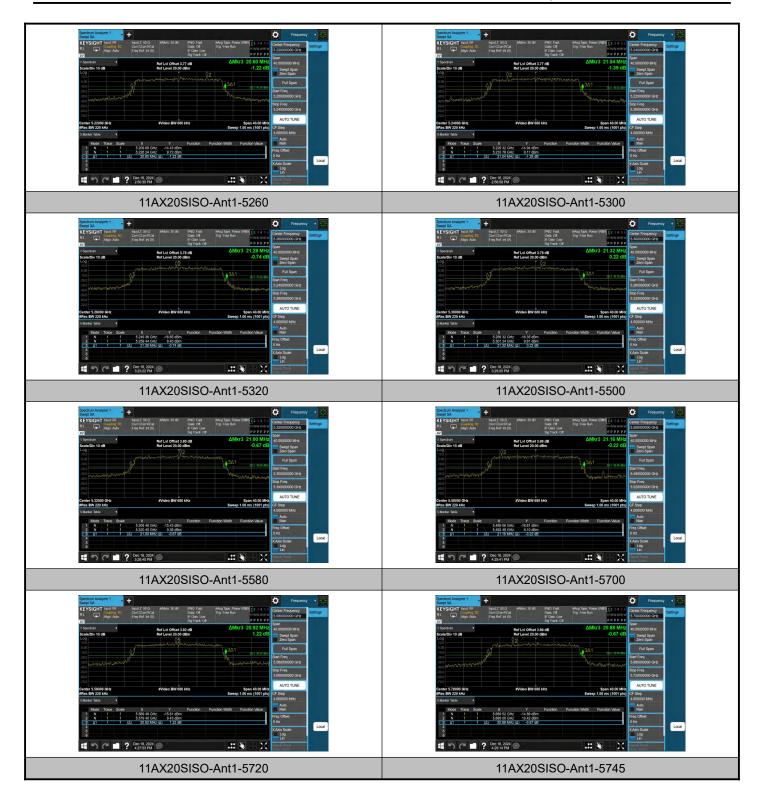














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Test Graphs for AX Part RU_26dB Bandwidth

