

# TEST REPORT

**Product Name** : Exos Cinema System  
**Model Number** : See Page 5 for details  
**FCC ID** : 2AYB7696AI7200N

Prepared for : SOLAR BRIGHT INDUSTRIAL LIMITED  
Address : RM 807 8/F SHING YIP IND. BLDG., 19-21 SHING YIP  
STREET, KWUN TONG, KL., HONG KONG.

Prepared by : EMTEK (SHENZHEN) CO., LTD.  
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Report Number : ENS2506050057W00203R  
Date(s) of Tests : June 5, 2025 to July 28, 2025  
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## Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ENS2506050057W00203R	/	Original Report

## 1 TEST RESULT CERTIFICATION

Applicant : SOLAR BRIGHT INDUSTRIAL LIMITED  
 Address : RM 807 8/F SHING YIP IND. BLDG., 19-21 SHING YIP STREET, KWUN TONG, KL., HONG KONG.  
 Manufacturer : SOLAR BRIGHT INDUSTRIAL LIMITED  
 Address : RM 807 8/F SHING YIP IND. BLDG., 19-21 SHING YIP STREET, KWUN TONG, KL., HONG KONG.  
 EUT : Exos Cinema System  
 Model Name : See Page 5 for details  
 Trademark : AIWA, REGENT, MODERN

**Measurement Procedure Used:**

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J	
FCC 47 CFR Part 15, Subpart E	PASS

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the above table standards requirement.

The test results of this report relate only to the tested sample identified in this report.

Date of Test : June 5, 2025 to July 28, 2025  
 Prepared by :   
 Una Yu/Editor  
 Reviewer :   
 Joe Xia/Supervisor  
 Approved & Authorized Signer :   
 Lisa Wang/Manager 

## Declaration on model difference

Production name	Trade mark	Model no.
Exos Cinema System	AIWA, REGENT, MODERN	RG261, MD261, AI7200N-BLK, AI7200N-BLK-STK, AI7200N-BLK-STK-2, AI7200N-TL, AI7200N-TL-STK, AI7200N-TL-STK-2, AI7200N-NVY, AI7200N-NVY-STK, AI7200N-NVY-STK-2, AI7200N-RG, AI7200N-RG-STK, AI7200N-RG-STK-2, AI7200N-GRY, AI7200N-GRY-STK, AI7200N-GRY-STK-2, AI7200N-BUR, AI7200N-BUR-STK, AI7200N-BUR-STK-2, AI7200N-RED, AI7200N-RED-STK, AI7200N-RED-STK-2, AI7200N-WHT, AI7200N-WHT-STK, AI7200N-WHT-STK-2, AI7200N-MT, AI7200N-MT-STK, AI7200N-MT-STK-2, AI7200N-EGRN, AI7200N-EGRN-STK, AI7200N-EGRN-STK-2, AI7200N-DNVY, AI7200N-DNVY-STK, AI7200N-DNVY-STK-2, AI7200N-FGRN, AI7200N-FGRN-STK, AI7200N-FGRN-STK-2, AI7200N-BGE, AI7200N-BGE-STK, AI7200N-BGE-STK-2, AI7200N-TRD, AI7200N-TRD-STK, AI7200N-TRD-STK-2, AI7200N-MCHA, AI7200N-MCHA-STK, AI7200N-MCHA-STK-2, AI7200N-XX, AI7200N-XX-STK, AI7200N-XX-STK-2, (XX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200N-XXX, AI7200N-XXX-STK, AI7200N-XXX-STK-2, (XXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200N-XXXX, AI7200N-XXXX-STK, AI7200N-XXXX-STK-2, (XXXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200-XX, AI7200-XX-STK, AI7200-XX-STK-2, (XX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200-XXX, AI7200-XXX-STK, AI7200-XXX-STK-2, (XXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200-XXXX, AI7200-XXXX-STK, AI7200-XXXX-STK-2, (XXXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200N-PERI, AI7200N-PERI-STK, AI7200N-PERI-STK-2, AI7200N-XX-T37, AI7200N-XX-T37-2 (XX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200N-XXX-T37, AI7200N-XXX-T37-2(XXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200N-XXXX-T37, AI7200N-XXXX-T37-2(XXXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200-XX-T37, AI7200-XX-T37-2(XX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200-XXX-T37, AI7200-XXX-T37-2(XXX denote 0-9, A-Z or N/A to represent variances in cosmetic), AI7200-XXXX-T37, AI7200-XXXX-T37-2(XXXX denote 0-9, A-Z or N/A to represent variances in cosmetic)
Note: N/A		

## 2 EUT TECHNICAL DESCRIPTION

<b>Product Name:</b>	Exos Cinema System
<b>Model Number:</b>	See Page 5 for details (Note: All models are identical in circuitry and electrical, mechanical and physical construction; the difference are color and model number for trading purpose. Mode RG261 was Chosen final test.)
<b>WIFI Type:</b>	UNII-1: 5150MHz-5250MHz Band UNII-2A: 5250MHz-5350MHz Band UNII-2C: 5470MHz-5725MHz Band UNII-3: 5725MHz-5850MHz Band
<b>WLAN Supported:</b>	IEEE 802.11a IEEE 802.11n(20MHz channel bandwidth) IEEE 802.11n(40MHz channel bandwidth)
<b>Frequency Range:</b>	5150MHz-5250MHz Band: 5180-5240MHz for 802.11a 5180-5240MHz for 802.11n(HT20) 5190-5230MHz for 802.11n(HT40)  5725MHz-5850MHz Band: 5745-5825MHz for 802.11a 5745-5825MHz for 802.11n(HT20) 5755-5795MHz for 802.11n(HT40)
<b>Modulation:</b>	OFDM
<b>TPC Function:</b>	Not Support
<b>Antenna Type:</b>	FPC Antenna
<b>Antenna Gain:</b>	UNII-1:1.98 dBi, UNII-3: 2.91dBi (Note: The antenna information is provided by the customers, which will have a certain impact on the test results.)
<b>Power supply:</b>	DC 14V from adapter
<b>Adapter:</b>	MODEL:JDA1403000WUS INPUT:100-240V~50/60Hz 1.25 A OUTPUT:14.0V/3.0A
<b>Test Voltage:</b>	AC 120V/60Hz
<b>Temperature Range:</b>	0°C ~ +45°C

*Note: for more details, please refer to the user's manual of the EUT.*

### 3 SUMMARY OF TEST RESULT

FCC Part Clause	Test Parameter	Verdict	Remark
15.407 (a) 15.407 (e)	99% , 6dB and 26dB Bandwidth	PASS	
15.407 (a)	Maximum Conducted Output Power	PASS	
15.407 (a)	Peak Power Spectral Density	PASS	
15.407 (b)	Radiated Spurious Emission	PASS	
15.407 (b)(6) 15.207	Power Line Conducted Emission	PASS	
15.407(a) 15.203	Antenna Application	PASS	
NOTE1: The results of this report do not take into account the uncertainty. NOTE2: According to FCC OET KDB 789033 D2 General UNII Test Procedures New Rules v02r01, In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.			

#### RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is filing to comply with the above table standards requirement.

## 4 TEST METHODOLOGY

### 4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:  
 FCC 47 CFR Part 2, Subpart J  
 FCC 47 CFR Part 15, Subpart E  
 FCC KDB 789033 D2 General UNII Test Procedures New Rules v02r01

### 4.2 MEASUREMENT EQUIPMENT USED

#### For Conducted Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101384	2025/5/9	1Year
AMN	Rohde & Schwarz	ENV216	101161	2025/5/9	1Year

#### For Spurious Emissions Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	Bonn	BLMA 011001N	2213967A	2024/10/18	1Year
EMI Test Receiver	Rohde & Schwarz	ESR7	102551	2024/10/18	1Year
Bilog Antenna	Schwarzbeck	VULB9163	9163142	2024/7/8	2Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1198	2025/5/13	2Year
Pre-Amplifier	Bonn	BLMA 0118-5G	2213967B-01	2024/10/18	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2025/5/9	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2025/5/13	2Year
Pre-Amplifier	Lunar EM	LNA18G26-40	J1012131010 001	2025/5/9	1Year
Pre-Amplifier	Lunar EM	LNA26G40-40	J1013131028 001	2025/5/9	1Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2025/5/13	2Year
Wideband Radio Communication Tester	R&S	CMW500	171168	2024/9/18	1Year
Coaxial Cable	TIMES	NmNm-7-C1570 2	N/A	2025/5/9	1Year
Coaxial Cable	TIMES	HF290-NMSM-6. 5M	N/A	2025/5/9	1Year

#### For Other Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Wideband Radio Communication Tester	R&S	CMW500	171168	2024/9/18	1Year
Frequency Extender	R&S	CMW-Z800A	100430	2024/9/18	1Year
Spectrum Analyzer	R&S	FSV3044	101289	2024/12/17	1Year
Analog Signal Generator	R&S	SMB100A	183237	2024/9/18	1Year
Vector Signal Generator	R&S	SMM100A	101808	2024/9/18	1Year
RF Control Unit(Power Meter)	Tonscend	JS0806-2	22C8060567	2024/9/18	1Year
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2024/5/11 2025/5/10	1 Year
DC Power Supply	KEYSIGHT	E3642A	MY53030016	2024/9/18	1 Year

### 4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

#### Wifi 5G with 5150-5250MHz

Frequency and Channels list for 802.11a/n(HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220	-	-
40	5200	48	5240	-	-

Frequency and Channels list for 802.11n (HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	-	-	-	-
46	5230	-	-	-	-

**Test Frequency and Channels** for 802.11a/n(HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	48	5240

**Test Frequency and channels** for 802.11n (HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	-	-	46	5230

**Wifi 5G with 5725MHz-5850MHz**

Frequency and Channels list for 802.11a/n(HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825
153	5765	161	5805	-	-

Frequency and Channels list for 802.11n(HT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	-	-	-	-
159	5795	-	-	-	-

**Test Frequency and Channels** for 802.11a/n(HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785	165	5825

**Test Frequency and channels** for 802.11n(HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	-	-	159	5795

Multi-antenna correlation:

<input type="checkbox"/>	Transmit Signals are Correlated Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi
<input type="checkbox"/>	All Transmit Signals are Completely Uncorrelated Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi

## 5 FACILITIES AND ACCREDITATIONS

### 5.1 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged wave guide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wide band preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods".

### 5.2 LABORATORY ACCREDITATIONS AND LISTINGS

#### Site Description

EMC Lab. : **Accredited by CNAS**  
The Certificate Registration Number is L2291  
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01  
(identical to ISO/IEC 17025:2017)

#### **Accredited by FCC**

Designation Number: CN1204  
Test Firm Registration Number: 882943

#### **Accredited by A2LA**

The Certificate Number is 4321.01

#### **Accredited by Industry Canada**

The Conformity Assessment Body Identifier is CN0008

Name of Firm : EMTEK (SHENZHEN) CO., LTD.

Site Location : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

## 6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

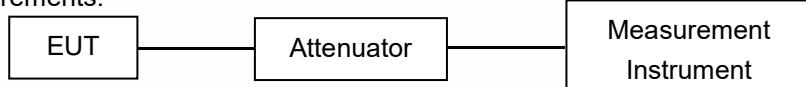
Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0 \text{dB}$
Conducted Emissions Test	$\pm 2.0 \text{dB}$
Radiated Emission Test	$\pm 2.0 \text{dB}$
Power Density	$\pm 2.0 \text{dB}$
Occupied Bandwidth Test	$\pm 1.0 \text{dB}$
Band Edge Test	$\pm 3 \text{dB}$
All emission, radiated	$\pm 3 \text{dB}$
Antenna Port Emission	$\pm 3 \text{dB}$
Temperature	$\pm 0.5 \text{ }^{\circ}\text{C}$
Humidity	$\pm 3\%$

Measurement Uncertainty for a level of Confidence of 95%.

## 7 SETUP OF EQUIPMENT UNDER TEST

### 7.1 RADIO FREQUENCY TEST SETUP

The WLAN component's antenna port(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



### 7.2 RADIO FREQUENCY TEST SETUP

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

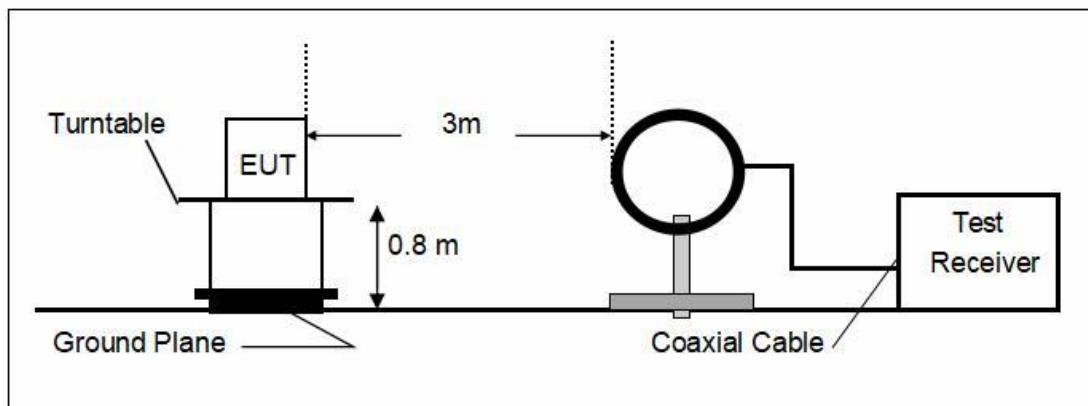
Above 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

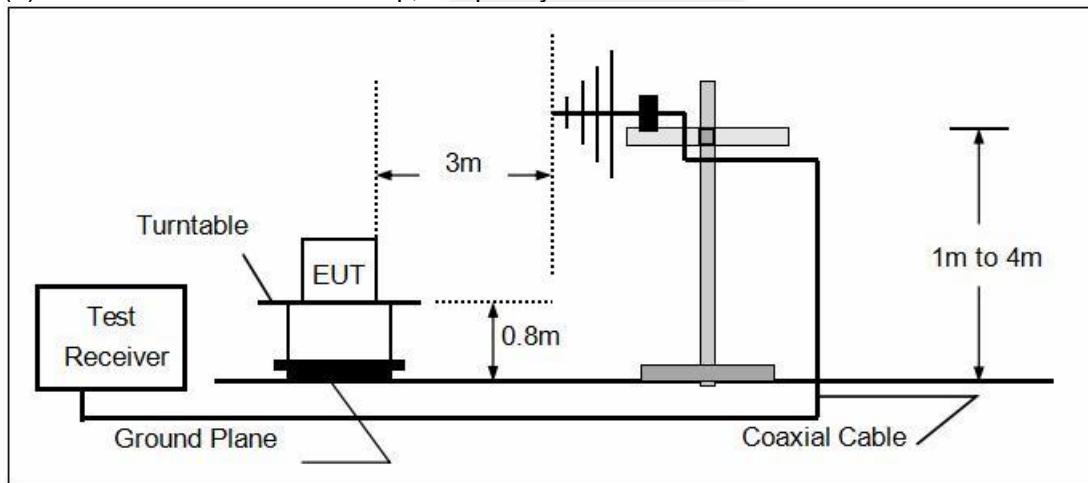
Above 1GHz:

(Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.)  
The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

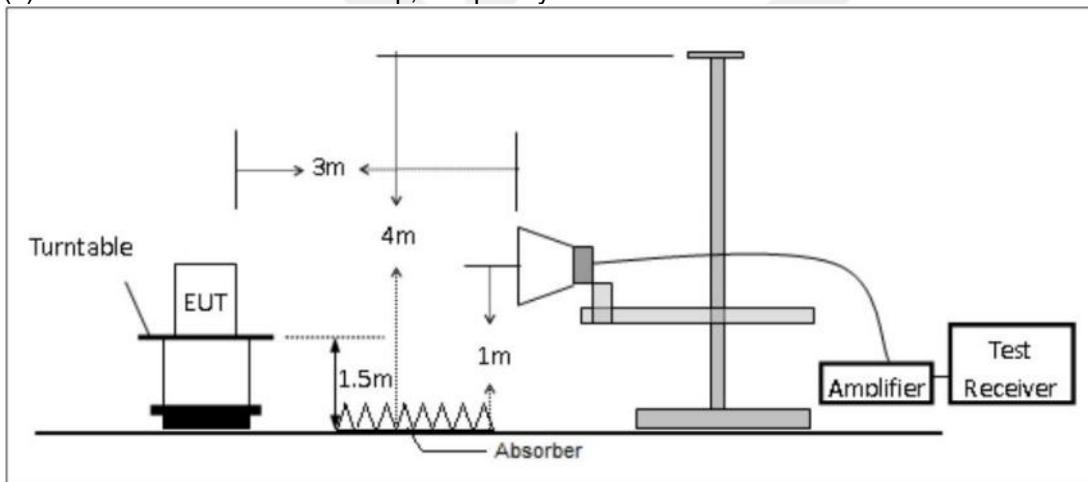
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

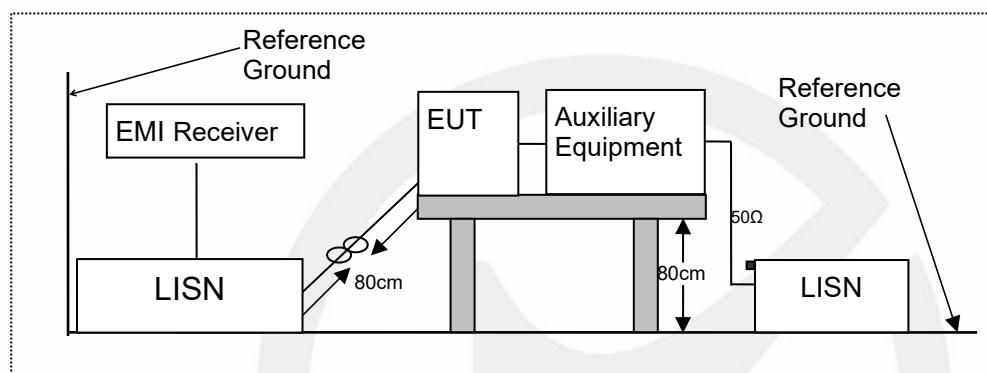


### 7.3 CONDUCTED EMISSION TEST SETUP

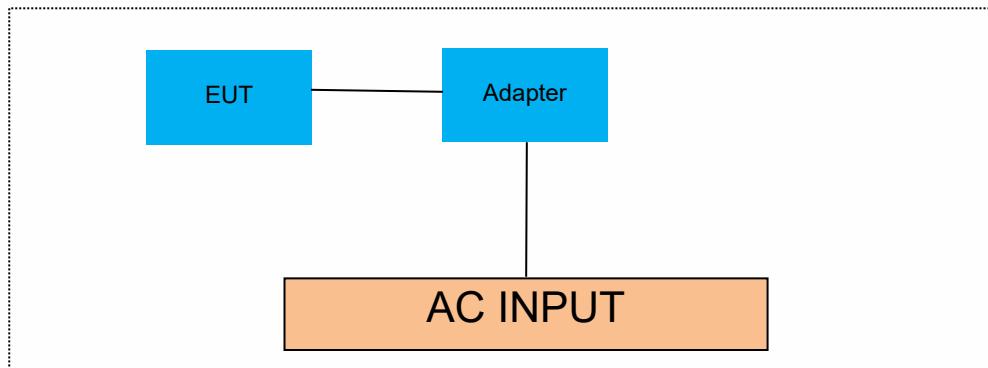
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



## 7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM



## 7.5 SUPPORT EQUIPMENT

N/A :

### Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

## 8 TEST REQUIREMENTS

### 8.1 BANDWIDTH MEASUREMENT

#### 8.1.1 Applicable Standard

- According to FCC Part 15.407(a)(1) for UNII Band I
- According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
- According to FCC Part 15.407(a)(3) for UNII Band III
- According to FCC Part 15.407(e) for UNII Band III
- According to 789033 D02 Section II(C)
- According to 789033 D02 Section II(D)

#### 8.1.2 Conformance Limit

- (1) For the band 5.15-5.25 GHz.
- (iv) For mobile and portable 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. 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.
- (e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

#### 8.1.3 Test Configuration

Test according to clause 6.1 radio frequency test setup.

#### 8.1.4 Test Procedure

According to 789033 D02 v02r01 section C&D, the following is the measurement procedure.

1. Emission Bandwidth (EBW)
  - a) Set RBW = approximately 1% of the emission bandwidth.
  - b) Set the VBW > RBW.
  - c) Detector = Peak.
  - d) Trace mode = max hold.
  - e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

## 2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.

g) 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.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

## D. 99 Percent Occupied Bandwidth

The 99-percent occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5 % of the total mean power of the given emission. Measurement of the 99-percent occupied bandwidth is required only as a condition for using the optional band-edge measurement techniques described in section II.G.3.d). Measurements of 99-percent occupied bandwidth may also optionally be used in lieu of the EBW to 789033 D02 v01r02 General UNII Test Procedures New Rules v01 define the minimum frequency range over which the spectrum is integrated when measuring maximum conducted output power as described in section II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with 15.407(a).

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW.
4. Set VBW  $\geq 3 \times$  RBW.
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

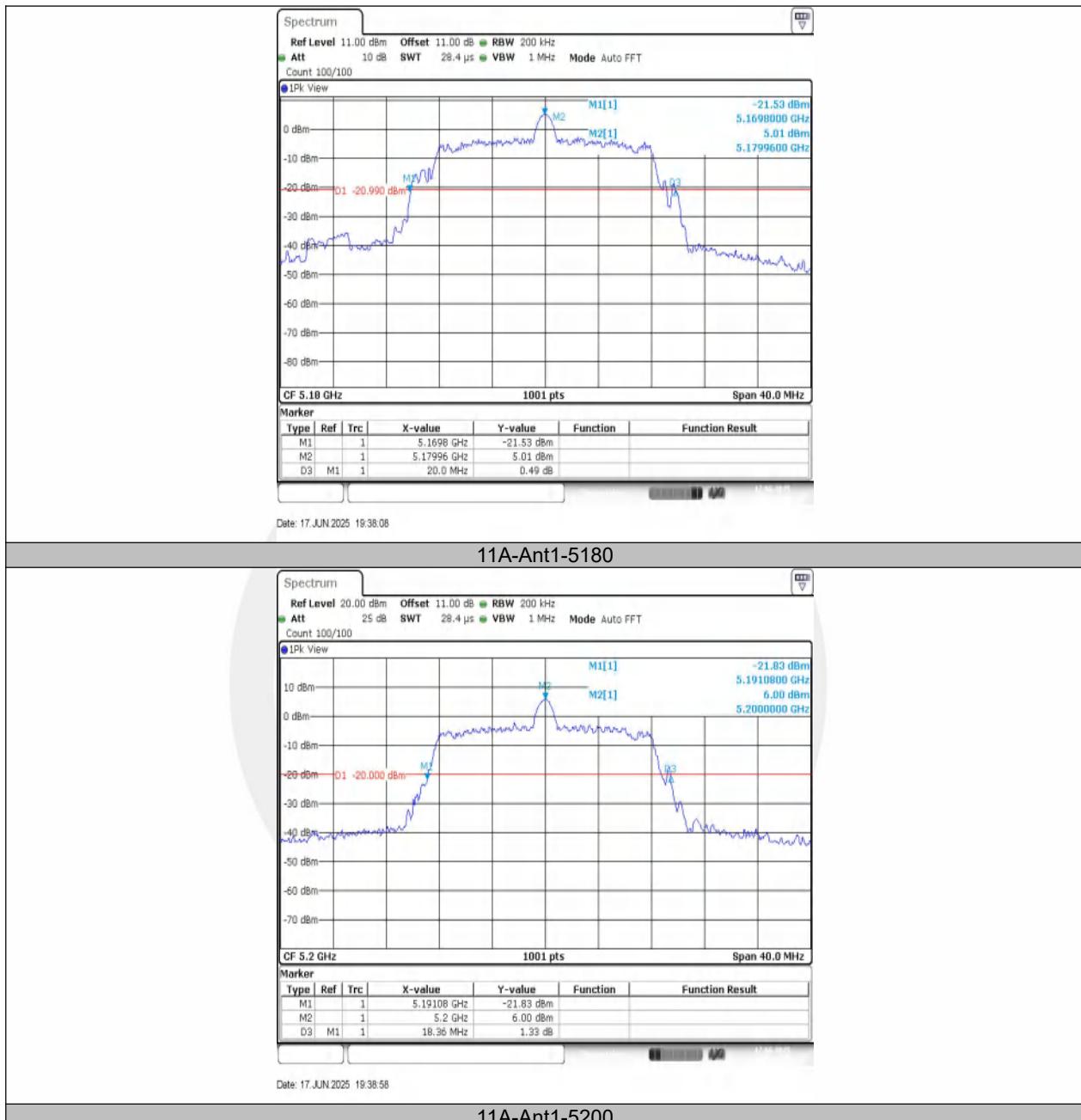
### 8.1.5 Test Results

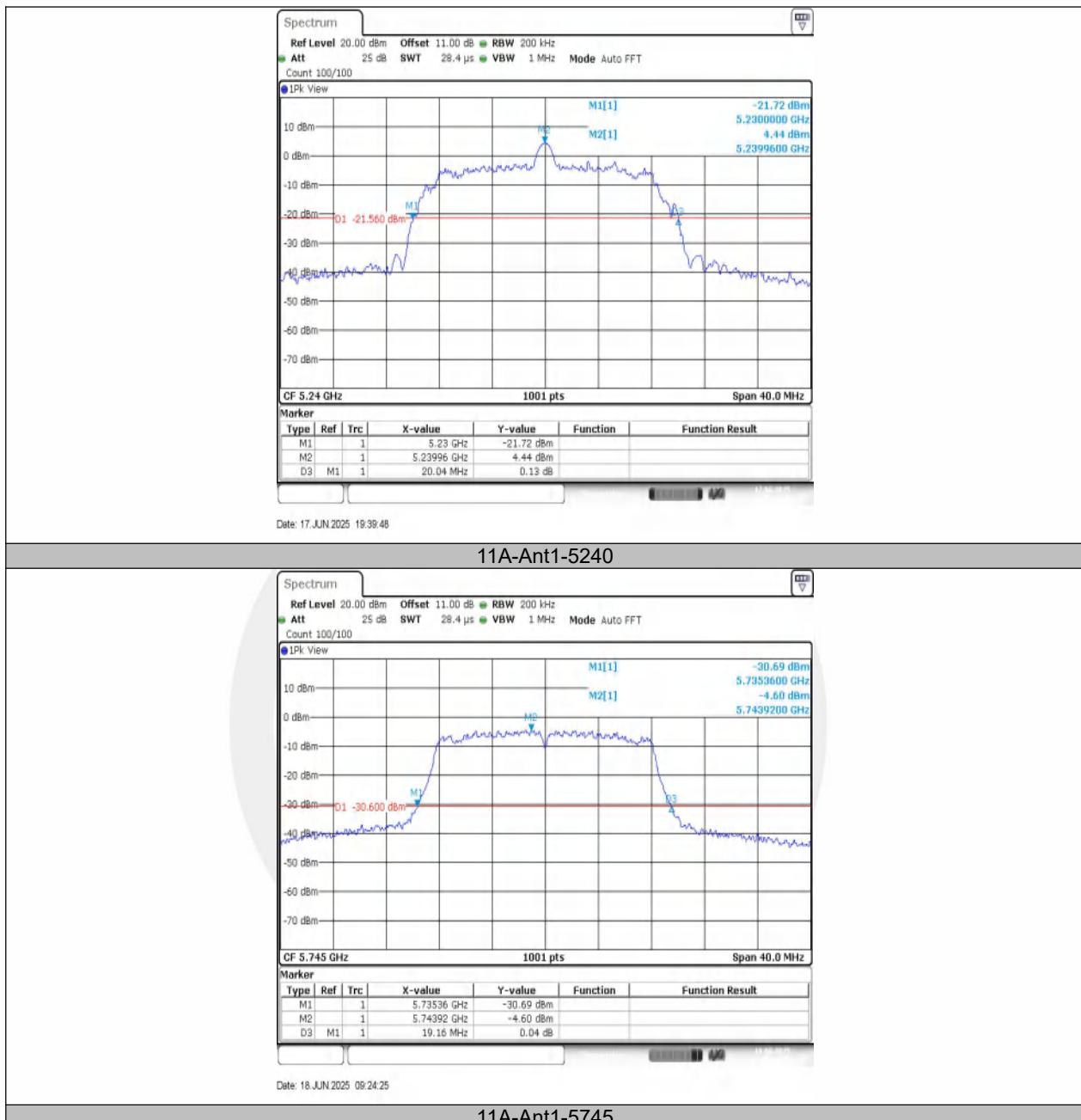
Temperature : 25°C      ATM Pressure:: 1011 mbar  
 Humidity : 45 %      Test Engineer: GJ

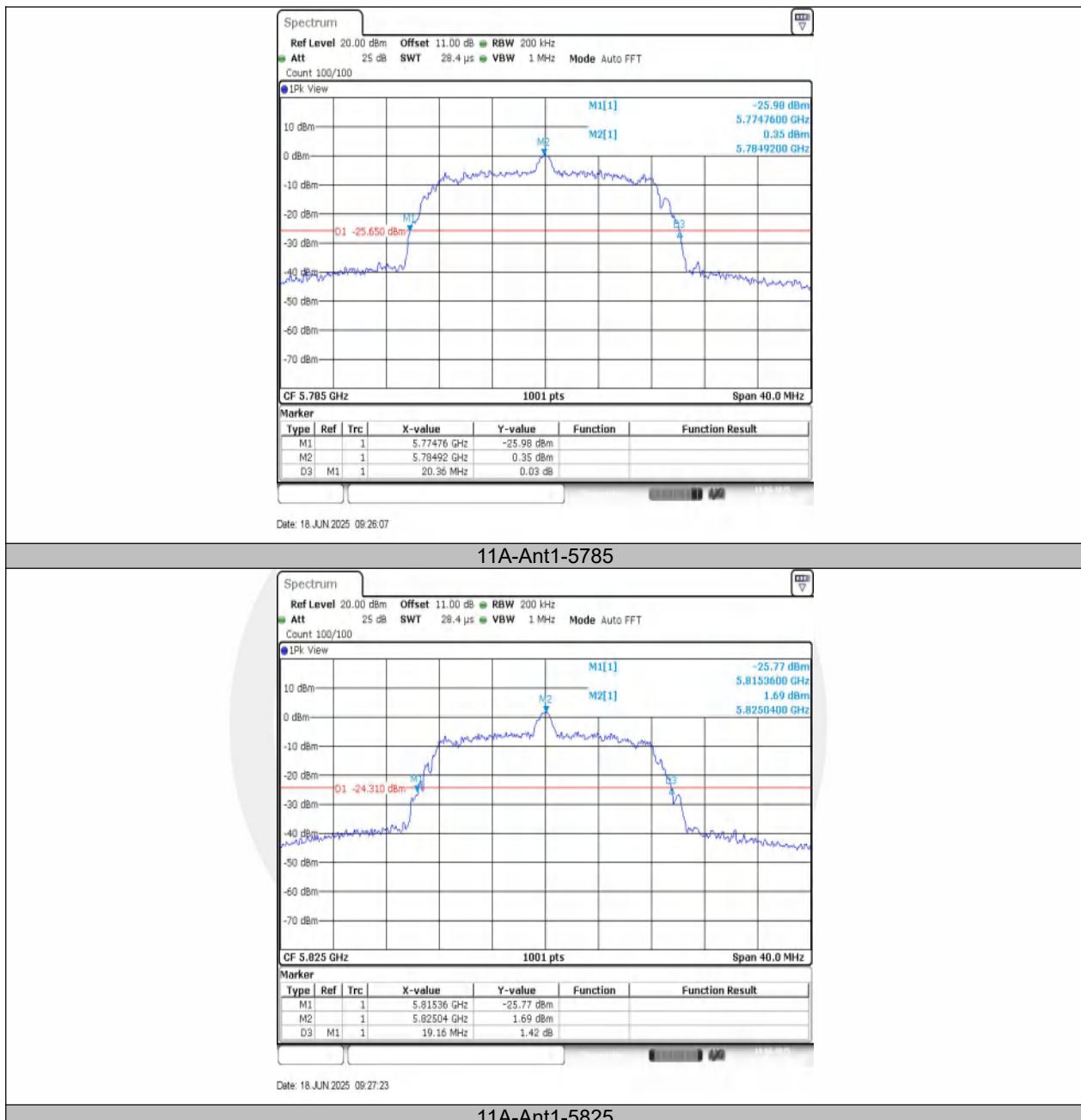
#### Emission Bandwidth (26dB)

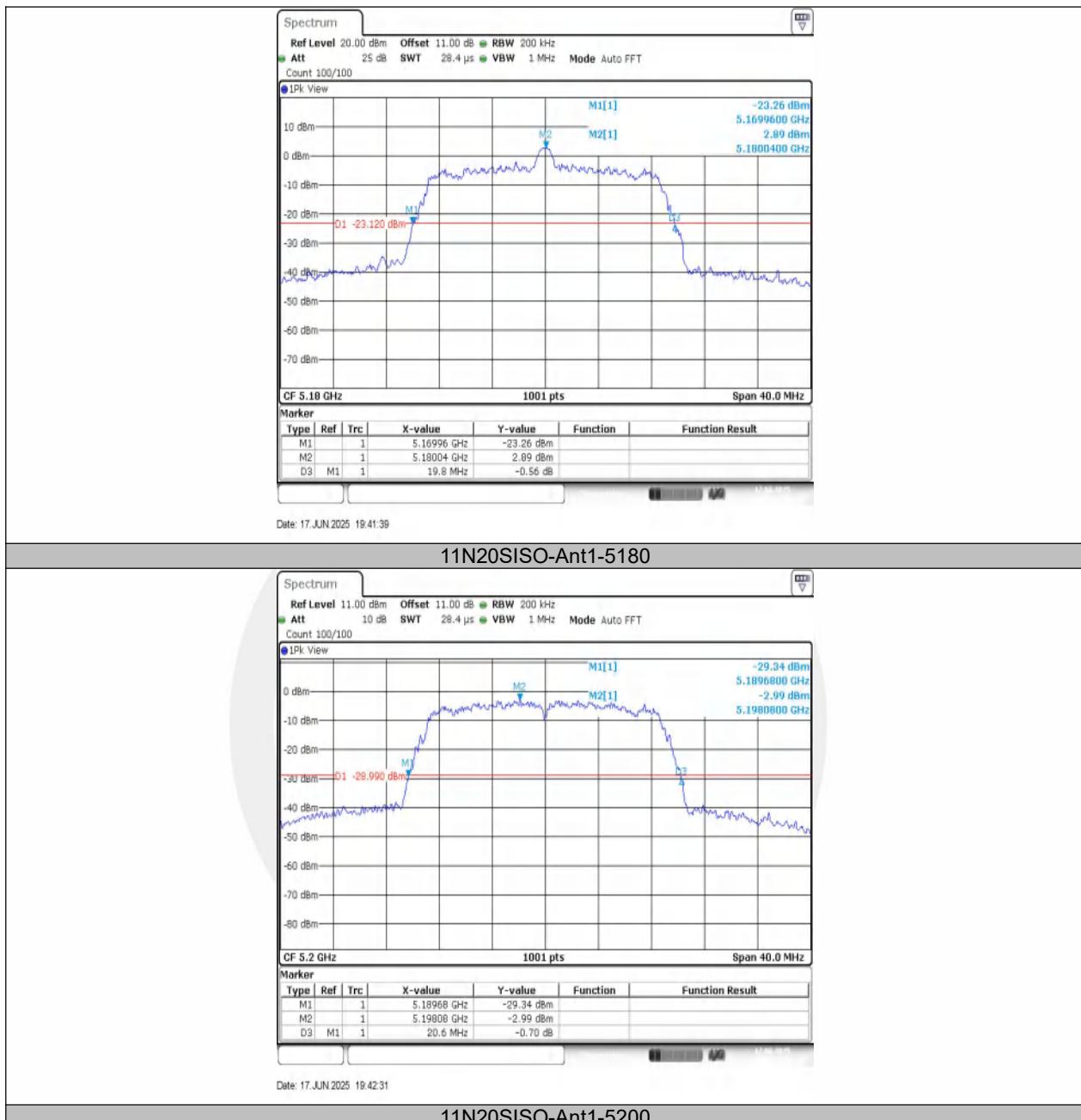
TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	20.00	5169.80	5189.80	---	---
11A	Ant1	5200	18.36	5191.08	5209.44	---	---
11A	Ant1	5240	20.04	5230.00	5250.04	---	---
11A	Ant1	5745	19.16	5735.36	5754.52	---	---
11A	Ant1	5785	20.36	5774.76	5795.12	---	---
11A	Ant1	5825	19.16	5815.36	5834.52	---	---
11N20SISO	Ant1	5180	19.80	5169.96	5189.76	---	---
11N20SISO	Ant1	5200	20.60	5189.68	5210.28	---	---
11N20SISO	Ant1	5240	20.32	5229.80	5250.12	---	---
11N20SISO	Ant1	5745	20.20	5734.88	5755.08	---	---
11N20SISO	Ant1	5785	20.64	5774.60	5795.24	---	---
11N20SISO	Ant1	5825	20.56	5814.76	5835.32	---	---
11N40SISO	Ant1	5190	39.44	5170.16	5209.60	---	---
11N40SISO	Ant1	5230	37.52	5211.20	5248.72	---	---
11N40SISO	Ant1	5755	37.60	5736.04	5773.64	---	---
11N40SISO	Ant1	5795	39.20	5775.24	5814.44	---	---

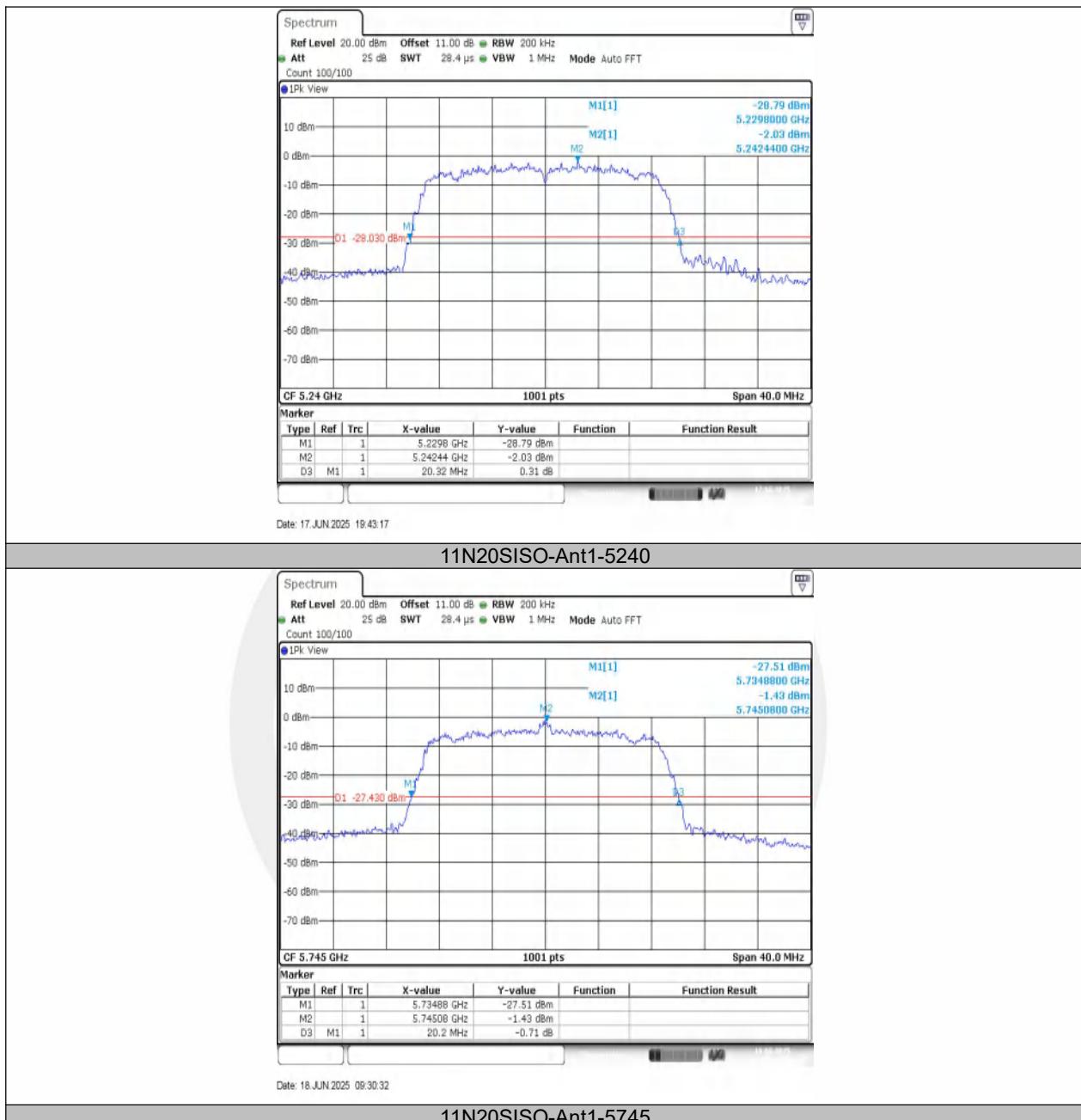
### Emission Bandwidth (26dB) Test Graphs

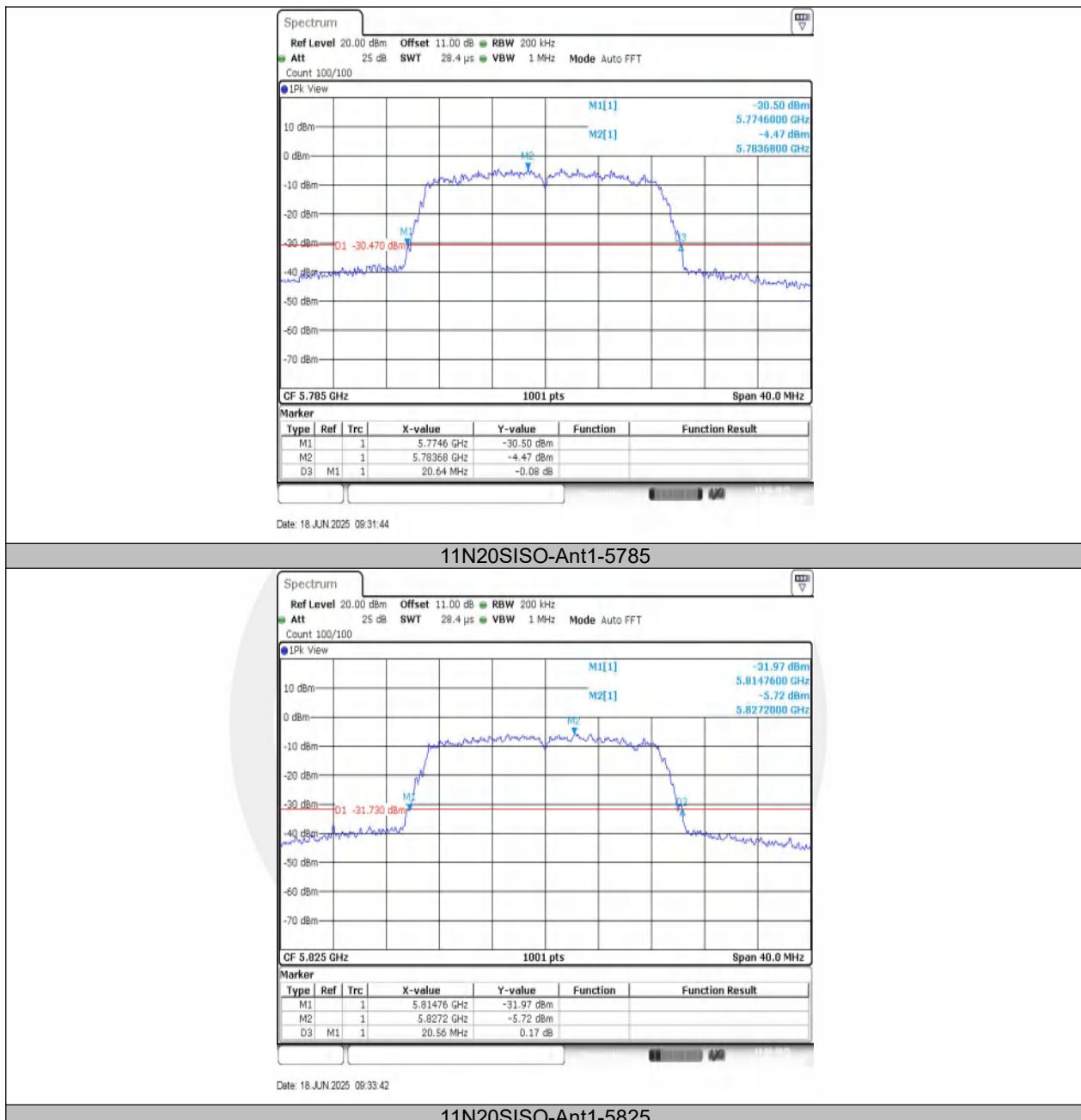


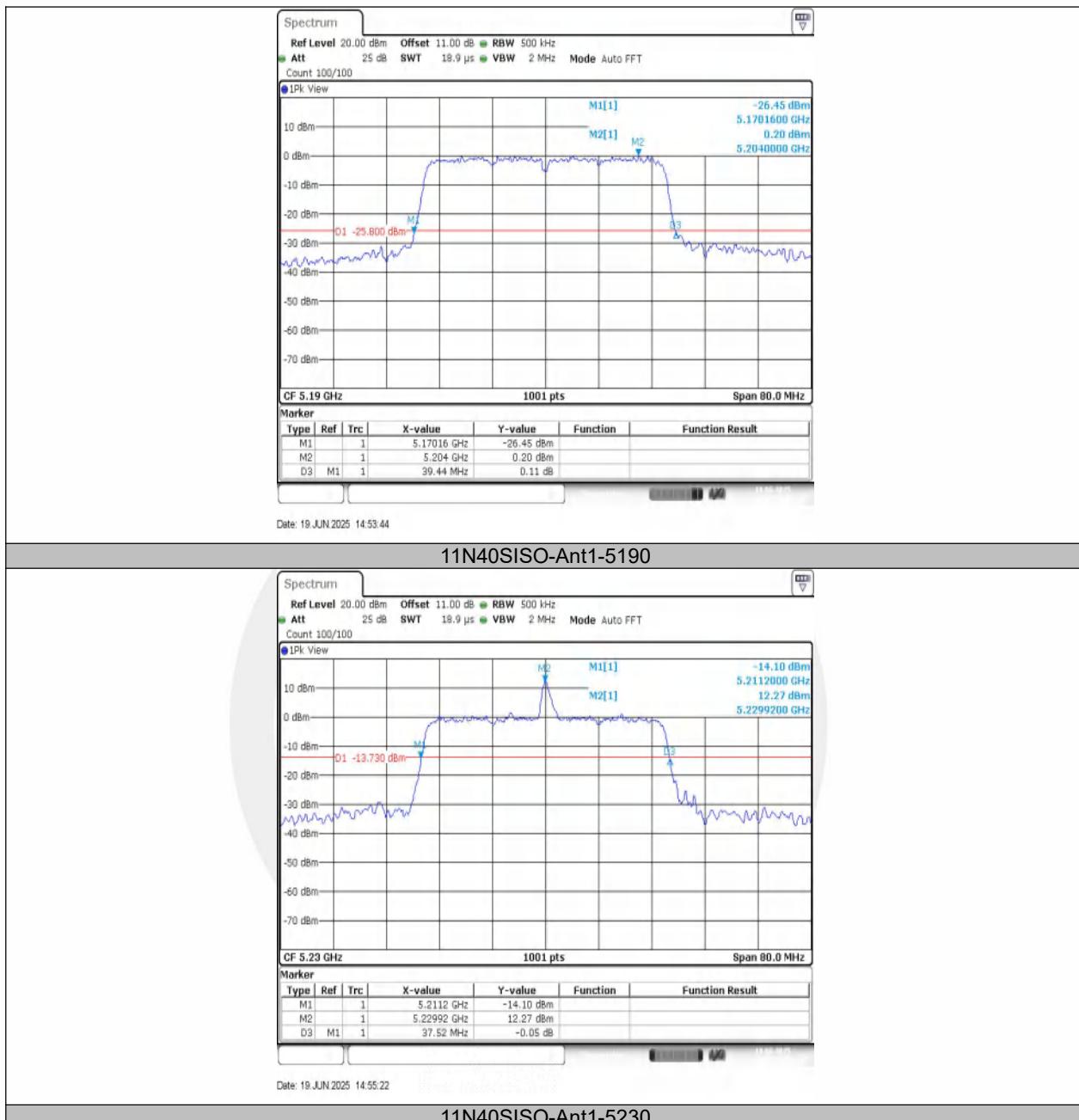


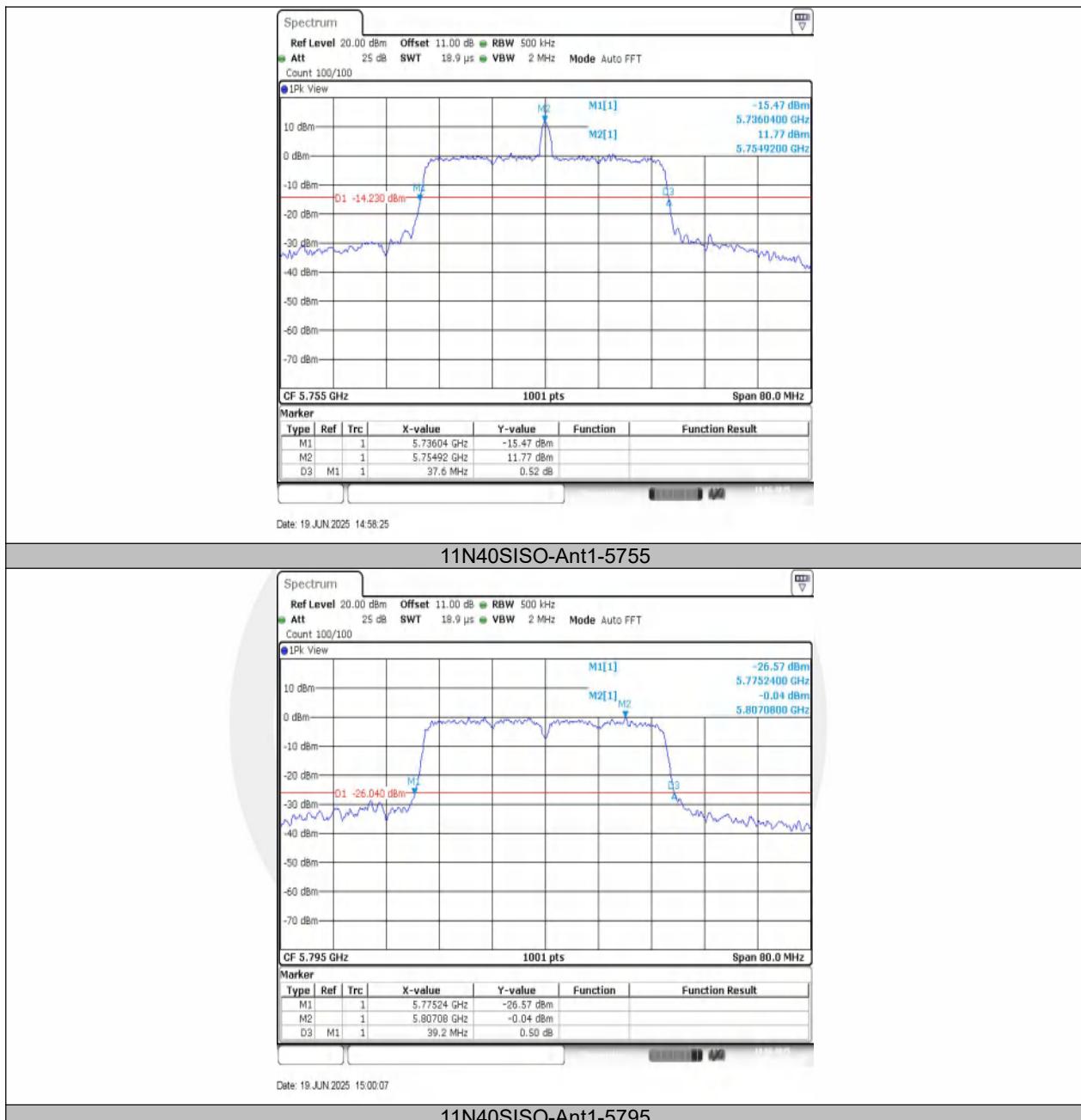








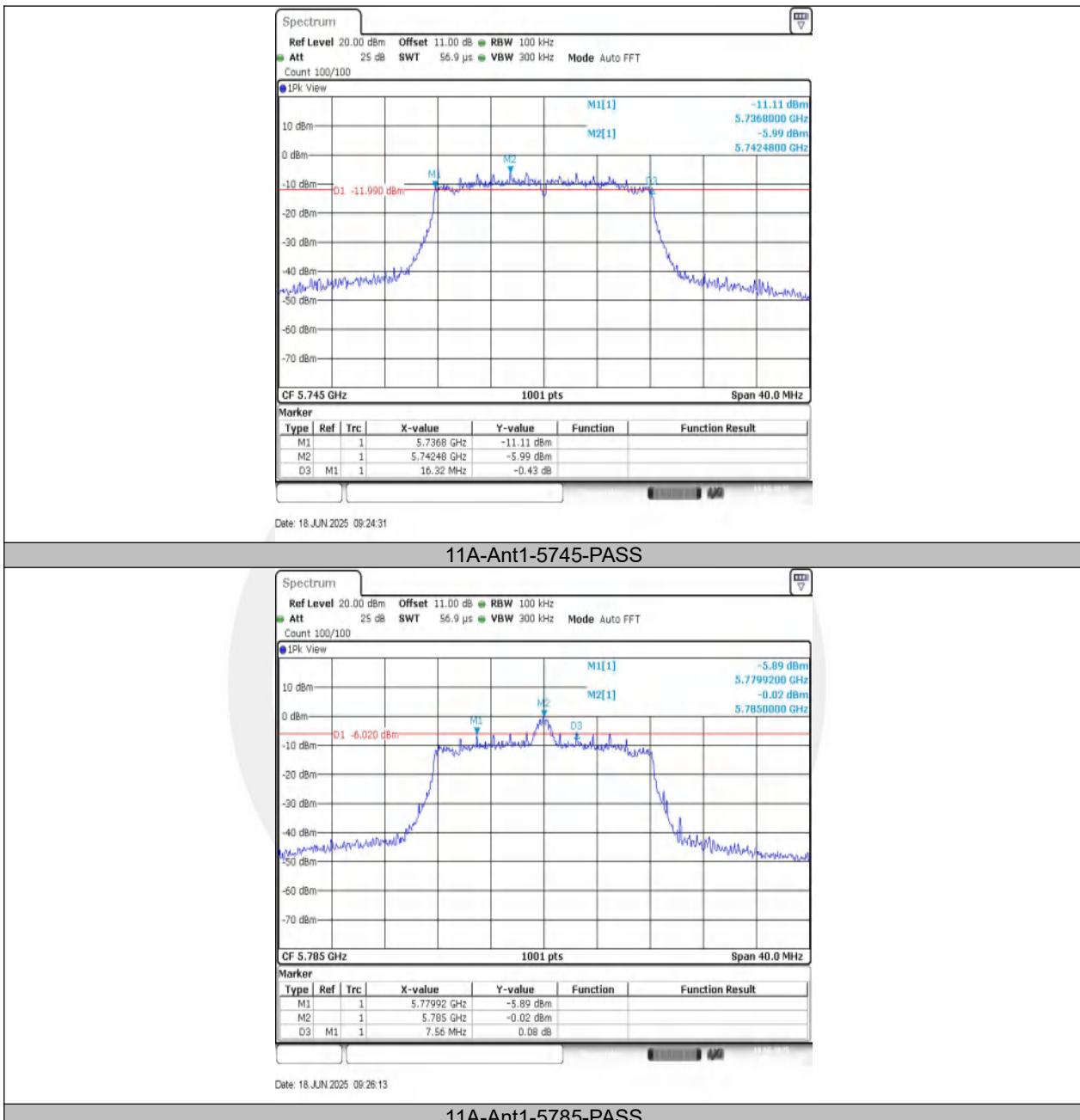


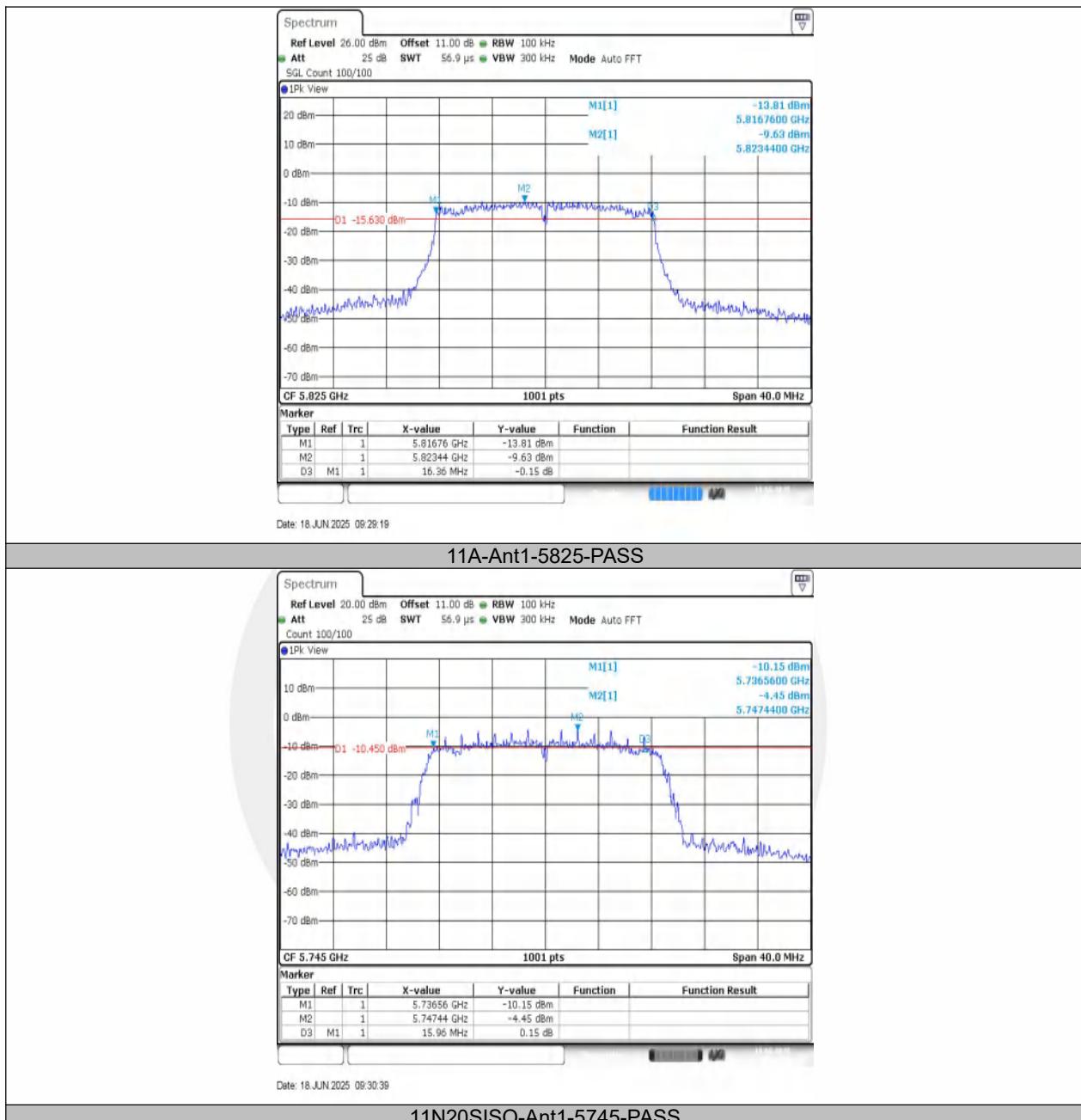


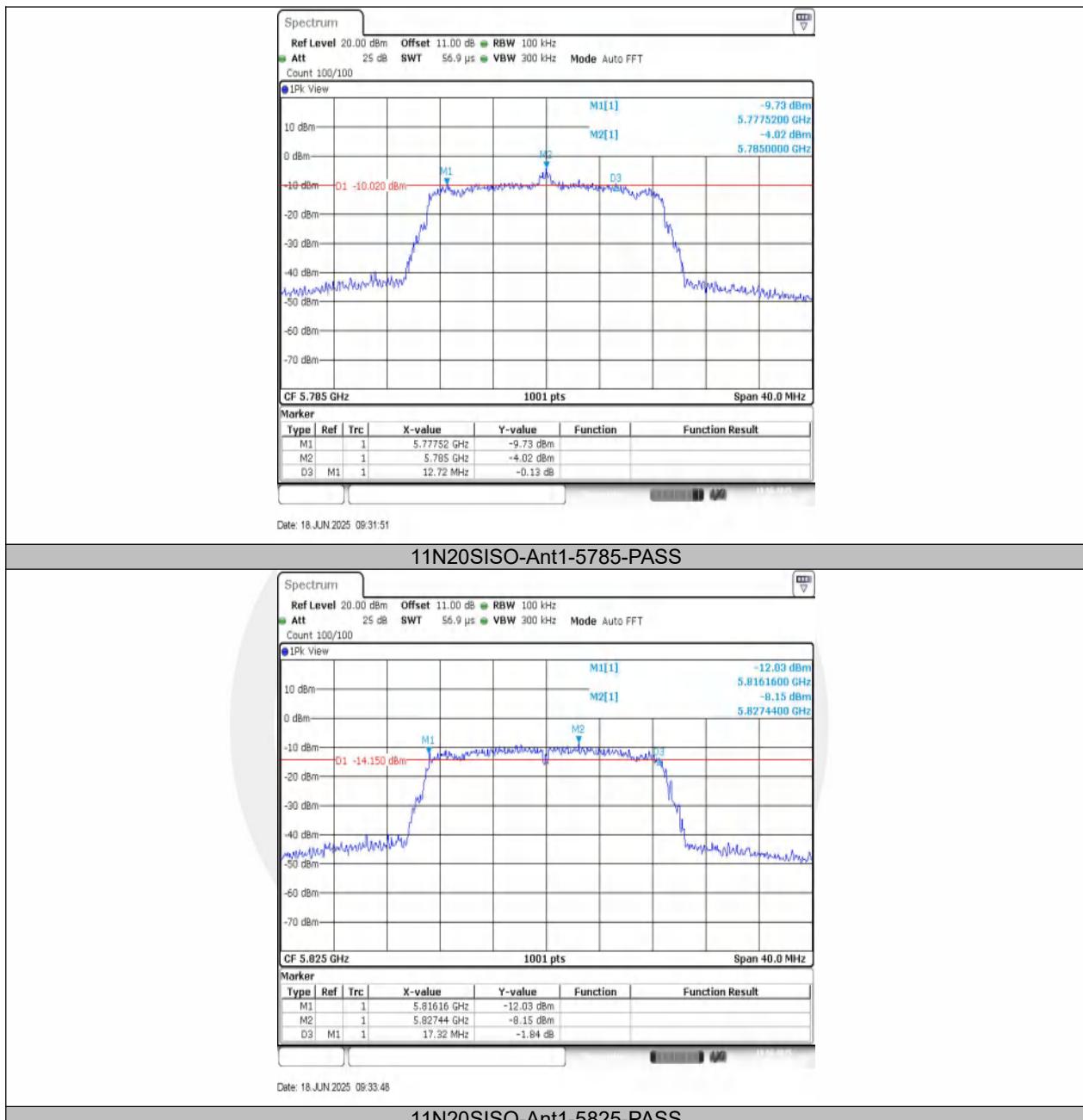
**Min emission bandwidth (6dB)**

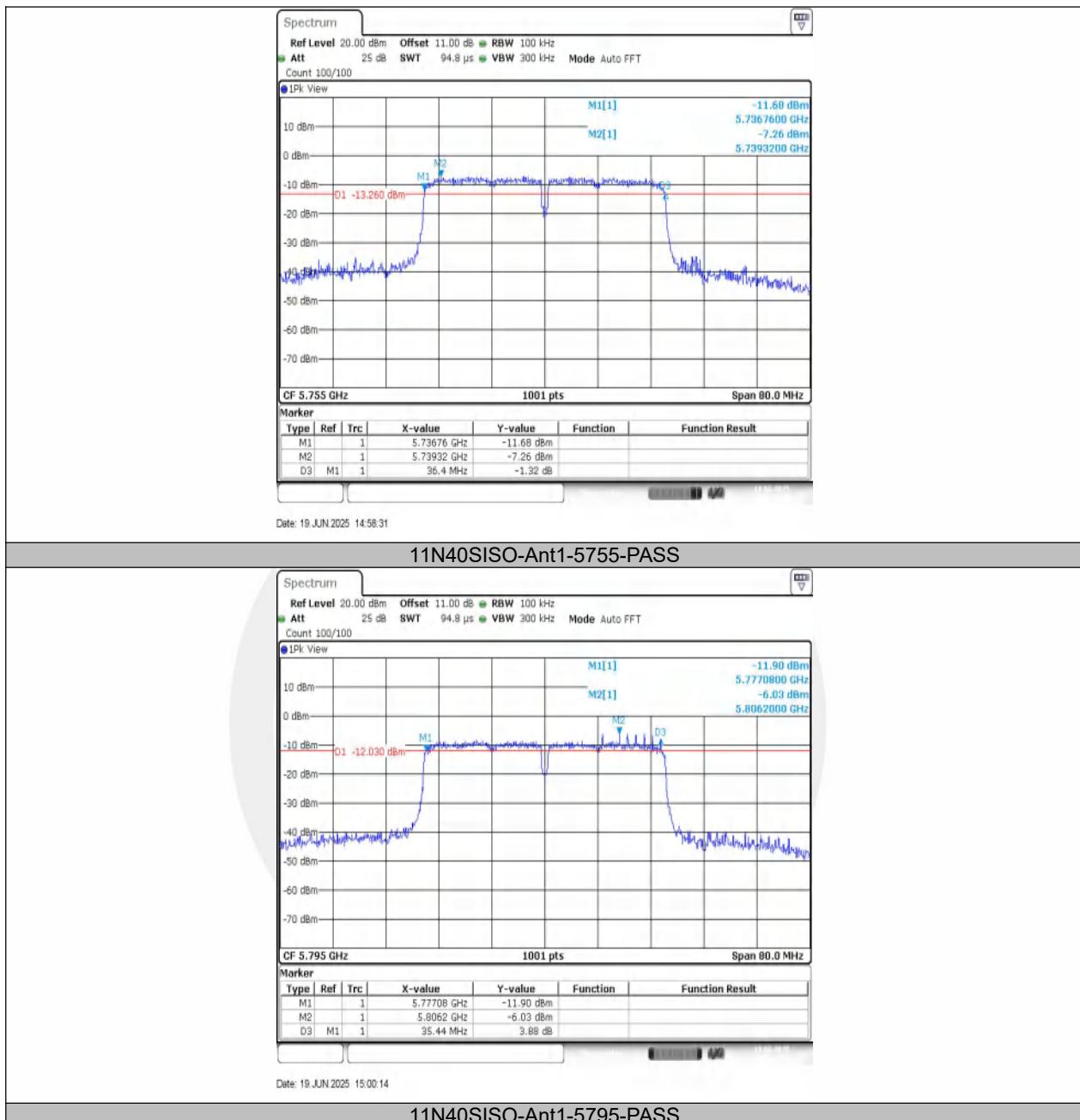
TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.32	5736.80	5753.12	0.5	PASS
11A	Ant1	5785	7.56	5779.92	5787.48	0.5	PASS
11A	Ant1	5825	16.36	5816.76	5833.12	0.5	PASS
11N20SISO	Ant1	5745	15.96	5736.56	5752.52	0.5	PASS
11N20SISO	Ant1	5785	12.72	5777.52	5790.24	0.5	PASS
11N20SISO	Ant1	5825	17.32	5816.16	5833.48	0.5	PASS
11N40SISO	Ant1	5755	36.40	5736.76	5773.16	0.5	PASS
11N40SISO	Ant1	5795	35.44	5777.08	5812.52	0.5	PASS



**Min emission bandwidth (6dB) Test Graphs**








## 8.2 MAXIMUM CONDUCTED OUTPUT POWER

### 8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I

According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C

According to FCC Part 15.407(a)(3) for UNII Band III

According to 789033 D02 Section II(E)

### 8.2.2 Conformance Limit

#### ■ For the band 5.15-5.25 GHz,

(a) (1) (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 and the maximum power spectral density 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).

(a) (1) (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.

(a) (1) (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.

(a) (1) (iv) For mobile and portable 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.

#### ■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands

(a) (2) 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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.

#### ■ For the band 5.725-5.85 GHz

(a) (3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. 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.

### 8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup 1.

## 8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

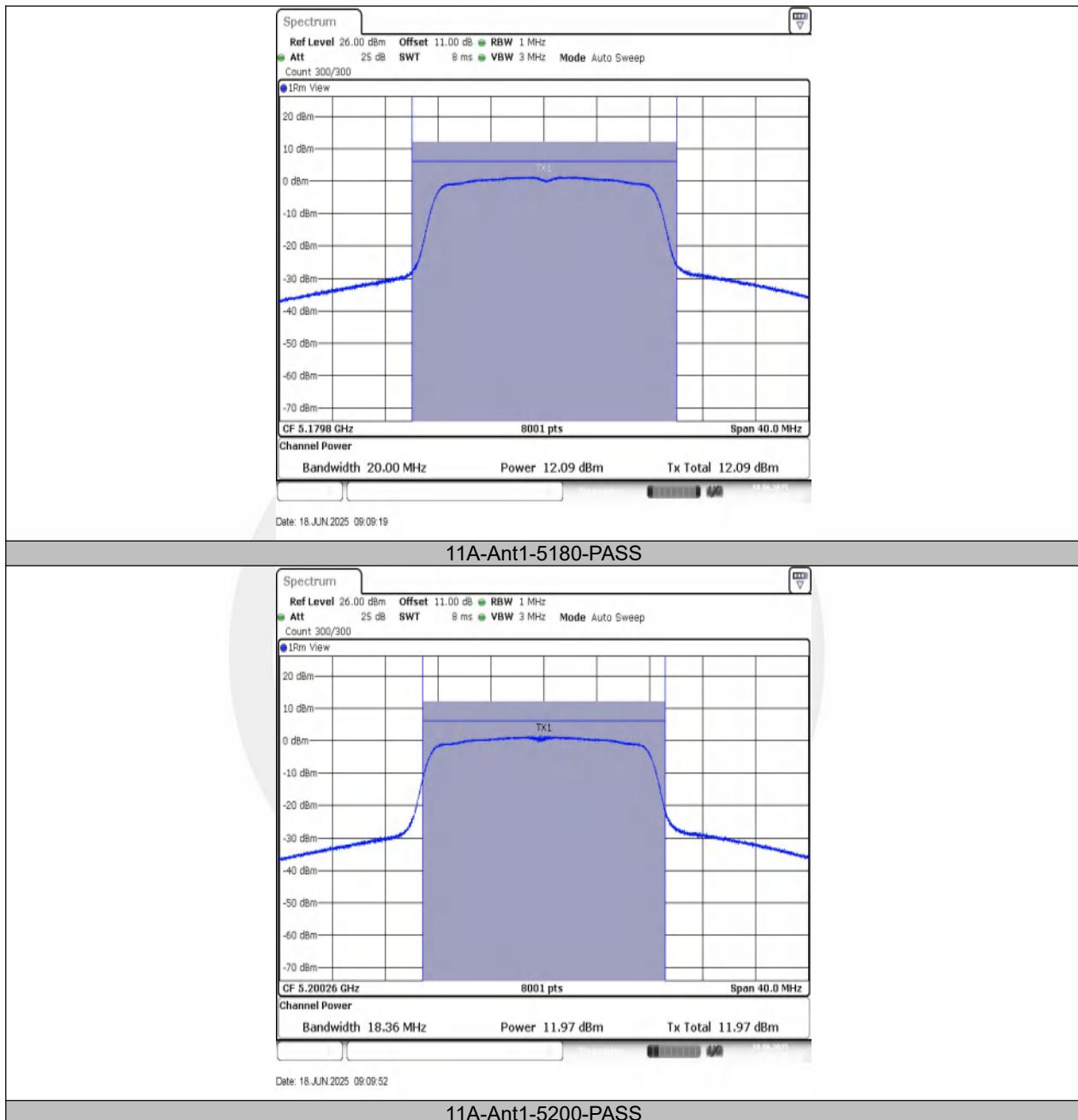
- a. The Transmitter output (antenna port) was connected to the power meter.
- b. Turn on the EUT and power meter and then record the power value.
- c. Repeat above procedures on all channels needed to be tested.

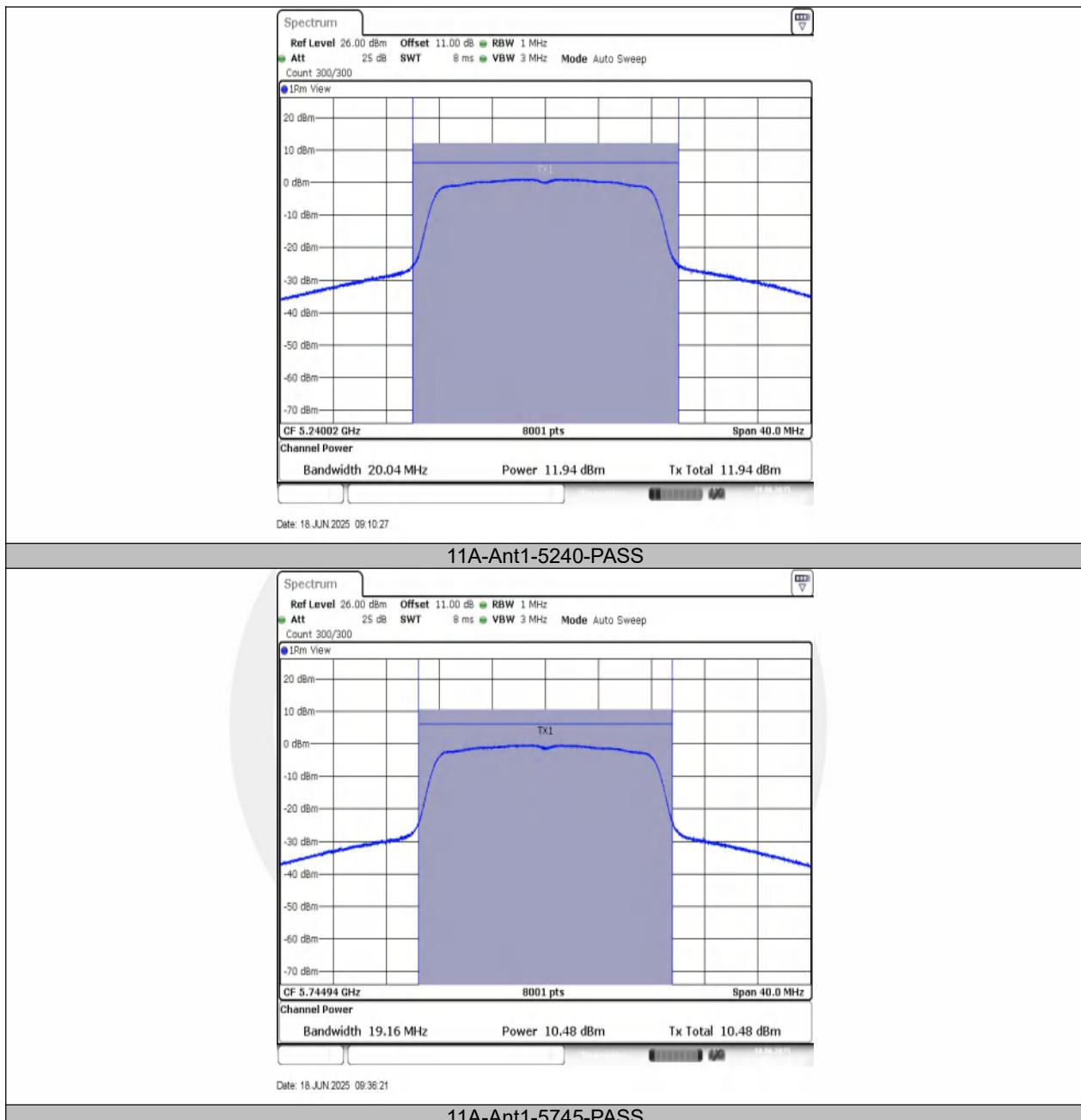
## 8.2.5 Test Results

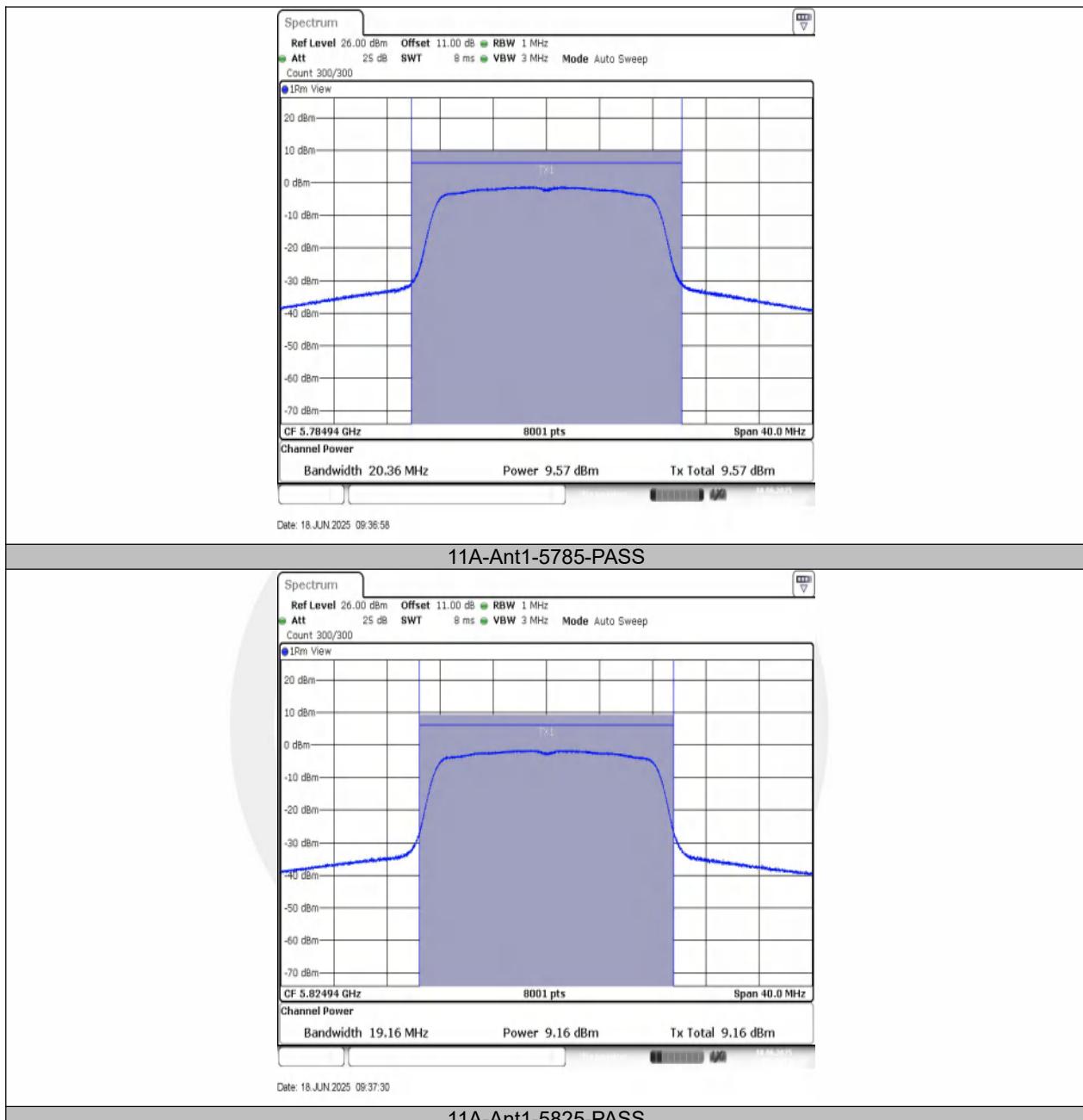
Temperature : 25°C ATM Pressure:: 1011 mbar  
Humidity : 60 % Test Engineer: GJ

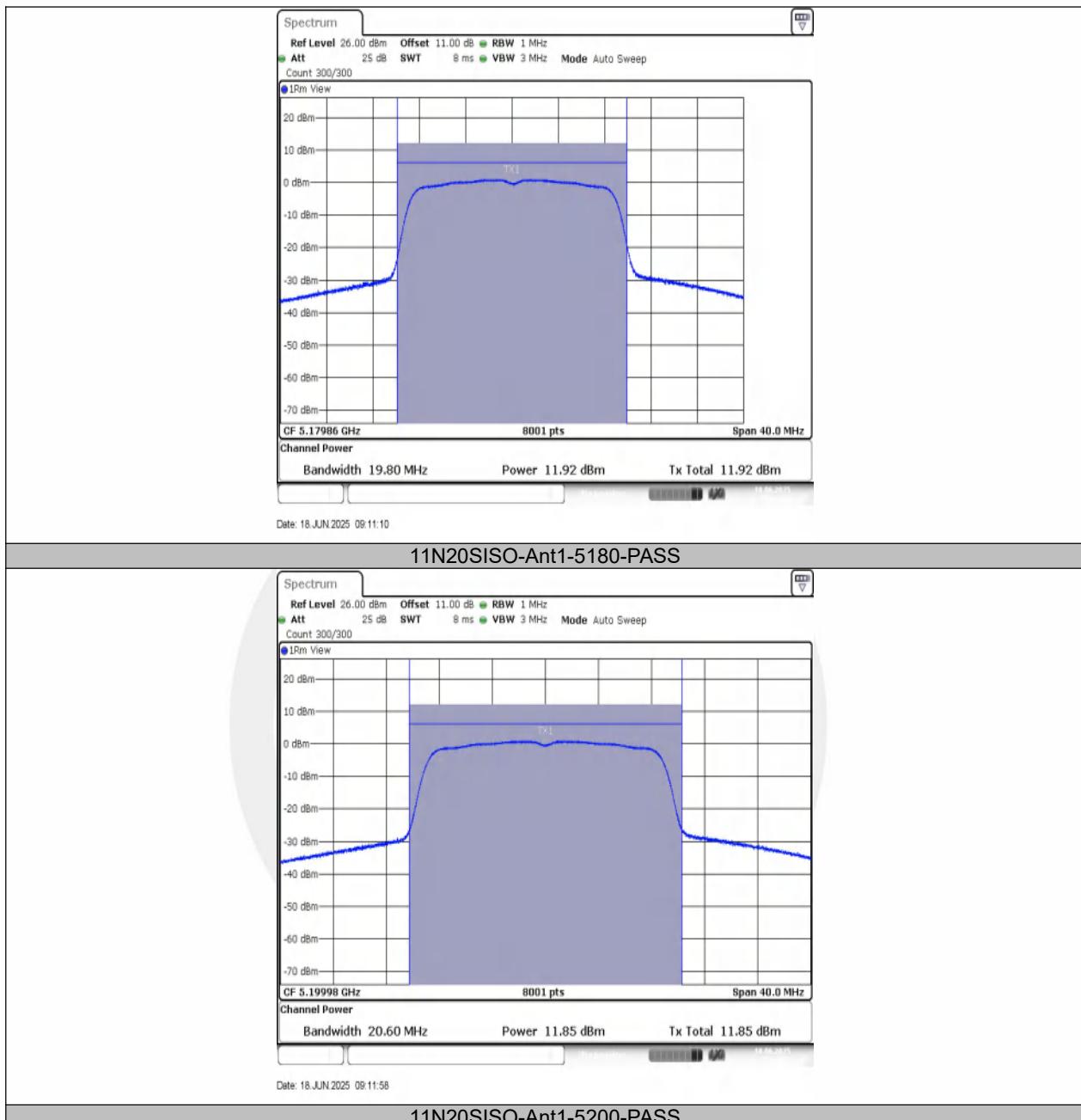
Test Mode	Antenna	Frequency [MHz]	Duty Cycle [%]	Result [dBm]	Limit [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11A	Ant1	5180	100.00	12.09	≤23.98	1.98	14.07	---	PASS
11A	Ant1	5200	100.00	11.97	≤23.98	1.98	13.95	---	PASS
11A	Ant1	5240	100.00	11.94	≤23.98	1.98	13.92	---	PASS
11A	Ant1	5745	100.00	10.48	≤30.00	2.91	13.39	---	PASS
11A	Ant1	5785	100.00	9.57	≤30.00	2.91	12.48	---	PASS
11A	Ant1	5825	100.00	9.16	≤30.00	2.91	12.07	---	PASS
11N20SISO	Ant1	5180	100.00	11.92	≤23.98	1.98	13.90	---	PASS
11N20SISO	Ant1	5200	100.00	11.85	≤23.98	1.98	13.83	---	PASS
11N20SISO	Ant1	5240	100.00	11.77	≤23.98	1.98	13.75	---	PASS
11N20SISO	Ant1	5745	100.00	10.44	≤30.00	2.91	13.35	---	PASS
11N20SISO	Ant1	5785	100.00	9.50	≤30.00	2.91	12.41	---	PASS
11N20SISO	Ant1	5825	100.00	9.05	≤30.00	2.91	11.96	---	PASS
11N40SISO	Ant1	5190	100.00	9.95	≤23.98	2.91	12.86	---	PASS
11N40SISO	Ant1	5230	100.00	10.09	≤23.98	2.91	13.00	---	PASS
11N40SISO	Ant1	5755	100.00	10.08	≤30.00	2.91	12.99	---	PASS
11N40SISO	Ant1	5795	100.00	8.88	≤30.00	2.91	11.79	---	PASS

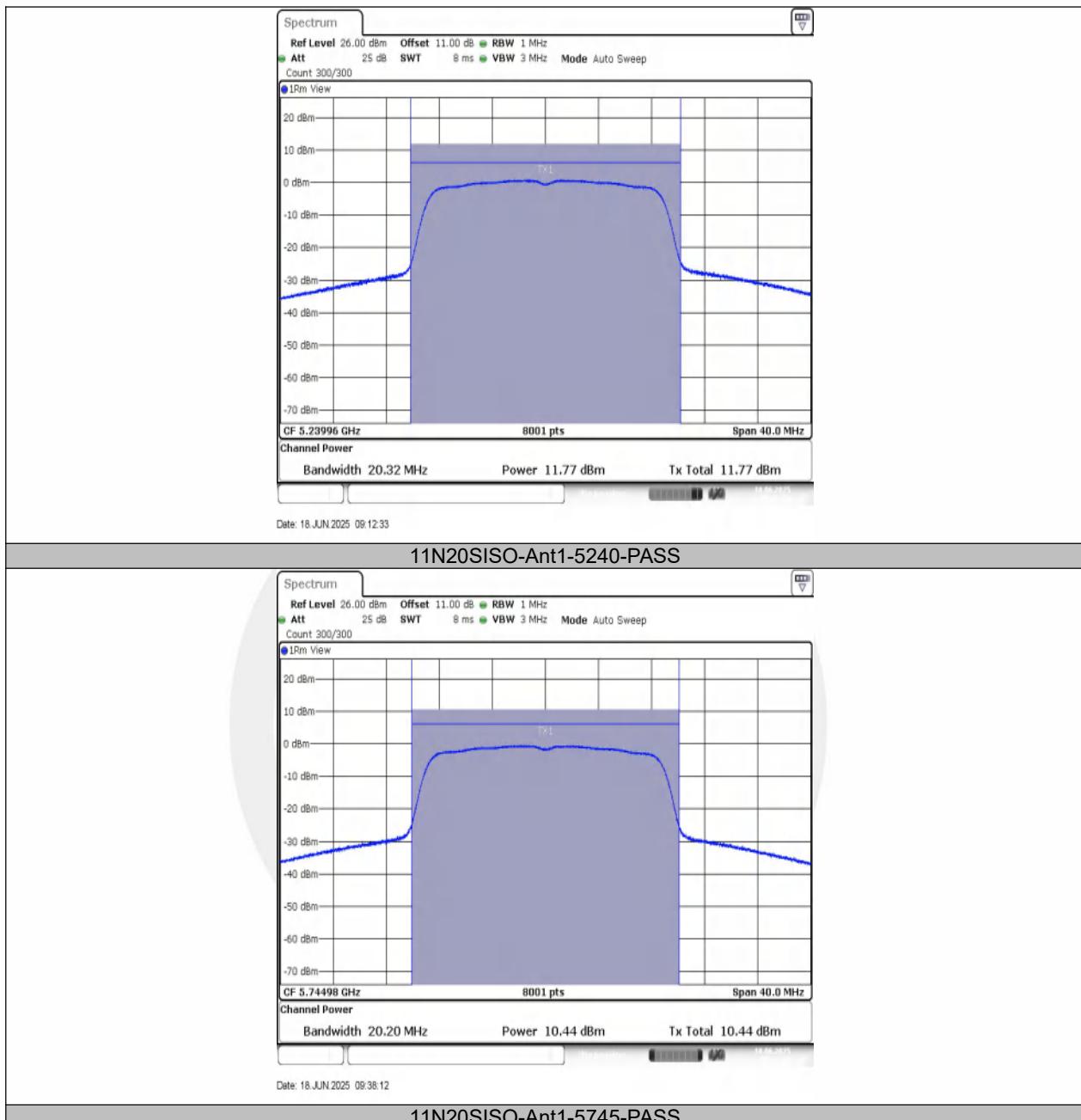
## Output Power Test Graphs

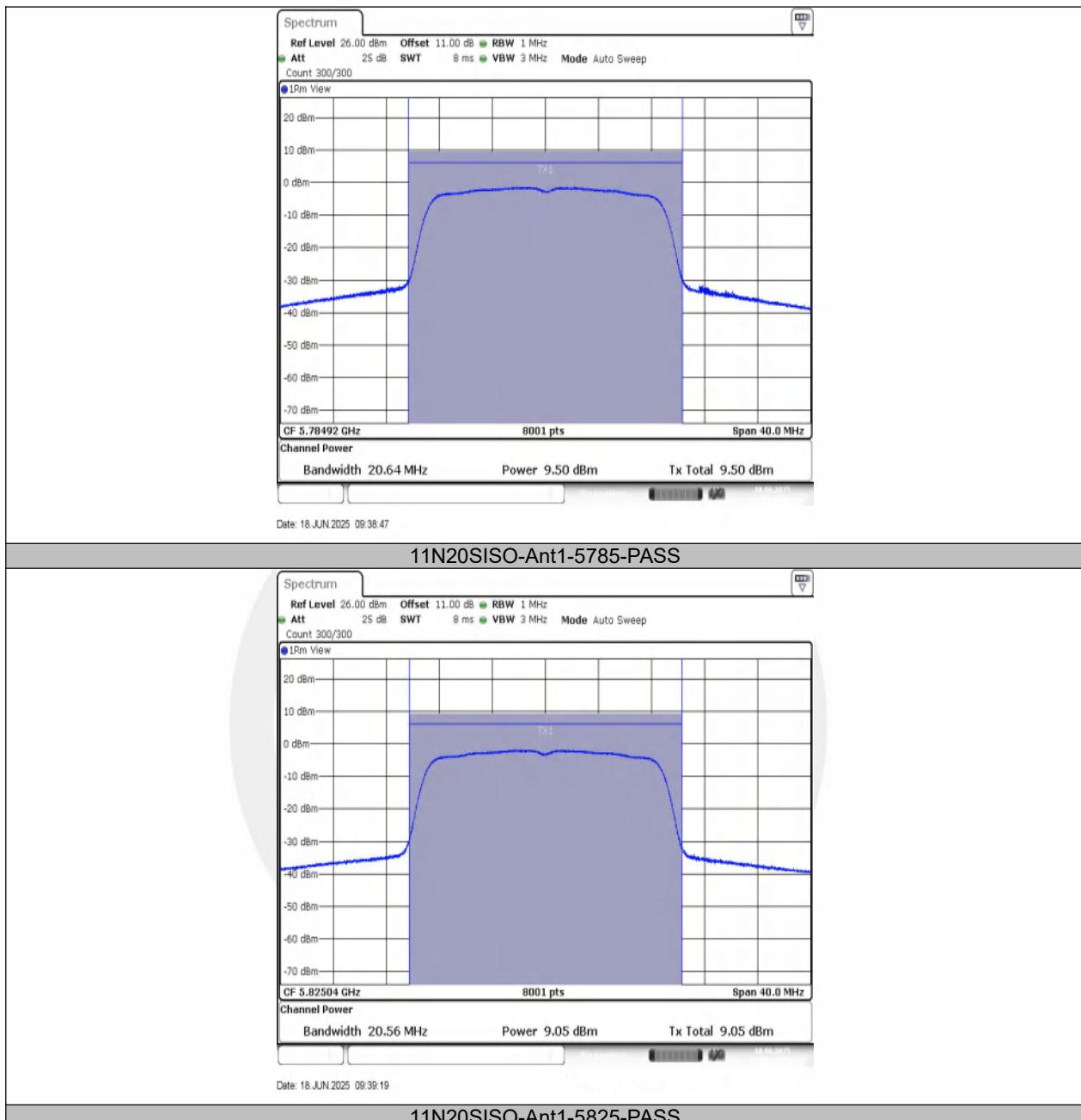


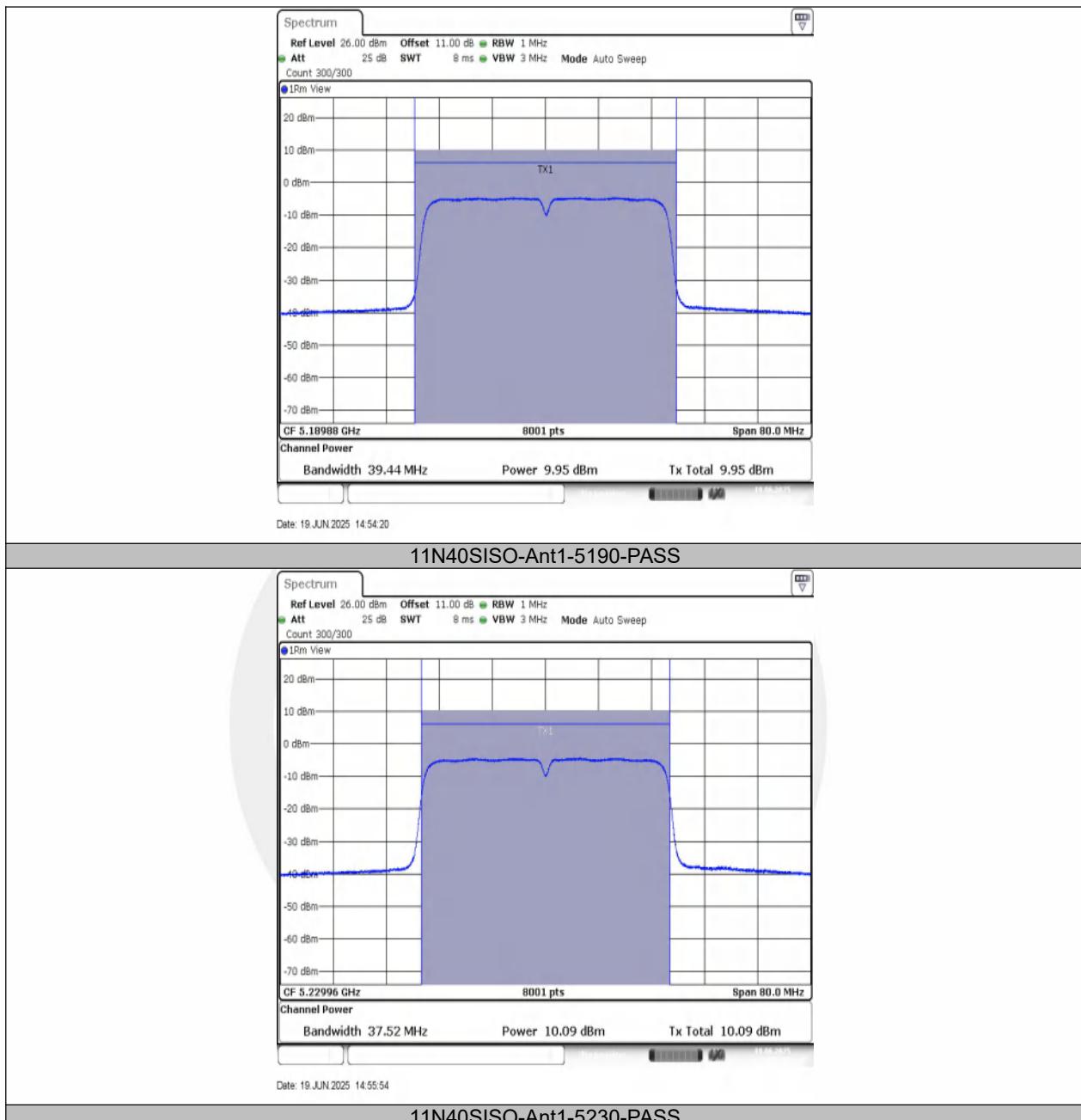


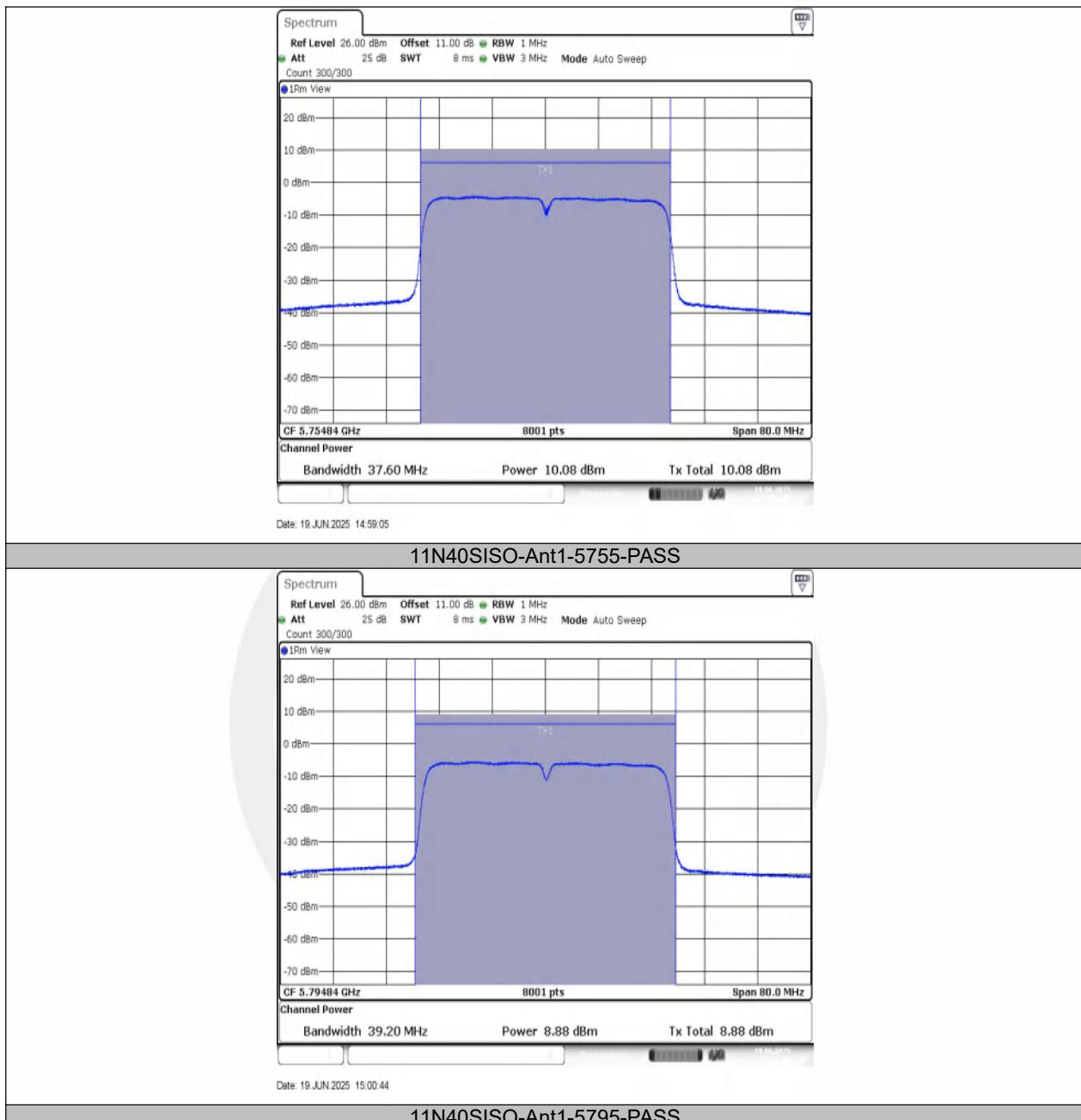












## 8.3 MAXIMUM PEAK POWER DENSITY

### 8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I

According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C

According to FCC Part 15.407(a)(3) for UNII Band III

According to 789033 D02 Section II(F)

### 8.3.2 Conformance Limit

#### ■ For the band 5.15-5.25 GHz

(a) (1) (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 and the maximum power spectral density 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).

(a) (1) (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.

(a) (1) (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.

(a) (1) (iv) For mobile and portable 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.

#### ■ For the 5.25-5.35 GHz and 5.47-5.725 GHz

(b) (2) 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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.

#### ■ For the band 5.725-5.85 GHz

(a) (3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. 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.

### 8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup 1.

#### 8.3.4 Test Procedure

Methods refer to FCC KDB 789033.

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBW less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

- a) Set RBW  $\geq 1/T$ , where T is defined in section II.B.I.a).
- b) Set VBW  $\geq 3$  RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10\log(500\text{kHz}/\text{RBW})$  to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10\log(1\text{MHz}/\text{RBW})$  to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections.

5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

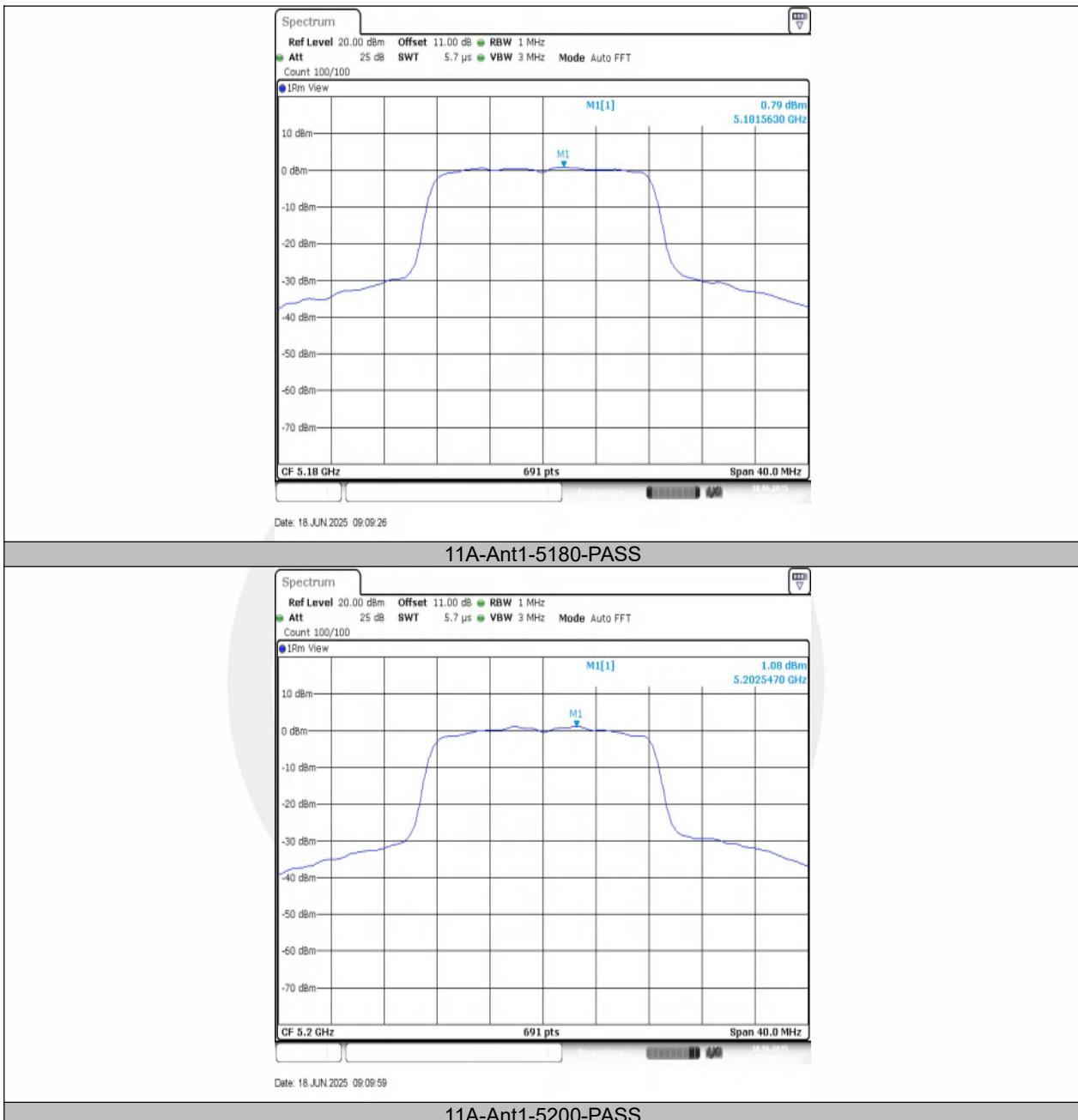
### 8.3.5 Test Results

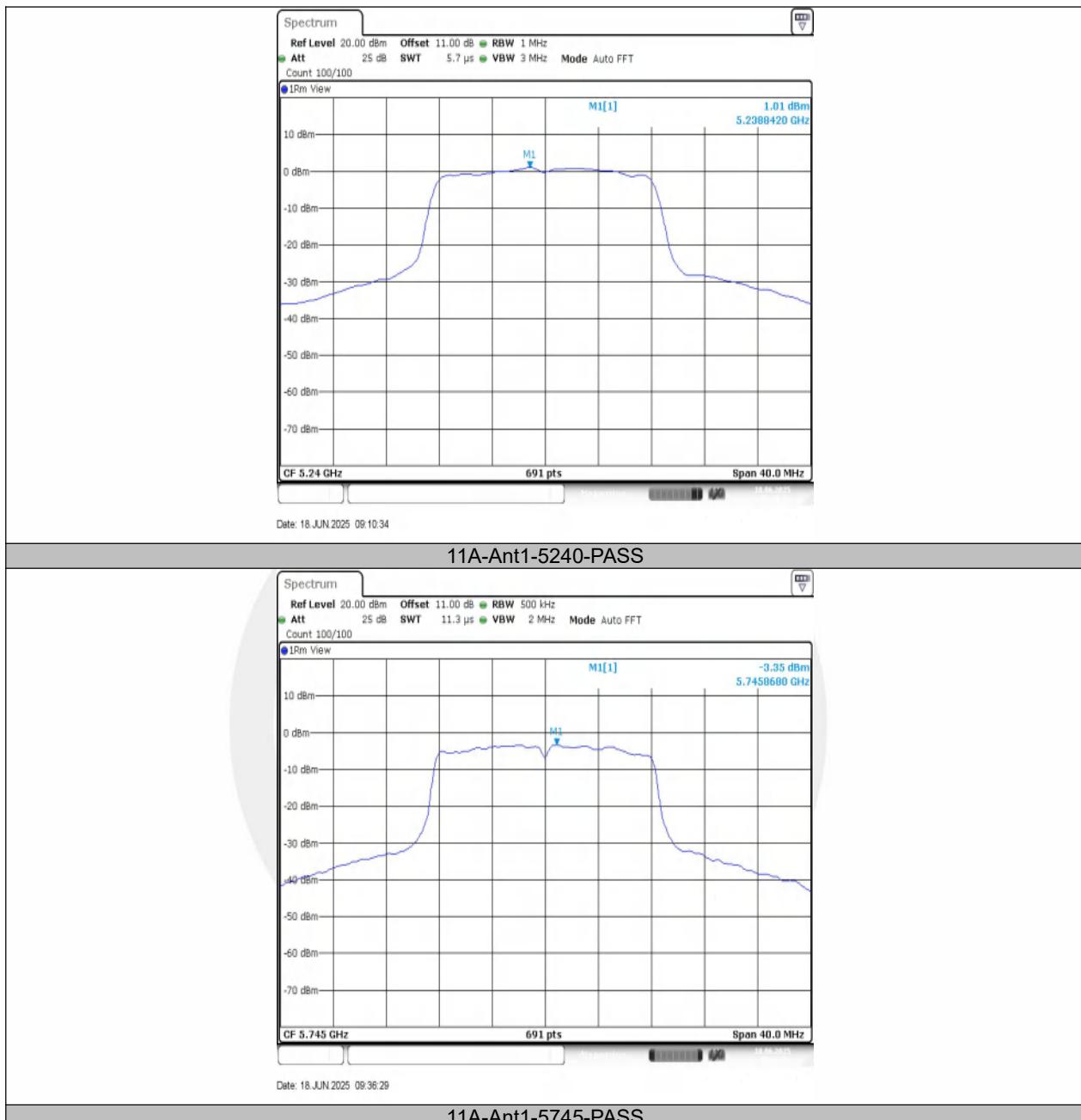
Temperature : 25°C  
Humidity : 60 %

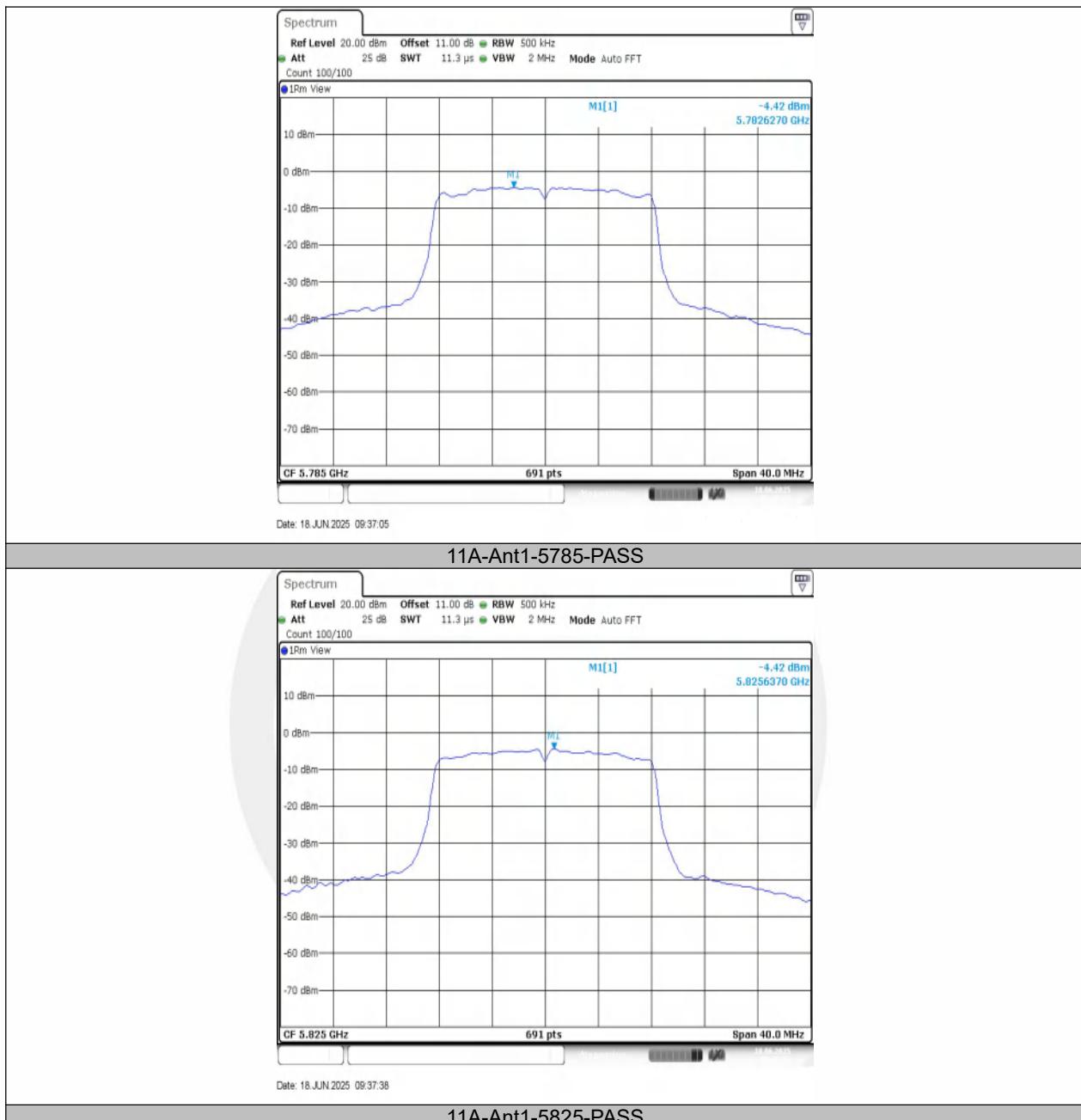
ATM Pressure:: 1011 mbar  
Test Engineer: GJ

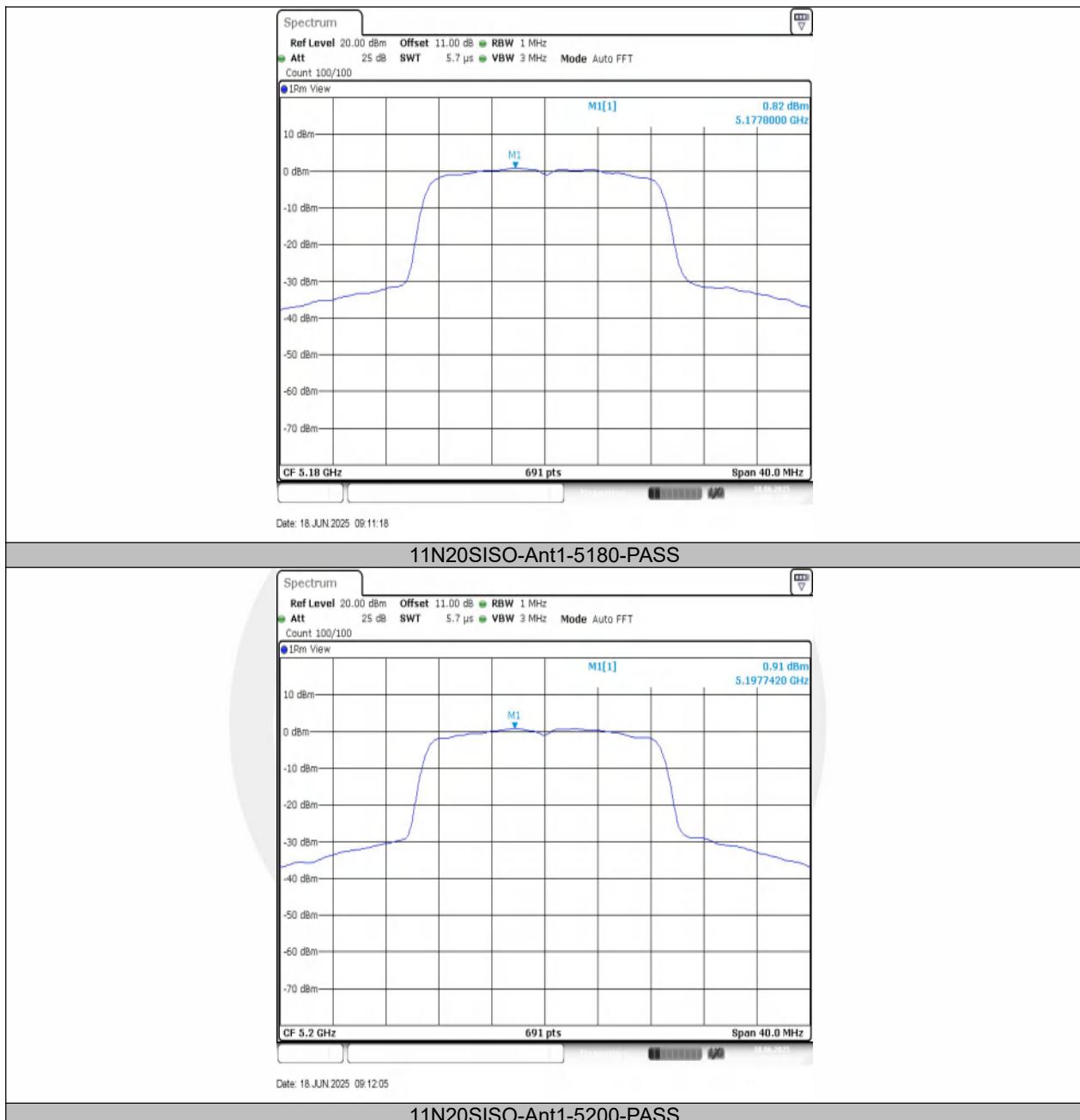
TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	0.79	≤11.00	PASS
11A	Ant1	5200	1.08	≤11.00	PASS
11A	Ant1	5240	1.01	≤11.00	PASS
11A	Ant1	5745	-3.35	≤30.00	PASS
11A	Ant1	5785	-4.42	≤30.00	PASS
11A	Ant1	5825	-4.42	≤30.00	PASS
11N20SISO	Ant1	5180	0.82	≤11.00	PASS
11N20SISO	Ant1	5200	0.91	≤11.00	PASS
11N20SISO	Ant1	5240	0.77	≤11.00	PASS
11N20SISO	Ant1	5745	-3.64	≤30.00	PASS
11N20SISO	Ant1	5785	-4.58	≤30.00	PASS
11N20SISO	Ant1	5825	-4.93	≤30.00	PASS
11N40SISO	Ant1	5190	-4.62	≤11.00	PASS
11N40SISO	Ant1	5230	-4.07	≤11.00	PASS
11N40SISO	Ant1	5755	-7.23	≤30.00	PASS
11N40SISO	Ant1	5795	-8.26	≤30.00	PASS

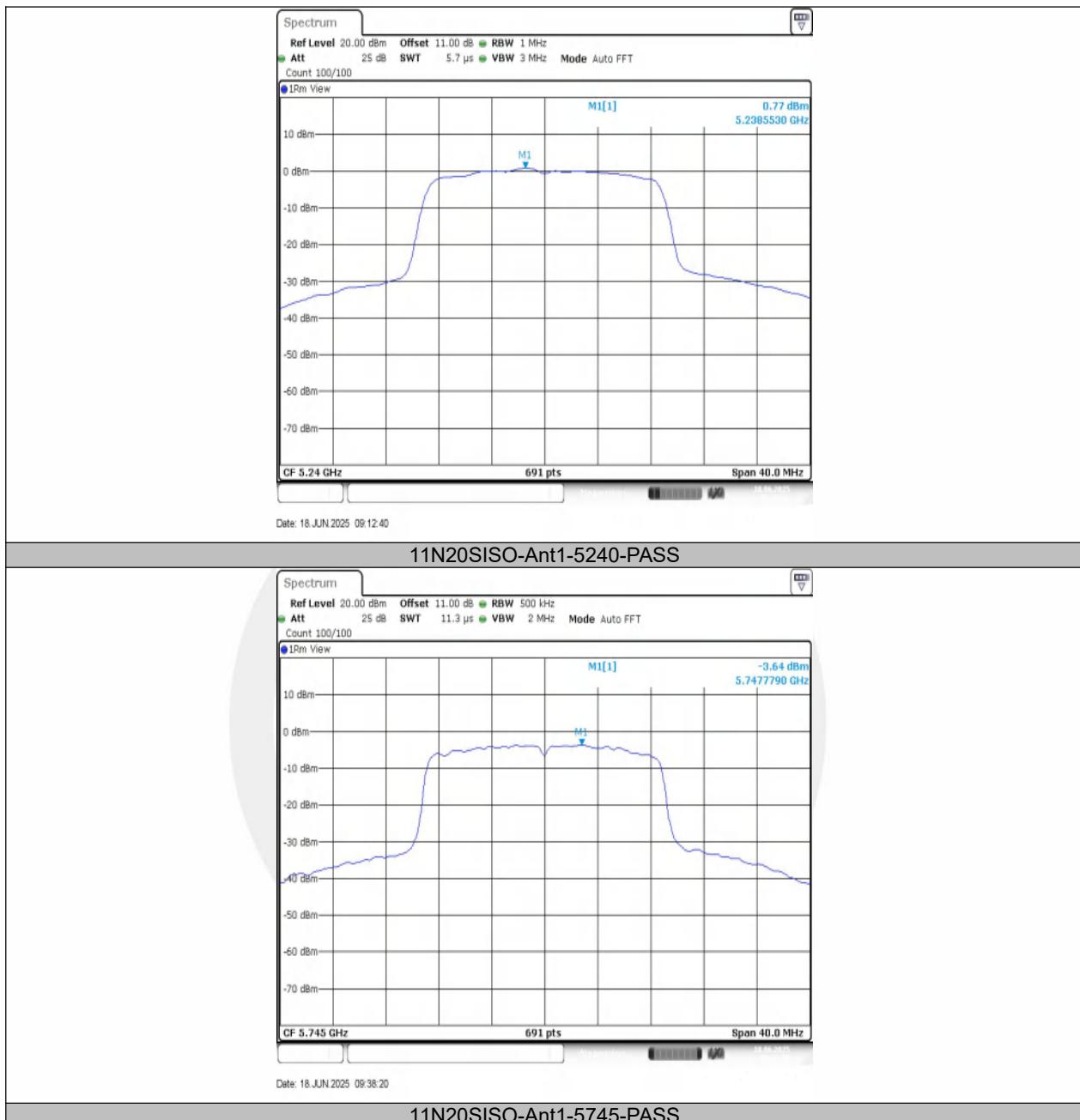
## Power Density Test Graphs

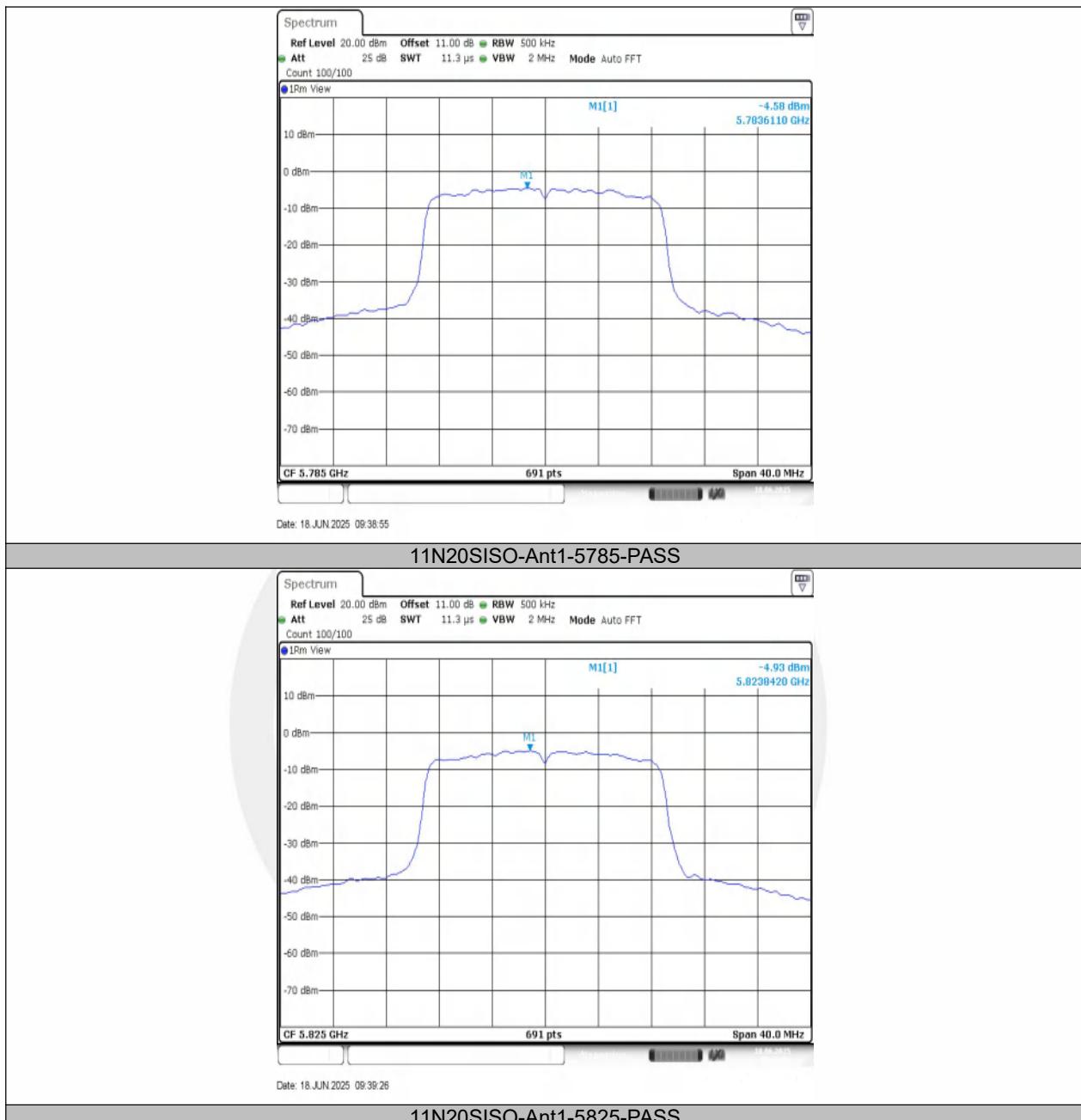


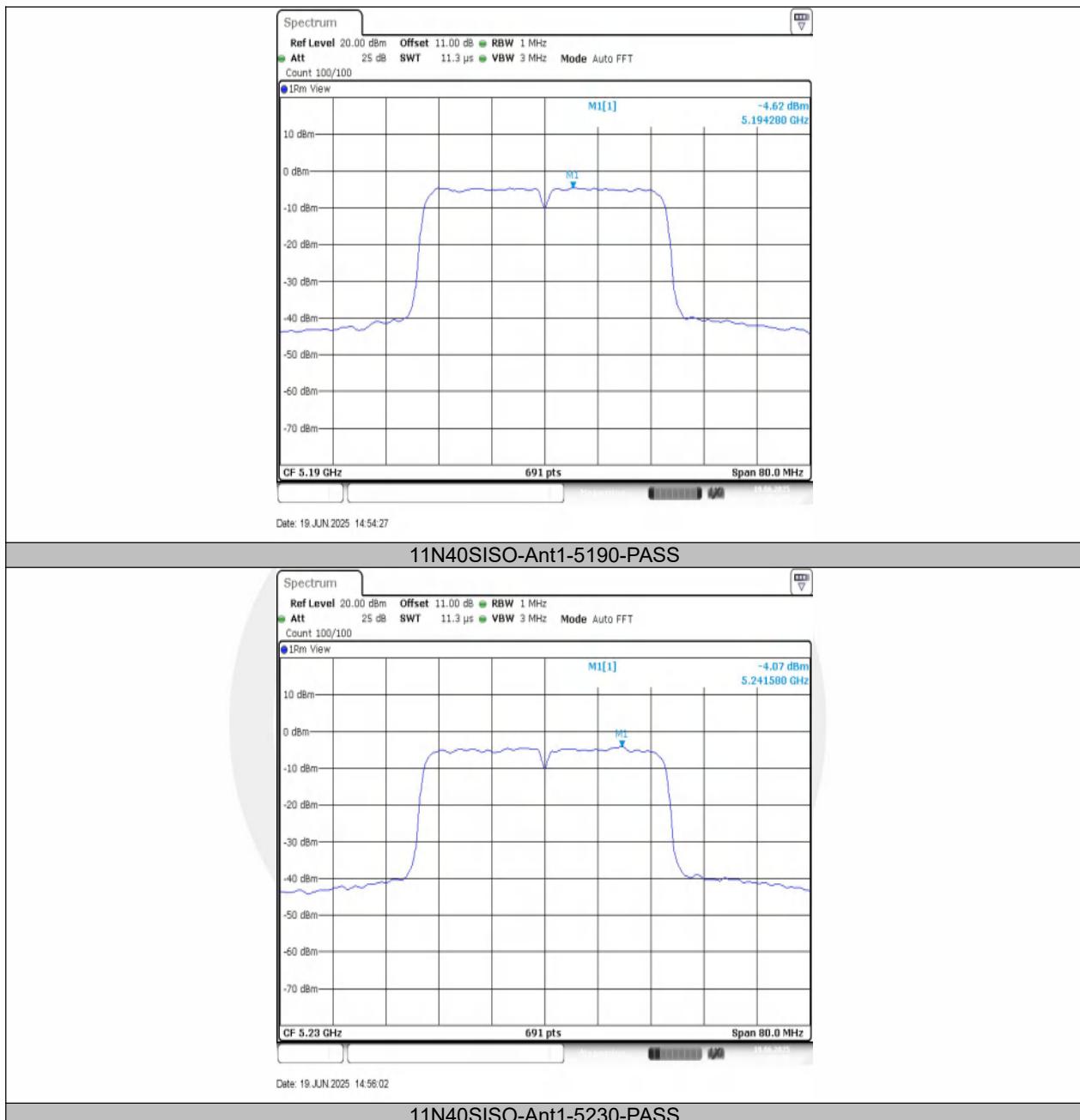


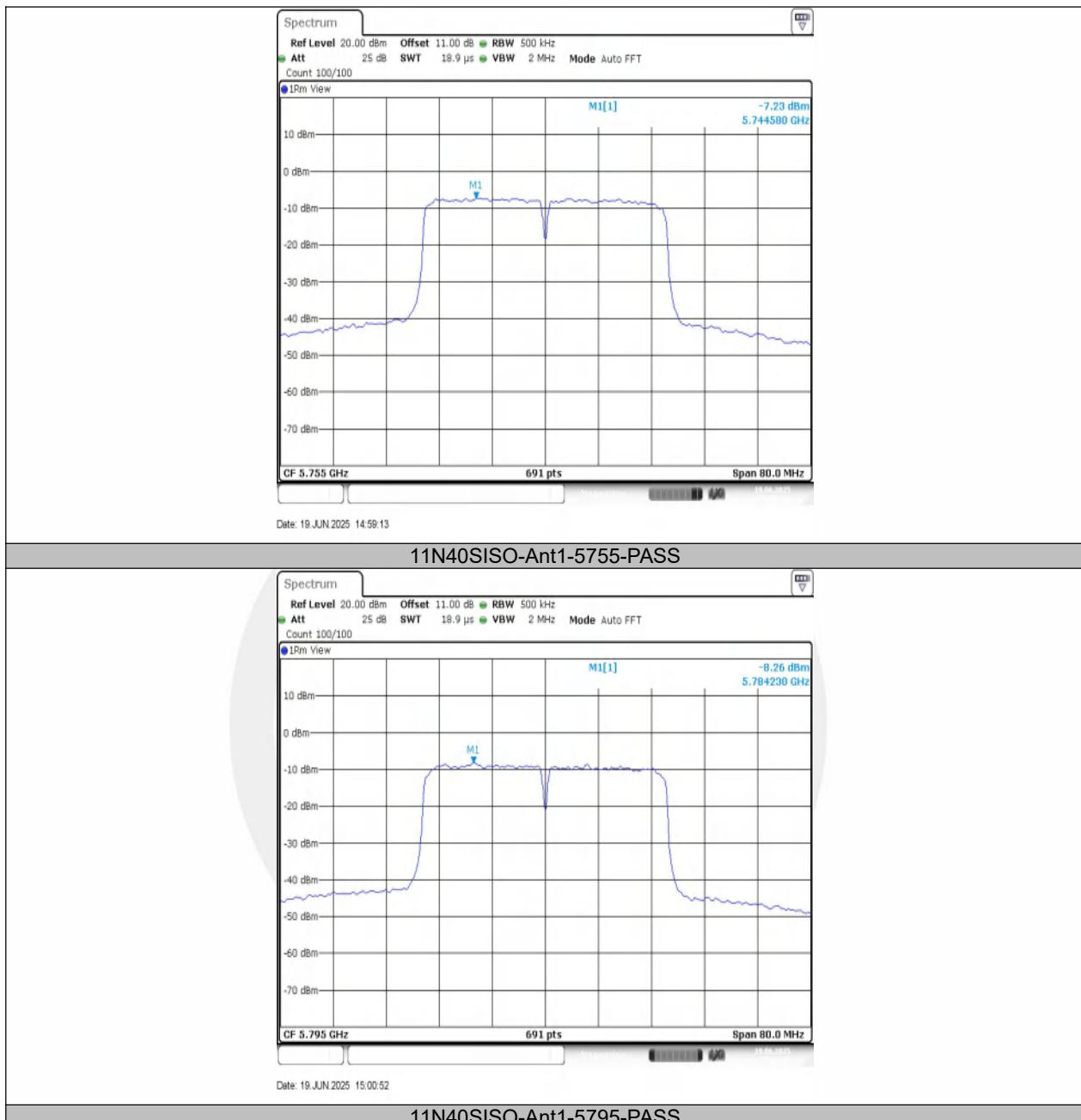












## 8.4 UNDESIRABLE RADIATED SPURIOUS EMISSION

### 8.4.1 Applicable Standard

According to FCC Part 15.407 (b)

According to 789033 D02 Section II(G)

### 8.4.2 Conformance 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 in the 5.725-5.85 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.

The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

Restricted Frequency(MHz)	Field Strength ( $\mu$ V/m)	Field Strength (dB $\mu$ V/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log ( $\mu$ V/m)	300
0.490-1.705	2400/F(KHz)	20 log ( $\mu$ V/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The provisions of §15.205 apply to intentional radiators operating under this section, 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

Remark: 1. Emission level in dBuV/m=20 log (uV/m)  
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.  
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of  $\xi$  15.205, and the emissions located in restricted bands also comply with 15.209 limit.

#### 8.4.3 Test Configuration

Test according to clause 6.2 radio frequency test setup 2.

#### 8.4.4 Test Procedure

##### ■ Unwanted Emissions Measurements below 1000 MHz

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

The EUT was placed on a turn table which is 0.8m above ground plane.

And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Repeat above procedures until all frequency measured was complete.

We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes have been tested and the worst result was reported.

Use the following spectrum analyzer settings:

Set RBW=120kHz for  $f < 1$  GHz(30MHz to 1GHz), 200Hz for  $f < 150$  KHz(9KHz to 150KHz), 9KHz for <30MHz (150KHz to 30KHz).

Set the VBW > RBW.

Detector = Peak.

Trace mode = max hold.

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Repeat above procedures until all frequency measured was complete.

##### ■ Unwanted Maximum peak Emissions Measurements above 1000 MHz

Maximum emission levels are measured by setting the analyzer as follows:

RBW = 1 MHz.

VBW  $\geq$  3 MHz.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately  $1/x$ , where  $x$  is the duty cycle. For example, at 50 percent duty cycle, the measurement time will increase by a factor of two relative to measurement time for continuous transmission.

##### ■ Unwanted Average Emissions Measurements above 1000 MHz

Method VB (Averaging using reduced video bandwidth): Alternative method.

RBW = 1 MHz.

Video bandwidth. • If the EUT is configured to transmit with duty cycle  $\geq$  98 percent, set  $VBW \leq RBW/100$  (i.e., 10 kHz) but not less than 10 Hz.

• If the EUT duty cycle is  $< 98$  percent, set  $VBW \geq 1/T$ , where  $T$  is defined in section II.B.1.a).

Video bandwidth mode or display mode • The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).

• As an alternative, the analyzer may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some analyzers require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where  $x$  is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 percent. (If a specific emission is demonstrated to be continuous—i.e., 100 percent duty cycle—rather than turning on and off with the transmit cycle, at least 50 traces shall be averaged).

■ Band edge measurements.

Unwanted band-edge emissions may be measured using either of the special band-edge measurement techniques (the marker-delta or integration methods) described below. Note that the marker-delta method is primarily a radiated measurement technique that requires the 99% occupied bandwidth edge to be within 2 MHz of the authorized band edge, whereas the integration method can be used in either a radiated or conducted measurement without any special requirement with regards to the displacement of the unwanted emission(s) relative to the authorized bandwidth.

Marker-Delta Method.

The marker-delta method, as described in ANSI C63.10, can be used to perform measurements of the radiated unwanted emissions level of emissions provided that the 99% occupied bandwidth of the fundamental is within 2 MHz of the authorized band-edge.

#### 8.4.5 Test Results

Temperature : 25°C  
Humidity : 60 %

ATM Pressure:: 1011 mbar  
Test Engineer: CZF

- For Undesirable radiated Spurious Emission in U-NII – 1
- Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

All the antenna(Antenna 1) and modes(802.11a/n) has been tested and the worst(Antenna 1,802.11n) result recorded was report as below:

Test mode: 802.11n(HT20) Frequency(MHz): 5180

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dB <sub>u</sub> V/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7633.39	V	56.95	-38.28	-27	11.28
10092.5	V	61.86	-33.37	-27	6.37
14324.7	V	67.27	-27.96	-27	0.96
7023.35	H	55.86	-39.37	-27	12.37
10049.5	H	62.12	-33.11	-27	6.11
14288.7	H	67.65	-27.58	-27	0.58

Test mode: 802.11n(HT20) Frequency(MHz): 5200

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dB <sub>u</sub> V/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7001.35	V	55.25	-39.98	-27	12.98
10054.5	V	61.14	-34.09	-27	7.09
14274.7	V	67.75	-27.48	-27	0.48
7007.35	H	55.06	-40.17	-27	13.17
10736.5	H	62.08	-33.15	-27	6.15
14261.7	H	66.20	-29.03	-27	2.03

Test mode: 802.11n(HT20) Frequency(MHz): 5240

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dB <sub>u</sub> V/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7632.39	V	56.24	-38.99	-27	11.99
10104.5	V	61.93	-33.3	-27	6.3
14264.7	V	66.60	-28.63	-27	1.63
8122.41	H	56.64	-38.59	-27	11.59
10049.5	H	61.58	-33.65	-27	6.65
15123.8	H	66.73	-28.5	-27	1.5

**Note:** (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3)EIRP[dBm] = E[dB<sub>u</sub>V/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

All the antenna(Antenna 1) and modes(802.11a/n) has been tested and the worst(Antenna 1,802.11n) result recorded was report as below:

Test mode:		802.11n(HT20) Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7633.39	V	56.95	74.00	17.05	Peak
10092.5	V	61.86	74.00	12.14	Peak
14324.7	V	67.27	74.00	6.73	Peak
7633.39	V	39.56	54.00	14.44	Avg
10092.5	V	42.76	54.00	11.24	Avg
14324.7	V	47.69	54.00	6.31	Avg
7023.35	H	55.86	74.00	18.14	Peak
10049.5	H	62.12	74.00	11.88	Peak
14288.7	H	67.65	74.00	6.35	Peak
7023.35	H	39.96	54.00	14.04	Avg
10049.5	H	42.36	54.00	11.64	Avg
14288.7	H	47.74	54.00	6.26	Avg
Test mode:		802.11n(HT20) Frequency(MHz): 5200			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7001.35	V	55.25	74.00	18.75	Peak
10054.5	V	61.14	74.00	12.86	Peak
14274.7	V	67.75	74.00	6.25	Peak
7001.35	V	40.05	54.00	13.95	Avg
10054.5	V	42.30	54.00	11.70	Avg
14274.7	V	46.19	54.00	7.81	Avg
7007.35	H	55.06	74.00	18.94	Peak
10736.5	H	62.08	74.00	11.92	Peak
14261.7	H	66.20	74.00	7.80	Peak
7007.35	H	40.01	54.00	13.99	Avg
10736.5	H	45.01	54.00	8.99	Avg
14261.7	H	47.59	54.00	6.41	Avg
Test mode:		802.11n(HT20) Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7632.39	V	56.24	74.00	17.76	Peak
10104.5	V	61.93	74.00	12.07	Peak
14264.7	V	66.60	74.00	7.40	Peak
7632.39	V	39.93	54.00	14.07	Avg
10104.5	V	42.49	54.00	11.51	Avg
14264.7	V	47.09	54.00	6.91	Avg
8122.41	H	56.64	74.00	17.36	Peak
10049.5	H	61.58	74.00	12.42	Peak
15123.8	H	66.73	74.00	7.27	Peak
8122.41	H	40.26	54.00	13.74	Avg
10049.5	H	42.42	54.00	11.58	Avg
15123.8	H	44.07	54.00	9.93	Avg

**Note:**

- (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
- (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
- (3) Correct Factor= Ant\_F + Cab\_L - Preamp
- (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



- Undesirable radiated Undesirable radiated Spurious Emission in Band Edge

All the antenna(Antenna 1) and modes(802.11a/n) has been tested and the worst(Antenna 1,802.11n) result recorded was report as below:

Test mode: 802.11n(HT20)		Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5147.80	V	64.57	-30.66	-27	Pass
5149.75	H	63.05	-32.18	-27	Pass

Test mode: 802.11n(HT20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5350.15	V	53.46	-41.77	-27	Pass
5350.50	H	53.33	-41.9	-27	Pass

**Note:** (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

(3) Correct Factor= Ant\_F + Cab\_L - Preamp

(4) EIRP[dBm] = E[dB<sub>u</sub>V/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

Test mode: 802.11n(HT20)		Frequency(MHz): 5180			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5147.80	V	64.57	74.00	9.43	Peak
5147.80	V	45.98	54.00	8.02	Avg
5149.75	H	63.05	74.00	10.95	Peak
5149.75	H	46.48	54.00	7.52	Avg

Test mode: 802.11n(HT20)		Frequency(MHz): 5240			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
5350.15	V	53.46	74.00	20.54	Peak
5350.15	V	45.55	54.00	8.45	Avg
5350.50	H	53.33	74.00	20.67	Peak
5350.50	H	45.44	54.00	8.56	Avg

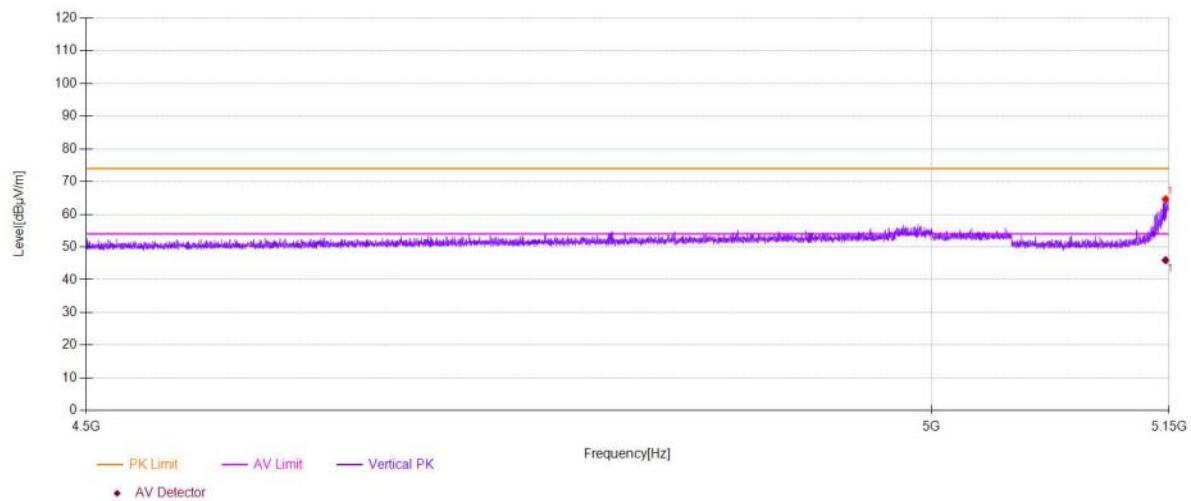
**Note:** (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

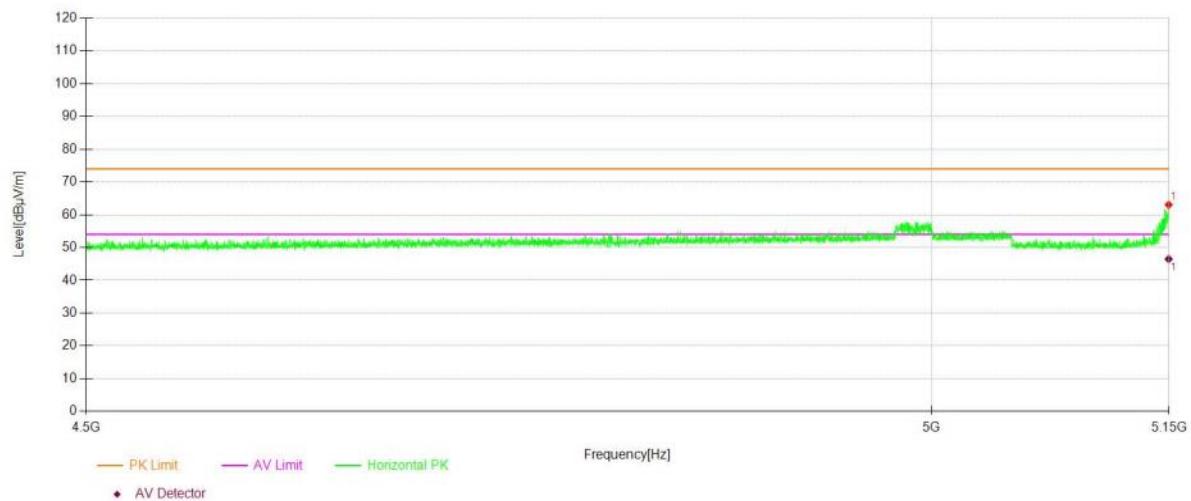
(3) Correct Factor= Ant\_F + Cab\_L - Preamp

(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

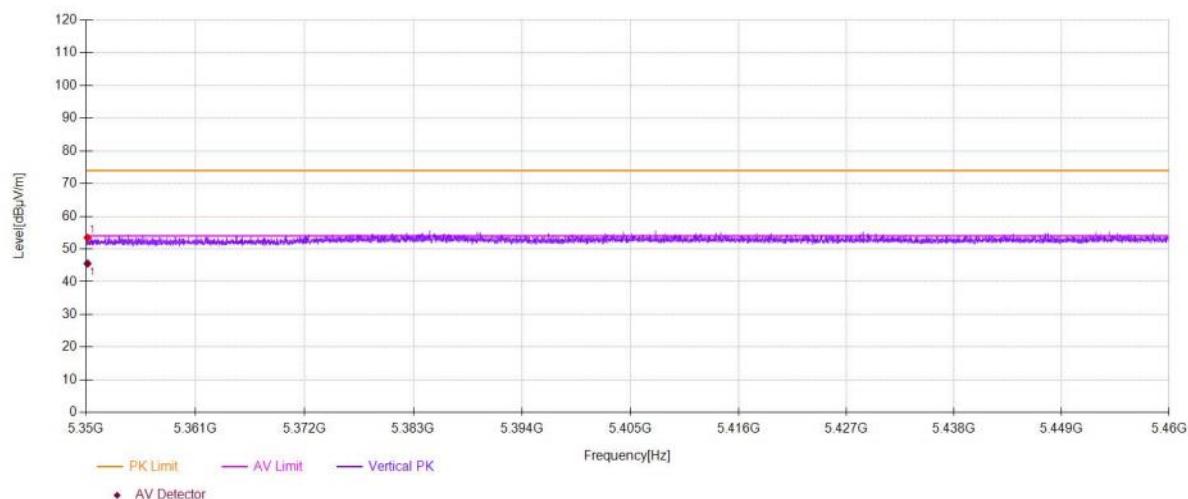
Test Model	U-NII - 1					
	Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)					
	<input type="checkbox"/> 802.11a	<input checked="" type="checkbox"/> 802.11n(HT20)	<input type="checkbox"/> 802.11n(HT40)			
	<input type="checkbox"/> 5180	<input type="checkbox"/> 5200	<input type="checkbox"/> 5240		Ant.Pol	V



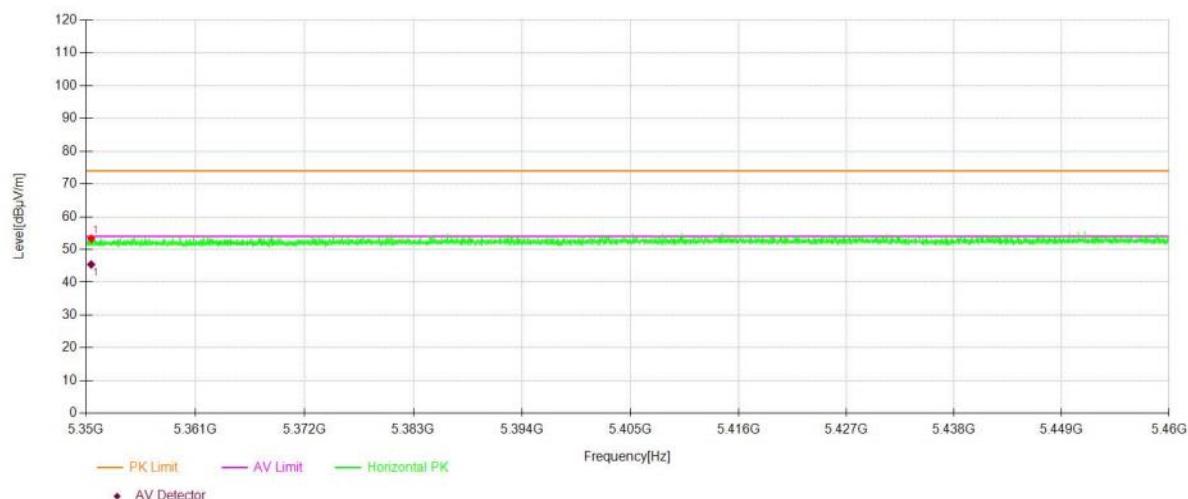
Test Model	U-NII - 1					
	Undesirable radiated Spurious Emission in Restricted Band (5100-5150MHz)					
	<input type="checkbox"/> 802.11a	<input checked="" type="checkbox"/> 802.11n(HT20)	<input type="checkbox"/> 802.11n(HT40)			
	<input checked="" type="checkbox"/> 5180	<input type="checkbox"/> 5200	<input type="checkbox"/> 5240		Ant.Pol	H



Test Model	U-NII - 1					
	Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz )					
	<input type="checkbox"/> 802.11a	<input checked="" type="checkbox"/> 802.11n(HT20)	<input type="checkbox"/> 802.11n(HT40)			
	<input type="checkbox"/> 5180	<input type="checkbox"/> 5200	<input checked="" type="checkbox"/> 5240	Ant.Pol		V



Test Model	U-NII - 1					
	Undesirable radiated Spurious Emission in Restricted Band (5350-5400MHz )					
	<input type="checkbox"/> 802.11a	<input checked="" type="checkbox"/> 802.11n(HT20)	<input type="checkbox"/> 802.11n(HT40)			
	<input type="checkbox"/> 5180	<input type="checkbox"/> 5200	<input checked="" type="checkbox"/> 5240	Ant.Pol		H



- For Undesirable radiated Spurious Emission in U-NII -3

- Undesirable radiated Spurious Emission Above 1GHz (1GHz to 40GHz)

All the antenna(Antenna 1) and modes(802.11a/n) has been tested and the worst(Antenna 1,802.11n) result recorded was report as below:

Test mode: 802.11n(HT20) Frequency(MHz): 5745

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
6929.34	V	55.02	-40.21	-27	13.21
9873.52	V	62.00	-33.23	-27	6.23
14326.7	V	67.07	-28.16	-27	1.16
8152.42	H	56.23	-39	-27	12
11097.5	H	62.51	-32.72	-27	5.72
14324.7	H	66.50	-28.73	-27	1.73

Test mode: 802.11n(HT20) Frequency(MHz): 5785

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7679.39	V	55.69	-39.54	-27	12.54
11113.5	V	62.53	-32.7	-27	5.7
13747.7	V	66.00	-29.23	-27	2.23
8073.41	H	57.63	-37.6	-27	10.6
11092.5	H	62.86	-32.37	-27	5.37
14336.7	H	66.45	-28.78	-27	1.78

Test mode: 802.11n(HT20) Frequency(MHz): 5825

Freq. (MHz)	Ant.Pol. H/V	Field Strength (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Over(dB)
7487.38	V	55.95	-39.28	-27	12.28
10048.5	V	61.11	-34.12	-27	7.12
14320.7	V	67.10	-28.13	-27	1.13
8081.41	H	56.72	-38.51	-27	11.51
10959.5	H	63.67	-31.56	-27	4.56
14322.7	H	66.56	-28.67	-27	1.67

**Note:** (1) All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3)EIRP[dBm] = E[dB $\mu$ V/m] + 20 log(d[meters]) - 104.77

d is the measurement distance in 3 meters

Test mode: 802.11n(20)		Frequency(MHz): 5745			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
6929.34	V	55.02	74.00	18.98	Peak
9873.52	V	62.00	74.00	12.00	Peak
14326.7	V	67.07	74.00	6.93	Peak
6929.34	V	39.46	54.00	14.54	Avg
9873.52	V	40.92	54.00	13.08	Avg
14326.7	V	47.47	54.00	6.53	Avg
8152.42	H	56.23	74.00	17.77	Peak
11097.5	H	62.51	74.00	11.49	Peak
14324.7	H	66.50	74.00	7.50	Peak
8152.42	H	40.74	54.00	13.26	Avg
11097.5	H	44.46	54.00	9.54	Avg
14324.7	H	47.65	54.00	6.35	Avg
Test mode: 802.11n(20)		Frequency(MHz): 5785			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7679.39	V	55.69	74.00	18.31	Peak
11113.5	V	62.53	74.00	11.47	Peak
13747.7	V	66.00	74.00	8.00	Peak
7679.39	V	39.53	54.00	14.47	Avg
11113.5	V	44.62	54.00	9.38	Avg
13747.7	V	42.65	54.00	11.35	Avg
8073.41	H	57.63	74.00	16.37	Peak
11092.5	H	62.86	74.00	11.14	Peak
14336.7	H	66.45	74.00	7.55	Peak
8073.41	H	40.91	54.00	13.09	Avg
11092.5	H	44.40	54.00	9.60	Avg
14336.7	H	47.54	54.00	6.46	Avg
Test mode: 802.11n(20)		Frequency(MHz): 5825			
Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)	Limit 3m(dBuV/m)	Over(dB)	Detector
7487.38	V	55.95	74.00	18.05	Peak
10048.5	V	61.11	74.00	12.89	Peak
14320.7	V	67.10	74.00	6.90	Peak
7487.38	V	40.02	54.00	13.98	Avg
10048.5	V	42.41	54.00	11.59	Avg
14320.7	V	47.97	54.00	6.03	Avg
8081.41	H	56.72	74.00	17.28	Peak
10959.5	H	63.67	74.00	10.33	Peak
14322.7	H	66.56	74.00	7.44	Peak
8081.41	H	40.89	54.00	13.11	Avg
10959.5	H	44.27	54.00	9.73	Avg
14322.7	H	47.38	54.00	6.62	Avg

**Note:** (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

(3) Correct Factor= Ant\_F + Cab\_L - Preamp

(4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

- Undesirable radiated Spurious Emission in band edge

All the antenna(Antenna 1) and modes(802.11a/n) has been tested and the worst(Antenna 1,802.11n) result recorded was report as below:

Test mode:	802.11n(HT20)	Frequency:	5745
------------	---------------	------------	------

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5724.12	V	79.11	-16.12	24.99	PASS
5722.62	H	72.55	-22.68	21.57	PASS

Test mode:	802.11n(HT20)	Frequency:	5825
------------	---------------	------------	------

Freq. (MHz)	Ant.Pol. H/V	Field Strength (RBW=100KHz) (dBuV/m)	E.I.R.P (dBm)	Limit (dBm)	Verdict
5851.00	V	73.26	-21.97	24.72	PASS
5851.00	H	68.97	-26.26	24.72	PASS

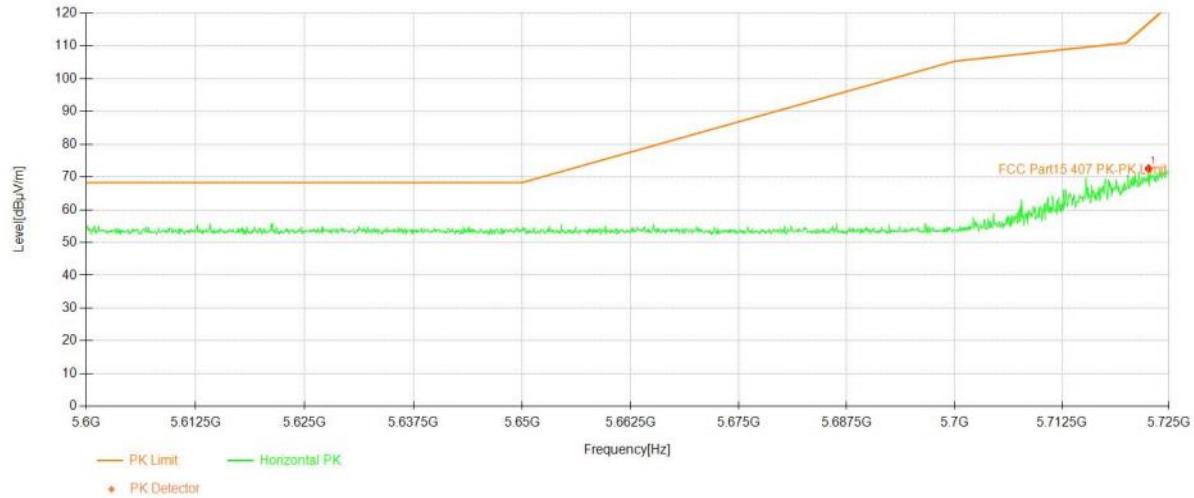
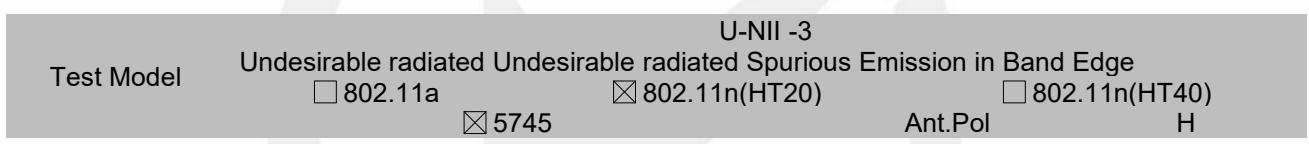
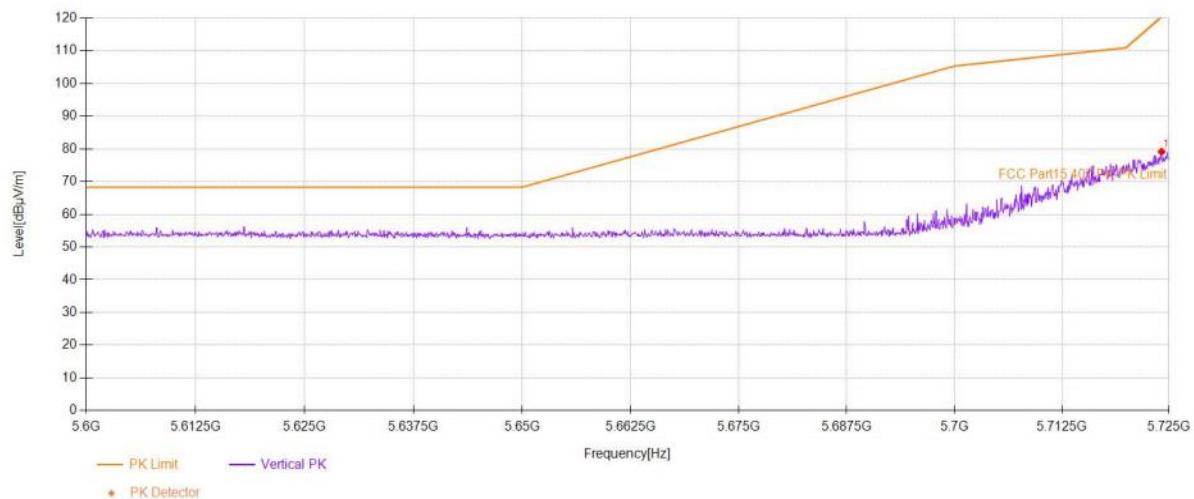
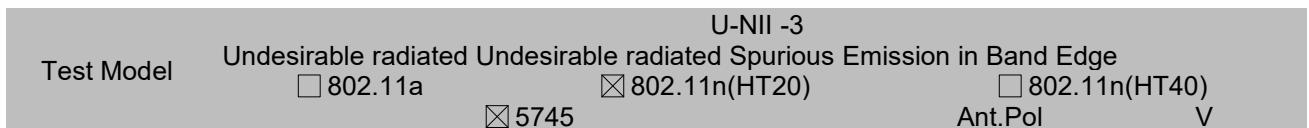
**Note:** (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

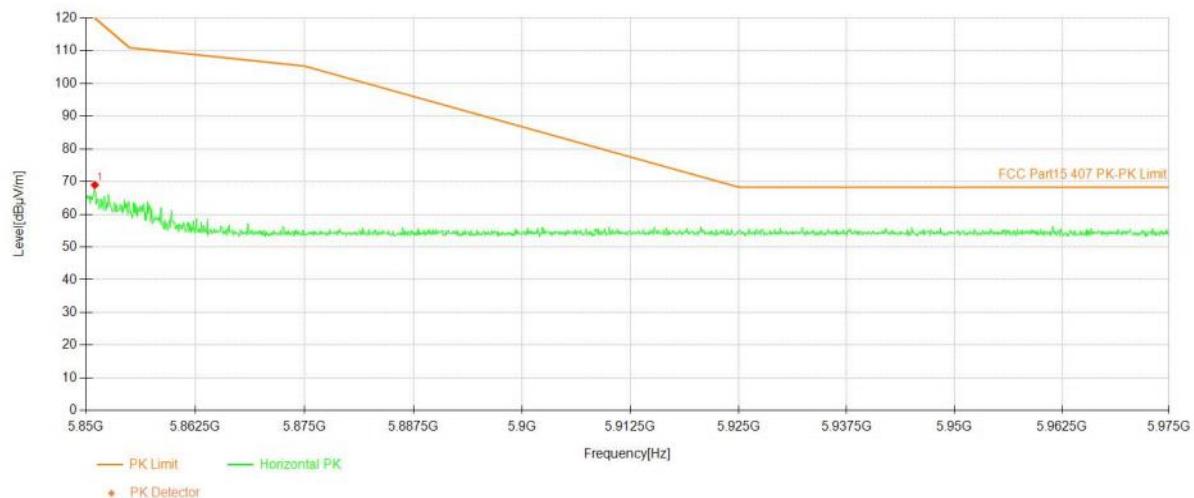
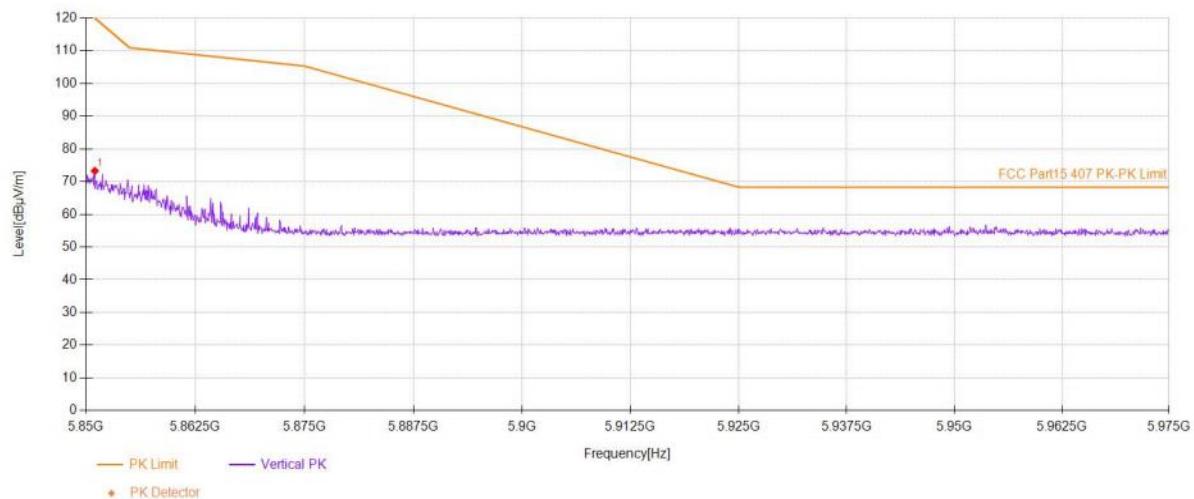
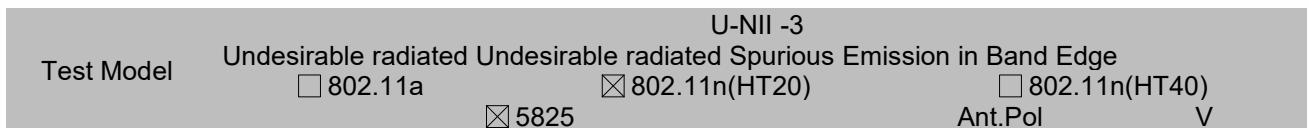
(2) Emission Level= Reading Level+Correct Factor +Cable Loss.

(3) Correct Factor= Ant\_F + Cab\_L - Preamp

(4) EIRP[dBm] = E[dB $\mu$ V/m] + 20 log(d[meters]) - 104.77

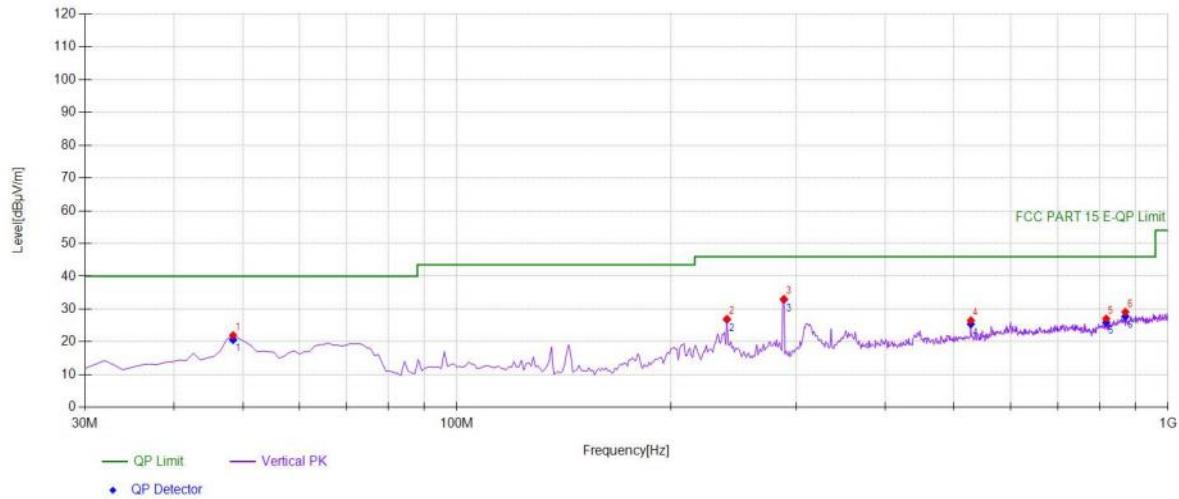
d is the measurement distance in 3 meters





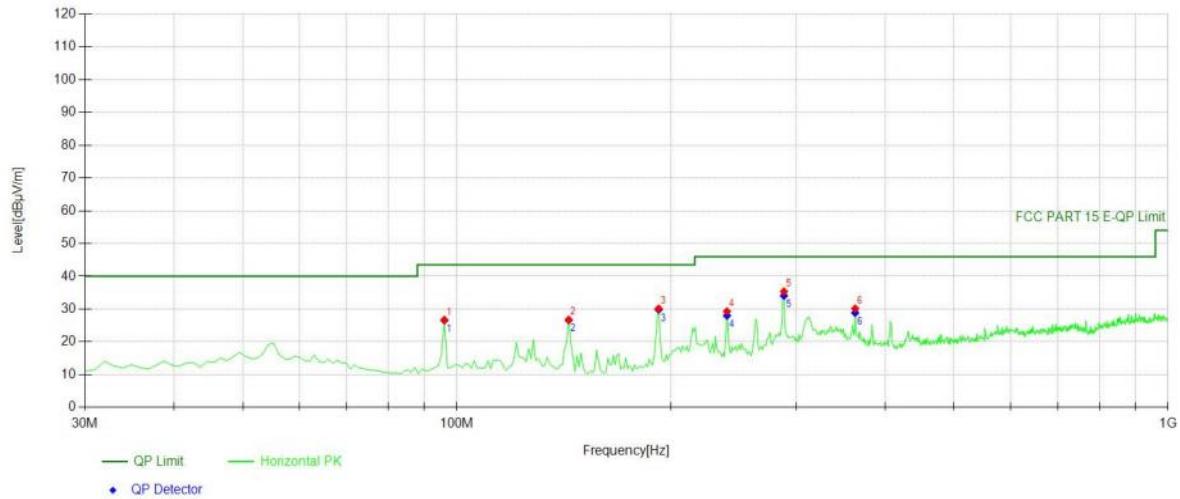
- Undesirable radiated Spurious Emission below 1GHz (30MHz to 1GHz)  
All of the configurations or modes are tested, the data of the worst case is recorded in the report.

Test mode: 802.11n(HT20) Frequency(MHz): 5180



Suspected Data List								
NO.	Freq. [MHz]	Reading [dB $\mu$ V]	Factor [dB/m]	Level [dB $\mu$ V/m]	Detector	Limit [dB $\mu$ V/m]	Margin [dB]	Polarity
1	48.4484	38.26	-16.24	22.02	PK	40.00	17.98	Vertical
2	239.729	42.72	-15.76	26.96	PK	46.00	19.04	Vertical
3	288.278	47.49	-14.44	33.05	PK	46.00	12.95	Vertical
4	528.108	35.85	-9.31	26.54	PK	46.00	19.46	Vertical
5	818.428	31.82	-4.74	27.08	PK	46.00	18.92	Vertical
6	870.860	32.51	-3.41	29.10	PK	46.00	16.90	Vertical

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dB $\mu$ V/m]	QP Limit [dB $\mu$ V/m]	QP Margin [dB]
1	48.4484	-16.24	20.63	40.00	19.37
2	239.7297	-15.76	26.83	46.00	19.17
3	288.2783	-14.44	32.92	46.00	13.08
4	528.1081	-9.31	25.44	46.00	20.56
5	818.4284	-4.74	25.98	46.00	20.02
6	870.8609	-3.41	27.76	46.00	18.24

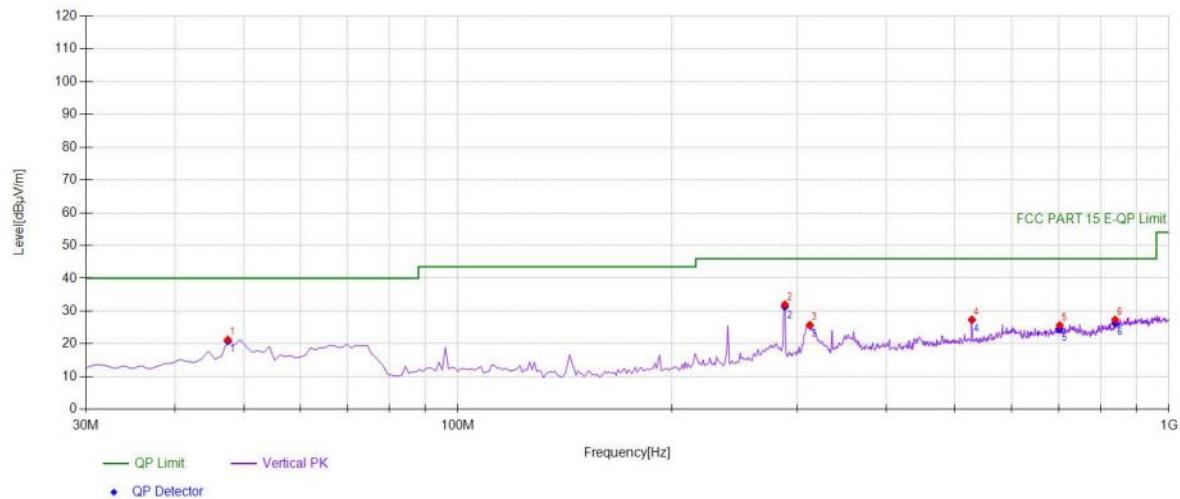

**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	96.026	44.50	-17.83	26.67	PK	43.50	16.83	Horizontal
2	143.603	46.44	-19.71	26.73	PK	43.50	16.77	Horizontal
3	192.152	48.13	-17.98	30.15	PK	43.50	13.35	Horizontal
4	239.729	45.07	-15.76	29.31	PK	46.00	16.69	Horizontal
5	288.278	49.80	-14.44	35.36	PK	46.00	10.64	Horizontal
6	363.043	42.36	-12.20	30.16	PK	46.00	15.84	Horizontal

**Final Data List**

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	96.026	-17.83	26.58	43.50	16.92
2	143.6036	-19.71	26.64	43.50	16.86
3	192.1522	-17.98	29.82	43.50	13.68
4	239.7297	-15.76	28.01	46.00	17.99
5	288.2783	-14.44	34.06	46.00	11.94
6	363.043	-12.20	28.86	46.00	17.14

Test mode: 802.11n(HT20) Frequency(MHz): 5200

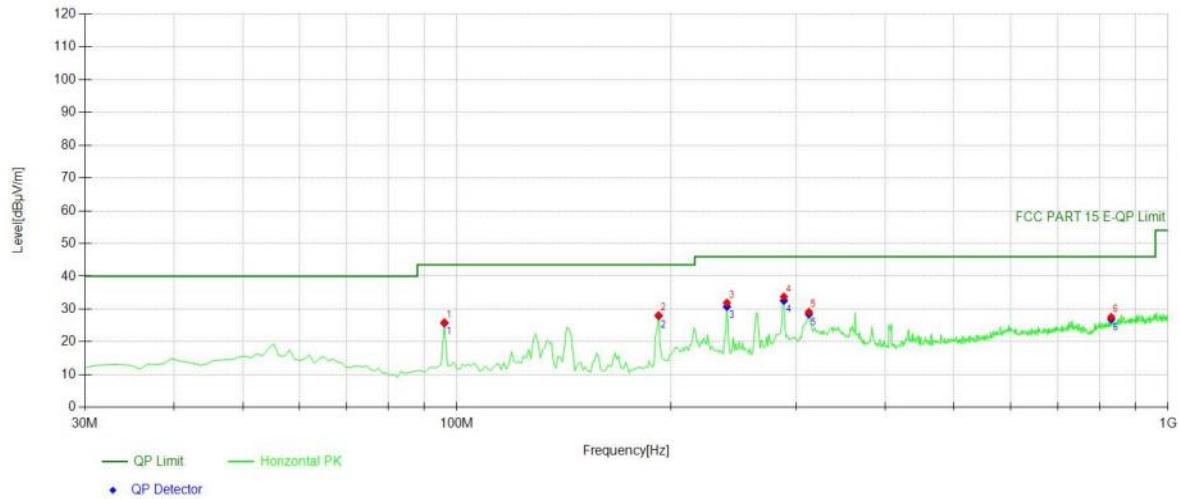


#### Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	47.4775	37.66	-16.39	21.27	PK	40.00	18.73	Vertical
2	288.278	46.45	-14.44	32.01	PK	46.00	13.99	Vertical
3	312.552	39.46	-13.68	25.78	PK	46.00	20.22	Vertical
4	528.108	36.74	-9.31	27.43	PK	46.00	18.57	Vertical
5	701.911	31.54	-5.86	25.68	PK	46.00	20.32	Vertical
6	839.789	31.77	-4.37	27.40	PK	46.00	18.60	Vertical

#### Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	47.4775	-16.39	20.85	40.00	19.15
2	288.2783	-14.44	31.34	46.00	14.66
3	312.5526	-13.68	25.65	46.00	20.35
4	528.1081	-9.31	27.30	46.00	18.70
5	701.9119	-5.86	24.59	46.00	21.41
6	839.7898	-4.37	26.31	46.00	19.69

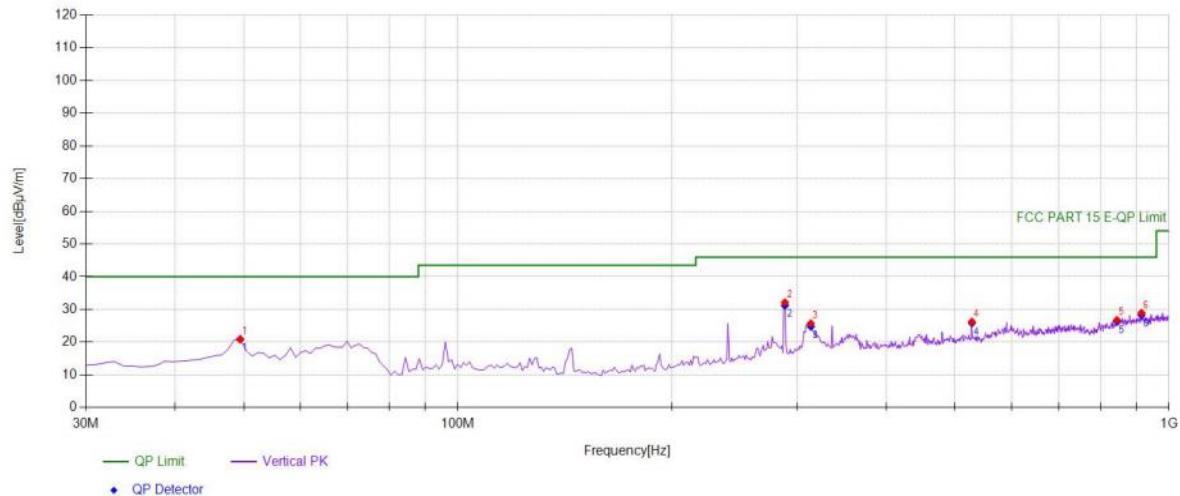

**Suspected Data List**

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	96.026	43.75	-17.83	25.92	PK	43.50	17.58	Horizontal
2	192.152	46.12	-17.98	28.14	PK	43.50	15.36	Horizontal
3	239.729	47.69	-15.76	31.93	PK	46.00	14.07	Horizontal
4	288.278	48.23	-14.44	33.79	PK	46.00	12.21	Horizontal
5	312.552	42.80	-13.68	29.12	PK	46.00	16.88	Horizontal
6	832.022	32.12	-4.54	27.58	PK	46.00	18.42	Horizontal

**Final Data List**

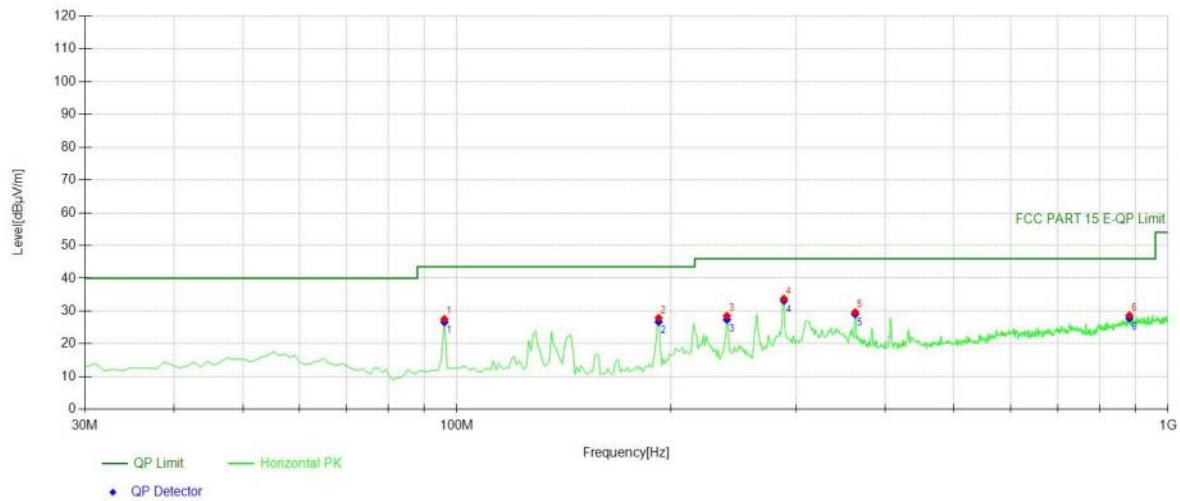
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	96.026	-17.83	25.67	43.50	17.83
2	192.1522	-17.98	27.89	43.50	15.61
3	239.7297	-15.76	30.72	46.00	15.28
4	288.2783	-14.44	32.58	46.00	13.42
5	312.5526	-13.68	28.44	46.00	17.56
6	832.022	-4.54	26.90	46.00	19.10

Test mode: 802.11n(HT20) Frequency(MHz): 5240



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	49.4194	37.02	-16.10	20.92	PK	40.00	19.08	Vertical
2	288.278	46.61	-14.44	32.17	PK	46.00	13.83	Vertical
3	313.523	39.42	-13.67	25.75	PK	46.00	20.25	Vertical
4	528.108	35.57	-9.31	26.26	PK	46.00	19.74	Vertical
5	844.644	30.87	-4.12	26.75	PK	46.00	19.25	Vertical
6	914.554	31.60	-2.65	28.95	PK	46.00	17.05	Vertical

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	49.4194	-16.10	20.92	40.00	19.08
2	288.2783	-14.44	31.21	46.00	14.79
3	313.5235	-13.67	24.79	46.00	21.21
4	528.1081	-9.31	25.84	46.00	20.16
5	844.6446	-4.12	26.33	46.00	19.67
6	914.5546	-2.65	28.28	46.00	17.72



#### Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	96.026	45.37	-17.83	27.54	PK	43.50	15.96	Horizontal
2	192.152	45.87	-17.98	27.89	PK	43.50	15.61	Horizontal
3	239.729	44.30	-15.76	28.54	PK	46.00	17.46	Horizontal
4	288.278	48.19	-14.44	33.75	PK	46.00	12.25	Horizontal
5	363.043	41.86	-12.20	29.66	PK	46.00	16.34	Horizontal
6	882.512	31.99	-3.31	28.68	PK	46.00	17.32	Horizontal

#### Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	96.026	-17.83	26.63	43.50	16.87
2	192.1522	-17.98	26.73	43.50	16.77
3	239.7297	-15.76	27.38	46.00	18.62
4	288.2783	-14.44	33.13	46.00	12.87
5	363.043	-12.20	29.04	46.00	16.96
6	882.5125	-3.31	27.81	46.00	18.19

## 8.5 POWER LINE CONDUCTED EMISSIONS

### 8.5.1 Applicable Standard

According to FCC Part 15.207(a)

### 8.5.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 8.5.3 Test Configuration

Test according to clause 6.3 conducted emission test setup

### 8.5.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Repeat above procedures until all frequency measured were complete.

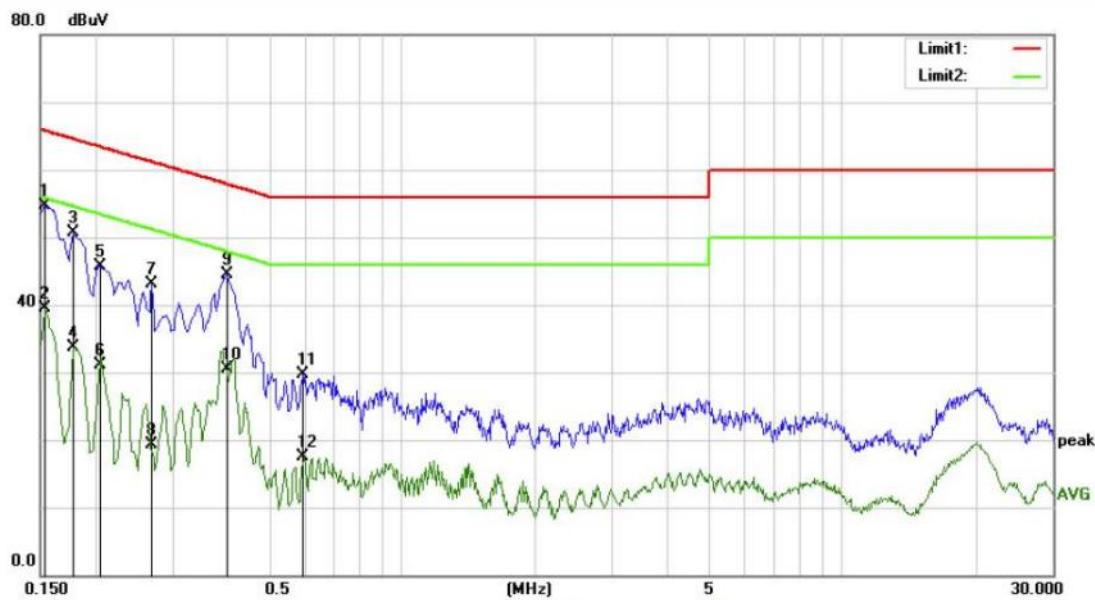
### 8.5.5 Test Results

Temperature : 21.2°C  
 Humidity : 55%

ATM Pressure: 1011 mbar  
 Test Engineer: Zhuowen Sheng

**Pass**

The all voltage have been tested, and the worst result recorded was report as below.



Site Conduction 2#

 Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B\_QP

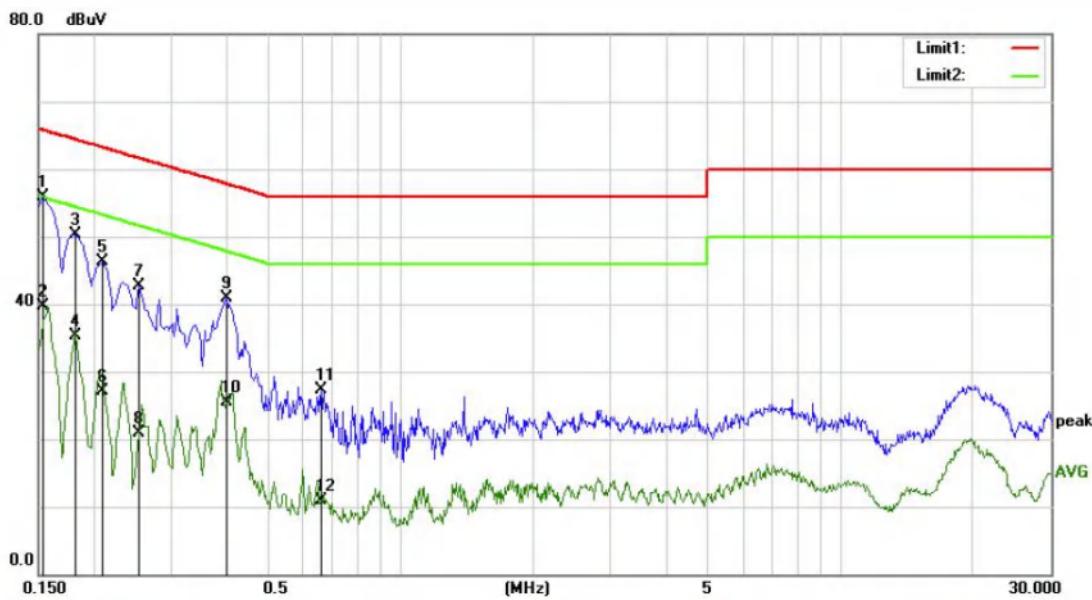
Power: AC 120V/60Hz

Humidity: 44 %

Mode: WiFi

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1540	44.01	10.69	54.70	65.78	-11.08	QP	
2		0.1540	28.78	10.69	39.47	55.78	-16.31	AVG	
3		0.1780	40.12	10.67	50.79	64.58	-13.79	QP	
4		0.1780	23.10	10.67	33.77	54.58	-20.81	AVG	
5		0.2060	35.14	10.66	45.80	63.37	-17.57	QP	
6		0.2060	20.44	10.66	31.10	53.37	-22.27	AVG	
7		0.2700	32.41	10.69	43.10	61.12	-18.02	QP	
8		0.2700	8.64	10.69	19.33	51.12	-31.79	AVG	
9		0.3980	33.73	10.72	44.45	57.90	-13.45	QP	
10		0.3980	19.83	10.72	30.55	47.90	-17.35	AVG	
11		0.5940	18.87	10.74	29.61	56.00	-26.39	QP	
12		0.5940	6.67	10.74	17.41	46.00	-28.59	AVG	



Site Conduction 2#

 Phase: **L1**

Temperature: 26

Limit: (CE)FCC PART 15 class B\_QP

Power: AC 120V/60Hz

Humidity: 44 %

Mode: WiFi

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1540	45.24	10.69	55.93	65.78	-9.85	QP	
2		0.1540	29.05	10.69	39.74	55.78	-16.04	AVG	
3		0.1820	39.65	10.67	50.32	64.39	-14.07	QP	
4		0.1820	24.59	10.67	35.26	54.39	-19.13	AVG	
5		0.2100	35.57	10.66	46.23	63.21	-16.98	QP	
6		0.2100	16.49	10.66	27.15	53.21	-26.06	AVG	
7		0.2540	31.94	10.69	42.63	61.63	-19.00	QP	
8		0.2540	10.23	10.69	20.92	51.63	-30.71	AVG	
9		0.4020	30.26	10.72	40.98	57.81	-16.83	QP	
10		0.4020	14.79	10.72	25.51	47.81	-22.30	AVG	
11		0.6580	16.58	10.74	27.32	56.00	-28.68	QP	
12		0.6580	0.11	10.74	10.85	46.00	-35.15	AVG	

## 8.6 ANTENNA APPLICATION

### 8.6.1 Antenna Requirement

Standard	Requirement
FCC CRF Part15.203	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 shall be considered sufficient to comply with the provisions of this section. 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.
FCC 47 CFR Part 15.247 (b)	If transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.
RSS-Gen Section 6.8	The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.
RSS-247 Section 5.4	If the transmitter employs an antenna system that emits multiple directional beams, but does not emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device (i.e. the sum of the power supplied to all antennas, antenna elements, staves, etc., and summed across all carriers or frequency channels) shall not exceed the applicable output power limit. However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

### 8.6.2 Result

PASS.

Note:  Antenna use a permanently attached antenna which is not replaceable.  
 Not using a standard antenna jack or electrical connector for antenna replacement  
 The antenna has to be professionally installed (please provide method of installation)

Please refer to the attached documentInternal Photos to show the antenna connector.

--- End of Report ---

## 声 明 Statement

1. 本报告无授权批准人签字及“检验检测专用章”无效。  
1. This report is invalid without the signature of the authorized approver and "special seal for testing".
2. 未经许可本报告不得部分复制。  
2. This report shall not be copied partly without authorization.
3. 本报告的检测结果仅对送测样品有效，委托方对样品的代表性和资料的真实性负责。  
3. The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material.
4. 本检测报告中检测项目标注有特殊符号则该项目不在资质认定范围内，仅作为客户委托、科研、教学或内部质量控制等目的使用。  
4. The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.
5. 本检测报告以实测值进行符合性判定，未考虑不确定度所带来的风险，本实验室不承担相关责任，特别约定、标准或规范中有明确规定的除外。  
5. The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, EMTEK shall not assume any responsibility.
6. 对本检验报告若有异议，请于收到报告之日起 20 日内提出。  
6. Objections shall be raised within 20 days from the date receiving the report.