

TEST REPORT

Product Name : Smart Access Control Terminal
Model Number : F34 Lite
FCC ID : 2AJ9T-20703

Prepared for : ZKTECO CO., LTD.
Address : No.32, Pingshan Industrial Avenue, Tangxia Town,
Dongguan City, Guangdong Province, China 523728

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Report Number : ENS2511140215W00503R
Date(s) of Tests : November 24, 2025 to December 23, 2025
Date of issue : December 25, 2025

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1 TEST RESULT CERTIFICATION

Applicant : ZKTECO CO., LTD.

Address : No.32, Pingshan Industrial Avenue, Tangxia Town, Dongguan City, Guangdong Province, China 523728

Manufacturer : ZKTECO CO., LTD.

Address : No.32, Pingshan Industrial Avenue, Tangxia Town, Dongguan City, Guangdong Province, China 523728

EUT : Smart Access Control Terminal

Model Name : F34 Lite

Trademark : N/A

Measurement Procedure Used:

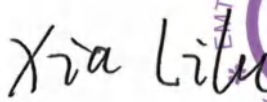
APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 , Subpart C	PASS

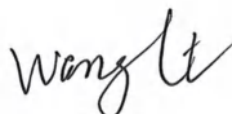
The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2020) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.247

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

Date of Test : November 24, 2025 to December 23, 2025

Prepared by : 
Cai Zefeng /Editor

Reviewer : 
Xia Lili /Supervisor

Approved & Authorized Signer : 
Wang Li /Manager

2 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product:	Smart Access Control Terminal
Model Number:	F34 Lite
IEEE 802.11 WLAN Mode Supported	☒ 802.11b ☒ 802.11g ☒ 802.11n(20MHz channel bandwidth)
Data Rate	802.11 b:1,2,5.5,11Mbps; 802.11 g:6,9,12,18,24,36,48,54Mbps; 802.11n(HT20): up to 72.2Mbps;
Modulation	DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n;
Operating Frequency Range	☒ 2412-2462MHz for 802.11b/g/n(HT20);
Number of Channels	☒ 11 channels for 802.11b/g n(HT20);
Transmit Power Max	15.90 dBm
Antenna Type	FPC Antenna
Antenna Gain	3.13 dBi Note: The antenna information provided by the manufacturer will have a certain impact on the test results.
Power Supply	DC 12V from adapter
Test Voltage	AC 120V/60Hz
Adapter1	MODEL:ADS-26FSG-12 12018EPCU INPUT: AC100-240V, 50Hz/60Hz,Max.0.7A OUTPUT:12V,1.5A
Temperature Range	-5°C ~ +45°C

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

Modified Information

Version	Report No.	Revision Date	Summary
Ver1.0	ENS2511140215W00503R	/	Original Report



3 SUMMARY OF TEST RESULT

FCC PartClause	Test Parameter	Verdict	Remark
15.247(a)(2)	DTS (6dB) Bandwidth	PASS	
ANSI C63.10 (2020)	Maximum Average Conducted Output Power	PASS	
15.247(e)	Maximum Power Spectral Density Level	PASS	
15.247(d)	Unwanted Emission Into Non-Restricted Frequency Bands	PASS	
15.247(d) 15.209	Unwanted Emission Into Restricted Frequency Bands (conducted)	PASS	
15.247(d) 15.209	Radiated Spurious Emission	PASS	
15.207	Conducted Emission Test	PASS	
15.247(b), 15.203	Antenna Application	PASS	
NOTE1:N/A (Not Applicable) NOTE2: According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits. NOTE3: The time on the test data photo is wrong, The correct test time is as described on the report.If there is fraud, Our laboratory assumes full responsibility.			

RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: **2AJ9T-20703** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

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 C
 FCC KDB 558074 D01 15.247 Meas Guidance v05r02

4.2 MEASUREMENT EQUIPMENT USED

4.2.1 Conducted Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2025/5/9	1Year
PULSE LIMITER	Rohde & Schwarz	ESH3-Z2	100107	2025/5/9	1Year
AMN	Rohde & Schwarz	ESH3-Z5	100191	2025/5/9	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2025/5/9	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100011	2025/5/9	1Year
V-Network	Rohde & Schwarz	ESH3-Z6	100253	2025/5/9	1Year

4.2.2 Radiated Emission Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Pre-Amplifier	HP	8447F	2944A07999	2025/5/9	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2025/5/9	1Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2025/7/5	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2025/8/9	2 Year
Pre-Amplifier	Bonn	BLMA 0118-5G	2213967B-01	2025/10/16	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2025/5/9	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2025/5/13	2 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2025/5/13	2 Year
Cable/Coaxial Cable	TIMES	NmNm-7-C1570 2	N/A	2025/5/22	1Year
Coaxial Cable	TIMES	HF290-NMSM-6. 5M	N/A	2025/5/22	1Year
Coaxial Cable	TIMES	LMR-240 N-N	N/A	2025/5/22	1Year

4.2.3 Radio Frequency Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Wideband Radio Communication Tester	R&S	CMW500	171168	2025/9/9	1 Year
Frequency Extender	R&S	CMW-Z800A	100430	2025/9/9	1 Year
Spectrum Analyzer	R&S	FSV3044	101290	2025/10/16	1 Year
Analog Signal Generator	R&S	SMB100A	183237	2025/9/9	1 Year
Vector Signal Generator	R&S	SMM100A	101808	2025/9/9	1 Year
RF Control Unit	Tonscend	JS0806-2	22C8060567	2025/5/10	N/A
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2025/5/10	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.

Those data rates (☒802.11b:1 Mbps; ☒802.11g: 6 Mbps; ☒802.11n(HT20): MCS0) were used for all test.

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

☒Frequency and Channel list for 802.11b/g/n (HT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462
2	2417	7	2442		
3	2422	8	2447		
4	2427	9	2452		
5	2432	10	2457		

☒Test Frequency and Channel for 802.11b/g/n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

Bldg 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

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:

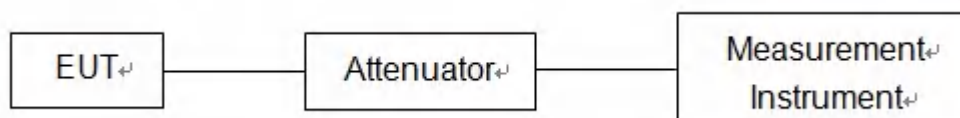
Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$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

Measurement Uncertainty for a level of Confidence of 95%

7 SETUP OF EQUIPMENT UNDER TEST

7.1 RADIO FREQUENCY TEST SETUP 1

The WLAN component's antenna ports(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 2

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 C63.10-2020 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 antennaplane may also need to be positioned horizontally at the specified distance from the EUT.

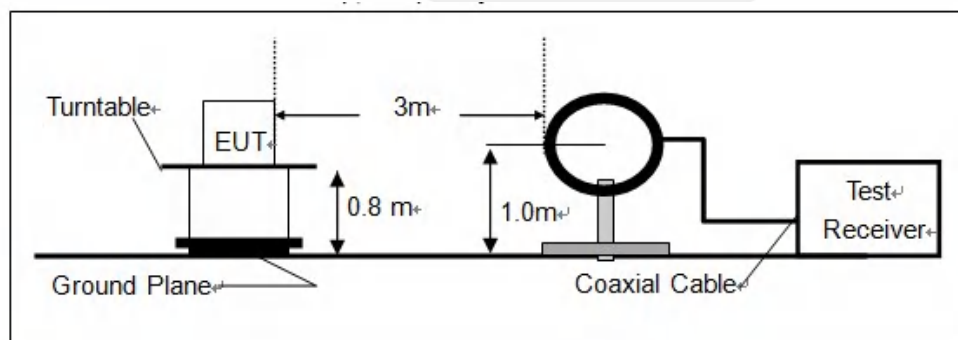
30MHz-1GHz:

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).

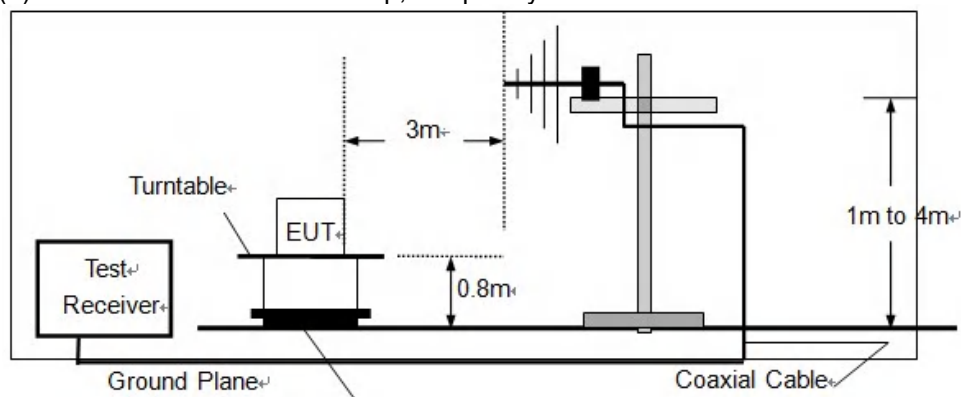
Above 1GHz:

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).

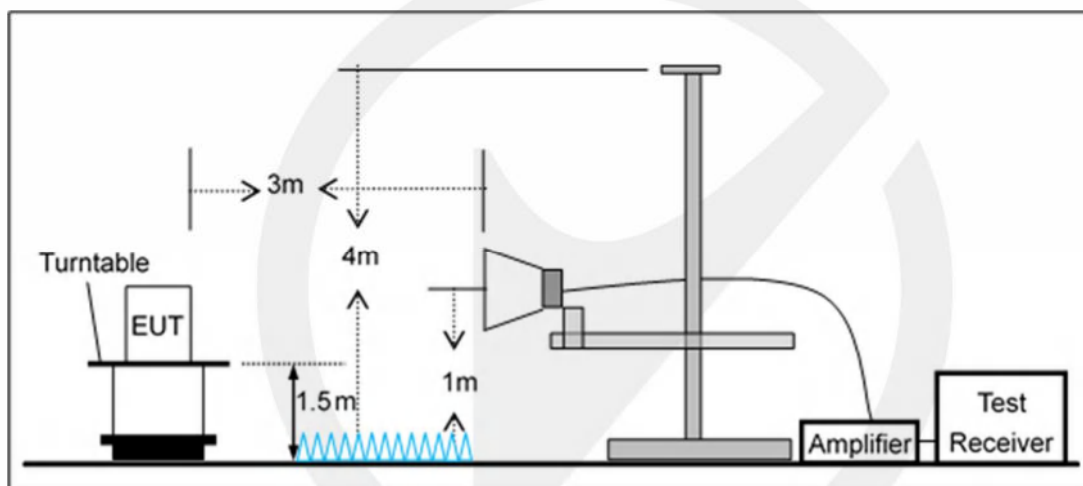
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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

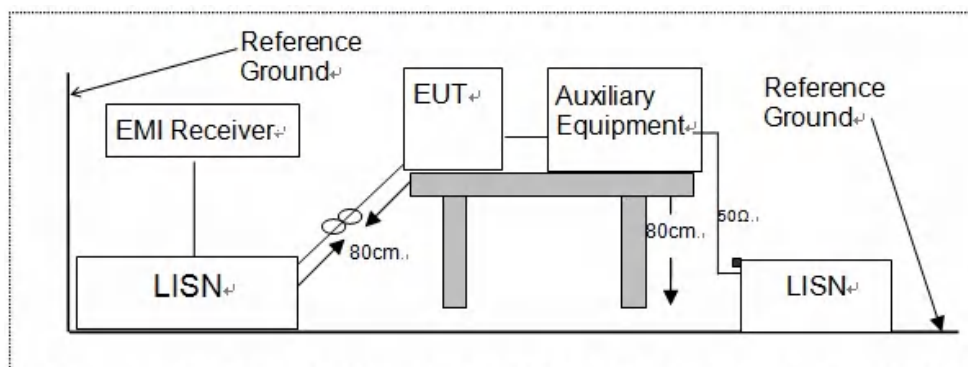


7.3 CONDUCTED EMISSION TEST SETUP

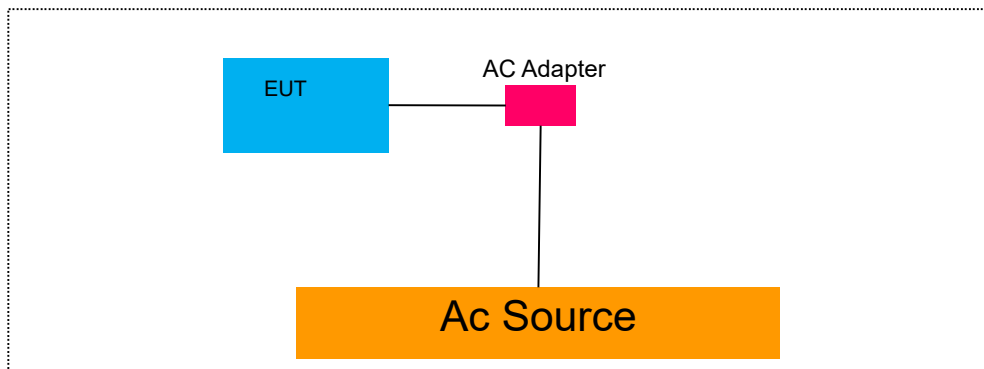
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All 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 C63.10-2020 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

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

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.
3. Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment

8 TEST REQUIREMENTS

8.1 DTS (6DB) BANDWIDTH

8.1.1 Applicable Standard

According to FCC Part15.247 (a)(2) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.1.2 Conformance Limit

The minimum -6 dB bandwidth shall be at least 500 kHz.

8.1.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.1.4 Test Procedure

The EUT was operating in IEEE 802.11b/g/n mode and controlled its channel. Printed out the test result from the spectrum by hard copy function.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1(i.e., RBW= 100 kHz, VBW≥3 RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

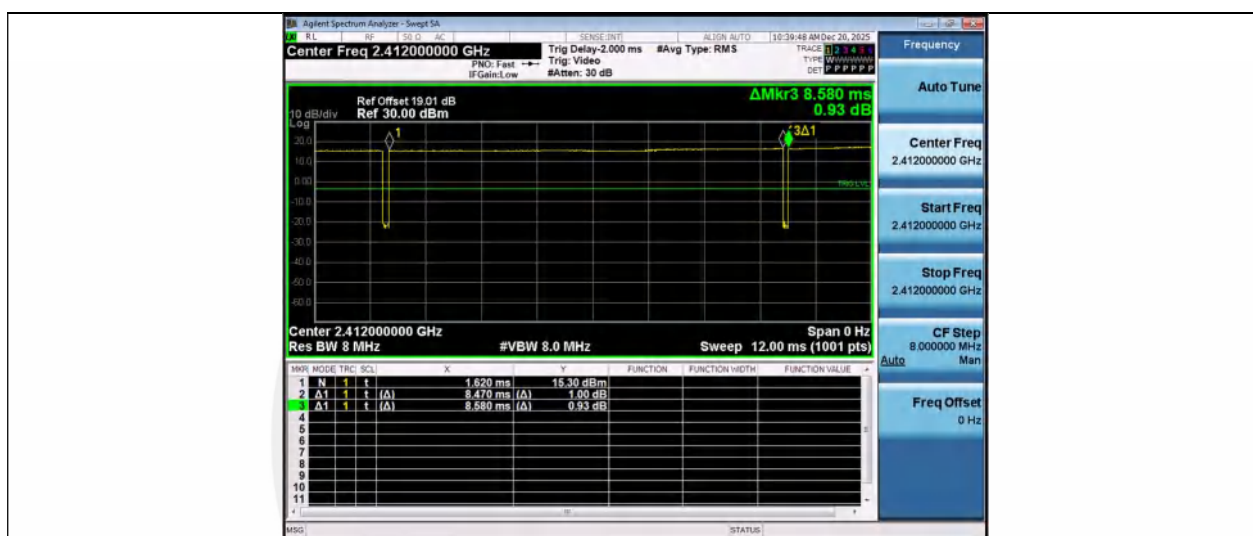
Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Measure and record the results in the test report.

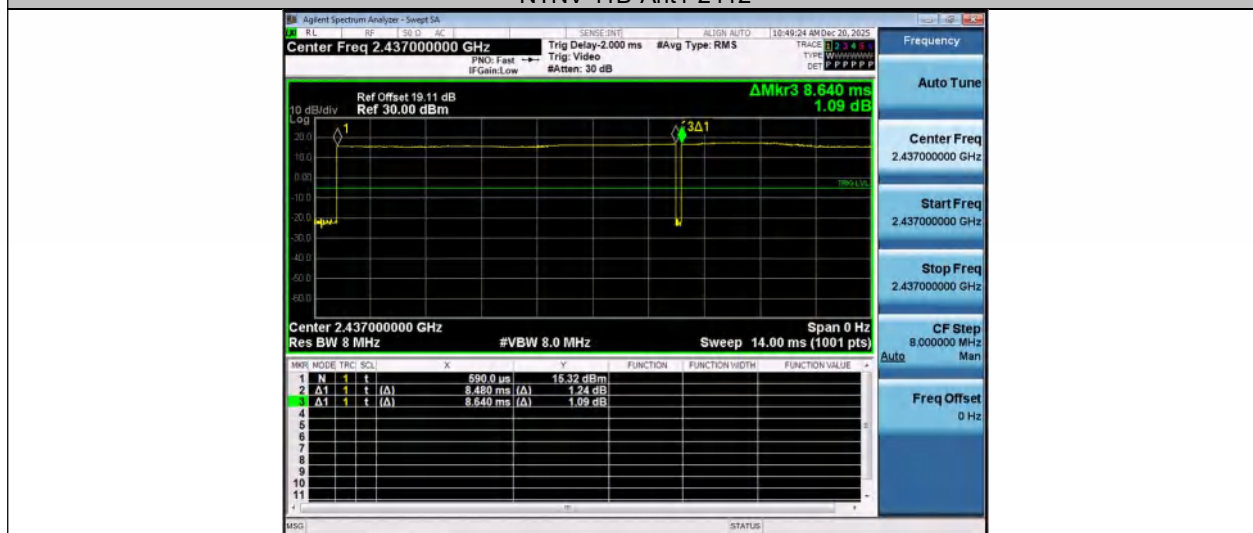
8.1.5 Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

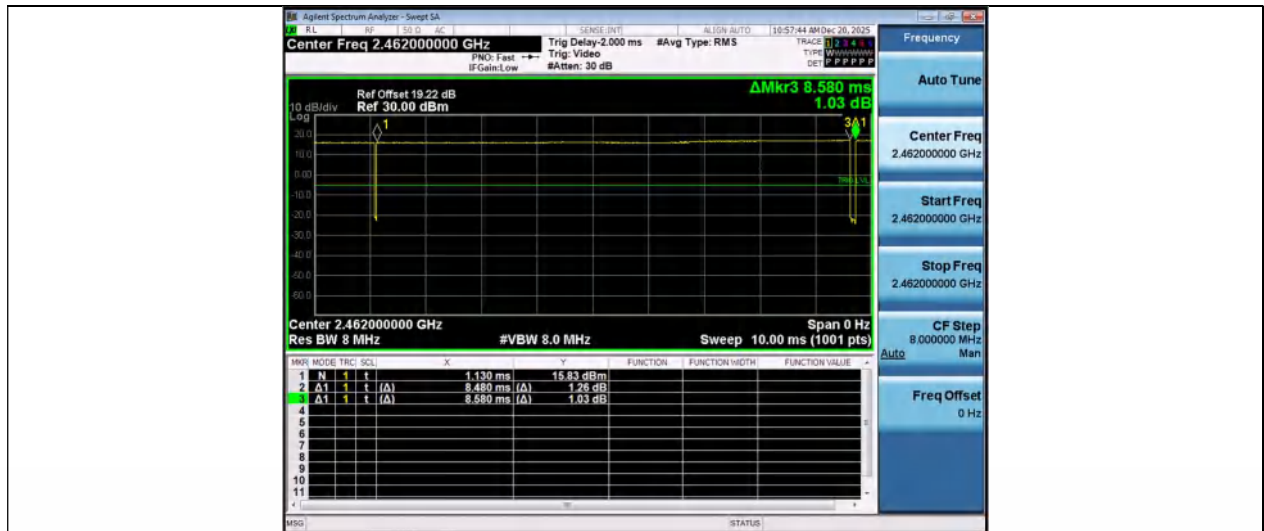
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	8.47	8.58	98.72	0.06
11B	Ant1	2437	8.48	8.64	98.15	0.08
11B	Ant1	2462	8.48	8.58	98.83	0.05
11G	Ant1	2412	1.40	1.57	89.17	0.50
11G	Ant1	2437	1.40	1.54	90.91	0.41
11G	Ant1	2462	1.41	1.56	90.38	0.44
11N20SISO	Ant1	2412	1.32	1.47	89.80	0.47
11N20SISO	Ant1	2437	1.31	1.48	88.51	0.53
11N20SISO	Ant1	2462	1.32	1.47	89.80	0.47



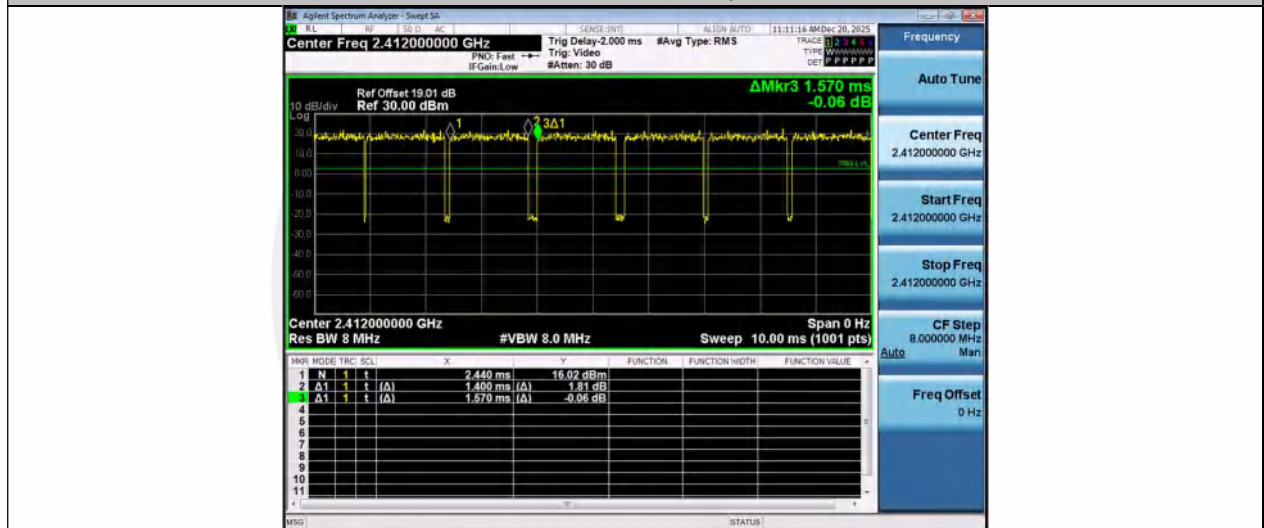
NTVN-11B-Ant1-2412



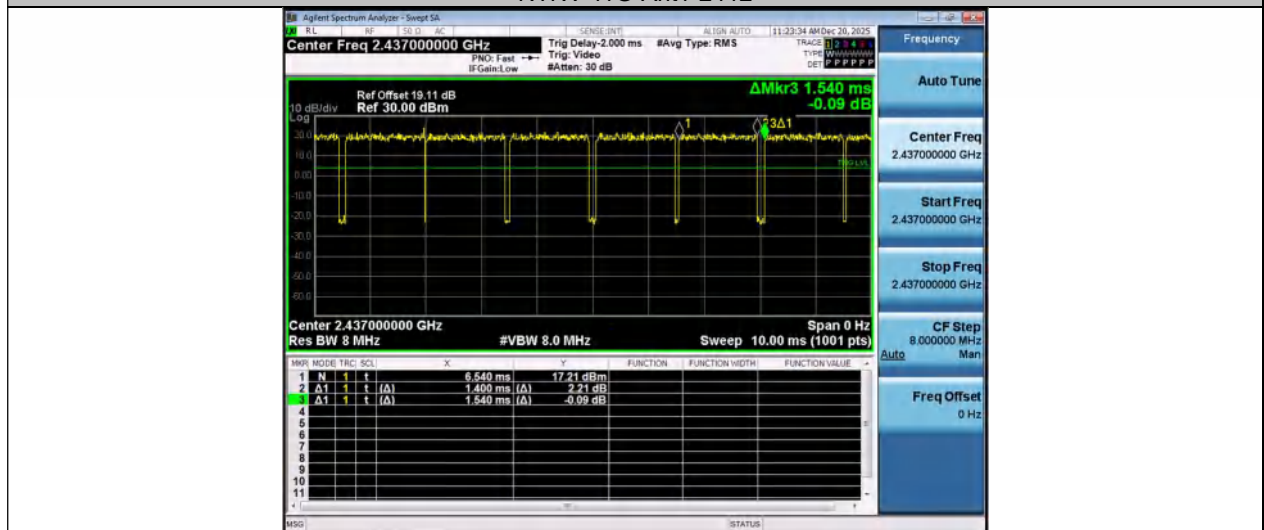
NTVN-11B-Ant1-2437



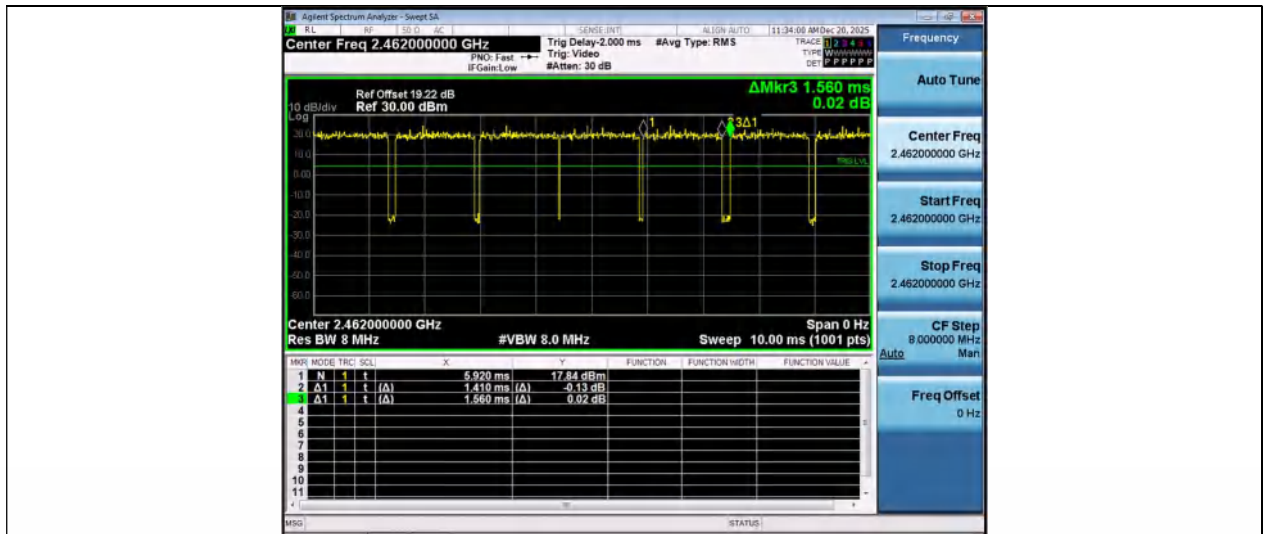
NTNV-11B-Ant1-2462



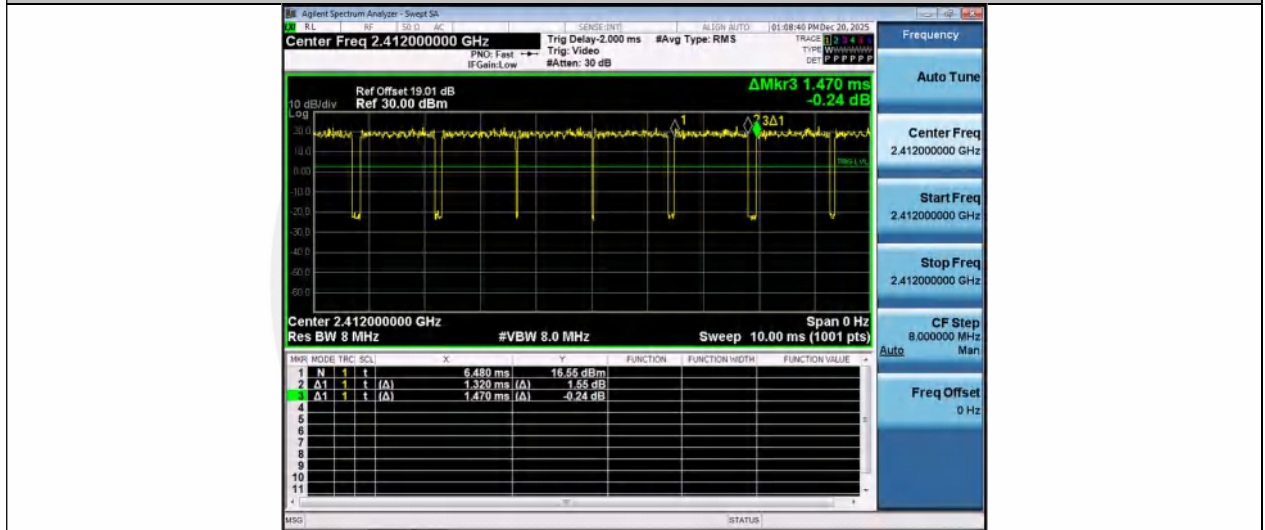
NTNV-11G-Ant1-2412



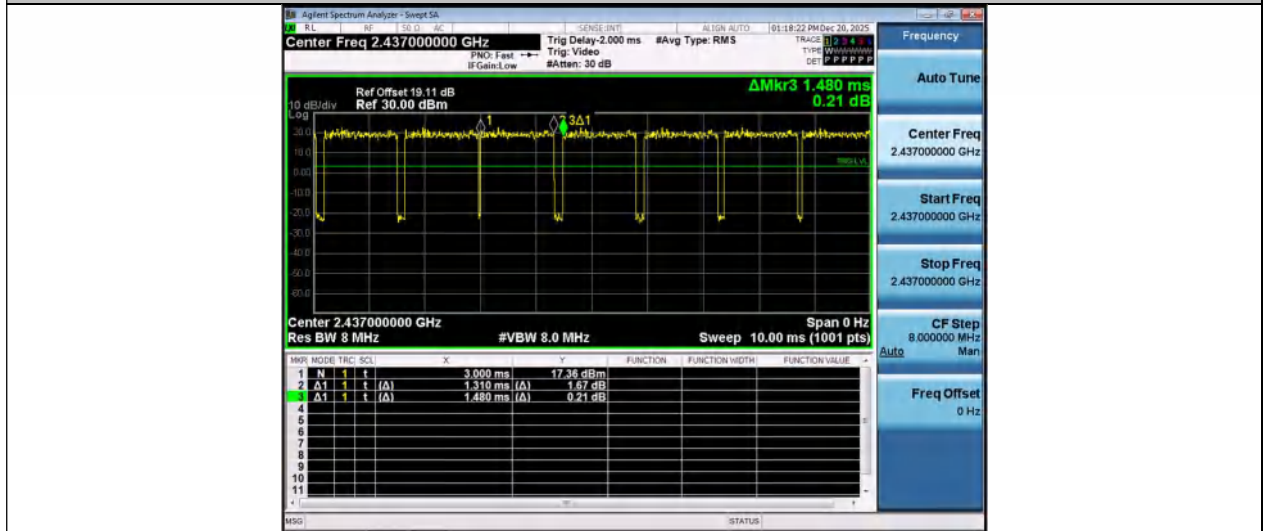
NTNV-11G-Ant1-2437



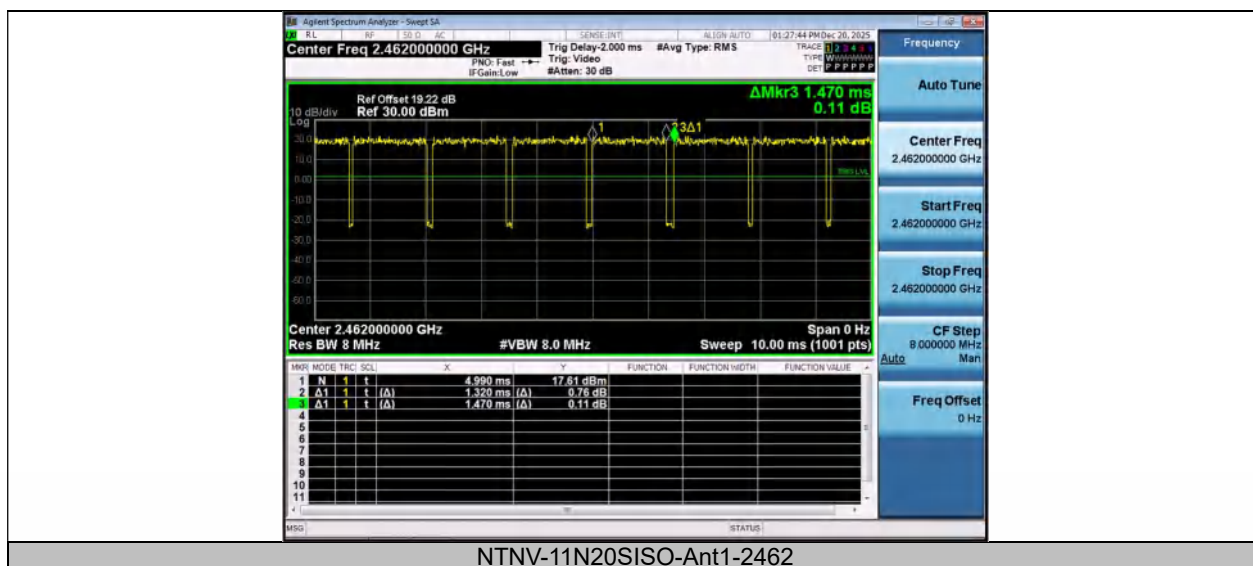
NTNV-11G-Ant1-2462



NTNV-11N20SISO-Ant1-2412



NTNV-11N20SISO-Ant1-2437

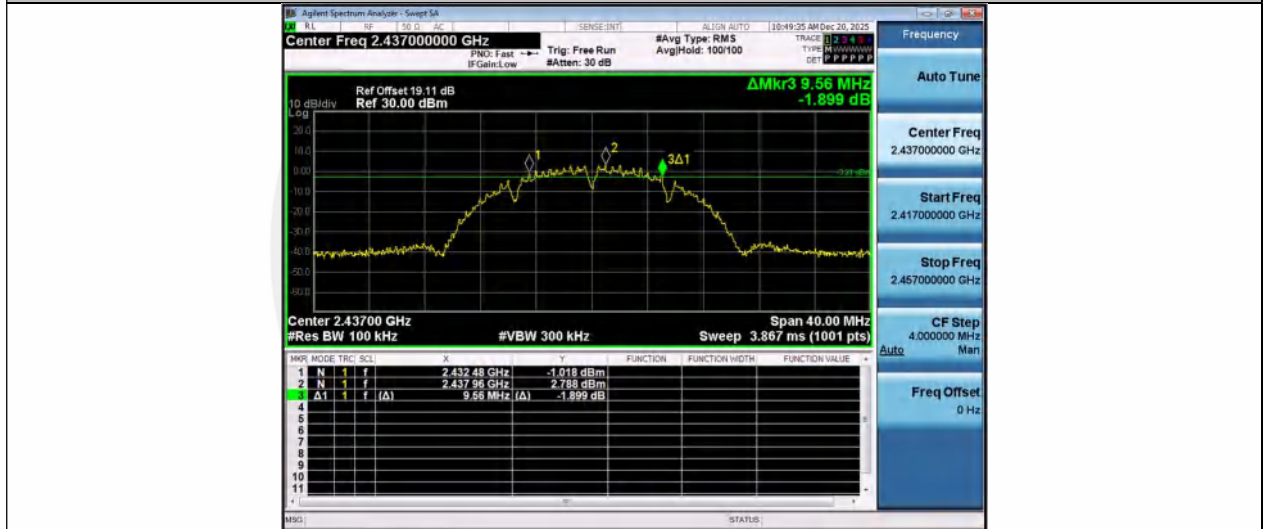


NTNV-11N20SISO-Ant1-2462

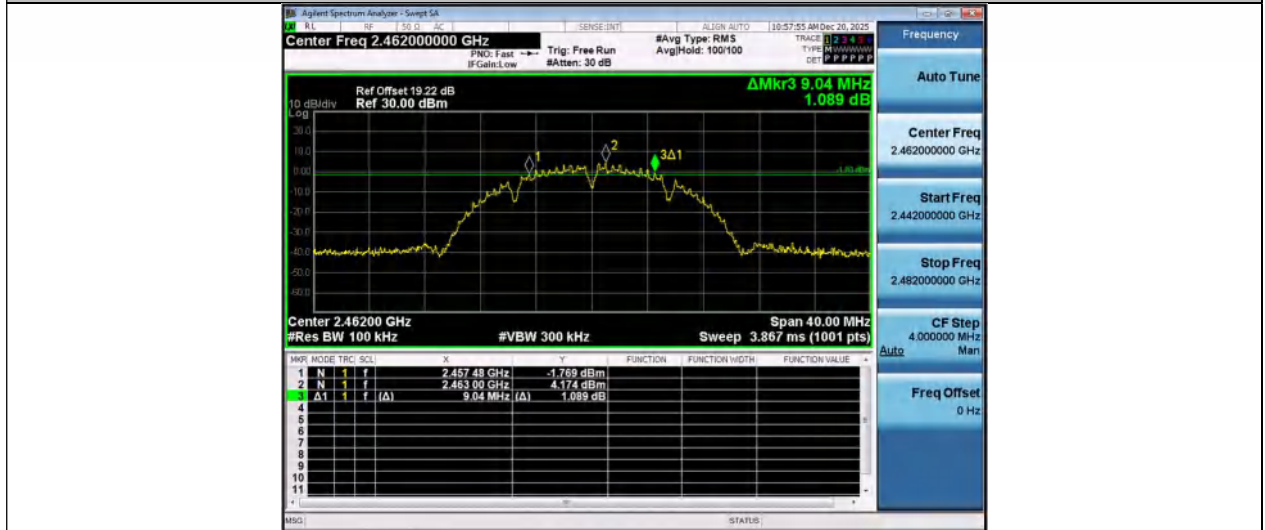
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.560	2407.480	2417.040	0.5	PASS
		2437	9.560	2432.480	2442.040	0.5	PASS
		2462	9.040	2457.480	2466.520	0.5	PASS
11G	Ant1	2412	16.280	2403.840	2420.120	0.5	PASS
		2437	16.320	2428.840	2445.160	0.5	PASS
		2462	16.320	2453.840	2470.160	0.5	PASS
11N20SISO	Ant1	2412	16.280	2403.840	2420.120	0.5	PASS
		2437	16.880	2428.520	2445.400	0.5	PASS
		2462	17.520	2453.240	2470.760	0.5	PASS



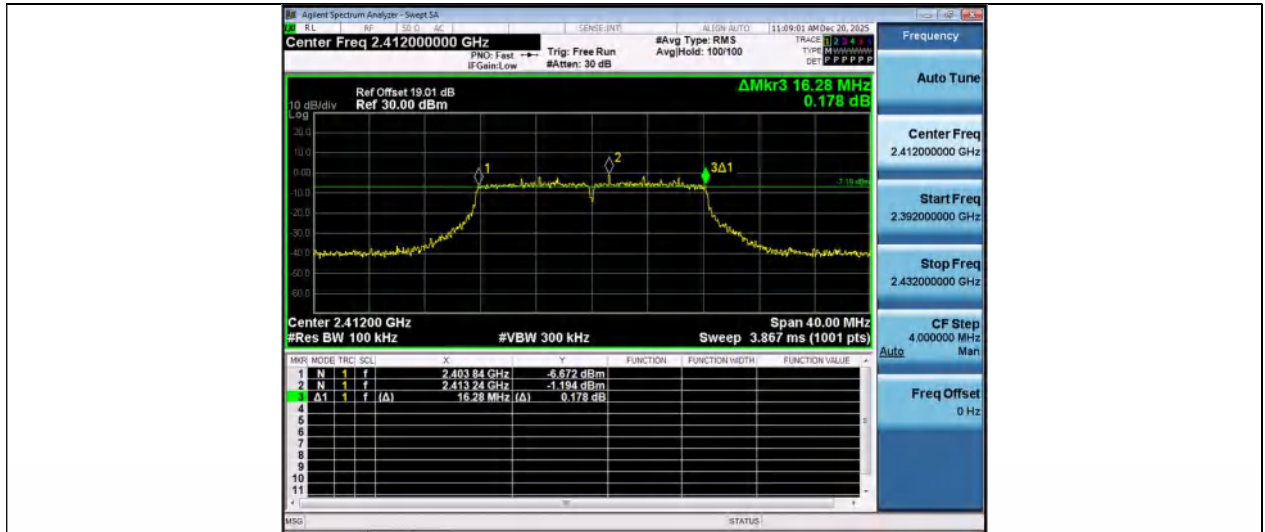
11B-Ant1-2412-PASS



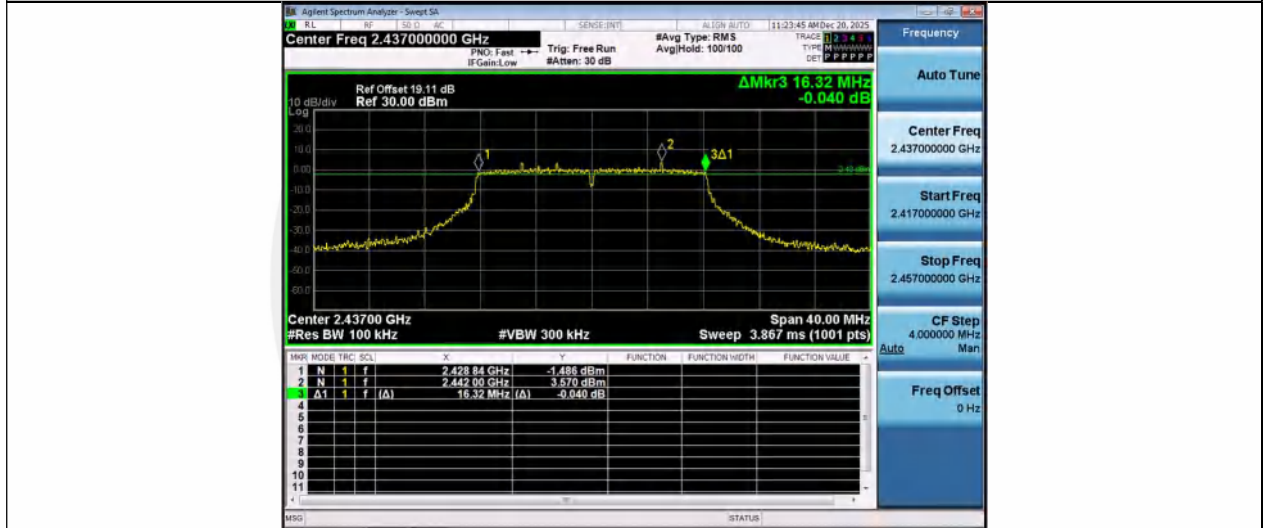
11B-Ant1-2437-PASS



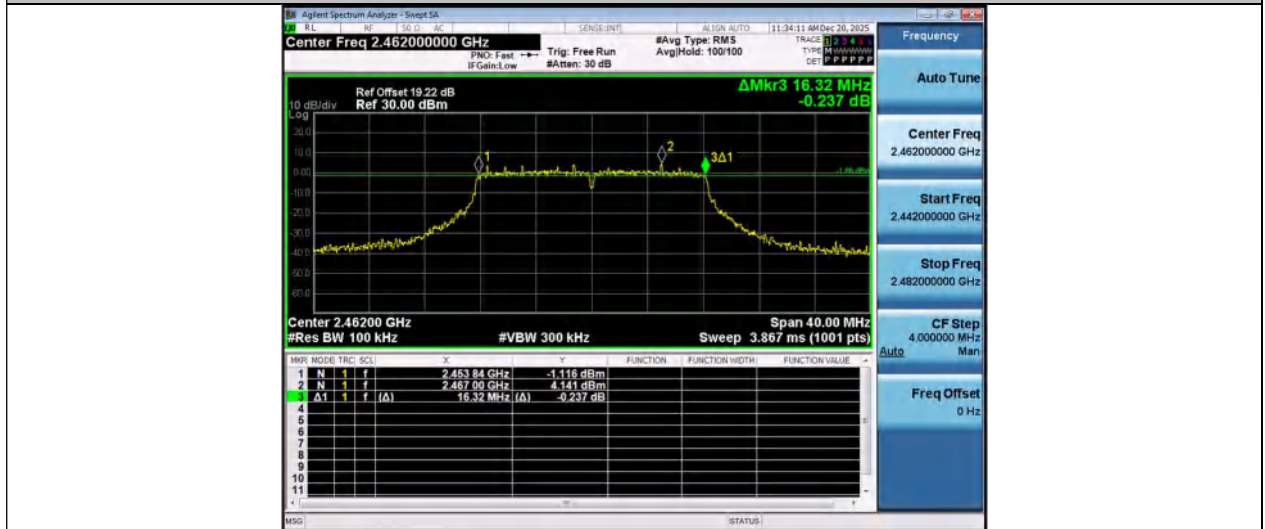
11B-Ant1-2462-PASS



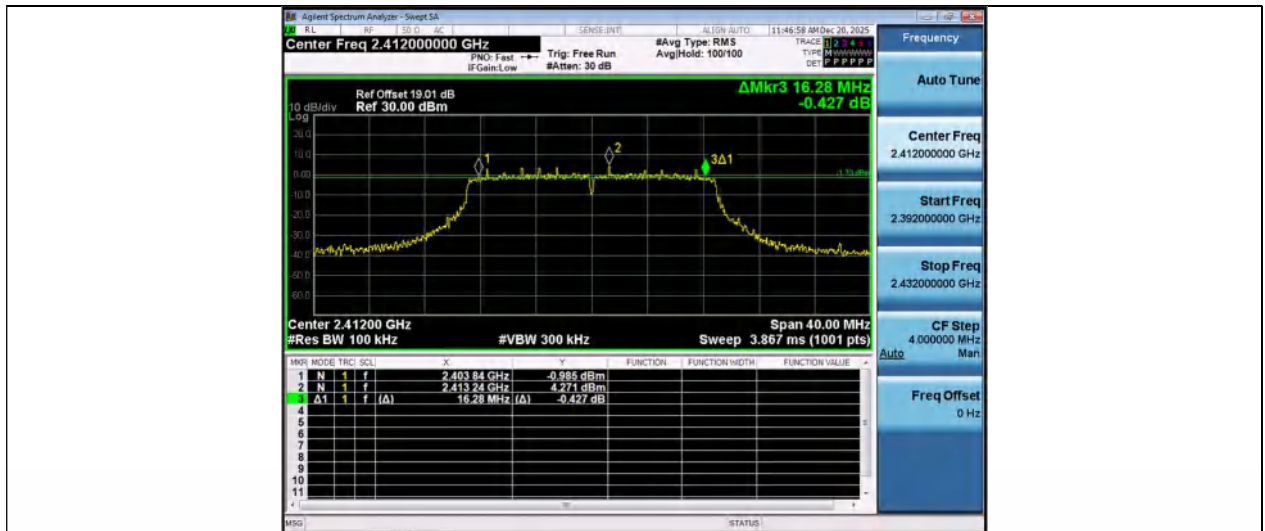
11G-Ant1-2412-PASS



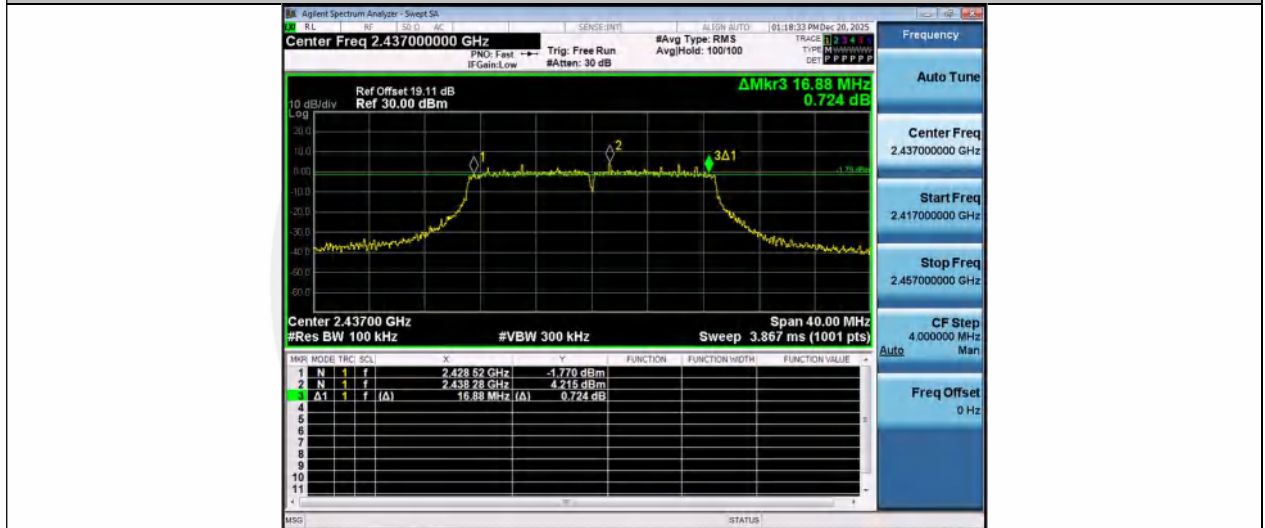
11G-Ant1-2437-PASS



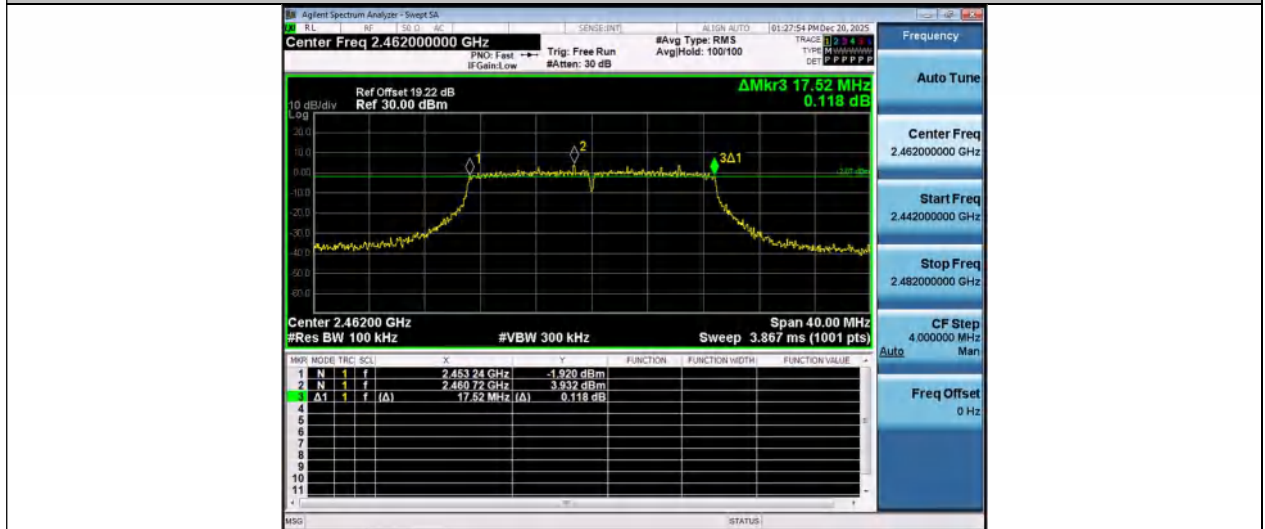
11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS



11N20SISO-Ant1-2462-PASS

8.2 MAXIMUM AVERAGE CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to ANSI C63.10 (2020)

8.2.2 Conformance Limit

The maximum peak conducted output power of the intentional radiator for systems using digital modulation in the 2400 - 2483.5 MHz bands shall not exceed: 1 Watt (30dBm).

8.2.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.2.4 Test Procedure

■ According to ANSI C63.10 (2020)

Set span to >1.5 times the OBW.

Set RBW = 1% to 5% of the OBW, but do not exceed 1 MHz.

Set VBW $\geq [3 \times \text{RBW}]$.

Set Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing RBW /2, so that narrowband signals are not lost between frequency bins.)

Set Sweep time = auto.

Set Detector = power averaging (mms), if available. Otherwise, use sample detector mode.

If transmit duty cycle < 98%, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at the 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 $\geq 98\%$, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."

Trace average at least 100 traces in power averaging (rms) mode

Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band-edges. If the instrument does not have a band-power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

In addition, The duty cycle factor has been added to the test plot.

Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

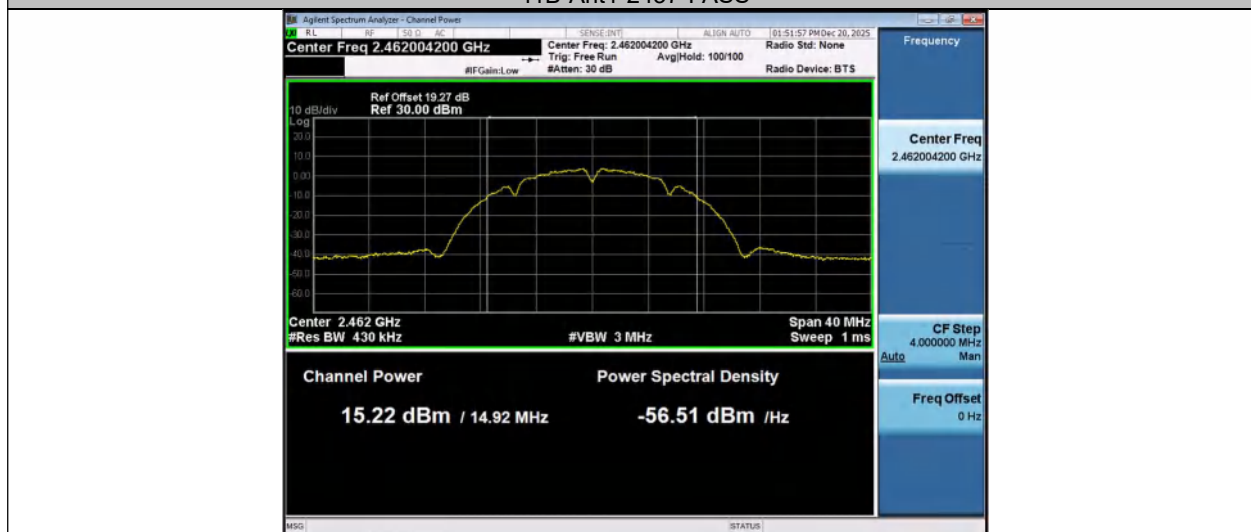
Test Mode	Antenna	Frequency [MHz]	Average power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	14.50	98.72	0.06	14.56	≤ 30.00	PASS
11B	Ant1	2437	14.83	98.15	0.08	14.91	≤ 30.00	PASS
11B	Ant1	2462	15.17	98.83	0.05	15.22	≤ 30.00	PASS
11G	Ant1	2412	13.93	89.17	0.50	14.43	≤ 30.00	PASS
11G	Ant1	2437	14.49	90.91	0.41	14.90	≤ 30.00	PASS
11G	Ant1	2462	14.89	90.38	0.44	15.33	≤ 30.00	PASS
11N20SIS O	Ant1	2412	14.19	89.80	0.47	14.66	≤ 30.00	PASS
11N20SIS O	Ant1	2437	14.52	88.51	0.53	15.05	≤ 30.00	PASS
11N20SIS O	Ant1	2462	15.43	89.80	0.47	15.90	≤ 30.00	PASS



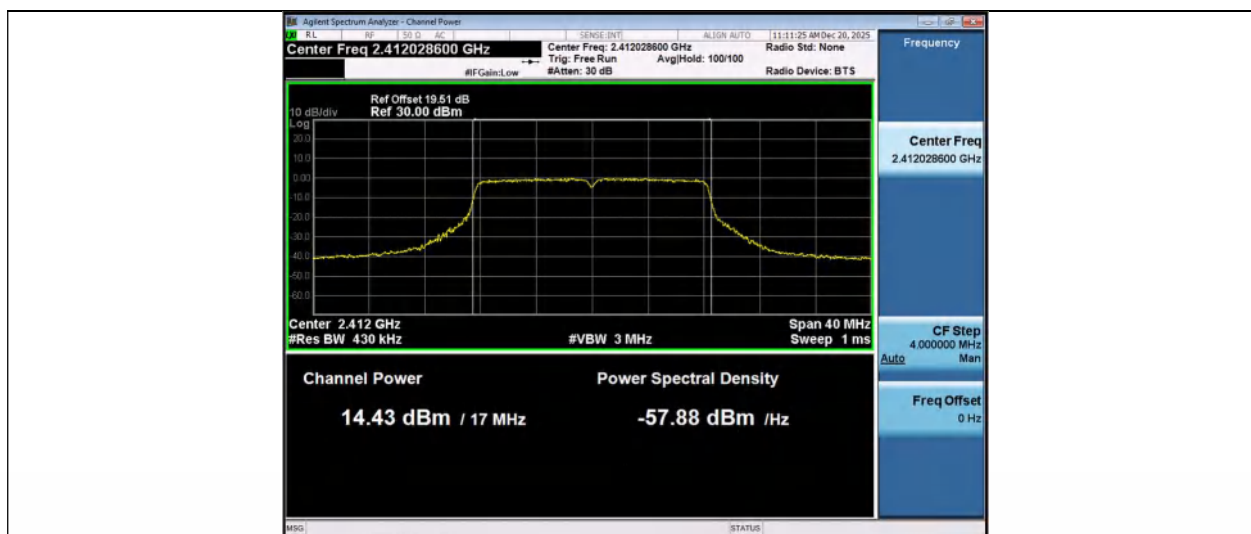
11B-Ant1-2412-PASS



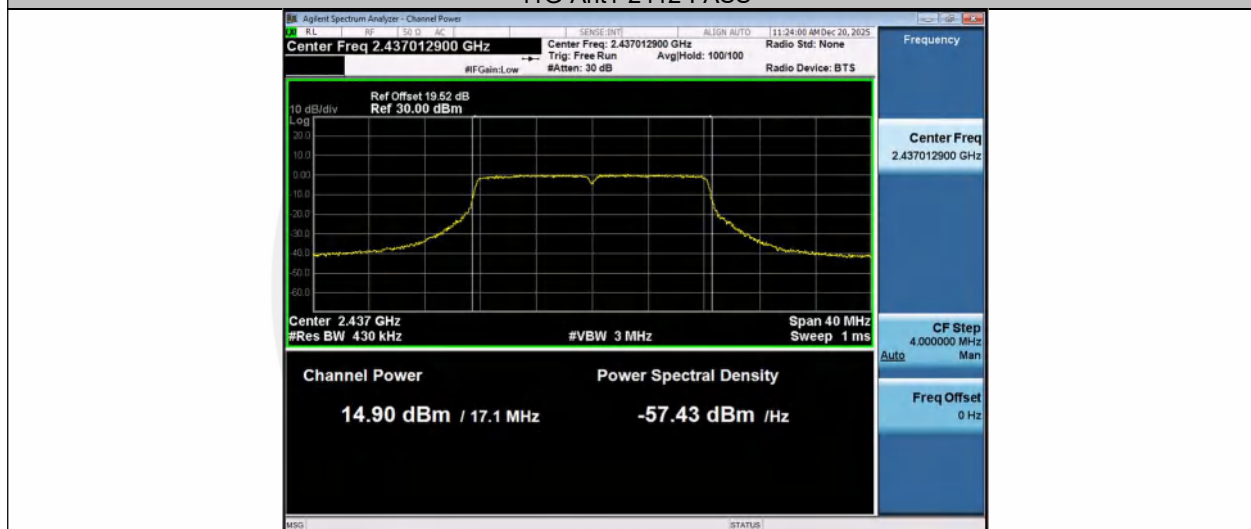
11B-Ant1-2437-PASS



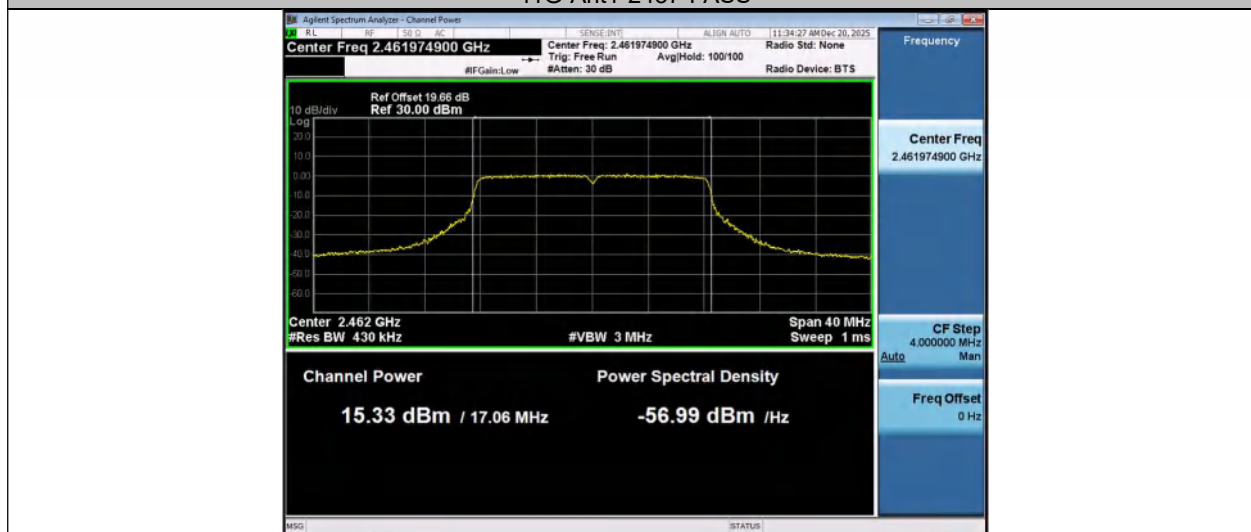
11B-Ant1-2462-PASS



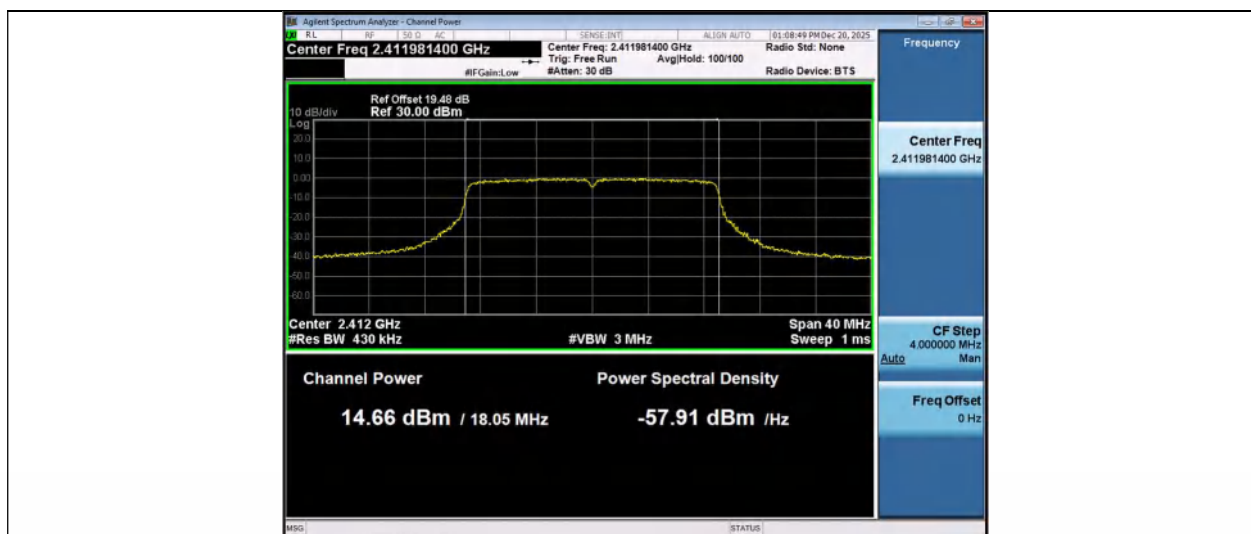
11G-Ant1-2412-PASS



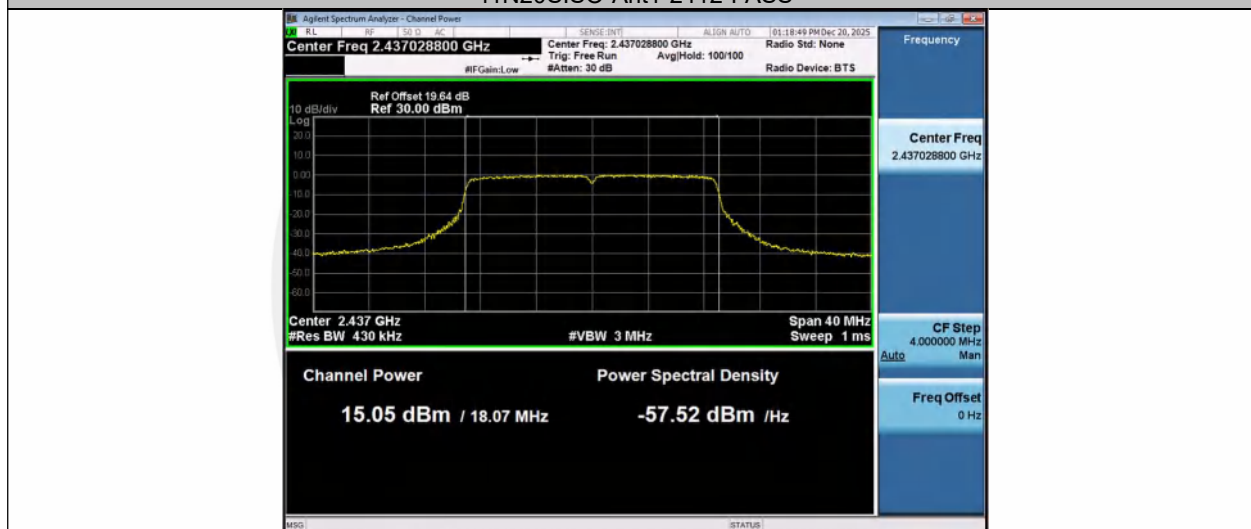
11G-Ant1-2437-PASS



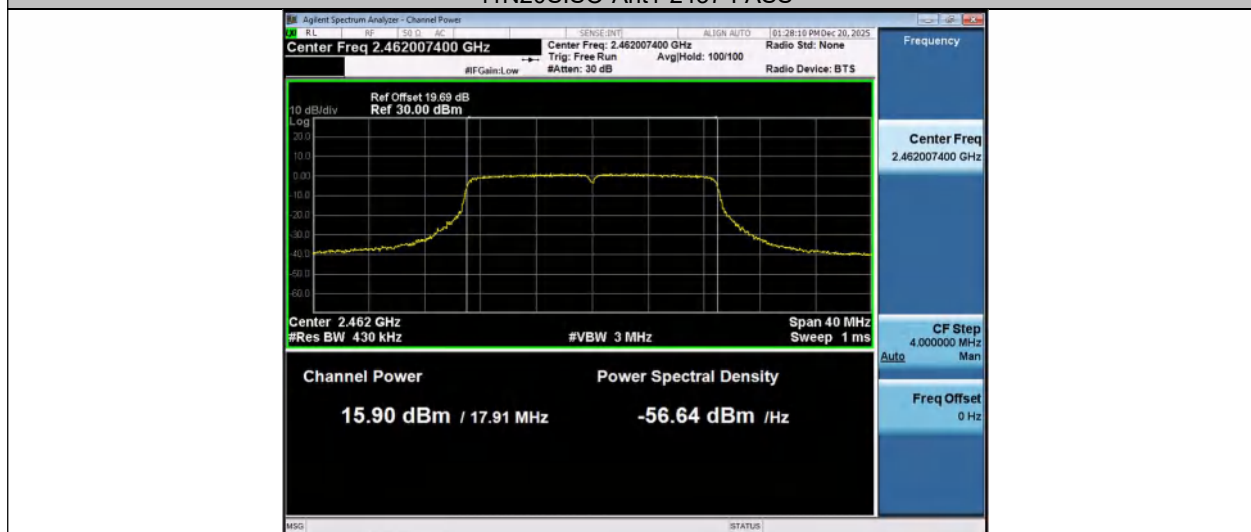
11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS



11N20SISO-Ant1-2462-PASS

8.3 MAXIMUM POWER SPECTRAL DENSITY

8.3.1 Applicable Standard

According to FCC Part15.247(e) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.3.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.3.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.3.4 Test Procedure

This procedure shall be used if maximum average conducted output power was used to demonstrate compliance

The transmitter output (antenna port) was connected to the spectrum analyzer

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the OBW.

Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$

Set the VBW to: $[3 \times \text{RBW}]$

Set Detector = power averaging (rms) or sample detector (when rms not available).

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level within the RBW.

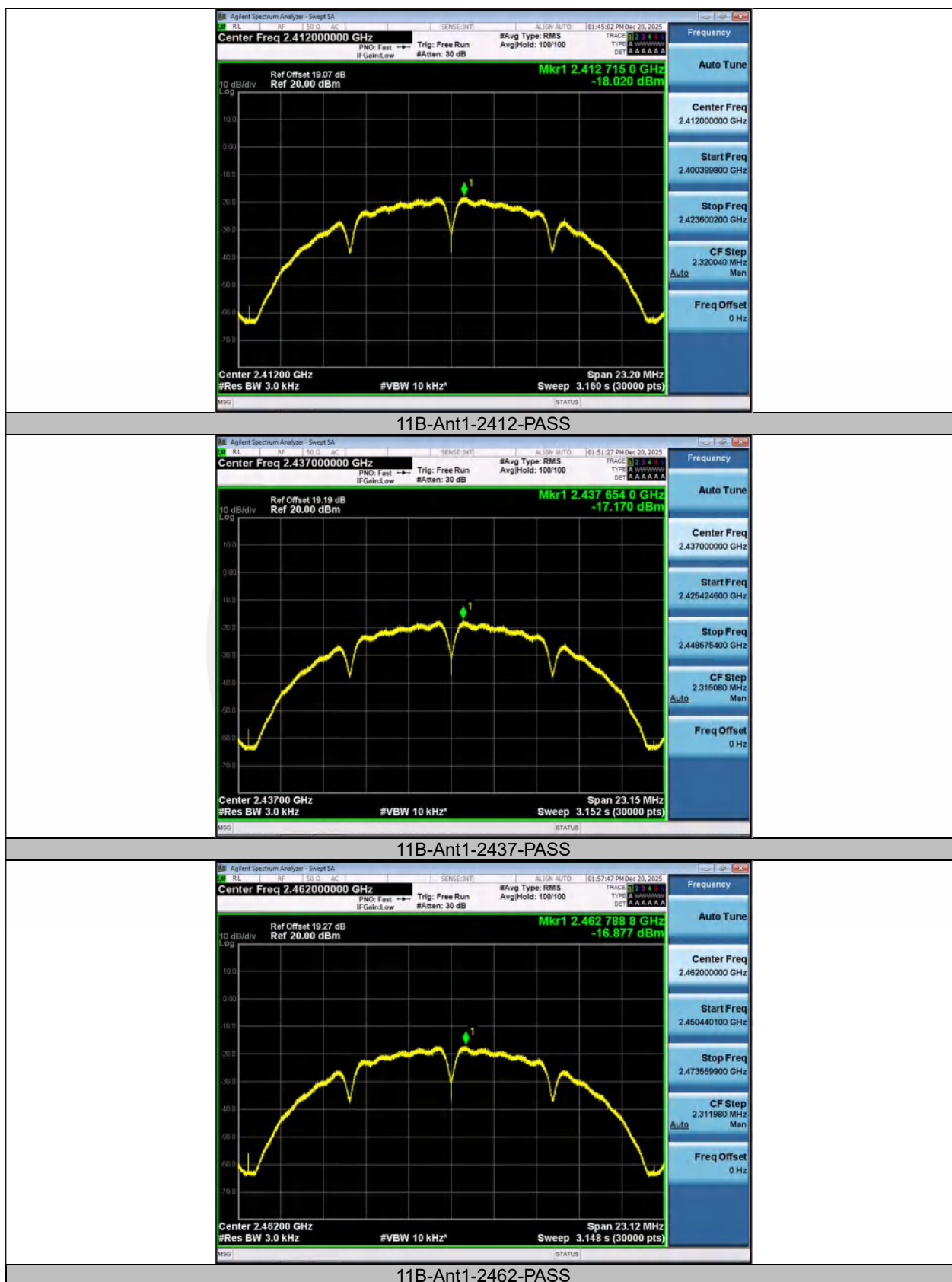
Note: If antenna Gain exceeds 6 dBi, then PSD Limit=8-(Gain- 6)

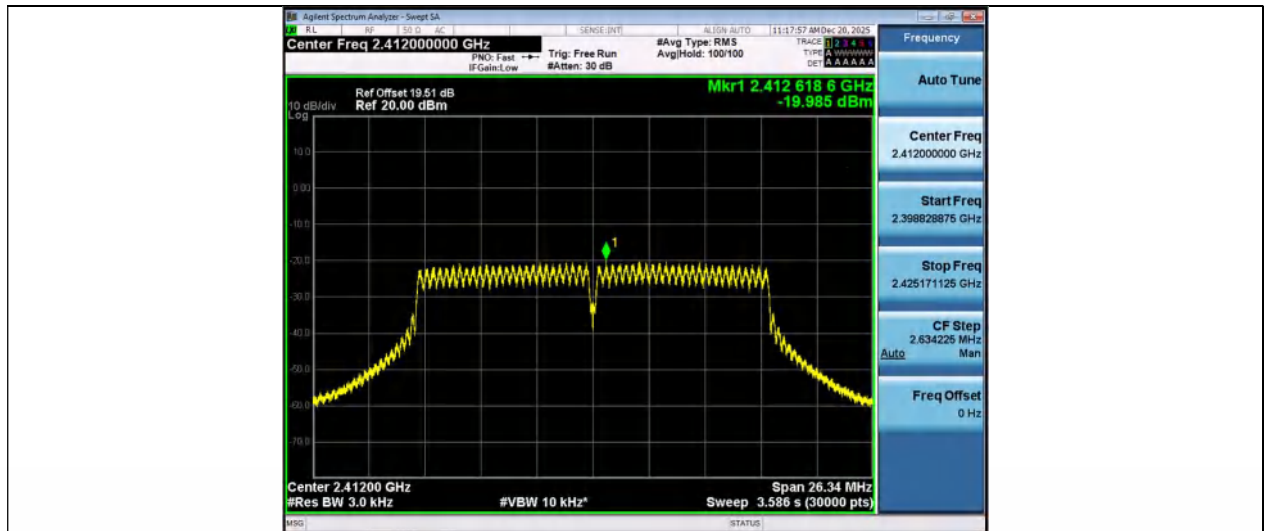
In addition, The duty cycle factor has been added to the test plot.

8.3.5 Test Results

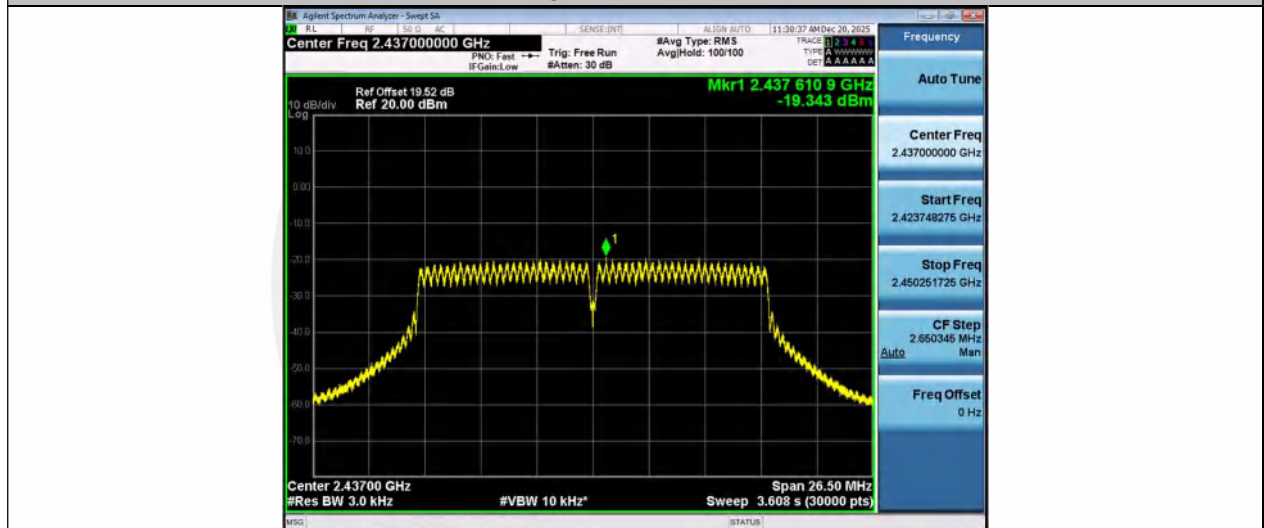
Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-18.02	≤ 8.00	PASS
		2437	-17.17	≤ 8.00	PASS
		2462	-16.88	≤ 8.00	PASS
11G	Ant1	2412	-19.99	≤ 8.00	PASS
		2437	-19.34	≤ 8.00	PASS
		2462	-18.40	≤ 8.00	PASS
11N20SISO	Ant1	2412	-19.83	≤ 8.00	PASS
		2437	-19.36	≤ 8.00	PASS
		2462	-18.84	≤ 8.00	PASS

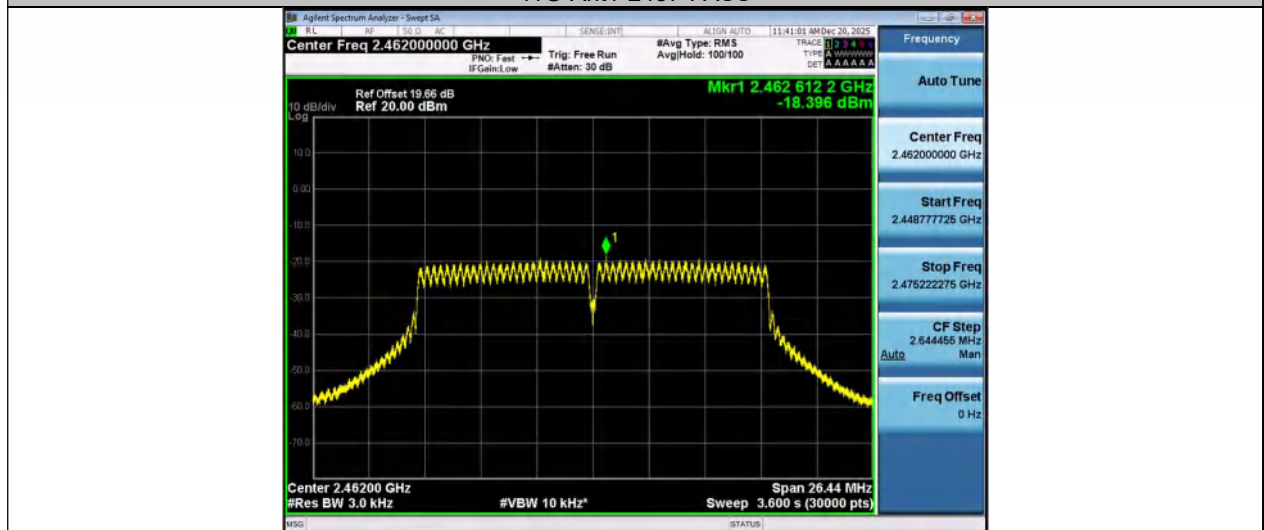




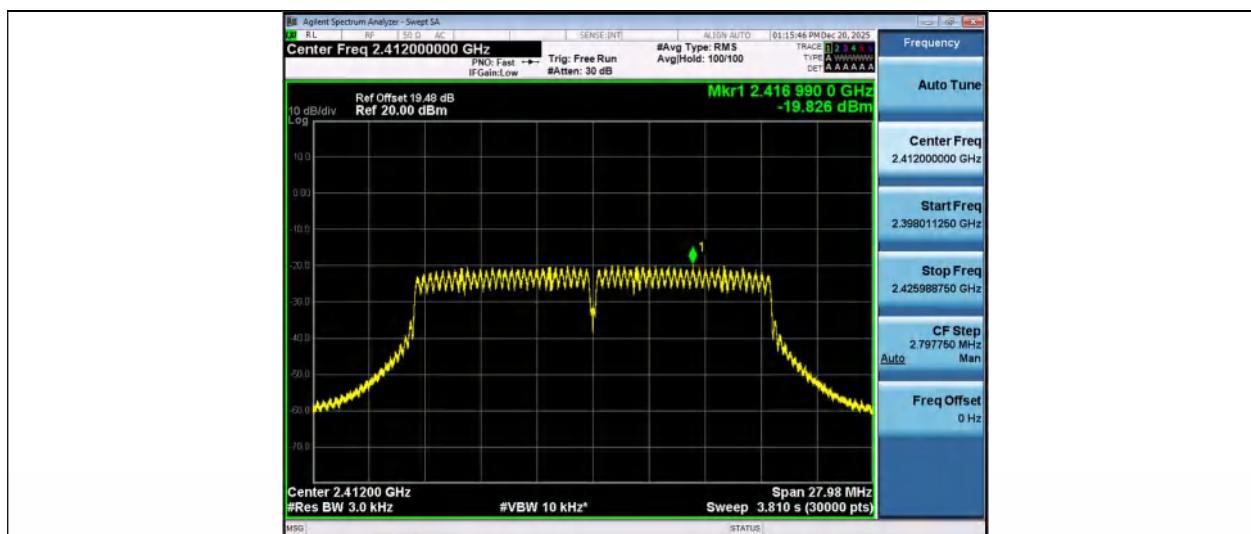
11G-Ant1-2412-PASS



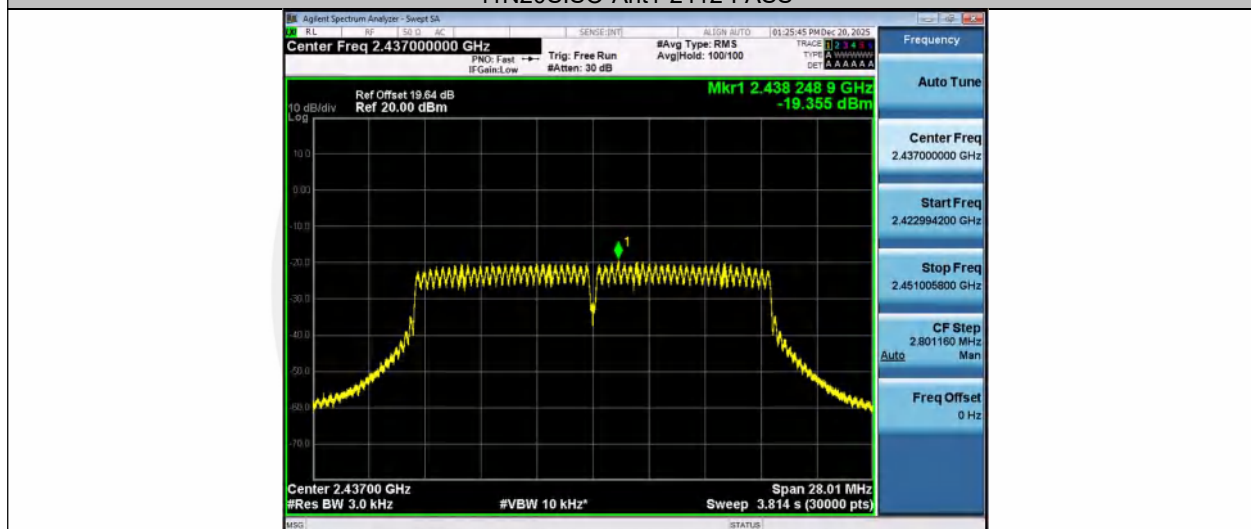
11G-Ant1-2437-PASS



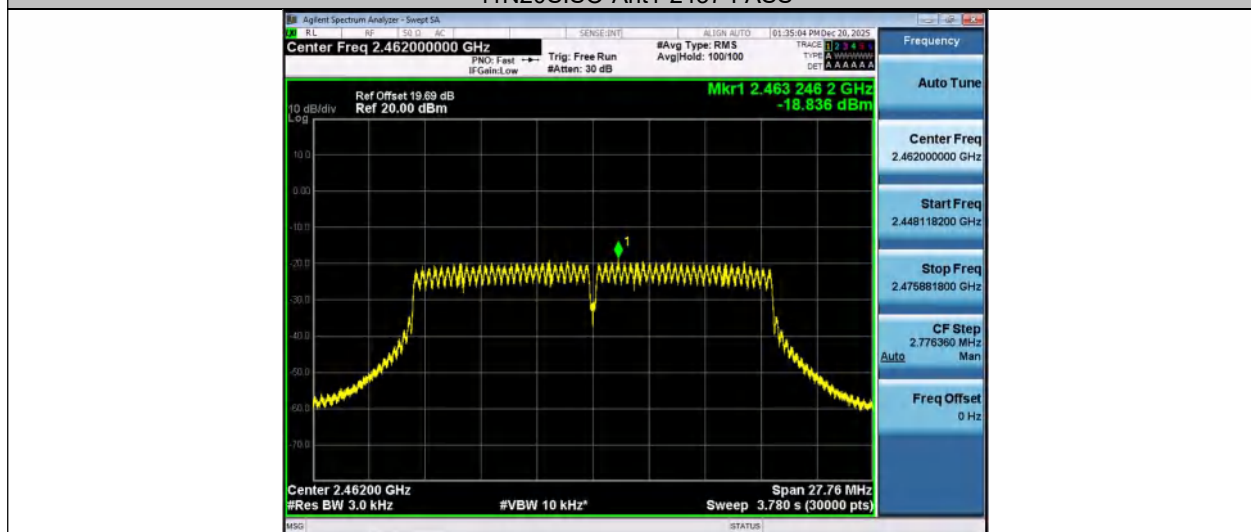
11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS



11N20SISO-Ant1-2462-PASS

8.4 UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

8.4.1 Applicable Standard

According to FCC Part 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02

8.4.2 Conformance Limit

According to FCC Part 15.247(d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

8.4.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

8.4.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

■ Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to ≥ 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW $\geq 3 \times$ RBW.

Set Detector = peak.

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

■ Emission level measurement

Set the center frequency and span to encompass frequency range to be measured.

Set the RBW = 100 kHz.

Set the VBW = 300 kHz.

Set Detector = peak

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements. Report the three highest emissions relative to the limit.

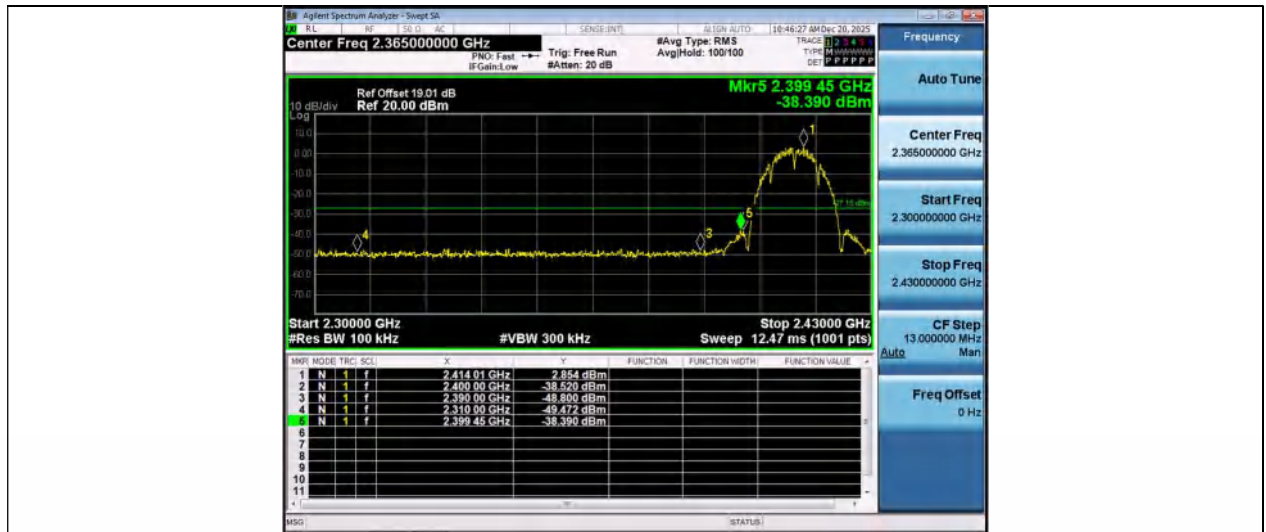
8.4.5 Test Results

All modes 2.4G 802.11b/g/n have been tested, and the worst result 802.11b recorded was report as below:

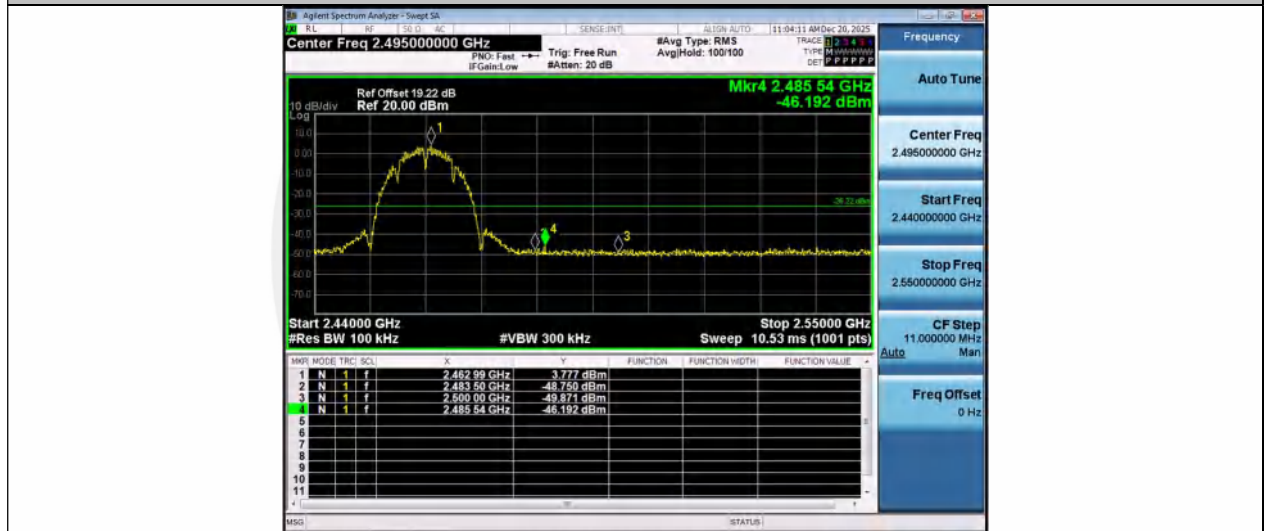
Band edge measurements

TestMode	Antenna	Channel	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	2.85	-38.39	≤-27.15	PASS
11B	Ant1	High	2462	3.78	-46.19	≤-26.22	PASS
11G	Ant1	Low	2412	3.30	-30.91	≤-26.7	PASS
11G	Ant1	High	2462	4.05	-41.99	≤-25.95	PASS
11N20SISO	Ant1	Low	2412	2.96	-31.25	≤-27.05	PASS
11N20SISO	Ant1	High	2462	3.76	-39.92	≤-26.24	PASS





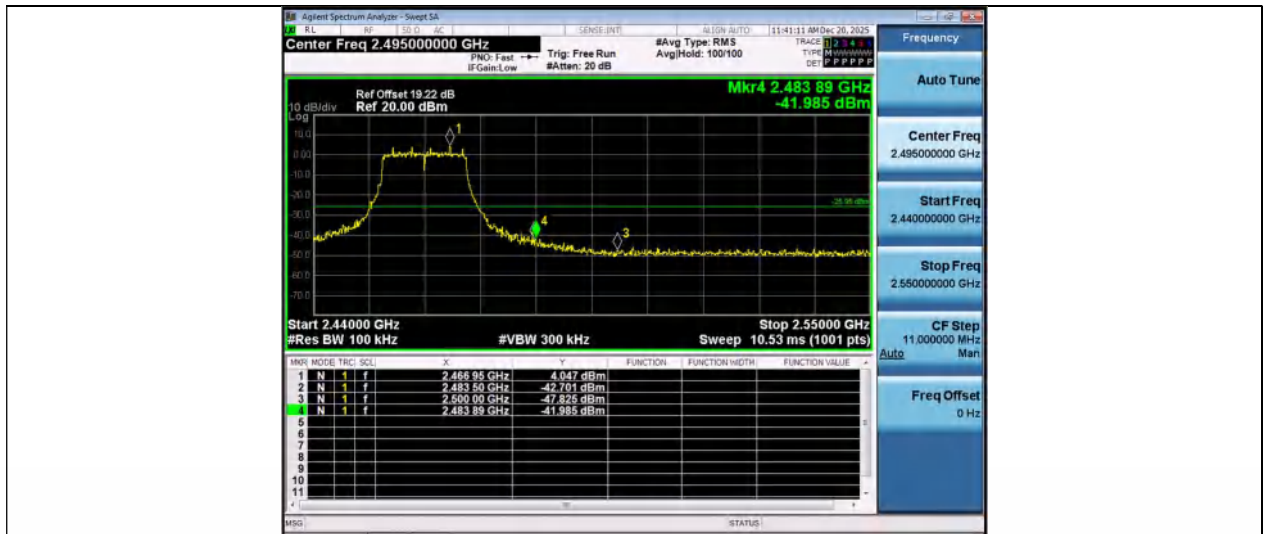
11B-Ant1-2412-PASS



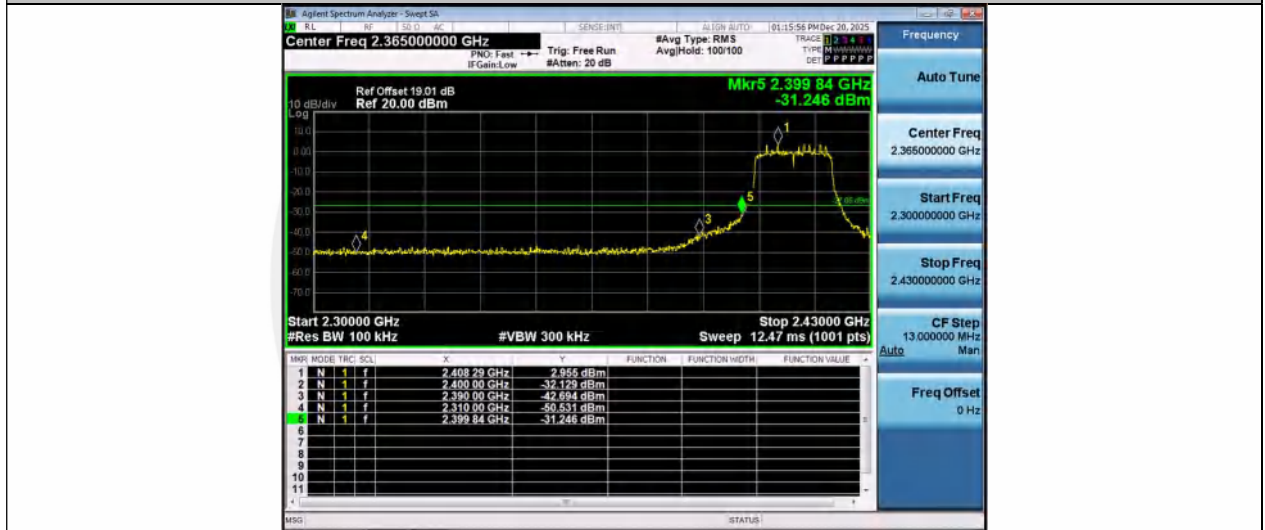
11B-Ant1-2462-PASS



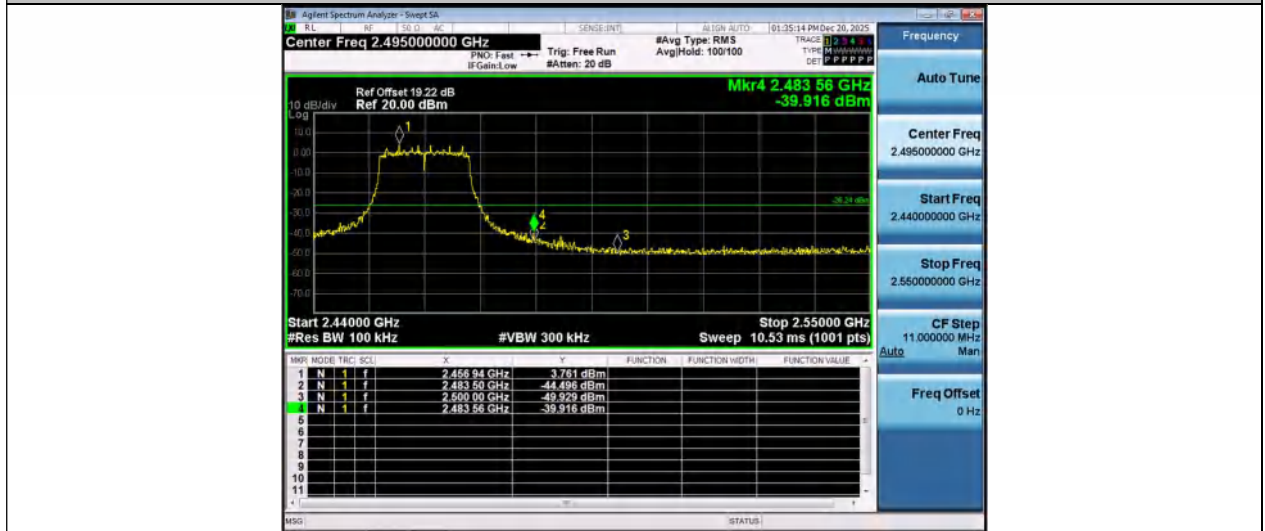
11G-Ant1-2412-PASS



11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



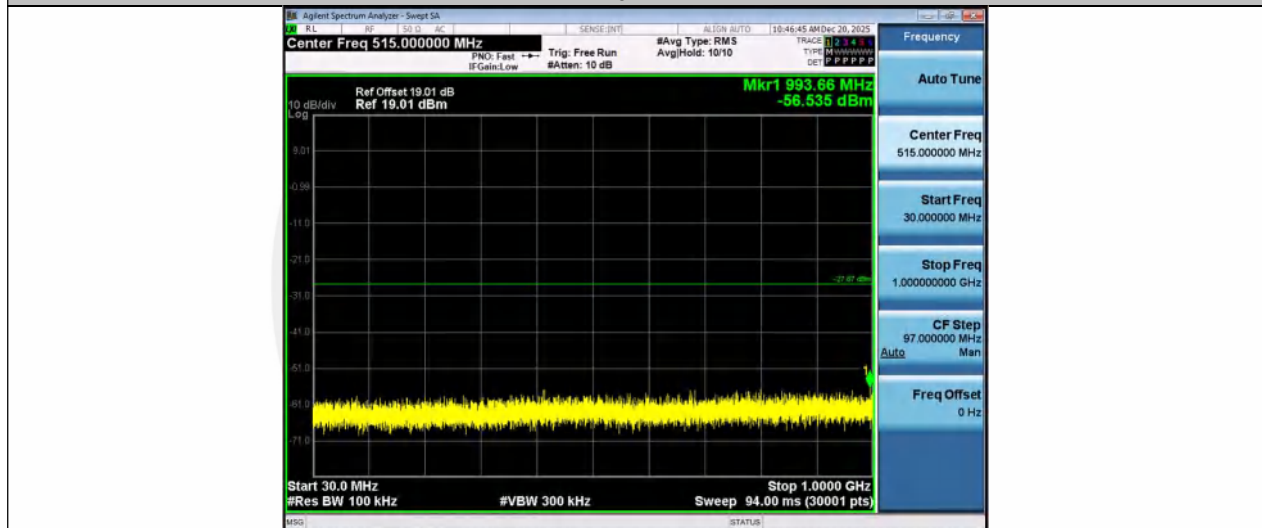
11N20SISO-Ant1-2462-PASS

Conducted Spurious Emission

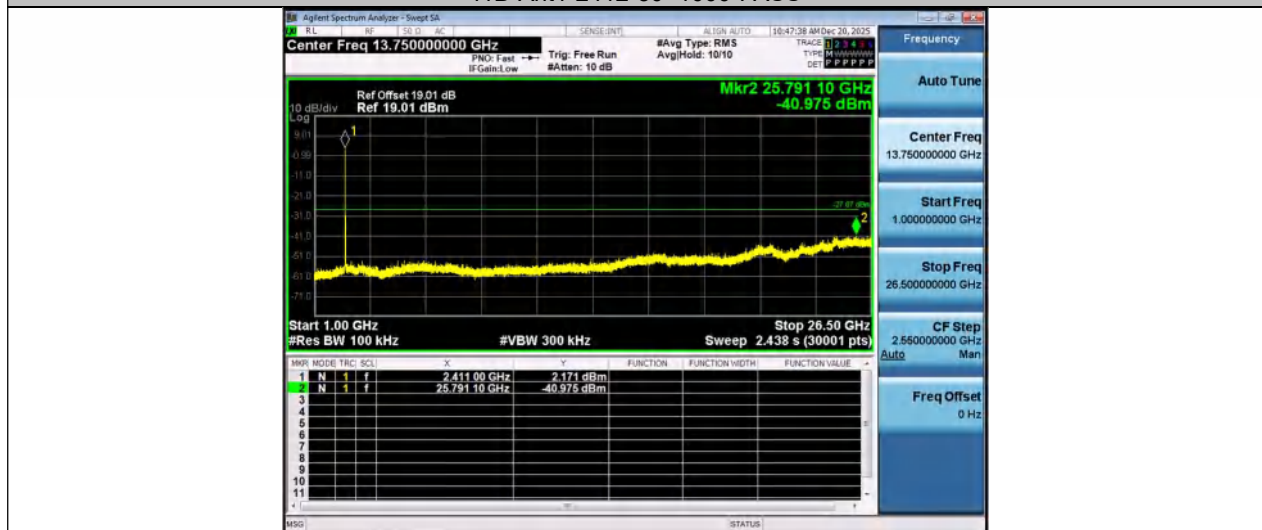
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	0~Reference	2.13	2.13	---	PASS
11B	Ant1	2412	30~1000	2.13	-56.54	≤-27.87	PASS
11B	Ant1	2412	1000~26500	2.13	-40.98	≤-27.87	PASS
11B	Ant1	2437	0~Reference	3.41	3.41	---	PASS
11B	Ant1	2437	30~1000	3.41	-56.65	≤-26.59	PASS
11B	Ant1	2437	1000~26500	3.41	-40.86	≤-26.59	PASS
11B	Ant1	2462	0~Reference	2.53	2.53	---	PASS
11B	Ant1	2462	30~1000	2.53	-55.69	≤-27.47	PASS
11B	Ant1	2462	1000~26500	2.53	-40.85	≤-27.47	PASS
11G	Ant1	2412	0~Reference	1.52	1.52	---	PASS
11G	Ant1	2412	30~1000	1.52	-55.57	≤-28.48	PASS
11G	Ant1	2412	1000~26500	1.52	-40.95	≤-28.48	PASS
11G	Ant1	2437	0~Reference	0.82	0.82	---	PASS
11G	Ant1	2437	30~1000	0.82	-57.63	≤-29.18	PASS
11G	Ant1	2437	1000~26500	0.82	-39.84	≤-29.18	PASS
11G	Ant1	2462	0~Reference	0.53	0.53	---	PASS
11G	Ant1	2462	30~1000	0.53	-57.2	≤-29.47	PASS
11G	Ant1	2462	1000~26500	0.53	-40.82	≤-29.47	PASS
11N20SISO	Ant1	2412	0~Reference	2.85	2.85	---	PASS
11N20SISO	Ant1	2412	30~1000	2.85	-57.06	≤-27.15	PASS
11N20SISO	Ant1	2412	1000~26500	2.85	-40.62	≤-27.15	PASS
11N20SISO	Ant1	2437	0~Reference	3.33	3.33	---	PASS
11N20SISO	Ant1	2437	30~1000	3.33	-56	≤-26.67	PASS
11N20SISO	Ant1	2437	1000~26500	3.33	-40.81	≤-26.67	PASS
11N20SISO	Ant1	2462	0~Reference	2.52	2.52	---	PASS
11N20SISO	Ant1	2462	30~1000	2.52	-56.39	≤-27.48	PASS
11N20SISO	Ant1	2462	1000~26500	2.52	-39.78	≤-27.48	PASS



11B-Ant1-2412-0~Reference-PASS



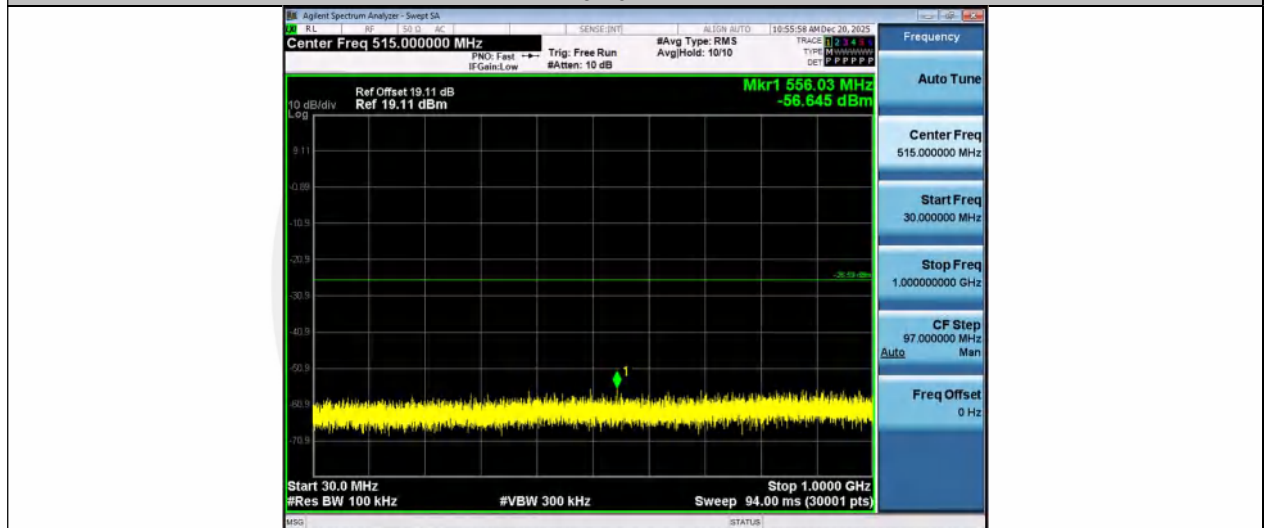
11B-Ant1-2412-30~1000-PASS



11B-Ant1-2412-1000~26500-PASS



11B-Ant1-2437-0~Reference-PASS



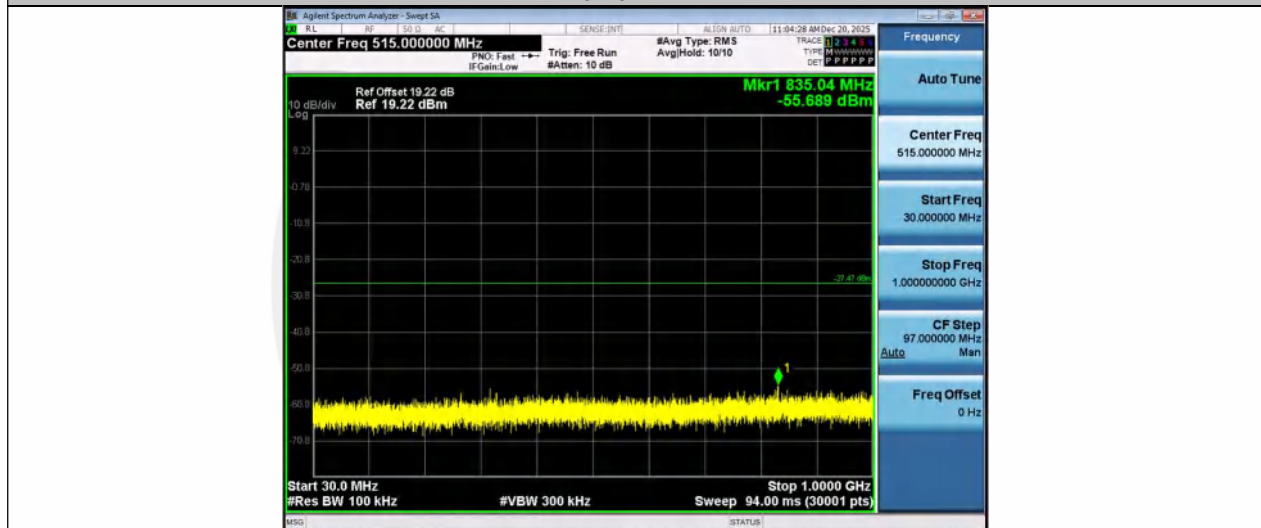
11B-Ant1-2437-30~1000-PASS



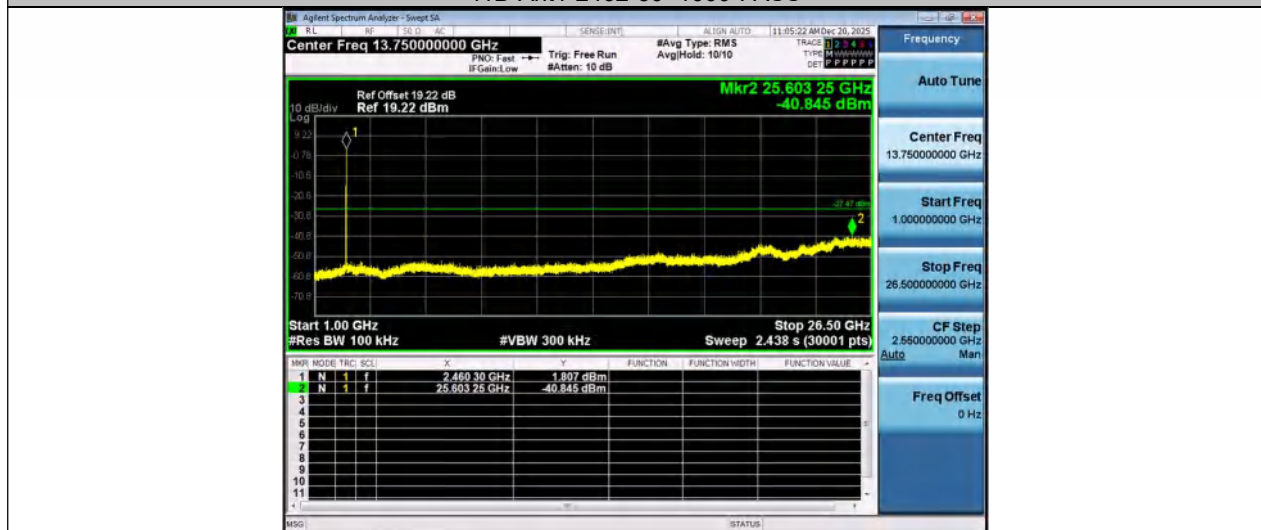
11B-Ant1-2437-1000~26500-PASS



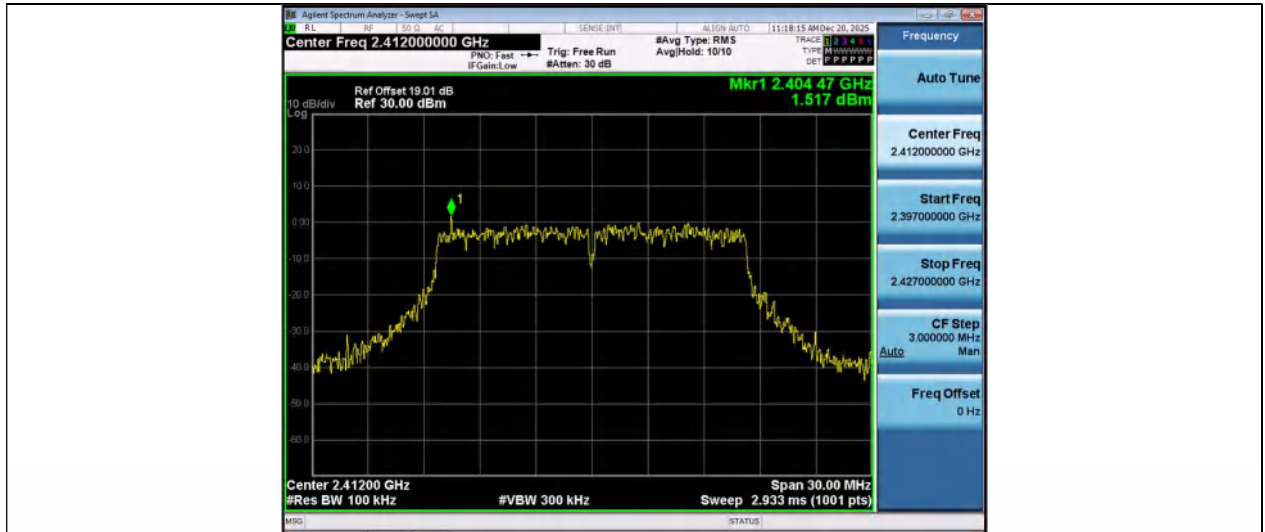
11B-Ant1-2462-0~Reference-PASS



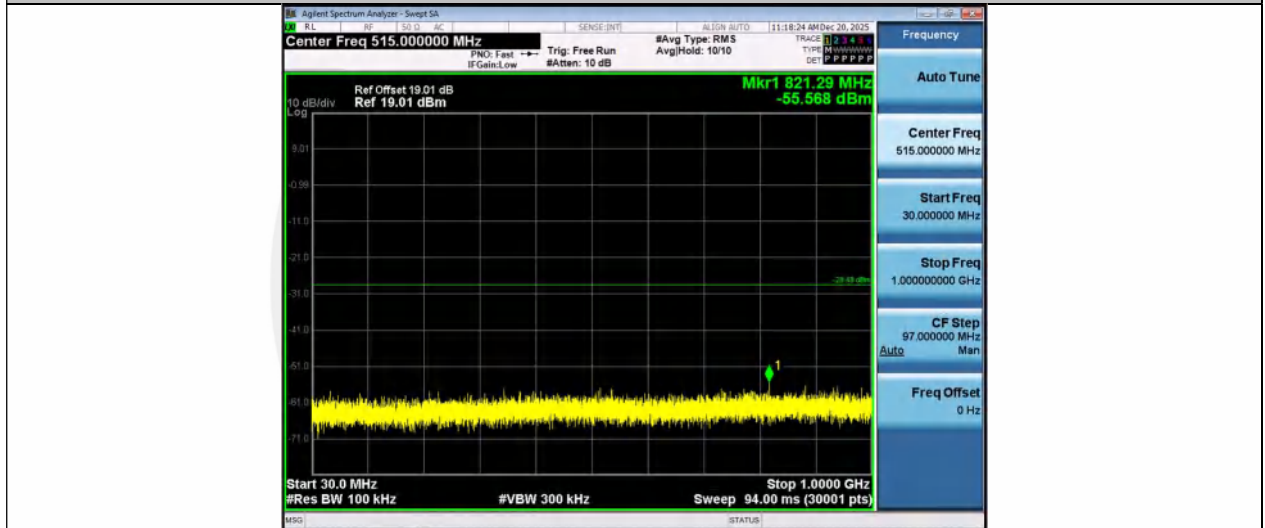
11B-Ant1-2462-30~1000-PASS



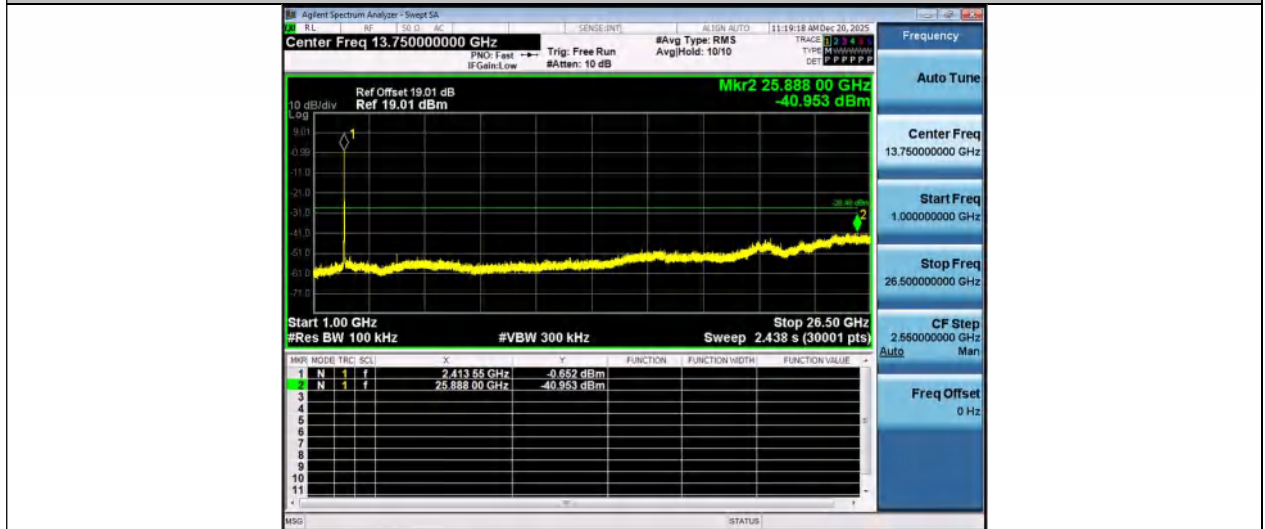
11B-Ant1-2462-1000~26500-PASS



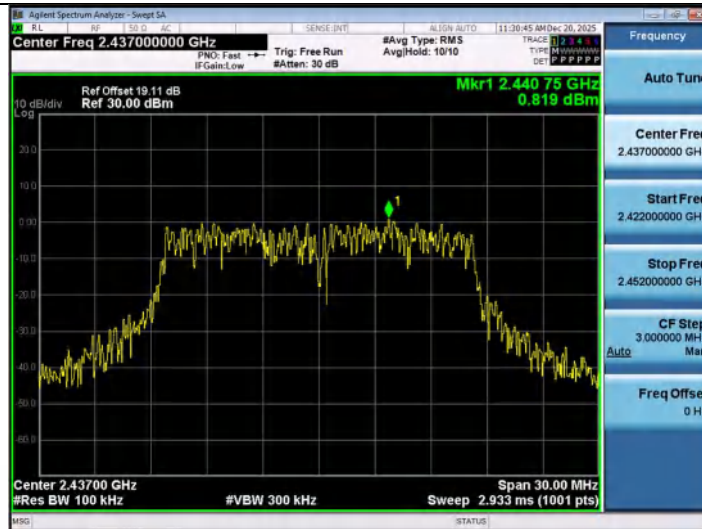
11G-Ant1-2412-0~Reference-PASS



11G-Ant1-2412-30~1000-PASS



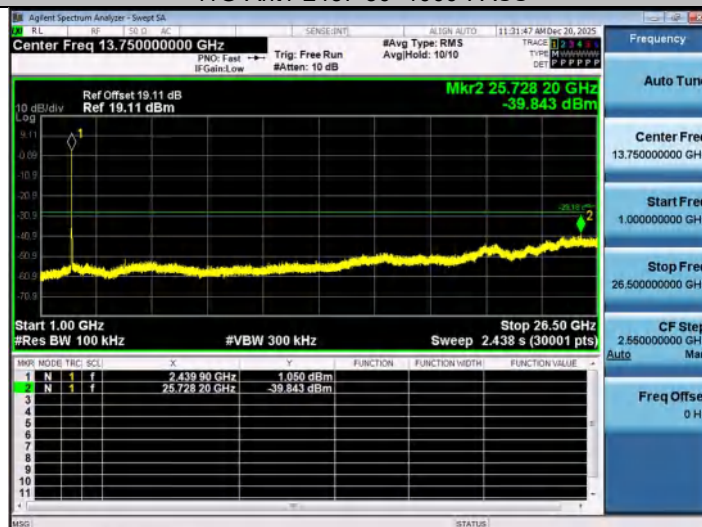
11G-Ant1-2412-1000~26500-PASS



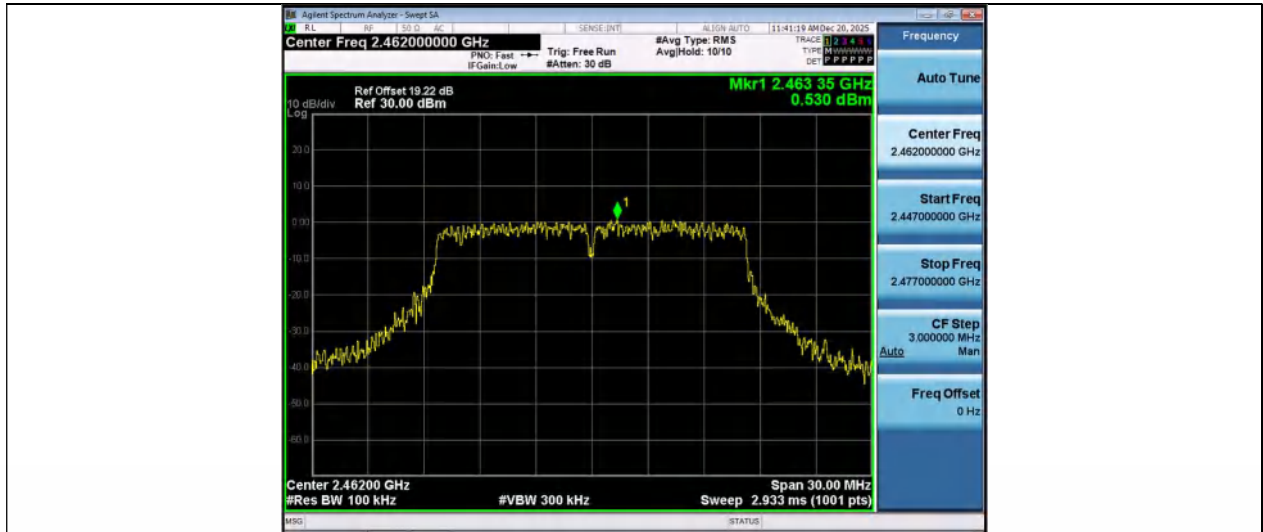
11G-Ant1-2437-0~Reference-PASS



11G-Ant1-2437-30~1000-PASS



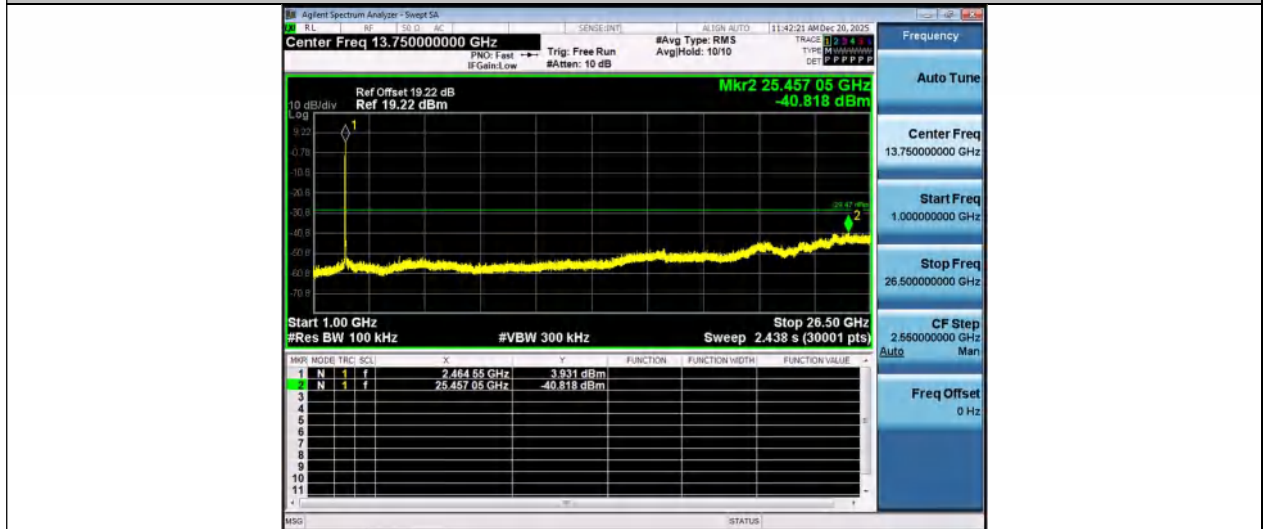
11G-Ant1-2437-1000~26500-PASS



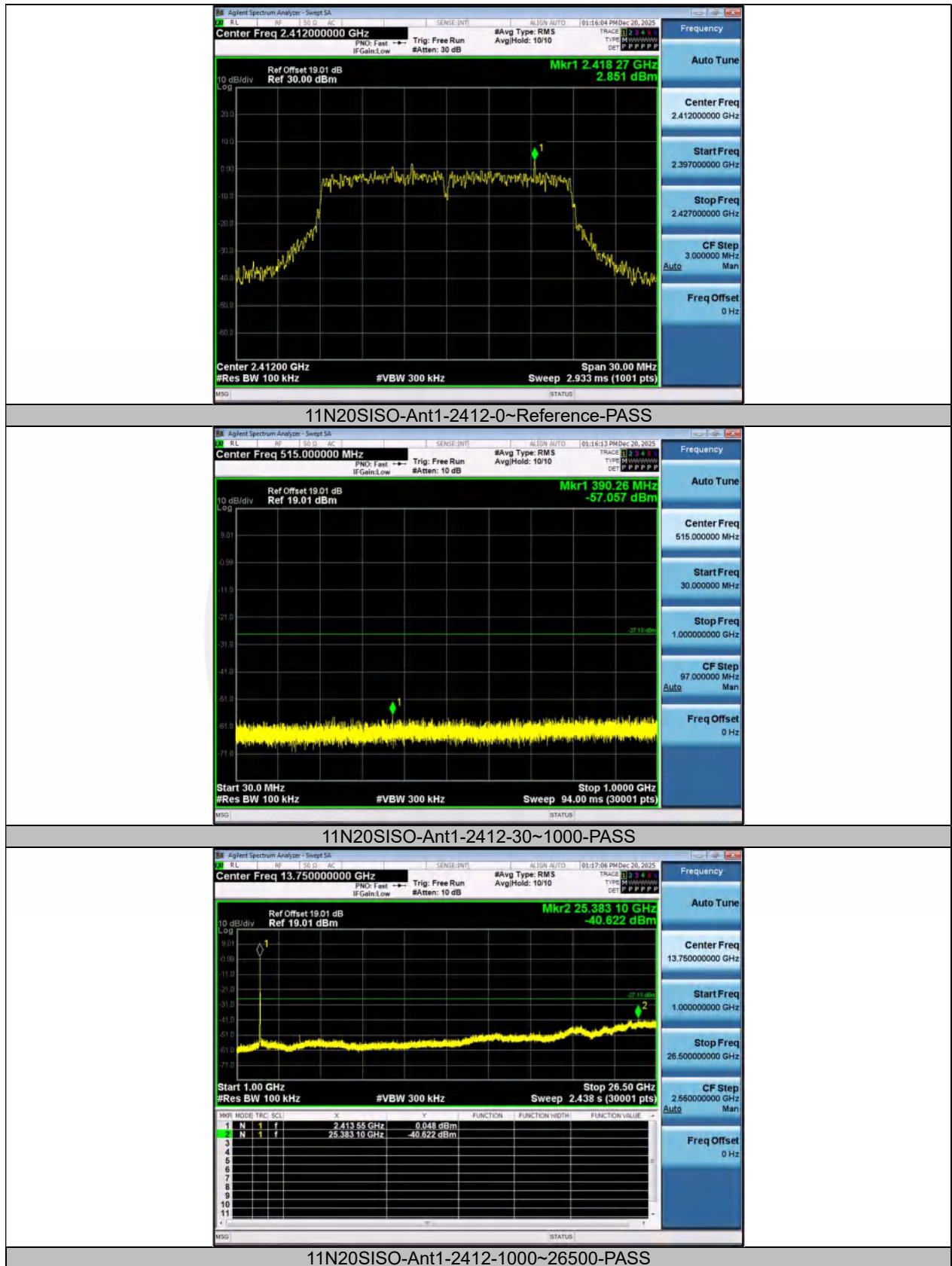
11G-Ant1-2462-0~Reference-PASS

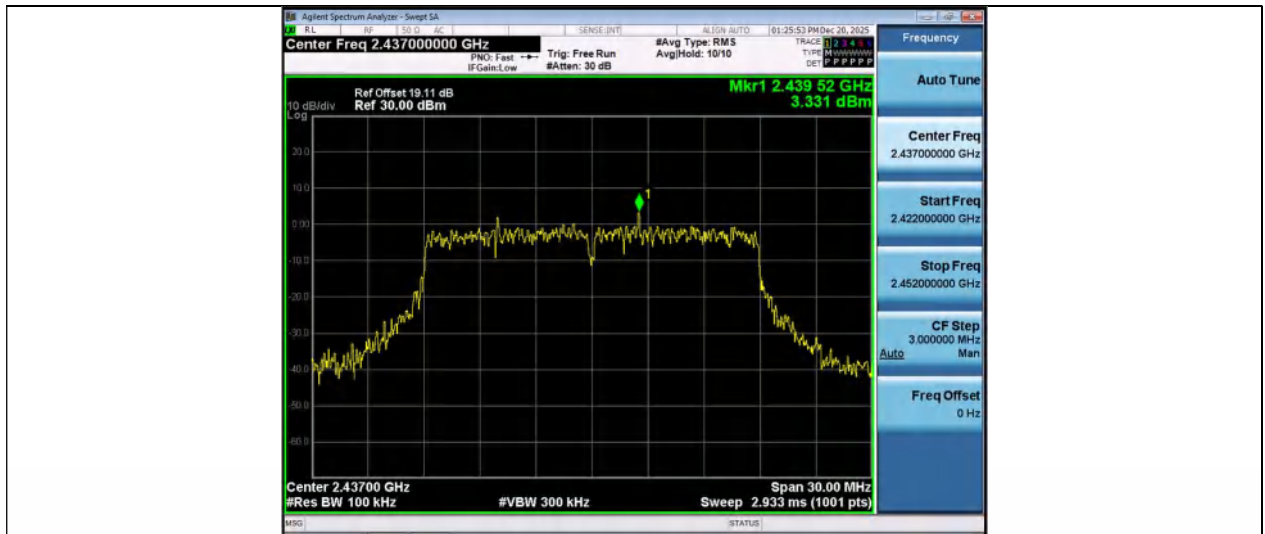


11G-Ant1-2462-30~1000-PASS

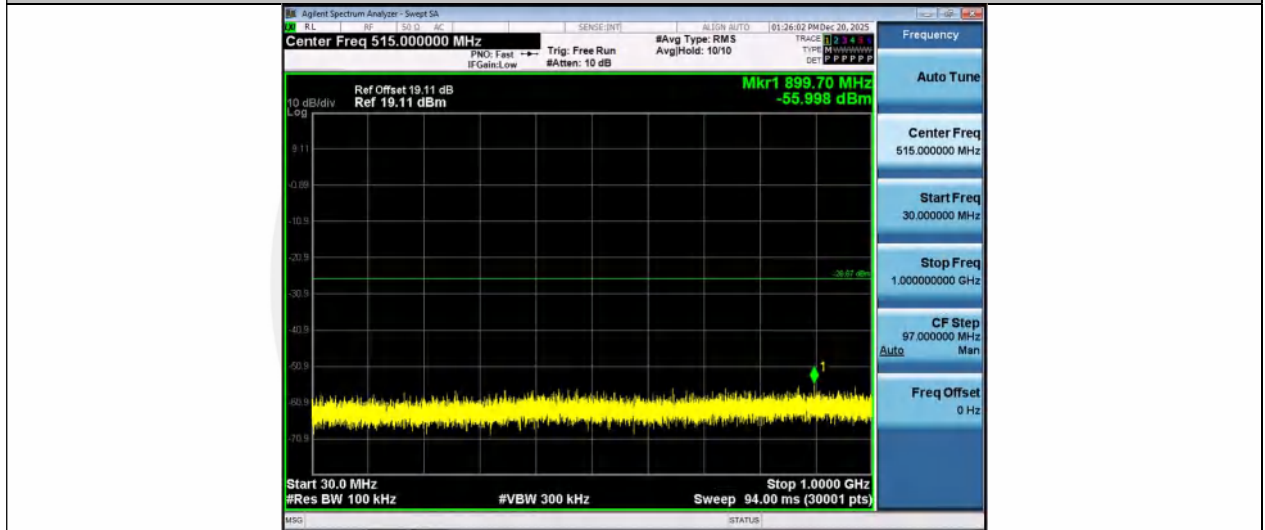


11G-Ant1-2462-1000~26500-PASS

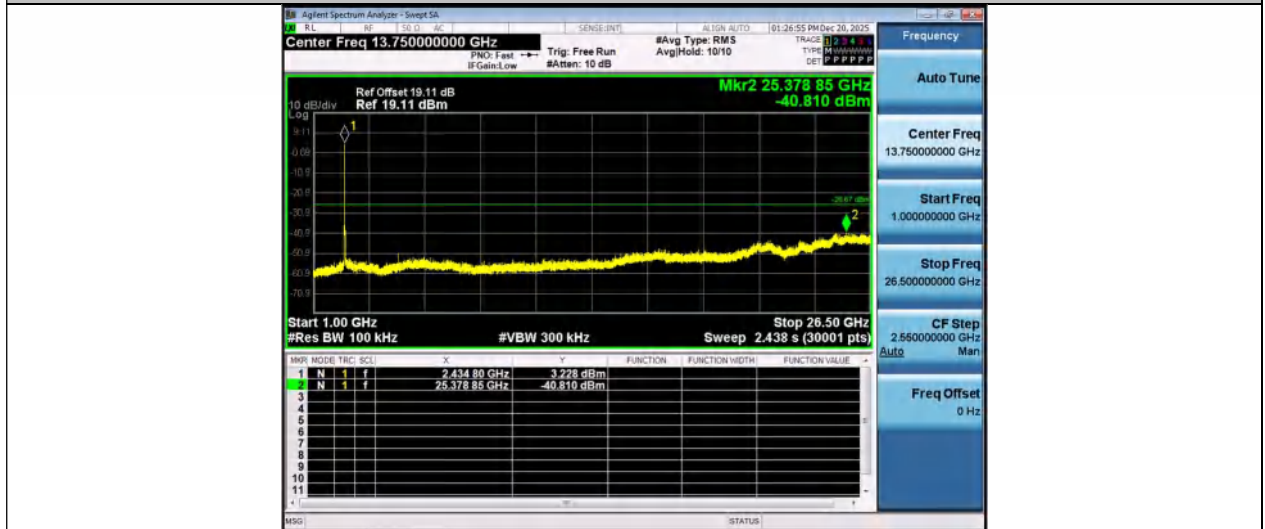




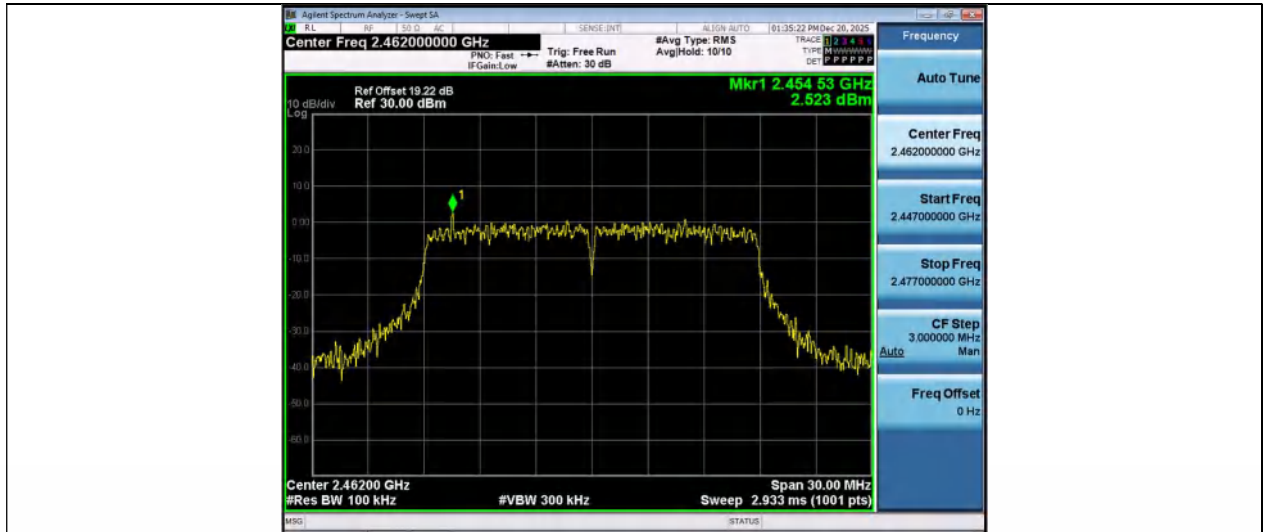
11N20SISO-Ant1-2437-0~Reference-PASS



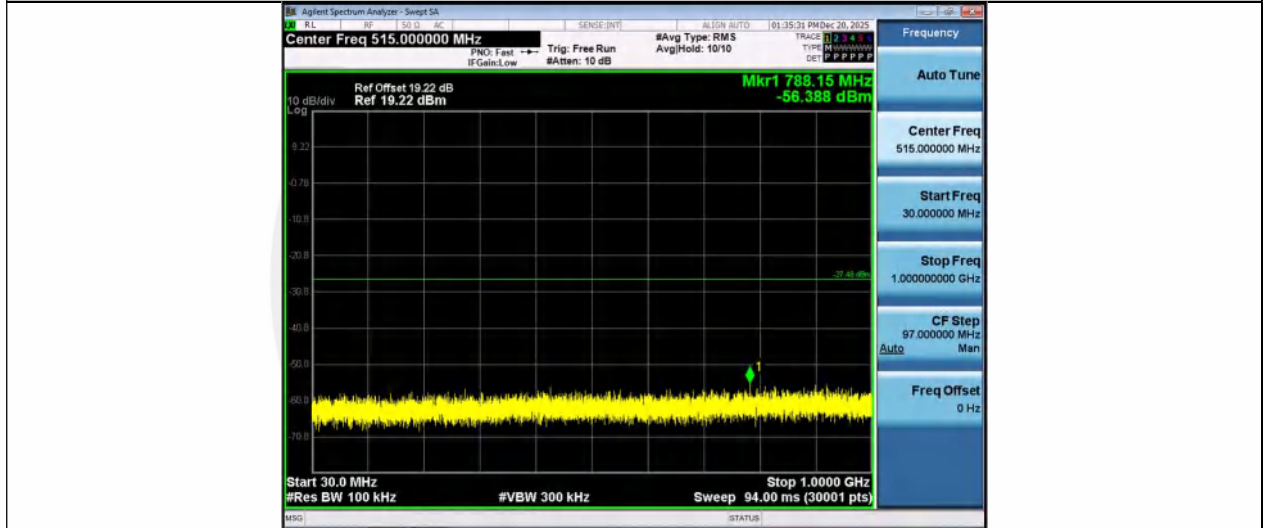
11N20SISO-Ant1-2437-30~1000-PASS



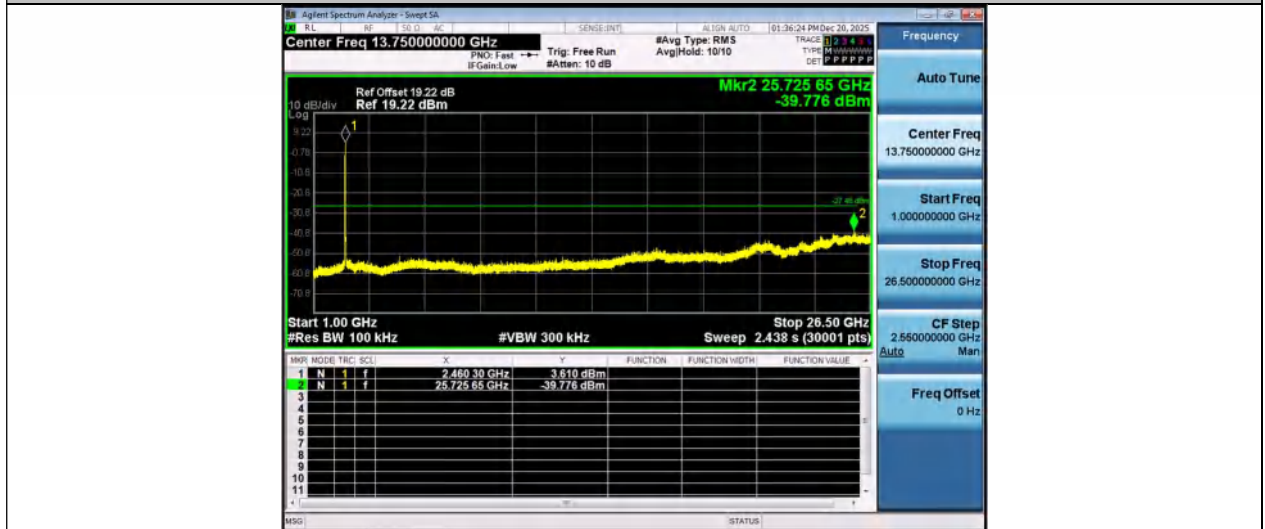
11N20SISO-Ant1-2437-1000~26500-PASS



11N20SISO-Ant1-2462-0~Reference-PASS



11N20SISO-Ant1-2462-30~1000-PASS



11N20SISO-Ant1-2462-1000~26500-PASS

8.5 RADIATED SPURIOUS EMISSION

8.5.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and KDB 558074 D01 15.247 Meas Guidance v05r02

8.5.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part 15.205, Restricted bands

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			

According to FCC Part 15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	2400/F(KHz)	20 log (uV/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

8.5.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

8.5.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

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

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

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz(1GHz to 25GHz), 100 kHz for $f < 1$ GHz(30MHz to 1GHz), 200Hz for $f < 150$ KHz(9KHz to 150KHz), 9KHz for $f < 30$ MHz(150KHz to 30KHz)

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2020 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.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

8.5.5 Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz(9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin (dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance}/\text{test distance})$ (dB);

Limit line = Specific limits(dBuV) + distance extrapolation factor

- Spurious Emission Above 1GHz(1GHz to 25GHz)
- All modes 2.4G 802.11b/g/n have been tested, and the worst result of 802.11b recorded was report as below:

Test mode: 802.11 b Frequency: Channel 1: 2412MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin (dB)	
		PK	AV	PK	AV	PK	AV
8302.5	V	59.72	41.82	74	54	14.28	12.18
13130.625	V	67.39	48.84	74	54	6.61	5.16
17388.75	V	67.27	49.17	74	54	6.73	4.83
8332.5	H	59.91	42.18	74	54	14.09	11.82
13261.875	H	66.78	47.79	74	54	7.22	6.21
17347.5	H	67.68	49.46	74	54	6.32	4.54

Test mode: 802.11 b Frequency: Channel 6: 2437MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin (dB)	
		PK	AV	PK	AV	PK	AV
8325	V	59.96	42.25	74	54	14.04	11.75
11527.5	V	64.24	43.96	74	54	9.76	10.04
16916.25	V	67.22	48.32	74	54	6.78	5.68
8338.125	H	60.11	41.80	74	54	13.89	12.20
10848.75	H	63.43	43.87	74	54	10.57	10.13
16417.5	H	67.83	48.20	74	54	6.17	5.80

Test mode: 802.11 b Frequency: Channel 11: 2462MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin (dB)	
		PK	AV	PK	AV	PK	AV
8328.75	V	59.49	42.32	74	54	14.51	11.68
13190.625	V	67.51	49.73	74	54	6.49	4.27
17460	V	67.26	50.77	74	54	6.74	3.23
8311.875	H	59.49	41.92	74	54	14.51	12.08
11340	H	64.06	45.04	74	54	9.94	8.96
17883.75	H	67.26	47.64	74	54	6.74	6.36

- 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.

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

All modes 2.4G 802.11b/g/n have been tested, and the worst result of 802.11b recorded was report as below:

Test mode: 802.11 n20 Frequency: Channel 1: 2412MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2389.70	H	52.65	74.00	38.03	54.00
2389.43	V	49.90	74.00	38.13	54.00

Test mode: 802.11 n20 Frequency: Channel 11: 2462MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2483.50	H	52.23	74.00	38.32	54.00
2484.17	V	50.38	74.00	38.41	54.00

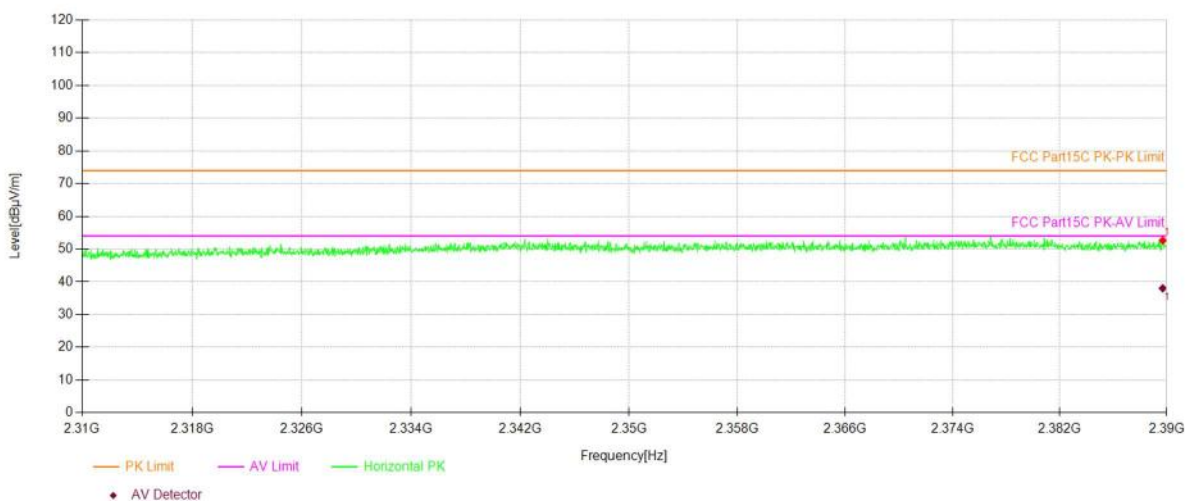
Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).

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

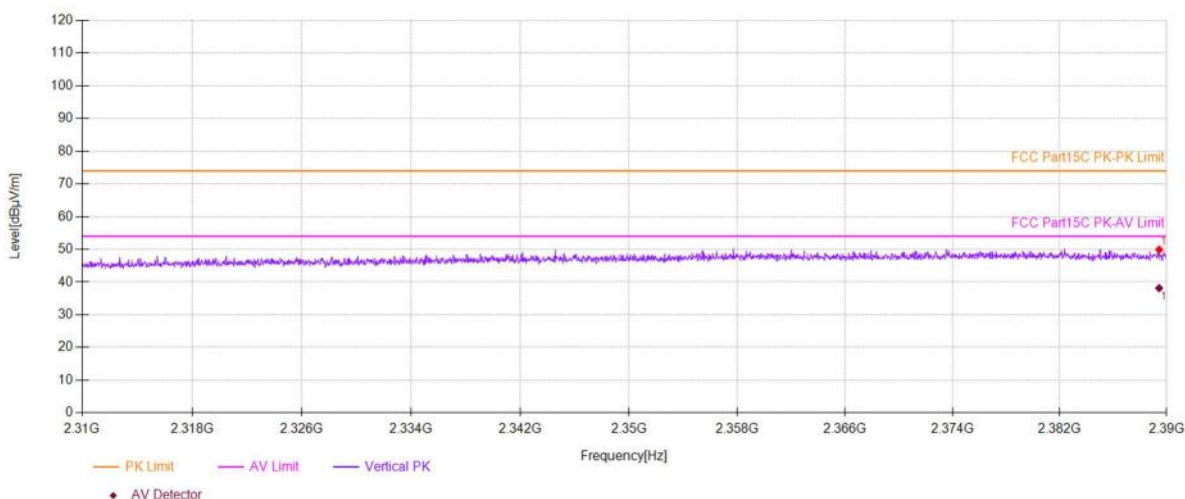
(3) Correct Factor= Ant_F + Cab_L - Preamp

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

Spurious Emission in Restricted Band 2310-2390MHz				
Test Model	☐ 802.11b	☐ 802.11g	☒ 802.11n(HT20)	☐ 802.11n(HT40)
	☒ Channel 1: 2412MHz	☐ Channel 3: 2422MHz	Polarity: H	
	VBW=3MHz			



Spurious Emission in Restricted Band 2310-2390MHz				
Test Model	☐ 802.11b	☐ 802.11g	☒ 802.11n(HT20)	☐ 802.11n(HT40)
	☒ Channel 1: 2412MHz	☐ Channel 3: 2422MHz	Polarity:V	
	VBW=3MHz			

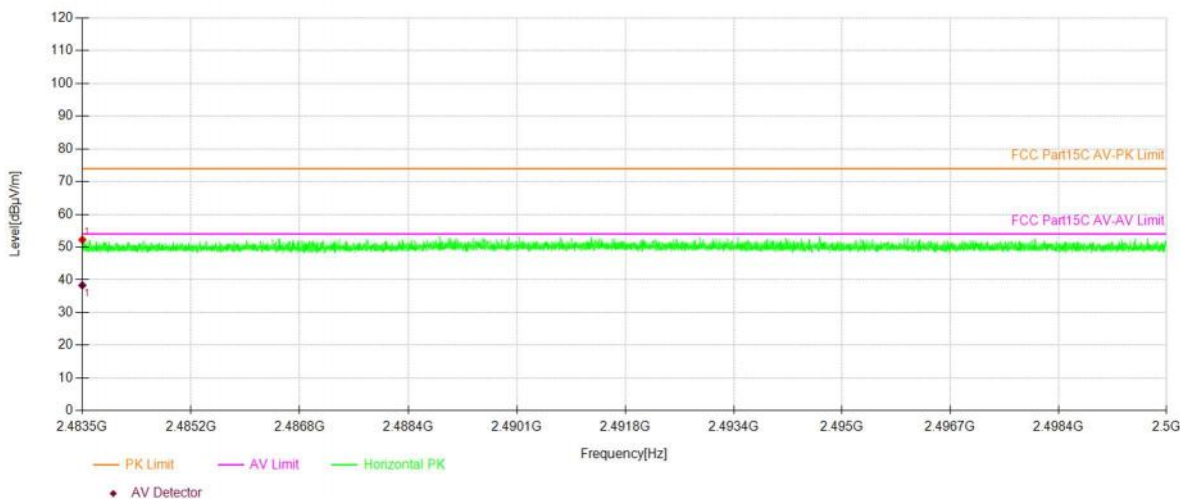


Spurious Emission in Restricted Band 2483.5-2500MHz

Test Model ☐ 802.11b ☐ 802.11g ☒ 802.11n(HT20) ☐ 802.11n(HT40)

☒ Channel 11: 2462MHz ☐ Channel 9: 2452MHz Polarity: H

VBW=3MHz

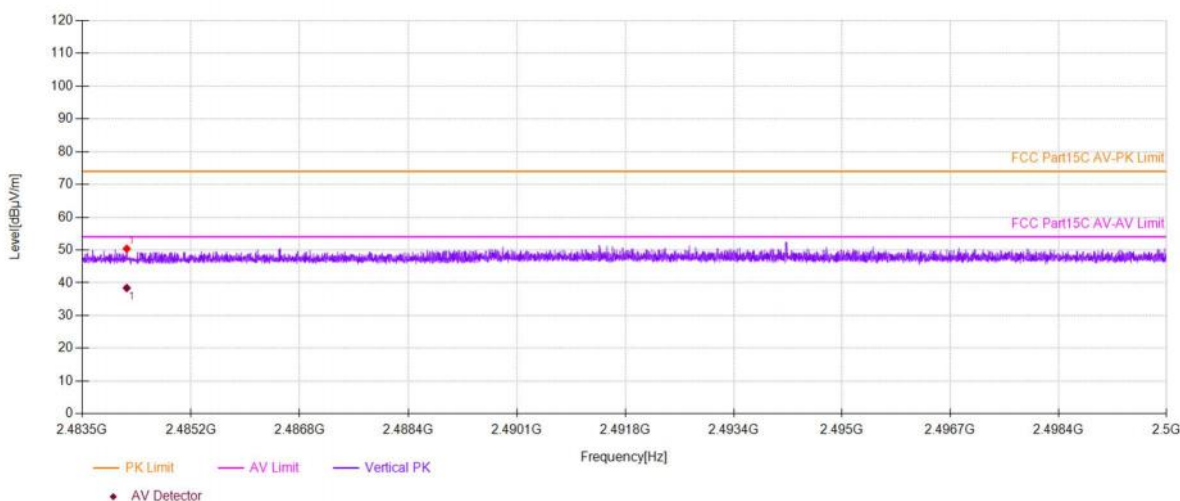


Spurious Emission in Restricted Band 2483.5-2500MHz

Test Model ☐ 802.11b ☐ 802.11g ☒ 802.11n(HT20) ☐ 802.11n(HT40)

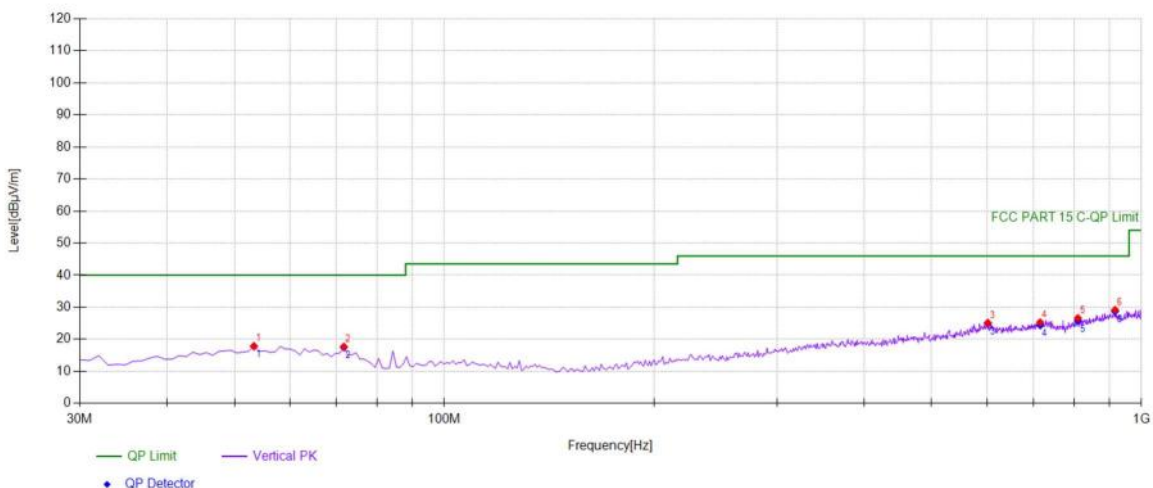
☒ Channel 11: 2462MHz ☐ Channel 9: 2452MHz Polarity: V

VBW=3MHz



- Spurious Emission below 1GHz (30MHz to 1GHz)
- All modes 2.4G 802.11b/g/n have been tested, and the worst result of 802.11b recorded was report as below:

2412

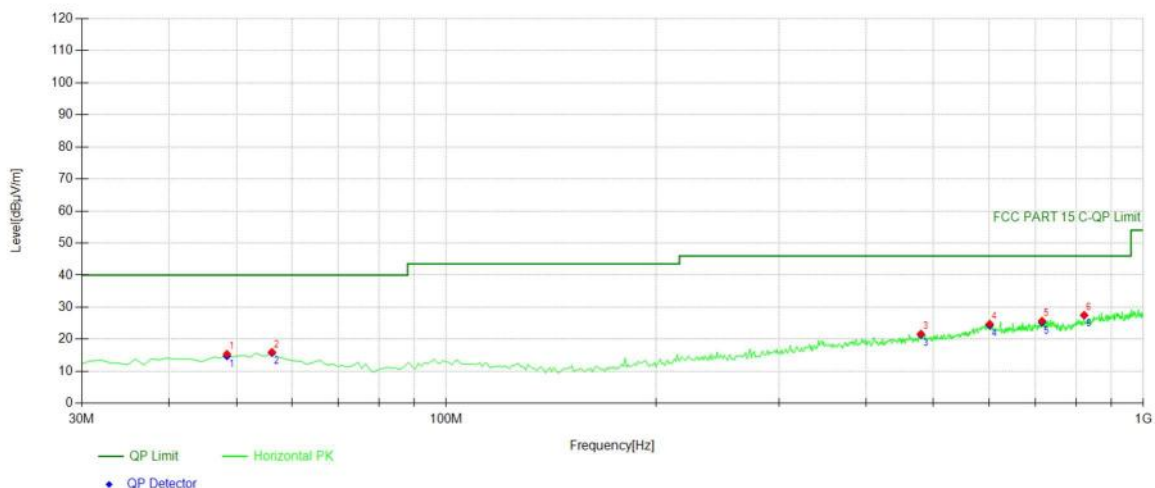


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	53.3033	34.32	-16.47	17.85	PK	40.00	22.15	Vertical
2	71.7518	36.73	-19.03	17.70	PK	40.00	22.30	Vertical
3	601.9019	31.36	-6.20	25.16	PK	46.00	20.84	Vertical
4	715.5055	31.06	-5.76	25.30	PK	46.00	20.70	Vertical
5	810.6607	31.50	-4.86	26.64	PK	46.00	19.36	Vertical
6	916.4965	31.80	-2.62	29.18	PK	46.00	16.82	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	53.3033	-16.47	17.85	40.00	22.15
2	71.7518	-19.03	17.54	40.00	22.46
3	601.9019	-6.20	25.00	46.00	21.00
4	715.5055	-5.76	24.49	46.00	21.51
5	810.6607	-4.86	25.83	46.00	20.17
6	916.4965	-2.62	28.73	46.00	17.27



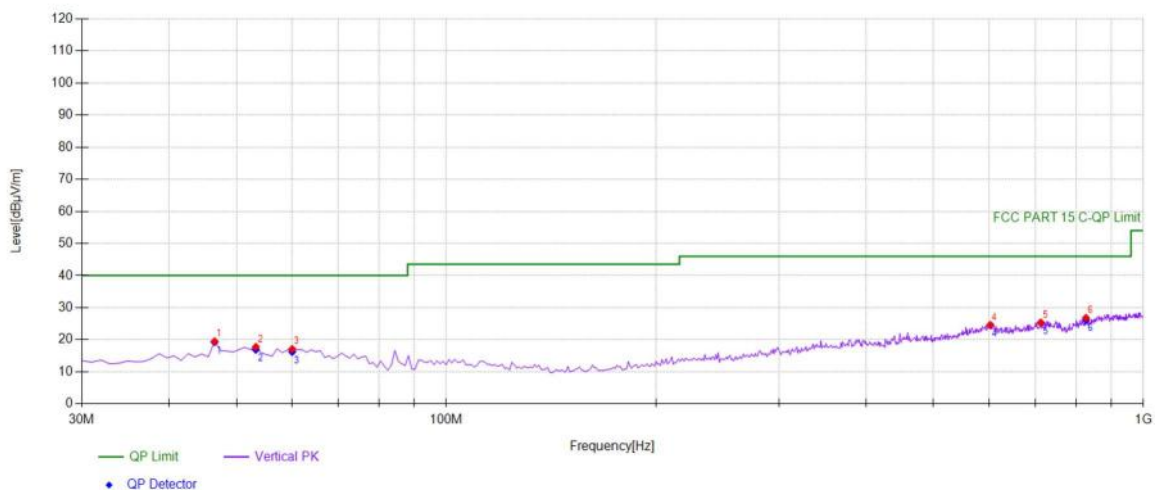
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	48.4484	31.67	-16.24	15.43	PK	40.00	24.57	Horizontal
2	56.2162	32.92	-16.87	16.05	PK	40.00	23.95	Horizontal
3	479.5596	31.67	-9.93	21.74	PK	46.00	24.26	Horizontal
4	601.9019	31.03	-6.20	24.83	PK	46.00	21.17	Horizontal
5	715.5055	31.50	-5.76	25.74	PK	46.00	20.26	Horizontal
6	822.3123	32.25	-4.68	27.57	PK	46.00	18.43	Horizontal

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	48.4484	-16.24	14.77	40.00	25.23
2	56.2162	-16.87	15.75	40.00	24.25
3	479.5596	-9.93	21.44	46.00	24.56
4	601.9019	-6.20	24.36	46.00	21.64
5	715.5055	-5.76	25.27	46.00	20.73
6	822.3123	-4.68	27.46	46.00	18.54

2437

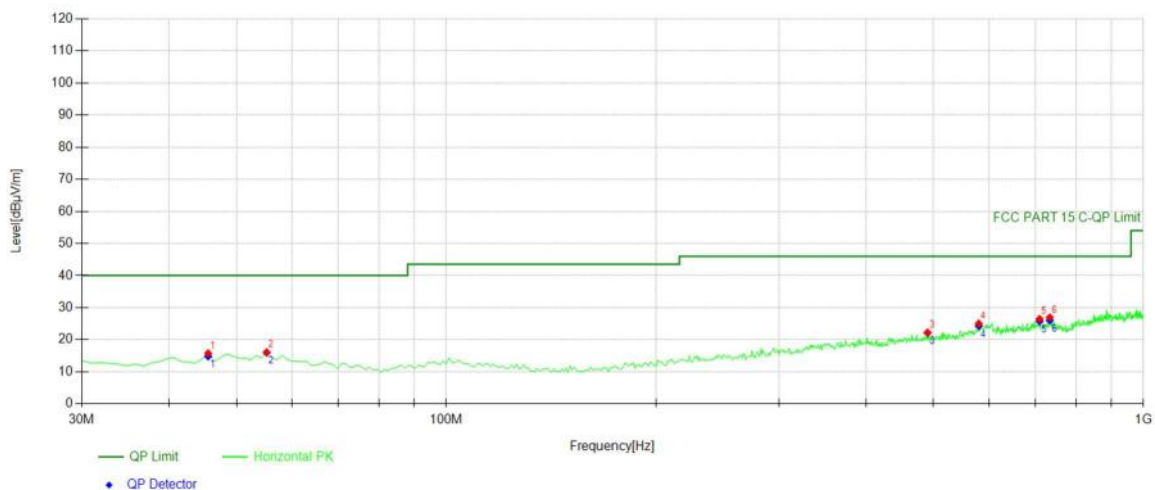


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	46.5065	36.04	-16.53	19.51	PK	40.00	20.49	Vertical
2	53.3033	34.27	-16.47	17.80	PK	40.00	22.20	Vertical
3	60.1001	34.53	-17.41	17.12	PK	40.00	22.88	Vertical
4	602.8729	30.86	-6.26	24.60	PK	46.00	21.40	Vertical
5	712.5926	31.10	-5.77	25.33	PK	46.00	20.67	Vertical
6	827.1672	31.44	-4.62	26.82	PK	46.00	19.18	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	46.5065	-16.53	19.27	40.00	20.73
2	53.3033	-16.47	16.91	40.00	23.09
3	60.1001	-17.41	16.23	40.00	23.77
4	602.8729	-6.26	24.55	46.00	21.45
5	712.5926	-5.77	25.28	46.00	20.72
6	827.1672	-4.62	26.13	46.00	19.87



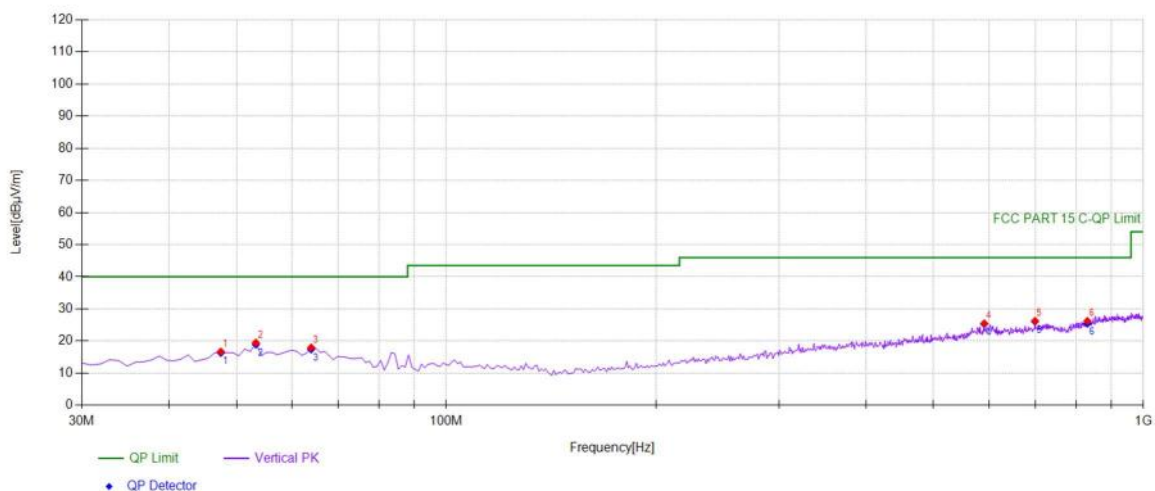
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	45.5355	32.42	-16.66	15.76	PK	40.00	24.24	Horizontal
2	55.2452	32.82	-16.74	16.08	PK	40.00	23.92	Horizontal
3	490.2402	32.10	-9.88	22.22	PK	46.00	23.78	Horizontal
4	580.5405	32.16	-7.12	25.04	PK	46.00	20.96	Horizontal
5	709.6797	32.27	-5.79	26.48	PK	46.00	19.52	Horizontal
6	733.954	32.30	-5.36	26.94	PK	46.00	19.06	Horizontal

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	45.5355	-16.66	14.84	40.00	25.16
2	55.2452	-16.74	16.00	40.00	24.00
3	490.2402	-9.88	22.14	46.00	23.86
4	580.5405	-7.12	24.31	46.00	21.69
5	709.6797	-5.79	25.75	46.00	20.25
6	733.954	-5.36	26.05	46.00	19.95

2462

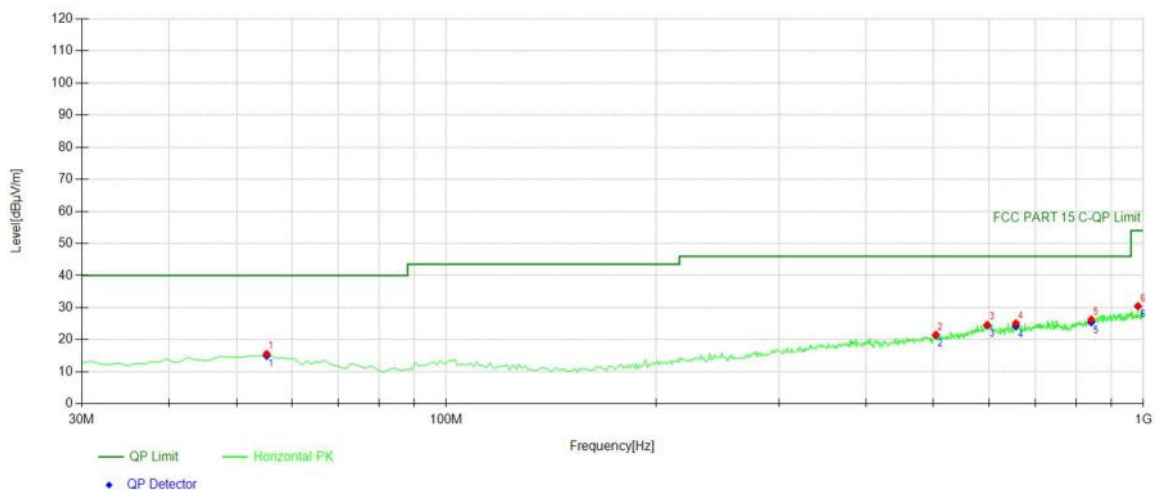


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	47.4775	33.12	-16.39	16.73	PK	40.00	23.27	Vertical
2	53.3033	35.96	-16.47	19.49	PK	40.00	20.51	Vertical
3	63.984	35.92	-17.94	17.98	PK	40.00	22.02	Vertical
4	591.2212	32.11	-6.62	25.49	PK	46.00	20.51	Vertical
5	698.999	32.18	-5.92	26.26	PK	46.00	19.74	Vertical
6	831.0511	30.82	-4.56	26.26	PK	46.00	19.74	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	16.36	40.00	23.64
2	53.3033	-16.47	18.96	40.00	21.04
3	63.984	-17.94	17.45	40.00	22.55
4	591.2212	-6.62	25.32	46.00	20.68
5	698.999	-5.92	26.09	46.00	19.91
6	831.0511	-4.56	25.45	46.00	20.55



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	55.2452	32.34	-16.74	15.60	PK	40.00	24.40	Horizontal
2	503.8338	31.47	-9.87	21.60	PK	46.00	24.40	Horizontal
3	597.047	30.96	-6.28	24.68	PK	46.00	21.32	Horizontal
4	656.2763	31.95	-6.79	25.16	PK	46.00	20.84	Horizontal
5	841.7317	30.60	-4.28	26.32	PK	46.00	19.68	Horizontal
6	982.5225	32.53	-2.08	30.45	PK	54.00	23.55	Horizontal

Final Data List

NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]
1	55.2452	-16.74	15.03	40.00	24.97
2	503.8338	-9.87	21.39	46.00	24.61
3	597.047	-6.28	24.47	46.00	21.53
4	656.2763	-6.79	24.31	46.00	21.69
5	841.7317	-4.28	25.47	46.00	20.53
6	982.5225	-2.08	30.44	54.00	23.56

8.6 CONDUCTED EMISSIONS TEST

8.6.1 Applicable Standard

According to FCC Part 15.207(a)

8.6.2 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.

8.6.3 Test Configuration

Test according to clause 7.3conducted emission test setup

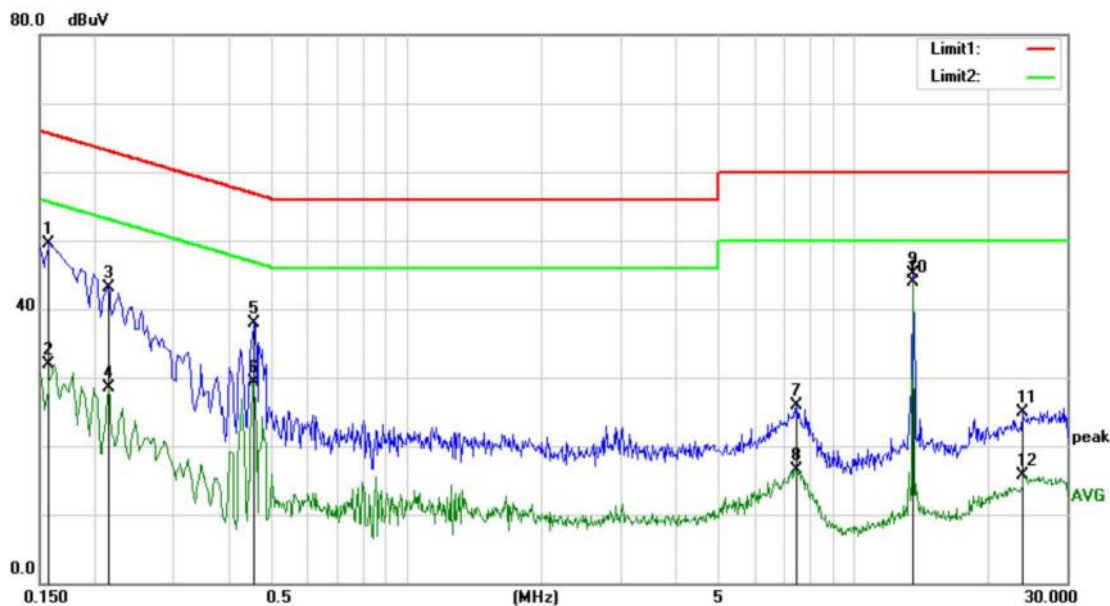
8.6.4 Test Procedure

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.

8.6.5 Test Results

Pass

The 120V &240V voltagehave been tested, and the worst result recorded was report as below:



Site Conduction 2#

Phase: **N**

Temperature: 23.7

Limit: (CE)FCC PART 15 class B_QP

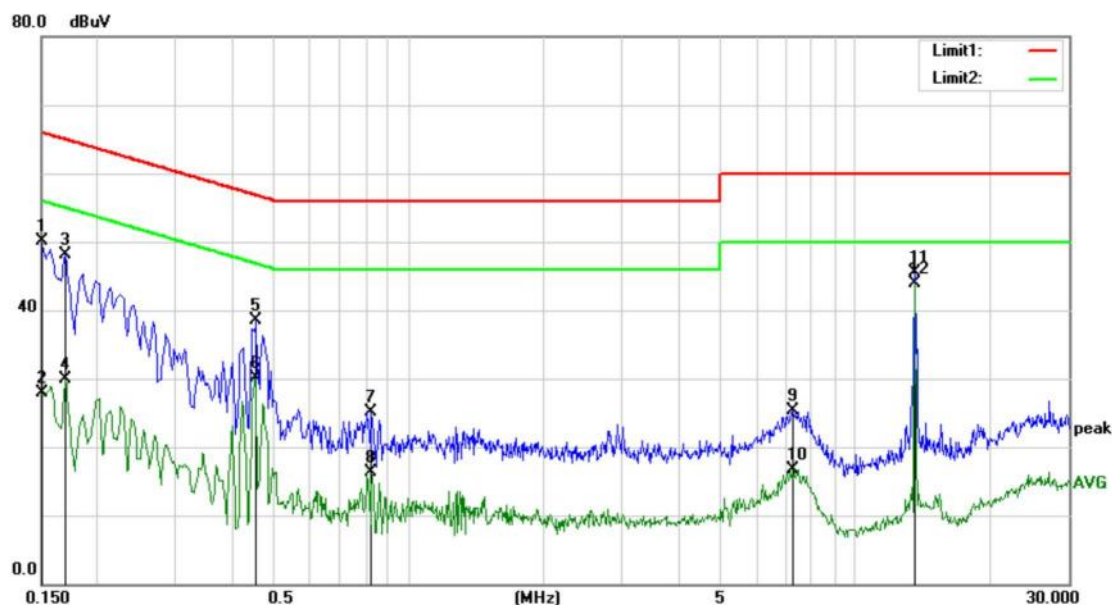
Power: AC 120V/60Hz

Humidity: 42 %

Mode: WiFi

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1580	39.00	10.53	49.53	65.57	-16.04	QP	
2		0.1580	21.42	10.53	31.95	55.57	-23.62	AVG	
3		0.2140	32.64	10.56	43.20	63.05	-19.85	QP	
4		0.2140	17.86	10.56	28.42	53.05	-24.63	AVG	
5		0.4540	27.38	10.61	37.99	56.80	-18.81	QP	
6		0.4540	18.75	10.61	29.36	46.80	-17.44	AVG	
7		7.4500	14.98	10.90	25.88	60.00	-34.12	QP	
8		7.4500	5.62	10.90	16.52	50.00	-33.48	AVG	
9		13.5620	33.88	11.31	45.19	60.00	-14.81	QP	
10	*	13.5620	32.66	11.31	43.97	50.00	-6.03	AVG	
11		23.7980	13.47	11.46	24.93	60.00	-35.07	QP	
12		23.7980	4.29	11.46	15.75	50.00	-34.25	AVG	



Site Conduction 2#

Phase: **L1**

Temperature: 23.7

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 42 %

Mode: WiFi

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	39.58	10.53	50.11	66.00	-15.89	QP	
2		0.1500	17.35	10.53	27.88	56.00	-28.12	AVG	
3		0.1700	37.65	10.54	48.19	64.96	-16.77	QP	
4		0.1700	19.32	10.54	29.86	54.96	-25.10	AVG	
5		0.4540	27.81	10.61	38.42	56.80	-18.38	QP	
6		0.4540	19.52	10.61	30.13	46.80	-16.67	AVG	
7		0.8260	14.46	10.58	25.04	56.00	-30.96	QP	
8		0.8260	5.66	10.58	16.24	46.00	-29.76	AVG	
9		7.2420	14.40	10.90	25.30	60.00	-34.70	QP	
10		7.2420	5.90	10.90	16.80	50.00	-33.20	AVG	
11		13.5620	34.26	11.31	45.57	60.00	-14.43	QP	
12	*	13.5620	32.56	11.31	43.87	50.00	-6.13	AVG	

8.7 ANTENNA APPLICATION

8.7.1 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 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.

8.7.2 Result

PASS.

- The EUT has a FPC Antenna for WIFI 2.4G, the antenna gain is 3.13 dBi.

Note: ☒ Antenna uses 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)

Which in accordance to section 15.203, please refer to the internal photos.

Detail of factor for radiated emission

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

*** End of Report ***