



FCC Part 15C Test Report

FCC ID: 2BWVG-F12H5SVXW2AS

Applicant: ESUNSTAR Technology Co., Ltd

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Manufacturer: ESUNSTAR Technology Co., Ltd

Address: A-507-508, YiyuanTong xuexiang Industrial Plant, Bantian Street, Longgang District, Shenzhen, Guangdong, China

Product Name: Wireless IP Camera

Trade Mark: ESUNSTAR, YUCHENG

Model Number: F12H5SVXW2AS, F12HXXX, F12M-XXX ("XXX" represents a different resolution)

Date of Receipt: May 19, 2026

Test Date: May 19, 2026 ~ Jul. 03, 2026

Date of Report: Jul. 03, 2026

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

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Applicable Standards: FCC PART 15 C 15.247
ANSI C63.10:2020

Test Result: Pass

Report Number: DLE-260703014R

Prepared by(Engineer): Ken Tan

Reviewer(Supervisor): Jack Bu

Approved(Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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**** Issued History ****

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	Jul. 03, 2026	



1. Summary

1.1 Test Procedures and Results

Requirement	CFR 47 Section	Result
Antenna Requirement	§15.203/§15.247(b)(4)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247(b)(3)	PASS
6dB Emission Bandwidth	§15.247(a)(2)	PASS
Power Spectral Density	§15.247(e)	PASS
Band Edge	§15.247(d)	PASS
Spurious Emission	§15.205/§15.209	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.



1.2 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.42\text{dB}$
3	Spurious emissions, conducted	$\pm 2.76\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.65\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$
8	6dB Bandwidth	$\pm 0.2\text{MHz}$
9	Power Spectral Density	$\pm 0.3\text{dBm}$



2. EUT Description

2.1 General Description of EUT

Equipment:	Wireless IP Camera
Model Name:	F12H5SVXW2AS
Series Model(s):	F12HXXX, F12M-XXX ("XXX" represents a different resolution)
Model Difference:	All model's the function, software and electric circuit are the same, only with model named and resolution different. Test sample model: F12H5SVXW2AS.
Antenna Type:	External Antenna
Antenna Gain:	2.9dBi
Operation Frequency:	802.11b/g/n(HT20)/ax(HE20): 2412~2462MHz 802.11n(HT40)/ax(HE40): 2422~2452MHz
Number of Channels:	802.11b/g/n(HT20)/ax(HE20): 11CH 802.11n(HT40)/ax(HE40): 7CH
Modulation Type:	DSSS, OFDM, OFDMA
Power Source:	DC12V from Adapter
Power Rating:	DC12V from Adapter
Hardware Version:	V1.0
Software Version:	V1.0
Note: 1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. Antenna gain Refer to the antenna specifications. 3. The cable loss data is obtained from the supplier. 4. The test results in the report only apply to the tested sample.	



2.2 Carrier Frequency of Channels

Channel List for 802.11b/ 802.11g/ 802.11n (HT20)/ 802.11ax (HE20)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List for 802.11n (HT40) / 802.11ax (HE40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
--	--	04	2427	07	2442	--	--
--	--	05	2432	08	2447	--	--
03	2422	06	2437	09	2452		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2.3 Operation of EUT during Testing

Operating Mode

The mode is used: Transmitting mode for 802.11b/802.11g/802.11n(HT20)/802.11ax(HE20)

Low Channel: 2412MHz

Middle Channel: 2437MHz

High Channel: 2462MHz

The mode is used: Transmitting mode for 802.11n(HT40)/802.11ax(HE40)

Low Channel: 2422MHz

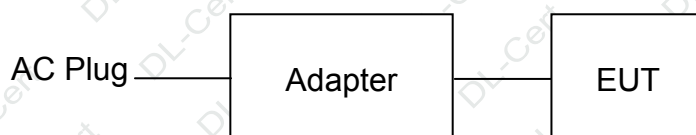
Middle Channel: 2437MHz

High Channel: 2452MHz

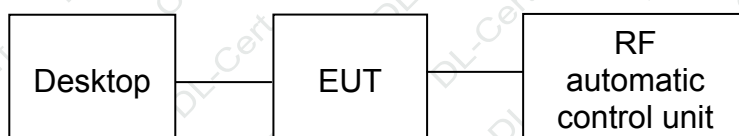


2.4 Description of Test Setup

Operation of EUT during AC Conducted testing and Radiation testing:



Operation of EUT during RF Conducted testing:



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The report only reflects the worst emission test results. The worst case is X position.



2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Remark
1	Wireless IP Camera	ESUNSTAR, YUCHENG	F12H5SVXW2AS	N/A	EUT
2	Adapter	N/A	MN012H-C120100	Input: AC100-240V, 50/60Hz, 0.3A max Output: DC12V/1A, 12W	

Note:

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. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

2.6 The Worse Case Power Setting Parameter

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the end product.

Test Software Version		SecureCRT_x86_7.1.1.264_en
Modulation Type	Transmit Antenna Number	Test Software setting value
DSSS, OFDM, OFDMA	1	default



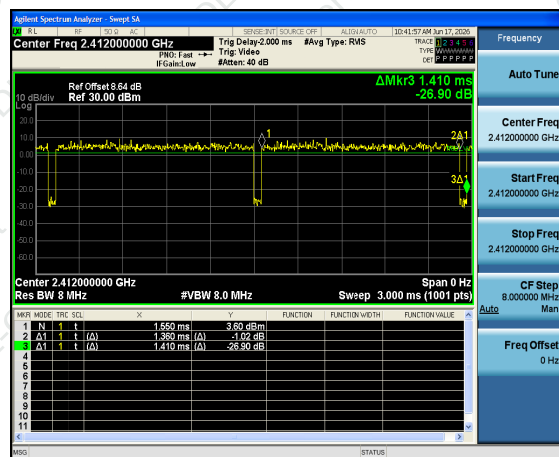
3. General Information

3.1 Test Environment and Mode

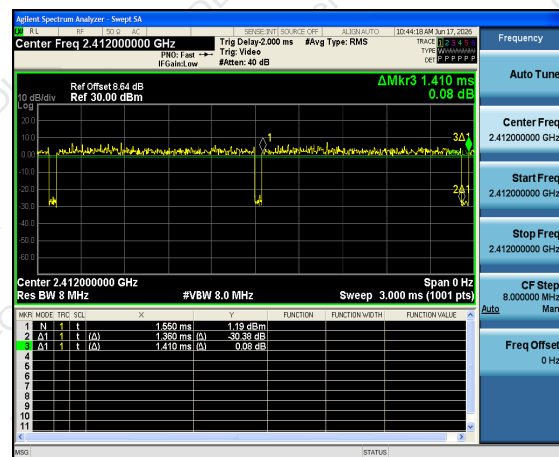
Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations
We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)/ax(HE20)	6.5Mbps
802.11n(HT40)/ax(HE40)	13.5Mbps
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation
1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive. 2. According to ANSI C63.10 standards, the test results are both the “worst case” and “worst setup” 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(HT20)/ax(HE20), 13.5Mbps for 802.11n(HT40)/ax(HE40).	
3. Mode Test Duty Cycle	
Mode	Duty Cycle
802.11b	0.9645
802.11g	0.9645
802.11n(HT20)	0.9624
802.11n(HT40)	0.9265
802.11ax(HE20)	0.9621
802.11ax(HE40)	0.9275
Test plots as follows:	



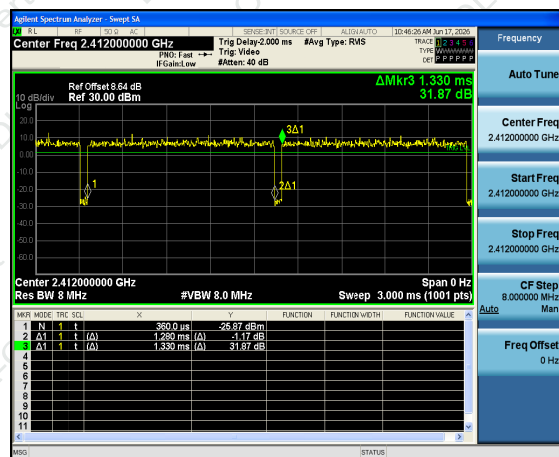
802.11b



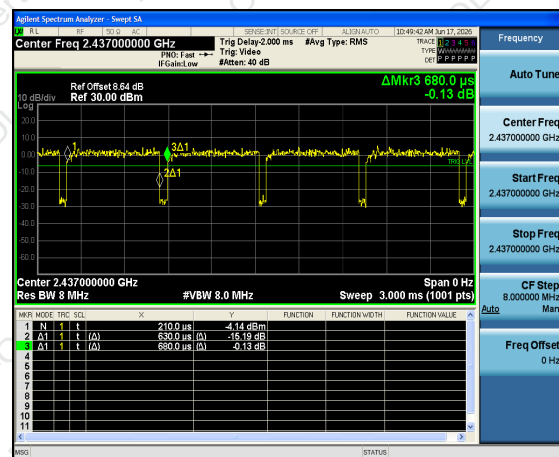
802.11g



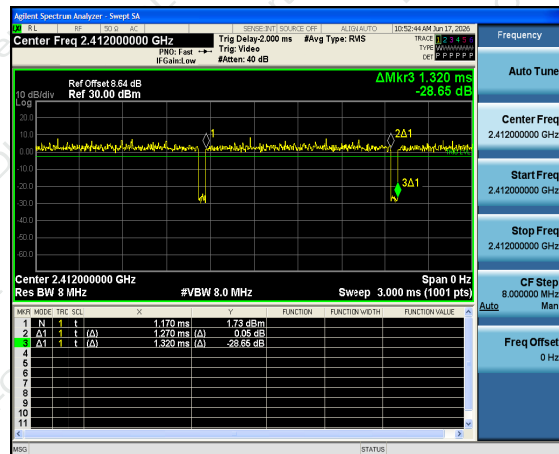
802.11n(HT20)



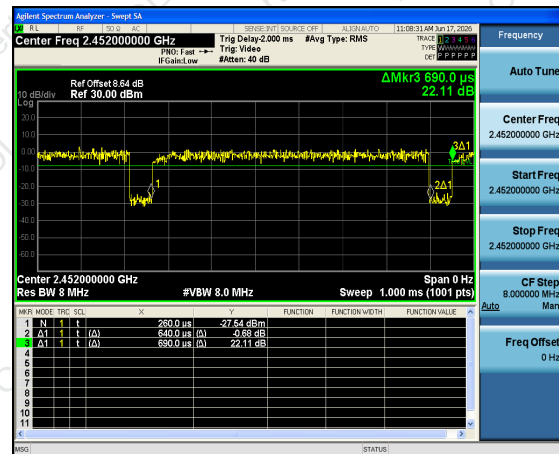
802.11n(HT40)



802.11ax(HE20)



802.11ax(HE40)





4. Test Results and Measurement Data

4.1 AC Power Line Conducted Emission

4.1.1 Test Specification

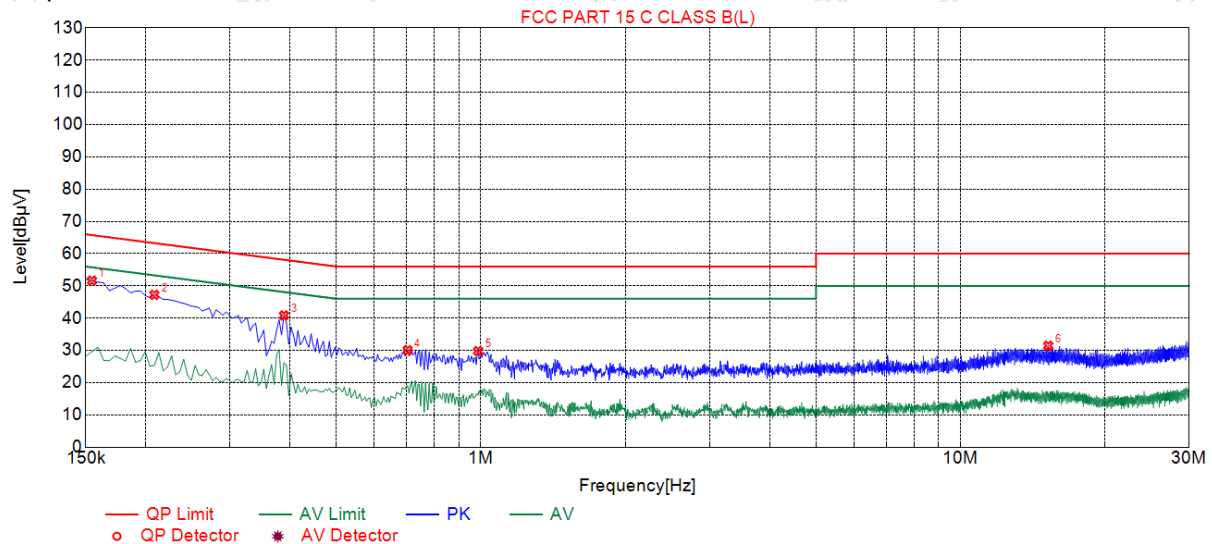
Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10: 2020														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	Reference Plane 40cm E.U.T AC power Test table/Insulation plane 80cm LISN Filter EMI Receiver AC power Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	transmitting with modulation														
Test Procedure:	1. The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2020 on conducted measurement.														
Test Result:	Pass														



4.1.2 Test Data

All the test modes completed for test. Only the worst mode of 802.11b low channel TX is reflected.

Test Specification: Line



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1545	51.65	19.84	65.75	14.10	31.81	PK	L
2	0.2085	47.23	19.75	63.26	16.03	27.48	PK	L
3	0.3885	40.84	19.81	58.10	17.26	21.03	PK	L
4	0.7035	30.06	19.95	56.00	25.94	10.11	PK	L
5	0.9870	29.81	19.87	56.00	26.19	9.94	PK	L
6	15.2565	31.46	22.10	60.00	28.54	9.36	PK	L

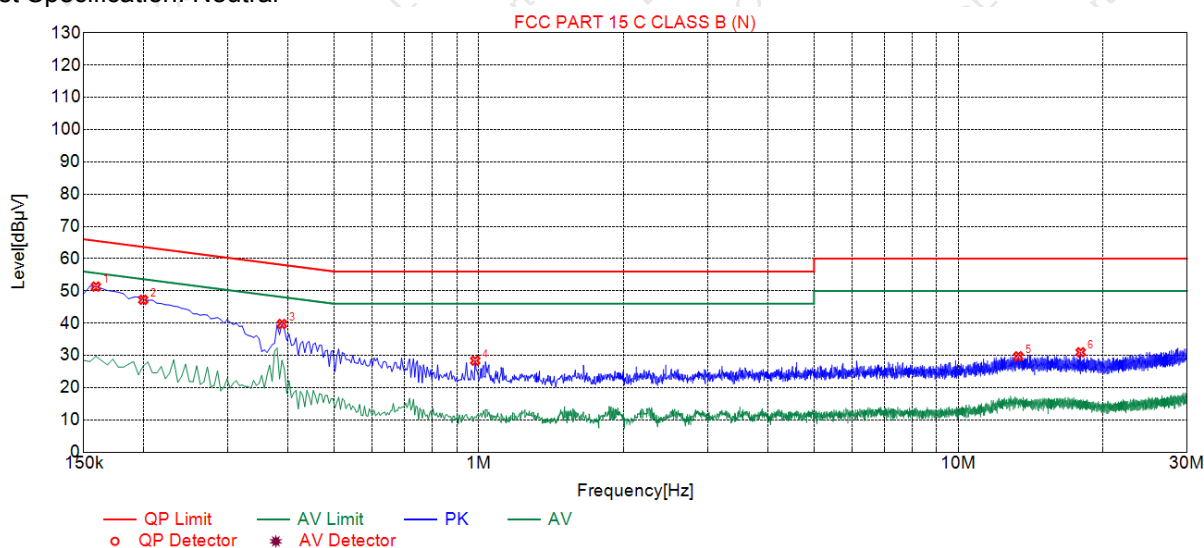
Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1590	51.34	19.91	65.52	14.18	31.43	PK	N
2	0.1995	47.23	19.75	63.63	16.40	27.48	PK	N
3	0.3885	39.74	19.88	58.10	18.36	19.86	PK	N
4	0.9825	28.36	19.97	56.00	27.64	8.39	PK	N
5	13.3395	29.71	21.64	60.00	30.29	8.07	PK	N
6	17.9925	30.96	22.61	60.00	29.04	8.35	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



4.2 Maximum Peak Conducted Output Power

4.2.1 Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02
Limit:	30dBm
Test Setup:	 RF automatic control unit EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 15.247 Meas Guidance v05r02. 2. The RF output of EUT was connected to the RF automatic control unit by RF cable. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Measure the Peak output power and record the results in the test report.
Test Result:	PASS



4.2.2 Test Data

Mode	Test Channel	Frequency	Maximum Peak Conducted Output Power	Limit
		(MHz)	(dBm)	dBm
802.11b	CH01	2412	14.08	30
802.11b	CH06	2437	13.83	30
802.11b	CH11	2462	13.86	30
802.11g	CH01	2412	13.99	30
802.11g	CH06	2437	14.64	30
802.11g	CH11	2462	13.60	30
802.11n(HT20)	CH01	2412	13.45	30
802.11n(HT20)	CH06	2437	13.27	30
802.11n(HT20)	CH11	2462	13.40	30
802.11n(HT40)	CH03	2422	13.22	30
802.11n(HT40)	CH06	2437	13.57	30
802.11n(HT40)	CH09	2452	13.29	30
802.11ax(HE20)	CH01	2412	13.50	30
802.11ax(HE20)	CH06	2437	14.33	30
802.11ax(HE20)	CH11	2462	14.26	30
802.11ax(HE40)	CH03	2422	13.84	30
802.11ax(HE40)	CH06	2437	14.08	30
802.11ax(HE40)	CH09	2452	13.83	30

Note: 1.The test results including the cable lose.



4.3 Emission Bandwidth

4.3.1 Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02
Limit:	≥500kHz
Test Setup:	 The diagram illustrates the test setup. On the left is a green box labeled 'Spectrum Analyzer' with a screen and two red dots. A black line connects it to a yellow box on the right labeled 'EUT' with a single red dot.
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1%~5%OBW. Set the video bandwidth (VBW) ≥ 3 RBW. In order to make an accurate measurement. The 6dB bandwidth must be at least 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS



4.3.2 Test Data

Test channel	6dB Emission Bandwidth (MHz)					
	802.11b	802.11g	802.11n (HT20)	802.11n (HT40)	802.11ax (HE20)	802.11ax (HE40)
Lowest	9.120	16.120	17.520	36.080	18.640	37.360
Middle	9.120	16.240	17.600	35.840	17.080	37.440
Highest	9.040	16.040	17.480	36.400	18.880	37.520
Limit:	≥500KHz					
Test Result:	PASS					

Test plots as follows:



802.11b Modulation

Lowest Channel



Middle Channel



Highest Channel





802.11g Modulation

Lowest Channel



Middle Channel



Highest Channel





802.11n (HT20) Modulation

Lowest Channel



Middle Channel



Highest Channel





802.11n (HT40) Modulation

Lowest Channel



Middle Channel



Highest Channel





802.11ax (HE20) Modulation

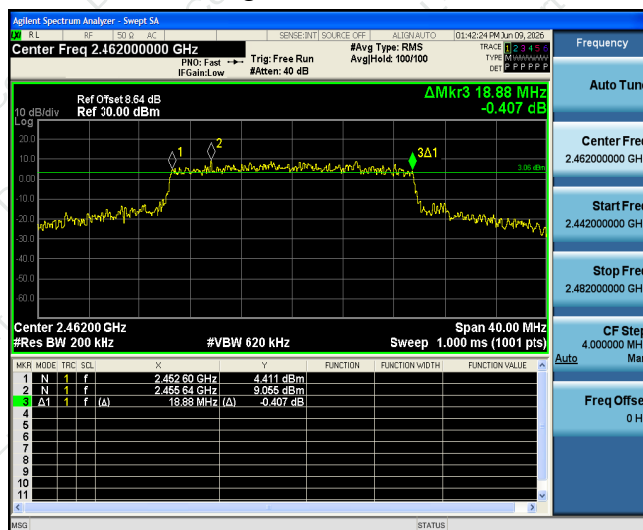
Lowest Channel



Middle Channel



Highest Channel





802.11ax (HE40) Modulation

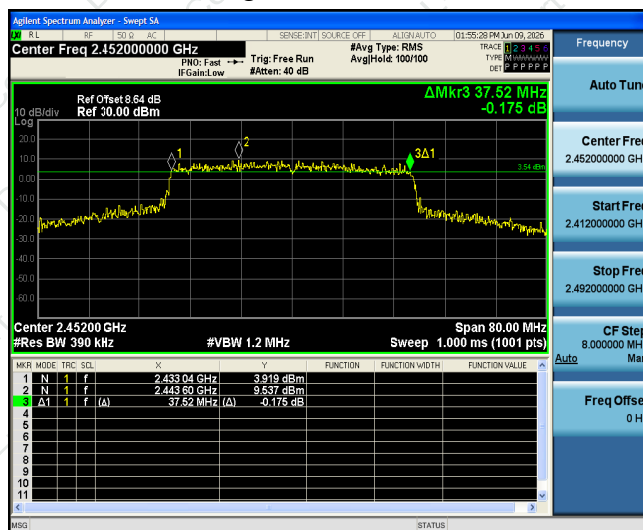
Lowest Channel



Middle Channel



Highest Channel





4.4 Power Spectral Density

4.4.1 Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02
Limit:	The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test Setup:	 The diagram illustrates the test setup. On the left is a green box labeled 'Spectrum Analyzer'. A black line representing an RF cable connects it to a yellow box on the right labeled 'EUT'.
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows Measurement procedure 10.2 method PKPSD of FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02. 2. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. Video bandwidth $\text{VBW} \geq 3 \times \text{RBW}$. Set the span to at least 1.5 times the OBW. 5. Detector = Peak, Sweep time = auto couple. 6. Employ trace averaging (Peak) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. 7. Measure and record the results in the test report.
Test Result:	PASS



4.4.2 Test Data

EUT Set Mode	Channel	Test Result (dBm/30kHz)	Result (dBm/3kHz)
802.11b	Lowest	1.75	-8.25
	Middle	2.43	-7.57
	Highest	2.04	-7.96
802.11g	Lowest	1.64	-8.36
	Middle	2.07	-7.93
	Highest	1.72	-8.28
802.11n(HT20)	Lowest	0.22	-9.78
	Middle	0.95	-9.05
	Highest	-0.08	-10.08
802.11n(HT40)	Lowest	-1.27	-11.27
	Middle	-1.21	-11.21
	Highest	-1.38	-11.38
802.11ax(HE20)	Lowest	1.06	-8.94
	Middle	3.90	-6.10
	Highest	2.71	-7.29
802.11ax(HE40)	Lowest	-0.33	-10.33
	Middle	-0.16	-10.16
	Highest	-0.11	-10.11
PSD test result (dBm/3kHz)= PSD test result (dBm/30kHz)-10			
Limit: 8dBm/3kHz			
Test Result:		PASS	

Test plots as follows:



802.11b Modulation

Lowest Channel



Middle Channel



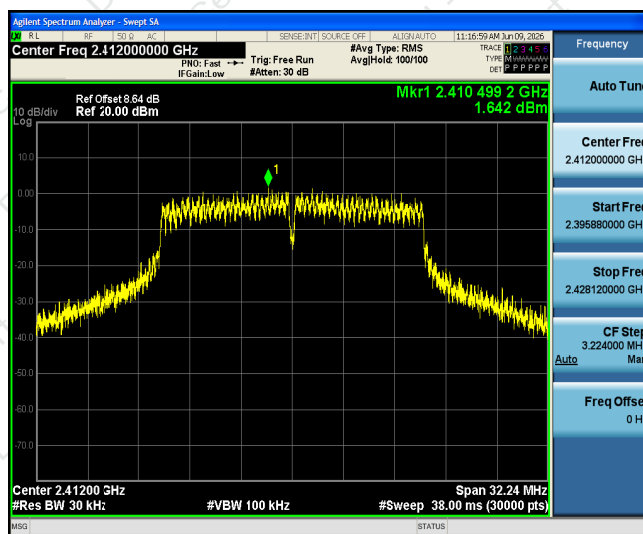
Highest Channel



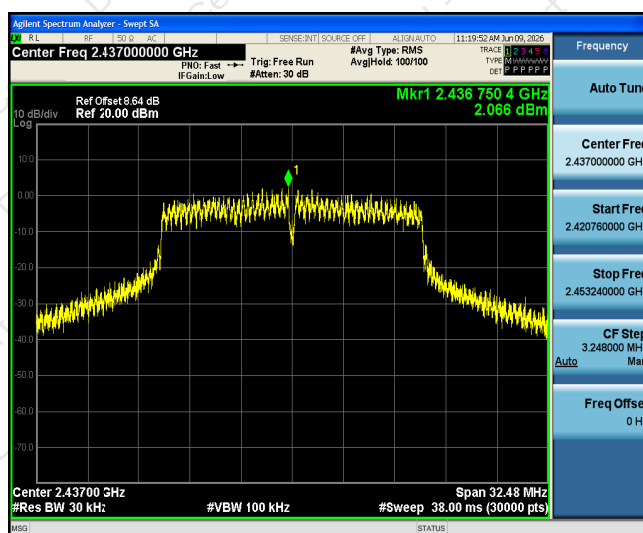


802.11g Modulation

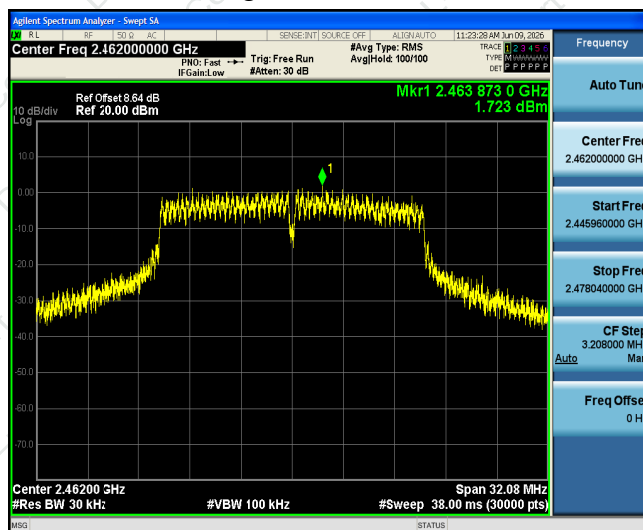
Lowest Channel



Middle Channel



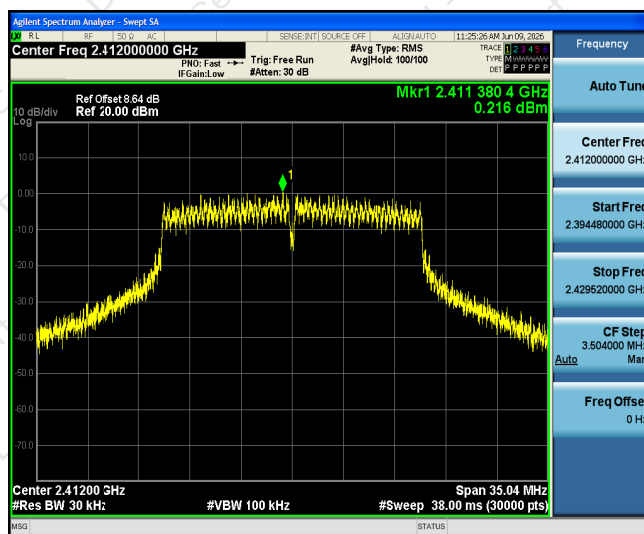
Highest Channel



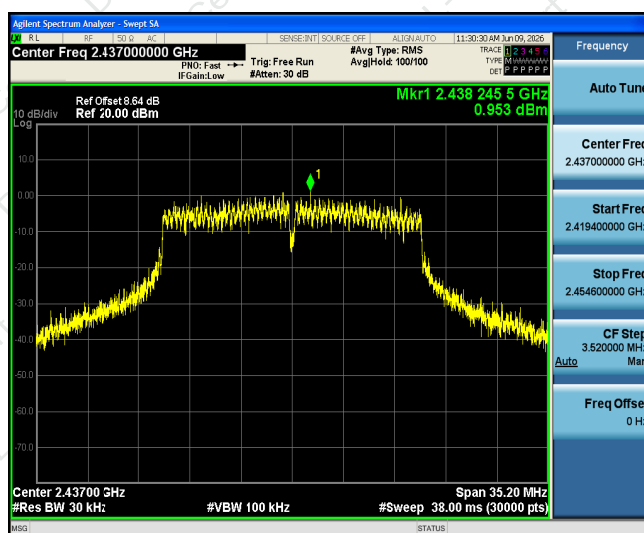


802.11n (HT20) Modulation

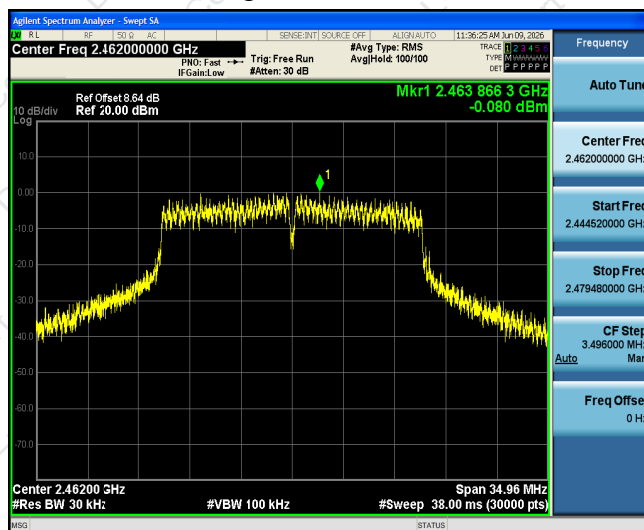
Lowest Channel



Middle Channel



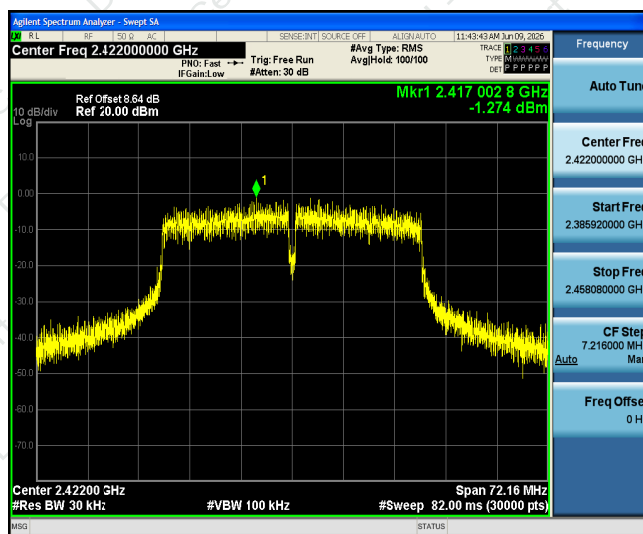
Highest Channel



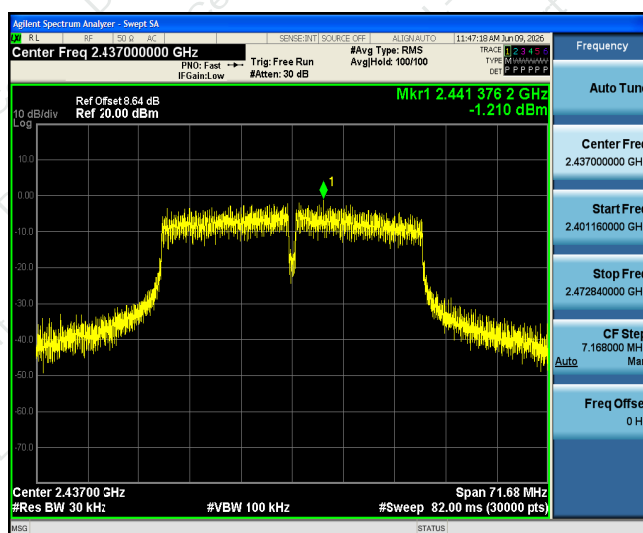


802.11n (HT40) Modulation

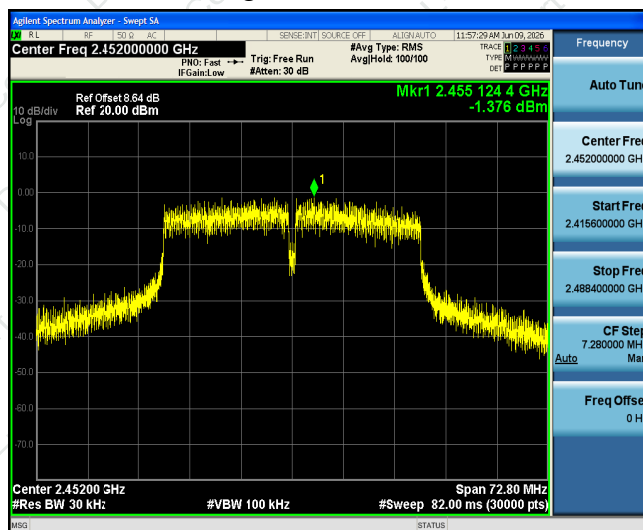
Lowest Channel



Middle Channel



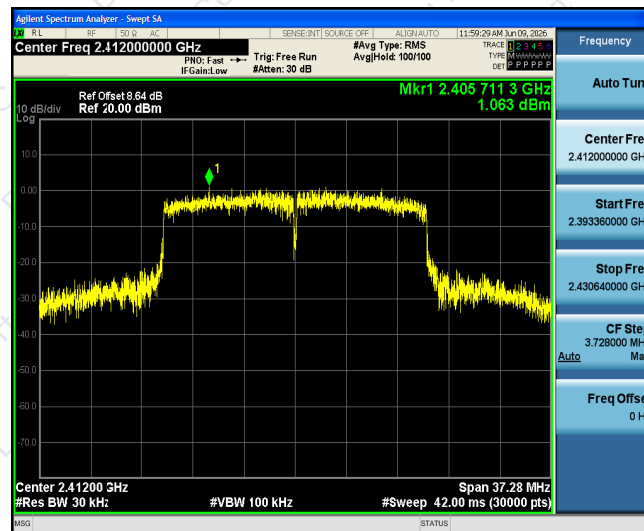
Highest Channel



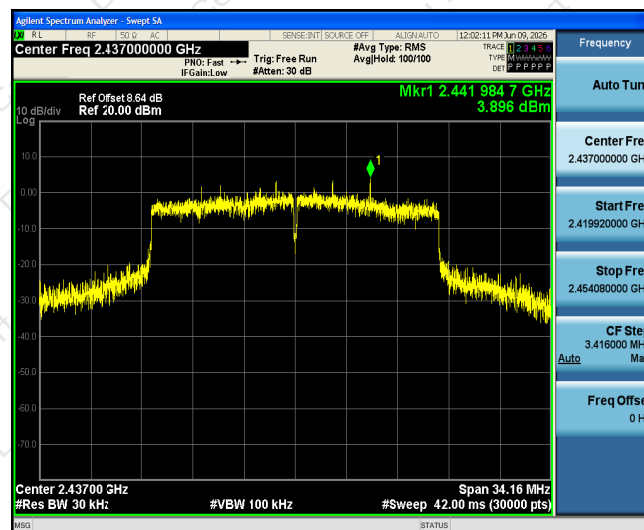


802.11ax (HE20) Modulation

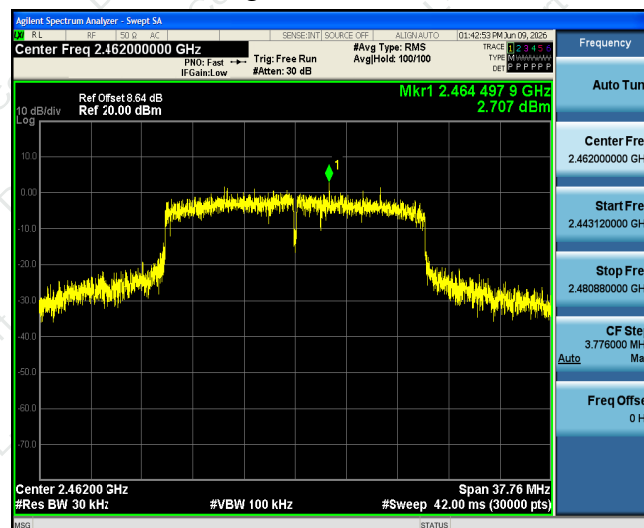
Lowest Channel



Middle Channel



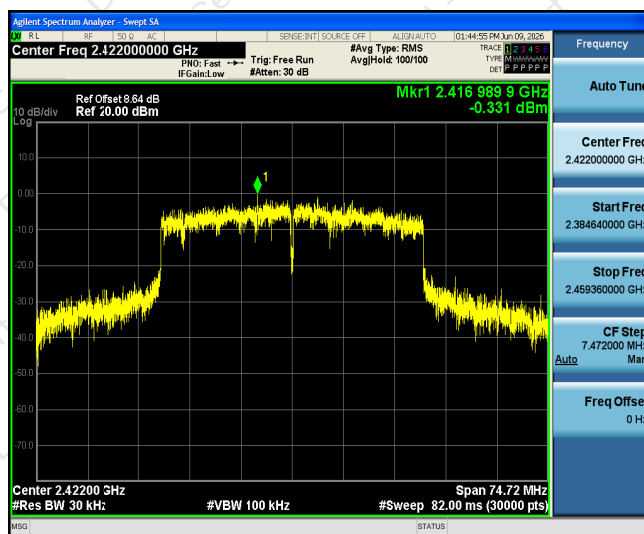
Highest Channel



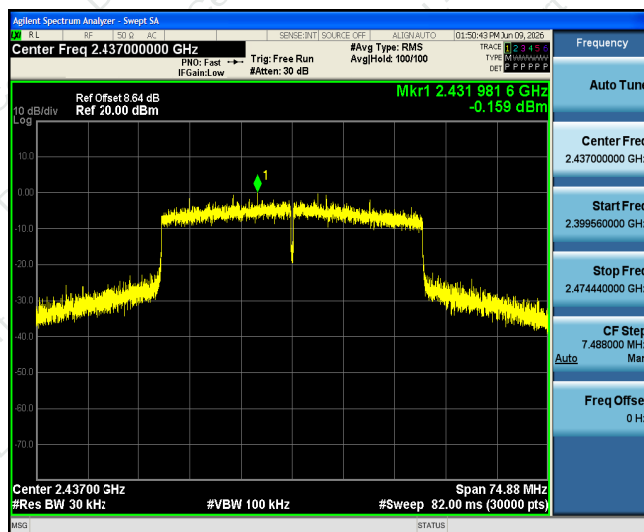


802.11ax (HE40) Modulation

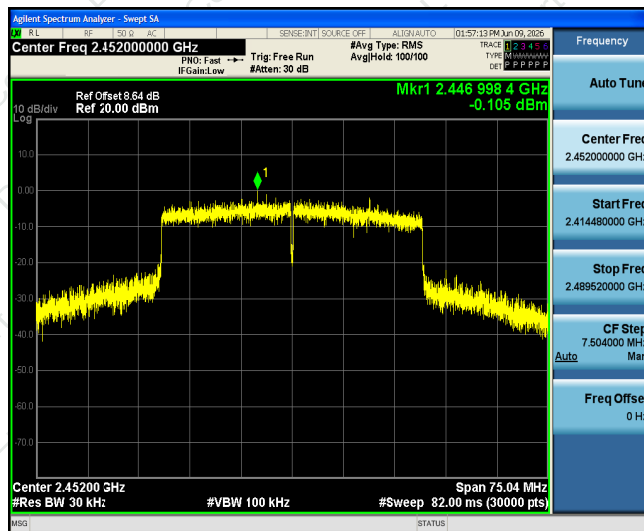
Lowest Channel



Middle Channel



Highest Channel





4.5 Conducted Band Edge and Spurious Emission Measurement

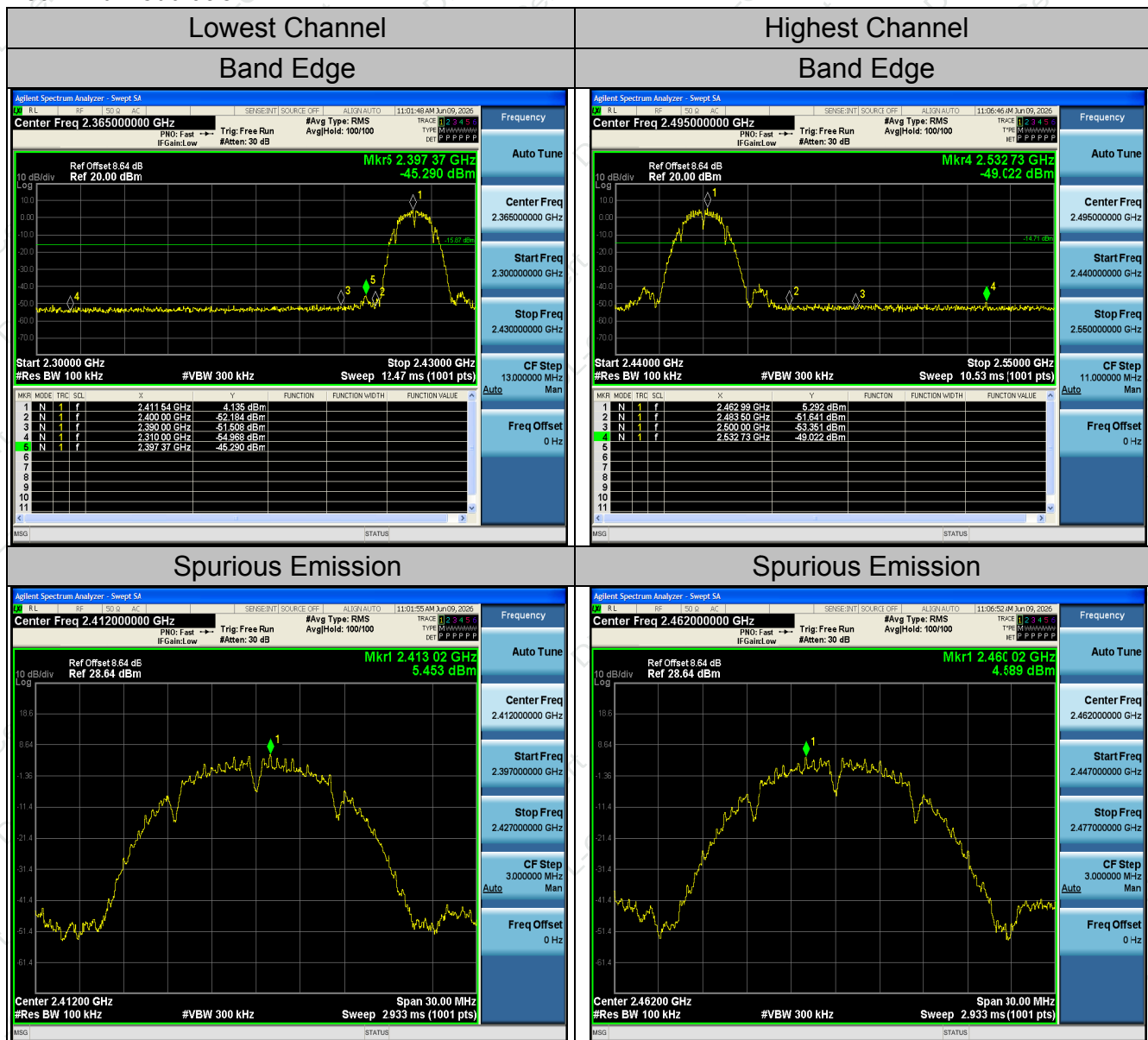
4.5.1 Test Specification

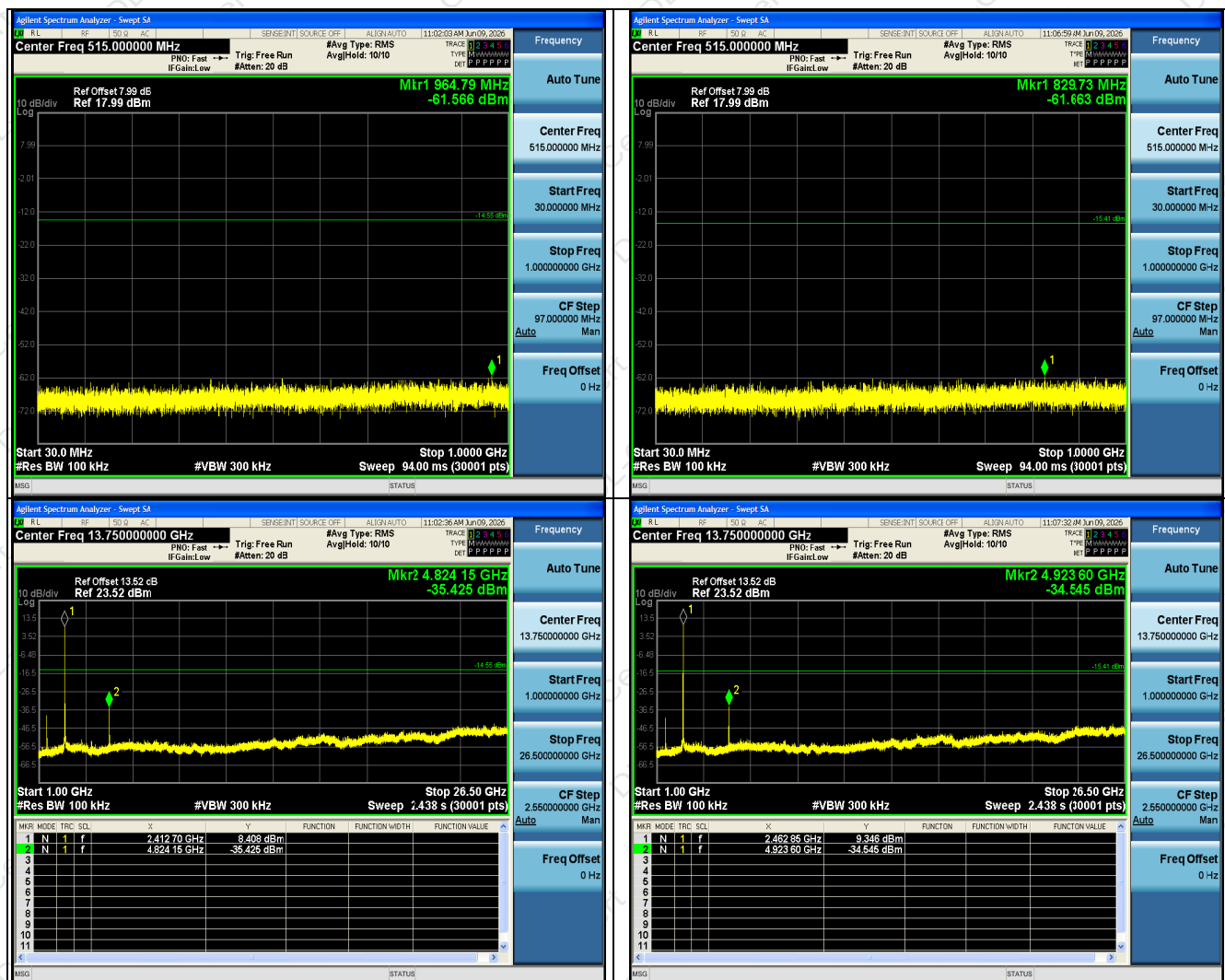
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02
Limit:	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
Test Setup:	 The diagram illustrates the test setup. On the left is a green rectangular box labeled 'Spectrum Analyzer'. A black line representing an RF cable connects it to a yellow rectangular box on the right labeled 'EUT'.
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows FCC KDB Publication 558074 D01 15.247 Meas Guidance v05r02. 2. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d). 5. Measure and record the results in the test report. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
Test Result:	PASS



4.5.2 Test Data

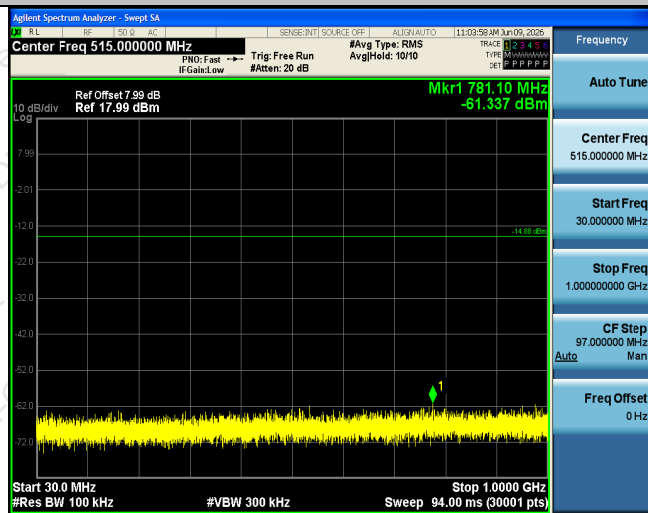
802.11b Modulation





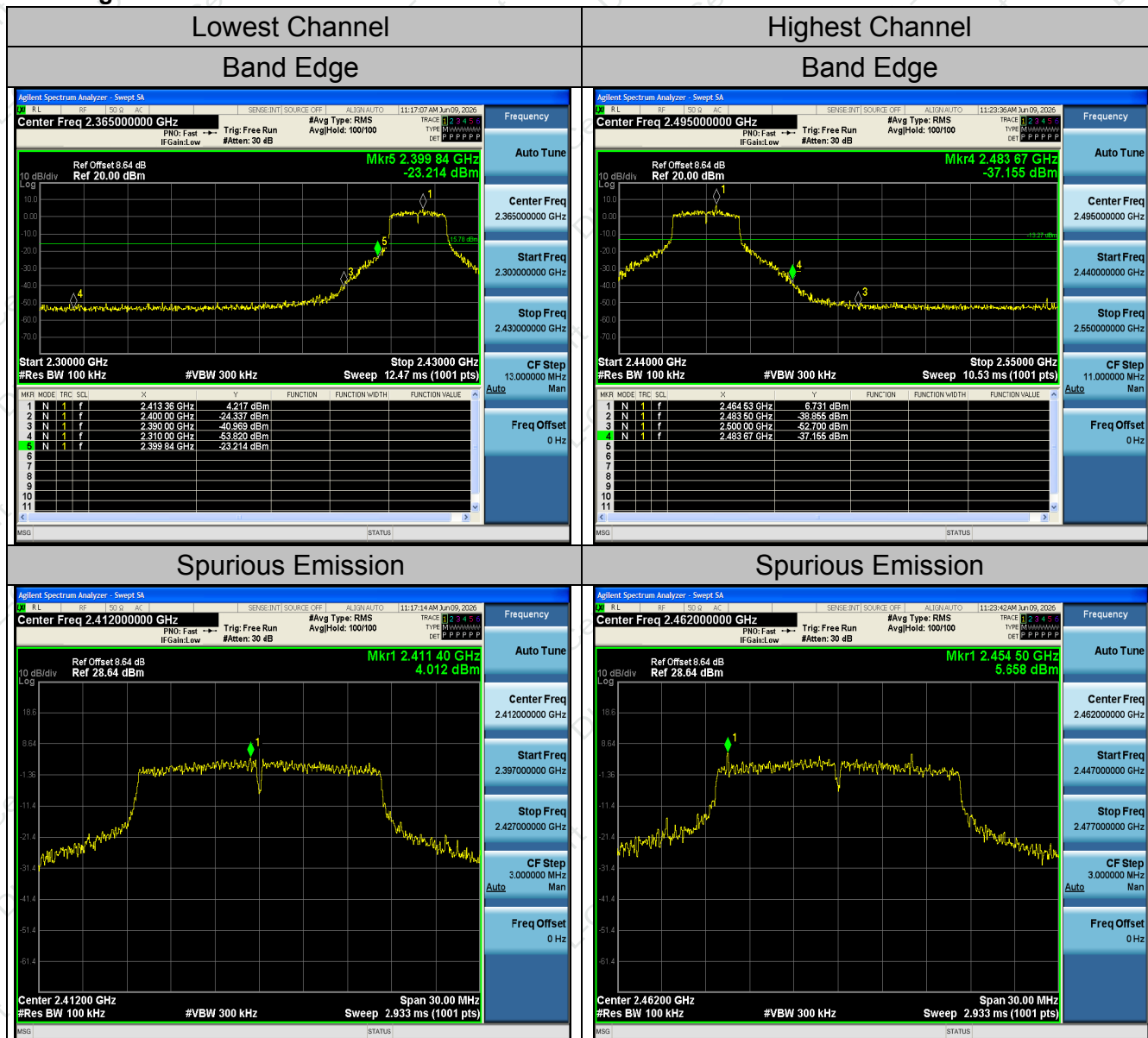


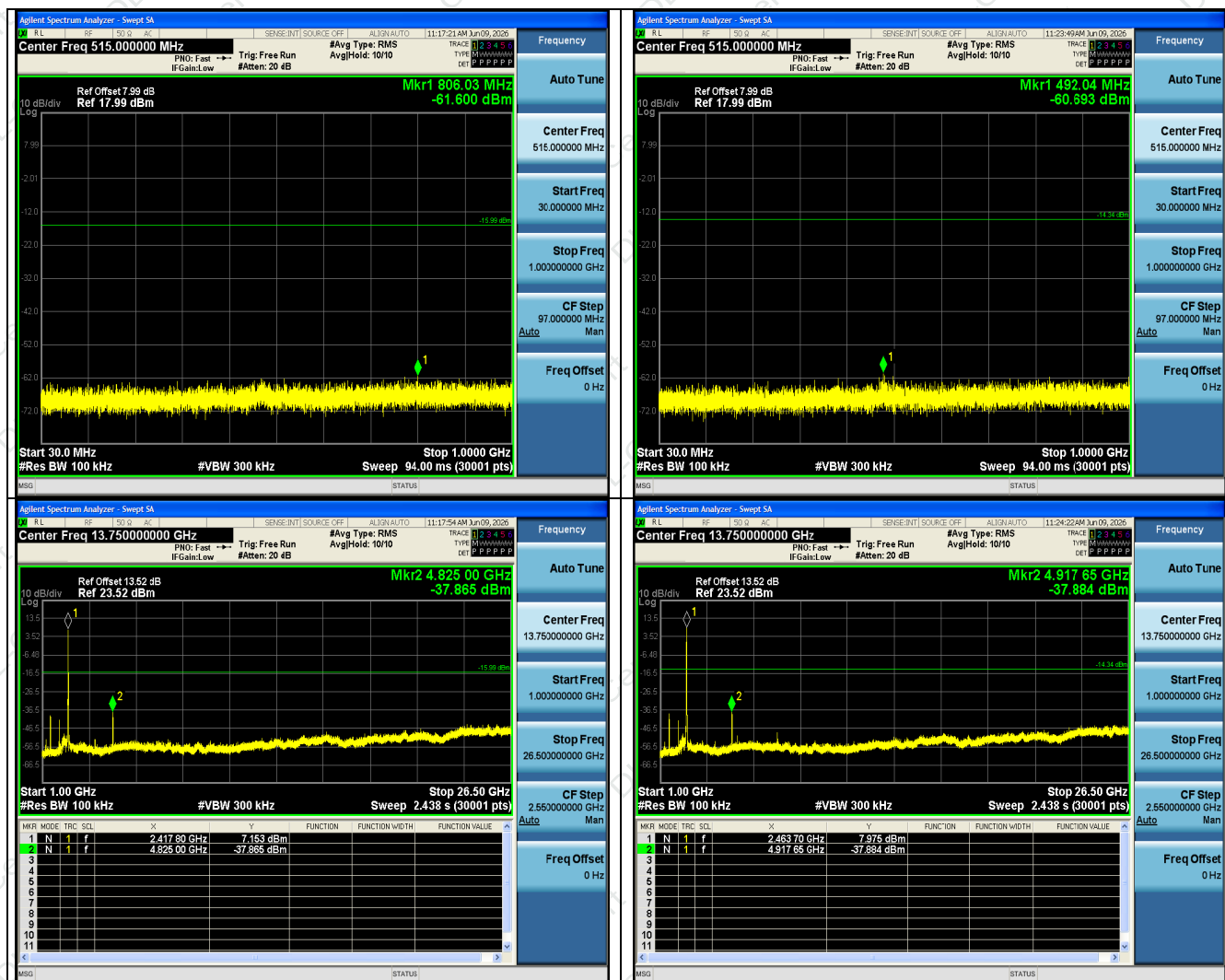
Middle Channel Spurious Emission

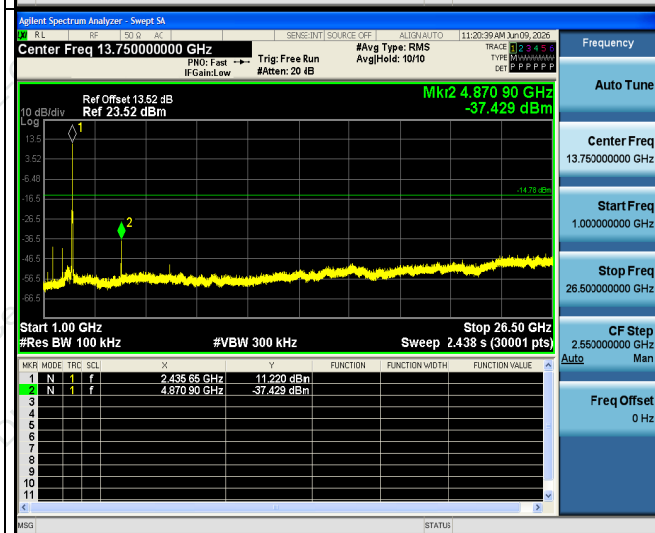
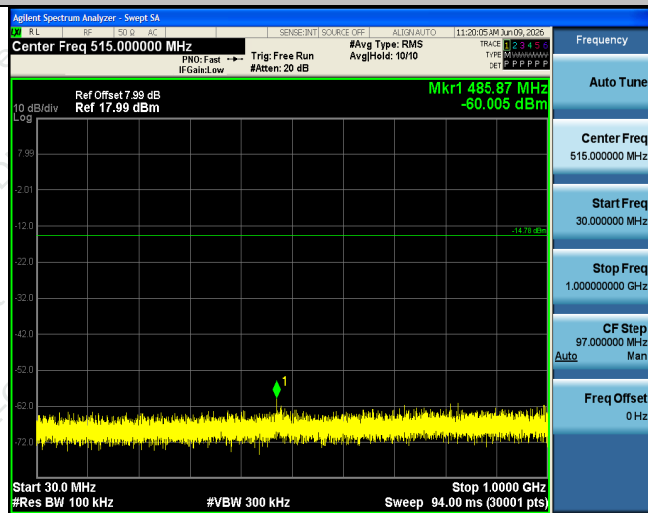




802.11g Modulation



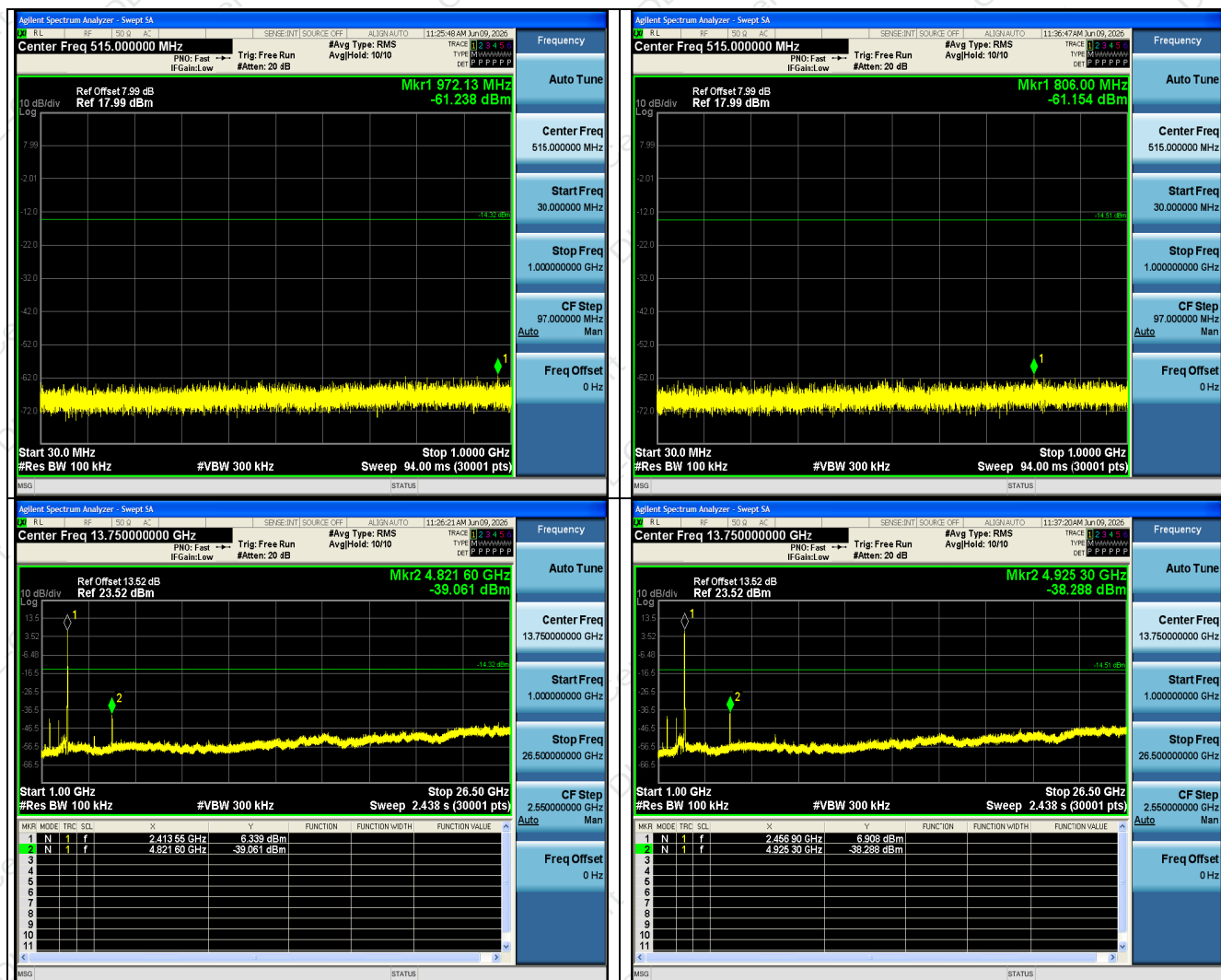


Middle Channel
Spurious Emission



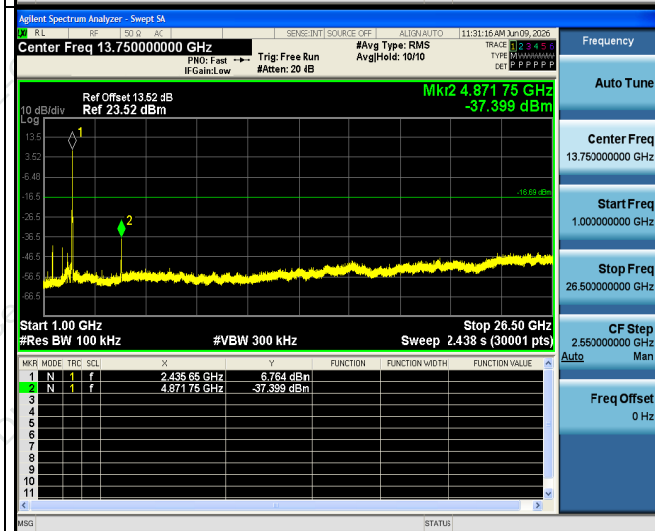
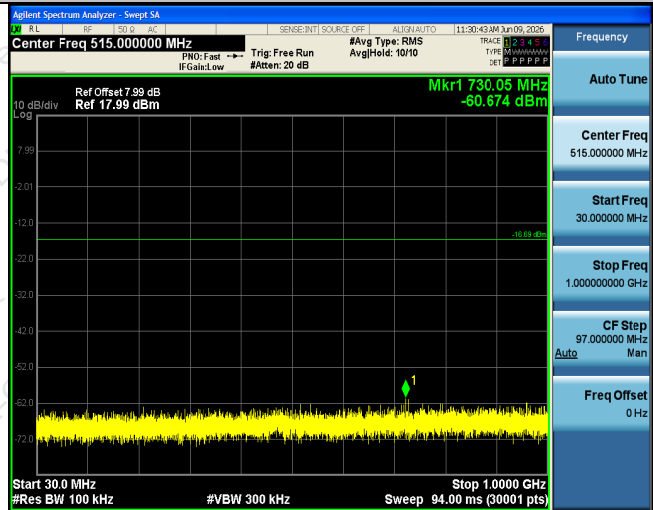
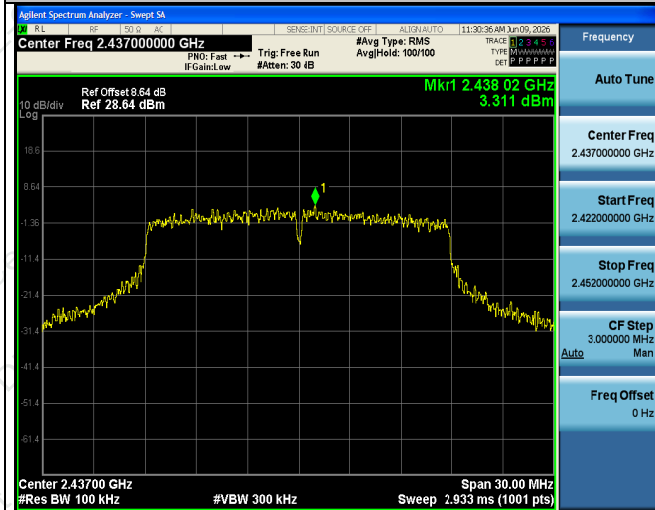
802.11n (HT20) Modulation





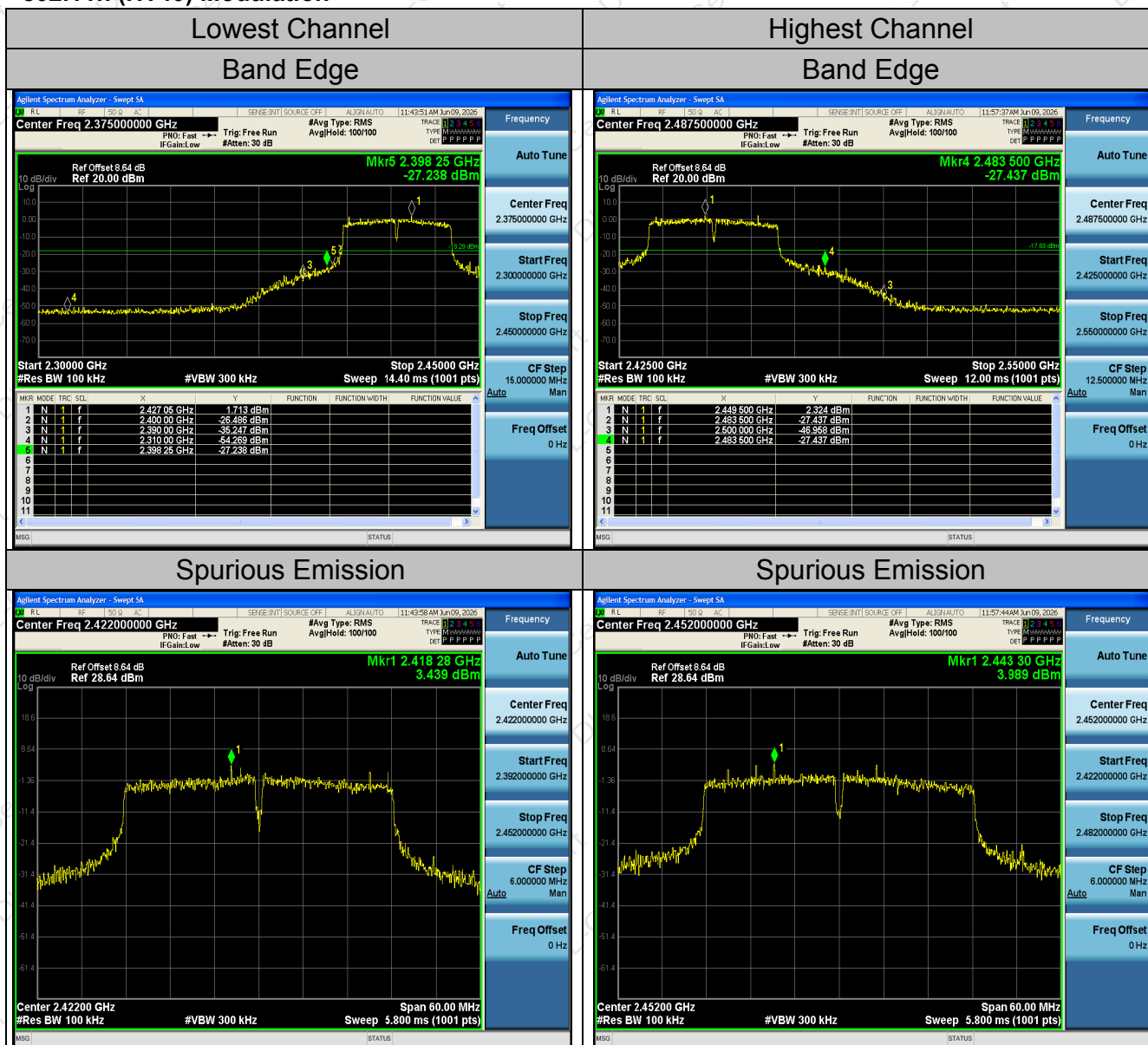


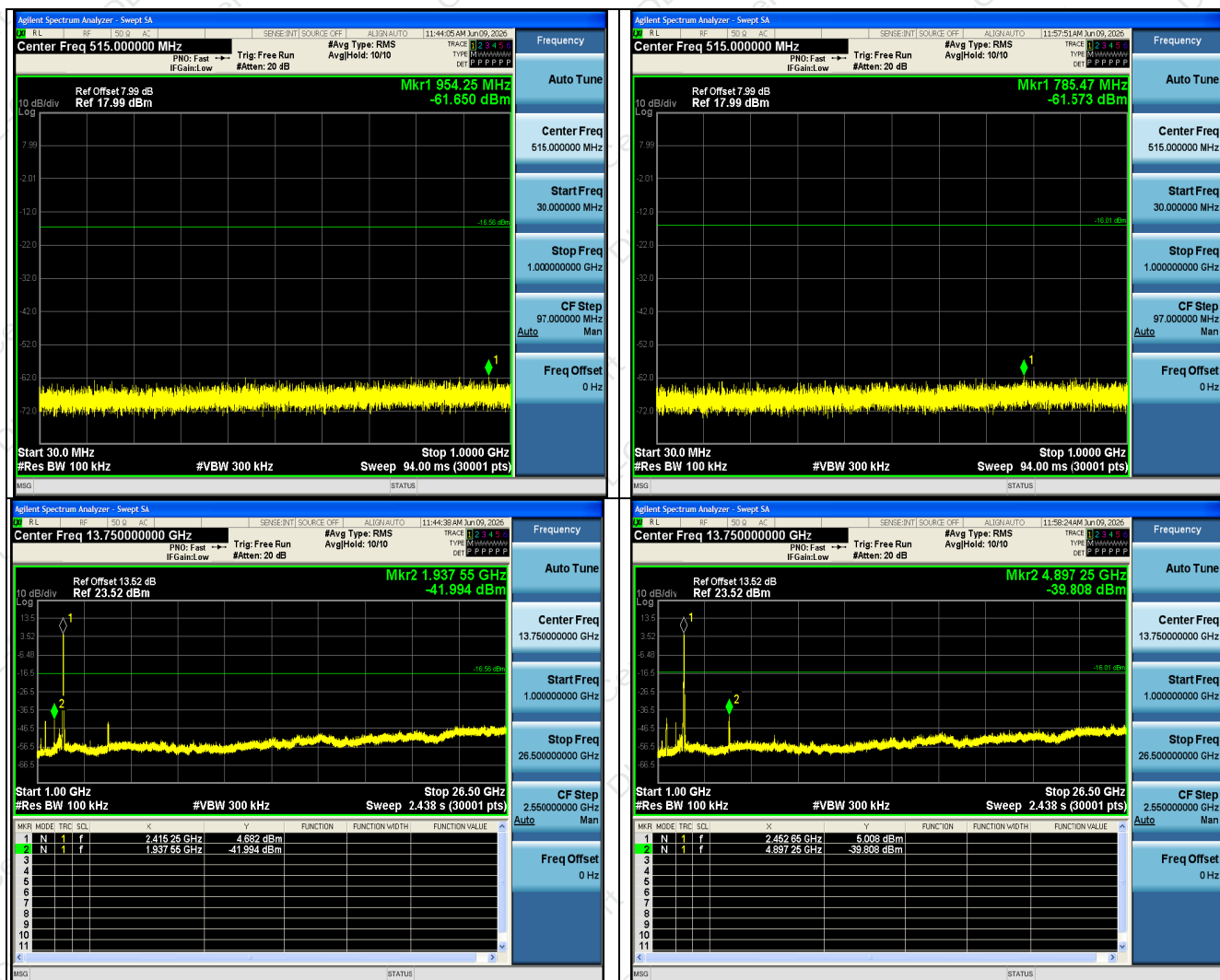
Middle Channel Spurious Emission





802.11n (HT40) Modulation





Middle Channel
Spurious Emission