

TEST REPORT

Report No.: SHE25060038-01CE

Date: 2025-07-09

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Applicant : XingKuang Innovation Technology (Suzhou) Co., Ltd.
Address of Applicant : 12th Floor, Building 2, No. 1463, Wuzhong Avenue,
Wuzhong District, Suzhou, Jiangsu Province, China

Product Name : SmartCam Health Feeder
Brand Name : Lingwei
Model Name : PF20A
Sample Acquisition Method : Sent by Client

Sample No. : E25060038-01#01
E25060038-01#02

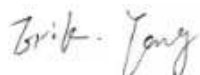
FCC ID : 2BOGG-PF20A
Standards : FCC CFR47 Part 15.247, Subpart C

Date of Receipt : 2025-06-11
Date of Test : 2025-07-04~ 2025-07-08
Date of Issue : 2025-07-09

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

Prepared by:



(Erik Yang)

Reviewed by:



(Jennifer Zhou)

Approved by:



(Authorized signatory: Echo Mu)

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1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Service (Shanghai) Co., Ltd
Address	No.1298, Pingan Road, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Details of Application

Applicant Company Name	XingKuang Innovation Technology (Suzhou) Co., Ltd.
Applicant Company Address	12th Floor, Building 2, No. 1463, Wuzhong Avenue, Wuzhong District, Suzhou, Jiangsu Province, China
Contact Person	Chunlei Deng
Telephone	18951582775
Email	certificate@dreame.tech
Manufacturer Company Name	XingKuang Innovation Technology (Suzhou) Co., Ltd.
Manufacturer Company Address	12th Floor, Building 2, No. 1463, Wuzhong Avenue, Wuzhong District, Suzhou, Jiangsu Province, China
Factory Company Name	Moke Intelligent Technology (Suzhou) Co., Ltd.
Factory Company Address	4th Floor, Building 6, No.1999 Songjia Road, Guoxiang Street, Wuzhong Economic Development Zone, Suzhou, Jiangsu Province, P.R.

1.3 Details of EUT

Product Name	SmartCam Health Feeder
Brand Name	Lingwei
Test Model Name	PF20A
FCC ID	2BOGG-PF20A
Mode of Operation	WIFI 802.11b/g/n(HT20)
Max RF Output Power	IEEE 802.11b: 15.19dBm IEEE 802.11g: 13.37dBm IEEE 802.11n(20): 13.23dBm
Frequency Range	2412MHz ~ 2462MHz
Channel Separation	5 MHz
Number of channels	11
Modulation Type	DSSS, OFDM
Antenna Type	FPC Antenna
Antenna Gain	3.29dBi
Extreme Temperature Range	0°C~ +40°C

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Test Voltage	DC 5V 2000mA Supply by Power Adapter (Model:KA12H-0502000US) DC 6V by battery (4*1.5V AA batteries)
Hardware Version	V1.1
Software Version	1027
RF power setting in TEST SW	AltoBeam WIFI GUI 2.10.124 19903 FwVer:19731 MAC:4C:60:BA:55:11:13 DIR: altobeamWifi_ETF_V2.10.124__Power level setting_deltagain(dB) set -3

Note:

1. The above information was declared by the manufacture.
2. For more details, please refer to the User's manual of the EUT.

Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2.412GHz	5	2.432GHz	9	2.452GHz
2	2.417GHz	6	2.437GHz	10	2.457GHz
3	2.422GHz	7	2.442GHz	11	2.462GHz
4	2.427GHz	8	2.447GHz		

Note: For 20MHz bandwidth system use Channel 1 to Channel 11

1.4 Test Methodology

47 CFR Part 15, Subpart C	Telecommunication-Radio Frequency Devices-Intentional Radiators
KDB Publication 558074 D01 v05r02	15.247 Meas Guidance.
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Note(s):

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

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1.5 Test Summary

Test Item	FCC Rules	Result
Antenna Requirement	FCC Part 15.247(b)(4), Part 15.203	PASS
Maximum conducted (average) output power	FCC Part 15.247(b)(3)	PASS
6dB Bandwidth	FCC Part 15.247(a)(2)	PASS
Maximum conducted output power spectral density	FCC Part 15.247(e)	PASS
Conducted Spurious Emission & Authorized-band band-edge	FCC Part 15.247(d)	PASS
Radiated Emission	FCC Part 15.247(d), 15.205, 15.209	PASS
Band Edge (Restricted-band band-edge)	FCC Part 15.247(d), 15.205, 15.209	PASS
Conducted Emission on AC Mains	FCC Part 15.207(a)	PASS

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2 Test Condition

2.1 Environmental conditions

Temperature (°C)	15-35
Humidity (%RH)	30-60
Barometric Pressure (mbar)	860-1060

Note: Actual values will be recorded during the test.

2.2 Equipment List

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020B	MY59260184	2025-06-30	2026-06-29
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2025-06-10	2026-06-09
Signal Generator	Rohde & Schwarz	SMR27	100184	2025-06-30	2026-06-29
EMI Test Receiver	Rohde & Schwarz	ESPI3	100173	2025-06-09	2026-06-08
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2025-06-09	2026-06-08
V-network	SCHWARZBECK	NSLK 8127	8127-902	2025-06-09	2026-06-08
Attenuator	SCHWARZBECK	VTSD 9561-FN	/	2025-06-09	2026-06-08
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2025-03-24	2027-03-23
Horn Antenna-18G	SCHWARZBECK	BBHA9120D	9120D-1775	2025-06-22	2027-06-21
Loop Antenna	SCHWARZBECK	FMZB 1513	/	2025-06-23	2027-06-22
Horn Antenna-40G	YINGLIAN	LB-180400-KF	N/A	2025-06-22	2027-06-21
Broadband Preamplifier	SCHWARZBECK	BBV 9718	346	2025-06-09	2026-06-08
EMC chamber 9*6*6(L*W*H)	CHANGNING	966	N/A	2025-06-10	2028-06-09
Shielded Enclosure 8*5*4(L*W*H)	CHANGNING	854	N/A	2025-06-10	2028-06-09
Test Software	BL	BL410_E	Version:2.1.1.436	N/A	N/A
Test Software	BL	BL410_R	Version:2.1.1.409	N/A	N/A

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2.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by CISPR and ANSI. The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95.45%.

Parameter		Uncertainty
Antenna Port Conducted Emission	< 1GHz	± 1.5 dB
	> 1GHz	± 1.5 dB
Radiated Emission	9KHz – 30MHz	± 3.42 dB
	30 MHz – 1GHz	± 5.01 dB
	> 1GHz	± 5.21 dB
Conducted Emission on AC Mains	150kHz-30MHz	± 2.68 dB
Occupied Channel Bandwidth		± 5 %
Maximum Conducted Output Power		± 0.64 dB
Maximum Conducted Output Power Spectral Density		± 1.18 dB

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3 Test Set-up and Operation Modes

3.1 Details of Test Mode

Using test software to control EUT work in continuous transmitting and receiving mode. Select test channel as below:
For 802.11b/g/n (HT20)

Channel	Frequency
The lowest channel (CH1)	2412MHz
The middle channel (CH6)	2437MHz
The highest channel (CH11)	2462MHz

Through Pre-scan under all rate at lowest channel, the data rate as below table described is the worst case, so we choose these data rate for test.

Type	Data rate
802.11b	11Mbps
802.11g	54Mbps
802.11n(20M)	MCS6

The basic operation modes are:

- A. On
 - 1. WLAN mode
 - a. Transmitting
 - i. Low Channel
 - ii. Middle Channel
 - iii. High Channel
 - b. Receiving
- B. Standby
- C. Off

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3.2 Special Accessories and Auxiliary Equipment

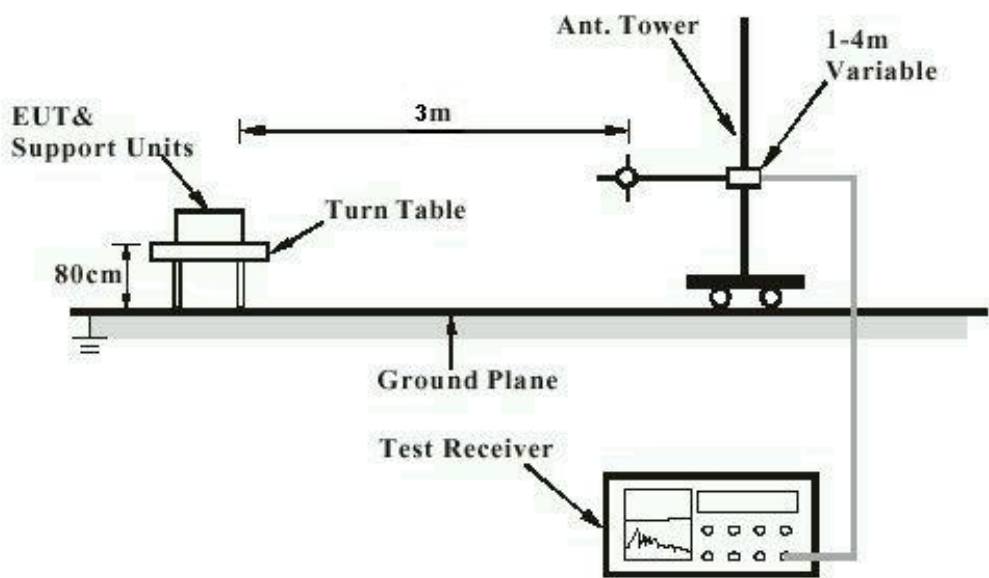
Description	Manufacturer	Model Name	Serial No.
Power Supply	KEYU	KA12H-0502000US	Input: AC 100-240V 50/60Hz 0.4A Max; Output: DC 5V 2000mA
Laptop 1	HP	HP ZHAN 66 Pro G1	5CD7438R1J
Laptop 2	Lenovo	TP00083A	PF-0PRDGN
USB Cable	N/A	N/A	1.00m Unshielded

3.3 Support Software

Description	Manufacturer	Software Name
Software	N/A	AltoBeam WIFI GUI 2.10.124 19903 FwVer:19731 MAC:4C:60:BA:55:11:13 DIR: altobeamWifi_ETF_V2.10.124

3.4 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

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Diagram of Measurement Equipment Configuration for Conduction Measurement

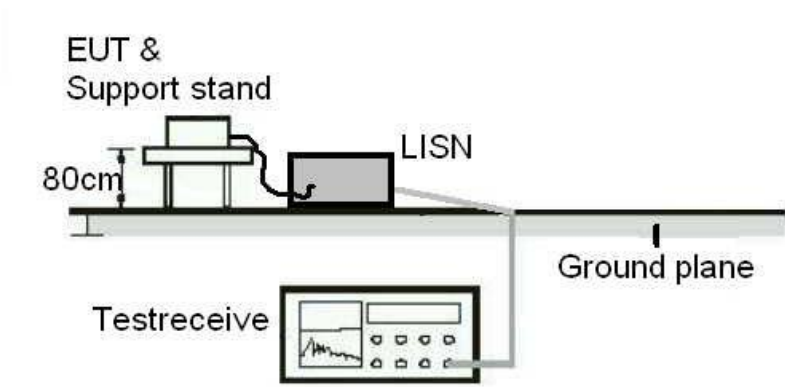


Diagram of Measurement Equipment Configuration for Transmitter Measurement

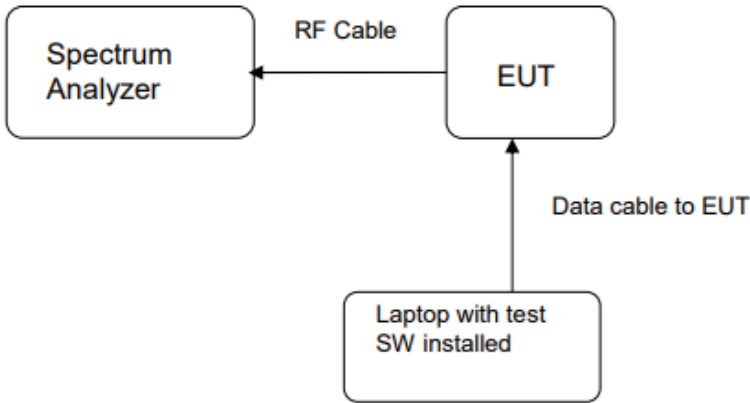
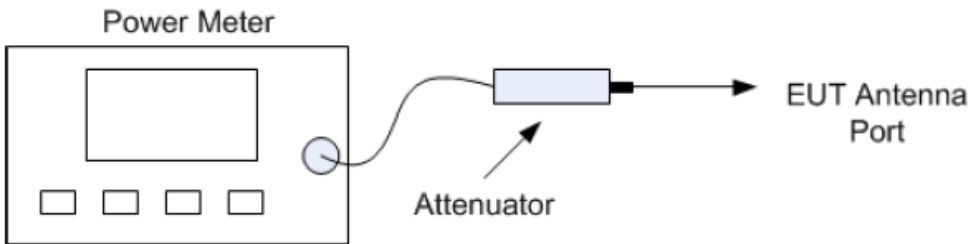


Diagram of Measurement Equipment Configuration for conducted output power setup



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4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT: **PASS**

Test standard	:	FCC Part 15.247(b)(4), Part 15.203
Requirement	:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator 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. In addition, If transmitting antennas of directional gain greater than 6dBi 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 6dBi.

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 3.29dBi. The antenna is FPC antenna with no possibility of replacement with a non-approved antenna by the end-user.

Therefore, the EUT is considered to comply with this provision.

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4.1.2 Maximum conducted (average) output power

RESULT:

PASS

Test standard : FCC Part 15.247(b)(3)
Requirement : ANSI C63.10-2013, Clause 11.9.2.3.1
KDB 558074 D01 v05r02, Clause 8.3.2
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 24.8°C
Relative humidity : 44%

Table 1: Maximum conducted (average) output power

Test Mode	Duty Cycle (%)	Test Channel (MHz)	Maximum conducted (average) output power		Limit (W)
			(dBm)	(mW)	
802.11b	100	2412	14.64	29.107	≤1
		2437	14.85	30.549	
		2462	15.19	33.037	
802.11g	100	2412	13.37	21.727	
		2437	13.15	20.654	
		2462	12.90	19.498	
802.11n(HT20)	100	2412	13.23	21.038	
		2437	13.06	20.230	
		2462	12.72	18.707	

Notes:

1. Add $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

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4.1.3 6dB Bandwidth

RESULT:

PASS

Test standard : FCC Part 15.247(a)(2)

Requirement : ANSI C63.10-2013, Clause 11.8.1
KDB 558074 D01 v05r02, Clause 8.2

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High

Operation Mode : A.1.a

Ambient temperature : 24.8°C

Relative humidity : 44%

Table 2: 6dB Bandwidth

Test Mode	Test Channel (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Applicable Limit (MHz)
802.11b	2412	9.774	≥0.5
	2437	9.758	
	2462	9.754	
802.11g	2412	13.720	
	2437	16.490	
	2462	14.520	
802.11n(HT20)	2412	14.280	
	2437	17.610	
	2462	15.120	

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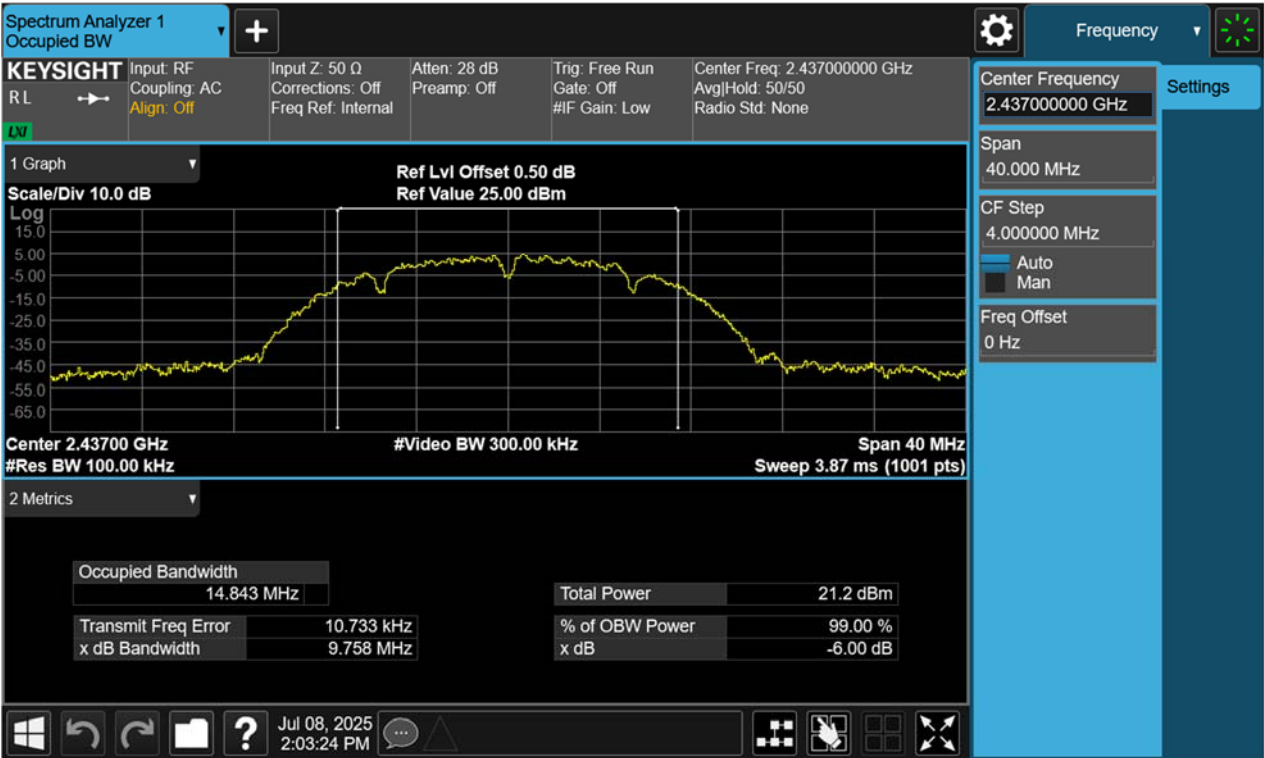
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Figure 1: 6dB Bandwidth, 802.11b, 2412MHz



Figure 2: 6dB Bandwidth, 802.11b, 2437MHz



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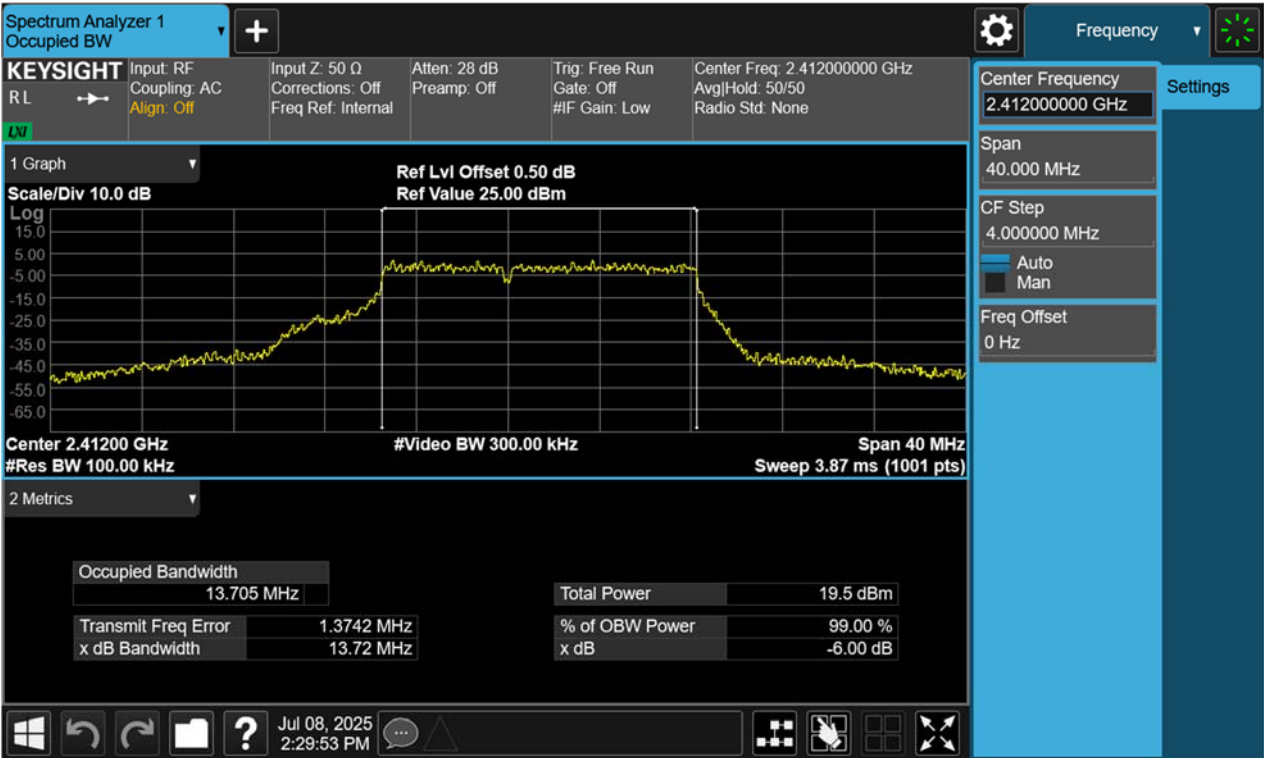
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Figure 3: 6dB Bandwidth, 802.11b, 2462MHz



Figure 4: 6dB Bandwidth, 802.11g, 2412MHz



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Figure 5: 6dB Bandwidth, 802.11g, 2437MHz

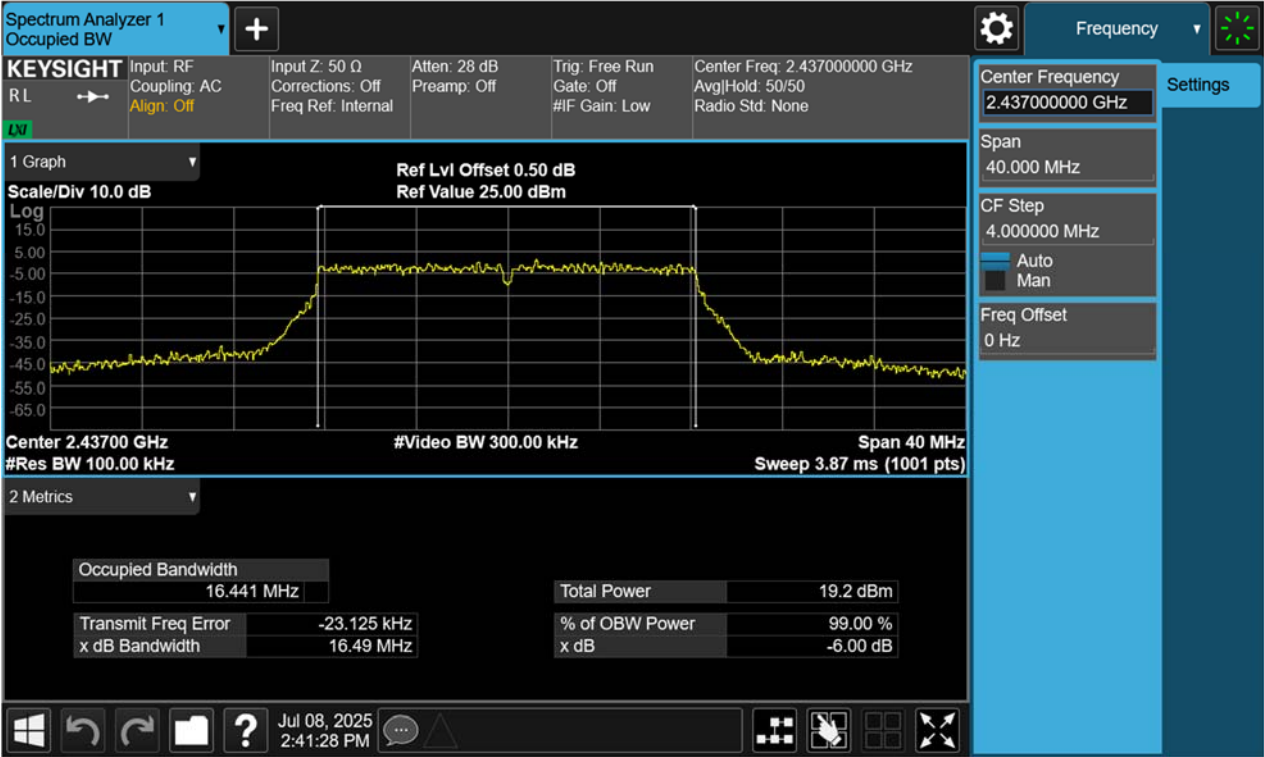
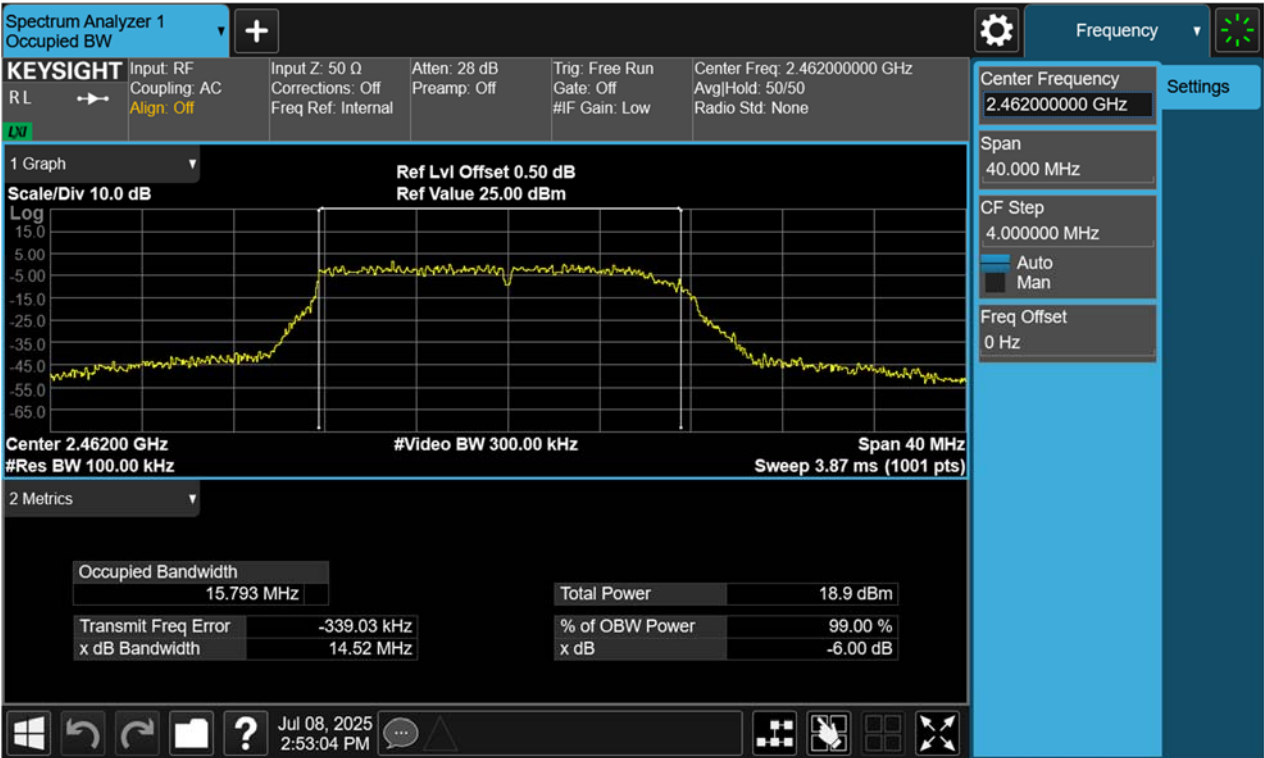


Figure 6: 6dB Bandwidth, 802.11g, 2462MHz



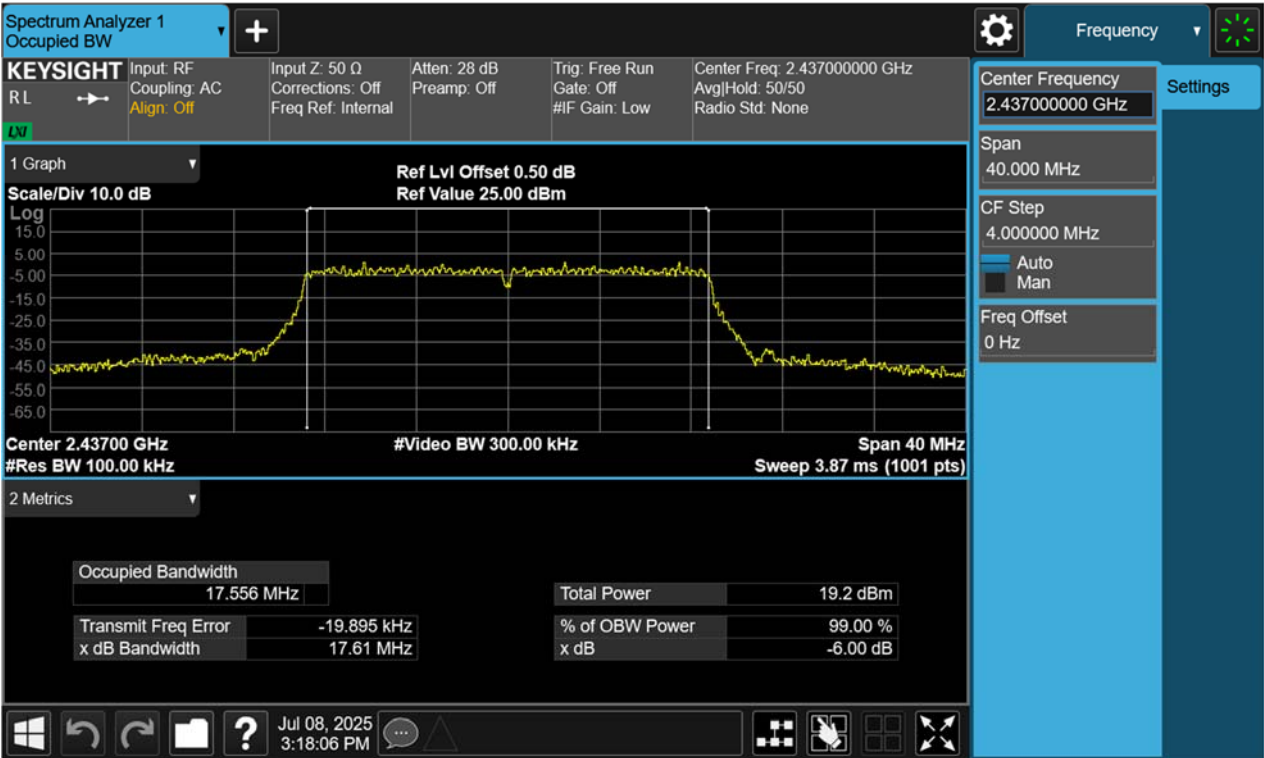
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Figure 7: 6dB Bandwidth, 802.11n(HT20), 2412MHz



Figure 8: 6dB Bandwidth, 802.11n(HT20), 2437MHz



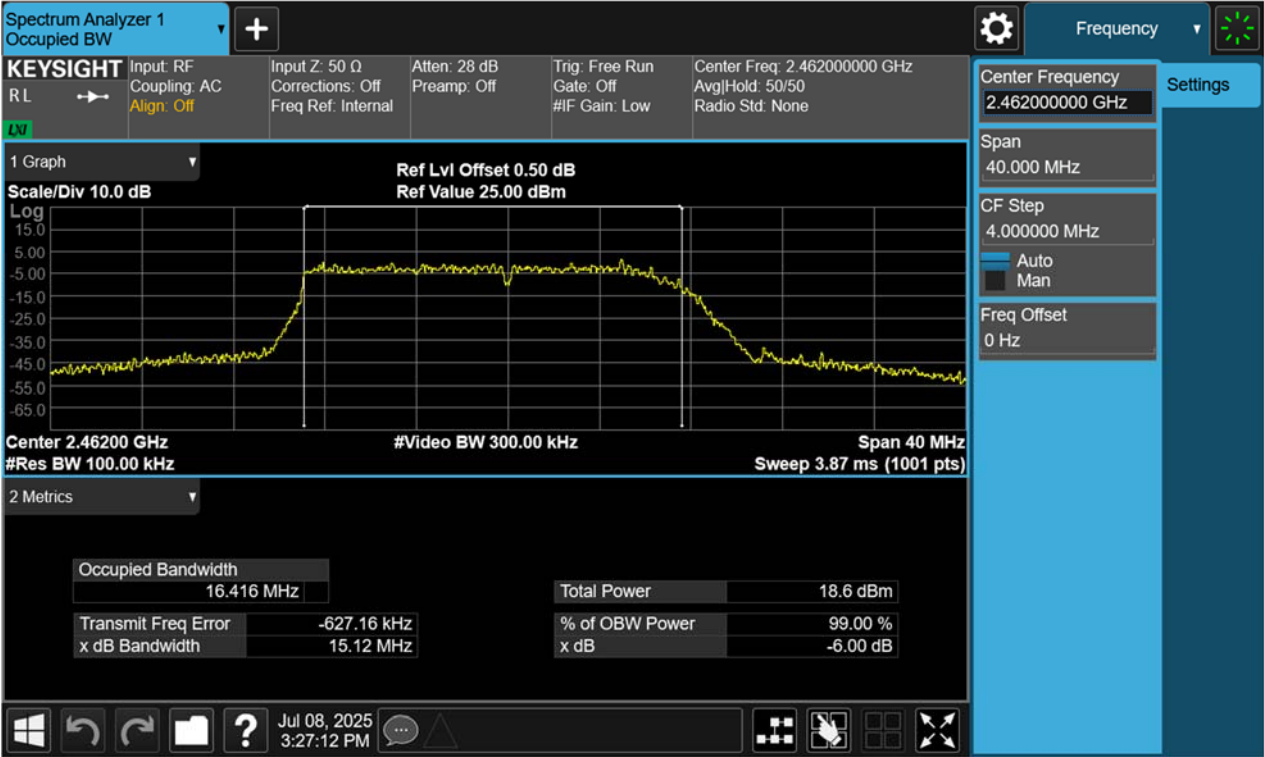
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Figure 9: 6dB Bandwidth, 802.11n(HT20), 2462MHz



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4.1.4 Maximum conducted output power spectral density

RESULT:

PASS

Test standard : FCC Part 15.247(e)

Requirement : ANSI C63.10-2013, Clause 11.10.3
KDB 558074 D01 v05r02, Clause 8.4

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High

Operation Mode : A.1.a

Ambient temperature : 24.8°C

Relative humidity : 44%

Table 3: Maximum (average) conducted output power spectral density

Test Mode	Test Channel (MHz)	Maximum (average) conducted output power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	2412	-9.249	≤8
	2437	-8.453	
	2462	-8.105	
802.11g	2412	-20.728	
	2437	-20.896	
	2462	-20.327	
802.11n(HT20)	2412	-20.776	
	2437	-21.894	
	2462	-20.597	

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Figure 10: Power Spectral Density, 802.11b, 2412MHz

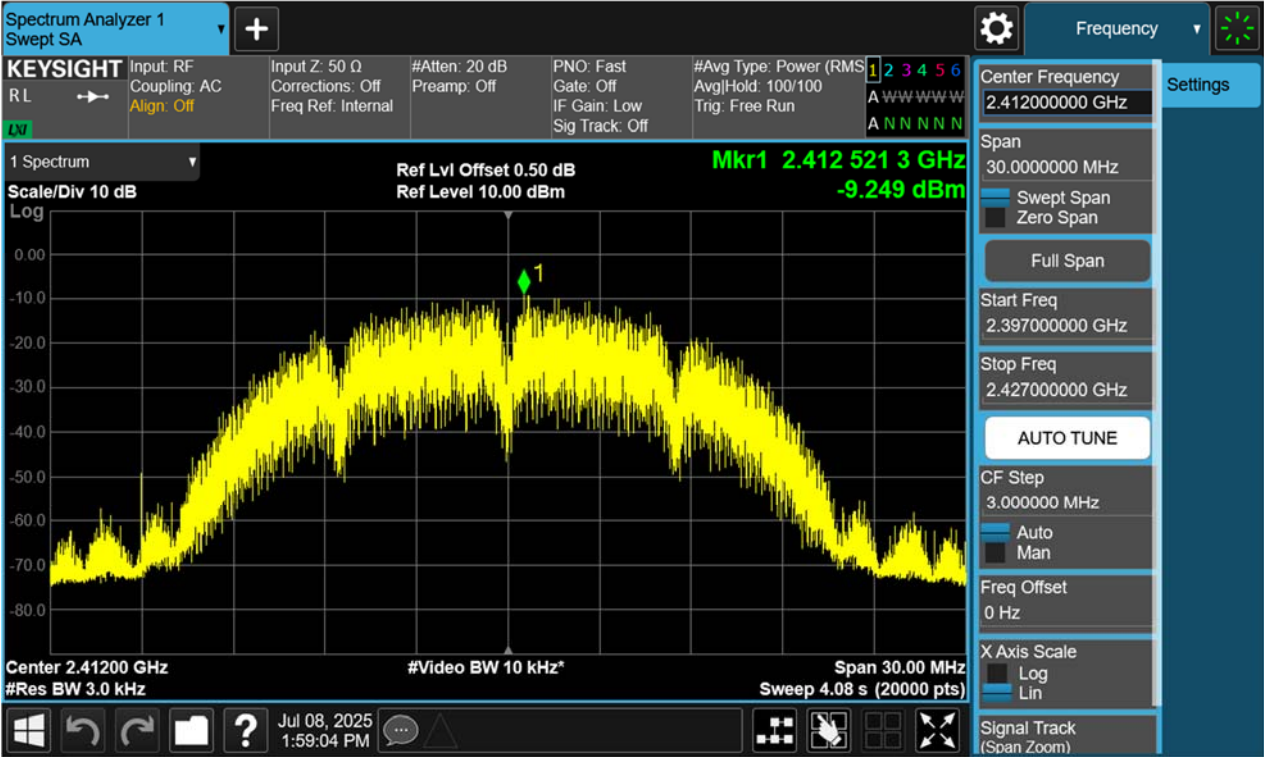
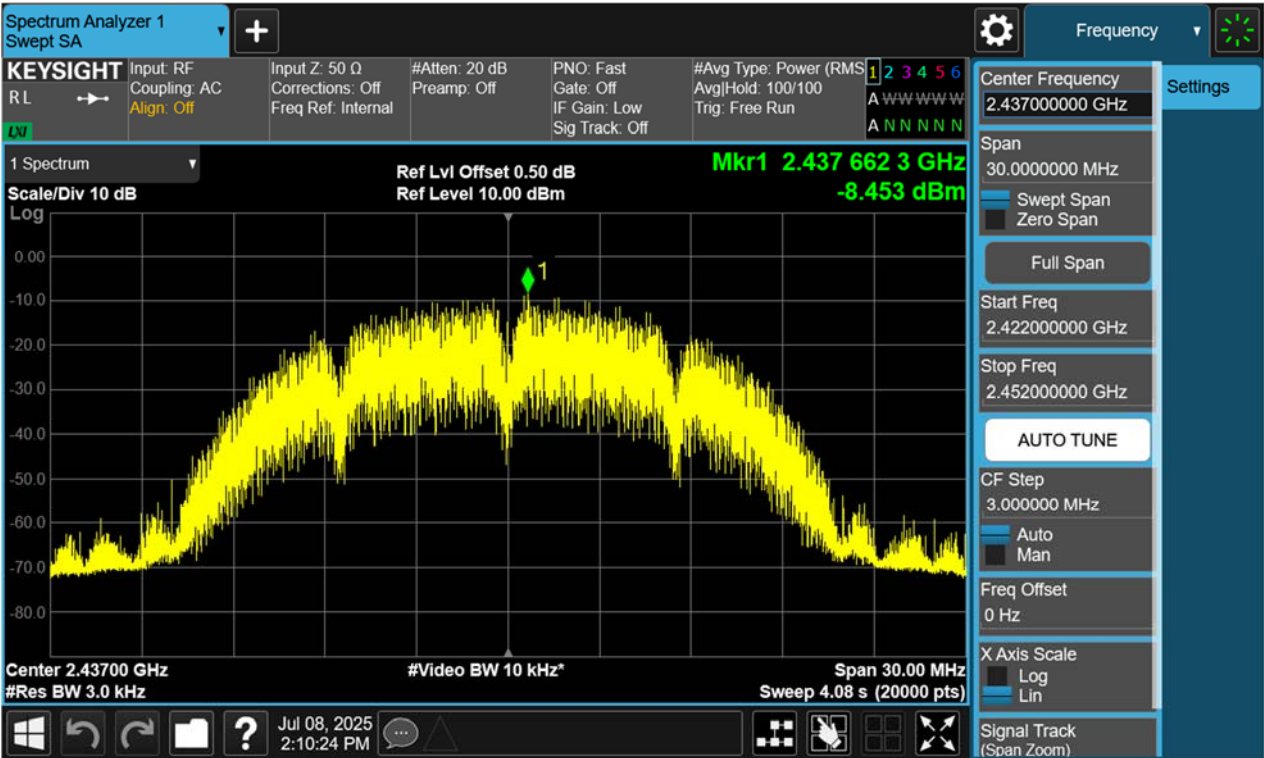


Figure 11: Power Spectral Density, 802.11b, 2437MHz



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Figure 12: Power Spectral Density, 802.11b, 2462MHz

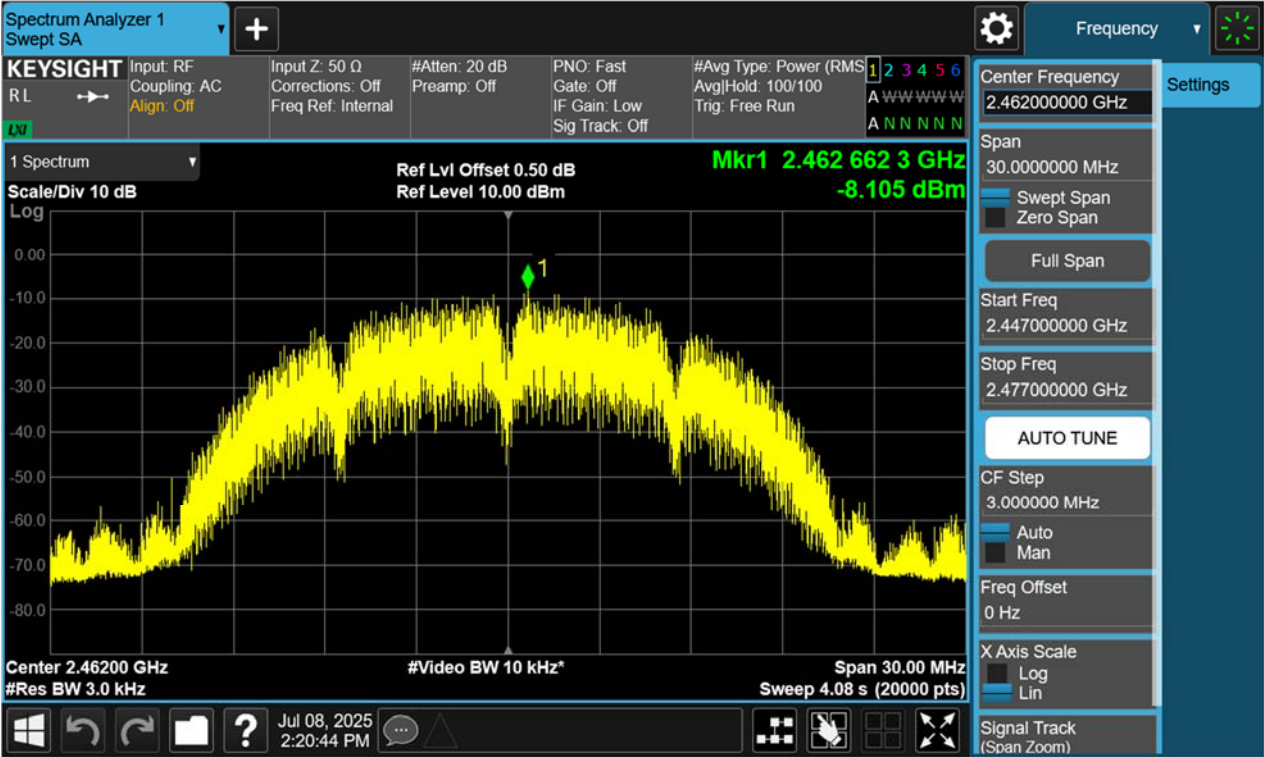


Figure 13: Power Spectral Density, 802.11g, 2412MHz



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Figure 14: Power Spectral Density, 802.11g, 2437MHz

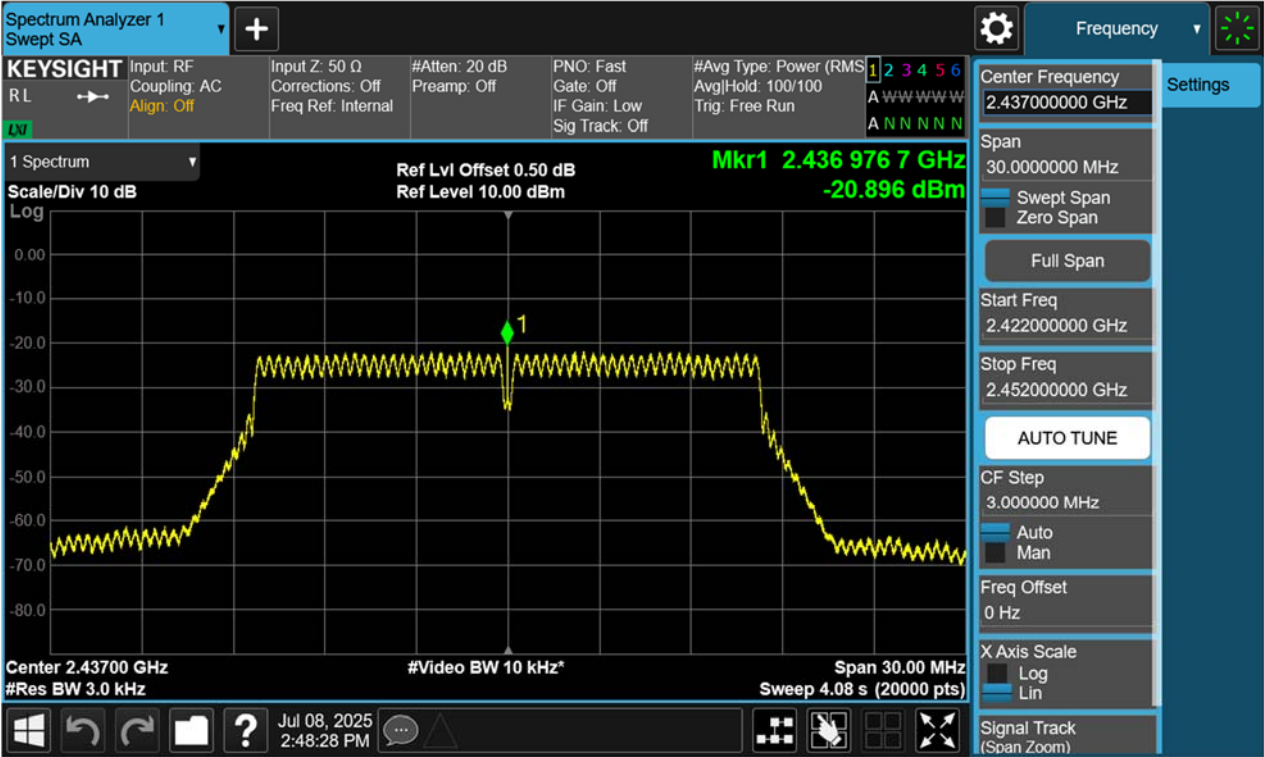
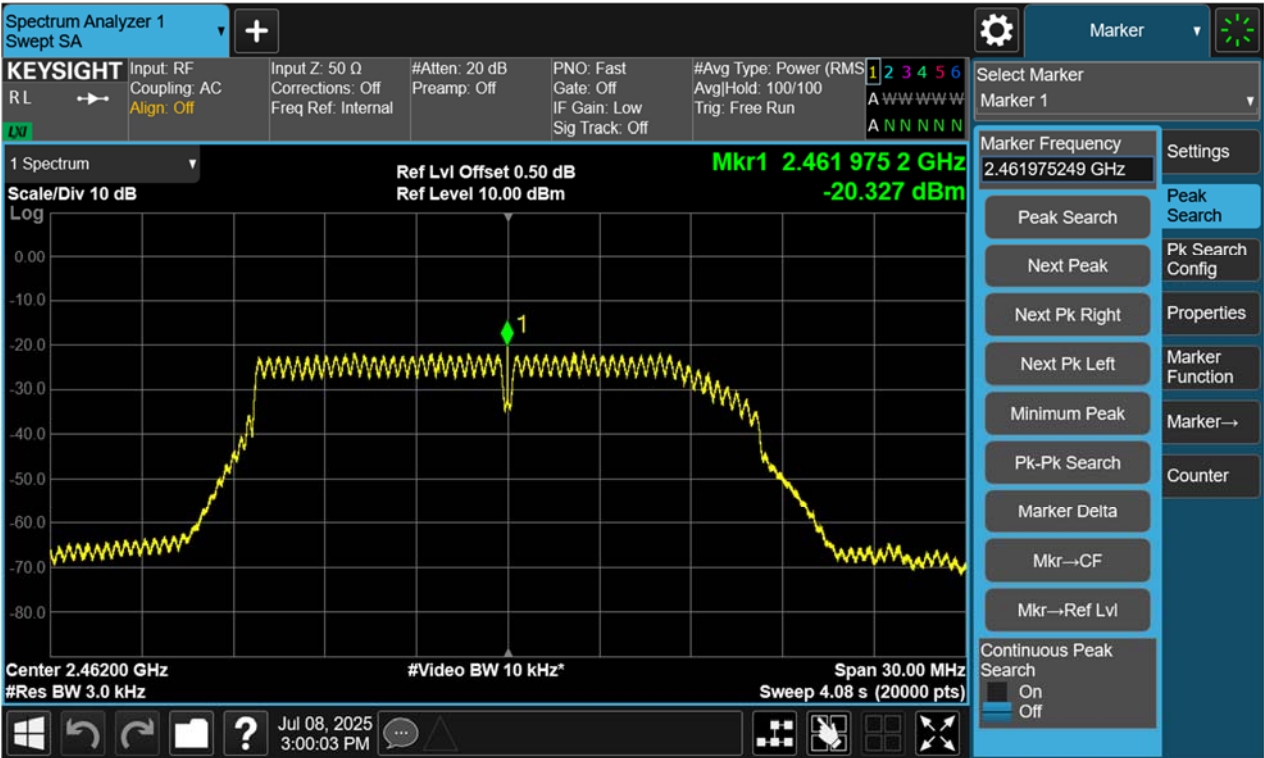


Figure 15: Power Spectral Density, 802.11g, 2462MHz



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Figure 16: Power Spectral Density, 802.11n(HT20), 2412MHz



Figure 17: Power Spectral Density, 802.11n(HT20), 2437MHz



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Figure 18: Power Spectral Density, 802.11n(HT20), 2462MHz



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4.1.5 Conducted Spurious Emission & Authorized-band band-edge

RESULT:

PASS

Test standard : FCC Part 15.247(d), 15.209
Requirement : ANSI C63.10-2013, Clause 11.11.1(b)
KDB 558074 D01 v05r02, Clause 8.5
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High for spurious, Low/High for Band Edge
Operation Mode : A.1.a
Ambient temperature : 24.8°C
Relative humidity : 44%

For details refer to following test plot.

Figure 19: Conducted Spurious Emission & Authorized-band band-edge, 802.11b, 2412MHz Carrier Level



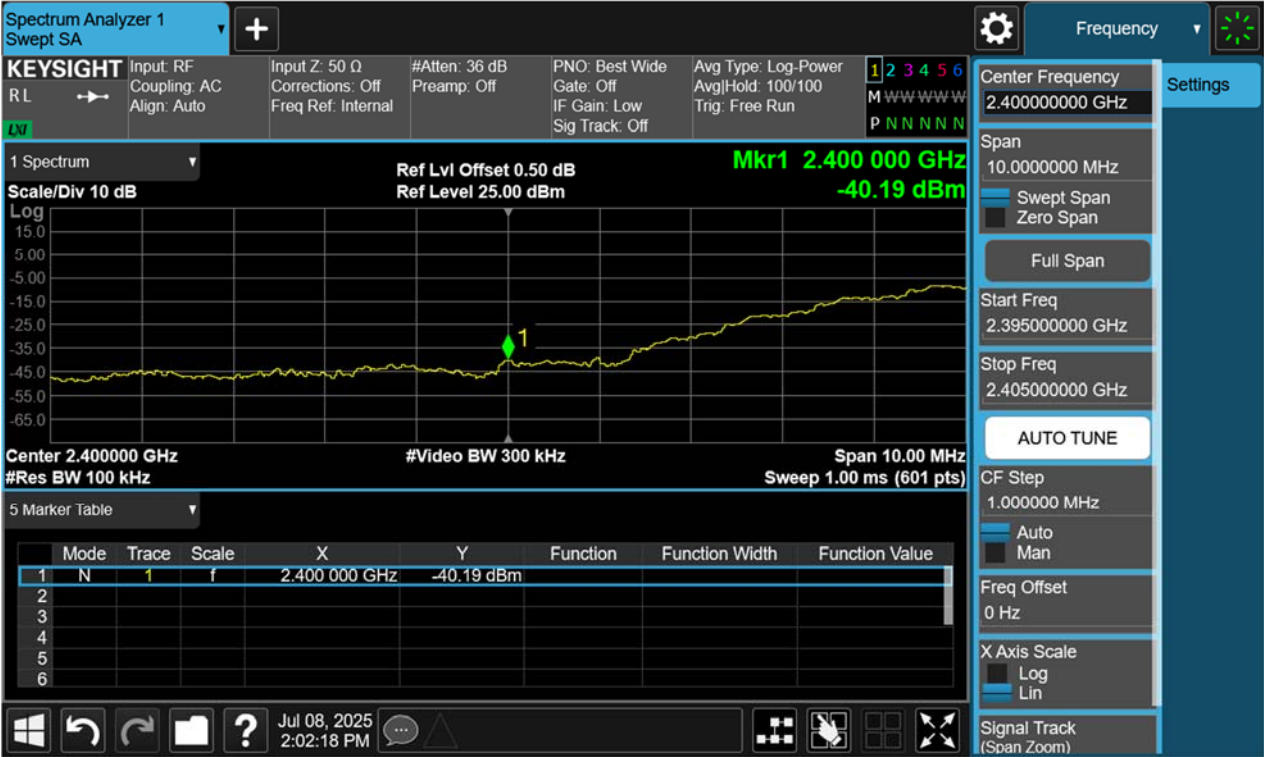
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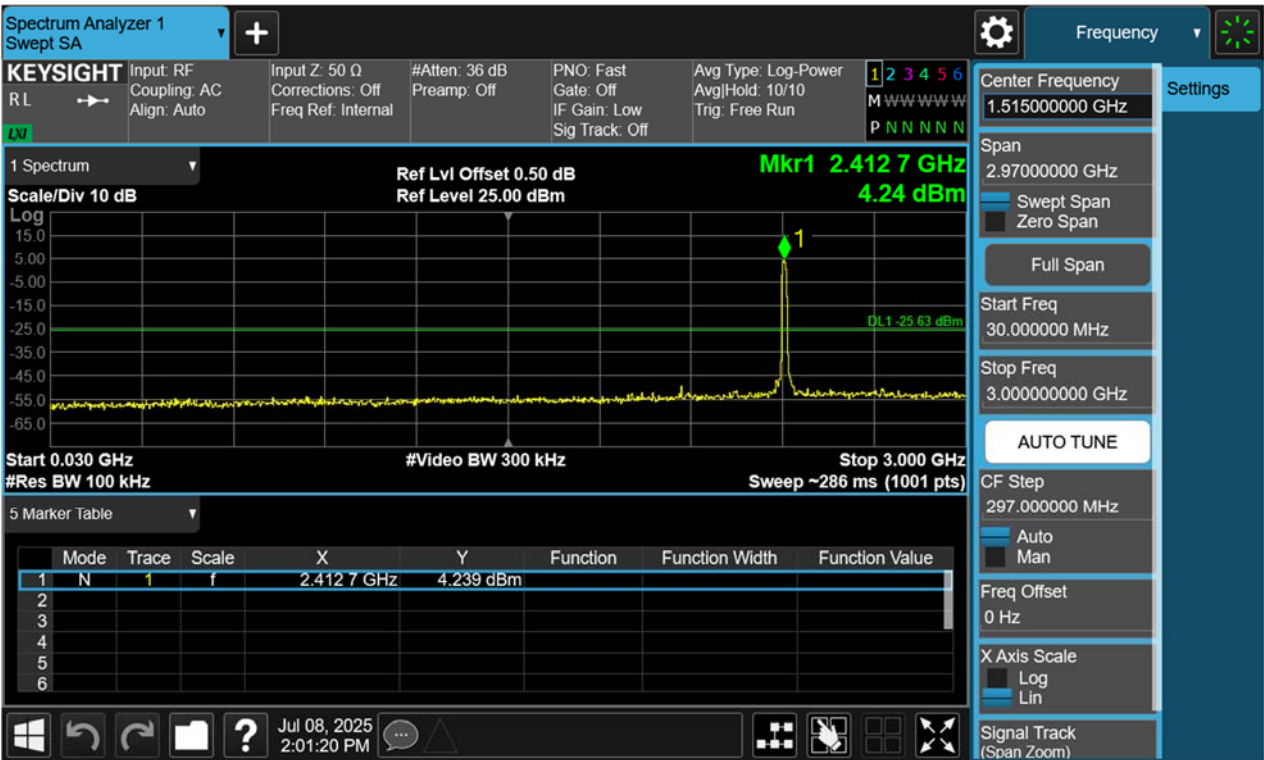
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Band Edge



Conducted spurious emissions 30MHz-25GHz



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Figure 20: Conducted Spurious Emission & Authorized-band band-edge, 802.11b, 2437MHz Carrier Level



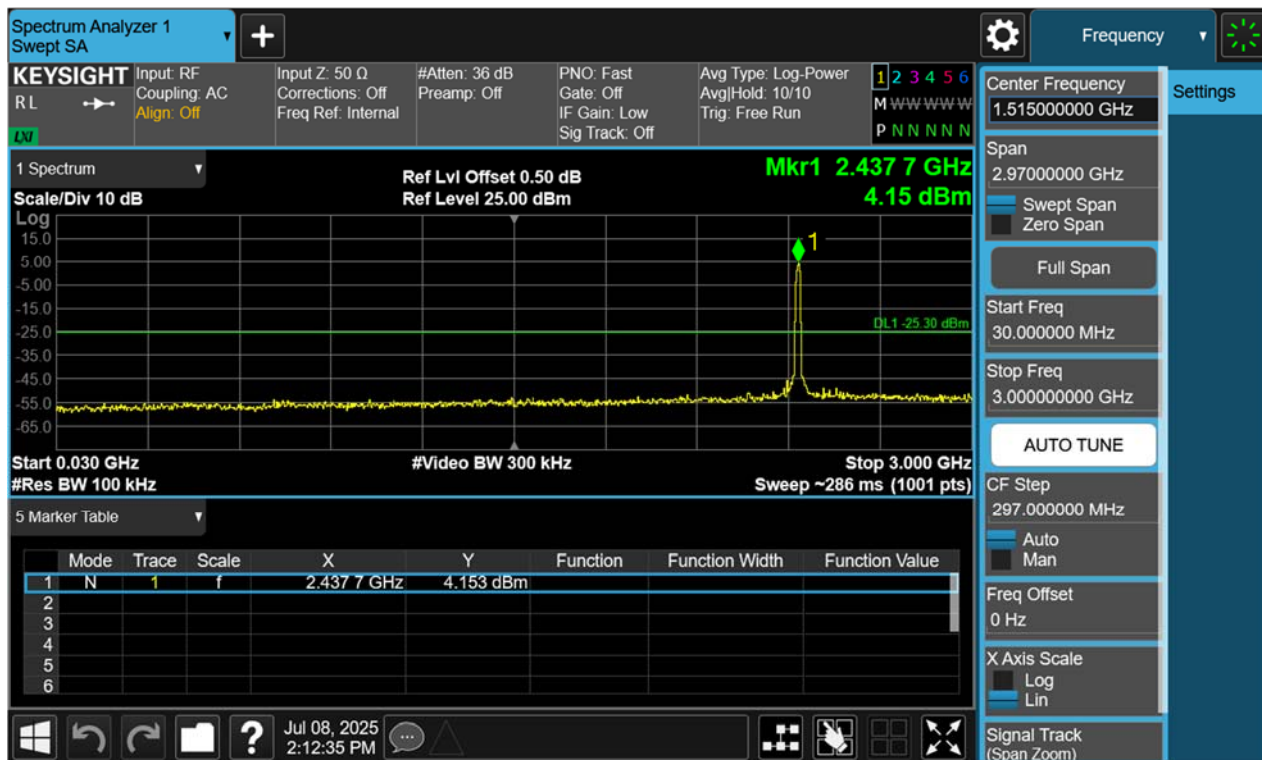
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Conducted spurious emissions 30MHz-25GHz



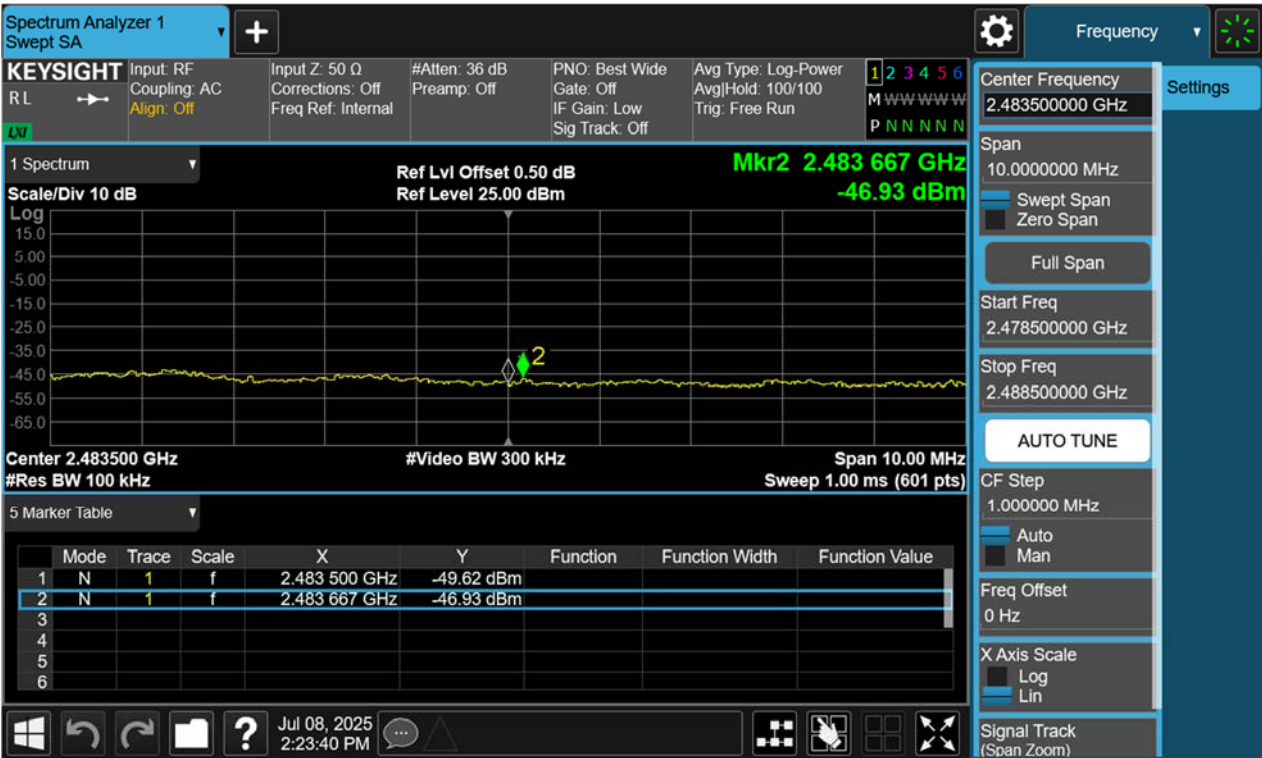
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Figure 21: Conducted Spurious Emission & Authorized-band band-edge, 802.11b, 2462MHz Carrier Level



Band Edge



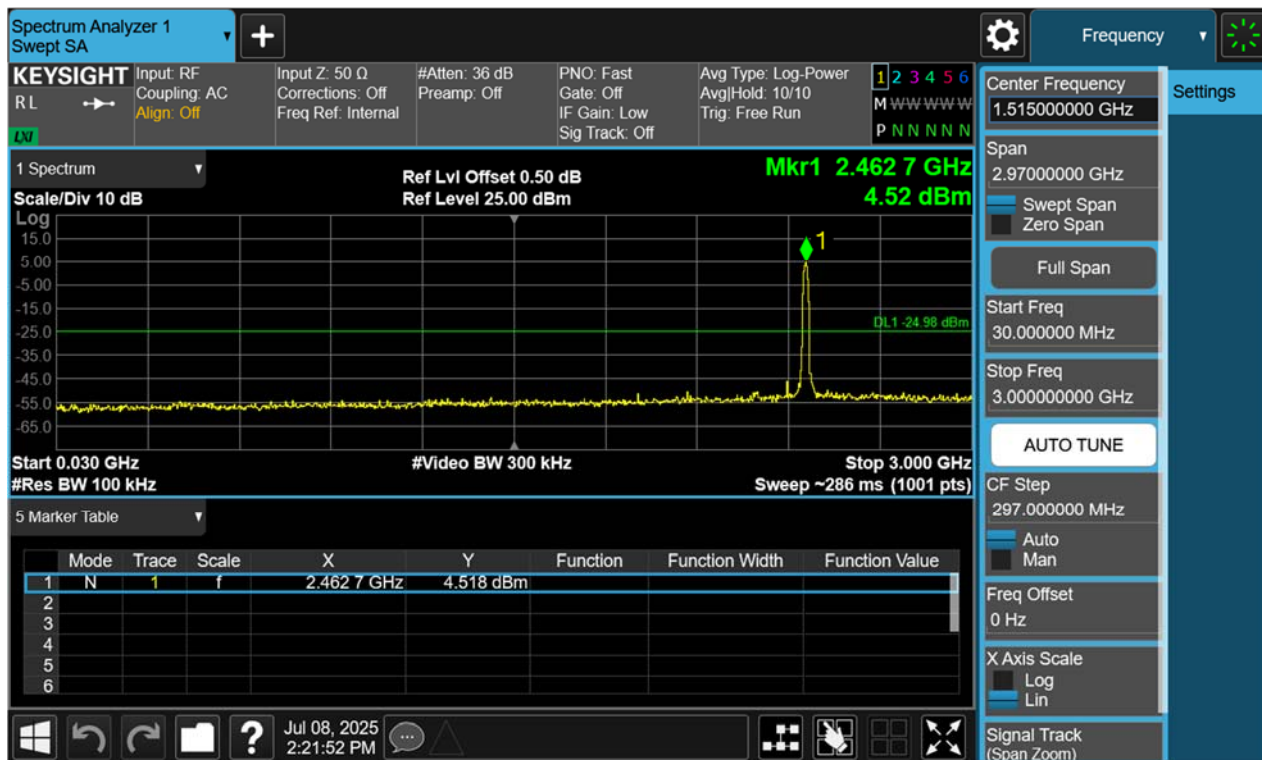
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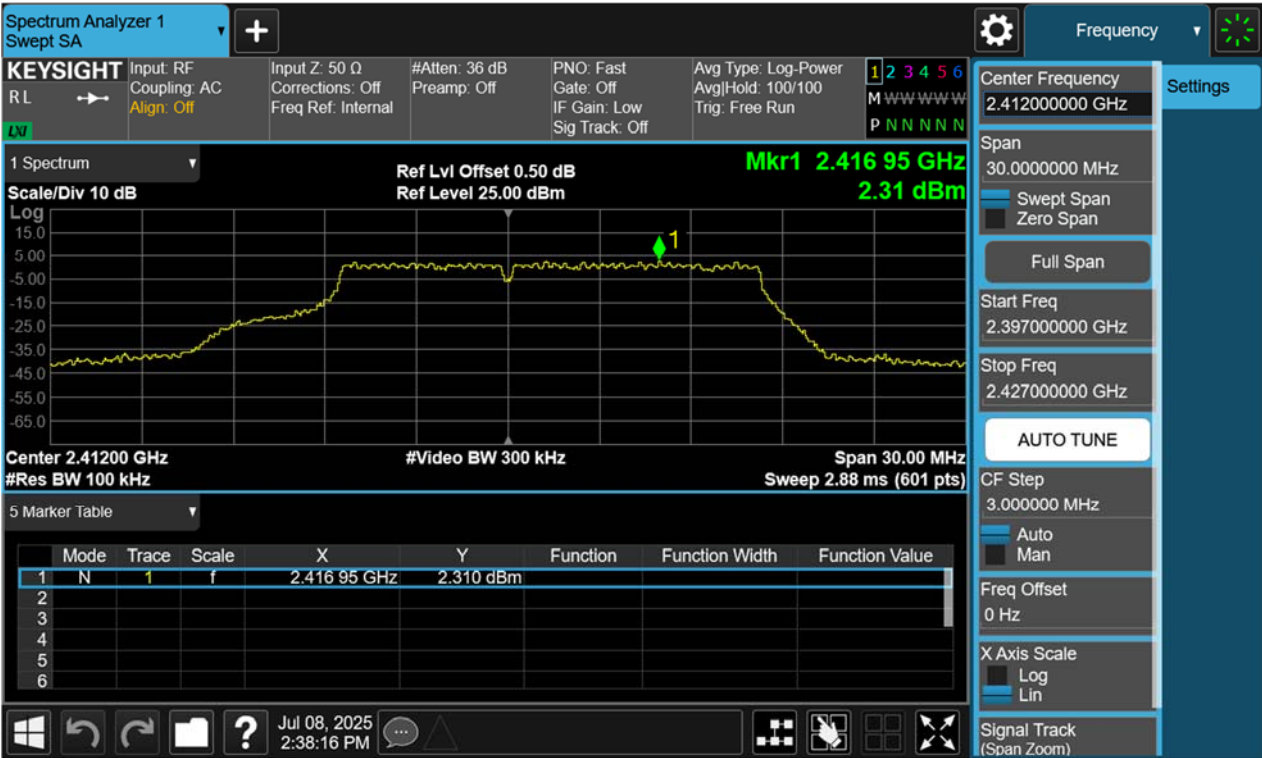
Conducted spurious emissions 30MHz-25GHz



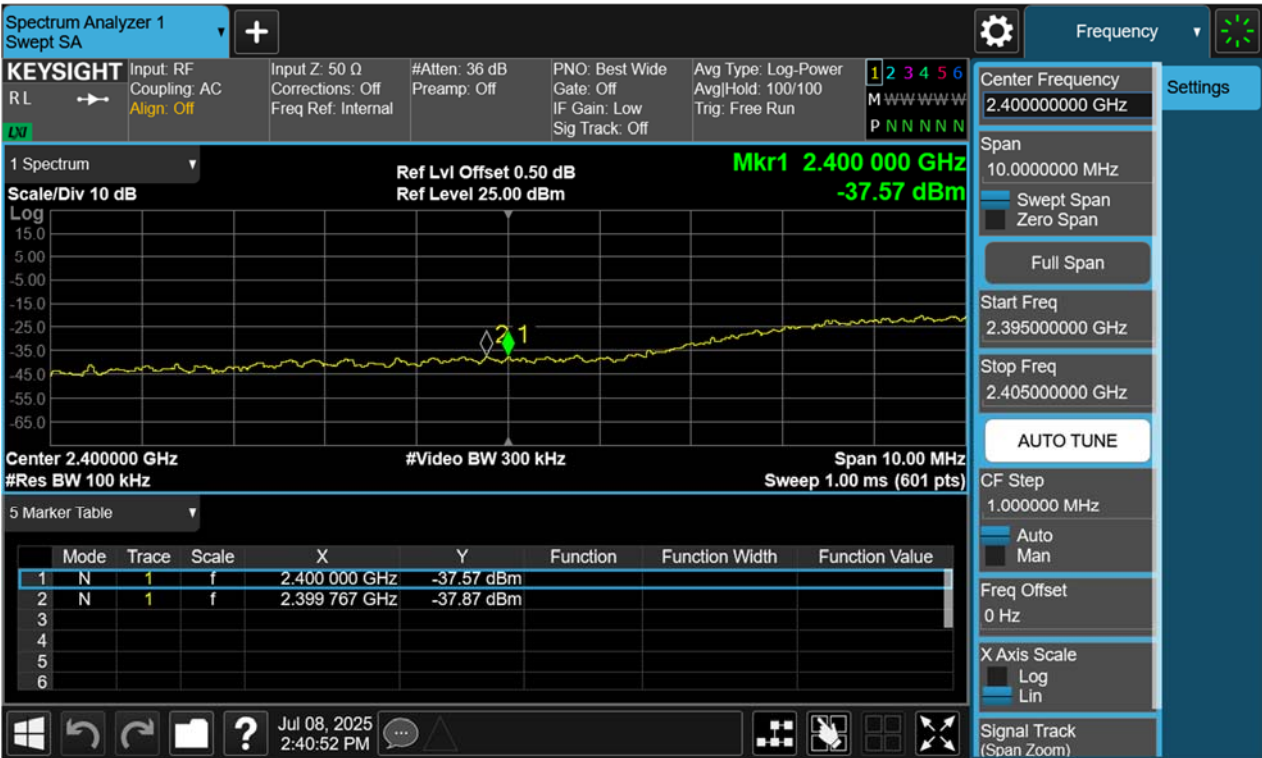
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Figure 22: Conducted Spurious Emission & Authorized-band band-edge, 802.11g, 2412MHz Carrier Level



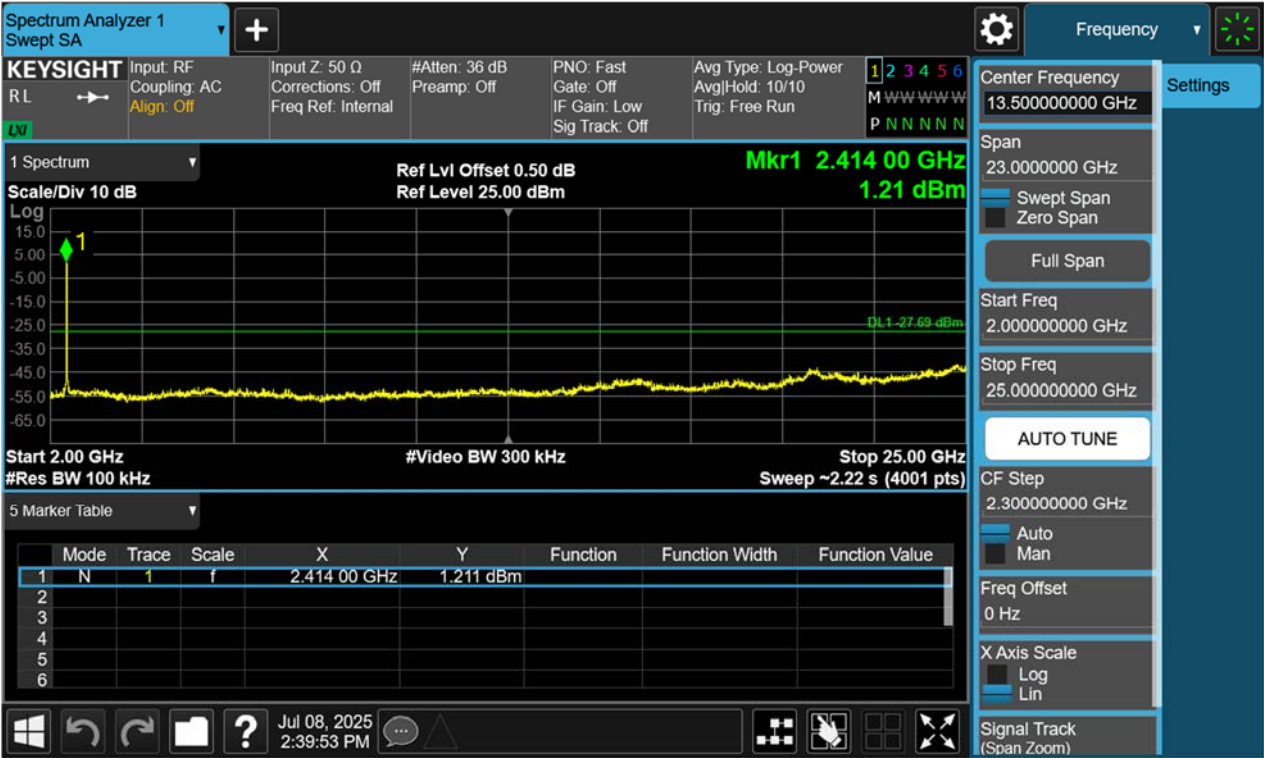
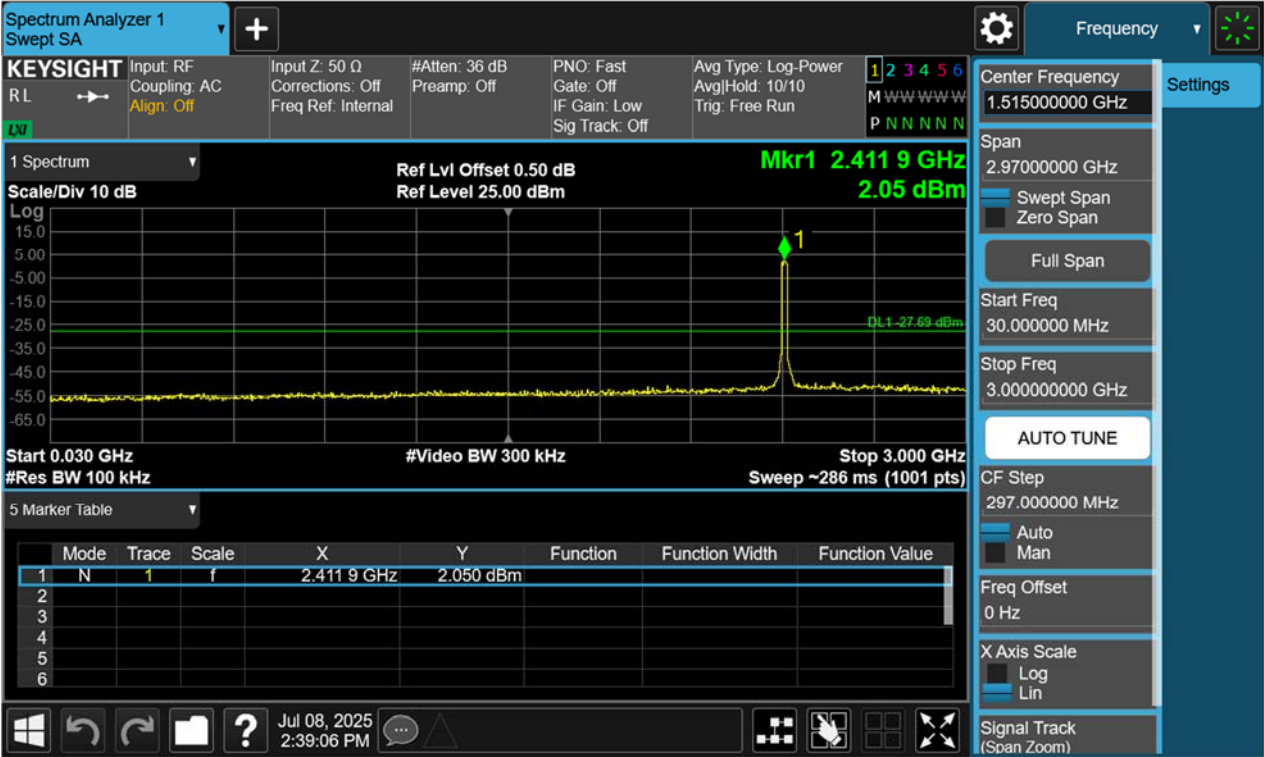
Band Edge



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Conducted spurious emissions 30MHz-25GHz



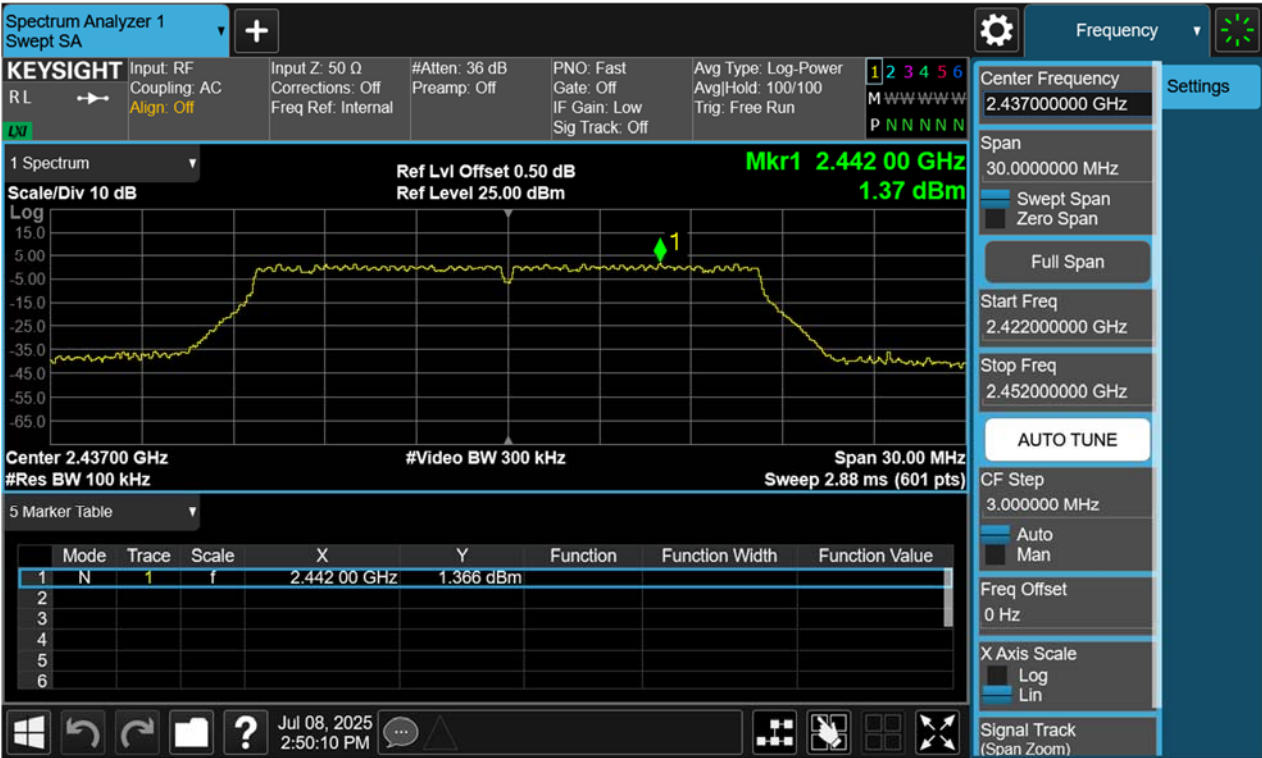
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Figure 23: Conducted Spurious Emission & Authorized-band band-edge, 802.11g, 2437MHz Carrier Level



Conducted spurious emissions 30MHz-25GHz

