
Japan Test Report

Report No: WD-RJ-R-260052-A0

Product Name : IP CAMERA
Model Name : HLC-1JKD-DFK2
Applicant : Hunt Electronic Co.,Ltd.
Received Date : Dec. 30, 2025
Tested Date : Jan. 14, 2026 ~ Mar. 09, 2026
Applicable Standard : MIC notice 88 Appendix 43 Article 2 Paragraph 1 of Item 19

Wendell Industrial Co., Ltd
Wendell EMC & RF Laboratory

Caution:

This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment.

Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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Test Report

Issued Date: March 10, 2026

Project No.: 25Q121801

Product Name	IP CAMERA
Trade Name	HUNT
Model Name	HLC-1JKD-DFK2
Applicant	Hunt Electronic Co.,Ltd.
Manufacturer	Hunt Electronic Co.,Ltd.
EUT Rated Voltage	DC 5V ~ 24V
EUT Test Voltage	DC 12V
EUT Supports Radios Application	WLAN 802.11a/b/g WLAN 802.11n(HT20/HT40) WLAN 802.11ac(VHT20/40/80) and ax(HE20/40/80)
Applicable Standard	MIC notice 88 Appendix 43 Article 2 Paragraph 1 of Item 19
Test Result	Complied

Documented :



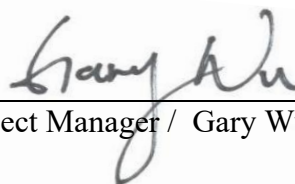
(Specialist / Emma Lu)

Technical Engineer :



(Section Manager / Jason Hsieh)

Approved :



(Project Manager / Gary Wu)

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Document Revision History

Report No.	Issue date	Description
WD-RJ-R-260052-A0	March 10, 2026	Initial report

Summary of Test Result

Test Items	Result
Antenna Power	Pass
Antenna Power Tolerance	Pass
Antenna Absolute Gain	Pass
EIRP	Pass
Frequency Tolerance	Pass
Unwanted Emission Strength	Pass
Occupied Bandwidth	Pass
Carrier Sensing Function	Pass
Secondary Radiated Emission Strength	Pass
Interference Prevention Function	Pass

1 Generation Information

1.1 Applicant

Hunt Electronic Co.,Ltd.

9F., No. 171, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 22183, Taiwan

1.2 Manufacturer

Hunt Electronic Co.,Ltd.

9F., No. 171, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 22183, Taiwan

1.3 Description of Equipment under Test

Product Name	IP CAMERA
Model No.	HLC-1JKD-DFK2
HW Version	V1.0
FW Version	DF_TF_VT6.0.0.13
MAC Address	84:FC:14:24:E7:DC
Frequency Range	802.11b/g/n-HT20/ax-HE20: 2412~2472MHz 802.11n-HT40/ax-HE40: 2422~2462MHz
Number of Channels	802.11b/g/n/ax-20MHz: 13, n/ax-40MHz: 9
Data Rate	802.11b : 1M - 11Mbps 802.11g : 6M - 54Mbps 802.11n : up to 150Mbps 802.11ax : up to 286.8Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA (BPSK, QPSK, 16~1024QAM)
Antenna Information	Refer to the table "Antenna List"
Declared Antenna Power	802.11b: 6.00 mW/MHz 802.11g: 2.10 mW/MHz 802.11n20: 1.30 mW/MHz 802.11n40: 2.60 mW/MHz 802.11ax20: 2.30 mW/MHz 802.11ax40: 2.60 mW/MHz

1.4 Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	Shenzhen Hedianxun Technology Co.,Ltd.	HD-Wifi6e-1.13-100	FPC Antenna	3.53 dBi for 2.4GHz

1.5 Channel List

802.11b/g/n-HT20/ax-HE20		802.11n-HT40/ax-HE40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	*2412	--	--
02	2417	--	--
03	2422	03	*2422
04	2427	04	2427
05	2432	05	2432
06	2437	06	2437
07	2442	07	2442
08	2447	08	2447
09	2452	09	2452
10	2457	10	2457
11	2462	11	*2462
12	2467	--	--
13	*2472	--	--

Note: Frequency remarked * are selected to perform test.

1.6 Use Cable Loss

Frequency (MHz)	Cable Loss (dBm)	
	Chain A	Chain B
30 ~ 1000	0.03	--
1000 ~ 2400	0.82	--
2400 ~ 2500	0.85	--
2500 ~ 12500	3.20	--
12500 ~ 26000	10.36	--

Note : Cable Loss = Signal Generation Output Value - Power Meter Reading Value

1.7 Test Software and Test Mode

(1) Parameters of test software setting

The RF Antenna power selection is for the setting of RF Antenna power expected by the customer and is going to be fixed on the firmware of the final end product.

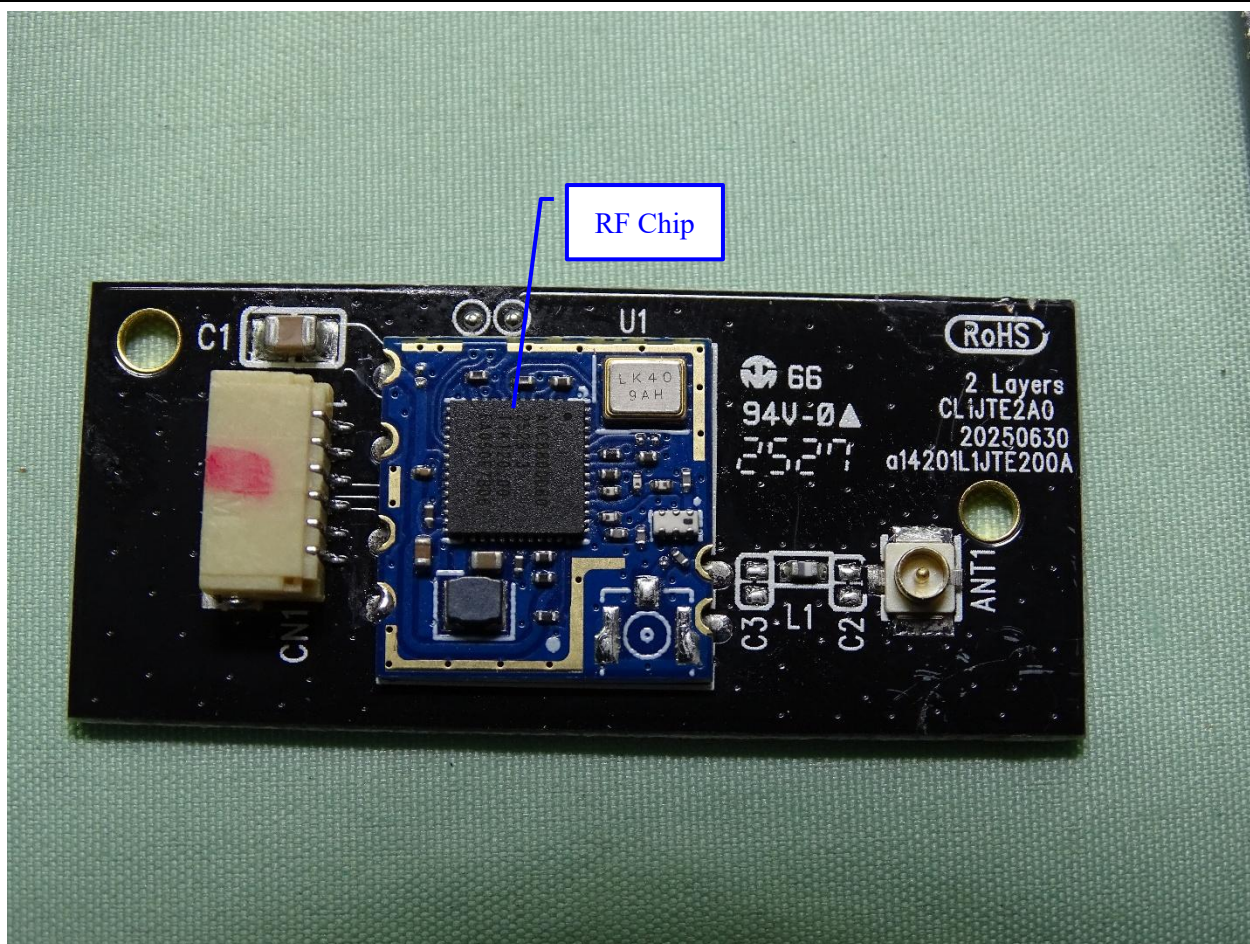
Test Software	DF_TF_VT6.0.0.13			
Type of Modulation	Channel	Frequency (MHz)	Set Value	
			Chain A	Chain B
802.11b	01	2412	13	--
	13	2472	15	--
802.11g	01	2412	6	--
	13	2472	8	--
802.11n_HT20	01	2412	6	--
	13	2472	6	--
802.11n_HT40	03	2422	12	--
	11	2462	12	--
802.11ax_HE20	01	2412	5	--
	13	2472	4.0	--
802.11ax_HE40	03	2422	9	--
	11	2462	9	--

(2) Test Mode

Mode 1 : Transmit (802.11b 1Mbps)
Mode 2 : Transmit (802.11g 6Mbps)
Mode 3 : Transmit (802.11n HT20 MCS0)
Mode 4 : Transmit (802.11n HT40 MCS0)
Mode 5 : Transmit (802.11ax HE20 MCS0)
Mode 6 : Transmit (802.11ax HE40 MCS0)
Mode 7 : Receiver (802.11b 1Mbps)
Mode 8 : Receiver (802.11g 6Mbps)
Mode 9 : Receiver (802.11n HT20 MCS0)
Mode 10 : Receiver (802.11n HT40 MCS0)
Mode 11 : Receiver (802.11ax HE20 MCS0)
Mode 12 : Receiver (802.11ax HE40 MCS0)
Mode 13 : Transmit-Normal WLAN 2.4GHz

1.8 RF and IF section must be tamper requirement

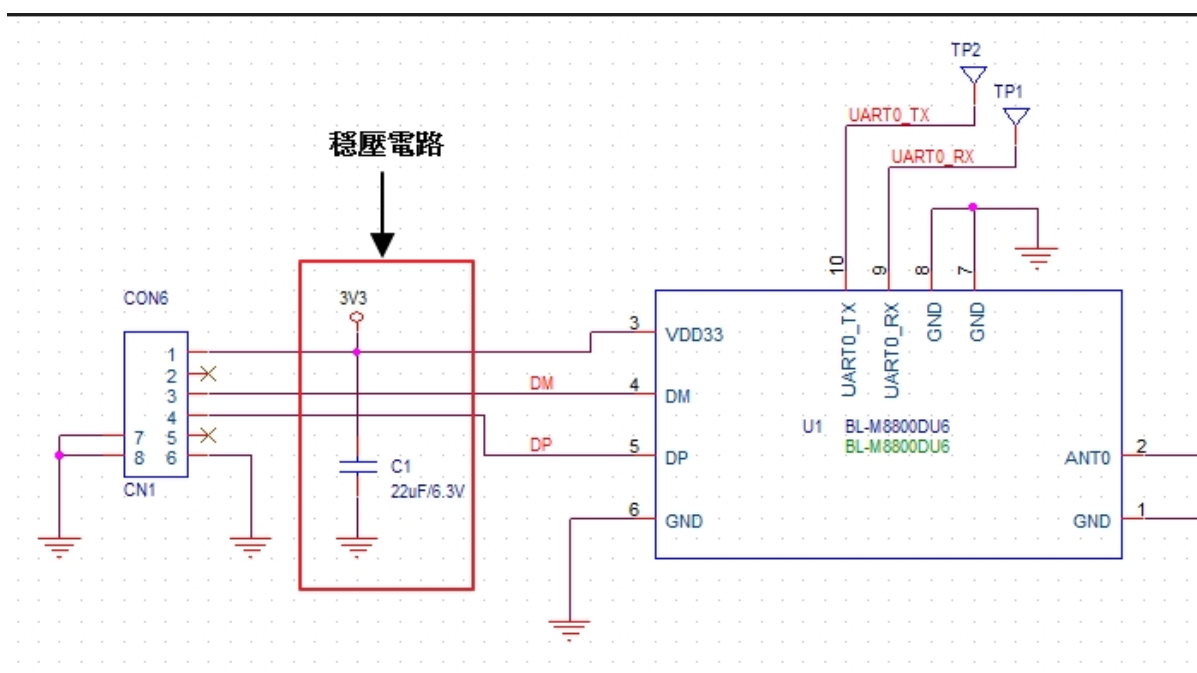
Requirement	Comments	Result
RF, IF and Modulation section must be tamper	☐ Use Shielding case ☐ Use Unique screw ☐ Use By ultrasonic ☐ Use Adhesive ☐ Use Ball Grid Array (BGA)	--
	☒ RF module/Chip pin >20, Chip pins distance <1.5mm	Complied



1.9 Voltage Change

Input Voltage (V)		Measured Result (V)	Difference (%)	Limit (%)	Result
Low	10.8	3.323	0.060	$\leq \pm 1$	Complied
Normal	12.0	3.325	--	--	--
High	13.2	3.324	0.030	$\leq \pm 1$	Complied

Note : When EUT be operated at $\pm 10\%$ from the normal supply voltage, the supply voltage of RF part was varied within $\pm 1\%$. All test cases were done under the normal supply voltage.



1.10 Test Facility

Items	Required (JIS Z8703)	Actual
Temperature (°C)	20 、 23 、 25	25
Humidity (% RH)	50 、 65	65
Barometric pressure (mbar)	860 ~ 1060	950 ~ 1010

Description: Accredited by TAF

Accredited Number: 2965

Issued by: Wendell Industrial Co., Ltd

Company Address: 6F/6F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Lab: Wendell EMC & RF Laboratory

Lab Address: 5F-1, No.188, Baoqiao Rd., Xindian Dist.,
New Taipei City 23145, Taiwan R.O.C

Test Location: No. 119, Wugong 3rd Rd., Wugu Dist.,
New Taipei City 248, Taiwan (R.O.C.)

1.11 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence (level based on a coverage factor K=2)

Measurement Project	Expanded Uncertainty
Unwanted Emission Strength Measurement	± 1.4 dB
RF Power, Conducted	± 1.1 dB
Occupied Bandwidth	± 2.4 %
Power Density	± 1.2 dB
Duty Cycle	± 1.7 %
Frequency Stability	± 0.073 ppm
DC Power Supply	± 2.1 %
Temperature	± 0.58 °C
Humidity	± 3.3 %

Note: Please note that the measurement uncertainty are provided for informational purpose only and are not used in determining the Pass/Fail results.

1.12 List of Test Equipment

For Conducted measurements / RF Conducted Measurement Room

Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Calibration Body	Calibration Method
Spectrum analyzer	Keysight	N9010A	SG50420005	2025/08/14	2026/08/13	ETC	(c)
Cable	Marvelous Microwave Inc.	280280.LL266.300	B90007C	2025/08/12	2026/08/11	ETC	(c)
Cable	Marvelous Microwave Inc.	280280.LL266.300	B90008C	2025/08/12	2026/08/11	ETC	(c)
Wideband Peak Power Meter	Anritsu	ML2495A	1733007	2025/09/04	2026/09/03	ITRI	(c)
Pulse Power Sensor + Precision Adaptor	Anritsu	MA2411B	1726022	2025/09/04	2026/09/03	ITRI	(c)
* Wireless Connectivity Tester	R&S	CMW270	101307	2025/06/07	2026/06/06	ETC	(c)
Attenuator	MVE	MVE2211-10	CT-9-056	2024/08/08	2026/08/07	ETC	(c)
Attenuator	MVE	MVE2211-20	CT-9-057	2024/08/08	2026/08/07	ETC	(c)
Attenuator	MVE	MVE2211-30	CT-9-058	2024/08/08	2026/08/07	ETC	(c)
Power Divider	MVE	MVE8546	170826003	2024/08/08	2026/08/07	ETC	(c)
Power Splitter	MVE	MVE8547	170302047	2024/08/10	2026/08/09	ETC	(c)
DC Power Supply	GW INSTEK	GPC-3060D	GER817636	2025/08/05	2026/08/04	ETC	(c)
Multimeter	UNI-T	UT61E+	C242358437	2024/09/23	2026/09/22	TAI YI	(c)
Pad	sunmi	P2	N/A	(*)		--	--
Access Point	pakedge	WK-2	WK-2C0815A10023	(*)		--	--
Protocol Monitor	Information of Laptop that is installed a wireshark Version 3.0.0			(*)		--	--

Remark:

1. The equipments are calibrated every one year.
2. The Attenuator/ Divider/ Splitter/ Multimeter are calibrated every two year.
3. (a) Calibration conducted by the National Institute of Information and Communications Technology(NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1).
(b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992).
(c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated agency under Article 102-18 paragraph (1).
(d) Calibration conducted by using other equipment that listed above from a) to c).
4. (*)The equipment is not used to measure accompanied with physical quantity.

1.13 EMI Reduction Method During Compliance Testing

No modification was made during testing.

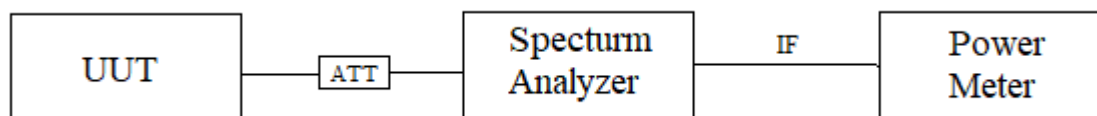
2 Test Result

2.1 Antenna Power & Antenna Power Tolerance

2.1.1 Limit

Item	Limit
Antenna Power	$\leq 3\text{mW/MHz}$; FHSS (Compound method with DSSS or OFDM) $\leq 10\text{mW/MHz}$; DSSS, OFDM ($\text{OBW} \leq 26 \text{ MHz}$) $\leq 5\text{mW/MHz}$; OFDM ($\text{OBW} = 26 - 40 \text{ MHz}$) $\leq 10\text{mW/MHz}$; Other Digital methods
Antenna Power Tolerance	+ 20%
EIRP	$\leq 6.91 - 16.91 \text{ dBm/MHz}$; FHSS (Compound method with DSSS or OFDM) $\leq 12.14 - 22.14 \text{ dBm/MHz}$; DSSS, OFDM ($\text{OBW} \leq 26 \text{ MHz}$) $\leq 9.13 - 19.13 \text{ dBm/MHz}$; OFDM ($\text{OBW} = 26 - 40 \text{ MHz}$) $\leq 12.14 - 22.14 \text{ dBm}$; Other Digital methods (Limit is variable by the H.P.B.A.)
Antenna Absolute Gain	$\leq 12.14 \text{ dBi}$ (When an E.I.R.P. is less than a limit, the shortage shall be compensated for by the gain of the transmitting antenna.)
Note: OBW = Occupied Bandwidth.	

2.1.2 Test Setup



2.1.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Antenna Power Tolerance)
A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- A sample detector function must be used.
- A measurement instrument with an integrated 1MHz power bandwidth function may be used to automate the test process.
- Connect the power meter to the IF output of the spectrum analyzer.
- Set zero span of spectrum analyzer and 'Maximum Hold' than test result will show in power meter.

2.1.4 Test Result

Product : IP CAMERA
Test Item : Antenna Power & EIRP
Test Mode : Mode 1 : Transmit (802.11b 1Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Antenna Power						Limit		Result
	Chain A		Chain B		Total		mW/MHz	%	
	dBm/MHz	mW/MHz	dBm/MHz	mW/MHz	mW/MHz	%			
2412	7.537	5.67	--	--	5.67	-5.47	≤ 10	+20	Pass
2472	7.691	5.88	--	--	5.88	-2.06	≤ 10	+20	Pass

Note :

- (1) Antenna Power = Reading value + cable loss
- (2) Total % = (Antenna power – Declared Antenna Power) / Declared Antenna Power * 100%
- (3) Declared Antenna Power = 6.00 mW/MHz

Frequency (MHz)	Total Antenna Power (mW/MHz)	Antenna Gain (dBi)		Total EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
		Chain A	Chain B			
2412	5.67	3.53	--	11.06	≤ 12.14	Pass
2472	5.88	3.53	--	11.21	≤ 12.14	Pass

Product : IP CAMERA
Test Item : Antenna Power & EIRP
Test Mode : Mode 2 : Transmit (802.11g 6Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Antenna Power						Limit		Result
	Chain A		Chain B		Total		mW/MHz	%	
	dBm/MHz	mW/MHz	dBm/MHz	mW/MHz	mW/MHz	%			
2412	0.862	1.22	--	--	1.22	-41.93	≤ 10	+20	Pass
2472	3.027	2.01	--	--	2.01	-4.39	≤ 10	+20	Pass

Note :

- (1) Antenna Power = Reading value + cable loss
- (2) Total % = (Antenna power – Declared Antenna Power) / Declared Antenna Power * 100%
- (3) Declared Antenna Power = 2.10 mW/MHz

Frequency (MHz)	Total Antenna Power (mW/MHz)	Antenna Gain (dBi)		Total EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
		Chain A	Chain B			
2412	1.22	3.53	--	4.38	≤ 12.14	Pass
2472	2.01	3.53	--	6.55	≤ 12.14	Pass

Product : IP CAMERA
Test Item : Antenna Power & EIRP
Test Mode : Mode 3 : Transmit (802.11n HT20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Antenna Power						Limit		Result
	Chain A		Chain B		Total		mW/MHz	%	
	dBm/MHz	mW/MHz	dBm/MHz	mW/MHz	mW/MHz	%			
2412	0.856	1.22	--	--	1.22	-6.32	≤ 10	+20	Pass
2472	0.731	1.18	--	--	1.18	-8.98	≤ 10	+20	Pass

Note :

- (1) Antenna Power = Reading value + cable loss
- (2) Total % = (Antenna power – Declared Antenna Power) / Declared Antenna Power * 100%
- (3) Declared Antenna Power = 1.30 mW/MHz

Frequency (MHz)	Total Antenna Power (mW/MHz)	Antenna Gain (dBi)		Total EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
		Chain A	Chain B			
2412	1.22	3.53	--	4.38	≤ 12.14	Pass
2472	1.18	3.53	--	4.25	≤ 12.14	Pass

Product : IP CAMERA
Test Item : Antenna Power & EIRP
Test Mode : Mode 4 : Transmit (802.11n HT40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Antenna Power						Limit		Result
	Chain A		Chain B		Total		mW/MHz	%	
	dBm/MHz	mW/MHz	dBm/MHz	mW/MHz	mW/MHz	%			
2422	3.894	2.45	--	--	2.45	-5.72	≤ 5	+20	Pass
2462	3.984	2.50	--	--	2.50	-3.74	≤ 5	+20	Pass

Note :

- (1) Antenna Power = Reading value + cable loss
- (2) Total % = (Antenna power – Declared Antenna Power) / Declared Antenna Power * 100%
- (3) Declared Antenna Power = 2.60 mW/MHz

Frequency (MHz)	Total Antenna Power (mW/MHz)	Antenna Gain (dBi)		Total EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
		Chain A	Chain B			
2422	2.45	3.53	--	7.42	≤ 9.14	Pass
2462	2.50	3.53	--	7.51	≤ 9.14	Pass

Product : IP CAMERA
Test Item : Antenna Power & EIRP
Test Mode : Mode 5 : Transmit (802.11ax HE20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Antenna Power						Limit		Result
	Chain A		Chain B		Total		mW/MHz	%	
	dBm/MHz	mW/MHz	dBm/MHz	mW/MHz	mW/MHz	%			
2412	3.332	2.15	--	--	2.15	-6.36	≤ 10	+20	Pass
2472	1.719	1.49	--	--	1.49	-35.41	≤ 10	+20	Pass

Note :

- (1) Antenna Power = Reading value + cable loss
- (2) Total % = (Antenna power – Declared Antenna Power) / Declared Antenna Power * 100%
- (3) Declared Antenna Power = 2.30 mW/MHz

Frequency (MHz)	Total Antenna Power (mW/MHz)	Antenna Gain (dBi)		Total EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
		Chain A	Chain B			
2412	2.15	3.53	--	6.85	≤ 12.14	Pass
2472	1.49	3.53	--	5.24	≤ 12.14	Pass

Product : IP CAMERA
Test Item : Antenna Power & EIRP
Test Mode : Mode 6 : Transmit (802.11ax HE40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Antenna Power						Limit		Result
	Chain A		Chain B		Total		mW/MHz	%	
	dBm/MHz	mW/MHz	dBm/MHz	mW/MHz	mW/MHz	%			
2422	3.776	2.39	--	--	2.39	-8.25	≤ 5	+20	Pass
2462	4.029	2.53	--	--	2.53	-2.74	≤ 5	+20	Pass

Note :

- (1) Antenna Power = Reading value + cable loss
- (2) Total % = (Antenna power – Declared Antenna Power) / Declared Antenna Power * 100%
- (3) Declared Antenna Power = 2.60 mW/MHz

Frequency (MHz)	Total Antenna Power (mW/MHz)	Antenna Gain (dBi)		Total EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
		Chain A	Chain B			
2422	2.39	3.53	--	7.30	≤ 9.14	Pass
2462	2.53	3.53	--	7.55	≤ 9.14	Pass

2.2 Frequency Tolerance

2.2.1 Limit

Frequency tolerance shall be ± 50 ppm.

2.2.2 Test setup



2.2.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Frequency Tolerance)

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

2.2.4 Test Result

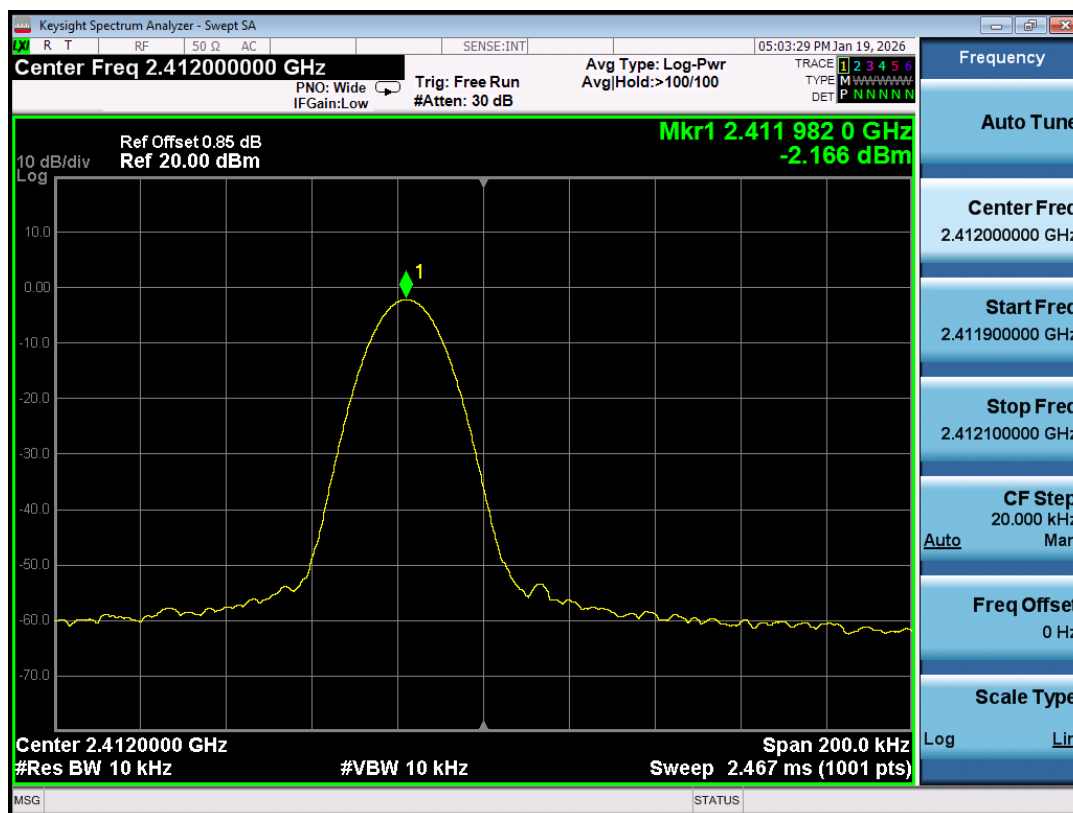
Product : IP CAMERA
Test Item : Frequency Tolerance
Test Mode : Mode 1 : Transmit (802.11b 1Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Chain A		Chain B		Limit (ppm)	Result
	Reading Value (MHz)	Tolerance (ppm)	Reading Value (MHz)	Tolerance (ppm)		
2412	2411.9820	-7.4627	--	--	±50	Pass
2472	2471.9894	-4.2880	--	--	±50	Pass

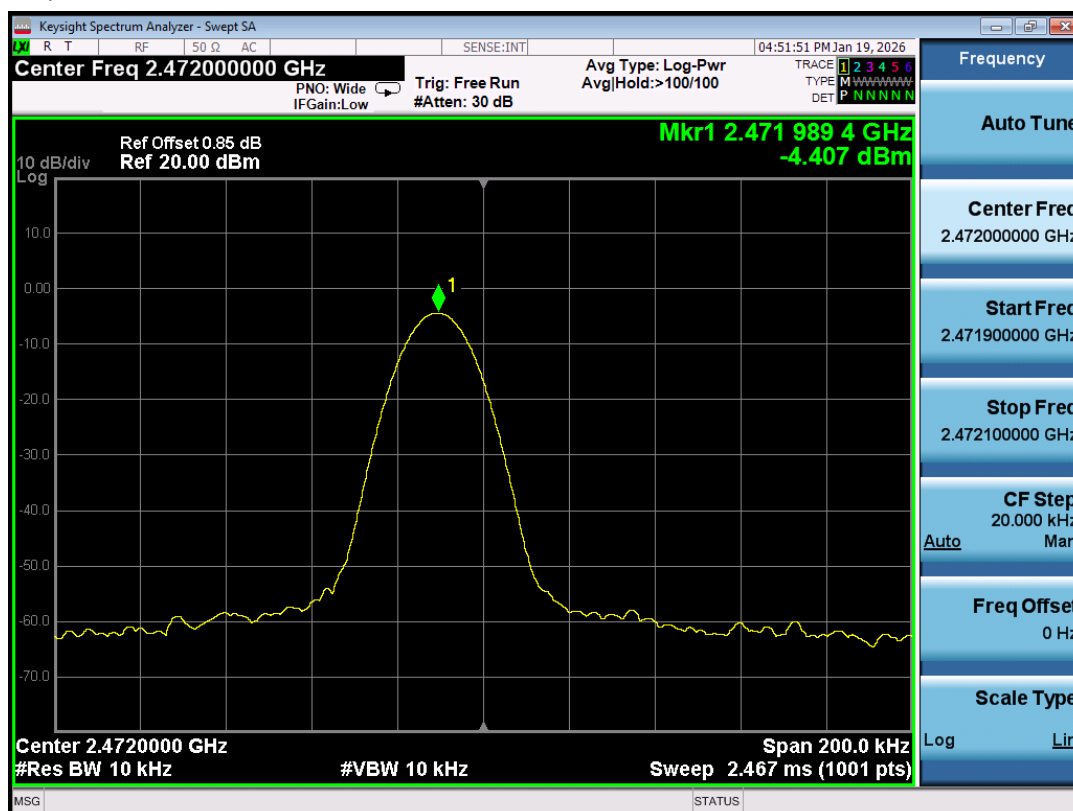
Note: The spectrum plots are attached on the following pages.

Chain A

802.11b ; 2412MHz



802.11b ; 2472MHz



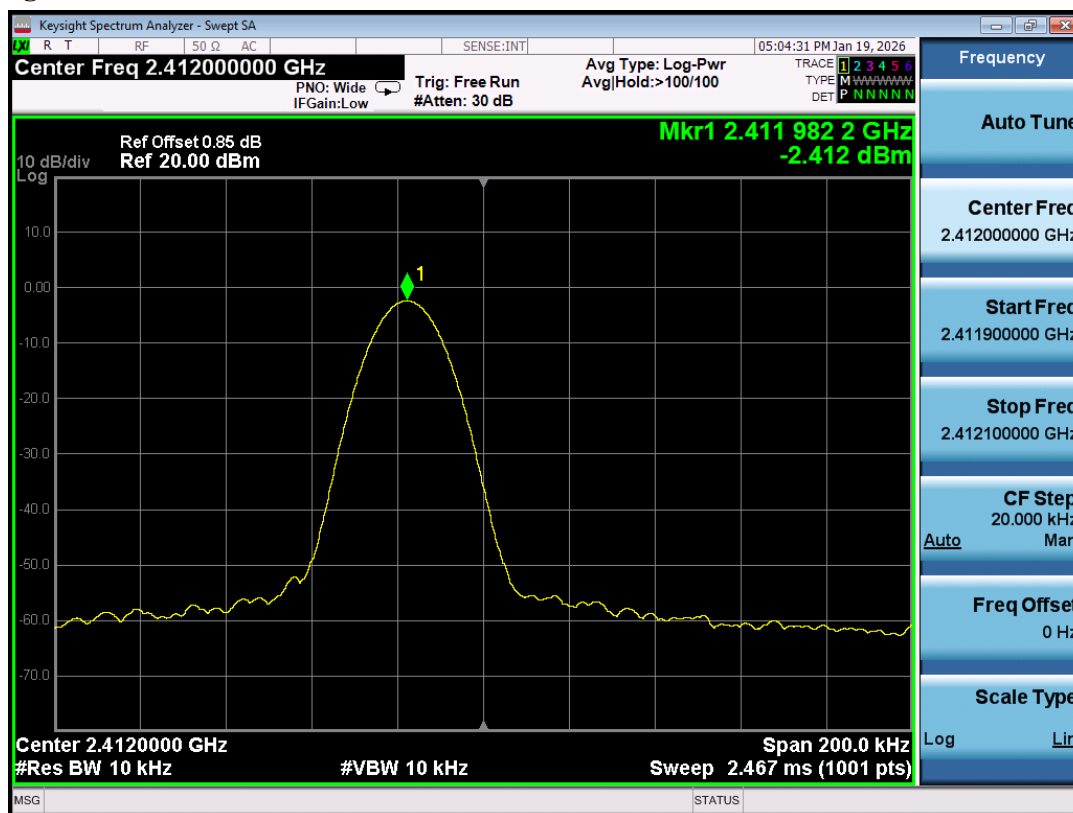
Product : IP CAMERA
Test Item : Frequency Tolerance
Test Mode : Mode 2 : Transmit (802.11g 6Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Chain A		Chain B		Limit (ppm)	Result
	Reading Value (MHz)	Tolerance (ppm)	Reading Value (MHz)	Tolerance (ppm)		
2412	2411.9822	-7.3798	--	--	±50	Pass
2472	2471.9892	-4.3689	--	--	±50	Pass

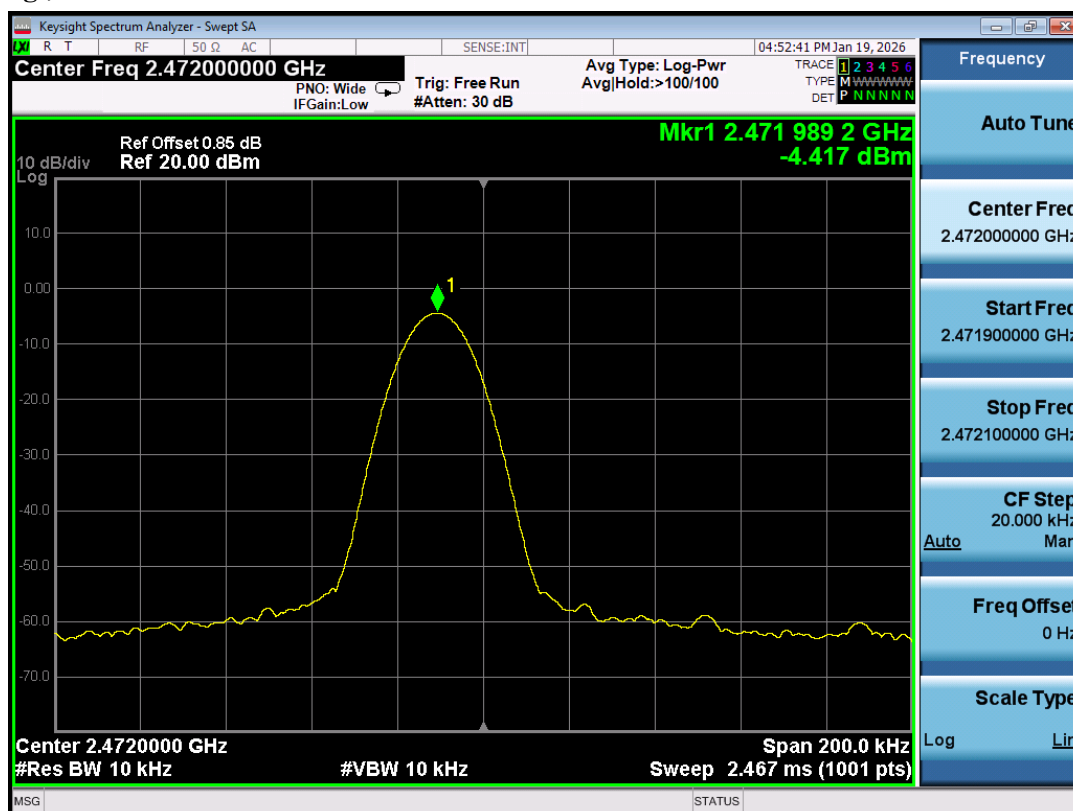
Note: The spectrum plots are attached on the following pages.

Chain A

802.11g ; 2412MHz



802.11g ; 2472MHz



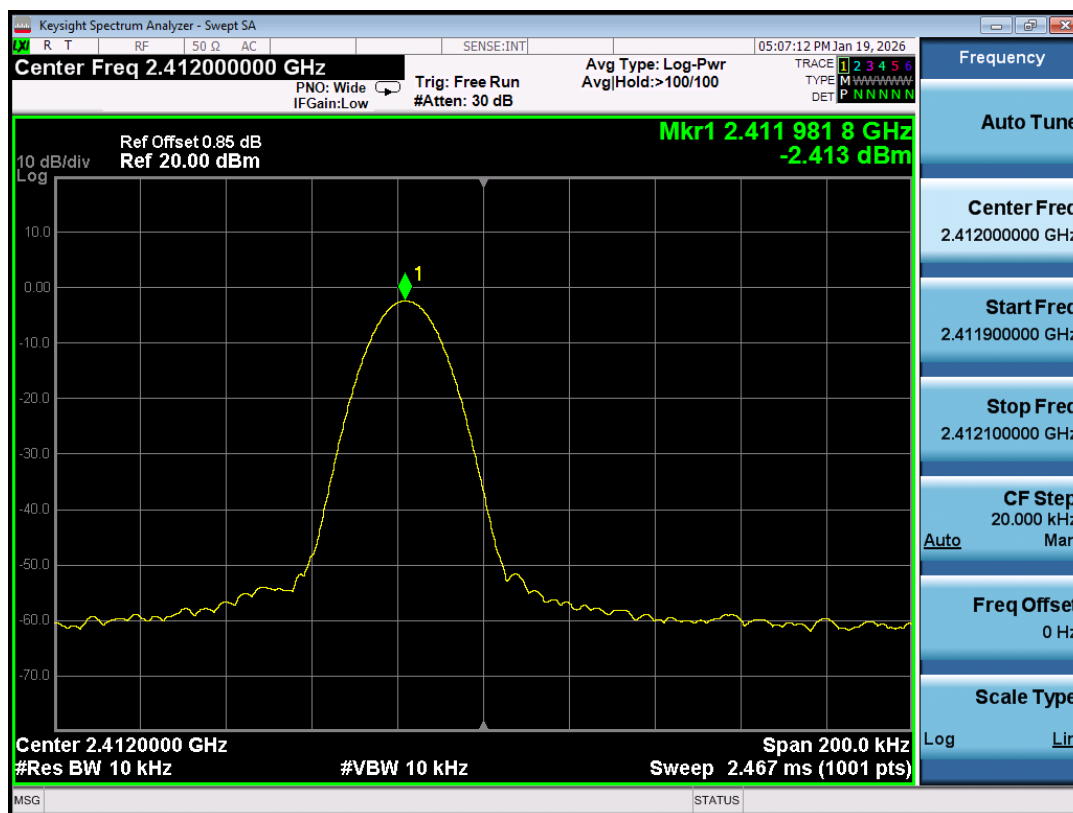
Product : IP CAMERA
Test Item : Frequency Tolerance
Test Mode : Mode 3 : Transmit (802.11n HT20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Chain A		Chain B		Limit (ppm)	Result
	Reading Value (MHz)	Tolerance (ppm)	Reading Value (MHz)	Tolerance (ppm)		
2412	2411.9818	-7.5456	--	--	±50	Pass
2472	2471.9892	-4.3689	--	--	±50	Pass

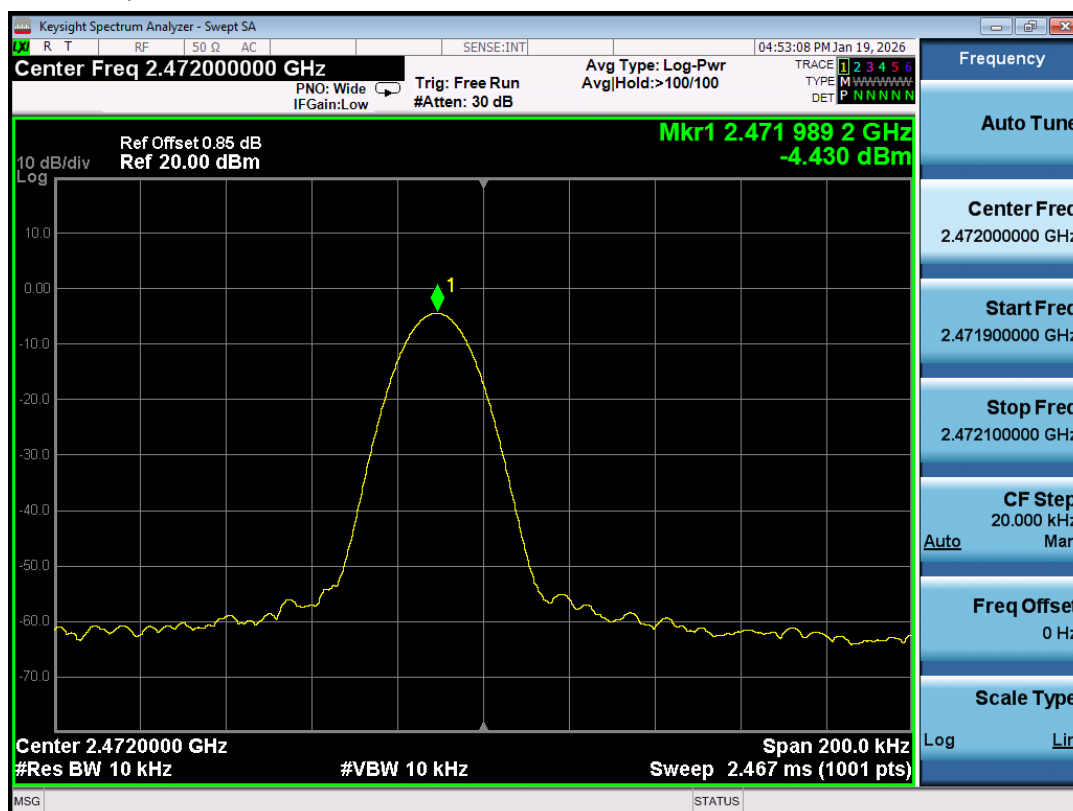
Note: The spectrum plots are attached on the following pages.

Chain A

802.11n HT20 ; 2412MHz



802.11n HT20 ; 2472MHz



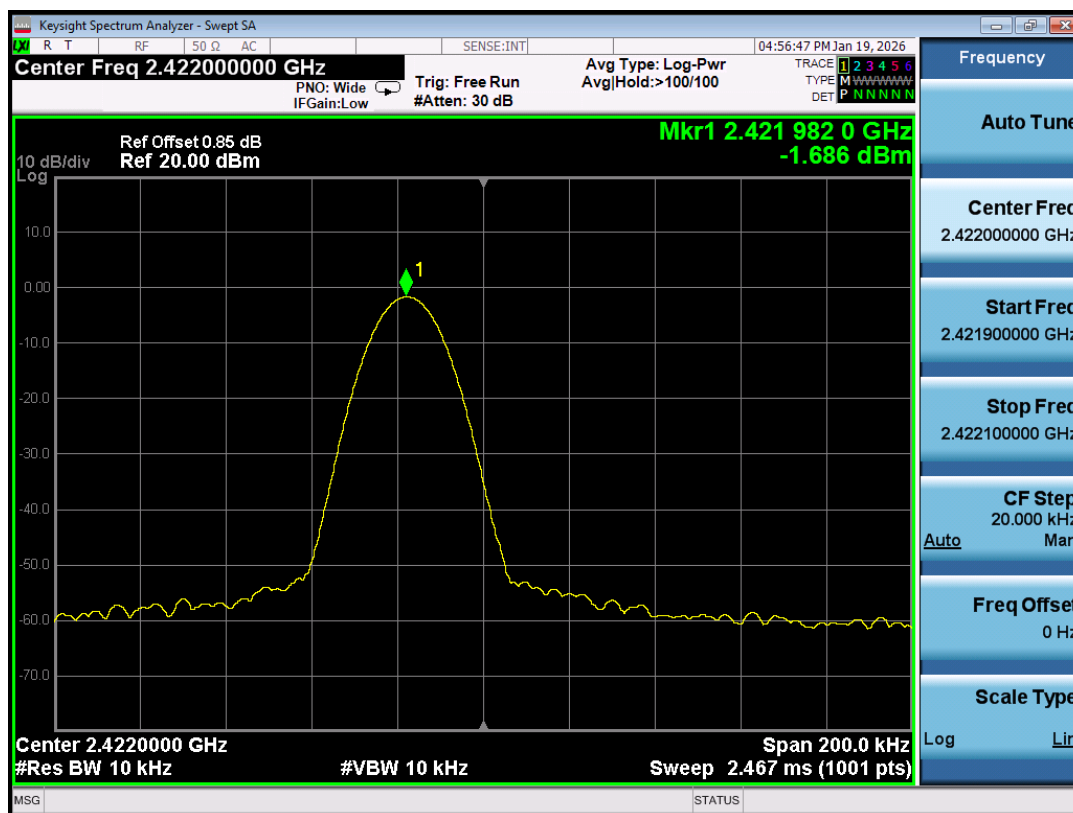
Product : IP CAMERA
Test Item : Frequency Tolerance
Test Mode : Mode 4 : Transmit (802.11n HT40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Chain A		Chain B		Limit (ppm)	Result
	Reading Value (MHz)	Tolerance (ppm)	Reading Value (MHz)	Tolerance (ppm)		
2422	2421.9820	-7.4319	--	--	±50	Pass
2462	2461.9820	-7.3111	--	--	±50	Pass

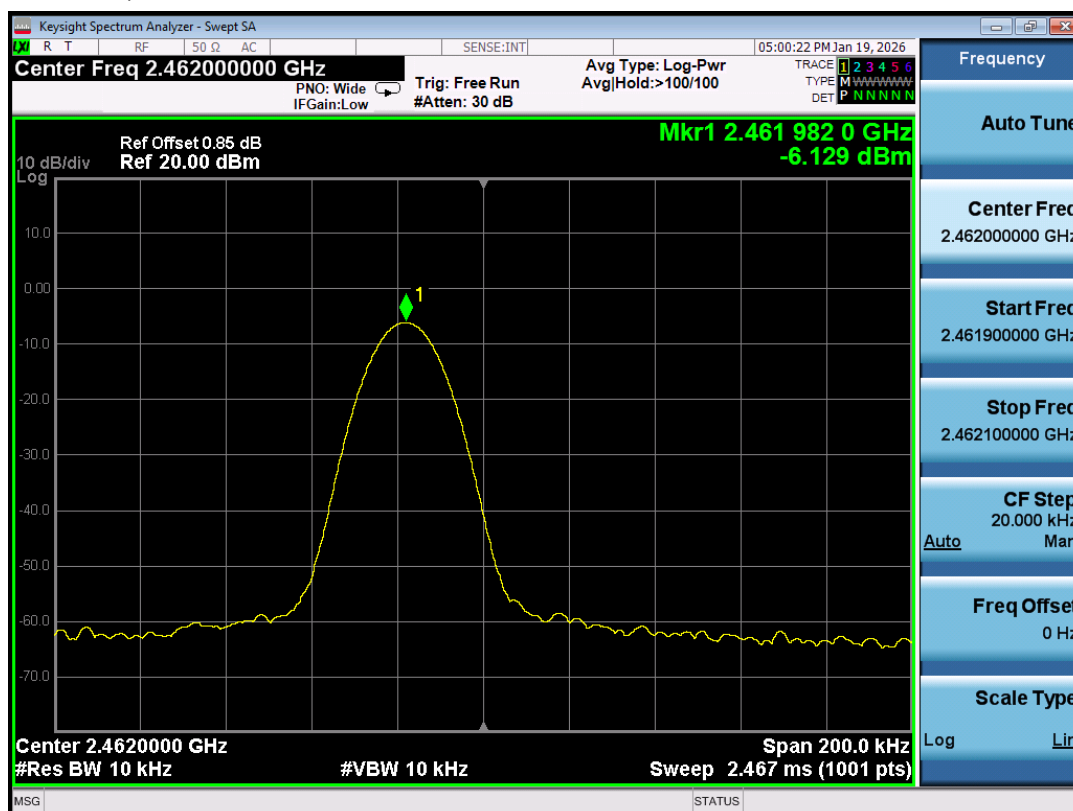
Note: The spectrum plots are attached on the following pages.

Chain A

802.11n HT40 ; 2422MHz



802.11n HT40 ; 2462MHz



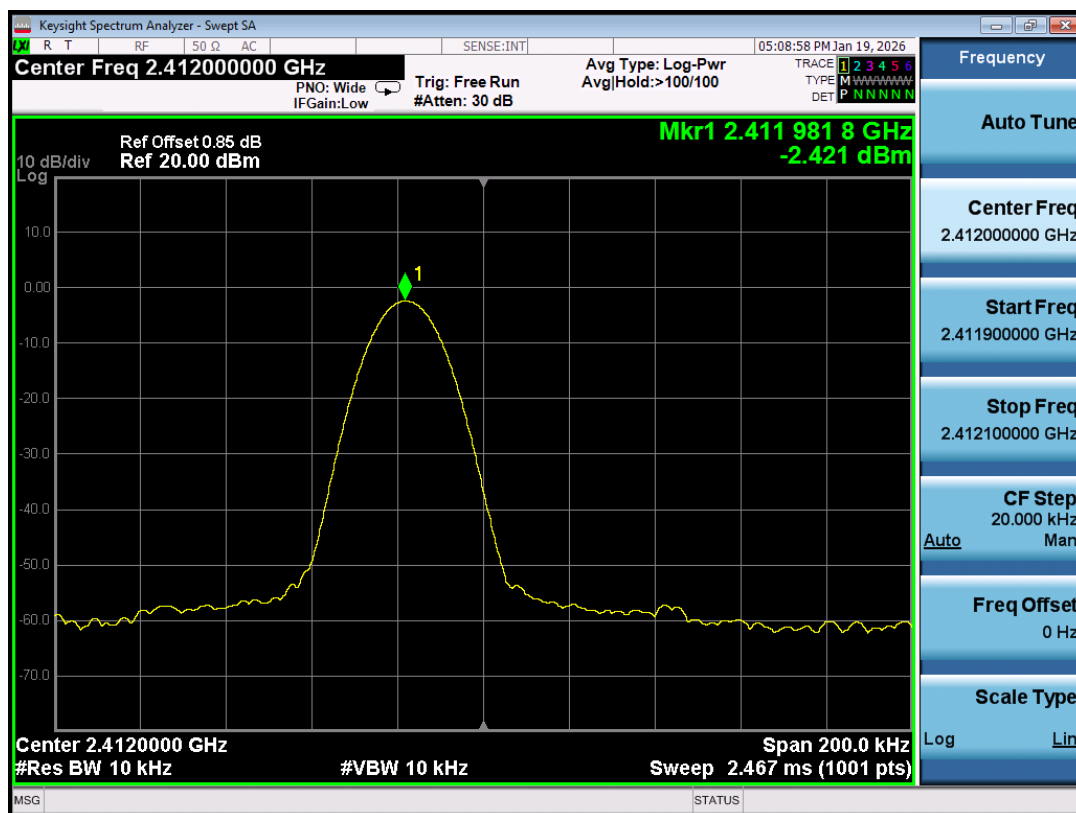
Product : IP CAMERA
Test Item : Frequency Tolerance
Test Mode : Mode 5 : Transmit (802.11ax HE20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Chain A		Chain B		Limit (ppm)	Result
	Reading Value (MHz)	Tolerance (ppm)	Reading Value (MHz)	Tolerance (ppm)		
2412	2411.9818	-7.5456	--	--	±50	Pass
2472	2471.9890	-4.4498	--	--	±50	Pass

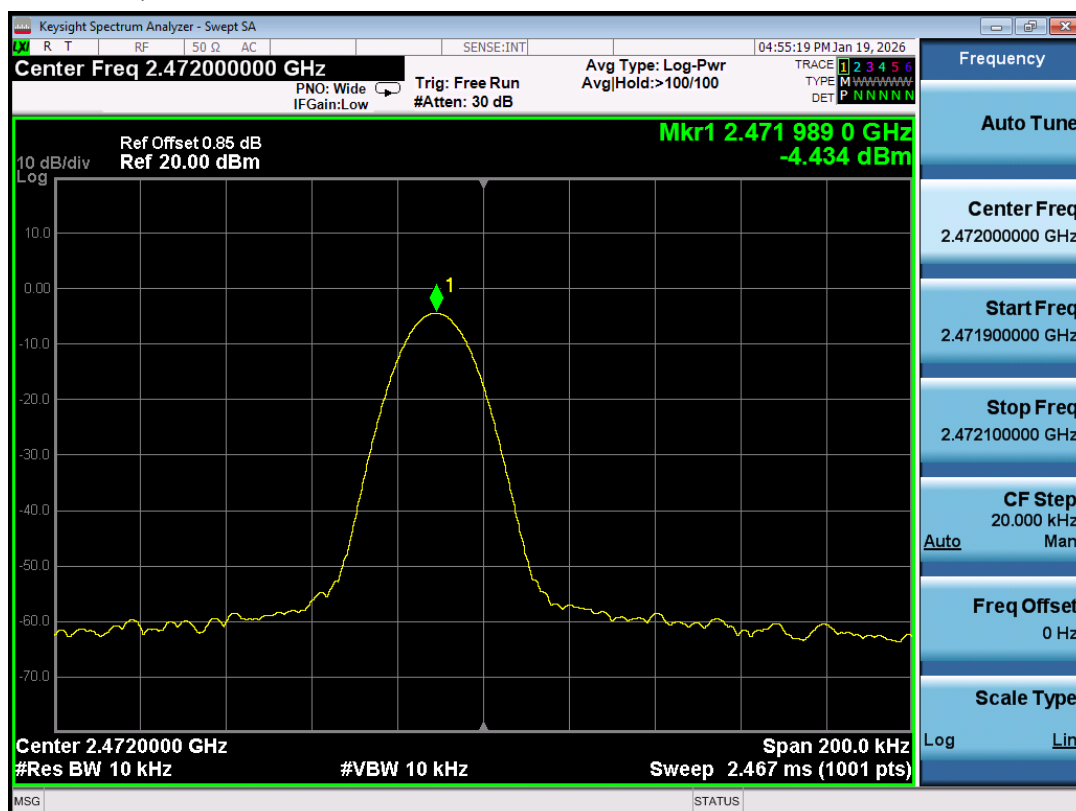
Note: The spectrum plots are attached on the following pages.

Chain A

802.11ax HE20 ; 2412MHz



802.11ax HE20 ; 2472MHz



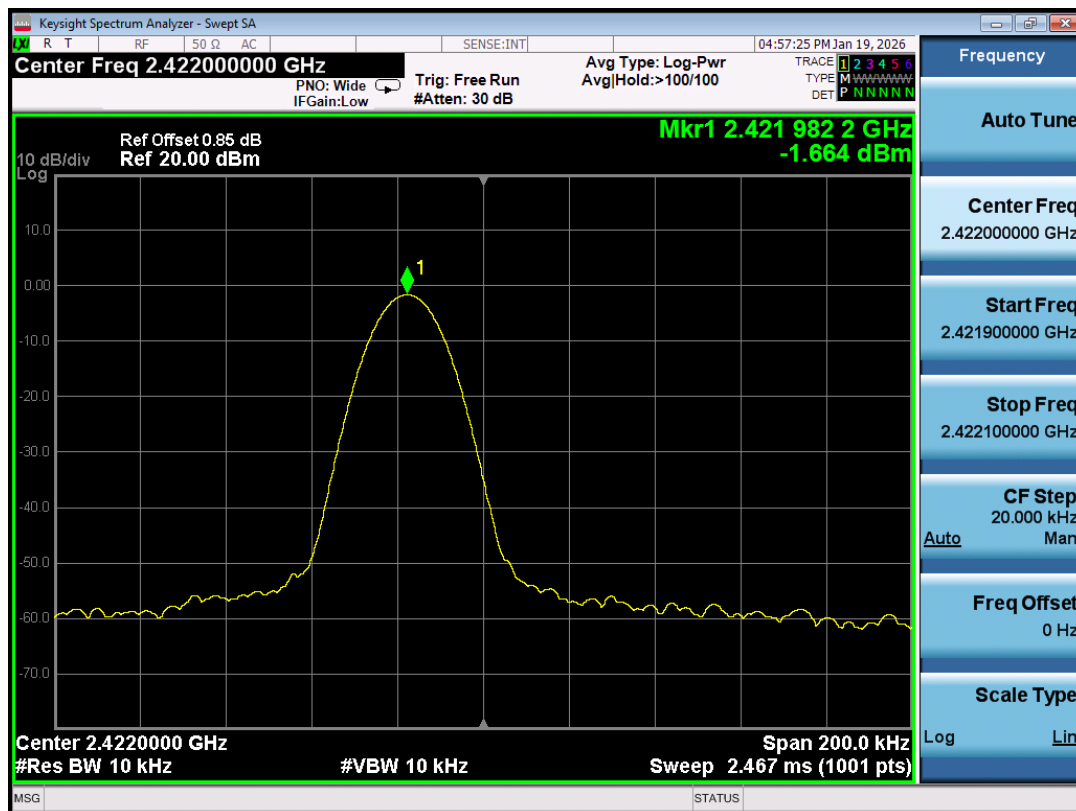
Product : IP CAMERA
Test Item : Frequency Tolerance
Test Mode : Mode 6 : Transmit (802.11ax HE40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Chain A		Chain B		Limit (ppm)	Result
	Reading Value (MHz)	Tolerance (ppm)	Reading Value (MHz)	Tolerance (ppm)		
2422	2421.9822	-7.3493	--	--	±50	Pass
2462	2461.9818	-7.3924	--	--	±50	Pass

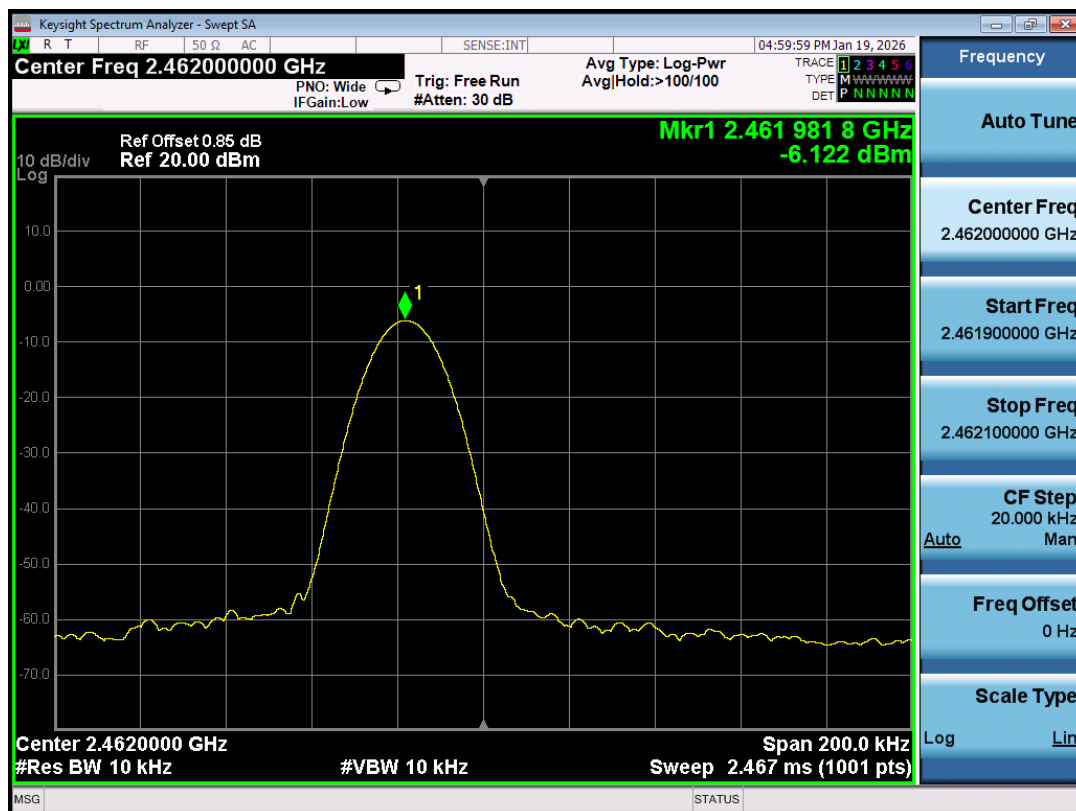
Note: The spectrum plots are attached on the following pages.

Chain A

802.11ax HE40 ; 2422MHz



802.11ax HE40 ; 2462MHz



2.3 Occupied Bandwidth

2.3.1 Limit

Mode	Limit
FHSS(Compound method with DSSS or OFDM)	≤ 83.5 MHz
DSSS、OFDM *1	≤ 26 MHz
OFDM*2	26 - 40 MHz
Other Digital methods	≤ 26 MHz

*1 Antenna Power ≤ 10 mW/MHz

*2 Antenna Power ≤ 5 mW/MHz

2.3.2 Test Setup



2.3.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Occupied Bandwidth & Spreading Bandwidth)

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- A positive peak detector function must be used.
- A measurement instrument with an integrated 99% power bandwidth function may be used to automate the test process.
- The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

2.3.4 Test Result

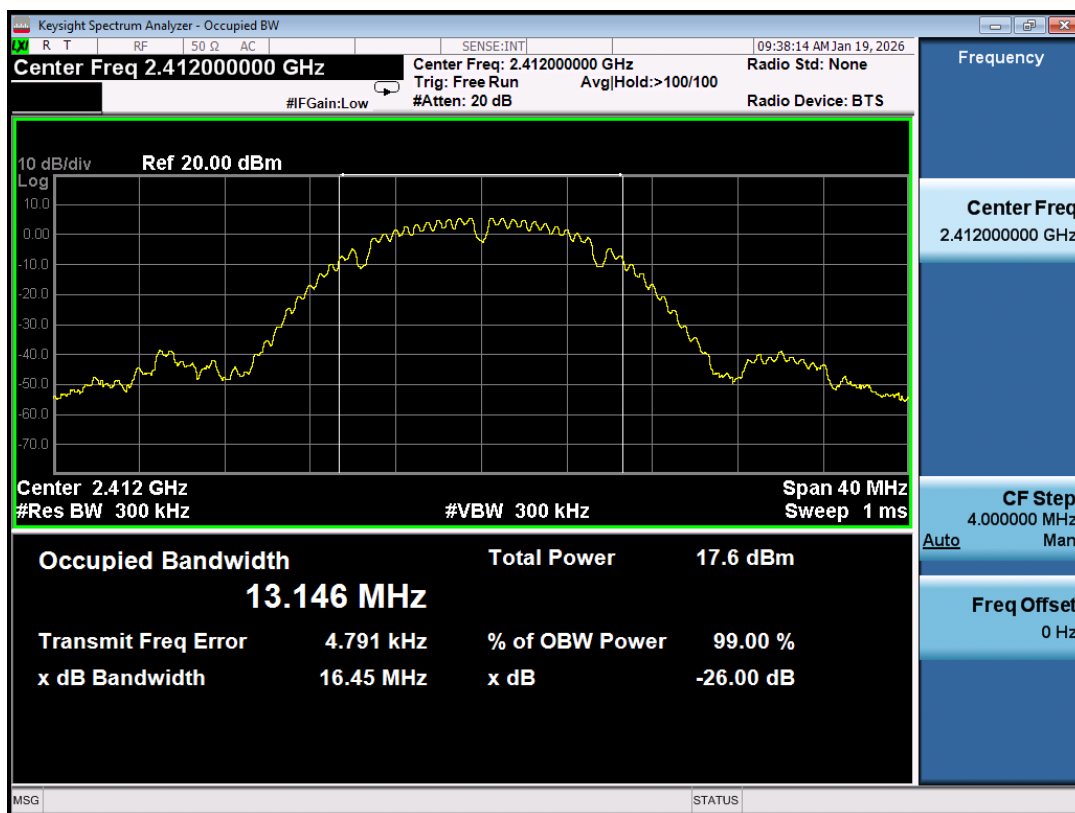
Product : IP CAMERA
Test Item : Occupied Bandwidth
Test Mode : Mode 1 : Transmit (802.11b 1Mbps)
Test Voltage : DC 12V

Frequency (MHz)	Measured Value (MHz)		Limit (MHz)	Result
	Chain A	Chain B		
2412	13.146	--	≤ 26	Pass
2472	13.201	--	≤ 26	Pass

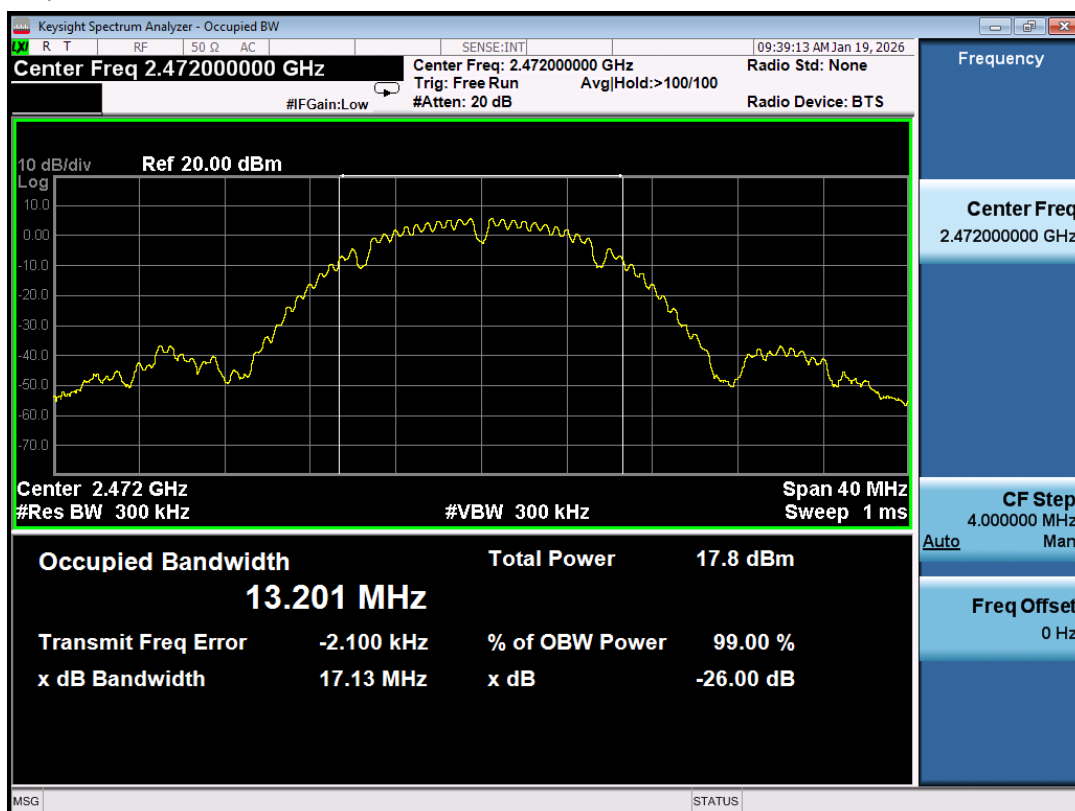
Note: The spectrum plots are attached on the following pages.

Chain A

802.11b ; 2412MHz



802.11b ; 2472MHz



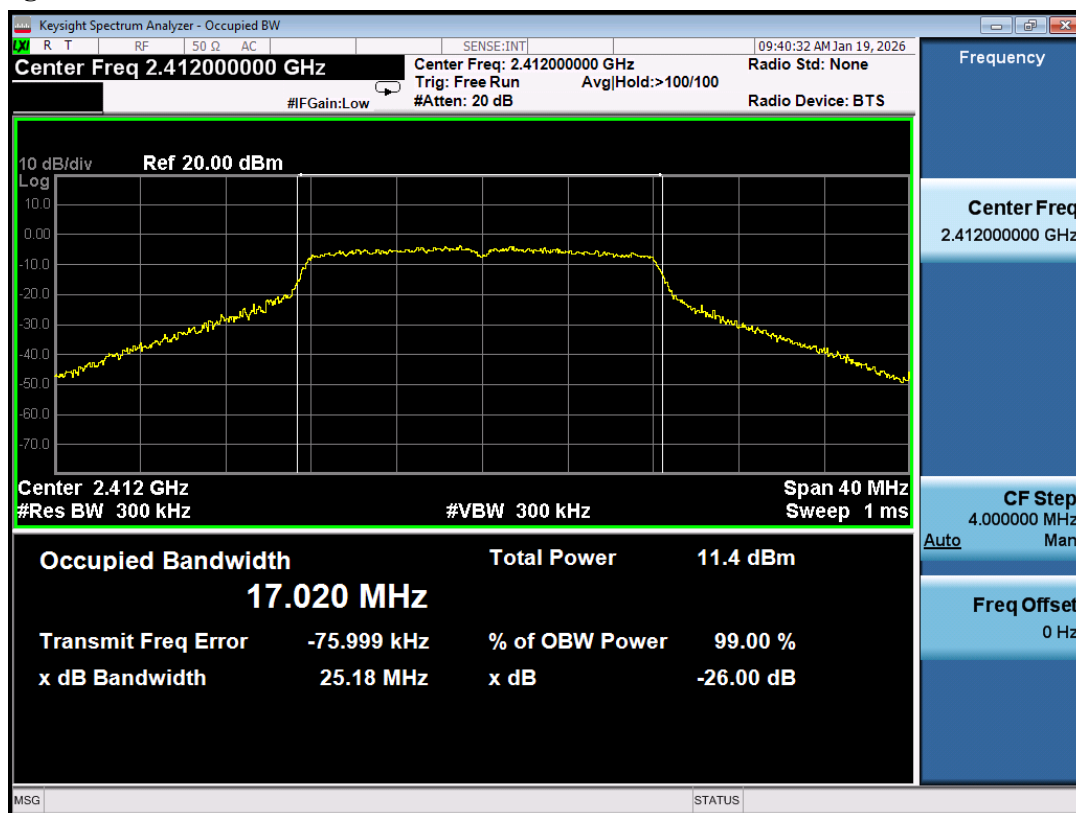
Product : IP CAMERA
Test Item : Occupied Bandwidth
Test Mode : Mode 2 : Transmit (802.11g 6Mbps)
Test Voltage : DC 12V

Frequency (MHz)	Measured Value (MHz)		Limit (MHz)	Result
	Chain A	Chain B		
2412	17.020	--	≤ 26	Pass
2472	17.005	--	≤ 26	Pass

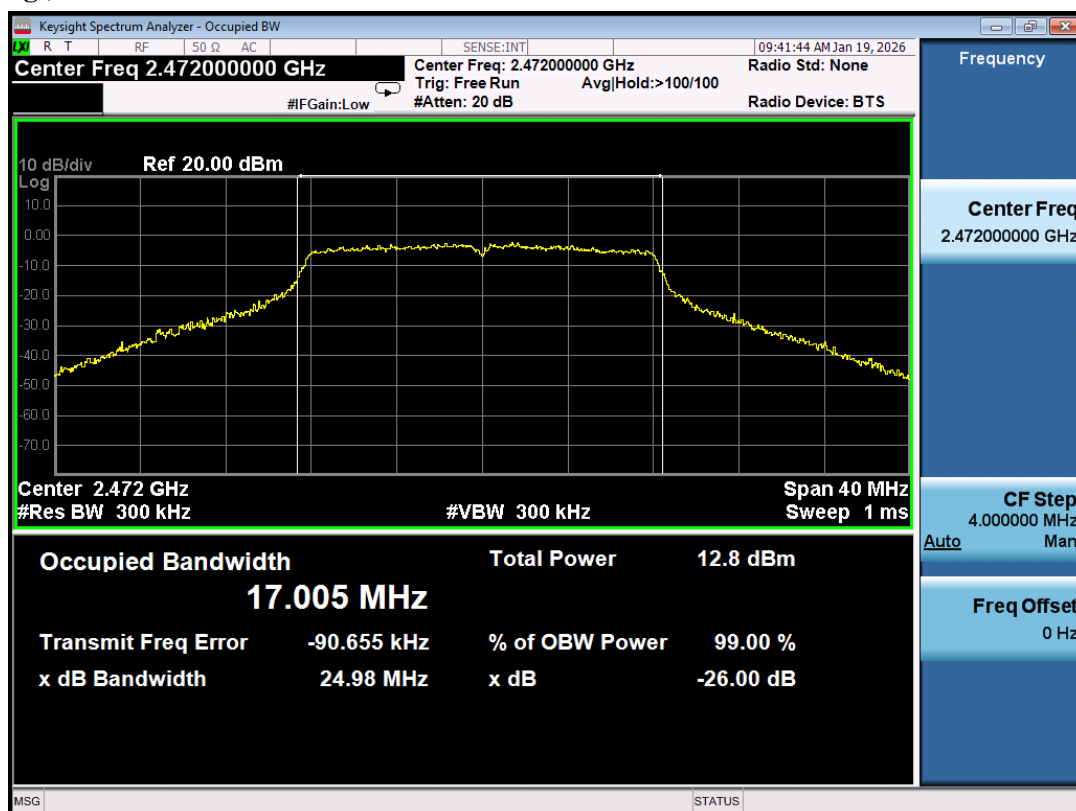
Note: The spectrum plots are attached on the following pages.

Chain A

802.11g ; 2412MHz



802.11g ; 2472MHz



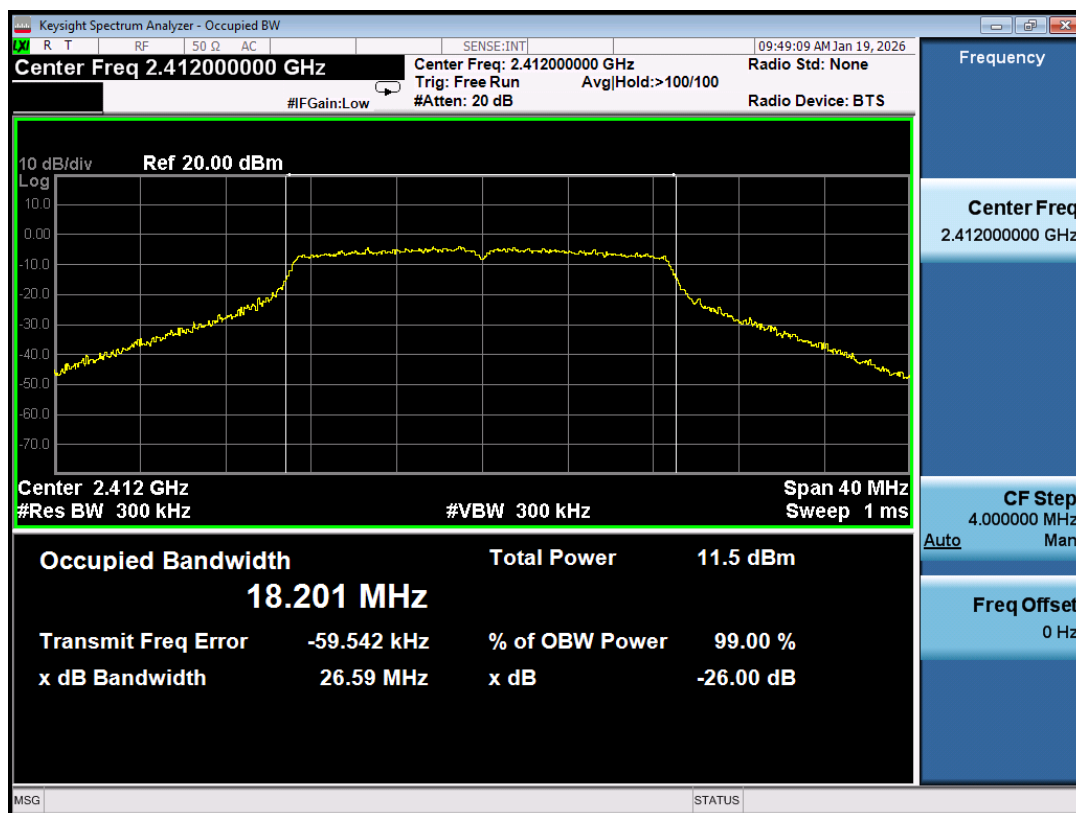
Product : IP CAMERA
Test Item : Occupied Bandwidth
Test Mode : Mode 3 : Transmit (802.11n HT20 MCS0)
Test Voltage : DC 12V

Frequency (MHz)	Measured Value (MHz)		Limit (MHz)	Result
	Chain A	Chain B		
2412	18.201	--	≤ 26	Pass
2472	18.189	--	≤ 26	Pass

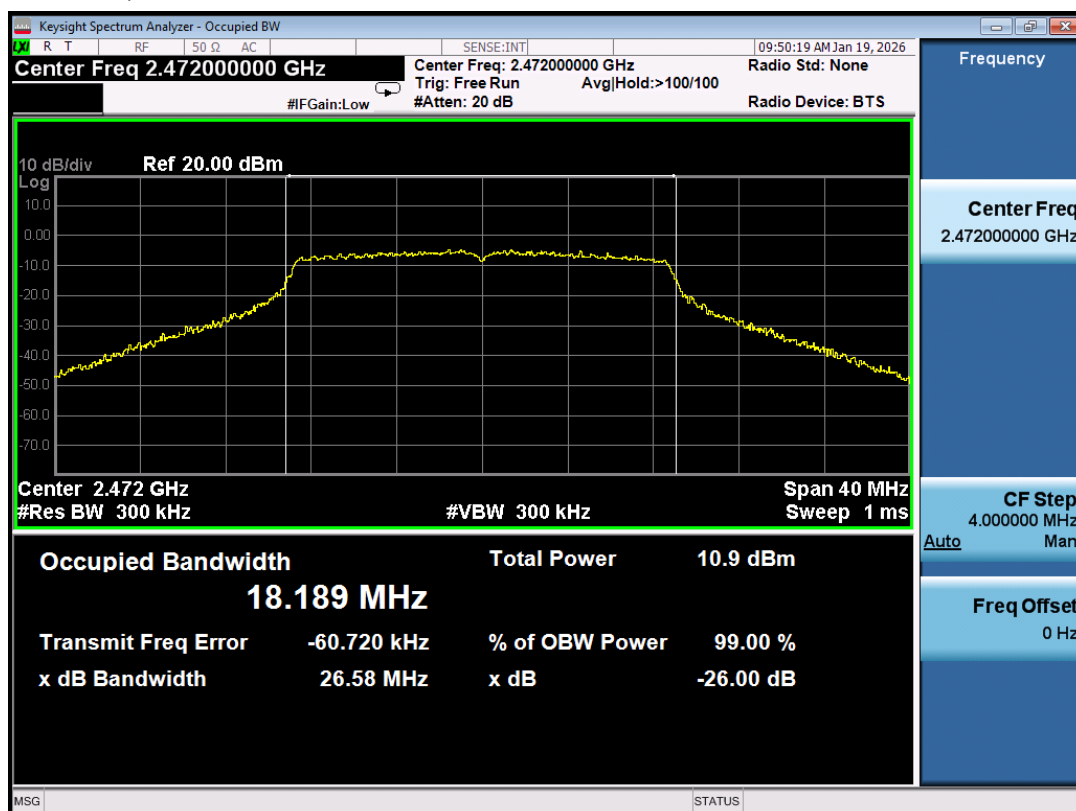
Note: The spectrum plots are attached on the following pages.

Chain A

802.11n HT20 ; 2412MHz



802.11n HT20 ; 2472MHz



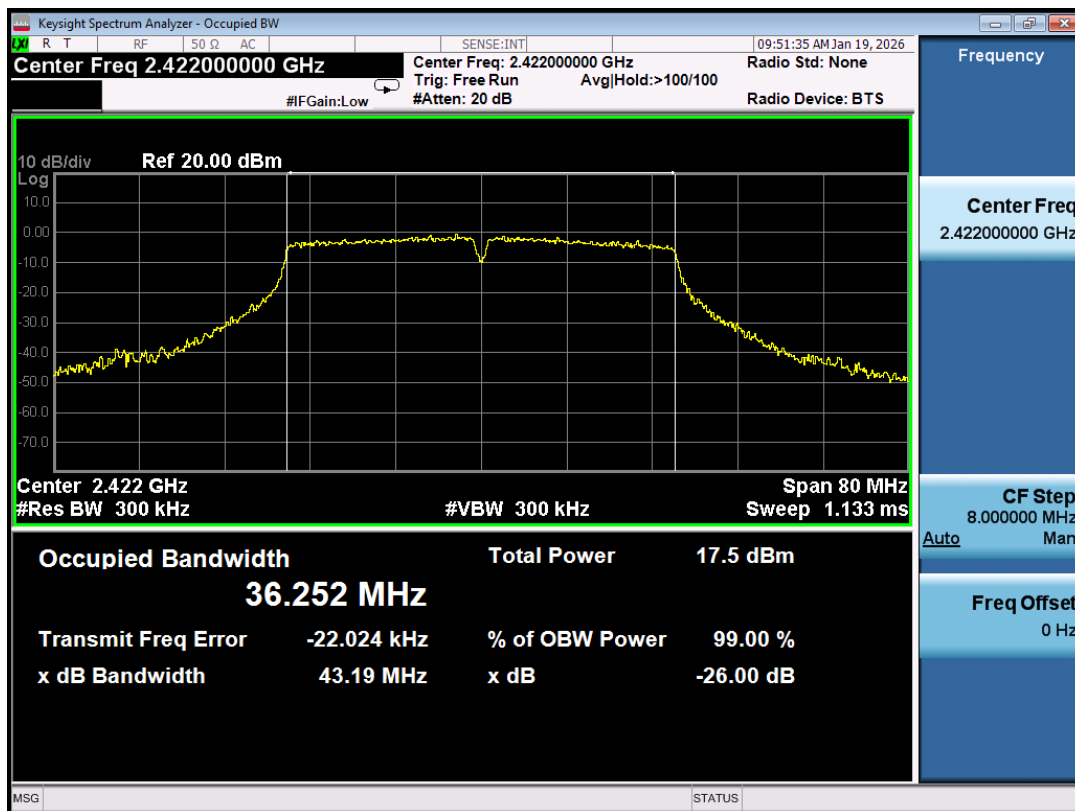
Product : IP CAMERA
Test Item : Occupied Bandwidth
Test Mode : Mode 4 : Transmit (802.11n HT40 MCS0)
Test Voltage : DC 12V

Frequency (MHz)	Measured Value (MHz)		Limit (MHz)	Result
	Chain A	Chain B		
2422	36.252	--	≤ 38	Pass
2462	36.185	--	≤ 38	Pass

Note: The spectrum plots are attached on the following pages.

Chain A

802.11n HT40 ; 2422MHz



802.11n HT40 ; 2462MHz



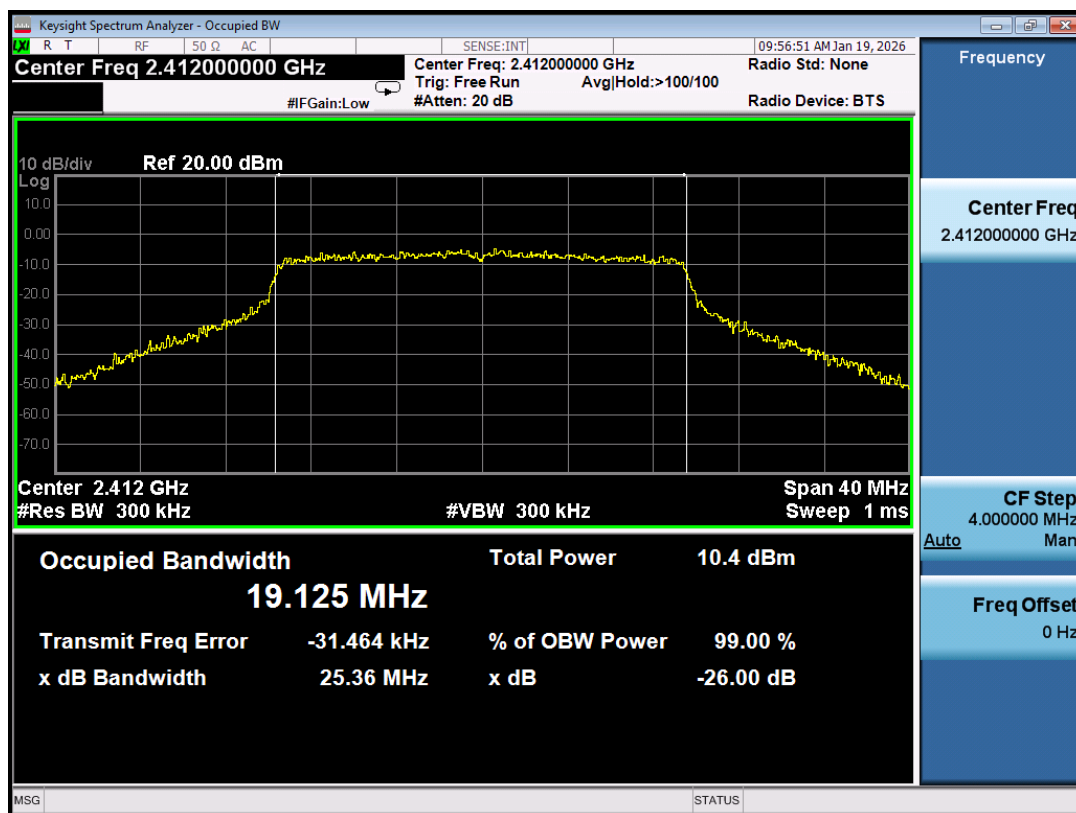
Product : IP CAMERA
Test Item : Occupied Bandwidth
Test Mode : Mode 5 : Transmit (802.11ax HE20 MCS0)
Test Voltage : DC 12V

Frequency (MHz)	Measured Value (MHz)		Limit (MHz)	Result
	Chain A	Chain B		
2412	19.125	--	≤ 26	Pass
2472	19.173	--	≤ 26	Pass

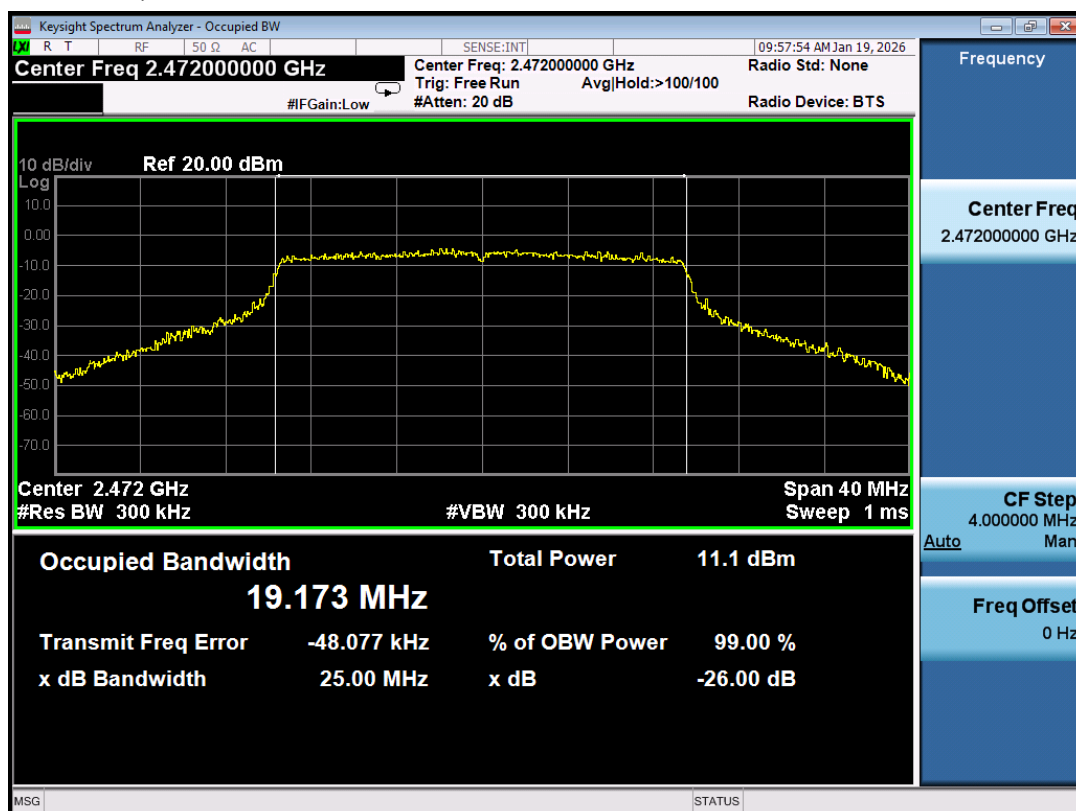
Note: The spectrum plots are attached on the following pages.

Chain A

802.11ax HE20 ; 2412MHz



802.11ax HE20 ; 2472MHz



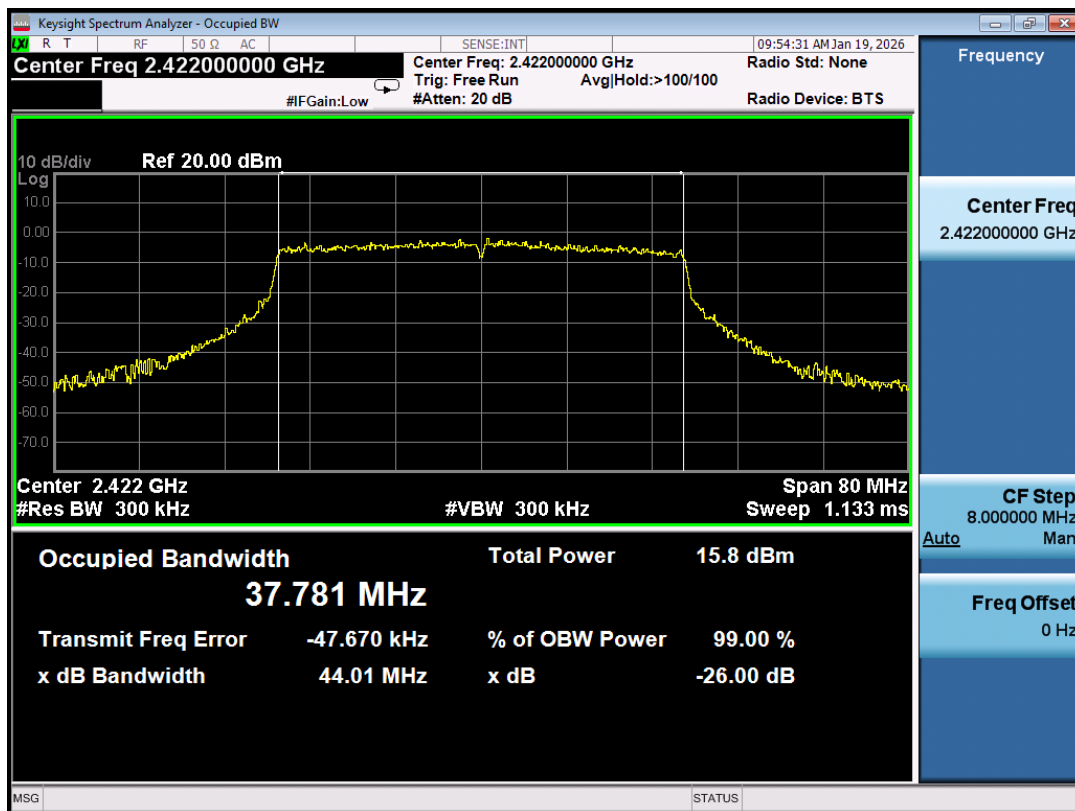
Product : IP CAMERA
Test Item : Occupied Bandwidth
Test Mode : Mode 6 : Transmit (802.11ax HE40 MCS0)
Test Voltage : DC 12V

Frequency (MHz)	Measured Value (MHz)		Limit (MHz)	Result
	Chain A	Chain B		
2422	37.781	--	≤ 38	Pass
2462	37.804	--	≤ 38	Pass

Note: The spectrum plots are attached on the following pages.

Chain A

802.11ax HE40 ; 2422MHz



802.11ax HE40 ; 2462MHz



2.4 Unwanted Emission Strength

2.4.1 Limit

Frequency	Limit
30 ~ 2387 MHz	$\leq 2.5\mu\text{W/MHz}$
2387 ~ 2400 MHz	$\leq 25\mu\text{W/MHz}$
2483.5 ~ 2496.5 MHz	$\leq 25\mu\text{W/MHz}$
2496.5 ~ 12500 MHz	$\leq 2.5\mu\text{W/MHz}$

2.4.2 Test Setup



2.4.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Intensity of spurious emission or unwanted emission)

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- A positive peak detector function must be used.
- The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

2.4.4 Test Result

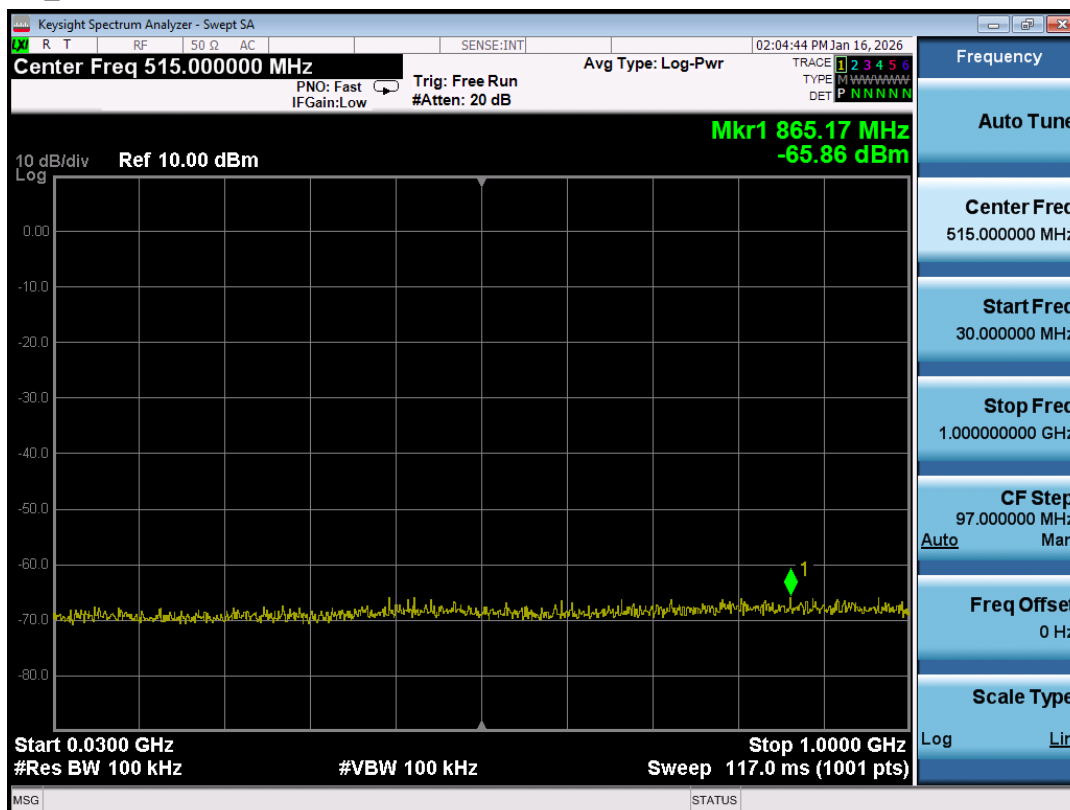
Product : IP CAMERA
Test Item : Transmitter Spurious Emission
Test Mode : Mode 1 : Transmit (802.11b 1Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (μW/MHz)	Limit (μW/MHz)	Result
		dBm/MHz	μW/MHz	dBm/MHz	μW/MHz			
2412	30 ~ 1000	-55.830	0.0026	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-47.310	0.0186	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-35.500	0.2818	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-48.870	0.0130	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-38.030	0.1574	--	--	--	≤ 2.5	Pass
2472	30 ~ 1000	-55.040	0.0031	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-48.390	0.0145	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-49.780	0.0105	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-34.050	0.3936	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-36.750	0.2113	--	--	--	≤ 2.5	Pass

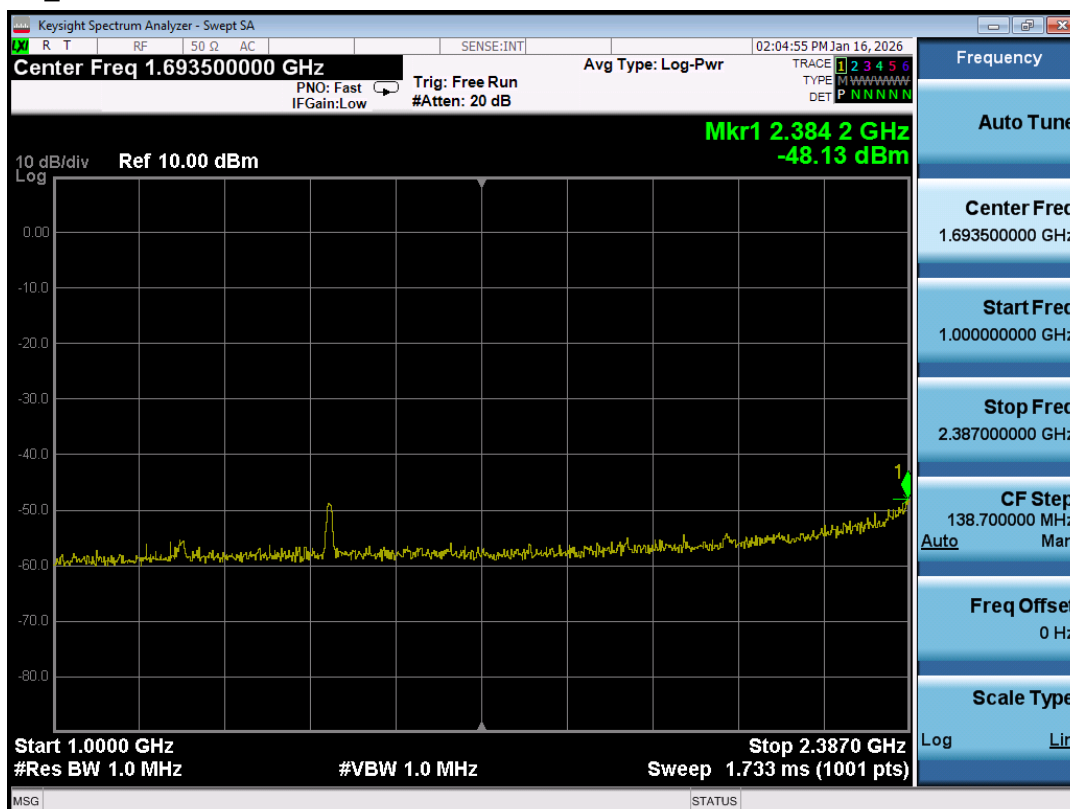
Note:

- (1) The frequency(30~1000MHz) test unit is μW/100kHz : $\mu\text{W}/\text{MHz} = \text{Measured Value}(\mu\text{W}/100\text{kHz}) * 10$
- (2) Actual value = Reading value + cable loss
- (3) The spectrum plots are attached on the following pages.

Chain A_802.11b 2412MHz ; 30 ~ 1000 MHz



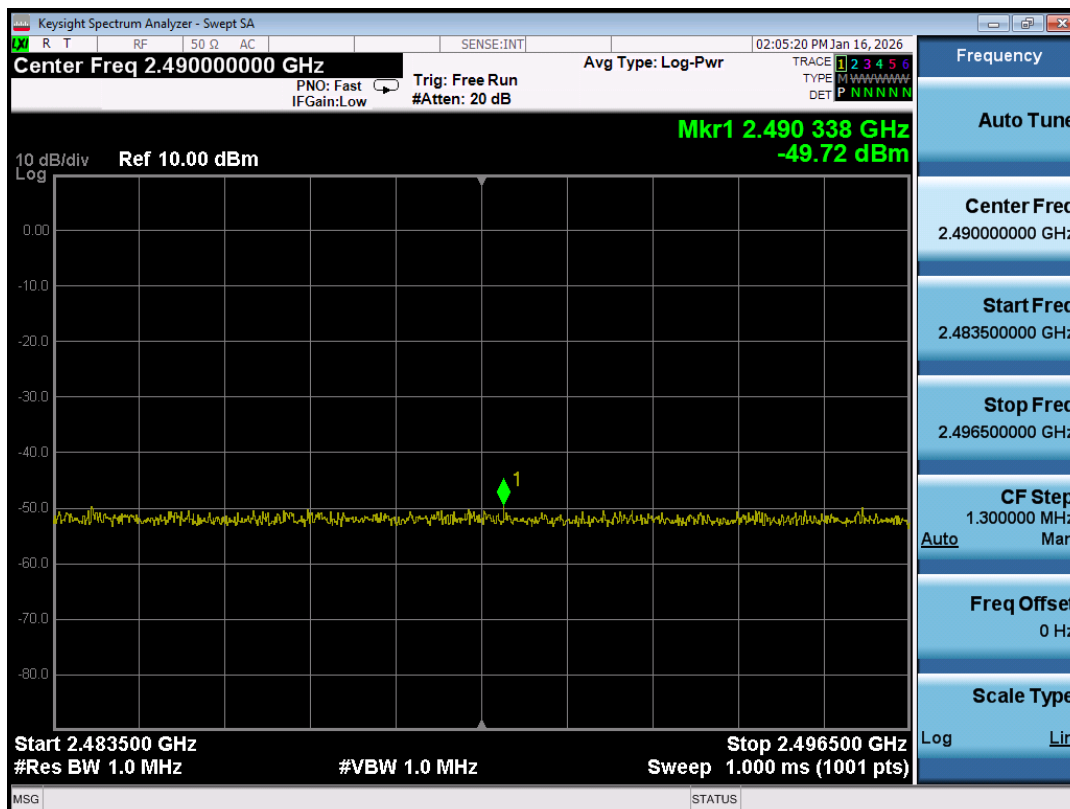
Chain A_802.11b 2412MHz ; 1000 ~ 2387 MHz



Chain A_802.11b 2412MHz; 2387 ~ 2400 MHz



Chain A_802.11b 2412MHz; 2483.5 ~ 2496.5 MHz



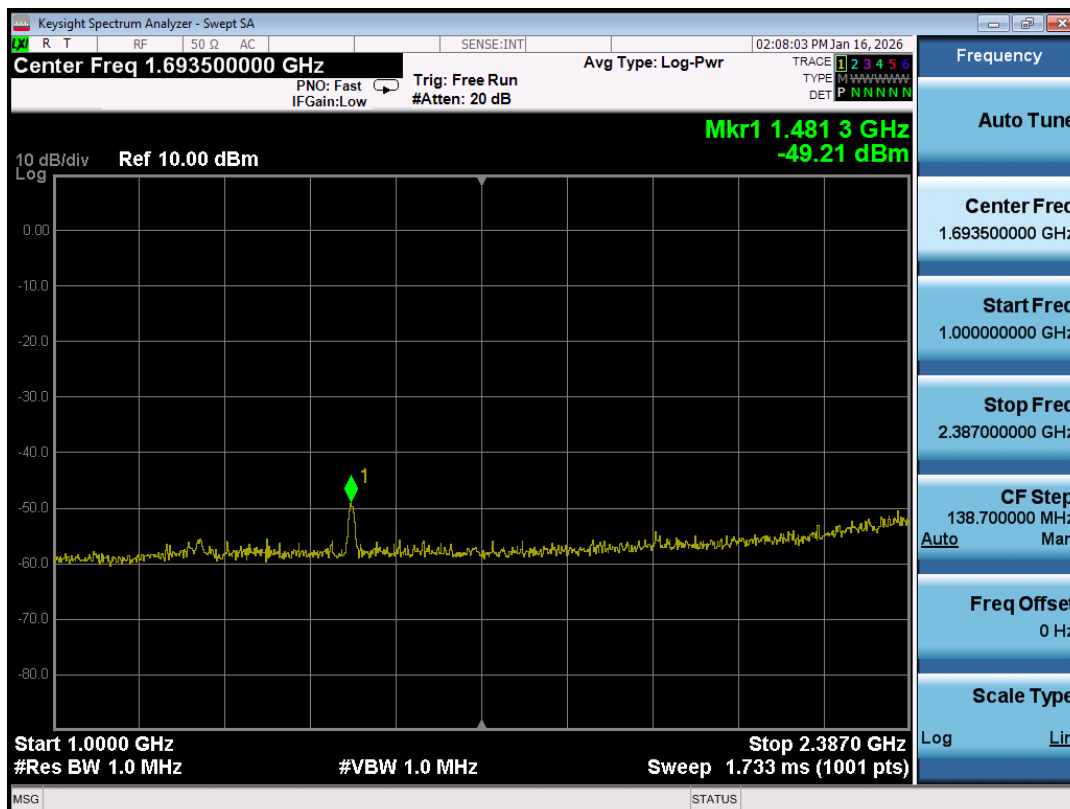
Chain A_802.11b 2412MHz; 2496.5 ~ 12500 MHz



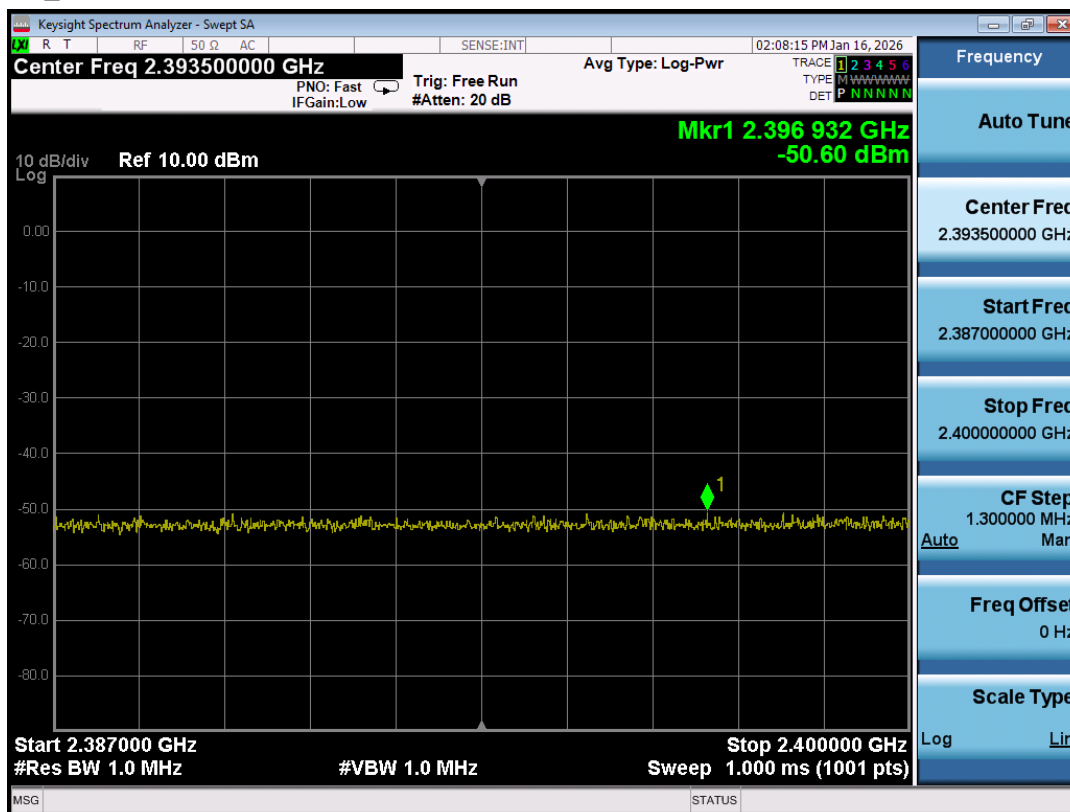
Chain A_802.11b 2472MHz ; 30 ~ 1000 MHz



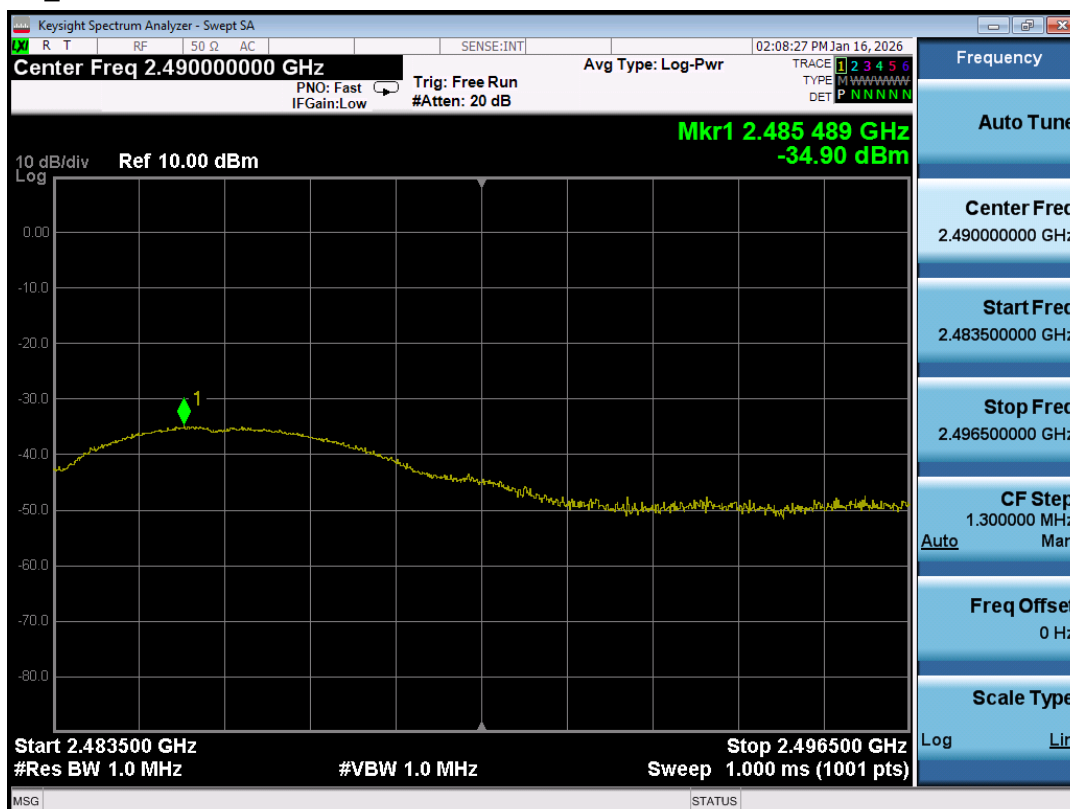
Chain A_802.11b 2472MHz ; 1000 ~ 2387 MHz



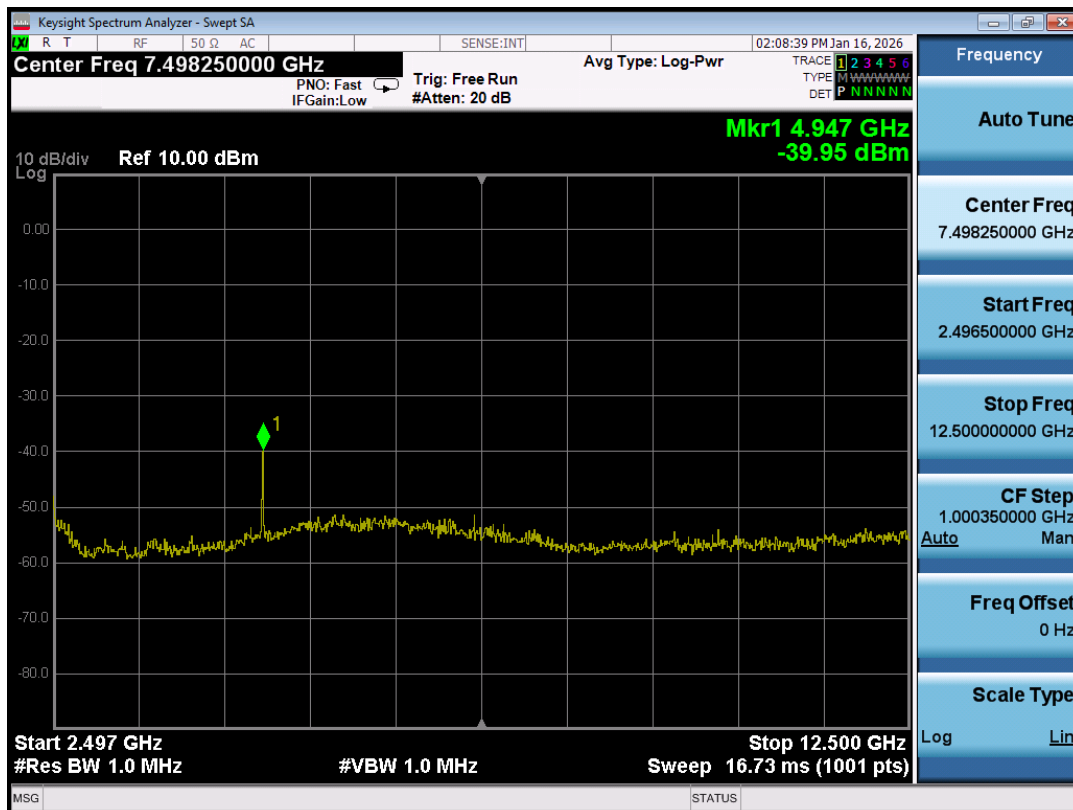
Chain A_802.11b 2472MHz ; 2387 ~ 2400 MHz



Chain A_802.11b 2472MHz ; 2483.5 ~ 2496.5 MHz



Chain A_802.11b 2472MHz ; 2496.5 ~ 12500 MHz



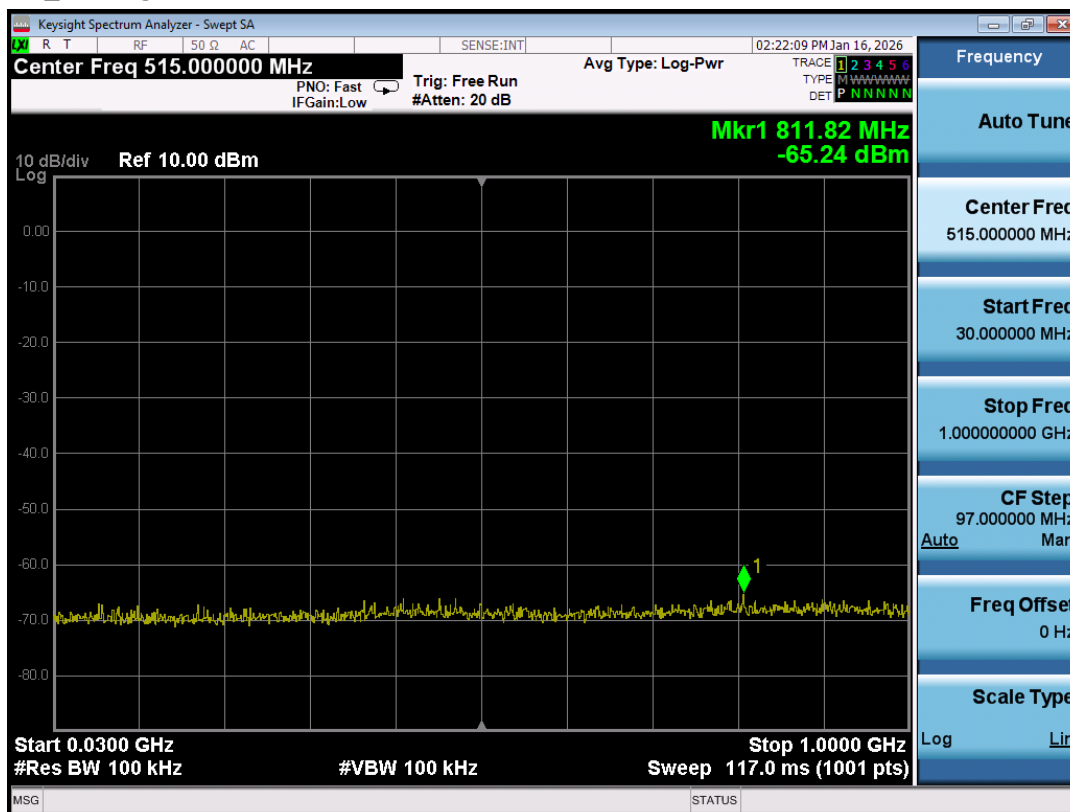
Product : IP CAMERA
Test Item : Transmitter Spurious Emission
Test Mode : Mode 2 : Transmit (802.11g 6Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (μW/MHz)	Limit (μW/MHz)	Result
		dBm/MHz	μW/MHz	dBm/MHz	μW/MHz			
2412	30 ~ 1000	-55.210	0.0030	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-39.300	0.1175	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-16.840	20.7014	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-43.480	0.0449	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-47.680	0.0171	--	--	--	≤ 2.5	Pass
2472	30 ~ 1000	-55.540	0.0028	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-34.930	0.3214	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-37.460	0.1795	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-16.610	21.8273	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-37.790	0.1663	--	--	--	≤ 2.5	Pass

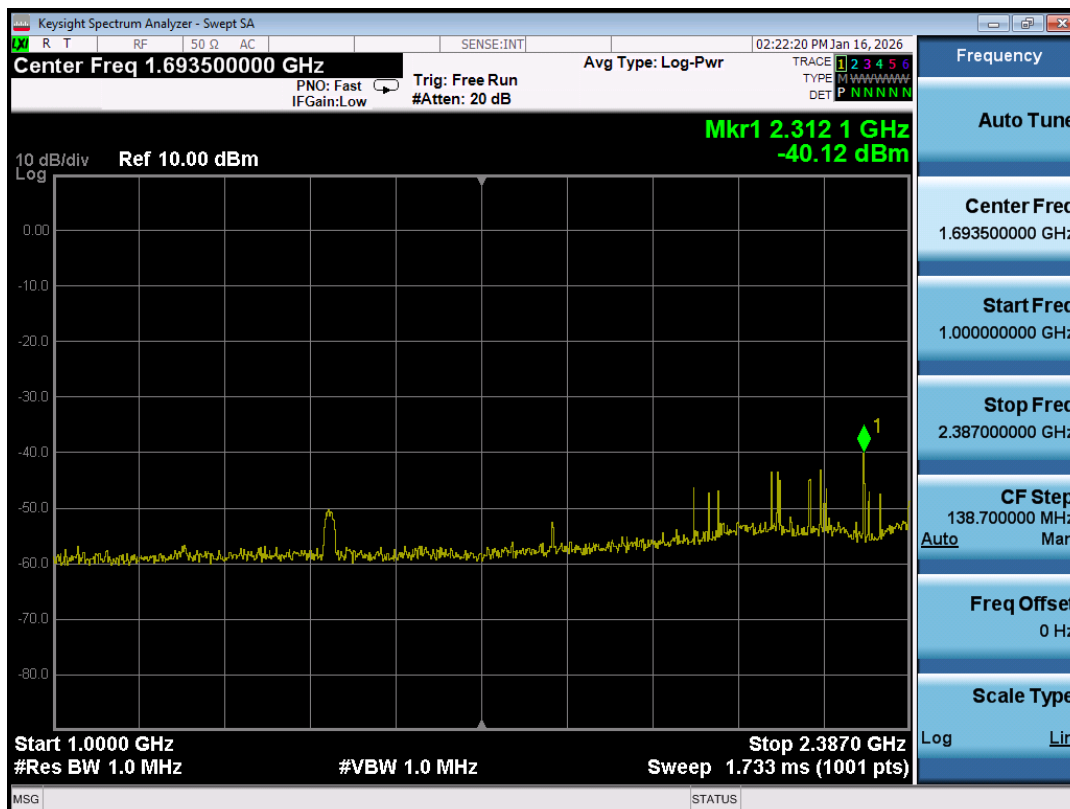
Note:

- (1) The frequency(30~1000MHz) test unit is μW/100kHz : $\mu\text{W}/\text{MHz} = \text{Measured Value}(\mu\text{W}/100\text{kHz}) * 10$
- (2) Actual value = Reading value + cable loss
- (3) The spectrum plots are attached on the following pages.

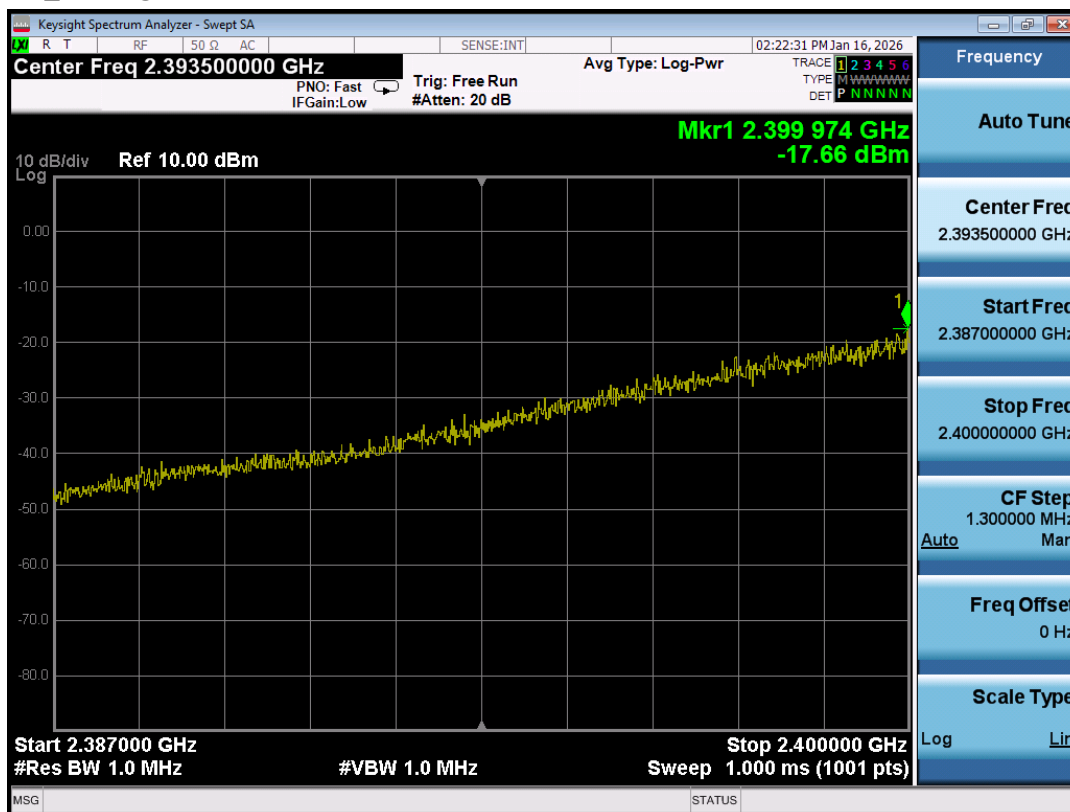
Chain A_802.11g 2412MHz ; 30 ~ 1000 MHz



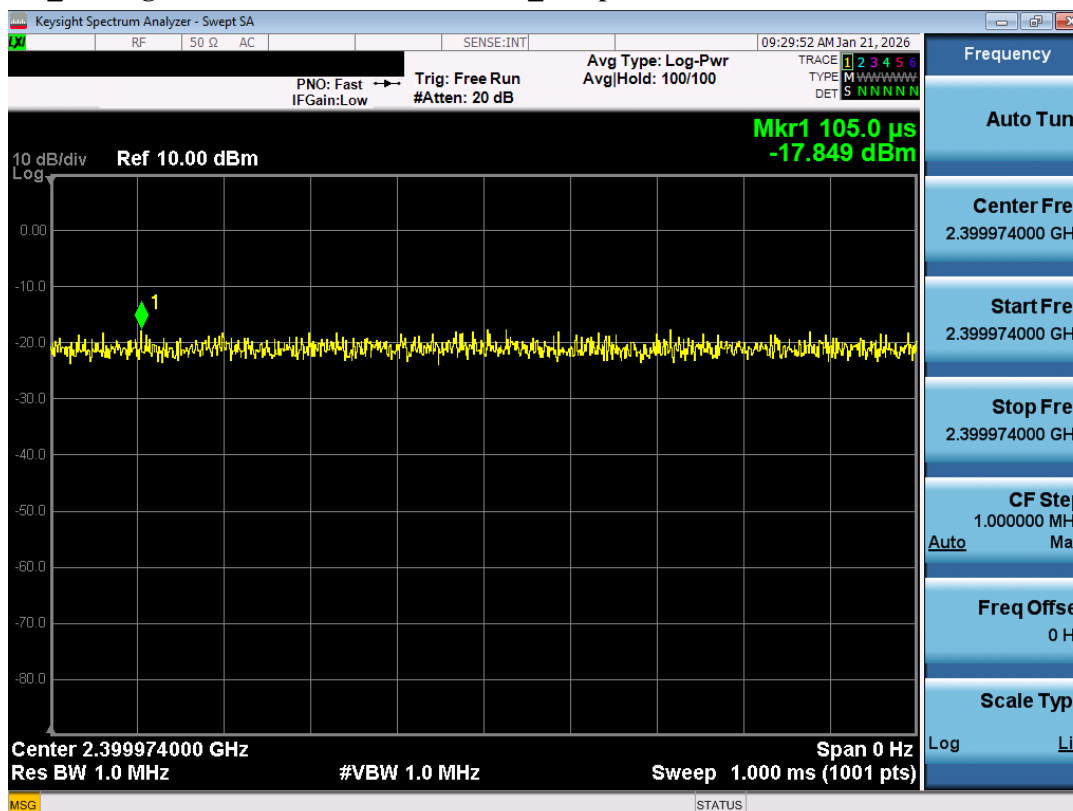
Chain A_802.11g 2412MHz ; 1000 ~ 2387 MHz



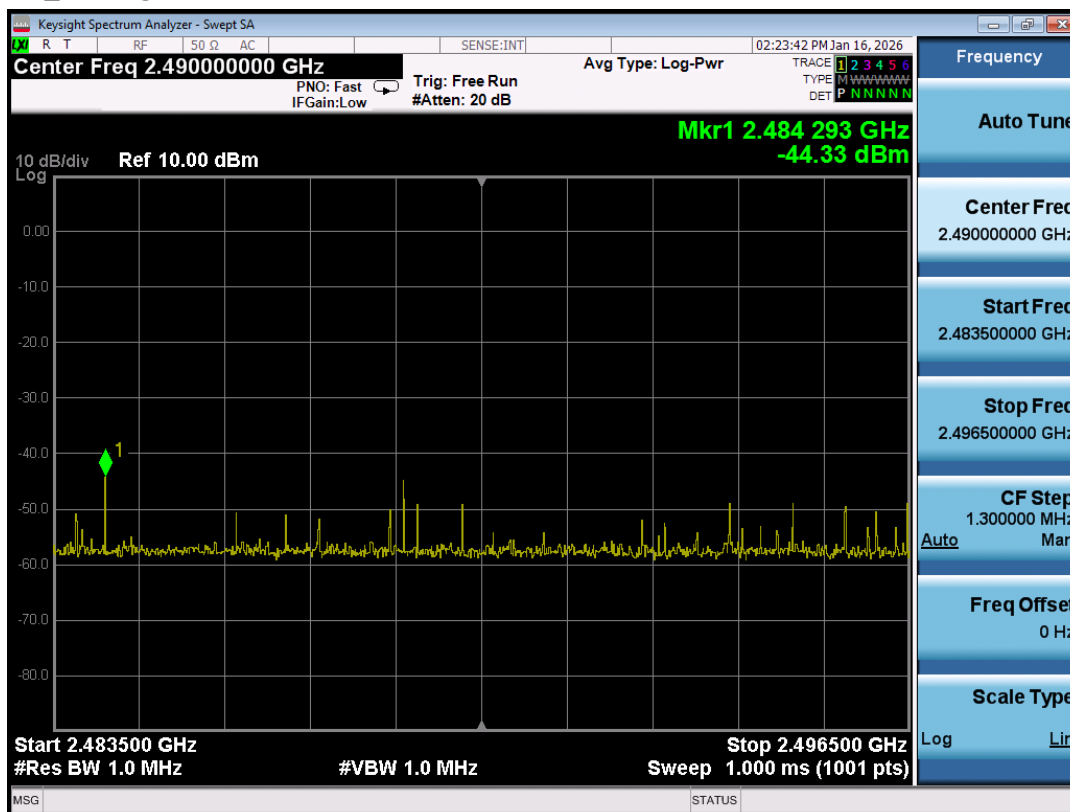
Chain A_802.11g 2412MHz; 2387 ~ 2400 MHz



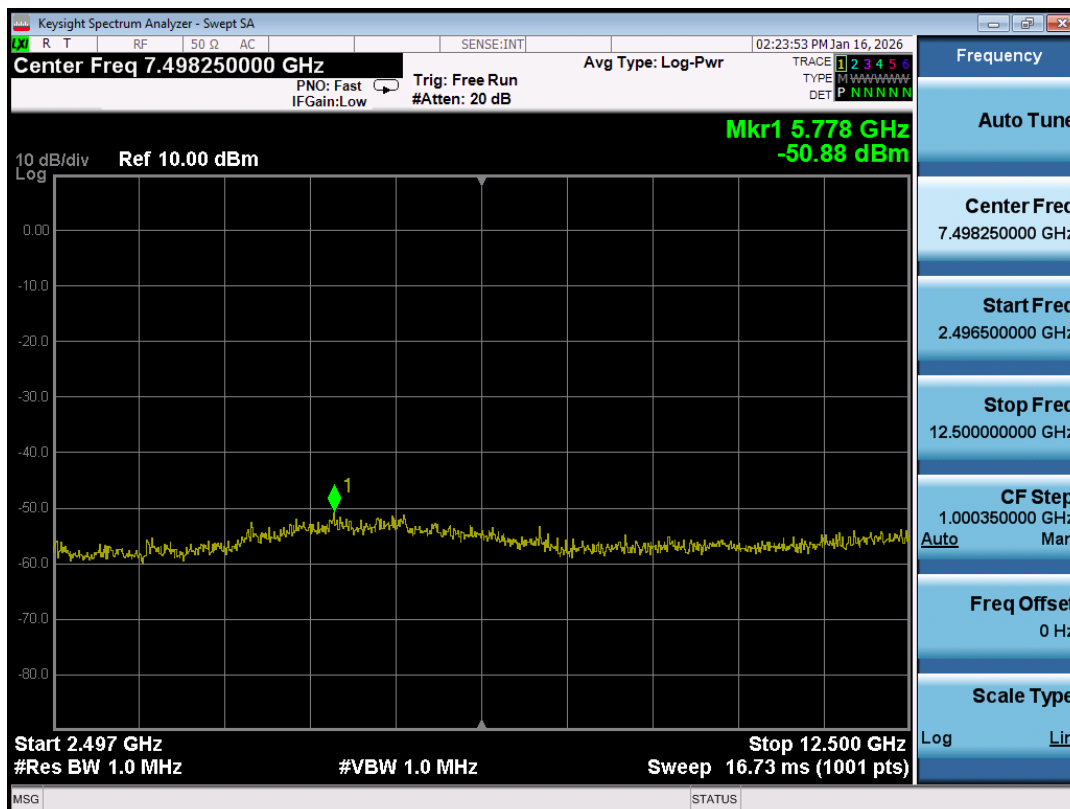
Chain A_802.11g 2412MHz; 2387 ~ 2400 MHz _Sample



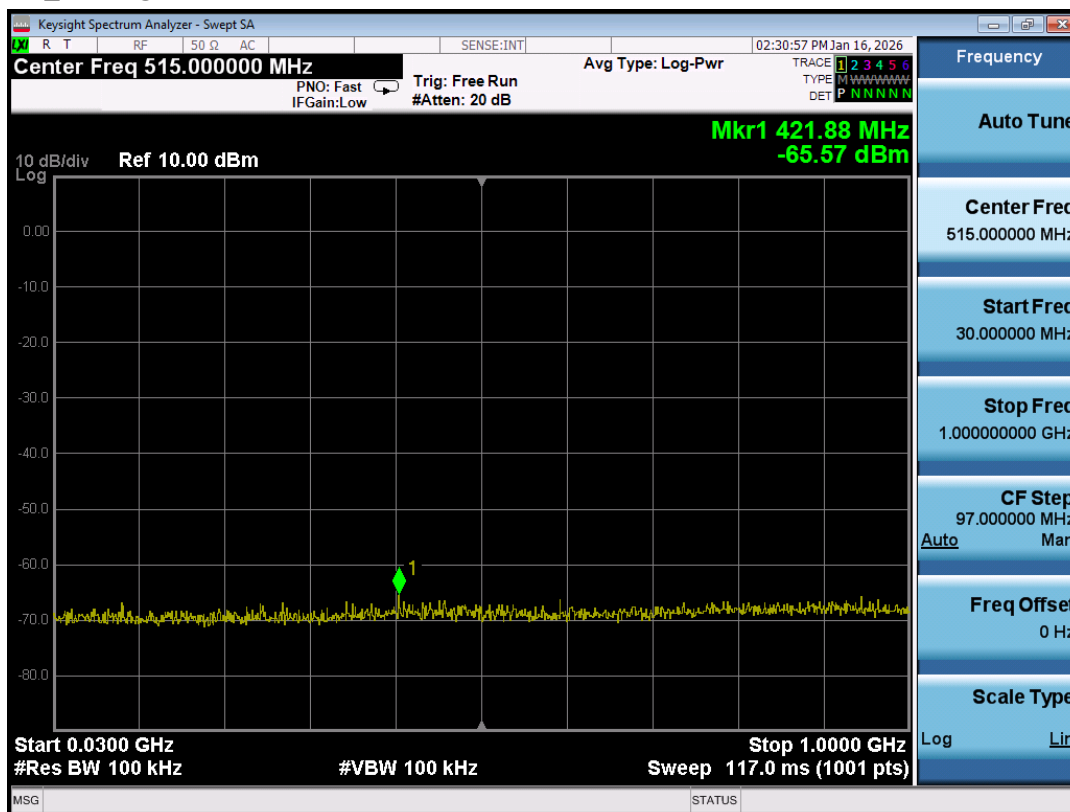
Chain A_802.11g 2412MHz; 2483.5 ~ 2496.5 MHz



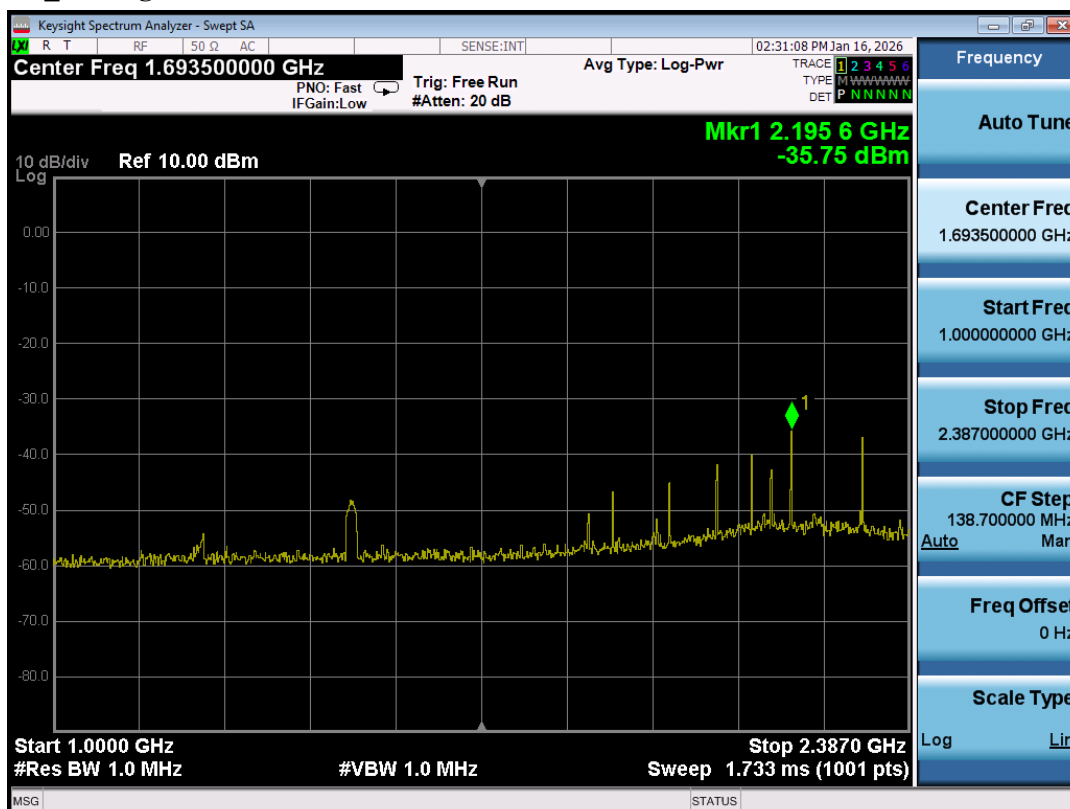
Chain A_802.11g 2412MHz; 2496.5 ~ 12500 MHz



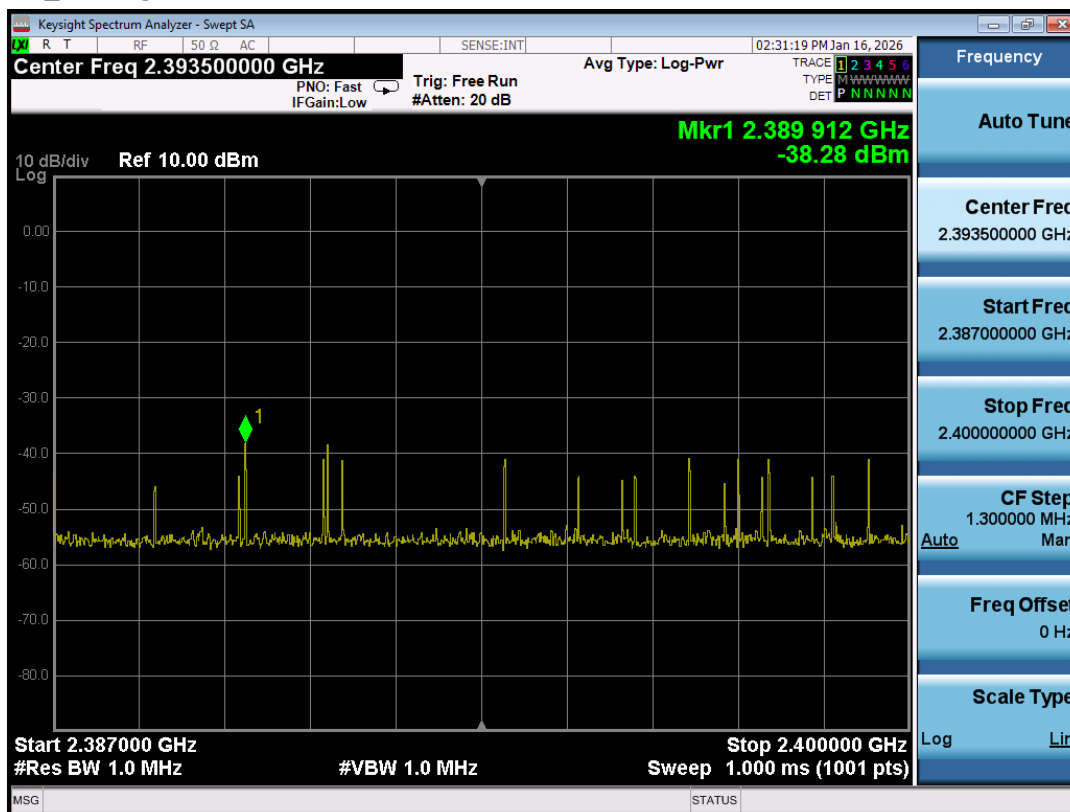
Chain A_802.11g 2472MHz ; 30 ~ 1000 MHz



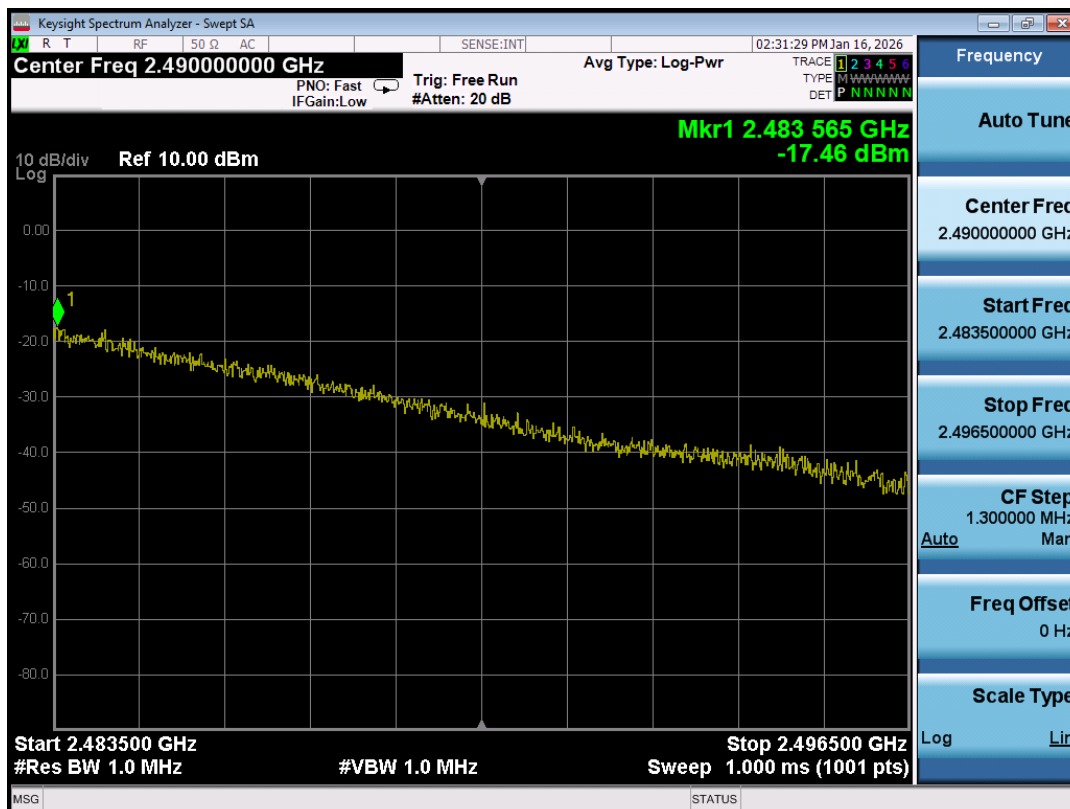
Chain A_802.11g 2472MHz ; 1000 ~ 2387 MHz



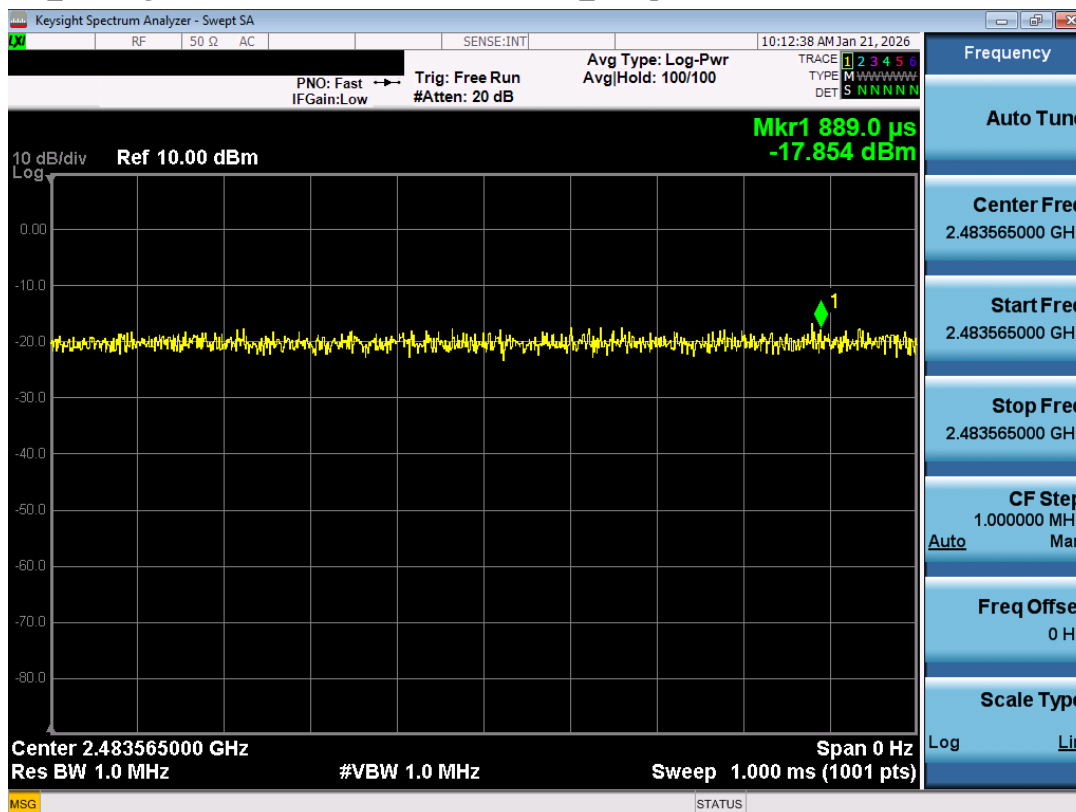
Chain A_802.11g 2472MHz ; 2387 ~ 2400 MHz



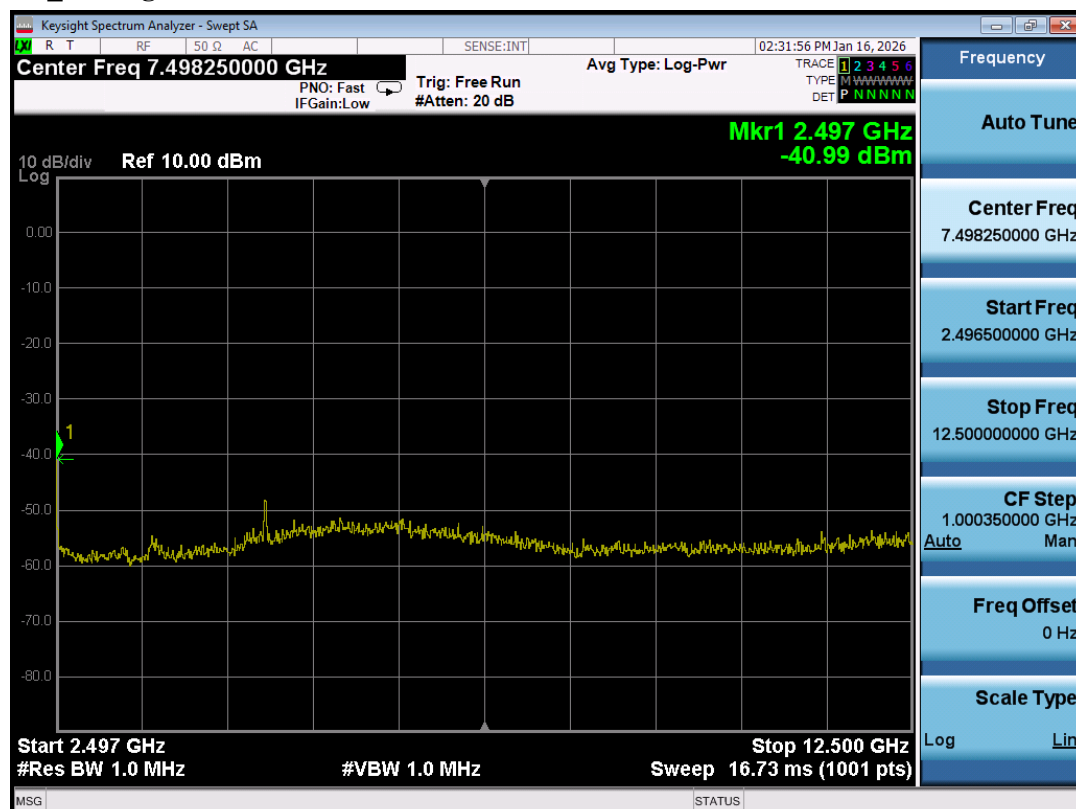
Chain A_802.11g 2472MHz ; 2483.5 ~ 2496.5 MHz



Chain A_802.11g 2472MHz ; 2483.5 ~ 2496.5 MHz _Sample



Chain A_802.11g 2472MHz ; 2496.5 ~ 12500 MHz



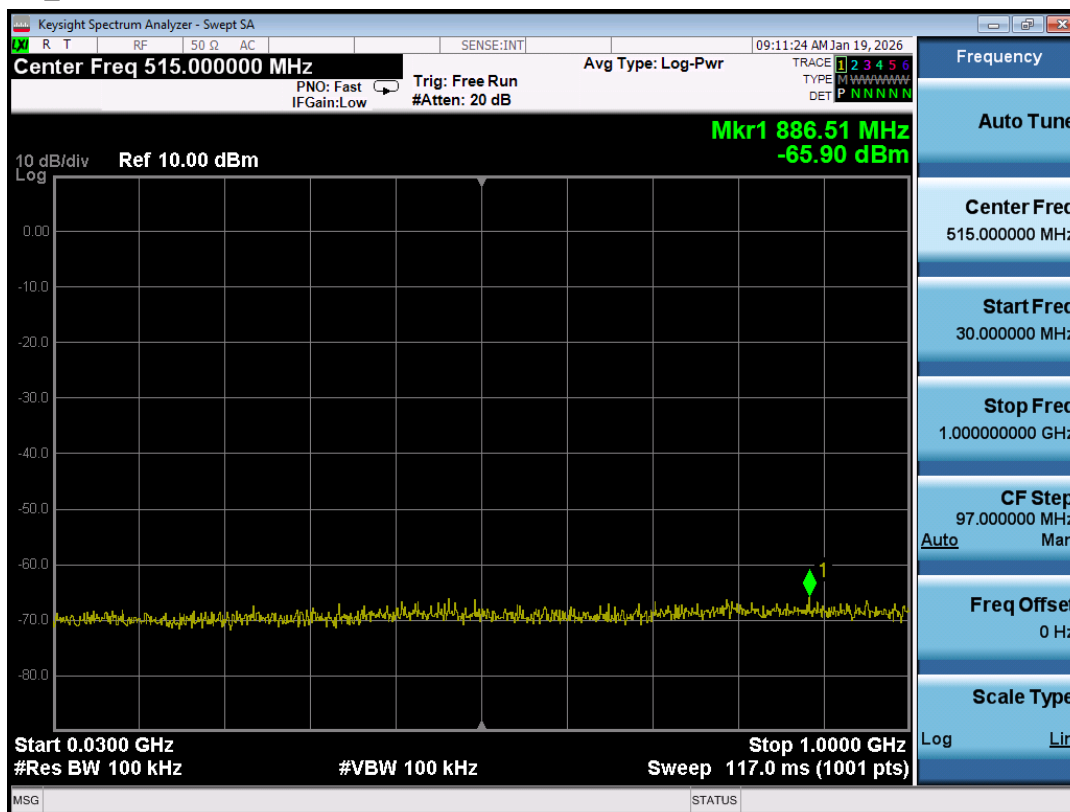
Product : IP CAMERA
Test Item : Transmitter Spurious Emission
Test Mode : Mode 3 : Transmit (802.11n HT20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (μW/MHz)	Limit (μW/MHz)	Result
		dBm/MHz	μW/MHz	dBm/MHz	μW/MHz			
2412	30 ~ 1000	-55.870	0.0026	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-41.120	0.0773	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-16.970	20.0909	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-48.340	0.0147	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-48.270	0.0149	--	--	--	≤ 2.5	Pass
2472	30 ~ 1000	-56.000	0.0025	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-48.640	0.0137	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-46.100	0.0245	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-17.170	19.1867	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-38.170	0.1524	--	--	--	≤ 2.5	Pass

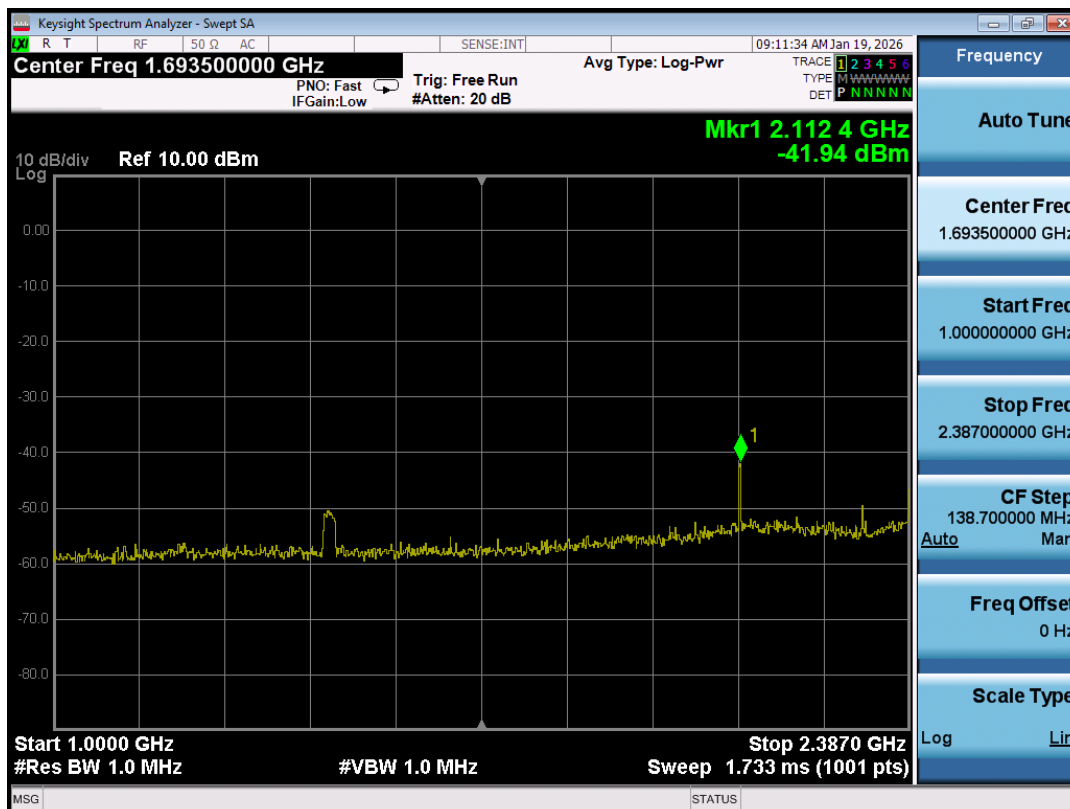
Note:

- (1) The frequency(30~1000MHz) test unit is μW/100kHz : $\mu\text{W}/\text{MHz} = \text{Measured Value}(\mu\text{W}/100\text{kHz}) * 10$
- (2) Actual value = Reading value + cable loss
- (3) The spectrum plots are attached on the following pages.

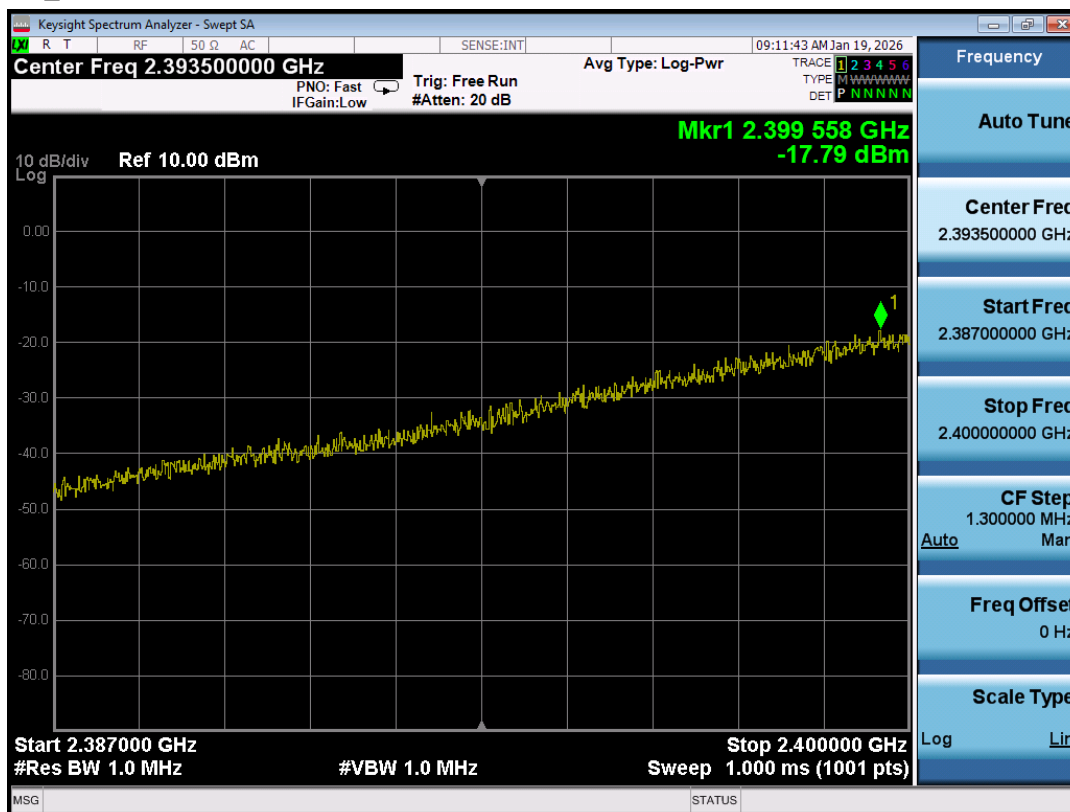
Chain A_802.11n HT20 2412MHz ; 30 ~ 1000 MHz



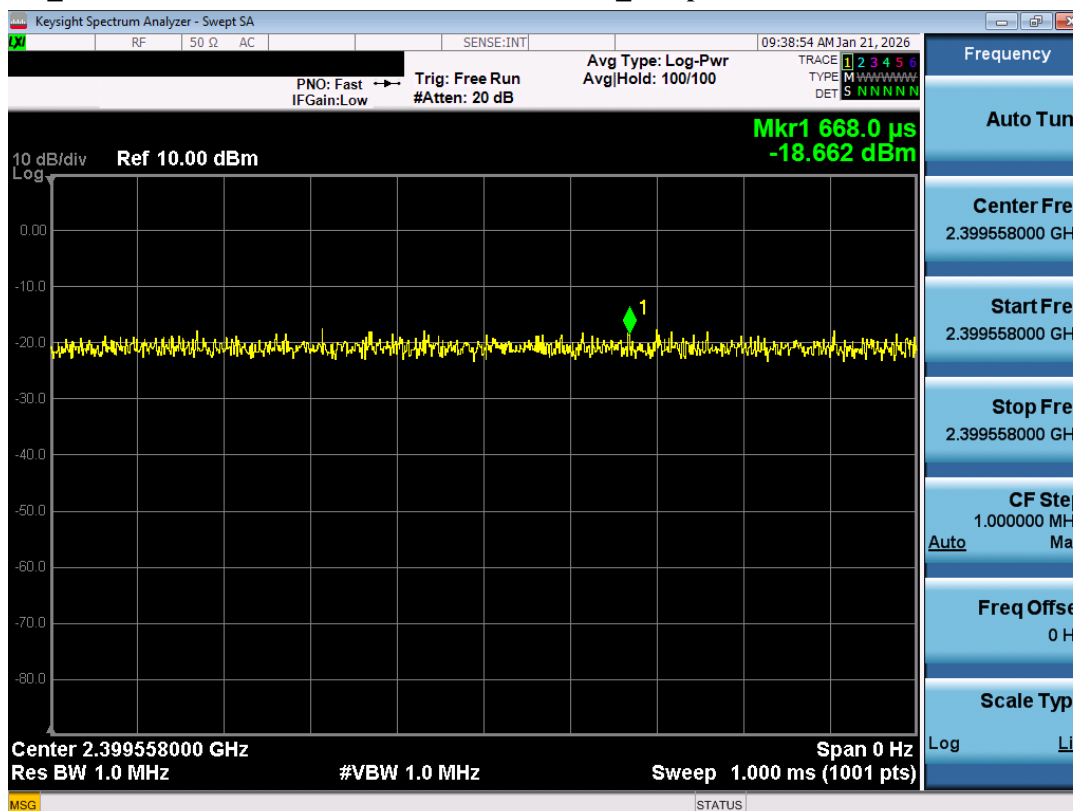
Chain A_802.11n HT20 2412MHz ; 1000 ~ 2387 MHz



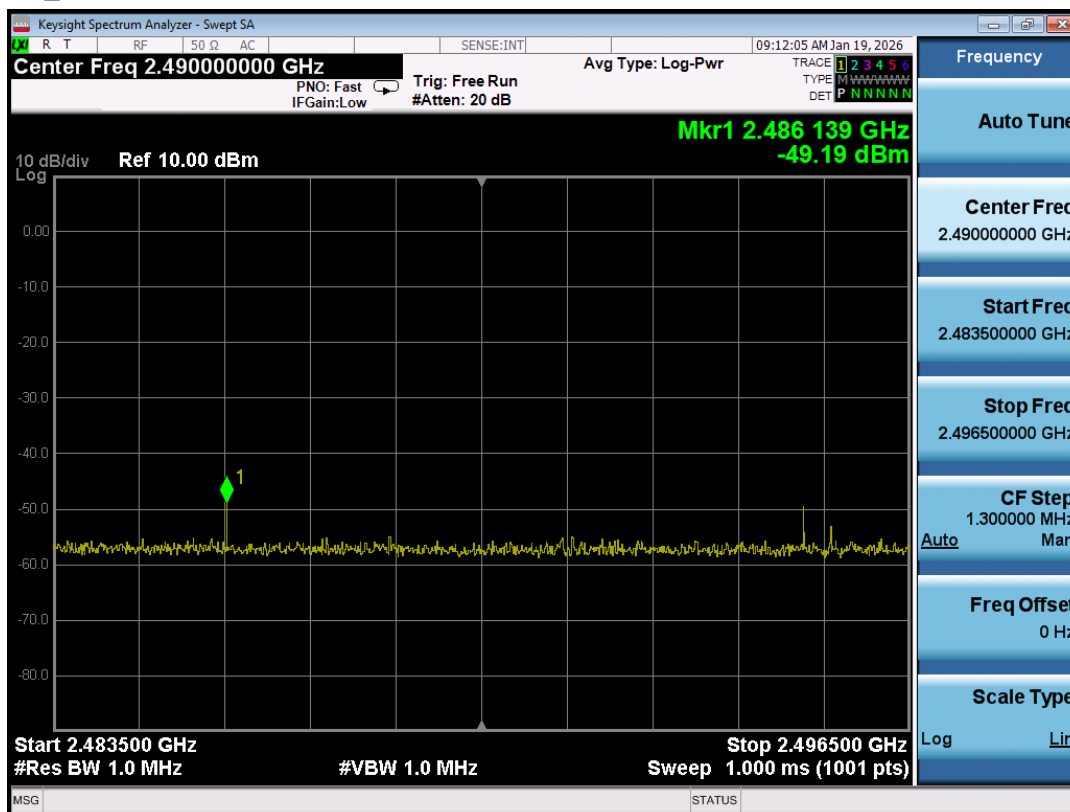
Chain A_802.11n HT20 2412MHz ; 2387 ~ 2400 MHz



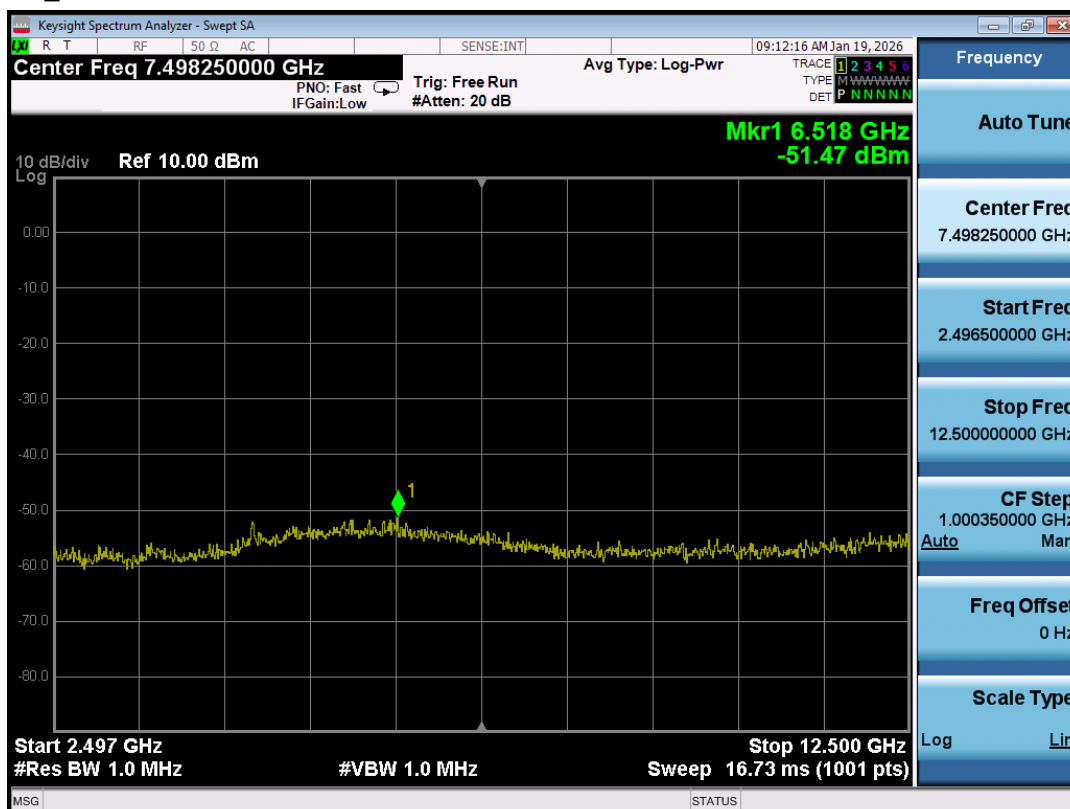
Chain A_802.11n HT20 2412MHz ; 2387 ~ 2400 MHz _Sample



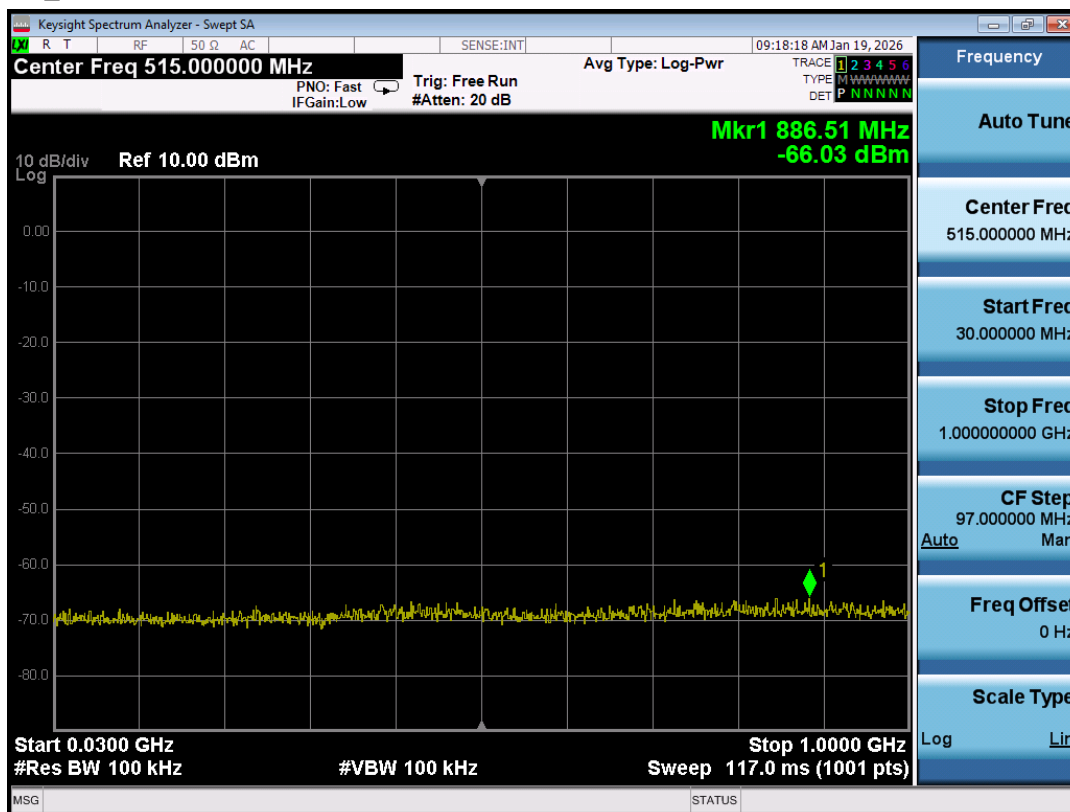
Chain A_802.11n HT20 2412MHz ; 2483.5 ~ 2496.5 MHz



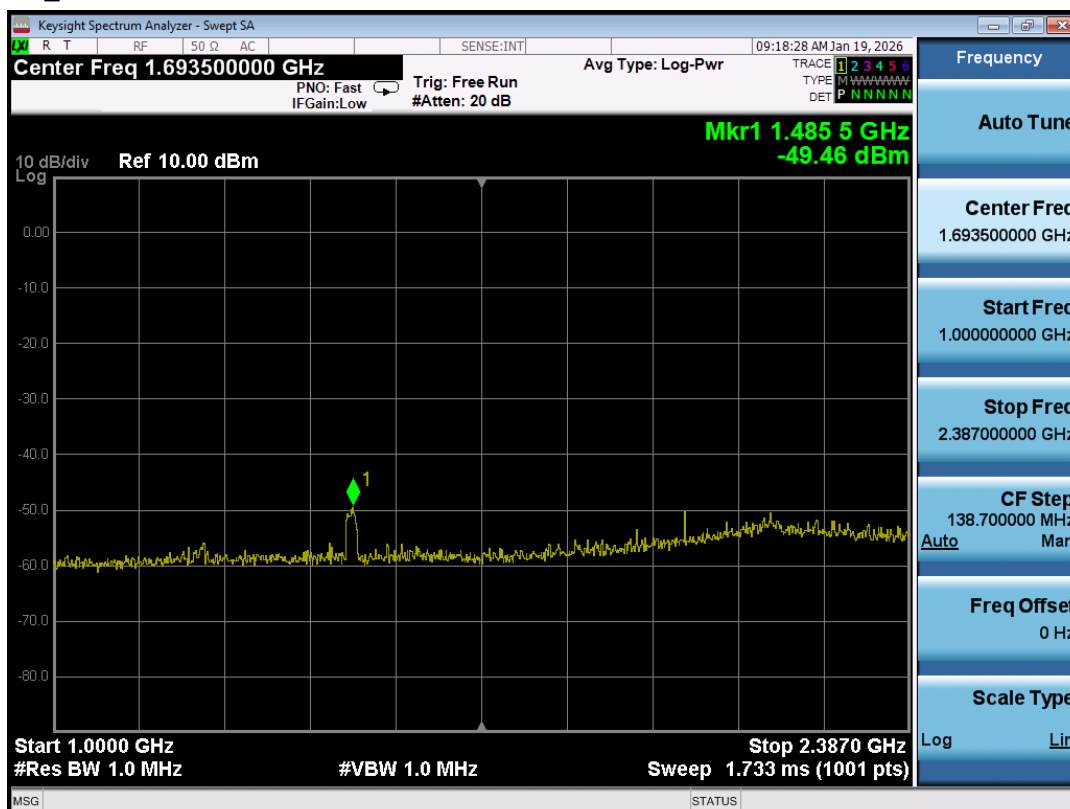
Chain A_802.11n HT20 2412MHz ; 2496.5 ~ 12500 MHz



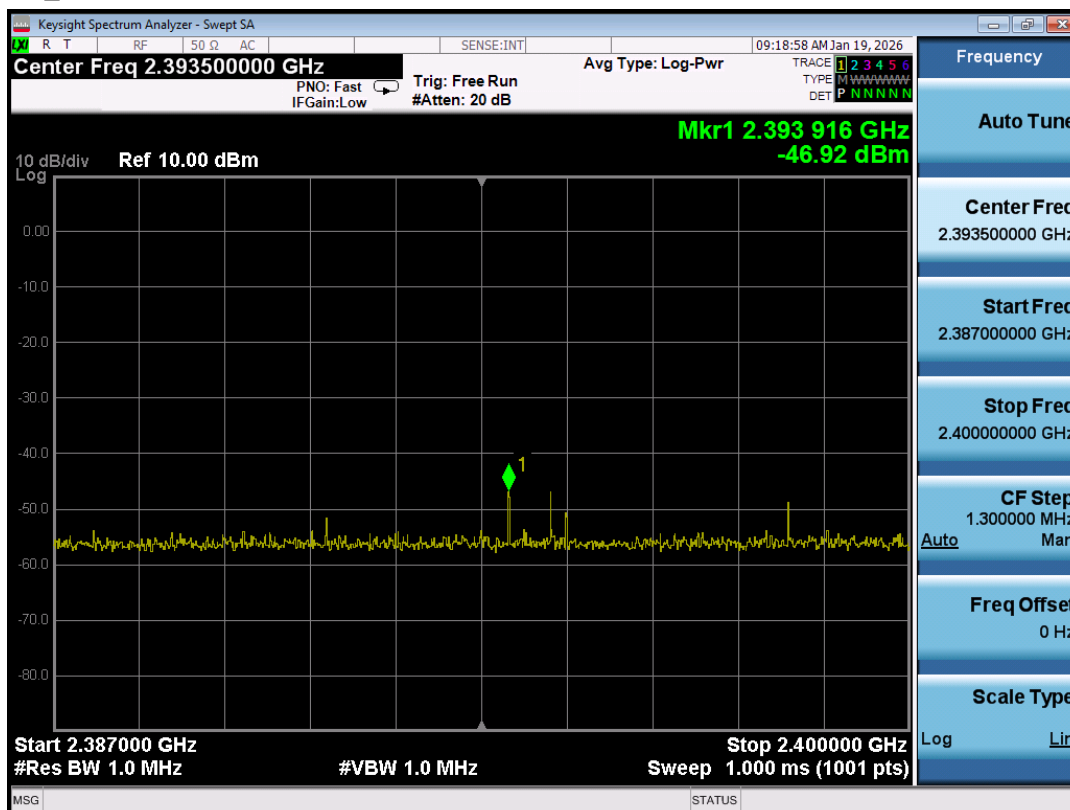
Chain A_802.11n HT20 2472MHz ; 30 ~ 1000 MHz



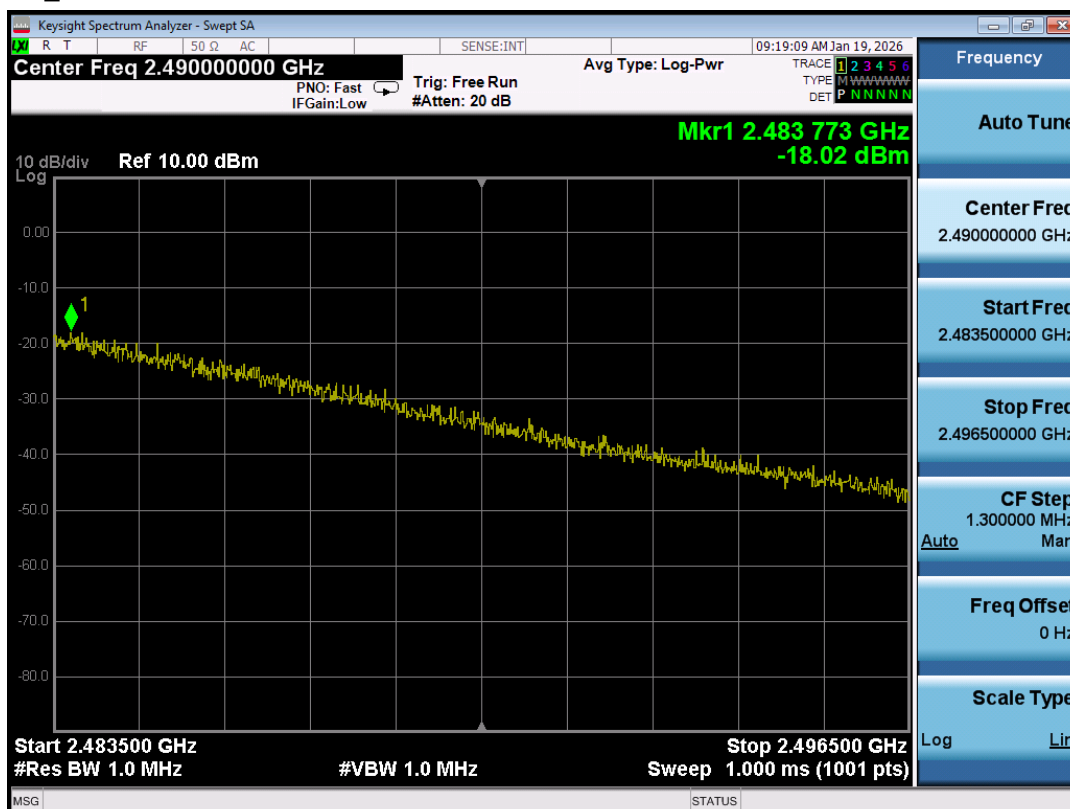
Chain A_802.11n HT20 2472MHz ; 1000 ~ 2387 MHz



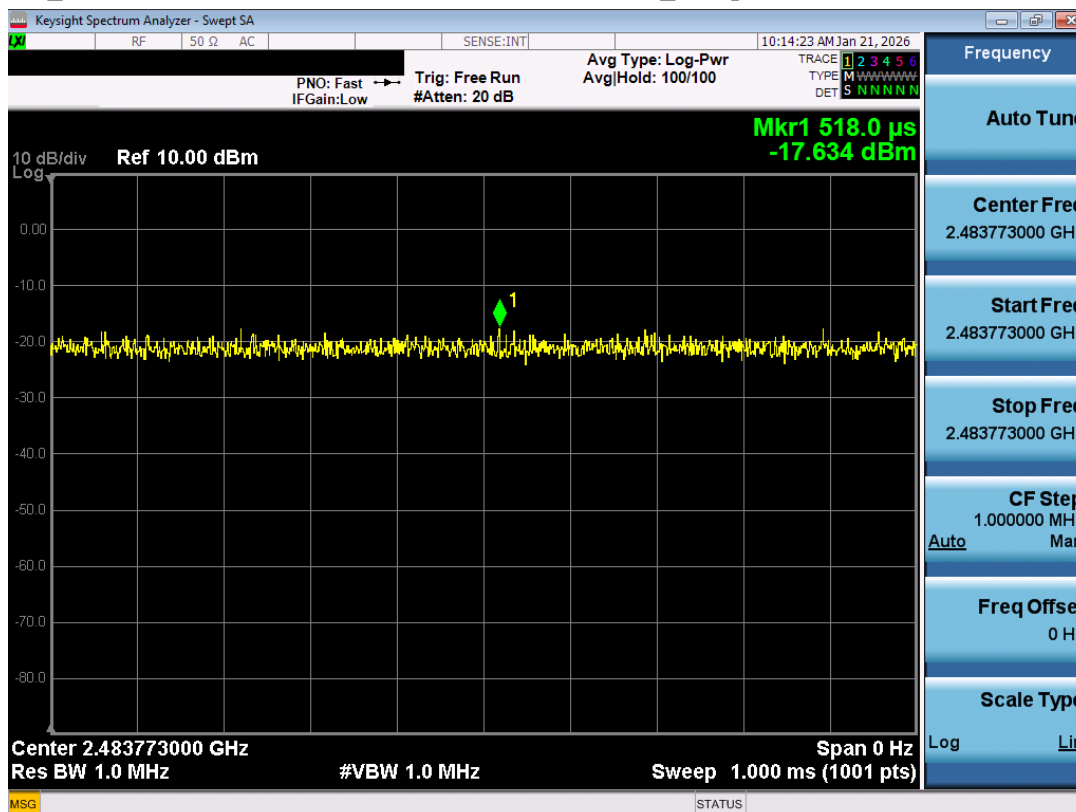
Chain A_802.11n HT20 2472MHz ; 2387 ~ 2400 MHz



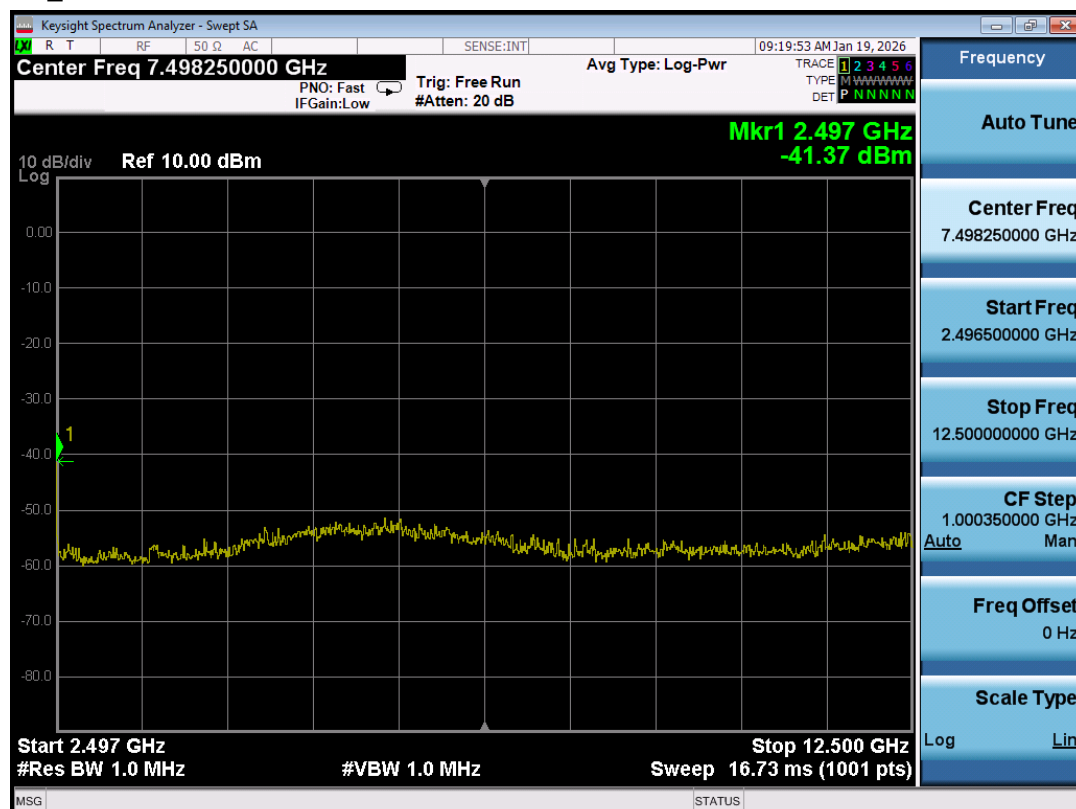
Chain A_802.11n HT20 2472MHz ; 2483.5 ~ 2496.5 MHz



Chain A_802.11n HT20 2472MHz ; 2483.5 ~ 2496.5 MHz _Sample



Chain A_802.11n HT20 2472MHz ; 2496.5 ~ 12500 MHz



Product : IP CAMERA
Test Item : Transmitter Spurious Emission
Test Mode : Mode 4 : Transmit (802.11n HT40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (μW/MHz)	Limit (μW/MHz)	Result
		dBm/MHz	μW/MHz	dBm/MHz	μW/MHz			
2422	30 ~ 1000	-55.200	0.0030	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-36.810	0.2084	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-17.700	16.9824	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-43.800	0.0417	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-45.500	0.0282	--	--	--	≤ 2.5	Pass
2462	30 ~ 1000	-54.990	0.0032	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-40.140	0.0968	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-37.800	0.1660	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-16.690	21.4289	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-37.890	0.1626	--	--	--	≤ 2.5	Pass

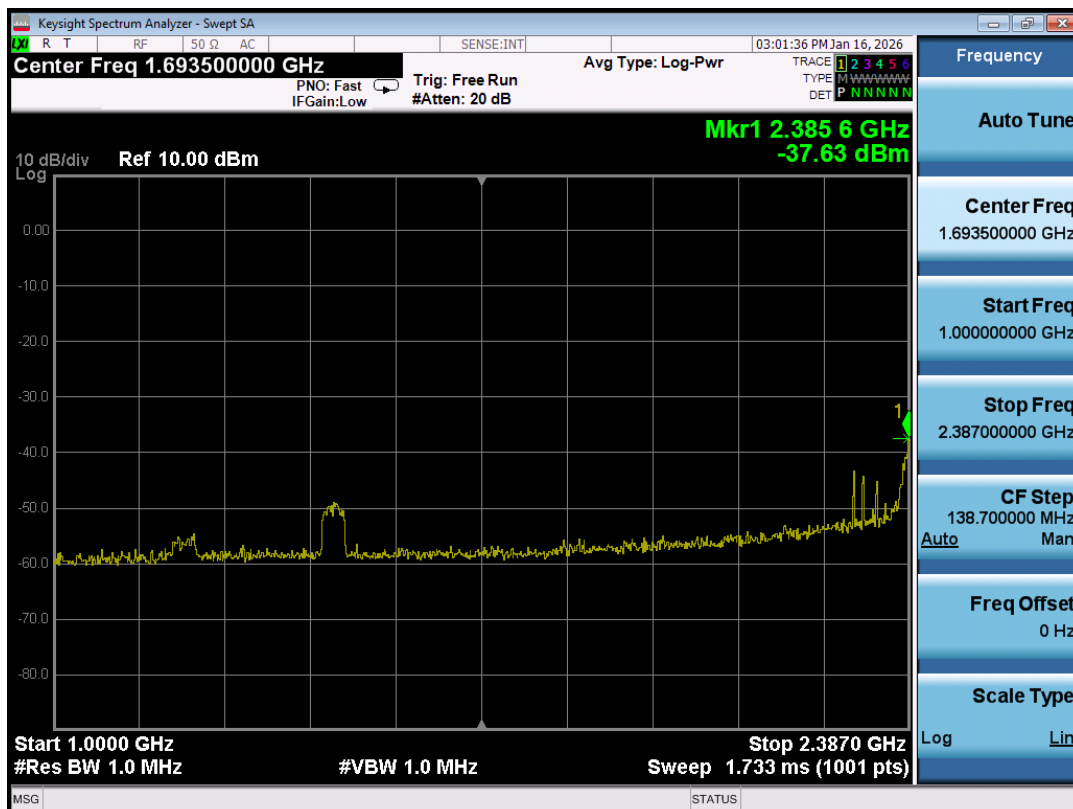
Note:

- (1) The frequency(30~1000MHz) test unit is μW/100kHz : $\mu\text{W}/\text{MHz} = \text{Measured Value}(\mu\text{W}/100\text{kHz}) * 10$
- (2) Actual value = Reading value + cable loss
- (3) The spectrum plots are attached on the following pages.

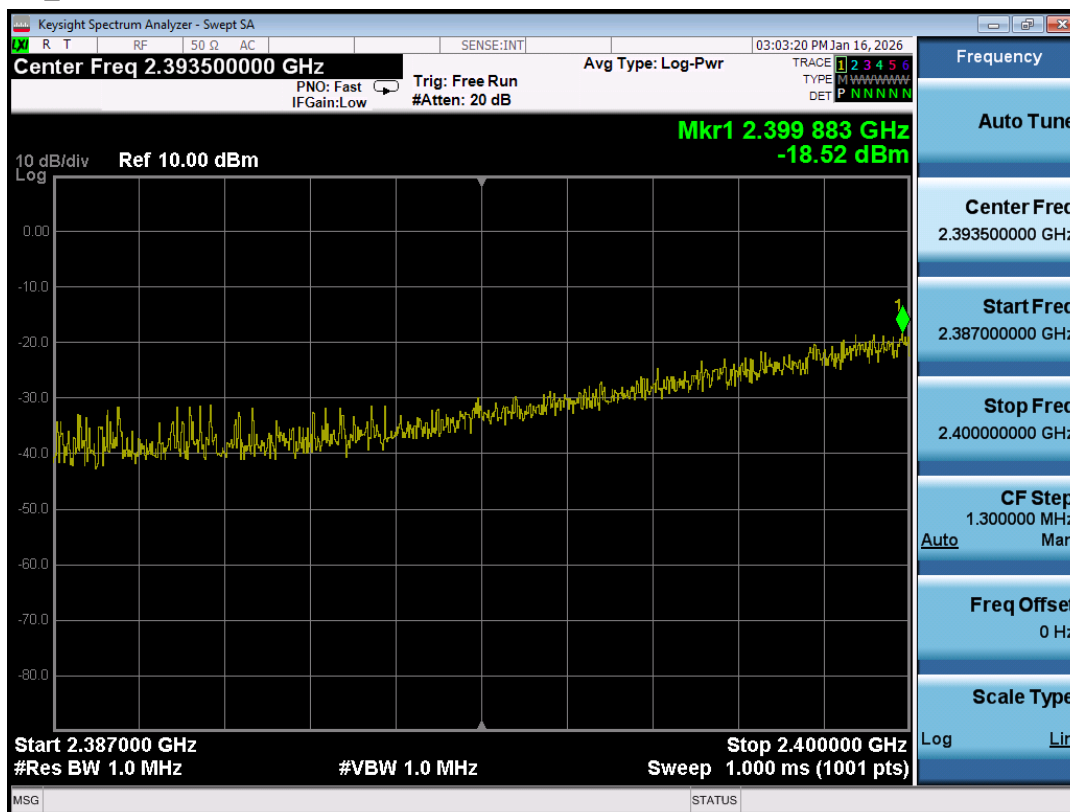
Chain A_802.11n HT40 2422MHz ; 30 ~ 1000 MHz



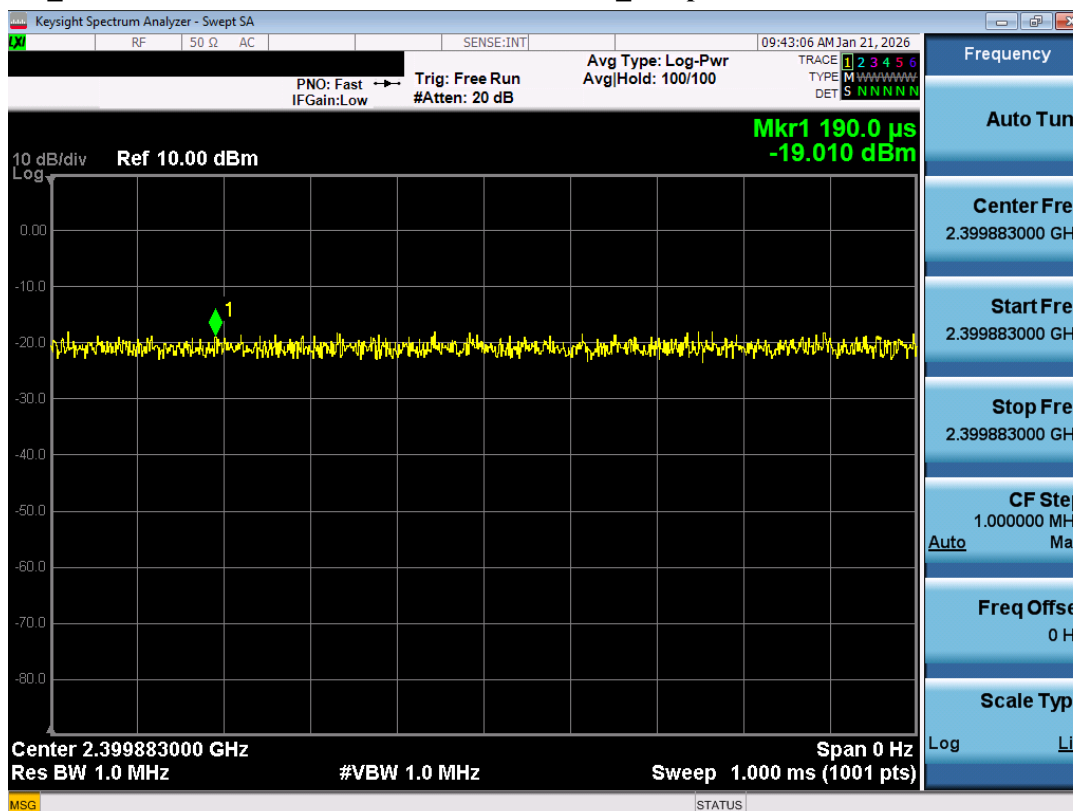
Chain A_802.11n HT40 2422MHz ; 1000 ~ 2387 MHz



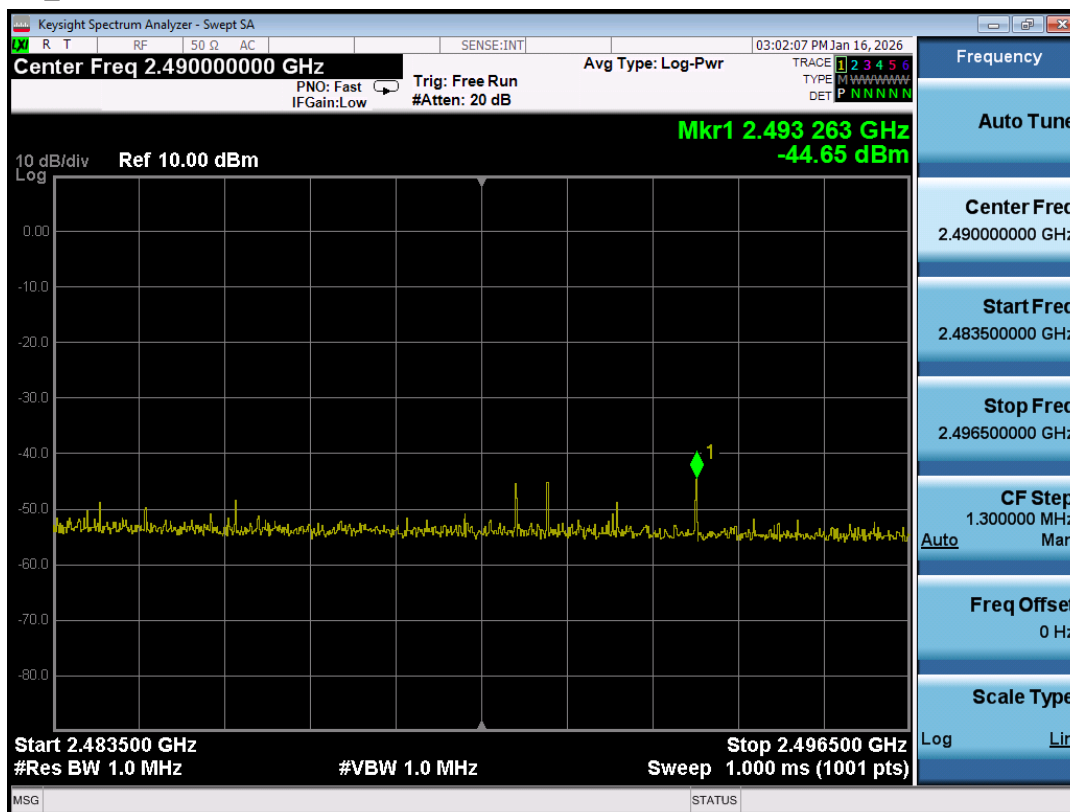
Chain A_802.11n HT40 2422MHz ; 2387 ~ 2400 MHz



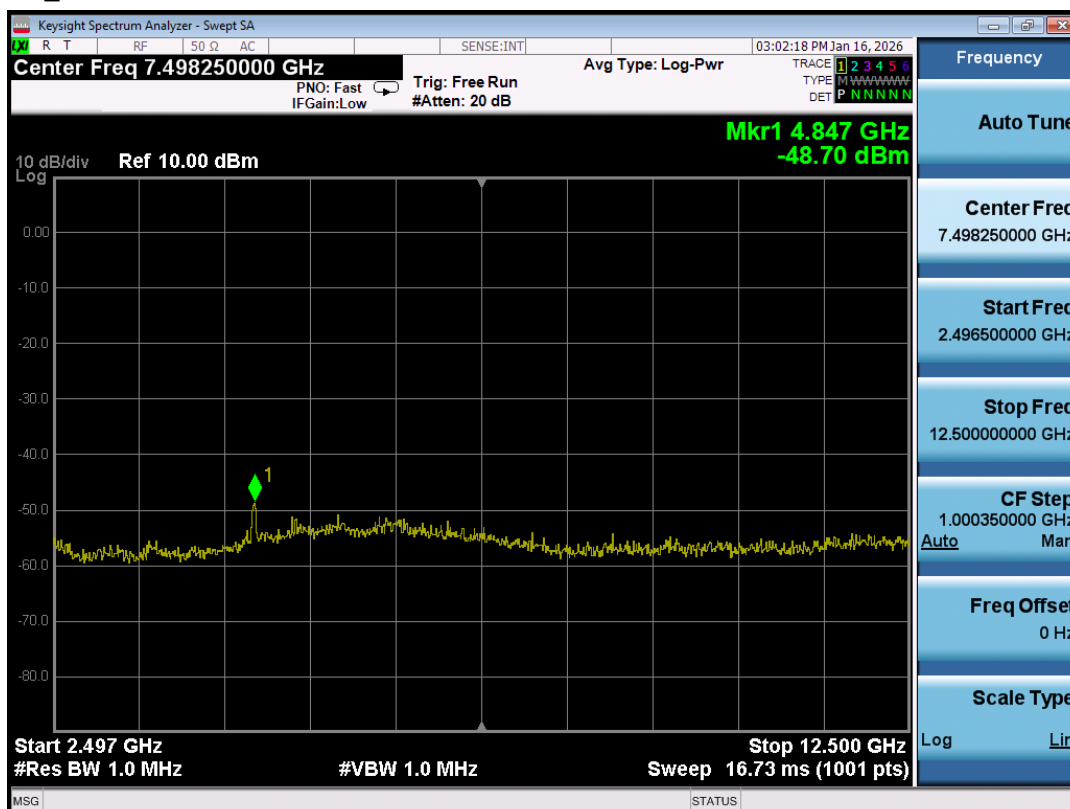
Chain A_802.11n HT40 2422MHz ; 2387 ~ 2400 MHz _Sample



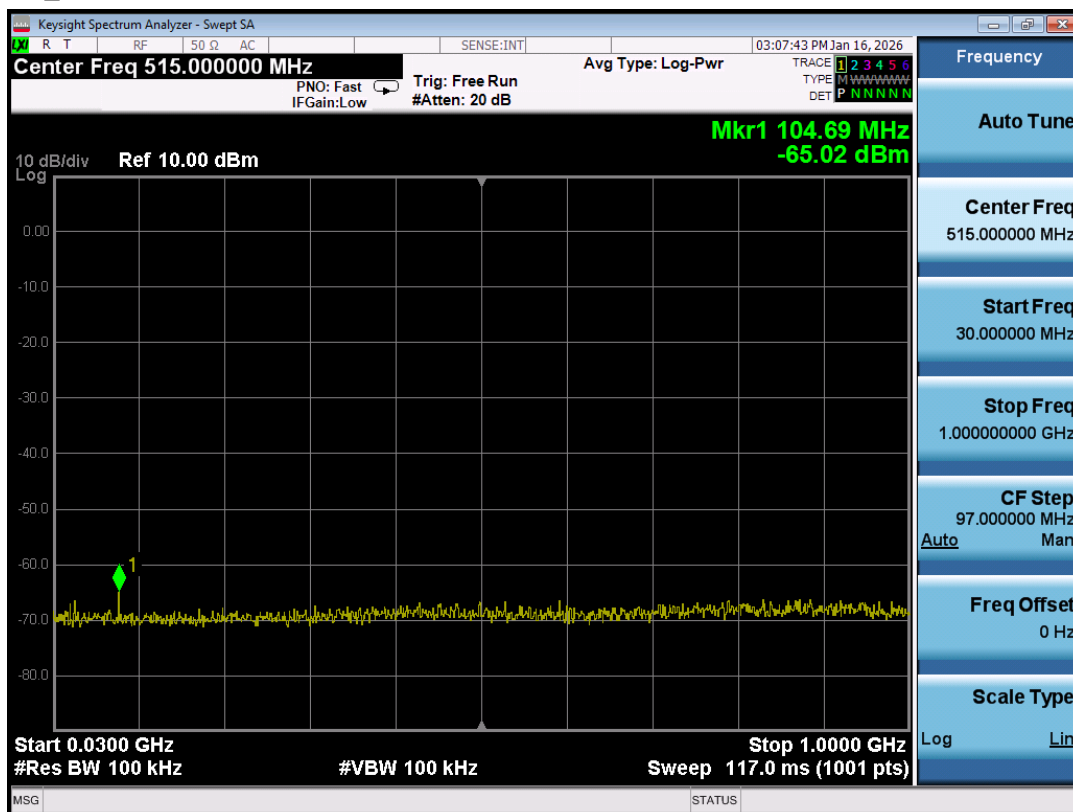
Chain A_802.11n HT40 2422MHz ; 2483.5 ~ 2496.5 MHz



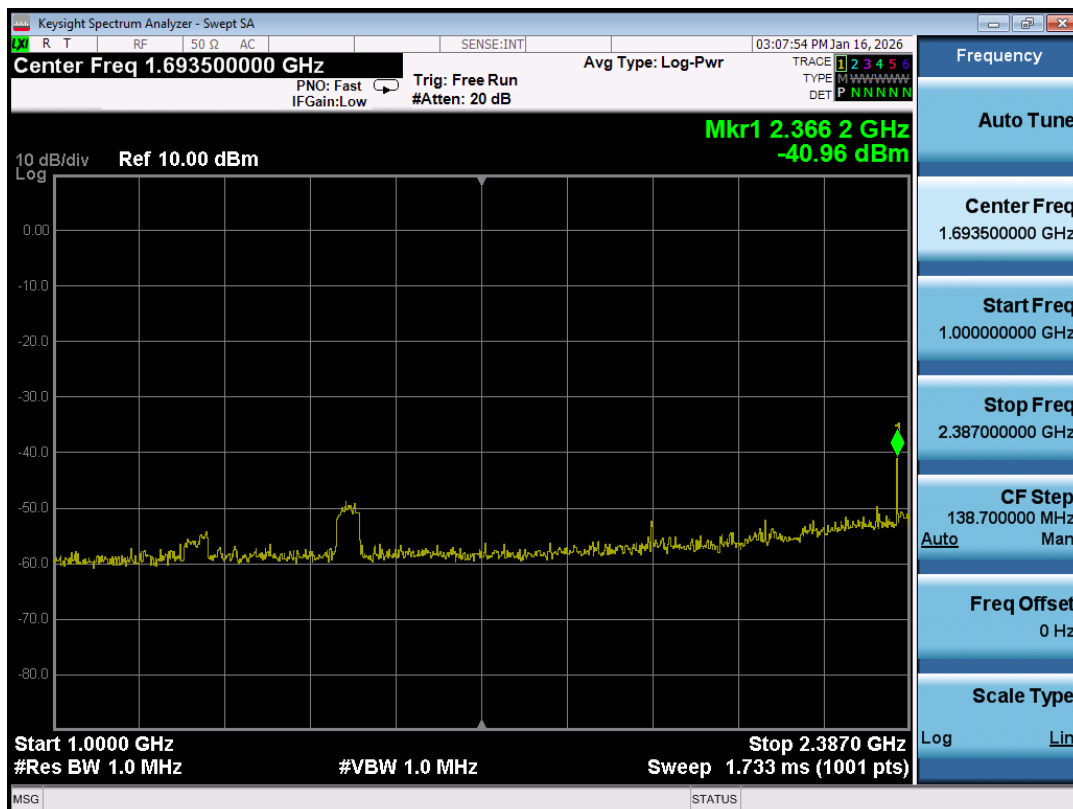
Chain A_802.11n HT40 2422MHz ; 2496.5 ~ 12500 MHz



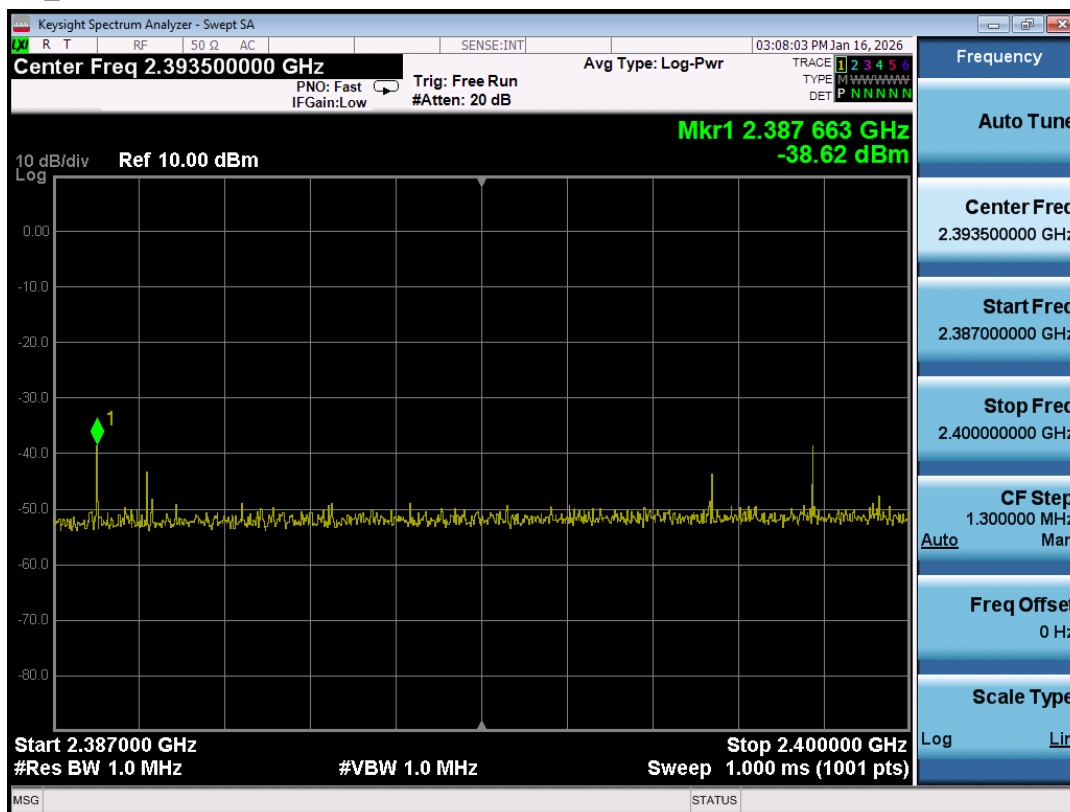
Chain A_802.11n HT40 2462MHz ; 30 ~ 1000 MHz



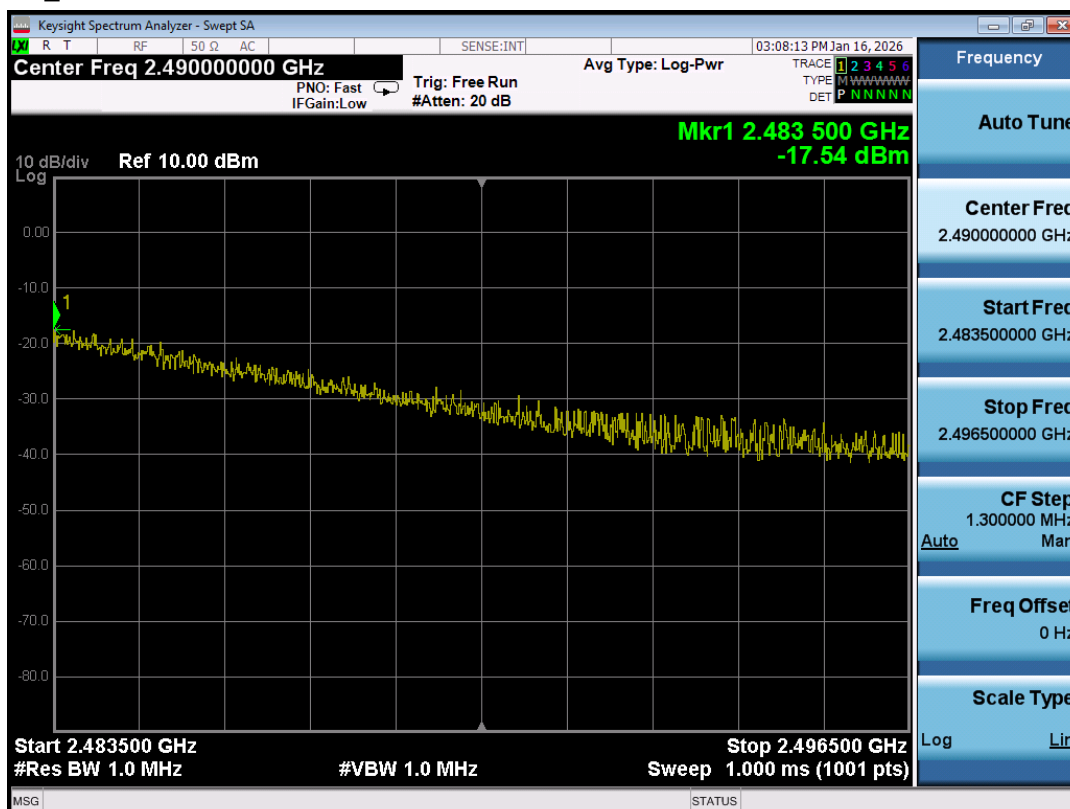
Chain A_802.11n HT40 2462MHz ; 1000 ~ 2387 MHz

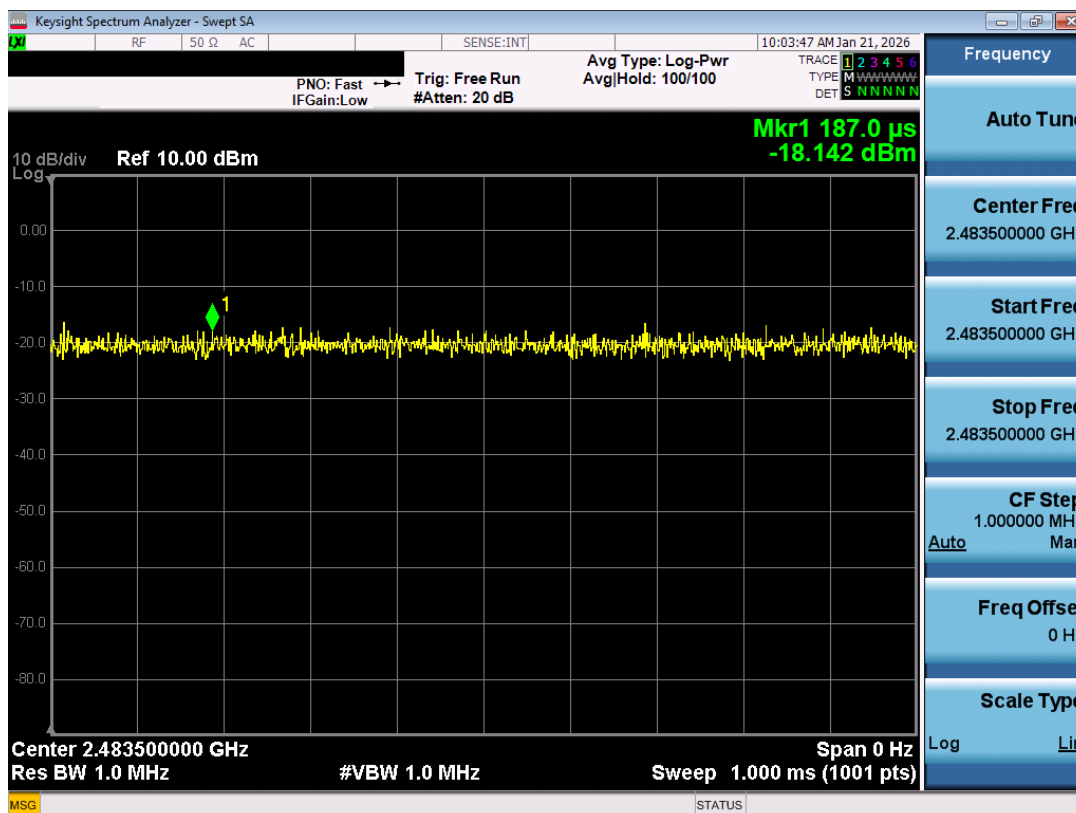


Chain A_802.11n HT40 2462MHz ; 2387 ~ 2400 MHz



Chain A_802.11n HT40 2462MHz ; 2483.5 ~ 2496.5 MHz





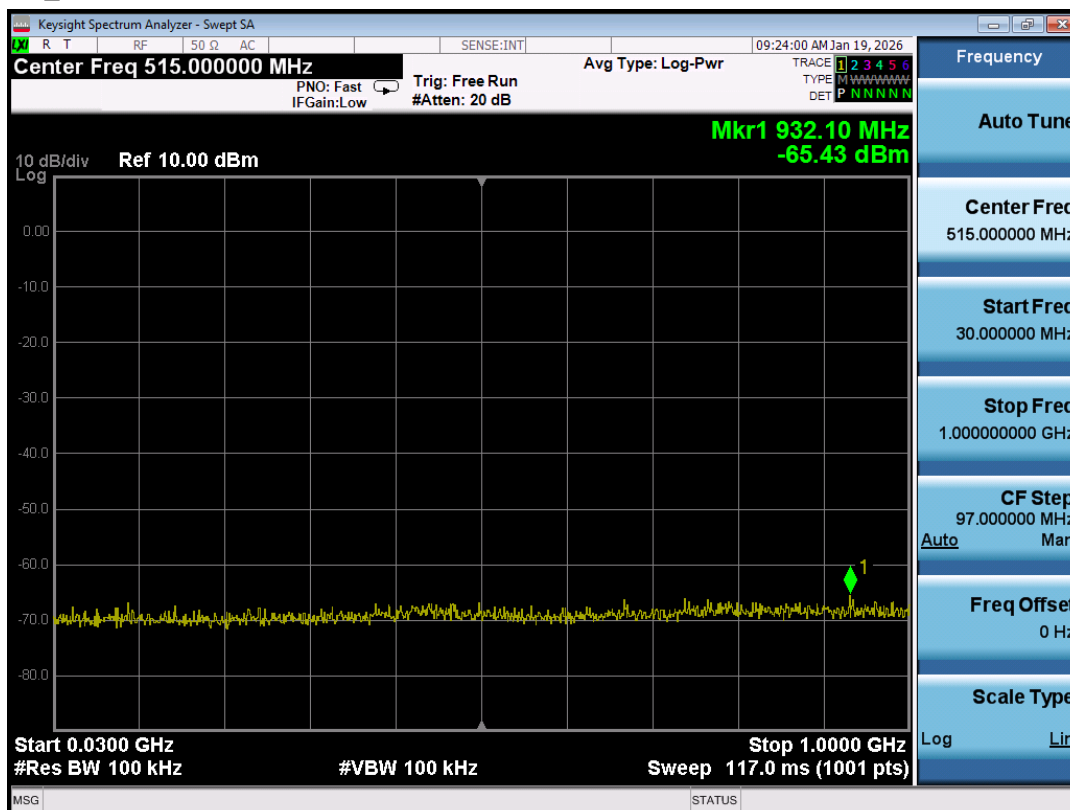
Product : IP CAMERA
Test Item : Transmitter Spurious Emission
Test Mode : Mode 5 : Transmit (802.11ax HE20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (μW/MHz)	Limit (μW/MHz)	Result
		dBm/MHz	μW/MHz	dBm/MHz	μW/MHz			
2412	30 ~ 1000	-55.400	0.0029	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-43.690	0.0428	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-17.030	19.8153	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-47.430	0.0181	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-48.280	0.0149	--	--	--	≤ 2.5	Pass
2472	30 ~ 1000	-55.580	0.0028	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-48.360	0.0146	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-46.620	0.0218	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-17.190	19.0985	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-36.760	0.2109	--	--	--	≤ 2.5	Pass

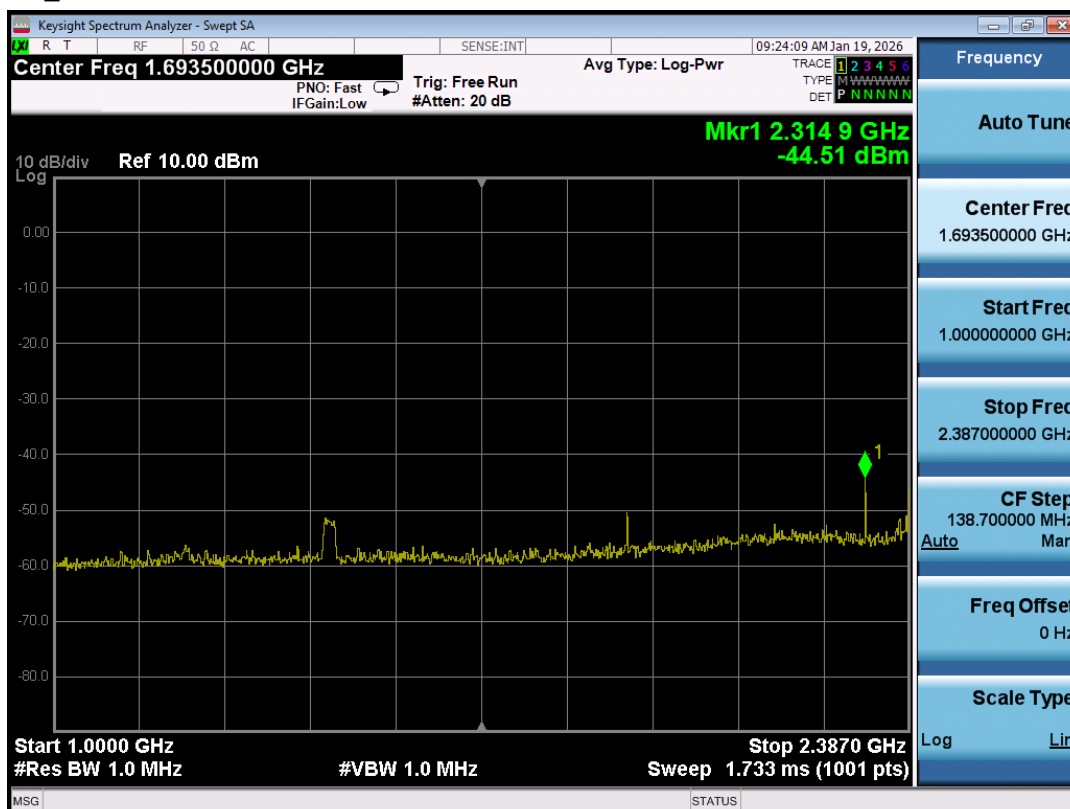
Note:

- (1) The frequency(30~1000MHz) test unit is μW/100kHz : $\mu\text{W}/\text{MHz} = \text{Measured Value}(\mu\text{W}/100\text{kHz}) * 10$
- (2) Actual value = Reading value + cable loss
- (3) The spectrum plots are attached on the following pages.

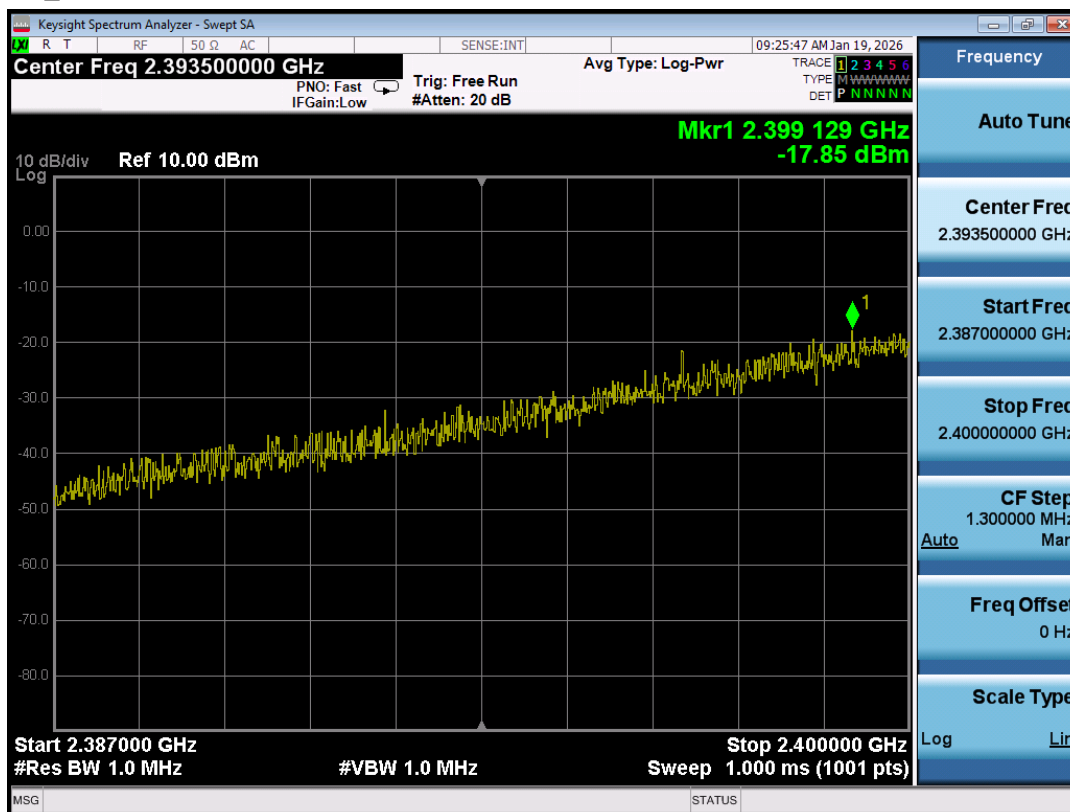
Chain A_802.11ax HE20 2412MHz ; 30 ~ 1000 MHz



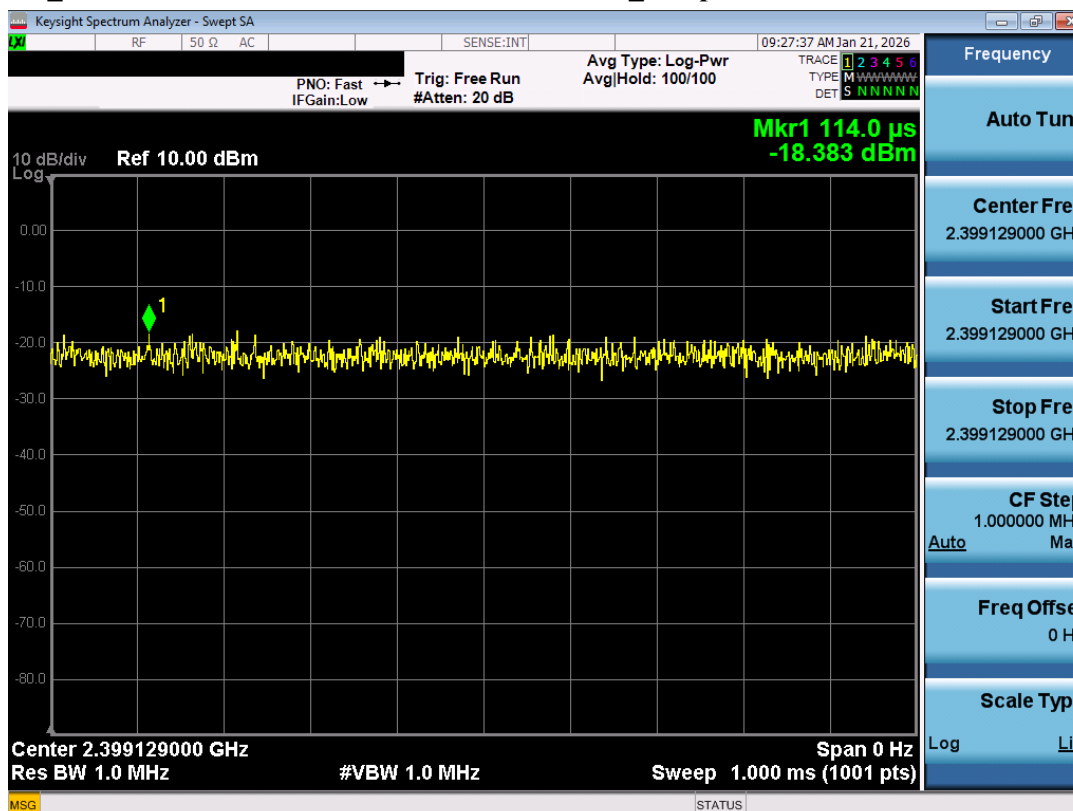
Chain A_802.11ax HE20 2412MHz ; 1000 ~ 2387 MHz



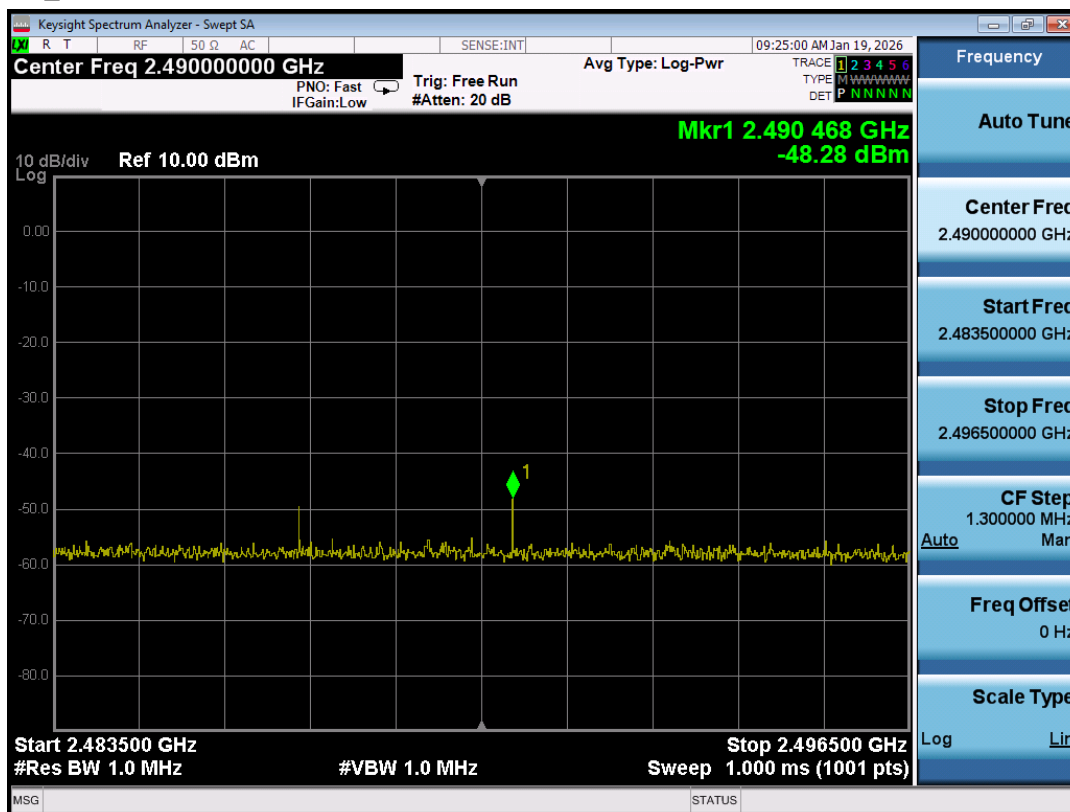
Chain A_802.11ax HE20 2412MHz ; 2387 ~ 2400 MHz



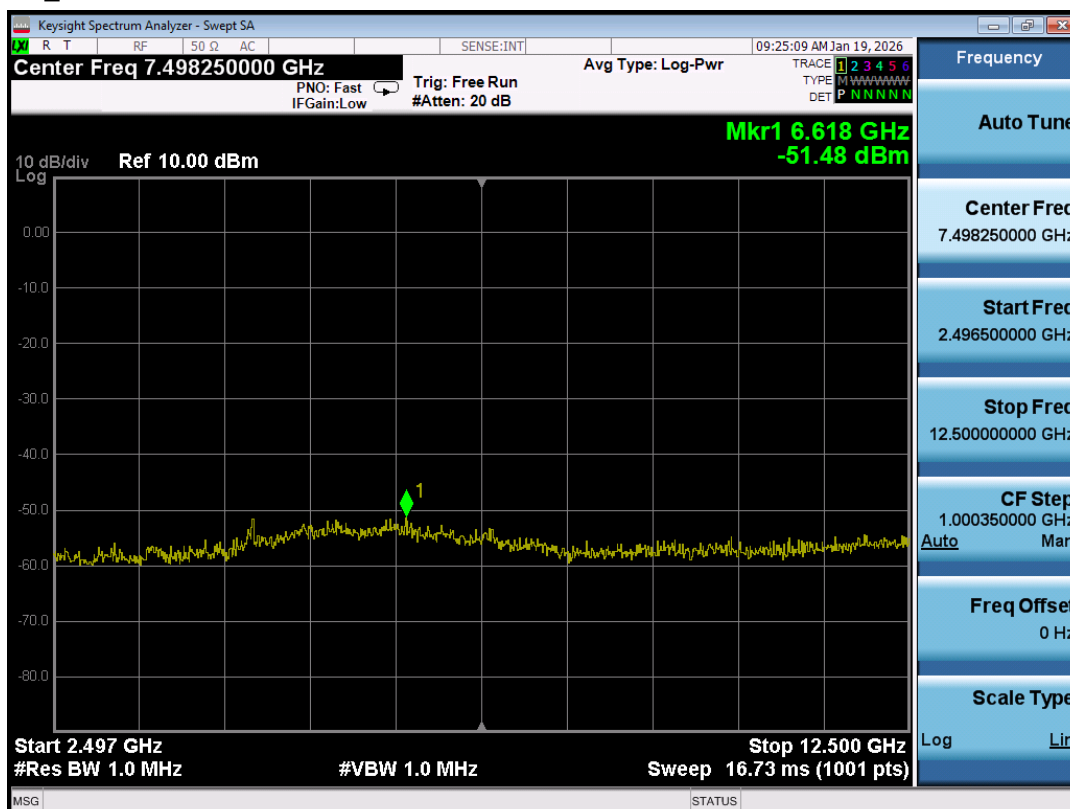
Chain A_802.11ax HE20 2412MHz ; 2387 ~ 2400 MHz _Sample



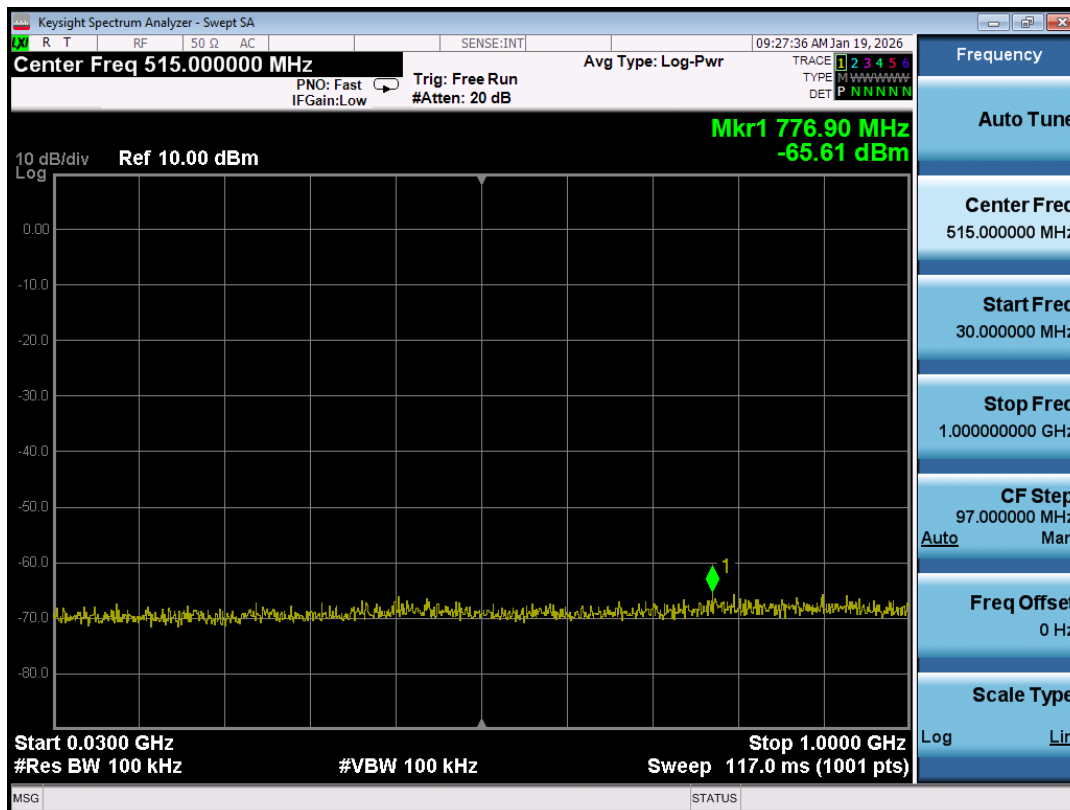
Chain A_802.11ax HE20 2412MHz ; 2483.5 ~ 2496.5 MHz



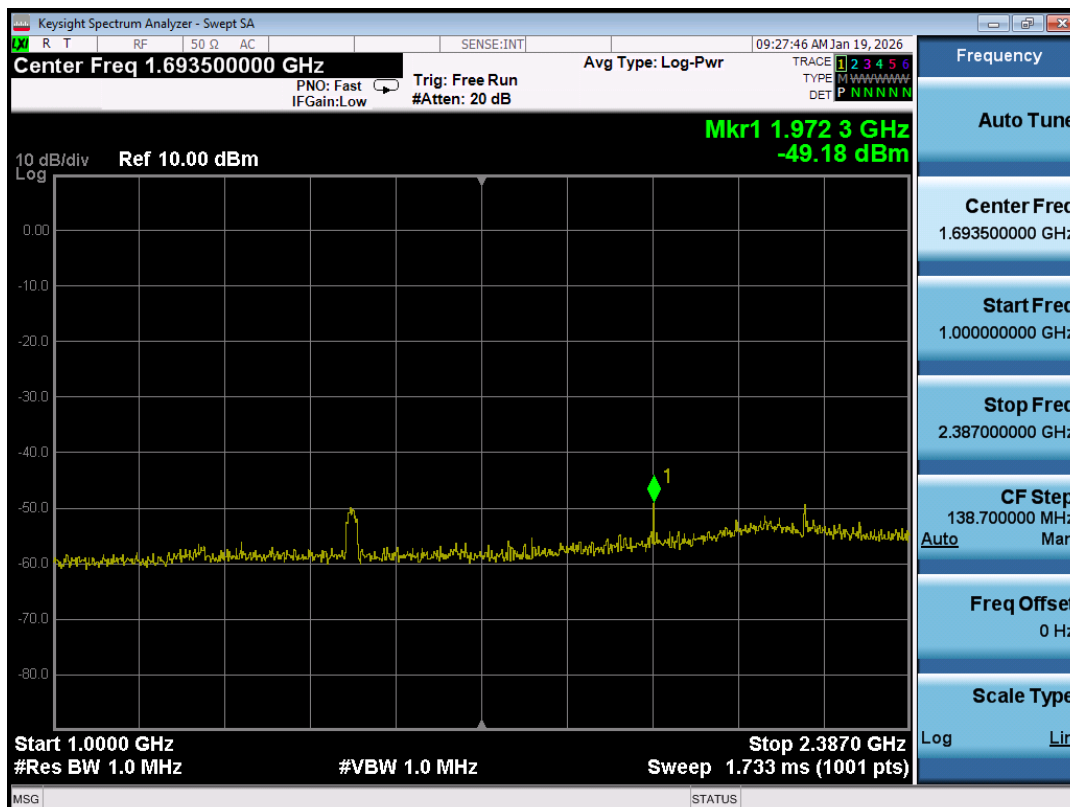
Chain A_802.11ax HE20 2412MHz ; 2496.5 ~ 12500 MHz



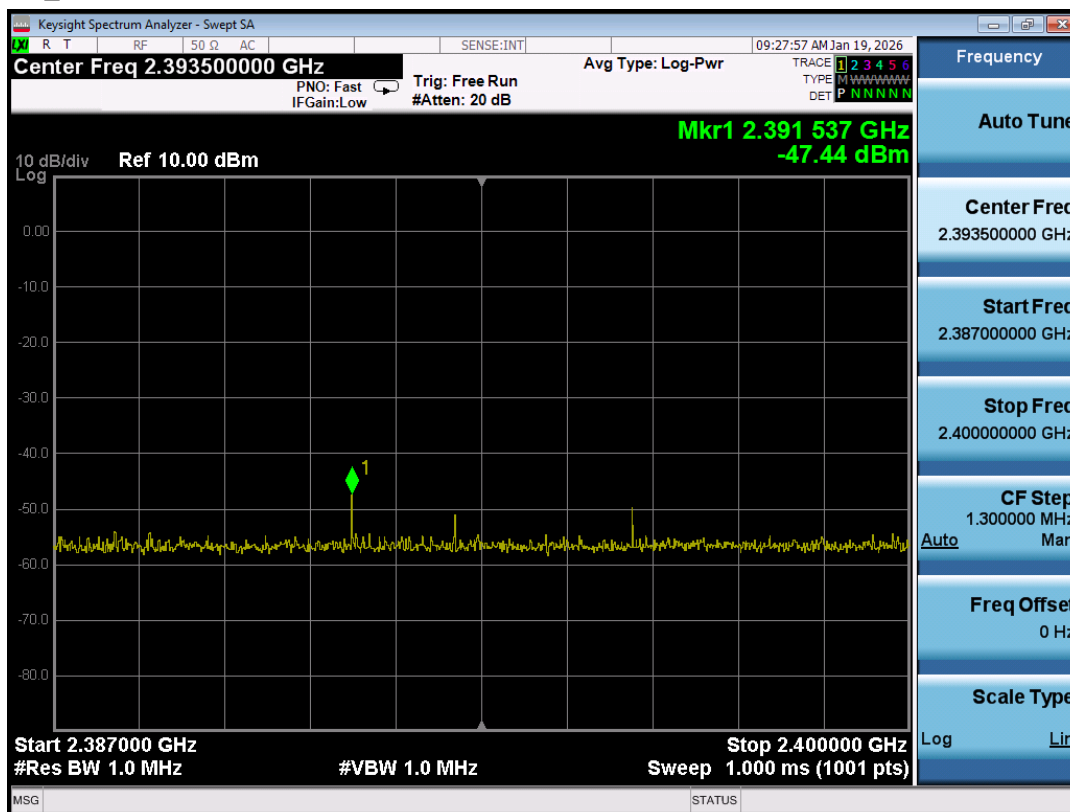
Chain A_802.11ax HE20 2472MHz ; 30 ~ 1000 MHz



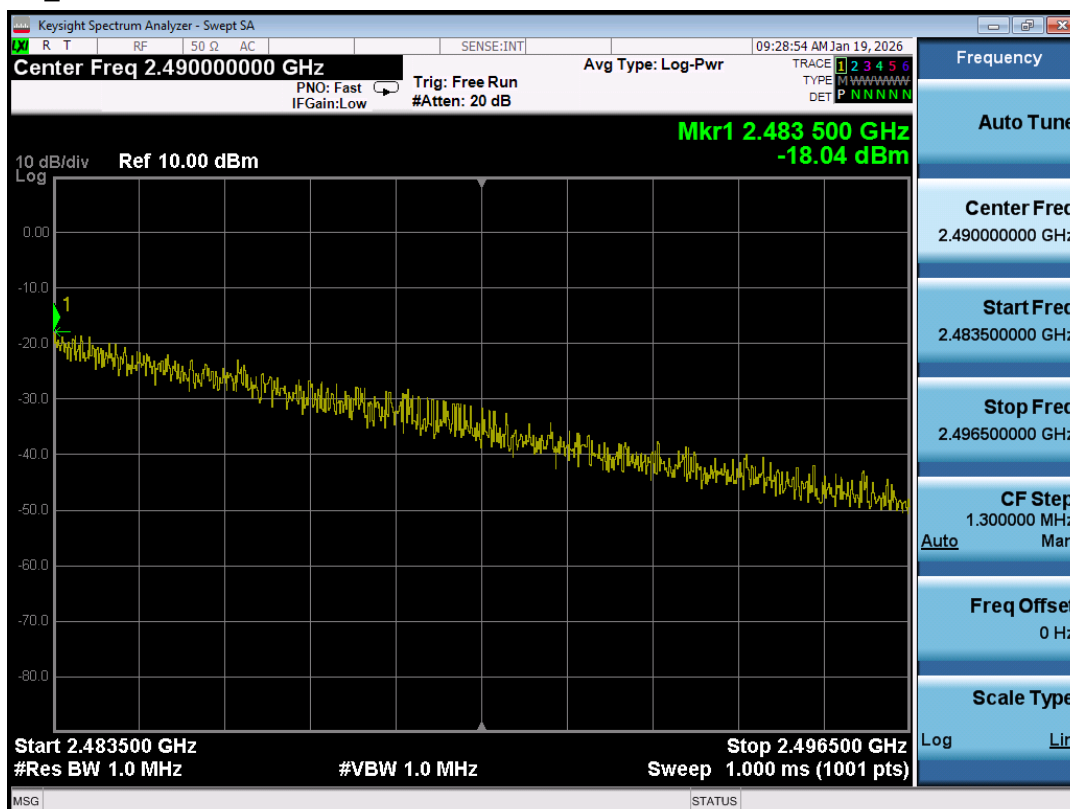
Chain A_802.11ax HE20 2472MHz ; 1000 ~ 2387 MHz



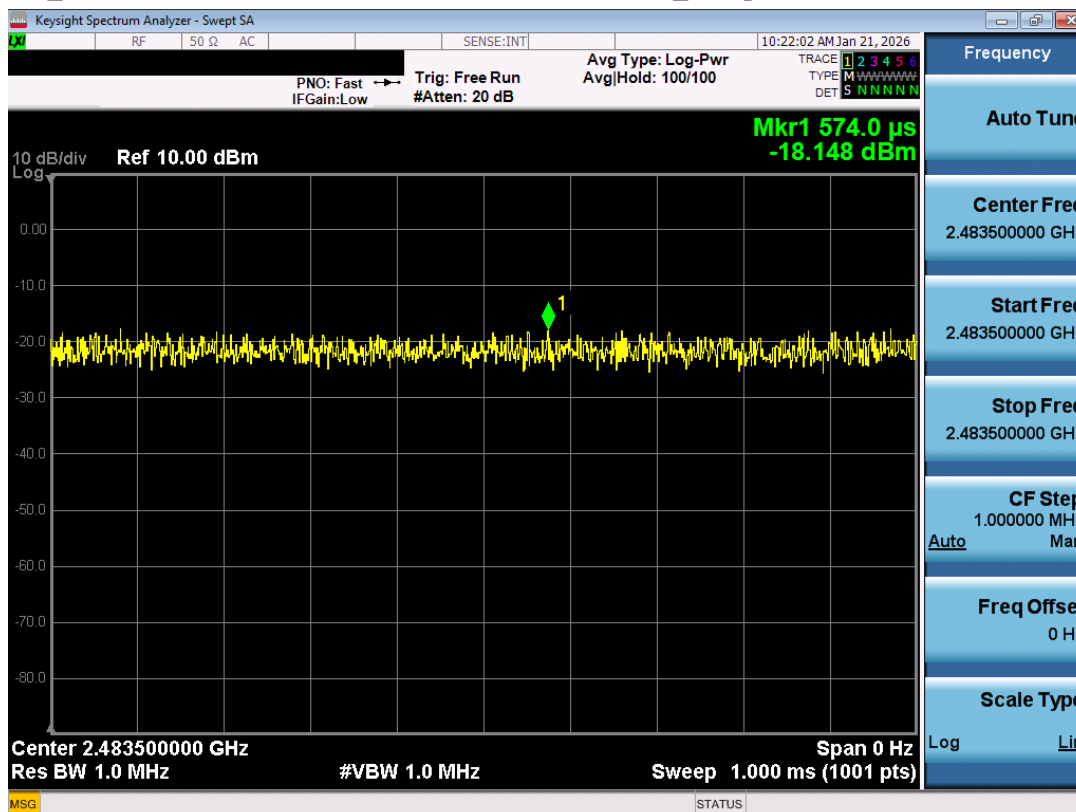
Chain A_802.11ax HE20 2472MHz ; 2387 ~ 2400 MHz



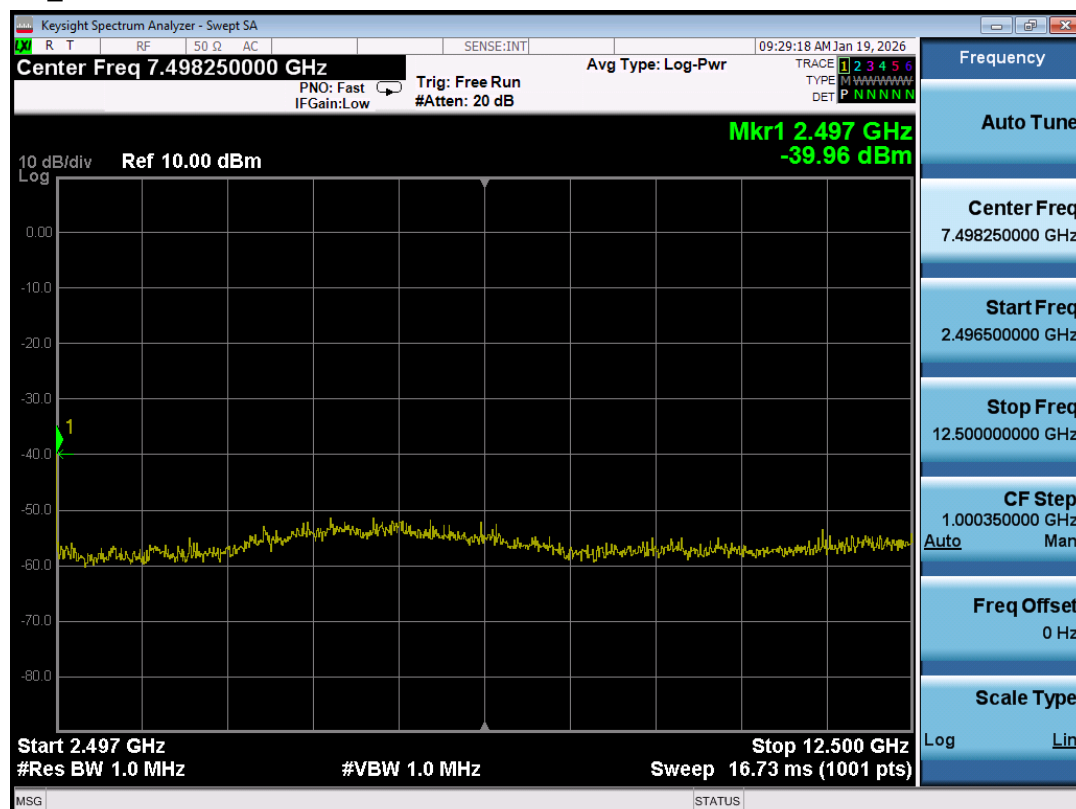
Chain A_802.11ax HE20 2472MHz ; 2483.5 ~ 2496.5 MHz



Chain A_802.11ax HE20 2472MHz ; 2483.5 ~ 2496.5 MHz _Sample



Chain A_802.11ax HE20 2472MHz ; 2496.5 ~ 12500 MHz



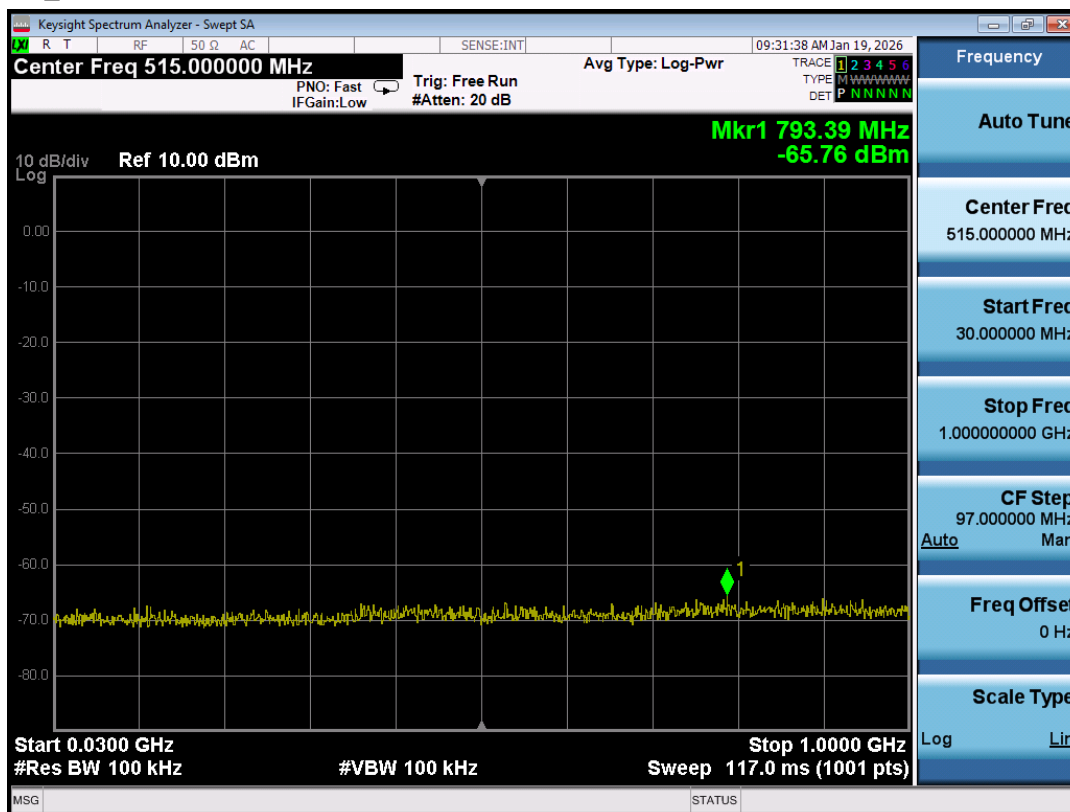
Product : IP CAMERA
Test Item : Transmitter Spurious Emission
Test Mode : Mode 6 : Transmit (802.11ax HE40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (μW/MHz)	Limit (μW/MHz)	Result
		dBm/MHz	μW/MHz	dBm/MHz	μW/MHz			
2422	30 ~ 1000	-55.730	0.0027	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-37.580	0.1746	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-18.200	15.1356	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-45.280	0.0296	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-47.920	0.0161	--	--	--	≤ 2.5	Pass
2462	30 ~ 1000	-55.580	0.0028	--	--	--	≤ 2.5	Pass
	1000 ~ 2387	-41.460	0.0714	--	--	--	≤ 2.5	Pass
	2387 ~ 2400	-40.860	0.0820	--	--	--	≤ 25	Pass
	2483.5 ~ 2496.5	-18.220	15.0661	--	--	--	≤ 25	Pass
	2496.5 ~ 12500	-38.220	0.1507	--	--	--	≤ 2.5	Pass

Note:

- (1) The frequency(30~1000MHz) test unit is μW/100kHz : $\mu\text{W}/\text{MHz} = \text{Measured Value}(\mu\text{W}/100\text{kHz}) * 10$
- (2) Actual value = Reading value + cable loss
- (3) The spectrum plots are attached on the following pages.

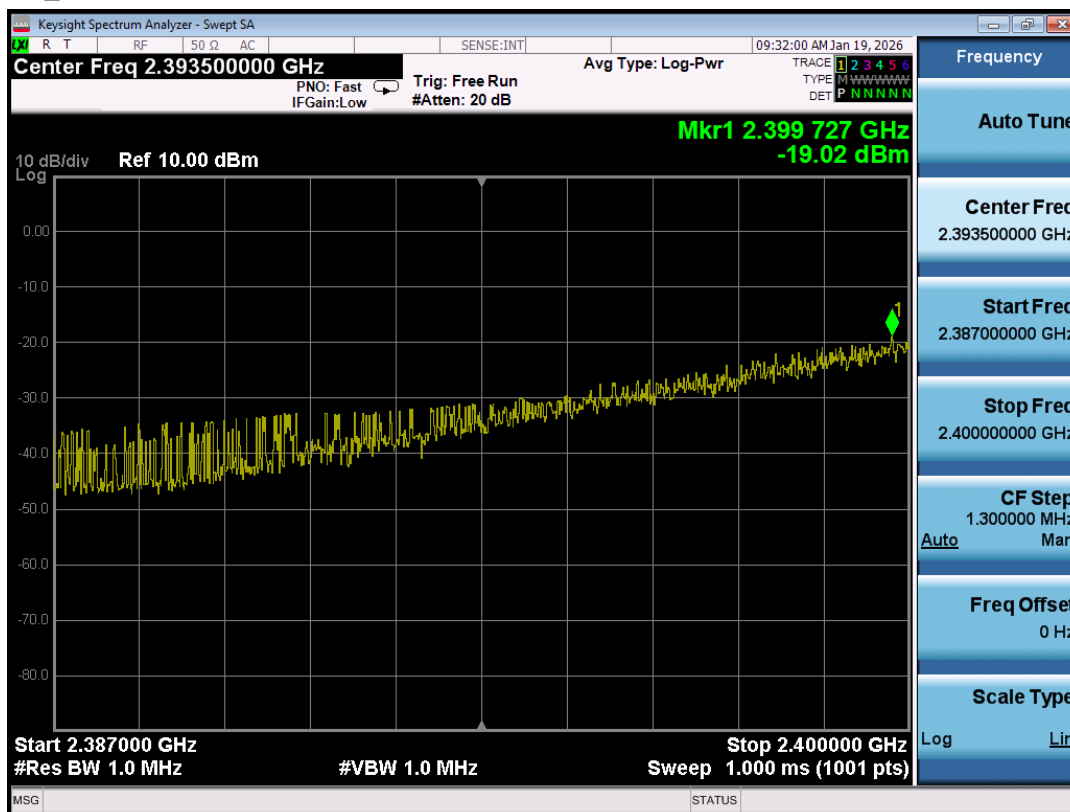
Chain A_802.11ax HE40 2422MHz ; 30 ~ 1000 MHz



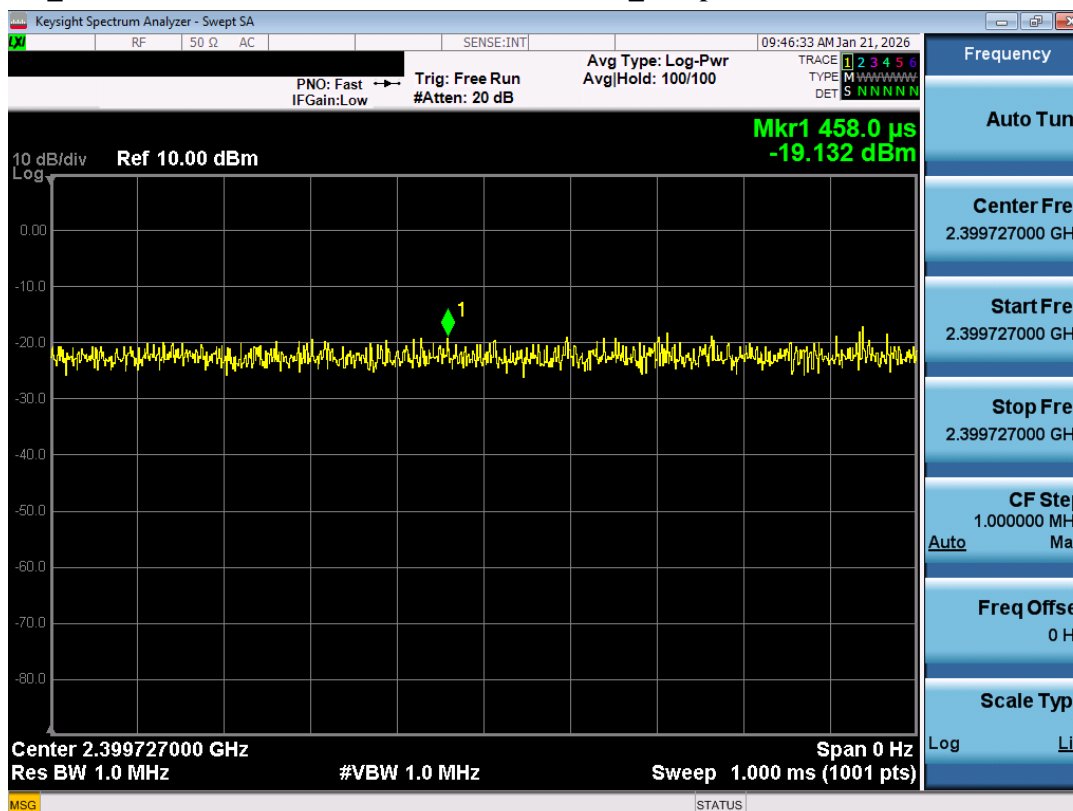
Chain A_802.11ax HE40 2422MHz ; 1000 ~ 2387 MHz



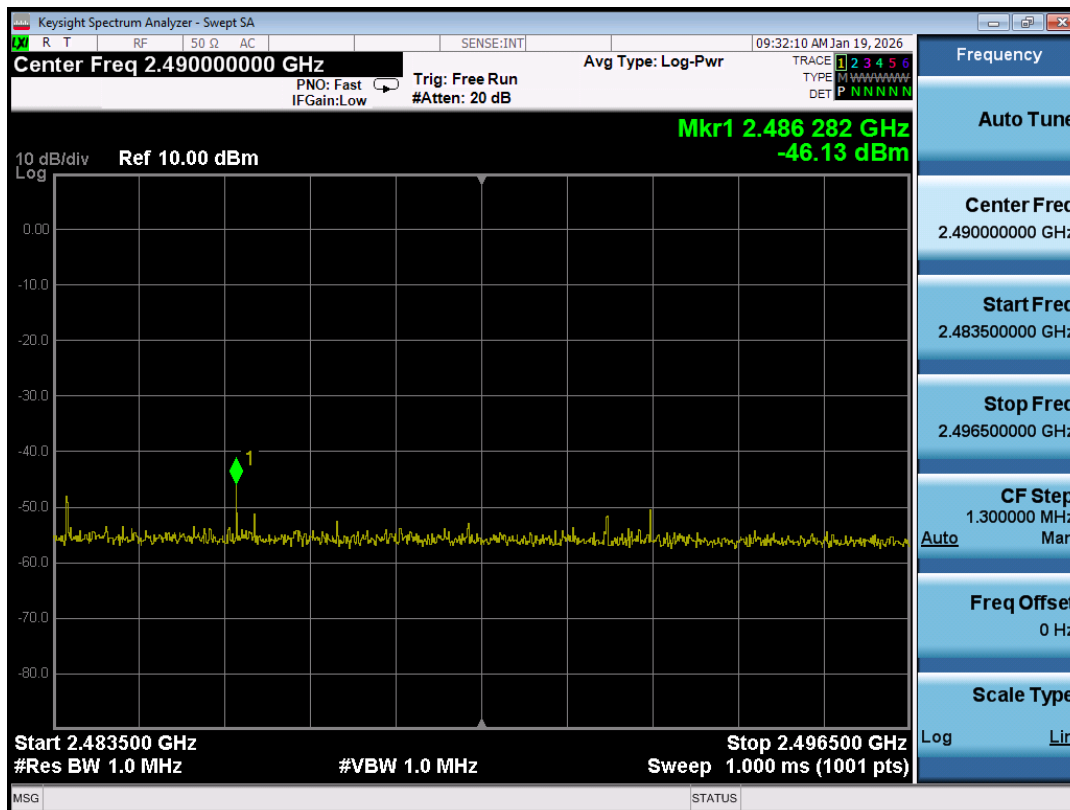
Chain A_802.11ax HE40 2422MHz ; 2387 ~ 2400 MHz



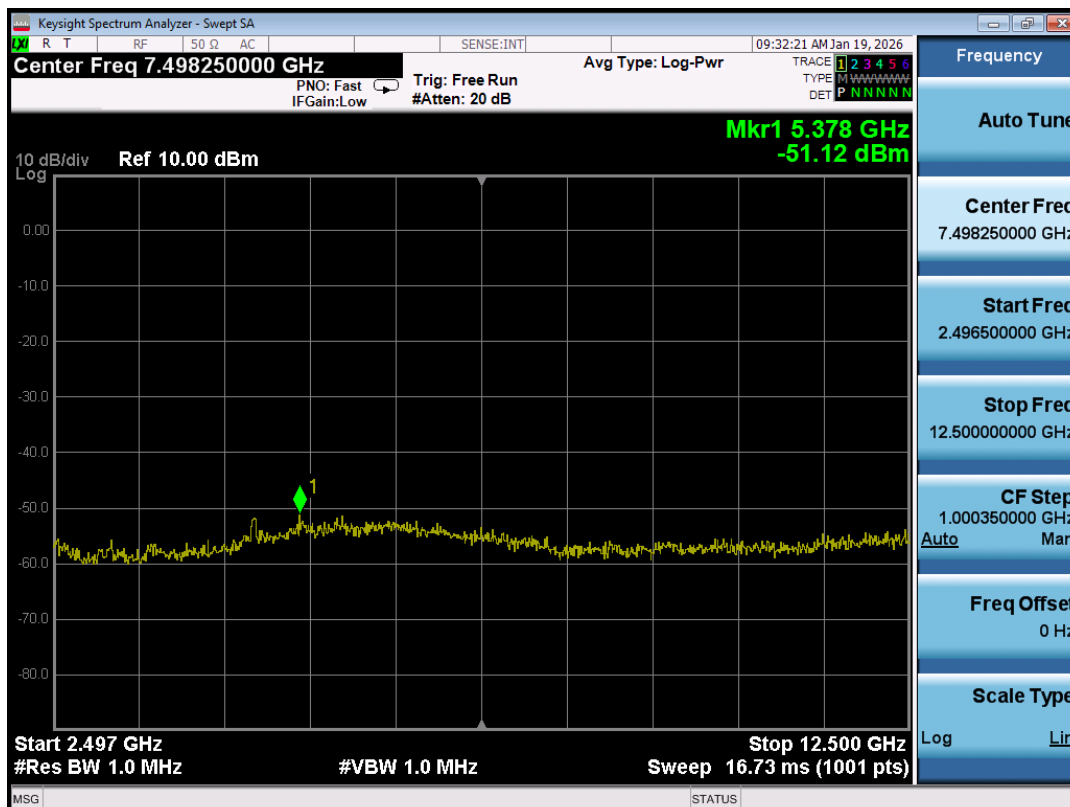
Chain A_802.11ax HE40 2422MHz ; 2387 ~ 2400 MHz _Sample



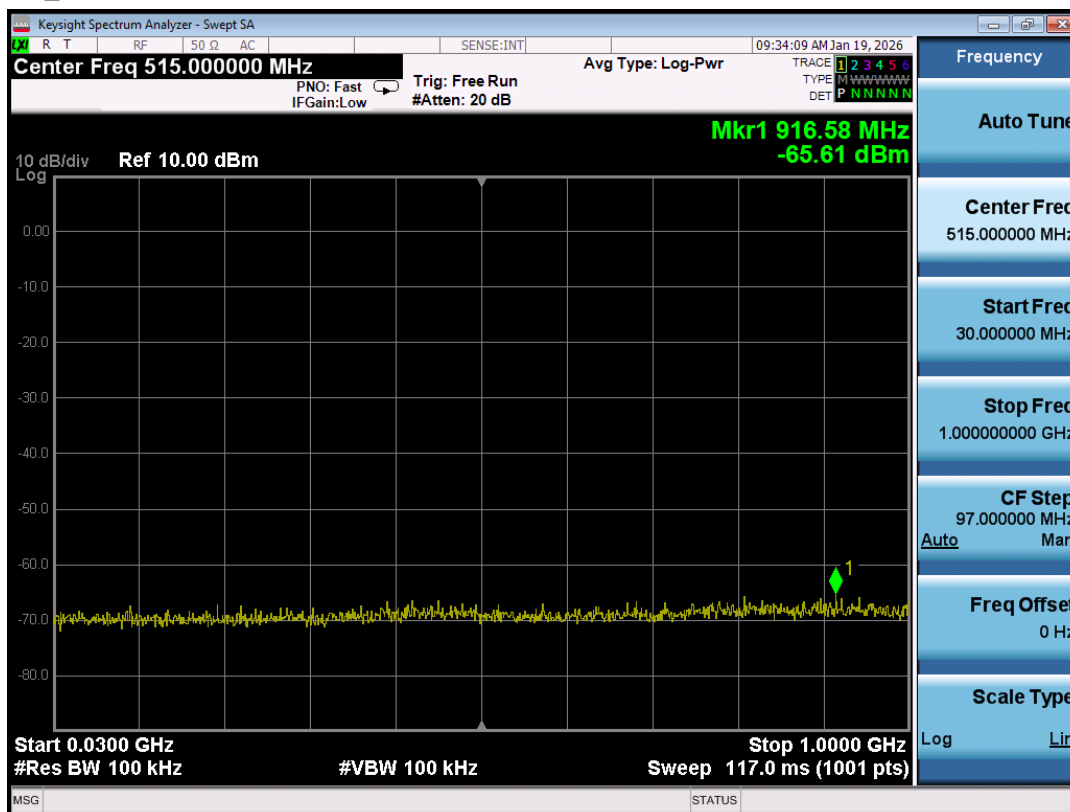
Chain A_802.11ax HE40 2422MHz ; 2483.5 ~ 2496.5 MHz



Chain A_802.11ax HE40 2422MHz ; 2496.5 ~ 12500 MHz



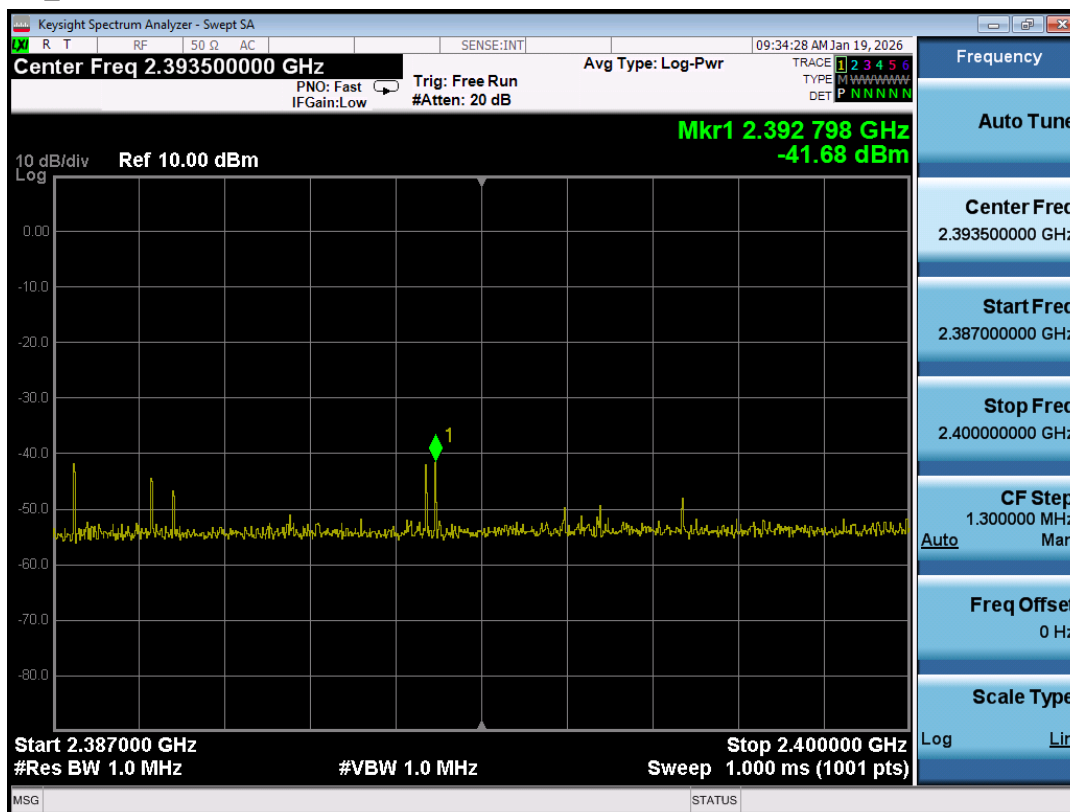
Chain A_802.11ax HE40 2462MHz ; 30 ~ 1000 MHz



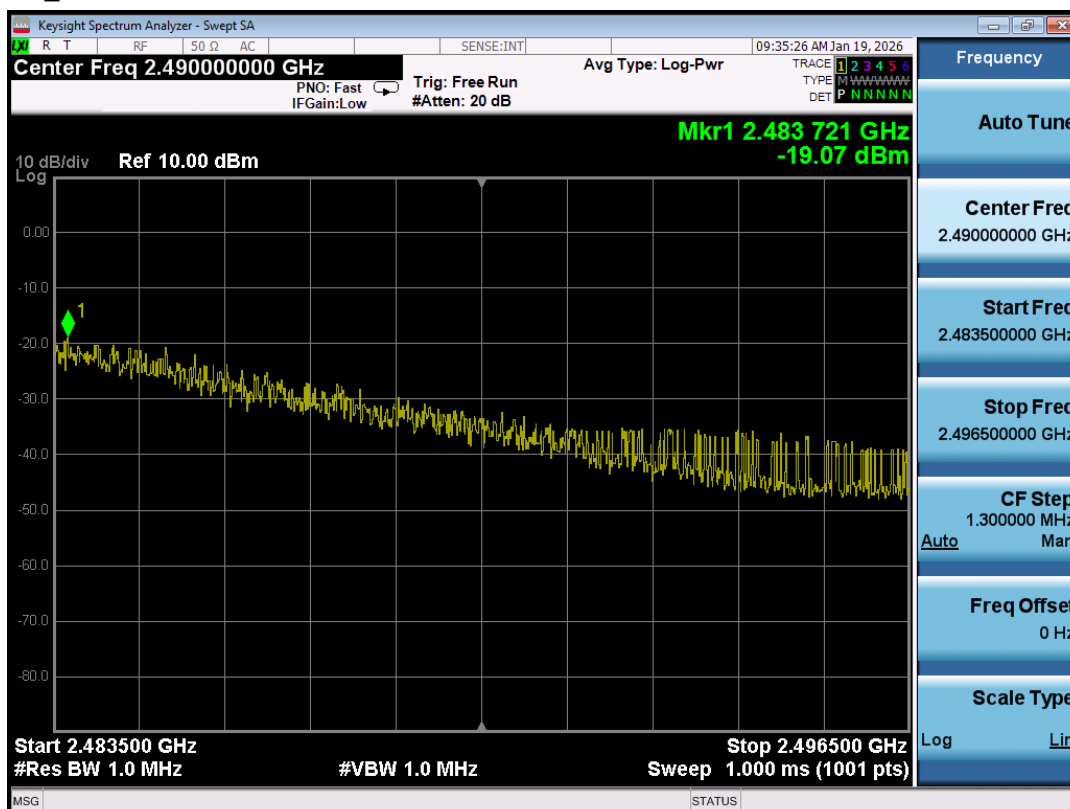
Chain A_802.11ax HE40 2462MHz ; 1000 ~ 2387 MHz



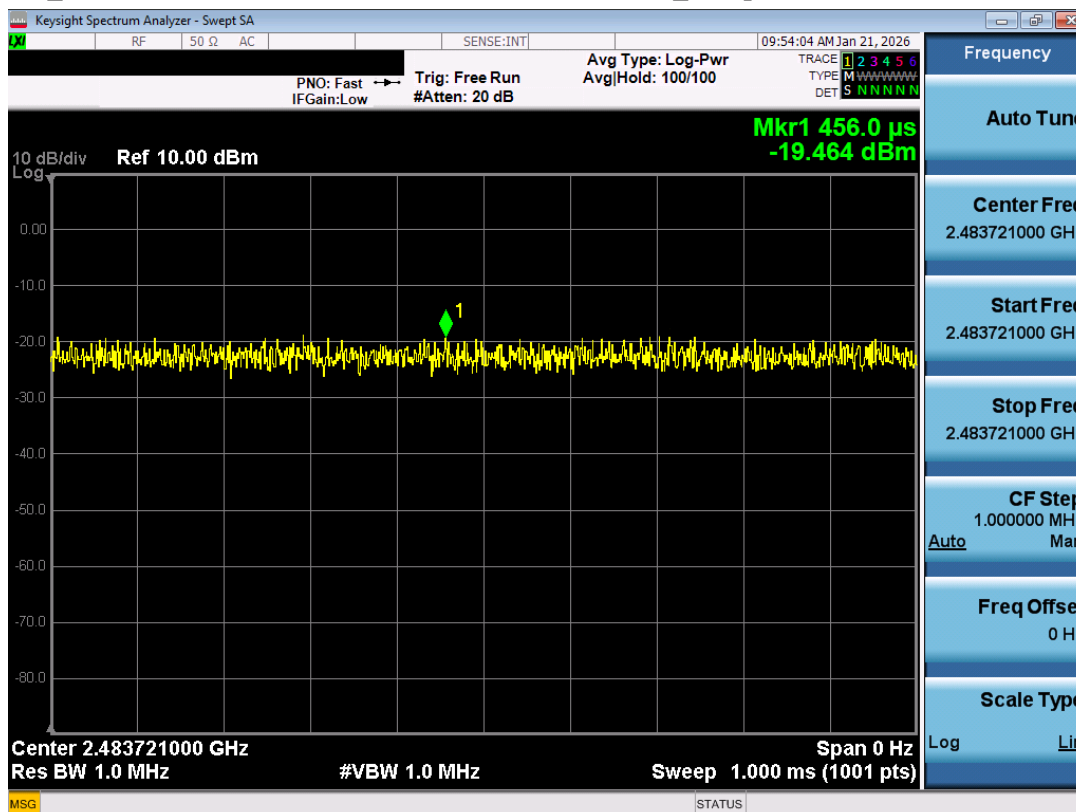
Chain A_802.11ax HE40 2462MHz ; 2387 ~ 2400 MHz



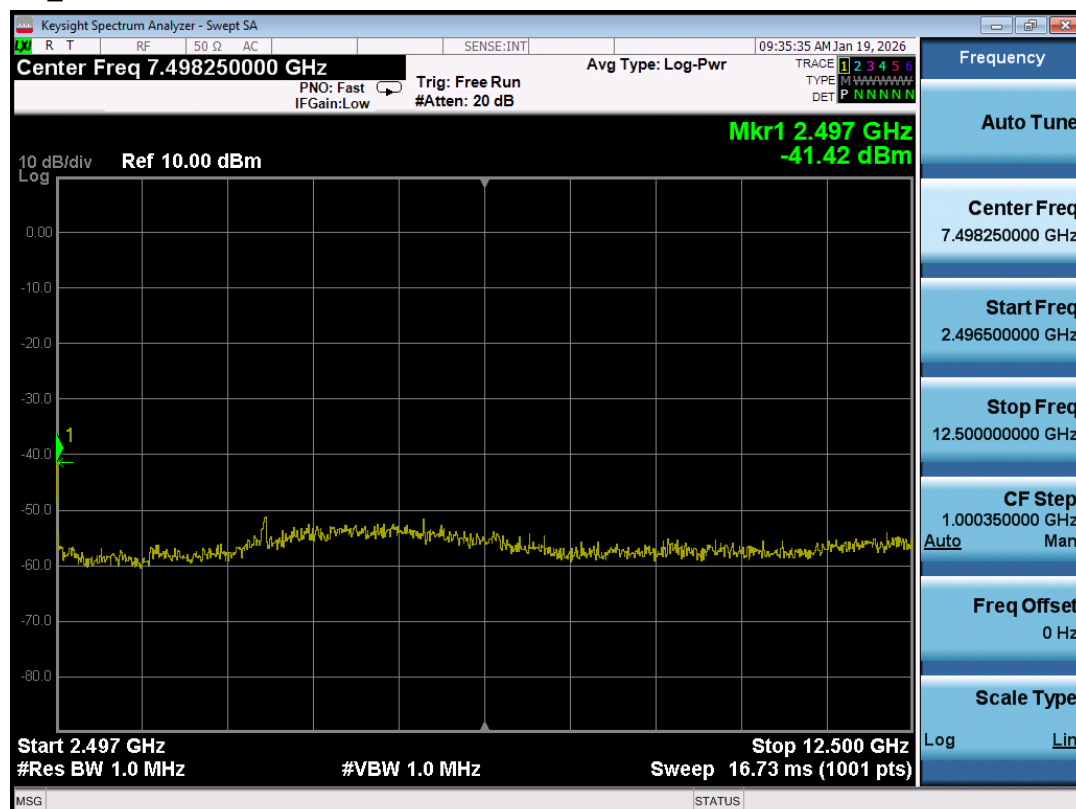
Chain A_802.11ax HE40 2462MHz ; 2483.5 ~ 2496.5 MHz



Chain A_802.11ax HE40 2462MHz ; 2483.5 ~ 2496.5 MHz _Sample



Chain A_802.11ax HE40 2462MHz ; 2496.5 ~ 12500 MHz



2.5 Secondary Radiated Emission Strength

2.5.1 Limit

Frequency	Limit
30 – 1000 MHz	$\leq 4\text{nW}$
1 – 12.5 GHz	$\leq 20\text{nW}$

2.5.2 Test Setup



2.5.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Limitation of secondarily emitted radio waves, etc.)

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

2.5.4 Test Result

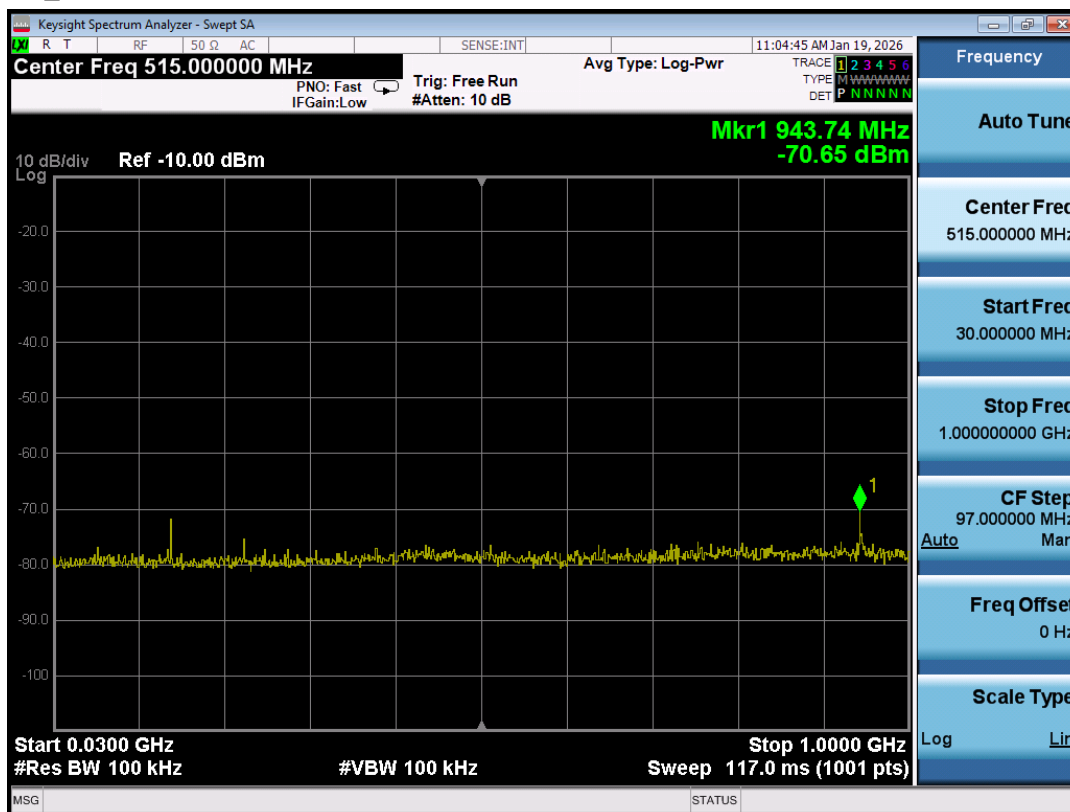
Product : IP CAMERA
Test Item : Receiver Spurious Emission
Test Mode : Mode 7 : Receiver (802.11b 1Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (nW)	Limit (nW)	Result
		dBm	nW	dBm	nW			
2412	30 ~ 1000	-70.62	0.0867	--	--	--	≤ 4	Pass
	1000 ~ 12500	-57.93	1.6106	--	--	--	≤ 20	Pass
2472	30 ~ 1000	-71.29	0.0743	--	--	--	≤ 4	Pass
	1000 ~ 12500	-58.11	1.5453	--	--	--	≤ 20	Pass

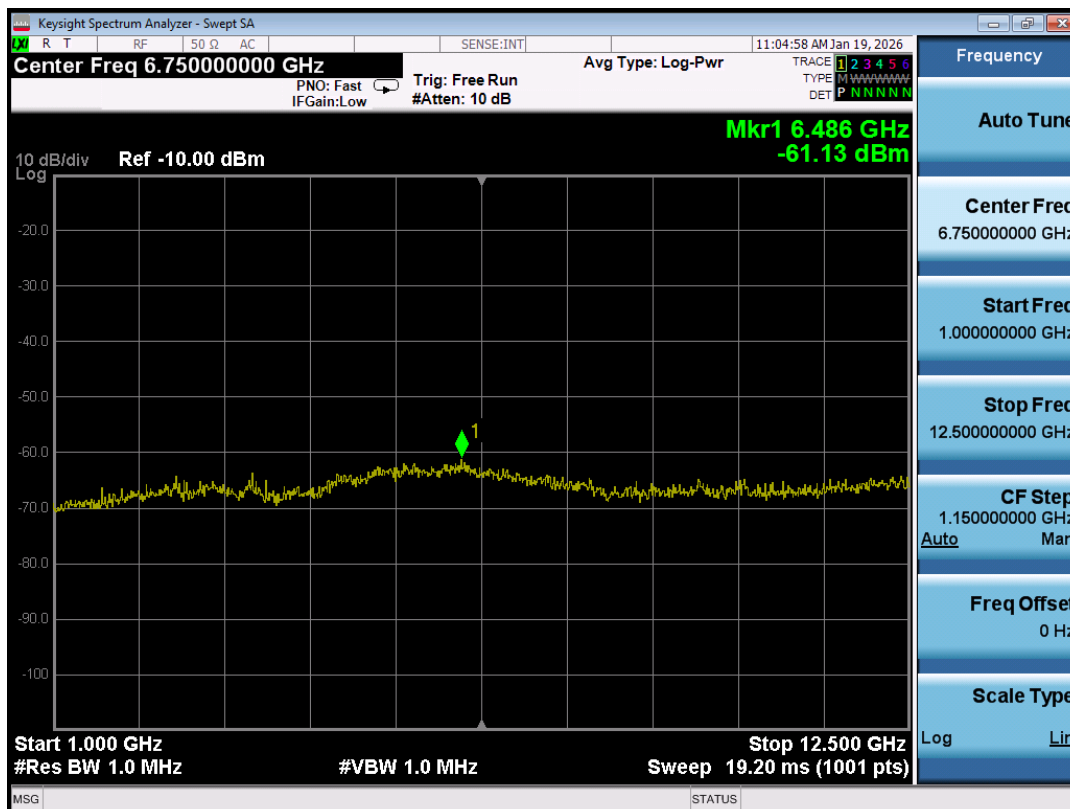
Note:

- (1) Measured Value = Spectrum Reading Value + Cable Loss
- (2) The spectrum plots are attached on the following pages.

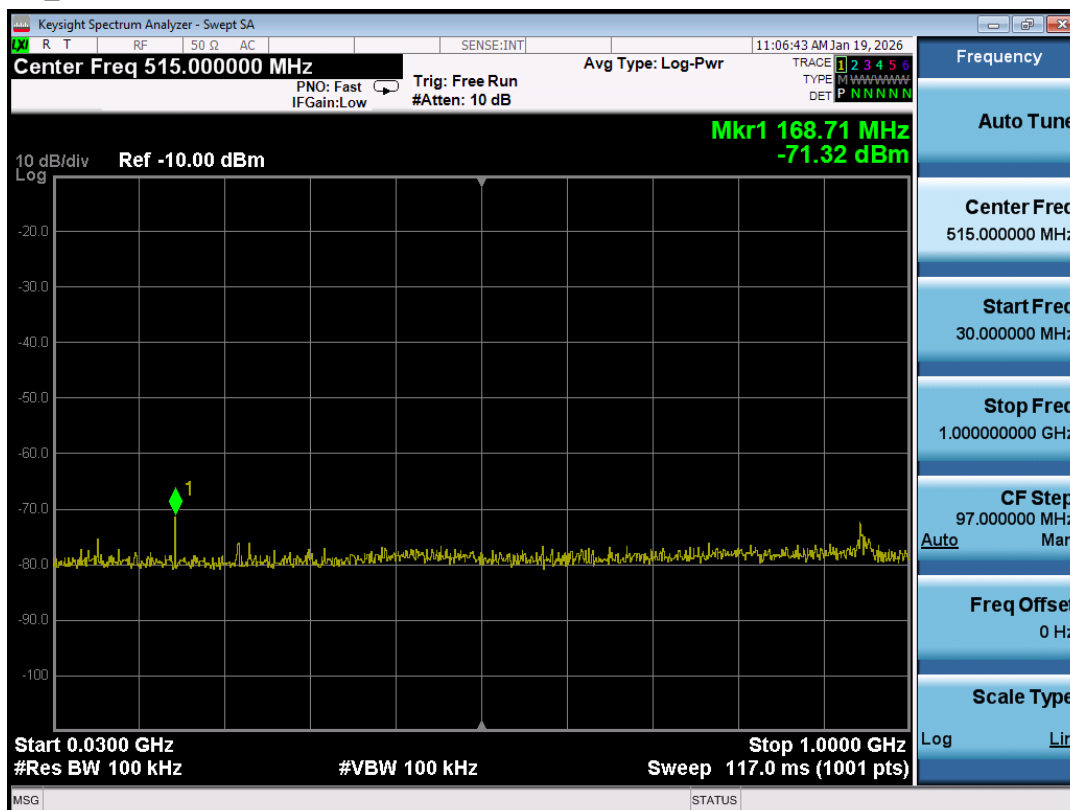
Chain A_802.11b 2412MHz ; 30 ~ 1000 MHz



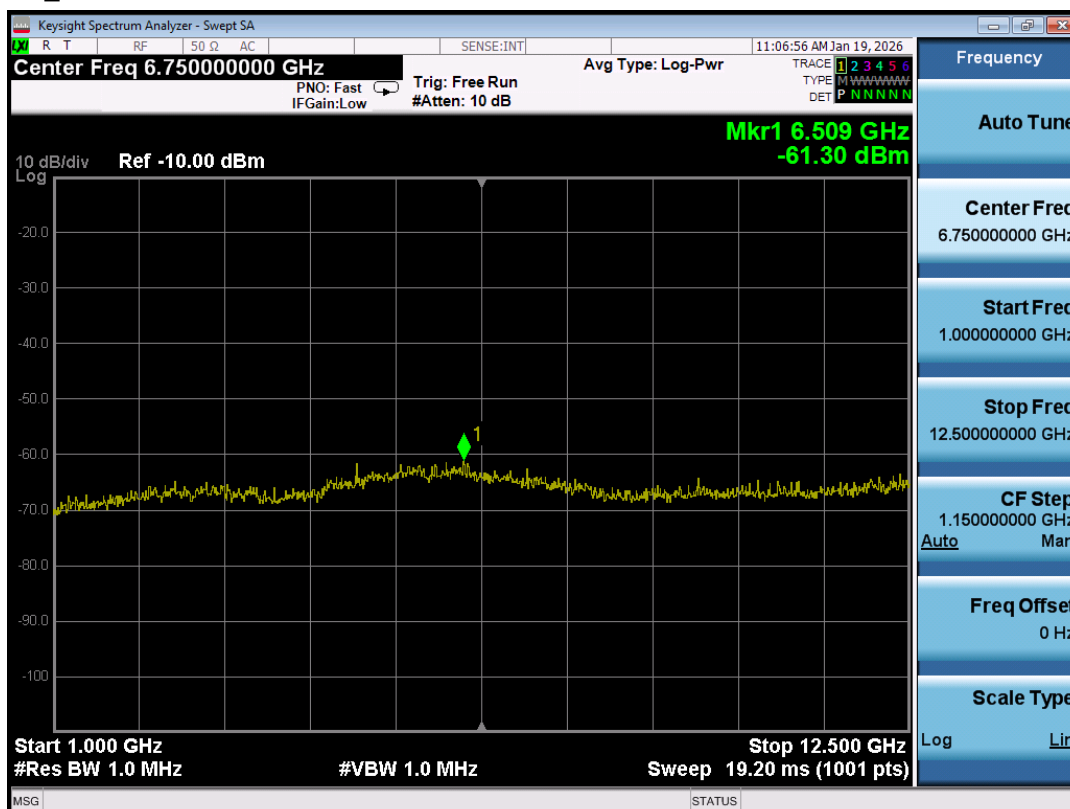
Chain A_802.11b 2412MHz ; 1000 ~ 12500 MHz



Chain A_802.11b 2472MHz ; 30 ~ 1000 MHz



Chain A_802.11b 2472MHz ; 1000 ~ 12500 MHz



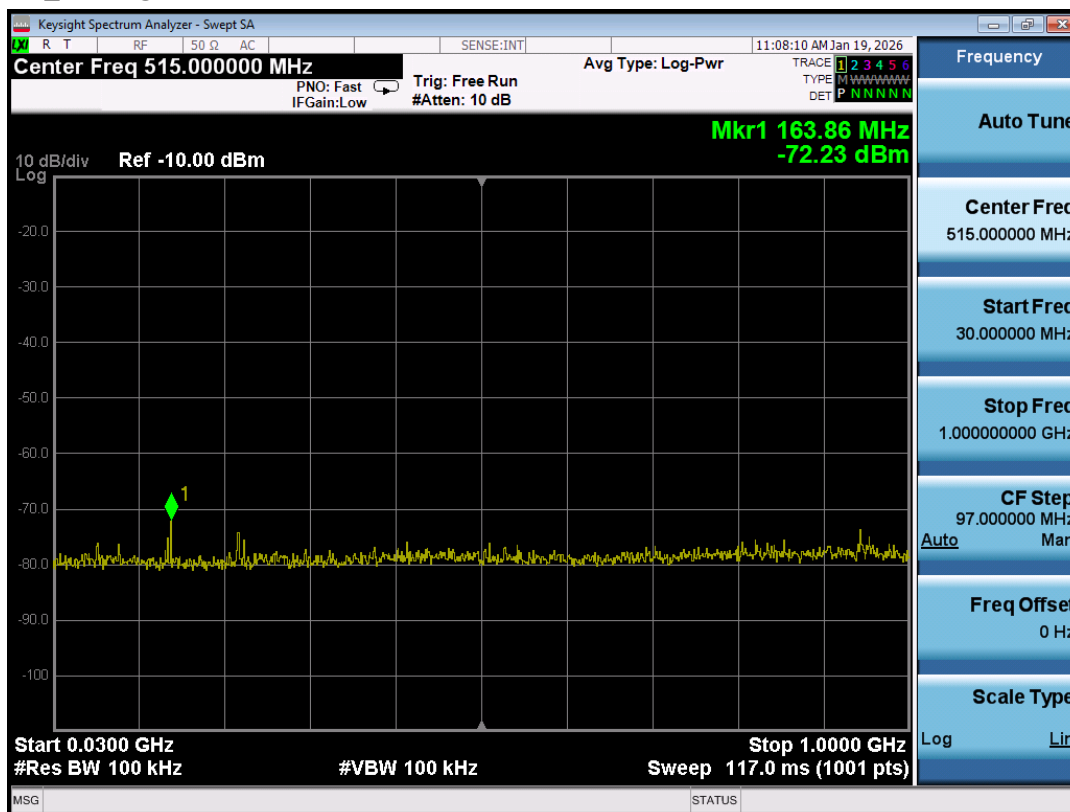
Product : IP CAMERA
Test Item : Receiver Spurious Emission
Test Mode : Mode 8 : Receiver (802.11g 6Mbps)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (nW)	Limit (nW)	Result
		dBm	nW	dBm	nW			
2412	30 ~ 1000	-72.20	0.0603	--	--	--	≤ 4	Pass
	1000 ~ 12500	-54.13	3.8637	--	--	--	≤ 20	Pass
2472	30 ~ 1000	-71.55	0.0700	--	--	--	≤ 4	Pass
	1000 ~ 12500	-58.04	1.5704	--	--	--	≤ 20	Pass

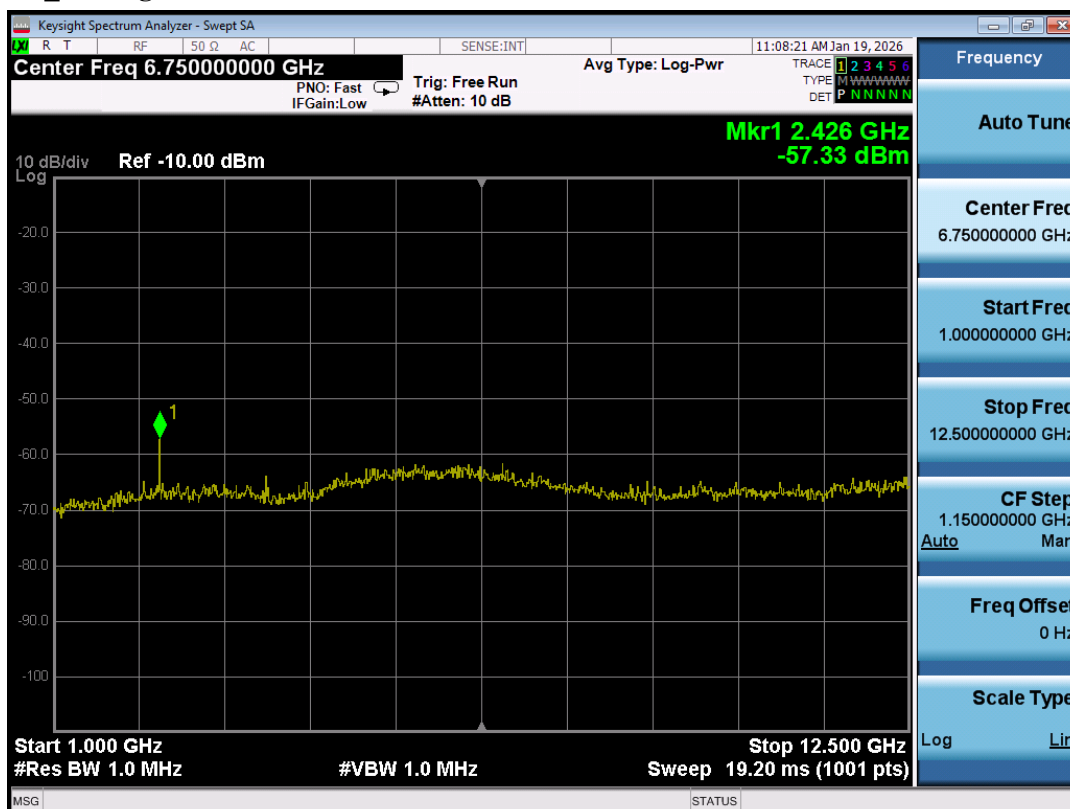
Note:

- (1) Measured Value = Spectrum Reading Value + Cable Loss
- (2) The spectrum plots are attached on the following pages.

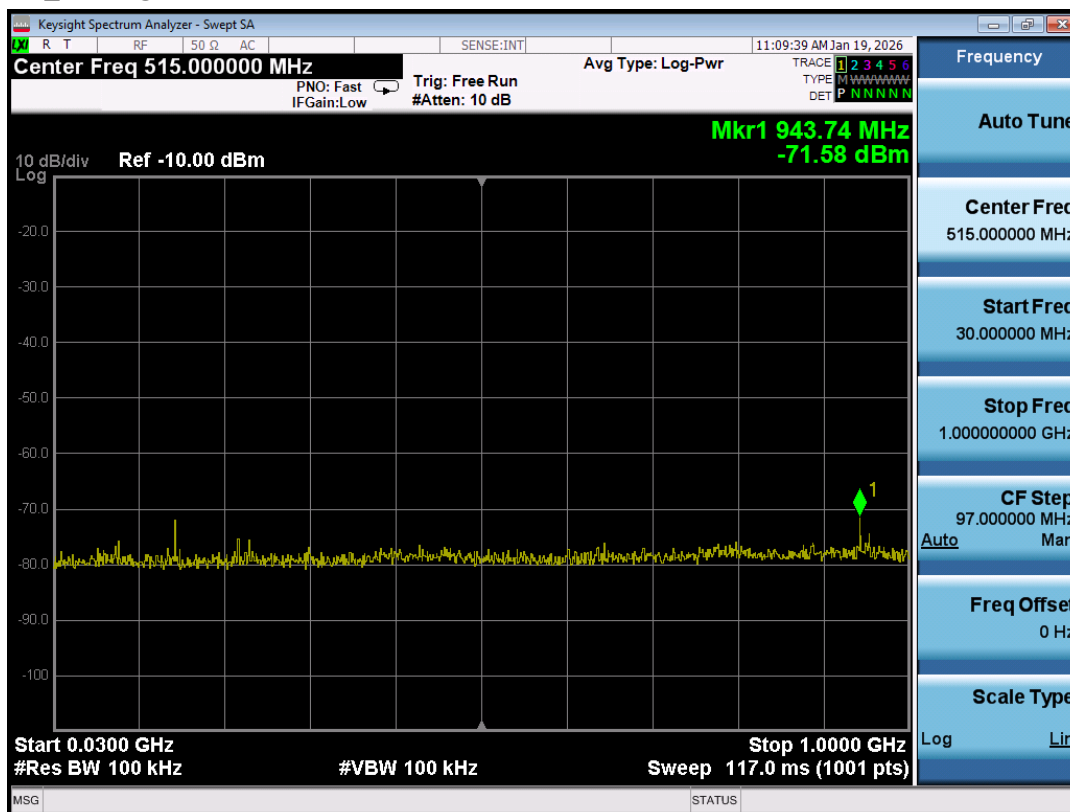
Chain A_802.11g 2412MHz ; 30 ~ 1000 MHz



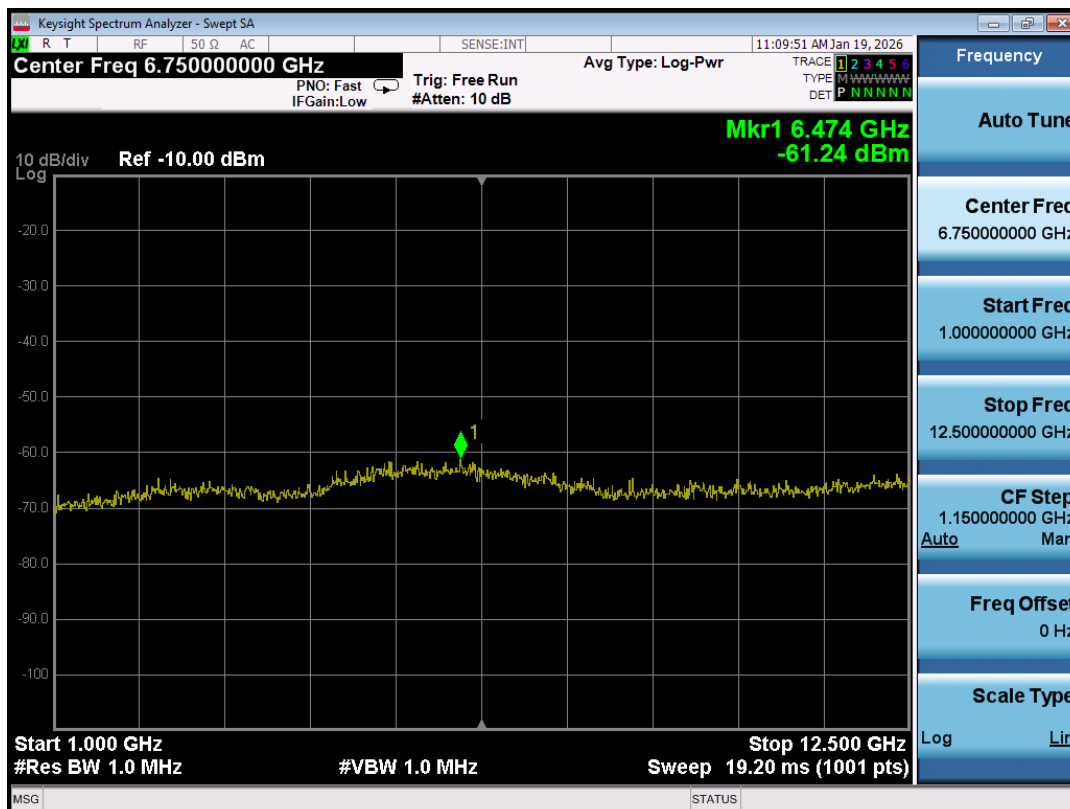
Chain A_802.11g 2412MHz ; 1000 ~ 12500 MHz



Chain A_802.11g 2472MHz ; 30 ~ 1000 MHz



Chain A_802.11g 2472MHz ; 1000 ~ 12500 MHz



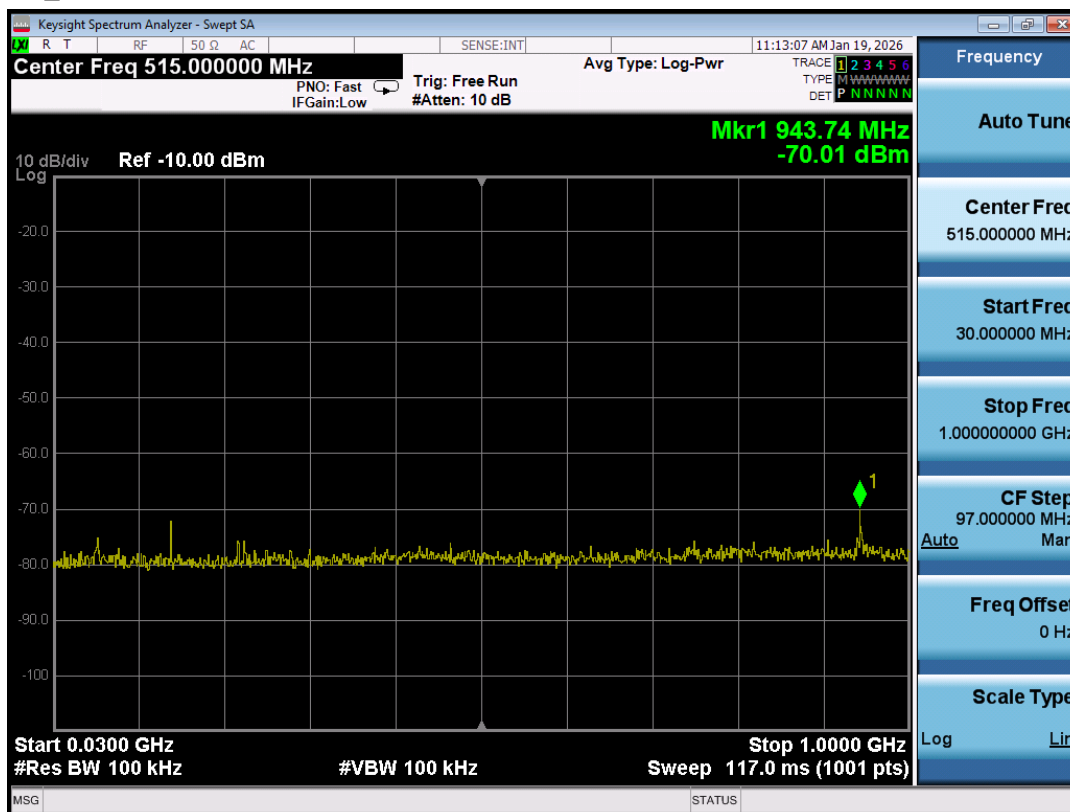
Product : IP CAMERA
Test Item : Receiver Spurious Emission
Test Mode : Mode 9 : Receiver (802.11n HT20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (nW)	Limit (nW)	Result
		dBm	nW	dBm	nW			
2412	30 ~ 1000	-69.98	0.1005	--	--	--	≤ 4	Pass
	1000 ~ 12500	-58.32	1.4723	--	--	--	≤ 20	Pass
2472	30 ~ 1000	-69.90	0.1023	--	--	--	≤ 4	Pass
	1000 ~ 12500	-57.38	1.8281	--	--	--	≤ 20	Pass

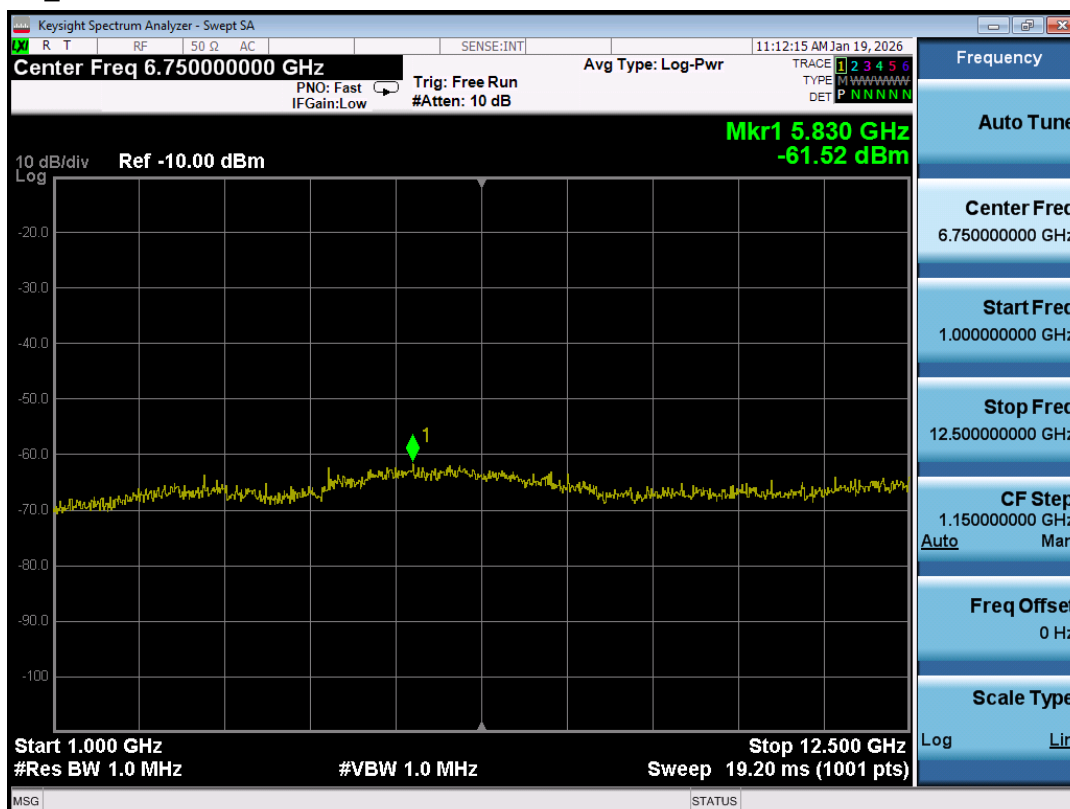
Note:

- (1) Measured Value = Spectrum Reading Value + Cable Loss
- (2) The spectrum plots are attached on the following pages.

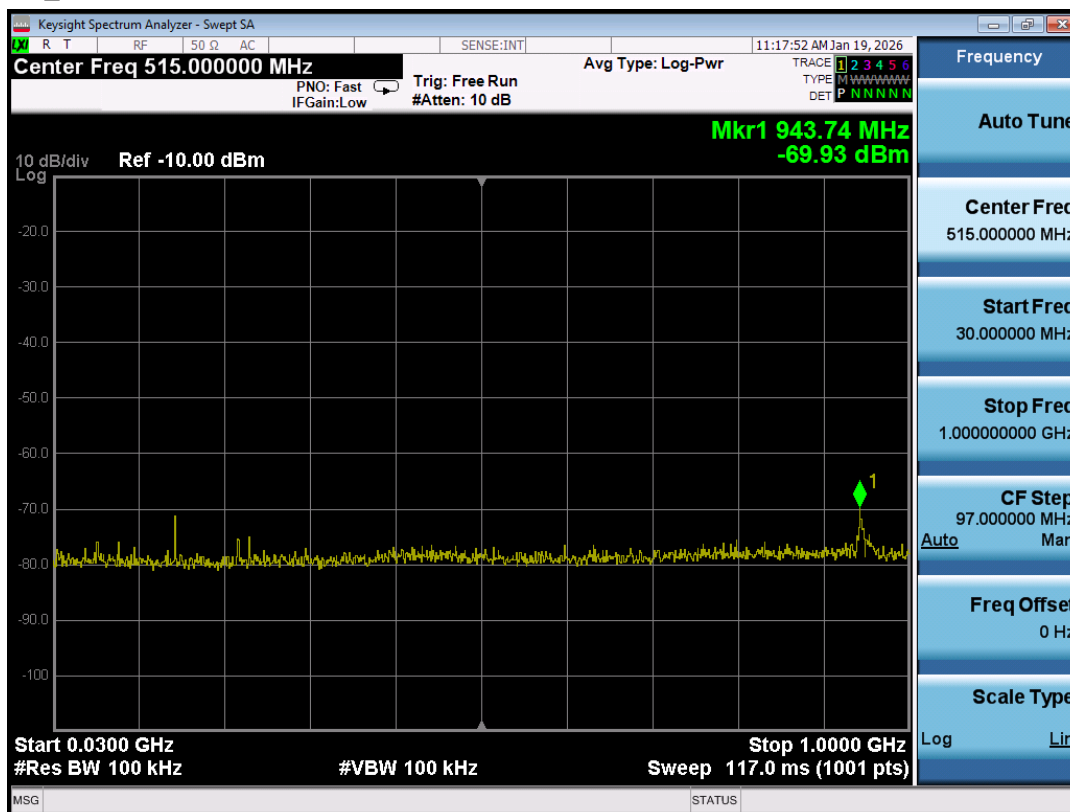
Chain A_802.11n HT20 2412MHz ; 30 ~ 1000 MHz



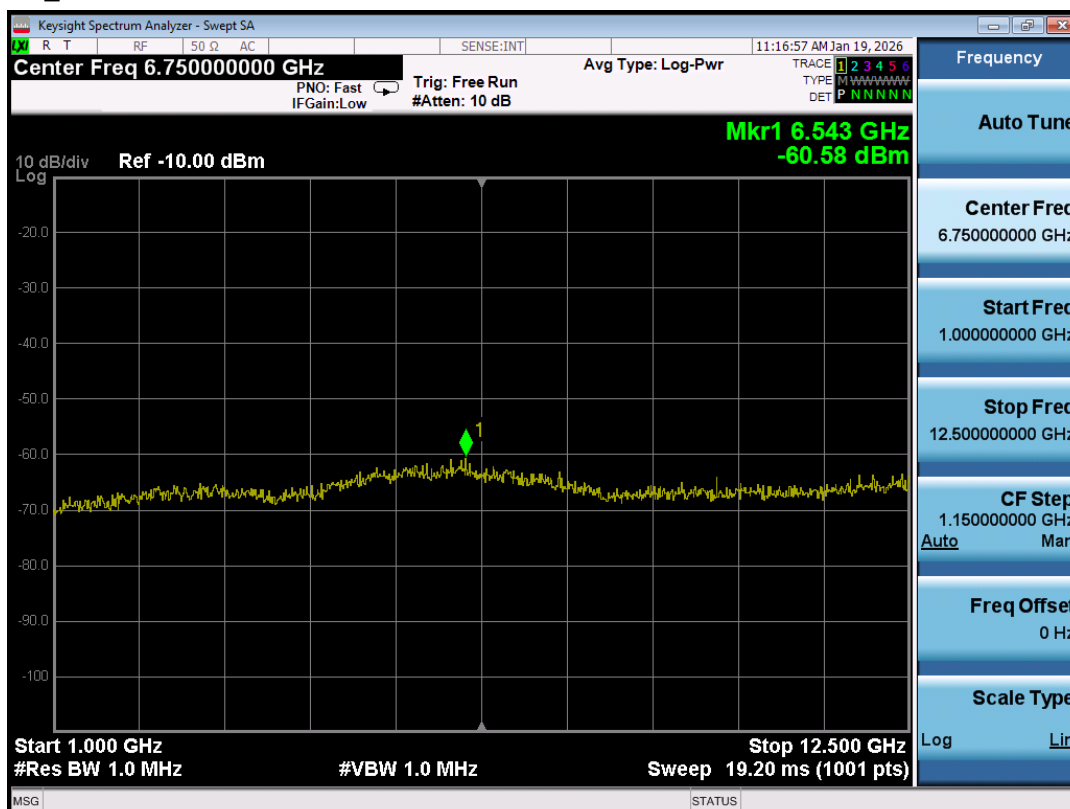
Chain A_802.11n HT20 2412MHz ; 1000 ~ 12500 MHz



Chain A_802.11n HT20 2472MHz ; 30 ~ 1000 MHz



Chain A_802.11n HT20 2472MHz ; 1000 ~ 12500 MHz



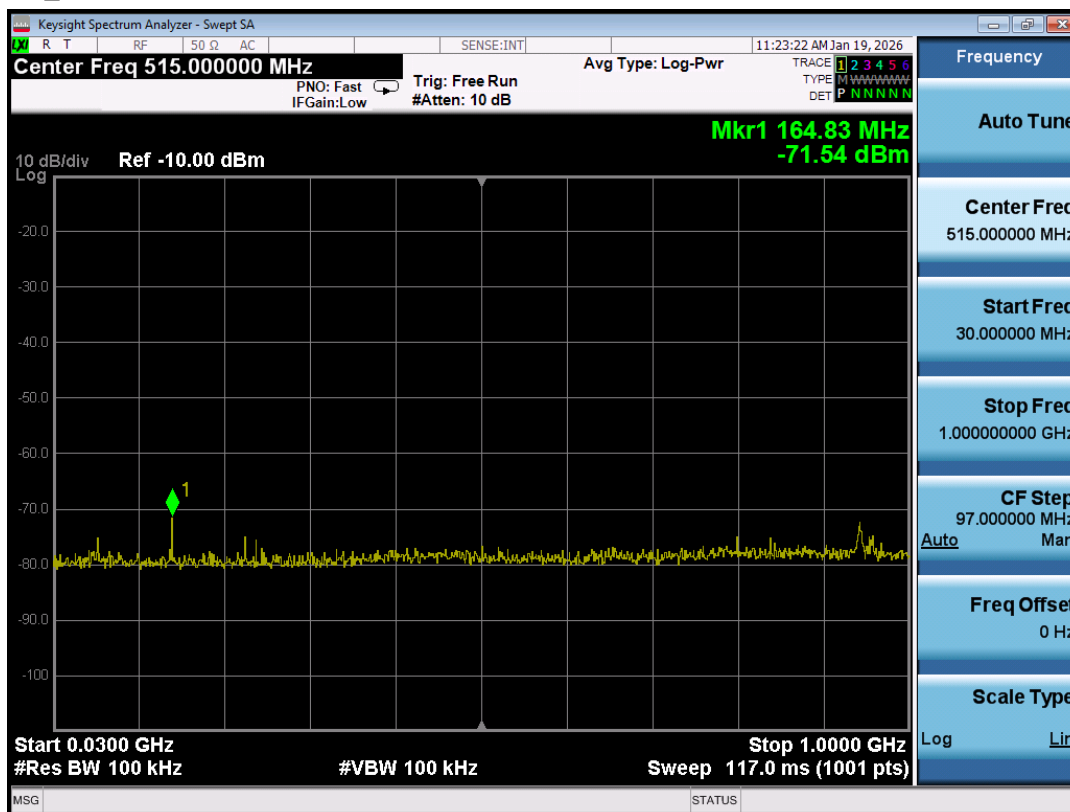
Product : IP CAMERA
Test Item : Receiver Spurious Emission
Test Mode : Mode 10 : Receiver (802.11n HT40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (nW)	Limit (nW)	Result
		dBm	nW	dBm	nW			
2422	30 ~ 1000	-71.51	0.0706	--	--	--	≤ 4	Pass
	1000 ~ 12500	-58.20	1.5136	--	--	--	≤ 20	Pass
2462	30 ~ 1000	-70.83	0.0826	--	--	--	≤ 4	Pass
	1000 ~ 12500	-56.81	2.0845	--	--	--	≤ 20	Pass

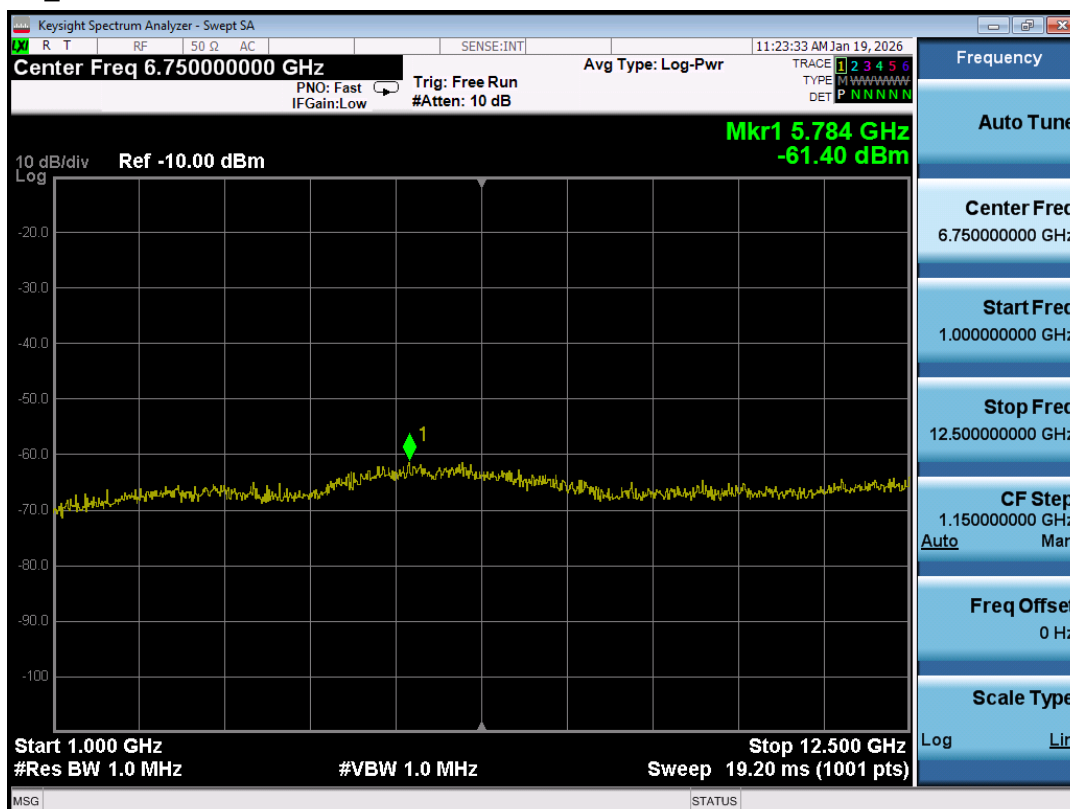
Note:

- (1) Measured Value = Spectrum Reading Value + Cable Loss
- (2) The spectrum plots are attached on the following pages.

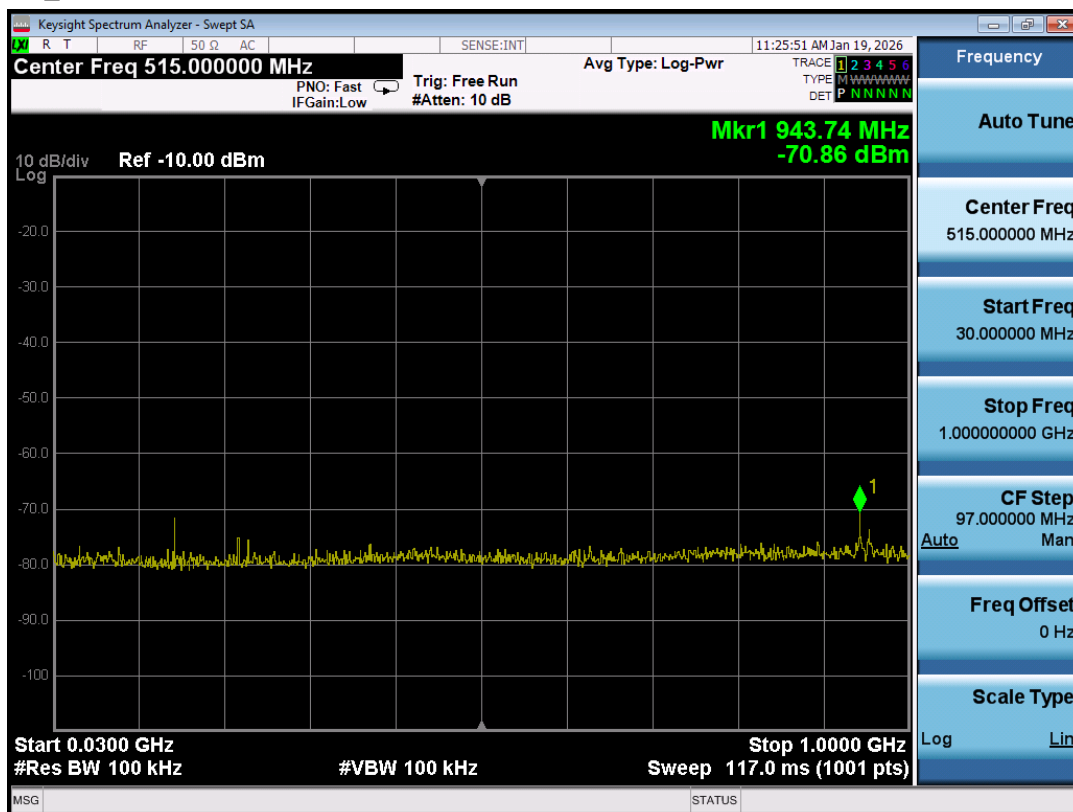
Chain A_802.11n HT40 2422MHz ; 30 ~ 1000 MHz



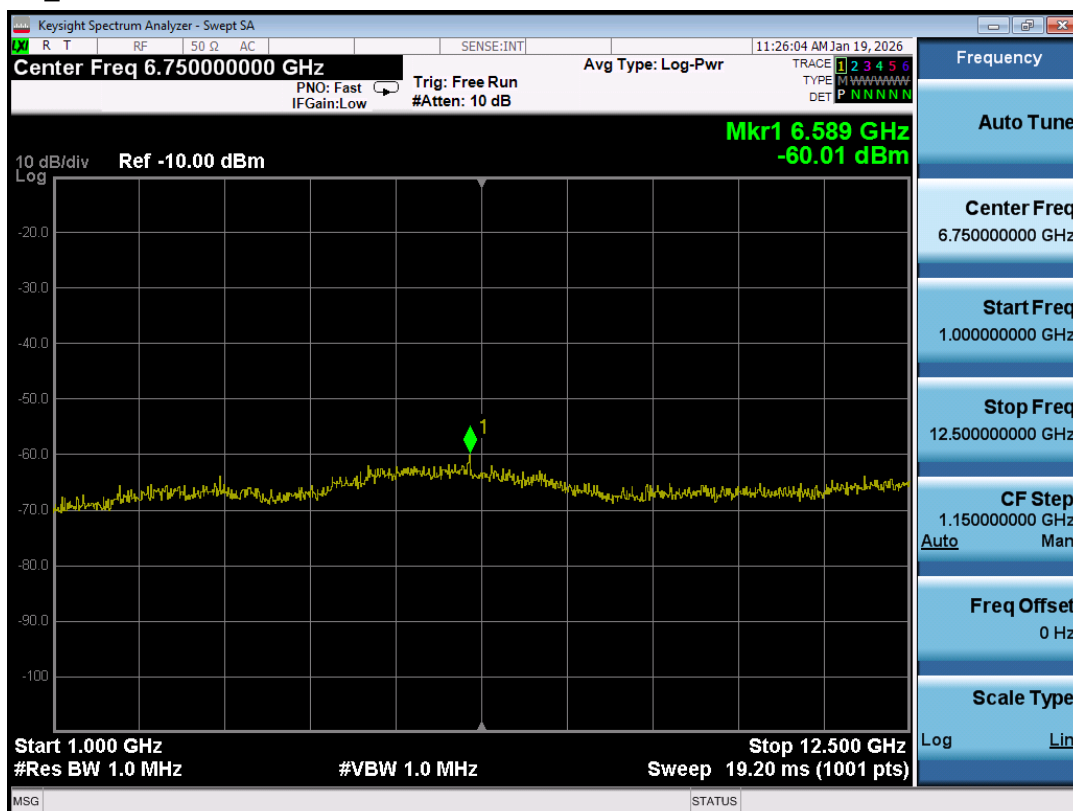
Chain A_802.11n HT40 2422MHz ; 1000 ~ 12500 MHz



Chain A_802.11n HT40 2462MHz ; 30 ~ 1000 MHz



Chain A_802.11n HT40 2462MHz ; 1000 ~ 12500 MHz



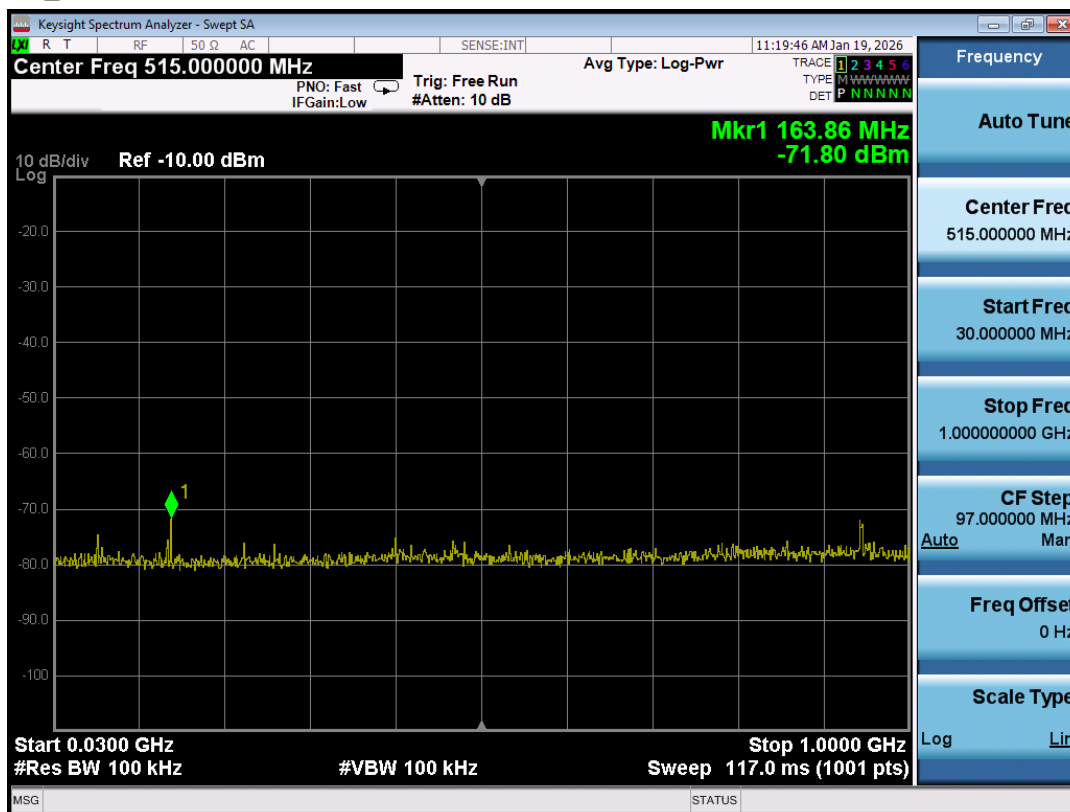
Product : IP CAMERA
Test Item : Receiver Spurious Emission
Test Mode : Mode 11 : Receiver (802.11ax HE20 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (nW)	Limit (nW)	Result
		dBm	nW	dBm	nW			
2412	30 ~ 1000	-71.77	0.0665	--	--	--	≤ 4	Pass
	1000 ~ 12500	-58.19	1.5171	--	--	--	≤ 20	Pass
2472	30 ~ 1000	-69.55	0.1109	--	--	--	≤ 4	Pass
	1000 ~ 12500	-57.86	1.6368	--	--	--	≤ 20	Pass

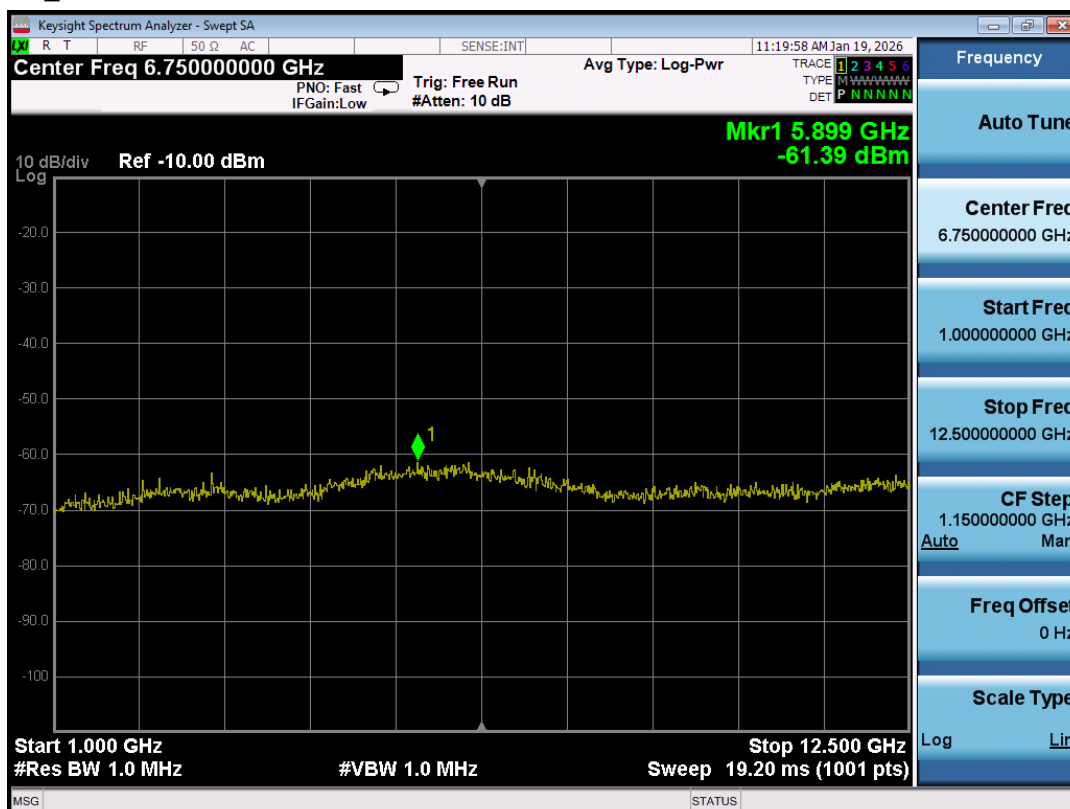
Note:

- (1) Measured Value = Spectrum Reading Value + Cable Loss
- (2) The spectrum plots are attached on the following pages.

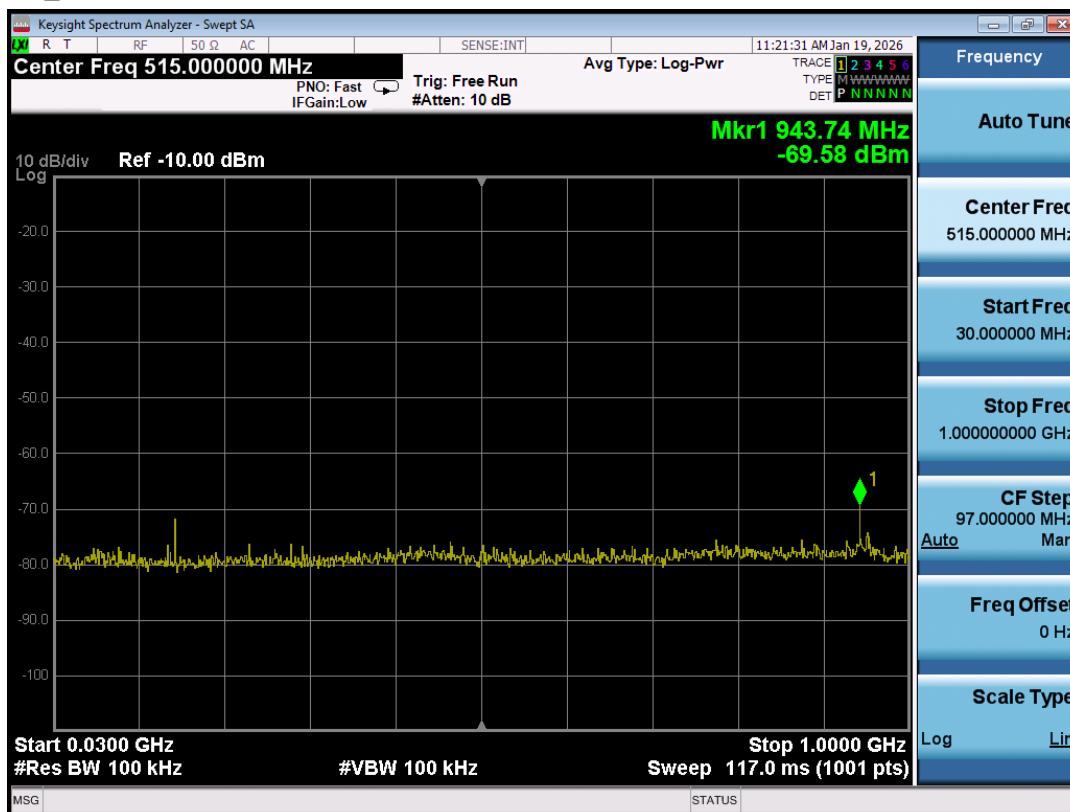
Chain A_802.11ax HE20 2412MHz ; 30 ~ 1000 MHz



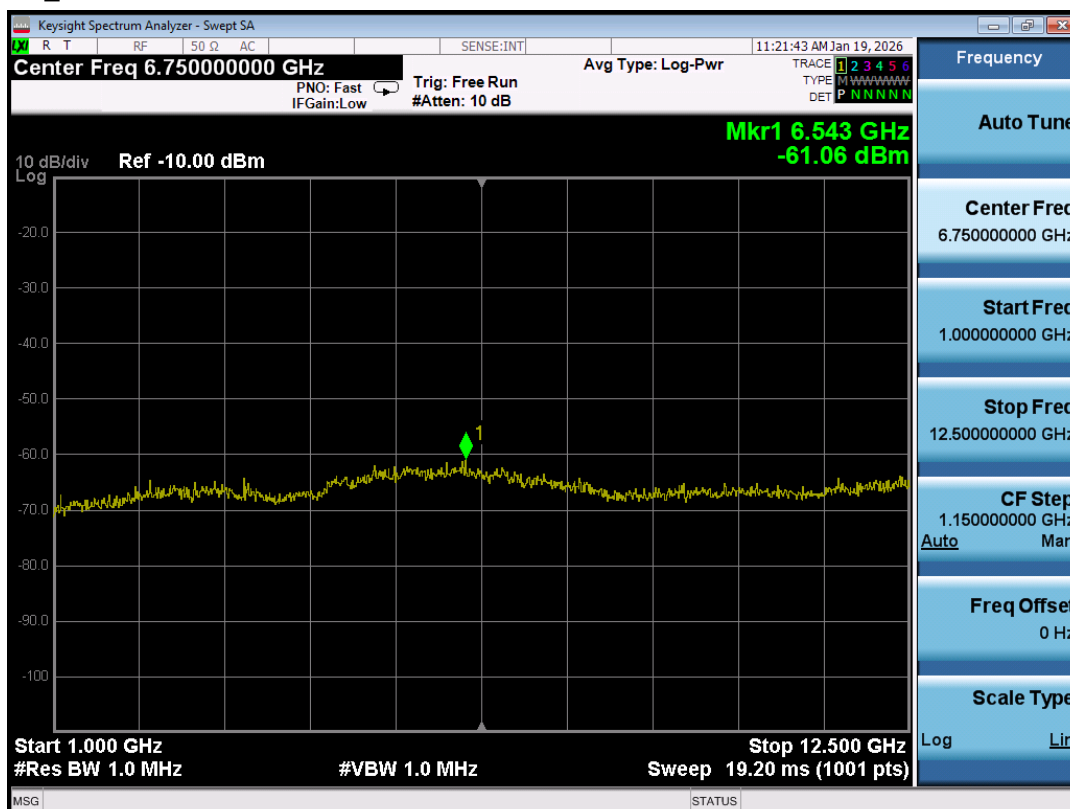
Chain A_802.11ax HE20 2412MHz ; 1000 ~ 12500 MHz



Chain A_802.11ax HE20 2472MHz ; 30 ~ 1000 MHz



Chain A_802.11ax HE20 2472MHz ; 1000 ~ 12500 MHz



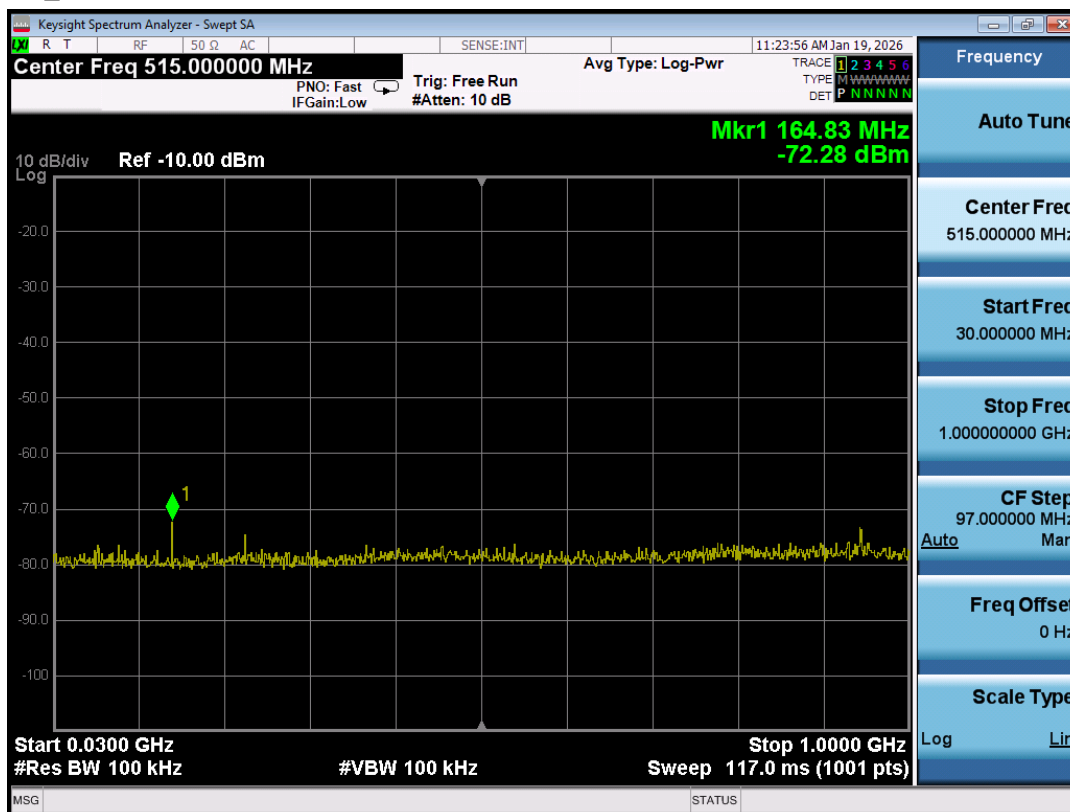
Product : IP CAMERA
Test Item : Receiver Spurious Emission
Test Mode : Mode 12 : Receiver (802.11ax HE40 MCS0)
Test Voltage : DC 12V

Freq. (MHz)	Test Freq. (MHz)	Chain A		Chain B		Total (nW)	Limit (nW)	Result
		dBm	nW	dBm	nW			
2422	30 ~ 1000	-72.25	0.0596	--	--	--	≤ 4	Pass
	1000 ~ 12500	-57.86	1.6368	--	--	--	≤ 20	Pass
2462	30 ~ 1000	-72.08	0.0619	--	--	--	≤ 4	Pass
	1000 ~ 12500	-58.41	1.4421	--	--	--	≤ 20	Pass

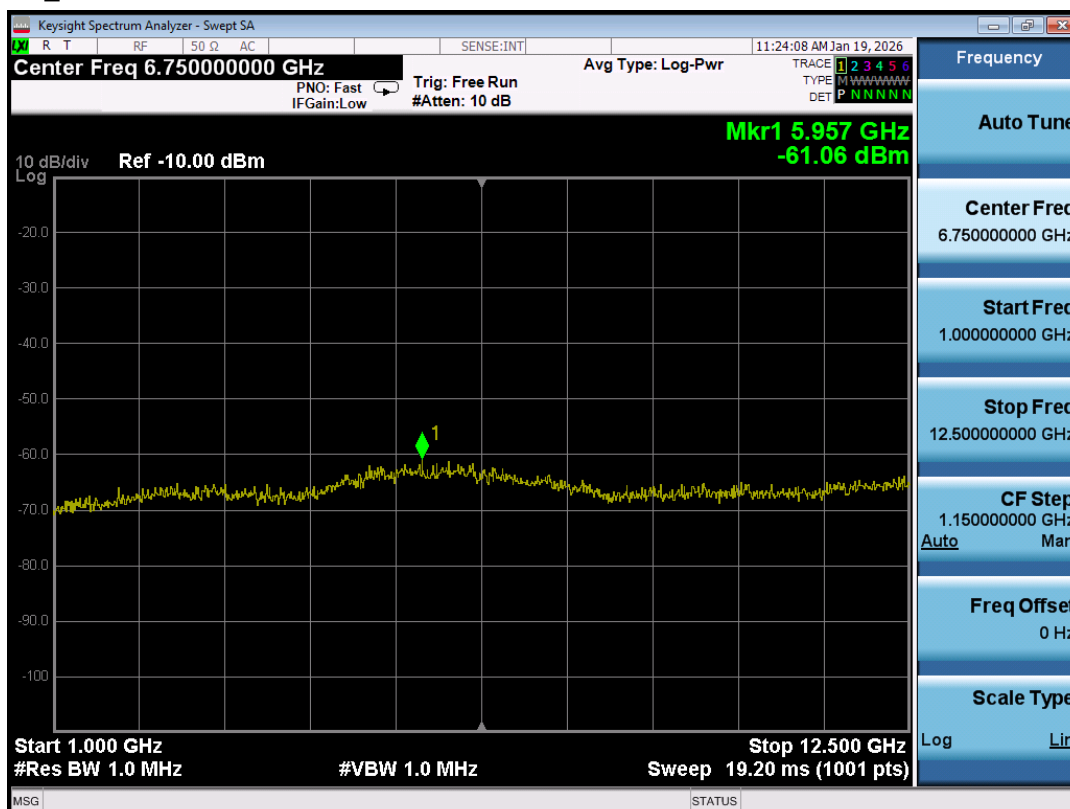
Note:

- (1) Measured Value = Spectrum Reading Value + Cable Loss
- (2) The spectrum plots are attached on the following pages.

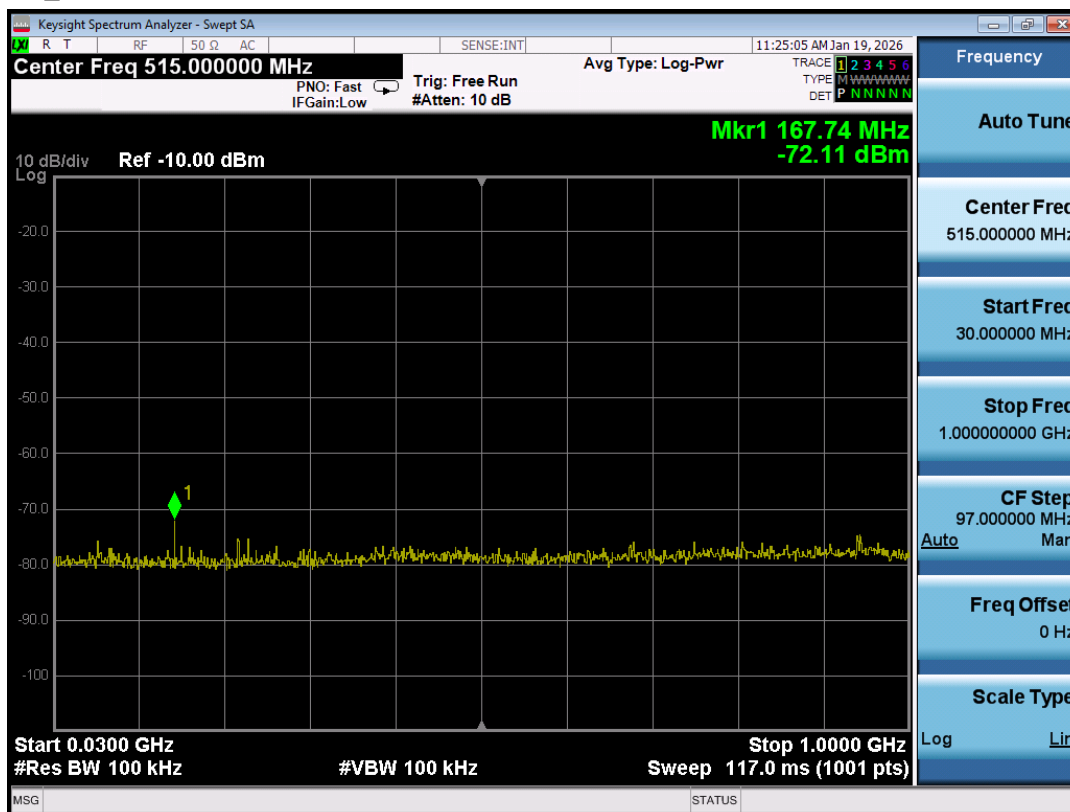
Chain A_802.11ax HE40 2422MHz ; 30 ~ 1000 MHz



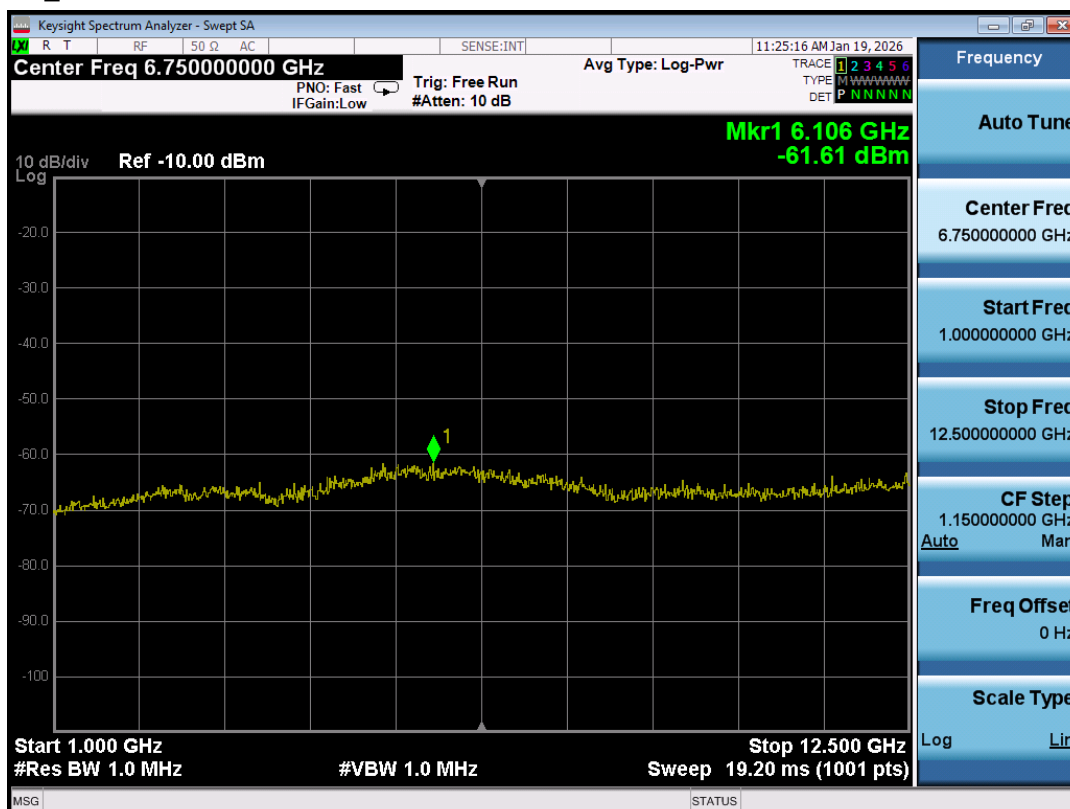
Chain A_802.11ax HE40 2422MHz ; 1000 ~ 12500 MHz



Chain A_802.11ax HE40 2462MHz ; 30 ~ 1000 MHz



Chain A_802.11ax HE40 2462MHz ; 1000 ~ 12500 MHz

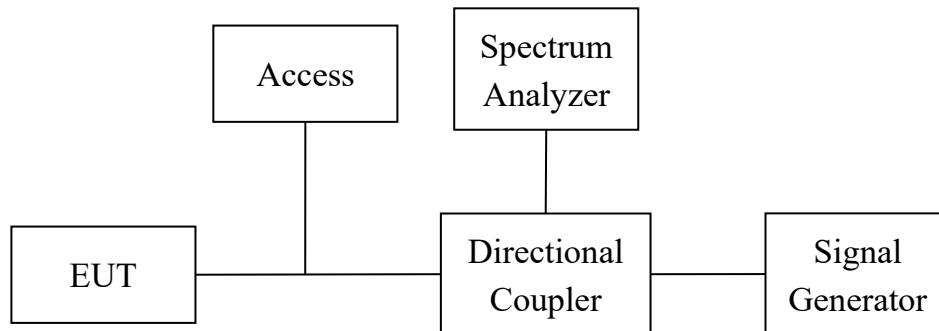


2.6 Carrier Sensing Measurement

2.6.1 Limit

Stop transmission while Carrier detecting.

2.6.2 Test Setup



2.6.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Carrier Sensing Function(1))

1. Link EUT and Access Point to Directional Coupler input port.
2. Link Signal Generator and Spectrum Analyzer to test port and output port in the Directional Coupler separately.
3. A positive Peak Detector function in Spectrum Analyzer must be used.
4. Set the Span to Zero.
5. Press the Signal Generator on and it will output the Carrier Signal. When the Link breaks off, wait a minute and press the Signal Generator off. After a while, reset the Link and done the test.

2.6.4 Test Result

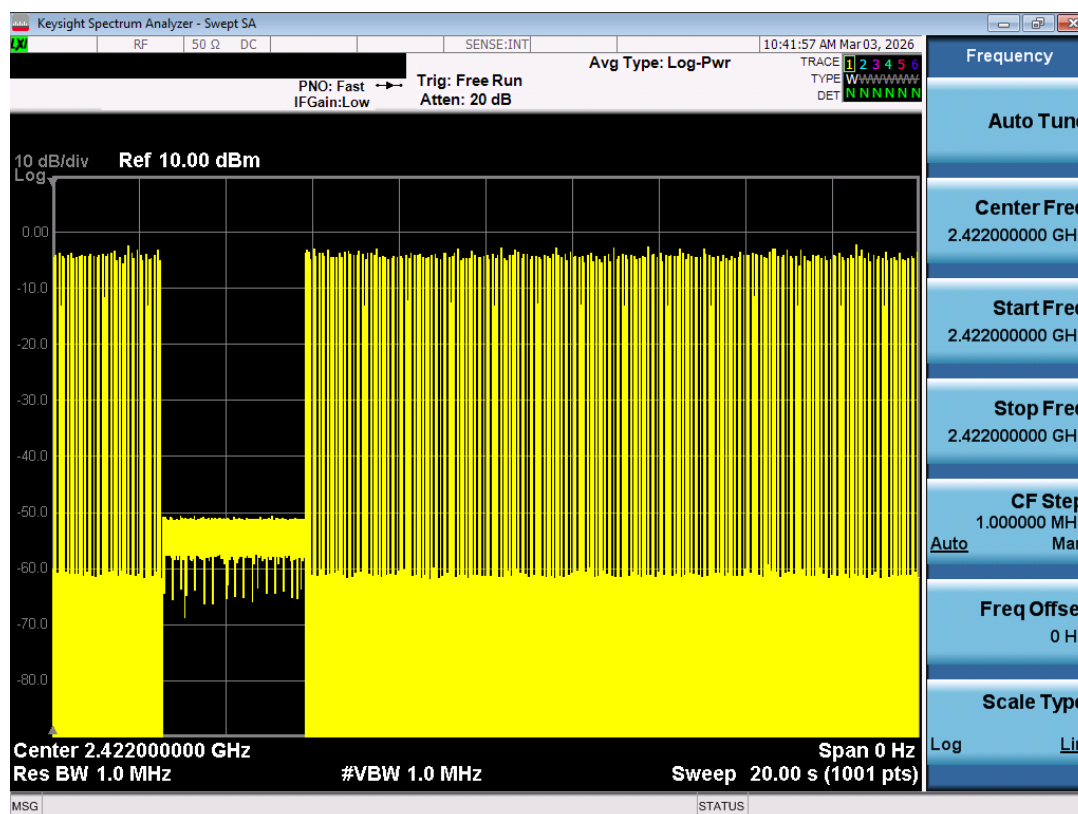
Product : IP CAMERA
Test Item : Carrier Sensing
Test Mode : Mode 13 : Transmit-Normal WLAN 2.4GHz
Test Voltage : DC 12V

Mode	Test Freq. (MHz)	Antenna Gain (G)	SG Power level	Result
		dBi	dBm	
802.11_n40	2422	3.53	-41.36	PASS

Note:

(1) Signal Generator Power Level (dBm) = $22.79 + G - 20\log(F)$, G: Antenna Gain , G: Antenna Gain

(2) * SG Power Level = $22.79 + 3.53 - 20 * \log(2442) = -41.36$ dBm



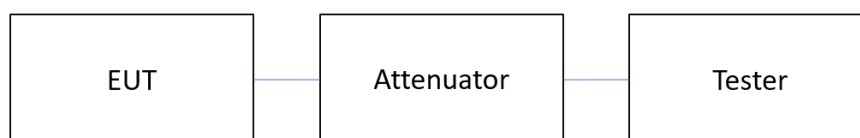
2.7 Interference Prevention Function

2.7.1 Limit

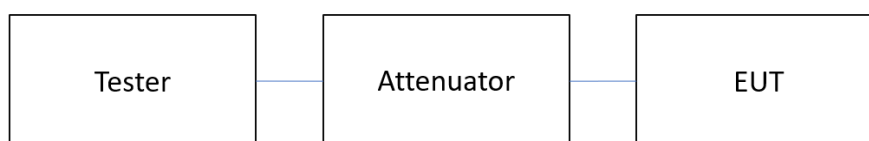
Item	Limit
Identification code	≥ 48 bits

2.7.2 Test Setup

- (1) When sending an identification code



- (2) When receiving an identification code



2.7.3 Test Procedure

Test method: According to Notification No. 88 of MIC, 2004, Annex 43(Interference Prevention Function)

1. When EUT has a function to automatically transmit an identification code
 - (a) Transmit the identification code specified in the Equipment Regulations from the test equipment.
 - (b) Check the identification code sent by the demodulator.
2. When the test equipment has a function to automatically receive the identification code
 - (a) Transmit the identification code specified in the Equipment Regulations from the counterpart device.
 - (b) Confirm that communication is performed with the EUT using the dedicated jig.
 - (c) Transmit a code different from the identification code specified in the Equipment Regulations from the counterpart device.
 - (d) Confirm that EUT stops transmission or displays that the identification code is different.

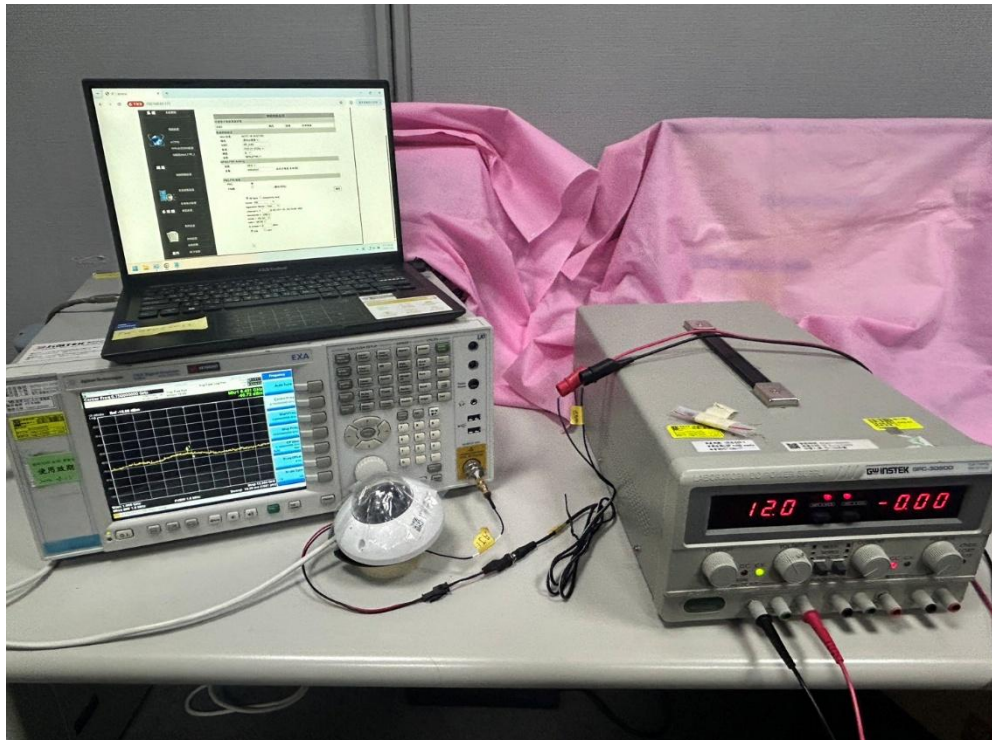
2.7.4 Test Result

The Mac Address is 84:FC:14:24:E7:DC

		IP_Camera	192.168.50.246	DHCP	84:FC:14:24:E7:DC	
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Attachment 1: Photographs of the Test Configuration

Spectrum Measurement



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