
FCC Test Report

Report No.: AGC03923230801FR01A

FCC ID : 2BCGH-IPM004
APPLICATION PURPOSE : Class II Equipment
PRODUCT DESIGNATION : WIFI Camera
BRAND NAME : E-Song
MODEL NAME : IPM004
APPLICANT : E-Song Digital Limited
DATE OF ISSUE : Nov. 09, 2023
STANDARD(S) : FCC Part 15.247
TEST PROCEDURE(S)
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 09, 2023	Valid	Initial Release

Note: The original test report AGC03923230801FR01 (dated Aug. 24, 2023 and tested from Aug. 07, 2023 to Aug. 24, 2023) was modified on Nov. 09, 2023, including the following changes and additions:

-Remove NTC

Based on the above changes, updated the EUT photos, additional tests for radiation emission and line conducted emission are required..

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1. VERIFICATION OF CONFORMITY

Applicant	E-Song Digital Limited
Address	6F, Block B, Jintai Industrial Park, Hangcheng Road, Gushu, Xixiang, Bao'an District, Shenzhen City, PRC
manufacturer	E-Song Digital Limited
Address	6F, Block B, Jintai Industrial Park, Hangcheng Road, Gushu, Xixiang, Bao'an District, Shenzhen City, PRC
Factory	E-Song Digital Limited
Address	6F, Block B, Jintai Industrial Park, Hangcheng Road, Gushu, Xixiang, Bao'an District, Shenzhen City, PRC
Product Designation	WIFI Camera
Brand Name	E-Song
Test Model	IPM004
Date of receipt of test item	Nov. 06, 2023
Date of test	Nov. 06, 2023 to Nov. 09, 2023
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Prepared By		
	Cici Li (Project Engineer)	Nov. 09, 2023
Reviewed By		
	Calvin Liu (Reviewer)	Nov. 09, 2023
Approved By		
	Max Zhang (Authorized Officer)	Nov. 09, 2023

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as “WIFI Camera”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Equipment Type	WLAN 2.4G
Frequency Band	2400MHz ~ 2483.5MHz
Operation Frequency	2412MHz ~ 2462MHz
Output Power (Average)	IEEE 802.11b: 12.65dBm; IEEE 802.11g: 10.77dBm; IEEE 802.11n(HT20): 11.15dBm;
Output Power (Peak)	IEEE 802.11b: 15.67dBm; IEEE 802.11g: 18.67dBm; IEEE 802.11n(HT20):19.06dBm;
Modulation	802.11b:DQPSK, DBPSK, CCK 802.11g/n: 64-QAM, 16-QAM, QPSK, BPSK
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps
Number of channels	11
Hardware Version	V4
Software Version	11.4
Antenna Designation	FPC antenna (Comply with requirements of the FCC part 15.203)
Antenna Gain	3.31dBi
Power Supply	DC 3.7V by battery or DC 5V by adapter

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2.2. TABLE OF CARRIER FREQUENCIES

11 channels are provided for 802.11b/g/n(HT20):

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz		

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2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Data rate(Mbps)	
									800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2BCGH-IPM004** filing to comply with the FCC Part 15 requirements.

2.5. TEST METHODOLOGY

KDB 558074 D01 15.247 Meas Guidance v05: Guidance for compliance measurements on Digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules
ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

2.7. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

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2.8. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX II: PHOTOGRAPHS OF EUT.

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3. 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%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	$U_c = \pm 2.7 \%$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$

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4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel transmitting (TX)
2	Middle channel transmitting (TX)
3	High channel transmitting (TX)

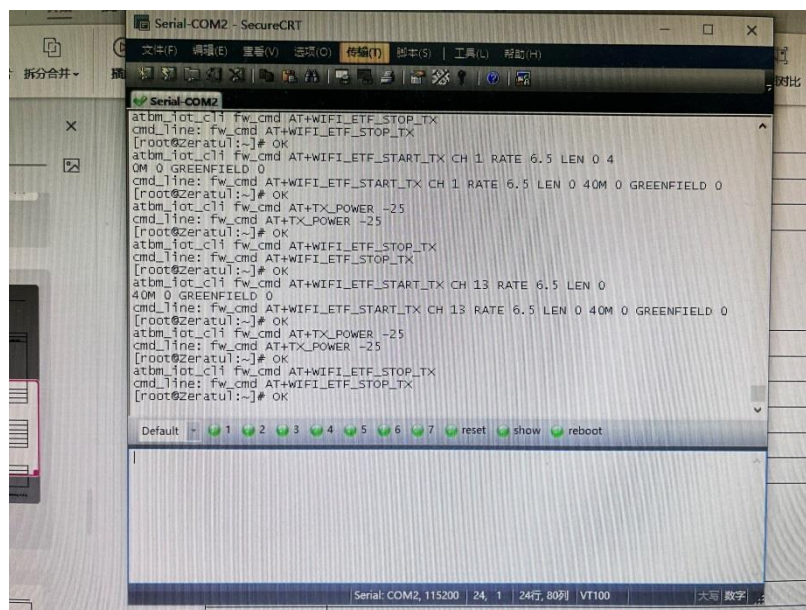
Note:

Transmit by 802.11b with Data rate (1/2/5.5/11)
Transmit by 802.11g with Data rate (6/9/12/18/24/36/48/54)
Transmit by 802.11n (20MHz) with Data rate (6.5/13/19.5/26/39/52/58.5/65)
The test channel for 20MHZ bandwidth system is channel 1, 6 and 11.

Note:

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the EUT is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

Software Setting



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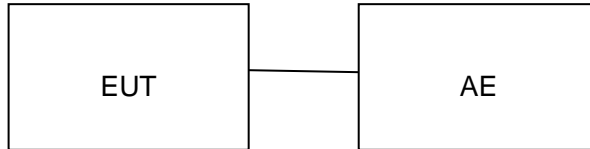
atbm_iot_cli fw_cmd AT+WIFI_ETF_STOP_TX
cmd_line: fw_cmd AT+WIFI_ETF_STOP_TX
[root@zeratul:~]# OK
atbm_iot_cli fw_cmd AT+WIFI_ETF_START_TX CH 1 RATE 6.5 LEN 0 4
0M 0 GREENFIELD 0
cmd_line: fw_cmd AT+WIFI_ETF_START_TX CH 1 RATE 6.5 LEN 0 40M 0 GREENFIELD 0
[root@zeratul:~]# OK
atbm_iot_cli fw_cmd AT+TX_POWER -25
cmd_line: fw_cmd AT+TX_POWER -25
[root@zeratul:~]# OK
atbm_iot_cli fw_cmd AT+WIFI_ETF_STOP_TX
cmd_line: fw_cmd AT+WIFI_ETF_STOP_TX
[root@zeratul:~]# OK
atbm_iot_cli fw_cmd AT+WIFI_ETF_START_TX CH 13 RATE 6.5 LEN 0
40M 0 GREENFIELD 0
cmd_line: fw_cmd AT+WIFI_ETF_START_TX CH 13 RATE 6.5 LEN 0 40M 0 GREENFIELD 0
[root@zeratul:~]# OK
atbm_iot_cli fw_cmd AT+TX_POWER -25
cmd_line: fw_cmd AT+TX_POWER -25
[root@zeratul:~]# OK
atbm_iot_cli fw_cmd AT+WIFI_ETF_STOP_TX
cmd_line: fw_cmd AT+WIFI_ETF_STOP_TX
[root@zeratul:~]# OK
  
```

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5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	WIFI Camera	IPM004	2BCGH-IPM004	EUT

5.3. SUMMARY OF TEST RESULTS

Item	FCC Rules	Description Of Test	Result
1	§15.209	Radiated Emission& Band Edge	Pass
2	§15.207	AC Power Line Conducted Emission	Pass

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6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun. 03, 2023	Jun. 02, 2024
LISN	R&S	ESH2-Z5	100086	Jun. 03, 2023	Jun. 02, 2024
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Feb. 18, 2023	Feb. 17, 2024
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Jun. 01, 2023	May 31, 2024
2.4GHz Fliter	EM Electronics	2400-2500MHZ	N/A	Jun. 01, 2023	May 31, 2024
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 24, 2023	Sep. 23, 2025
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	00034609	Mar. 12, 2022	Mar. 11, 2024
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2023	Apr. 22, 2024
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 01, 2022	Sep. 02, 2024
ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 05, 2023	Jan. 04, 2025
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

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7. RADIATED EMISSION

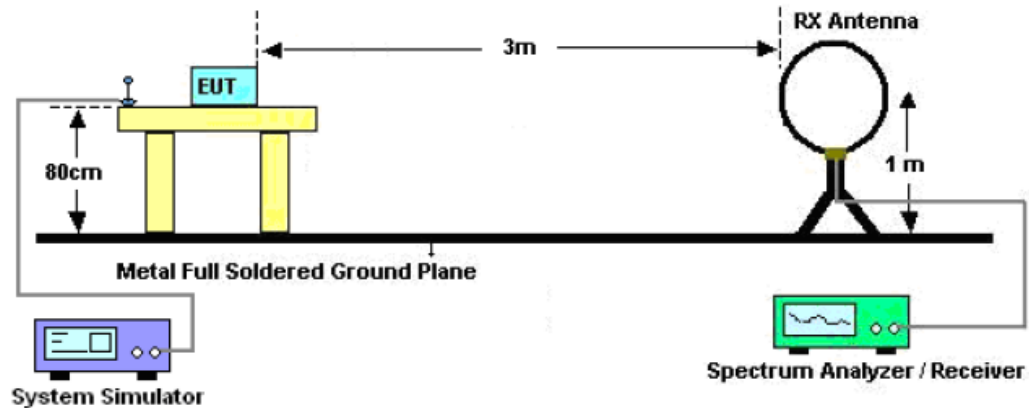
7.1. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

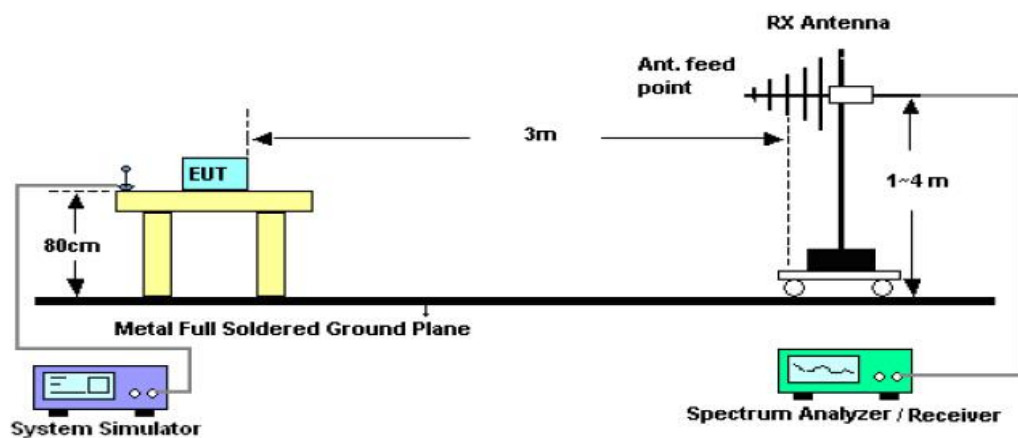
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7.2. TEST SETUP

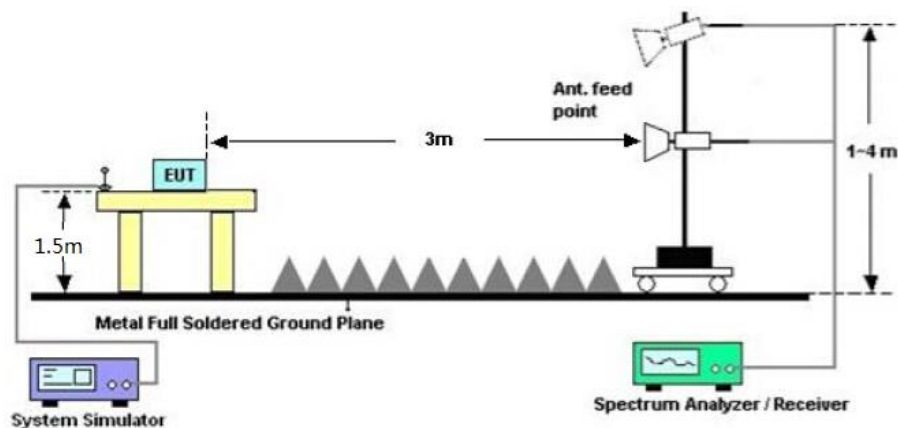
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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7.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

7.4. TEST RESULT

Radiated emission below 30MHz

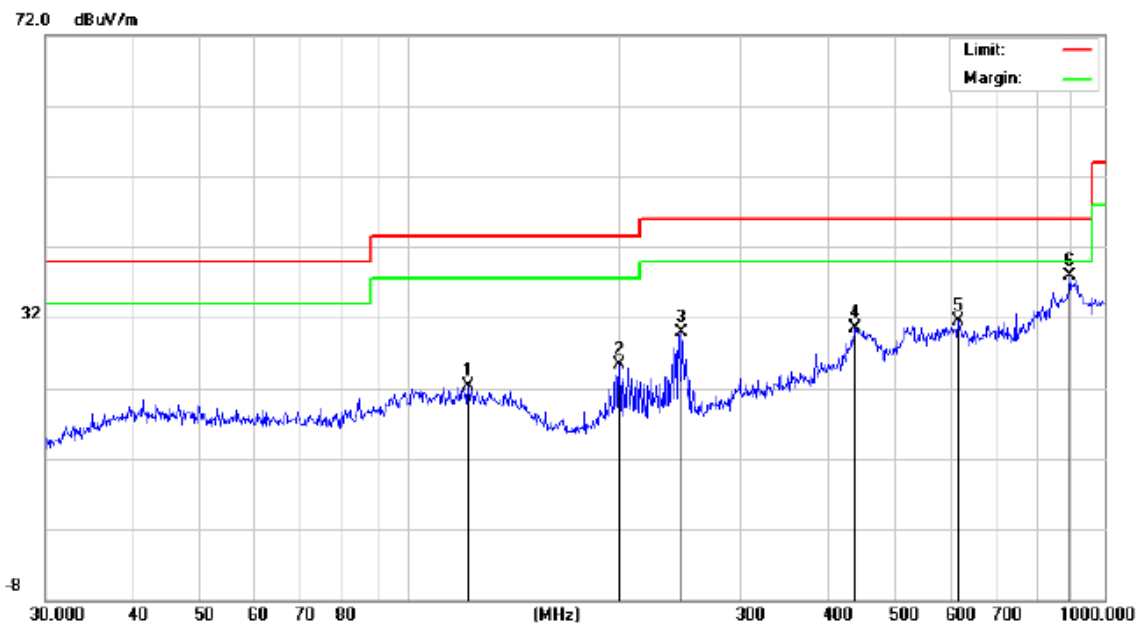
The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

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Radiated emission from 30MHz to 1000MHz

EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Horizontal

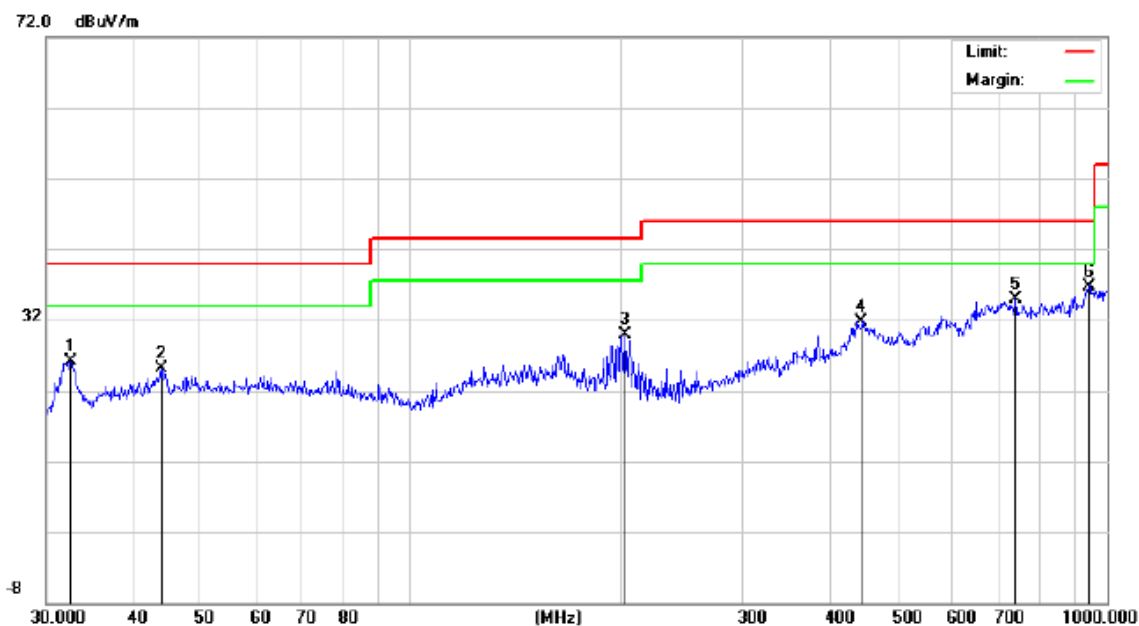


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		121.5485	5.96	16.31	22.27	43.50	-21.23	peak
2		200.6880	10.75	14.50	25.25	43.50	-18.25	peak
3		246.8148	14.73	15.20	29.93	46.00	-16.07	peak
4		437.1198	5.99	24.48	30.47	46.00	-15.53	peak
5		616.3718	6.29	25.18	31.47	46.00	-14.53	peak
6	*	890.7278	7.35	30.64	37.99	46.00	-8.01	peak

RESULT: PASS

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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		32.5198	11.74	14.43	26.17	40.00	-13.83	peak
2		43.8119	8.18	16.94	25.12	40.00	-14.88	peak
3		203.5228	12.33	17.64	29.97	43.50	-13.53	peak
4		444.8514	5.92	25.88	31.80	46.00	-14.20	peak
5		739.6604	7.88	26.93	34.81	46.00	-11.19	peak
6	*	942.1305	5.89	30.91	36.80	46.00	-9.20	peak

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Over=Measure-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. All test modes had been pre-tested. The 802.11b at low channel is the worst case and recorded in the report.

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Radiated emission above 1GHz

EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	56.23	0.08	56.31	74	-17.69	peak
4824.000	47.67	0.08	47.75	54	-6.25	AVG
7236.000	50.32	2.21	52.53	74	-21.47	peak
7236.000	41.66	2.21	43.87	54	-10.13	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	56.82	0.08	56.9	74	-17.1	peak
4824.000	46.61	0.08	46.69	54	-7.31	AVG
7236.000	50.32	2.21	52.53	74	-21.47	peak
7236.000	41.22	2.21	43.43	54	-10.57	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2437MHz	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.000	56.3	0.14	56.44	74	-17.56	peak
4874.000	46.42	0.14	46.56	54	-7.44	AVG
7311.000	51.66	2.36	54.02	74	-19.98	peak
7311.000	41.73	2.36	44.09	54	-9.91	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2437MHz	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.000	56.31	0.14	56.45	74	-17.55	peak
4874.000	46.19	0.14	46.33	54	-7.67	AVG
7311.000	50.42	2.36	52.78	74	-21.22	peak
7311.000	41.66	2.36	44.02	54	-9.98	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHz	Antenna	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.000	55.91	0.22	56.13	74	-17.87	peak
4924.000	46.69	0.22	46.91	54	-7.09	AVG
7386.000	50.41	2.64	53.05	74	-20.95	peak
7386.000	42.79	2.64	45.43	54	-8.57	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHz	Antenna	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.000	56.43	0.22	56.65	74	-17.35	peak
4924.000	46.39	0.22	46.61	54	-7.39	AVG
7386.000	51.22	2.64	53.86	74	-20.14	peak
7386.000	42.07	2.64	44.71	54	-9.29	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RESULT: PASS

Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Emission Level-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The 802.11b mode is the worst case and recorded in the report.

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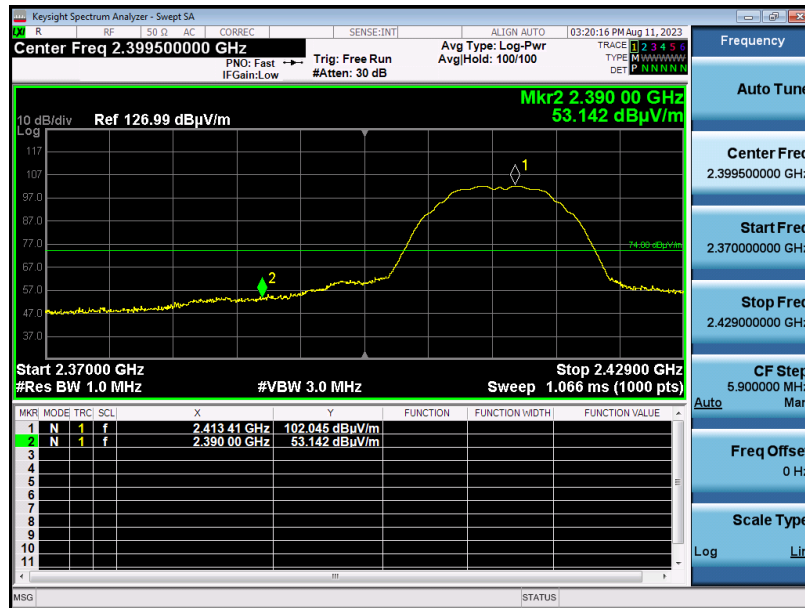
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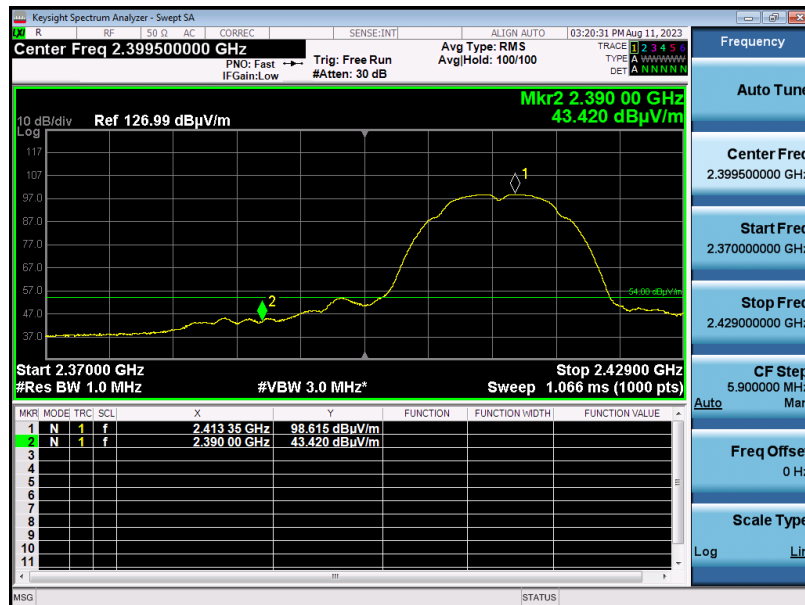
Test result for band edge emission at restricted bands

EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



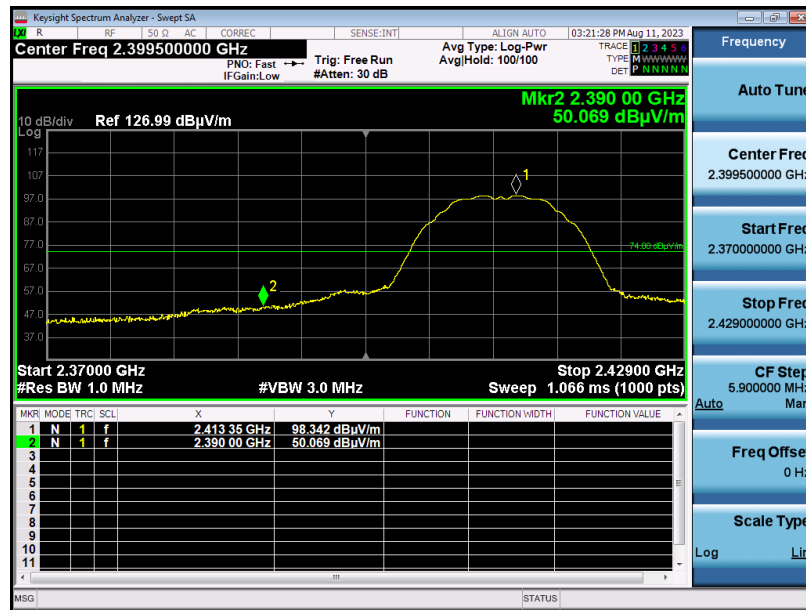
RESULT: PASS

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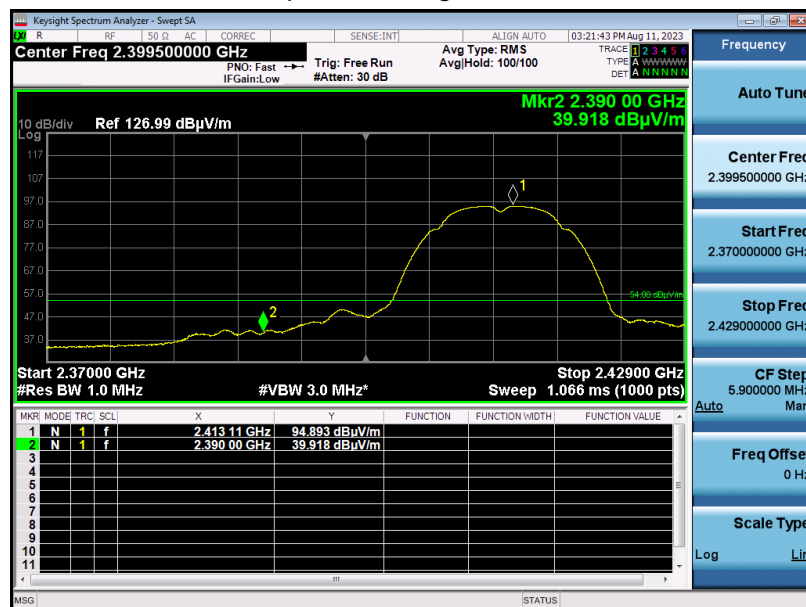
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



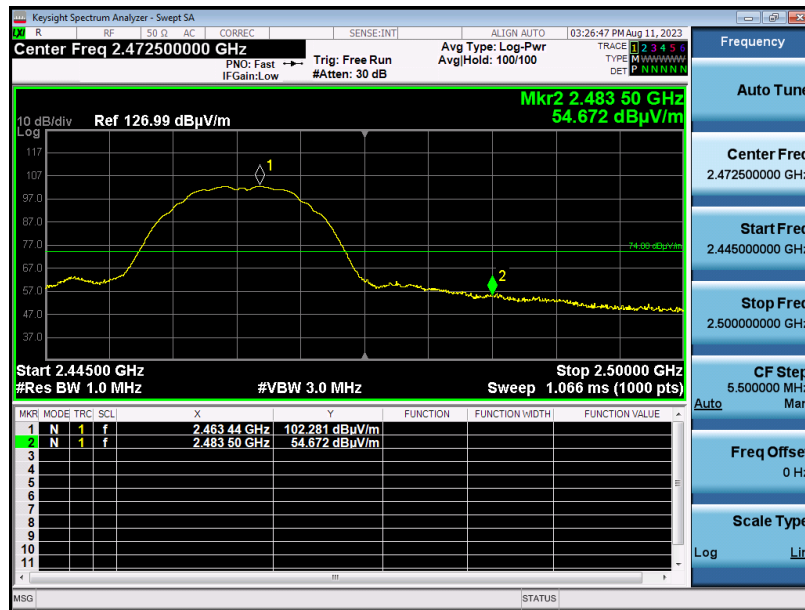
RESULT: PASS

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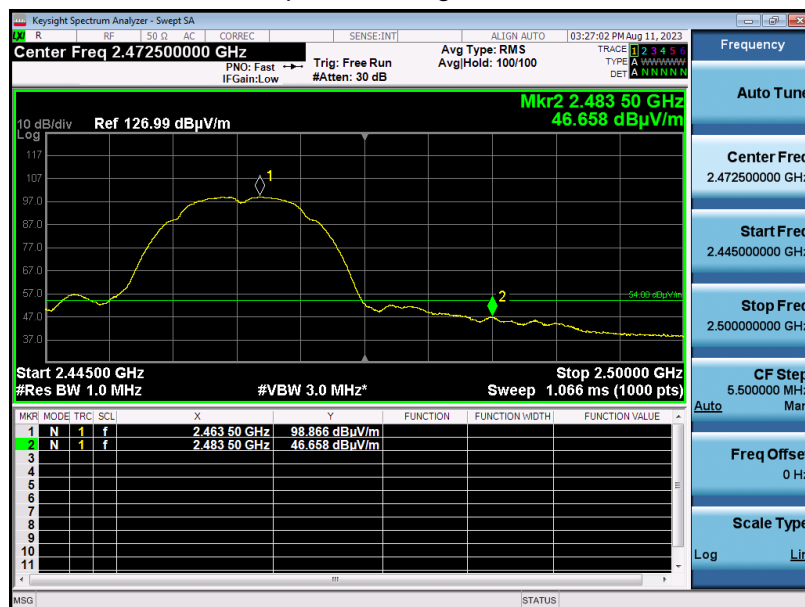
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



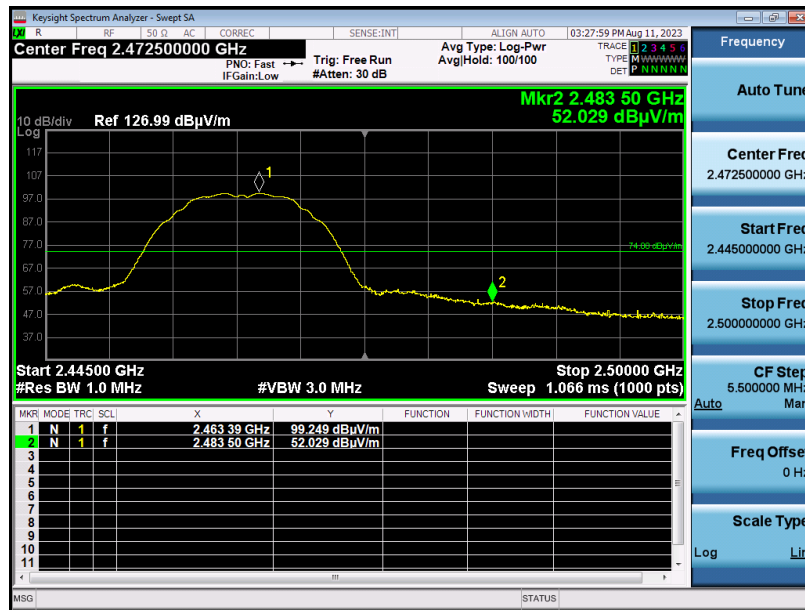
RESULT: PASS

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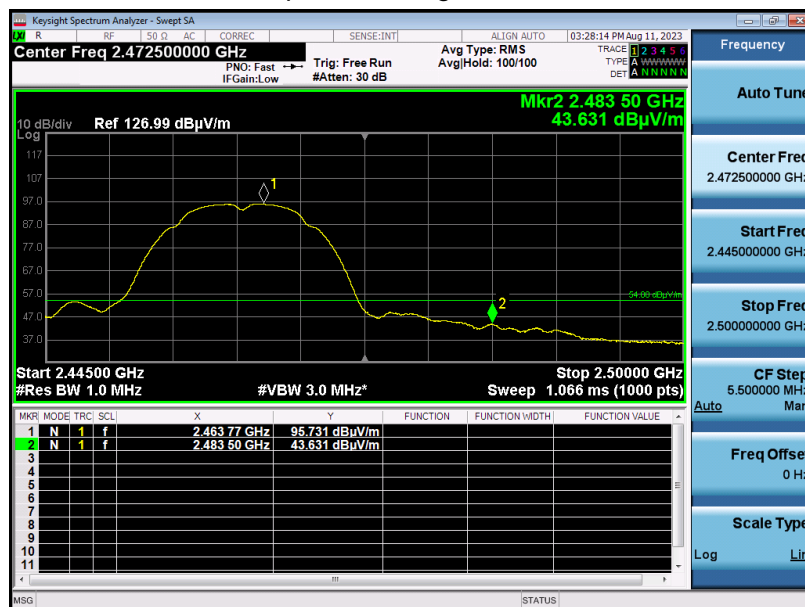
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2462MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



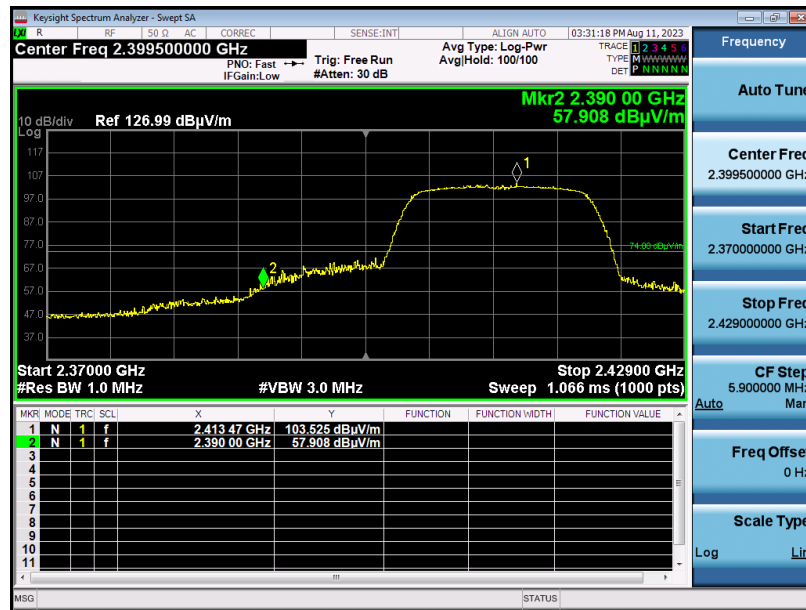
RESULT: PASS

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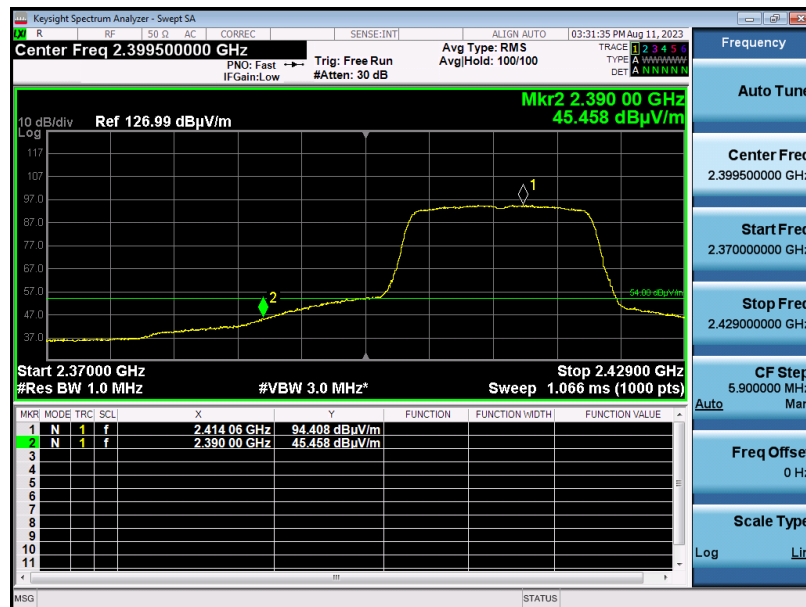
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



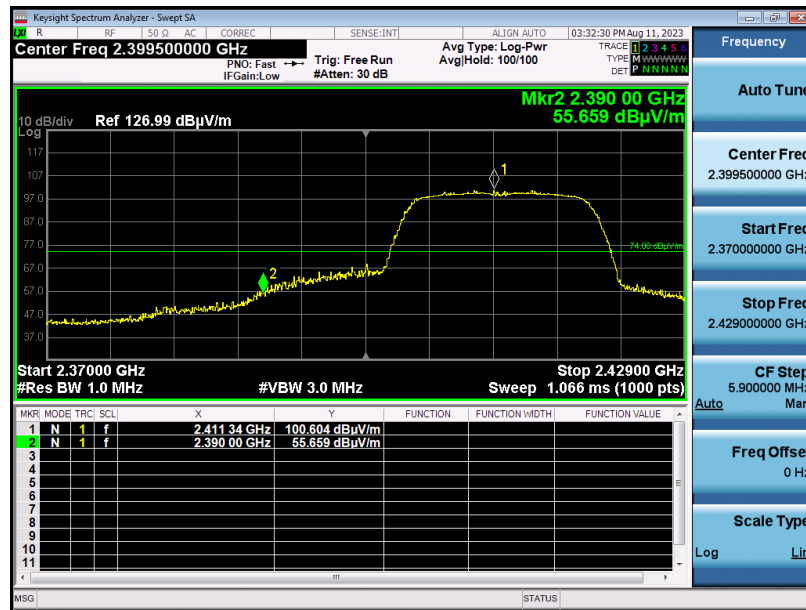
RESULT: PASS

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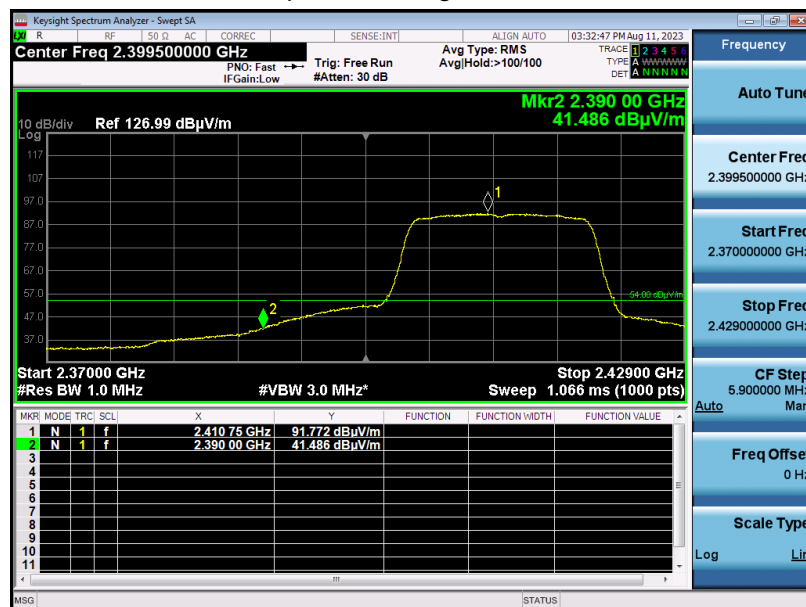
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2412MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



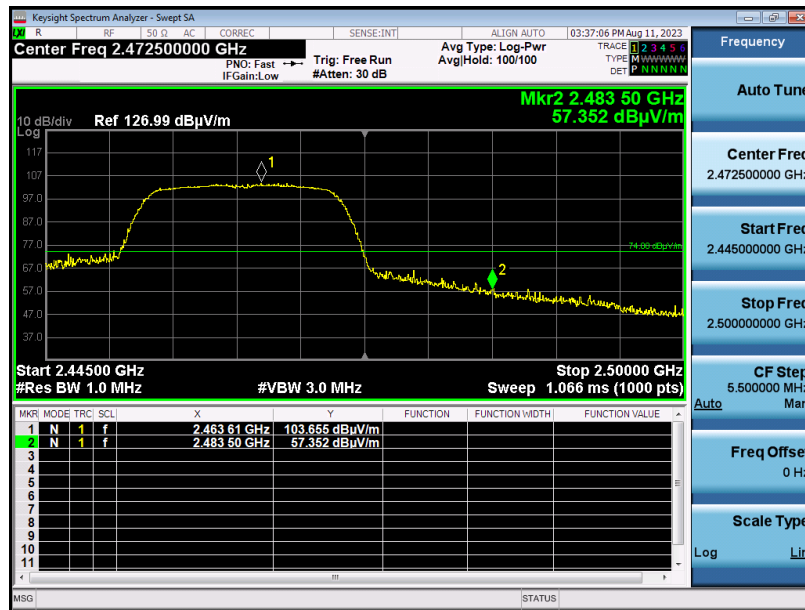
RESULT: PASS

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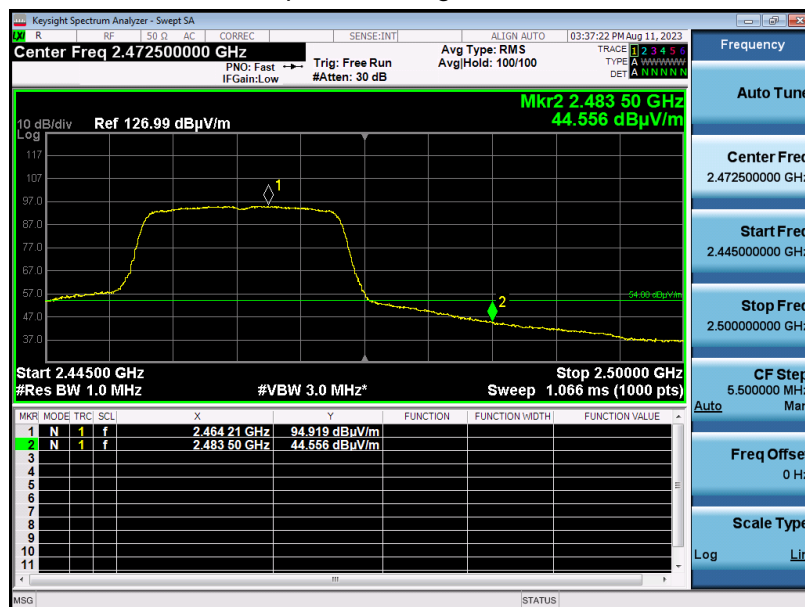
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



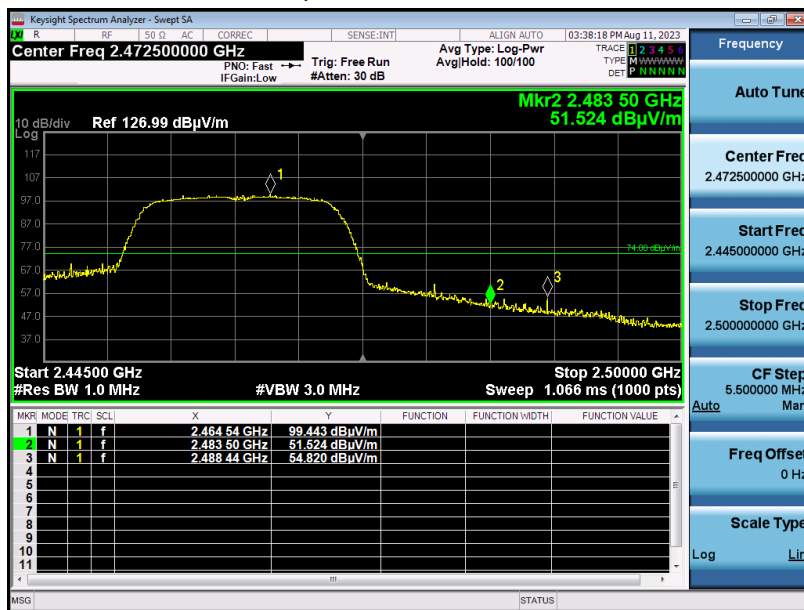
RESULT: PASS

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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with data rate 6 2462MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



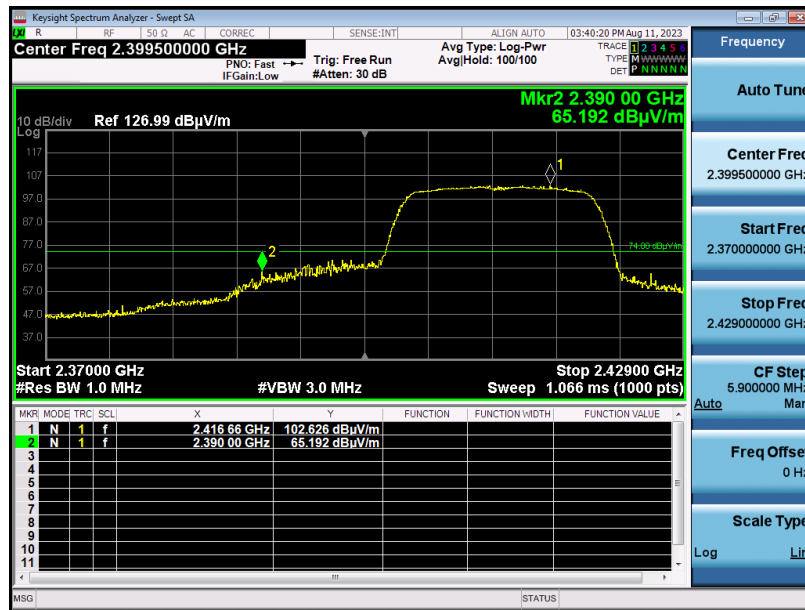
RESULT: PASS

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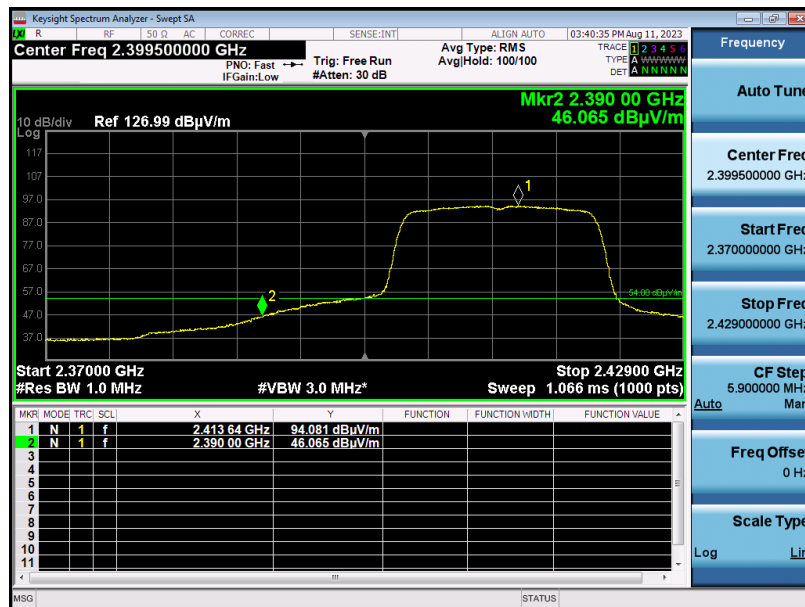
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2412MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



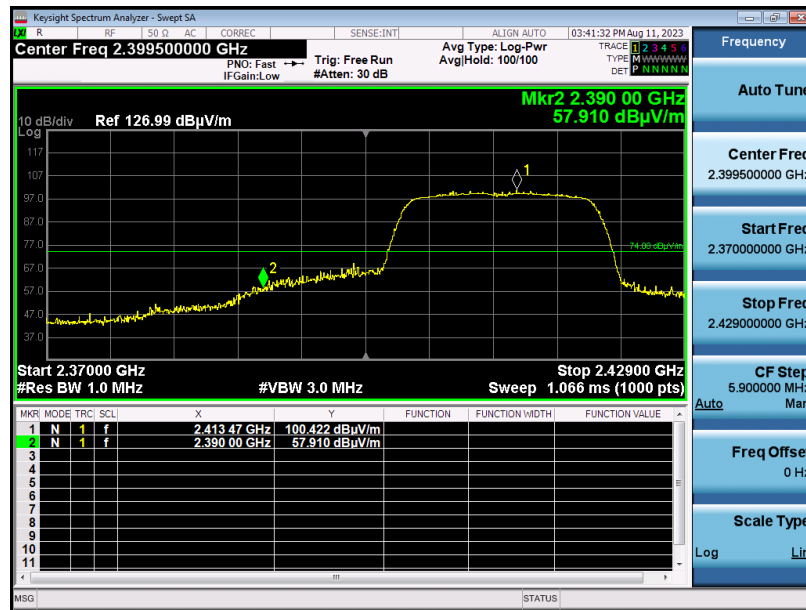
RESULT: PASS

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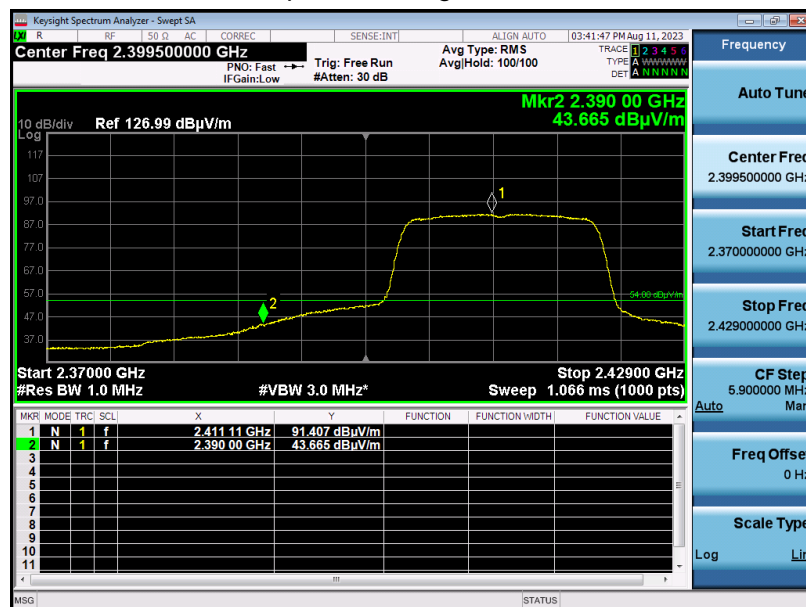
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2412MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



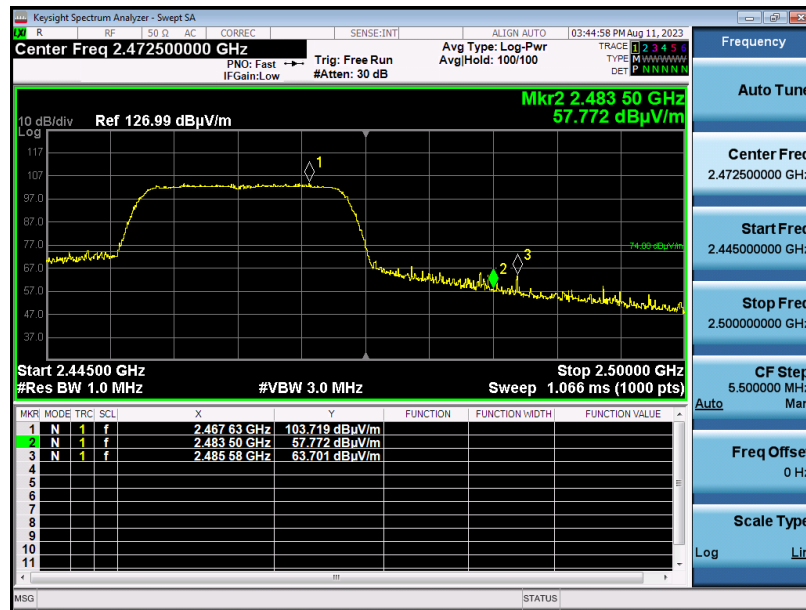
RESULT: PASS

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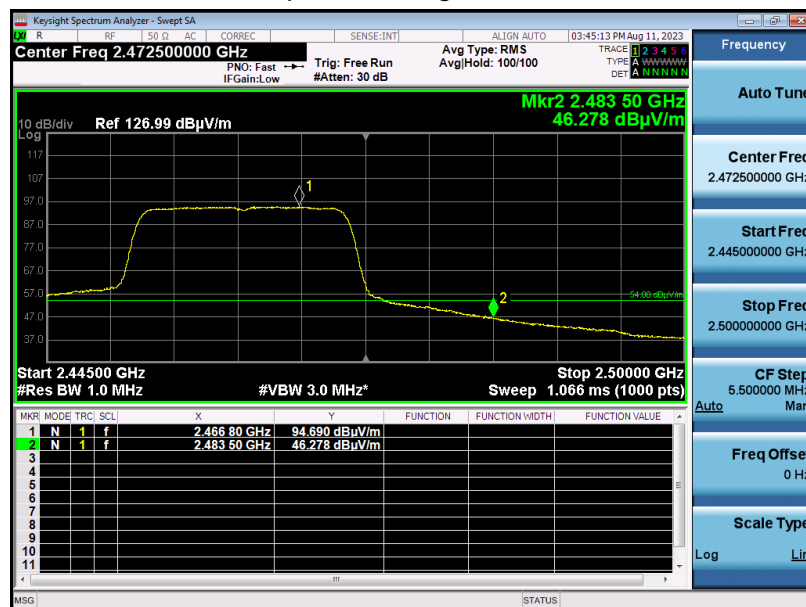
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2462MHz	Antenna	Horizontal

Test Graph for Peak Measurement



Test Graph for Average Measurement



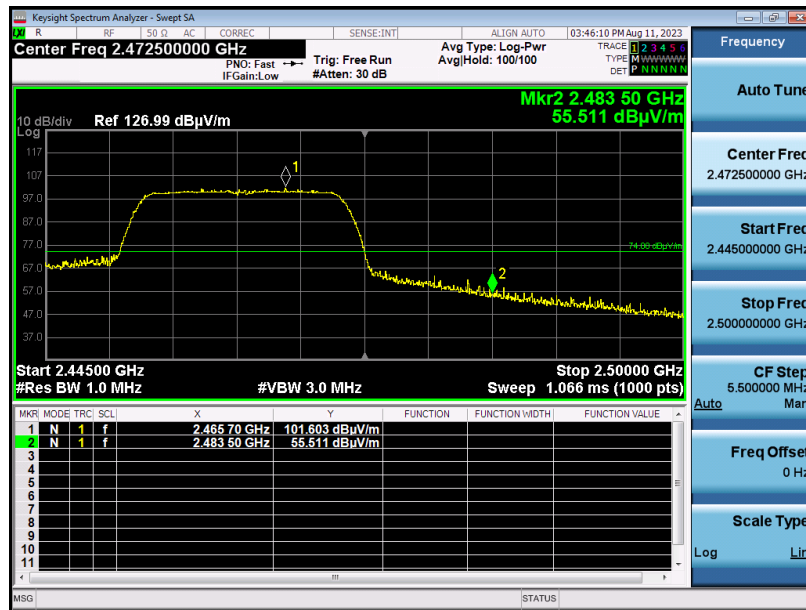
RESULT: PASS

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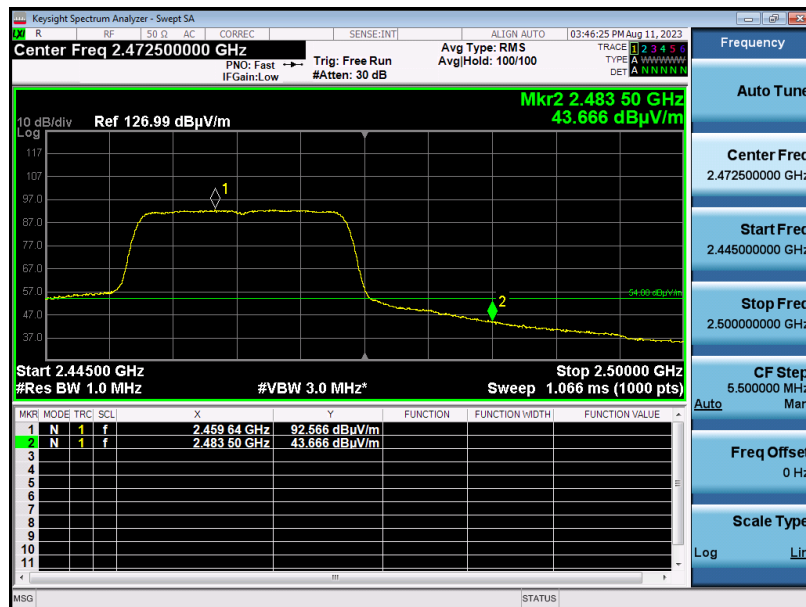
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EUT	WIFI Camera	Model Name	IPM004
Temperature	25°C	Relative Humidity	60%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n20 with data rate 6.5 2462MHz	Antenna	Vertical

Test Graph for Peak Measurement



Test Graph for Average Measurement



RESULT: PASS

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8. LINE CONDUCTED EMISSION TEST

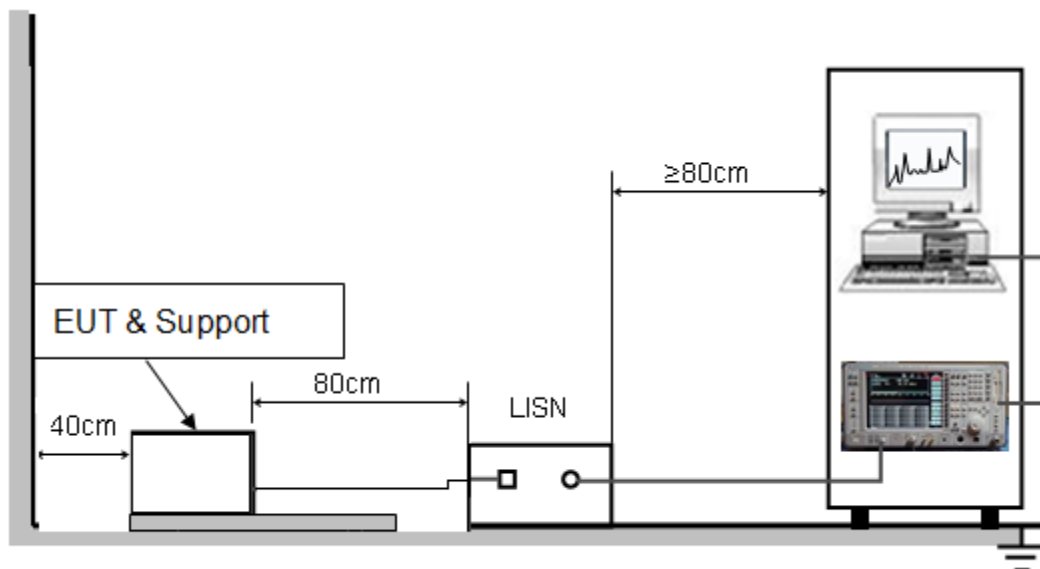
8.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P (dB μ V)	Average (dB μ V)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

8.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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8.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 16.1V power from adapter which received AC120V/60Hz power from a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

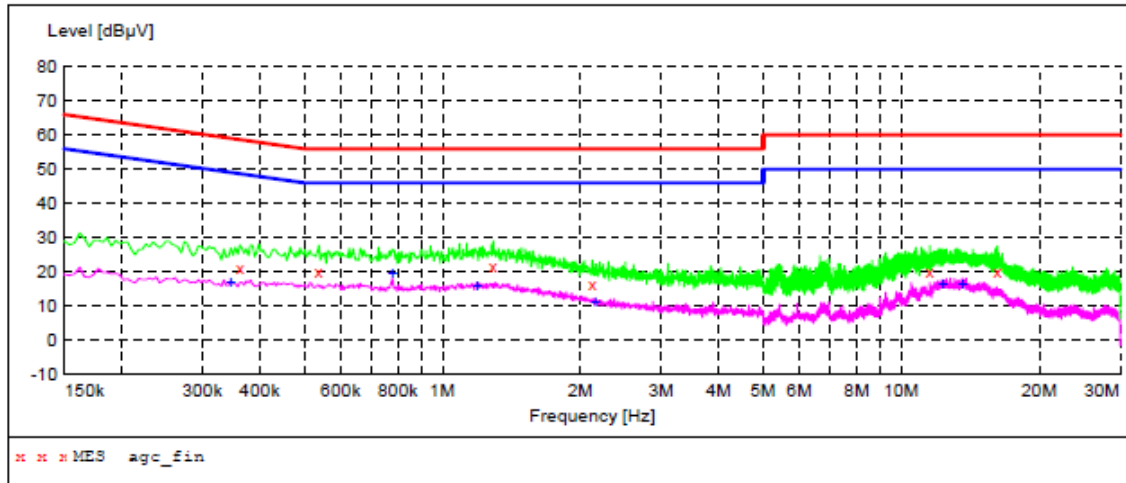
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

8.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case was reported on the Summary Data page.

8.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc_fin"

2023/11/7 9:57

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.362000	20.90	6.1	59	37.8	QP	L1
0.538000	19.90	6.2	56	36.1	QP	L1
1.290000	21.70	6.2	56	34.3	QP	L1
2.122000	16.40	6.2	56	39.6	QP	L1
11.530000	20.20	6.7	60	39.8	QP	L1
16.194000	20.10	6.9	60	39.9	QP	L1

MEASUREMENT RESULT: "agc_fin2"

2023/11/7 9:57

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.346000	16.70	6.1	49	32.4	AV	L1
0.778000	19.50	6.2	46	26.5	AV	L1
1.190000	15.80	6.2	46	30.2	AV	L1
2.154000	11.30	6.2	46	34.7	AV	L1
12.290000	16.30	6.8	50	33.7	AV	L1
13.566000	16.30	6.8	50	33.7	AV	L1

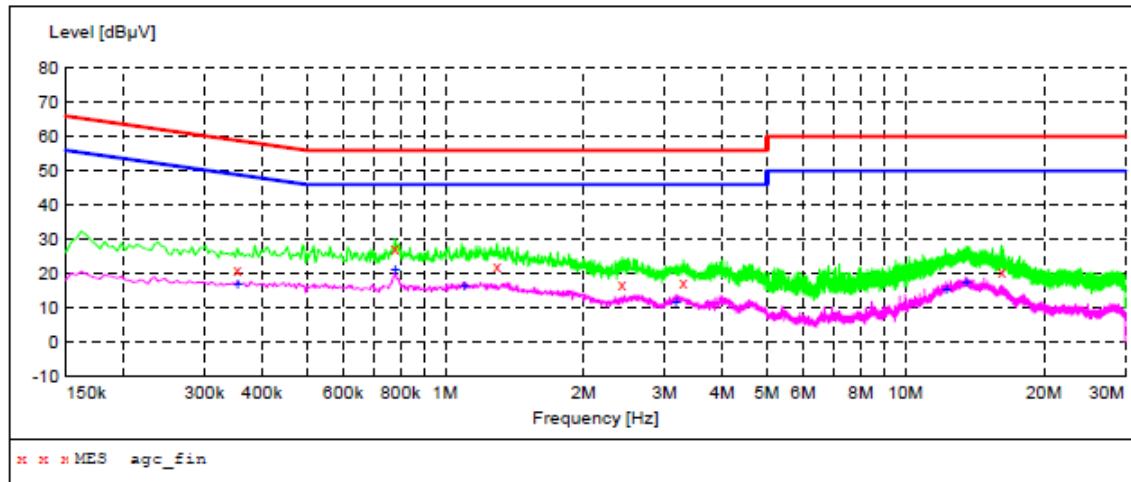
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Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc_fin"

2023/11/7 10:00

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.354000	21.10	6.1	59	37.8	QP	N
0.778000	27.50	6.2	56	28.5	QP	N
1.298000	22.20	6.2	56	33.8	QP	N
2.422000	16.90	6.3	56	39.1	QP	N
3.294000	17.30	6.3	56	38.7	QP	N
16.182000	20.70	6.9	60	39.3	QP	N

MEASUREMENT RESULT: "agc_fin2"

2023/11/7 10:00

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.354000	17.00	6.1	49	31.9	AV	N
0.778000	21.20	6.2	46	24.8	AV	N
1.102000	16.30	6.2	46	29.7	AV	N
3.170000	11.90	6.3	46	34.1	AV	N
12.266000	15.40	6.8	50	34.6	AV	N
13.538000	17.60	6.8	50	32.4	AV	N

RESULT: PASS

Note: All test modes had been pre-tested. The 802.11b at Middle channel is the worst case and recorded in the report.

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APPENDIX I: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC03923230801AP02A

APPENDIX II: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC03923230801AP03A

----END OF REPORT----

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8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
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