

**FCC - TEST REPORT**

Report Number : **709502409407-00B** Date of Issue: November 21, 2024

Model : PI3505

Product Type : Snowball Pet Fountain SE

Applicant : Hiigge Co., Ltd.

Address : Room 208, Floor 12, Building 1, No.588 Zixing Road, Minhang District, 201100 Shanghai, PEOPLE'S REPUBLIC OF CHINA

Production Facility : Dongguan Miha Intelligent Technology Co., Ltd

Address : Building 2, No. 15, Dongfang Road, Beizha, Humen Town, Dongguan City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including
Appendices : 70



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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
No.16 Lane, 1951 Du Hui Road,
Shanghai 201108,
P.R. China

Telephone: +86 21 6141 0123

Fax: +86 21 6140 8600

FCC Registration No.: 820234

FCC Designation Number: CN1183

ISED CAB identifier CN0101

IC Registration No.: 31668



3 Description of the Equipment under Test

Product:	Snowball Pet Fountain SE																																
Model no.:	PI3505																																
FCC ID:	2BK23-P355																																
Options and accessories:	NA																																
Rating:	AC 120V/60Hz by adaptor; input: 5V, 2A																																
RF Transmission Frequency:	802.11b/g/n-HT20: 2412~2462 MHz																																
No. of Operated Channel:	11 for 802.11b/802.11g/802.11n(H20)																																
Modulation:	Direct Sequence Spread Spectrum (DSSS) for 802.11b Orthogonal Frequency Division Multiplexing (OFDM) for 802.11g/n																																
Hardware Version:	LBCB032B																																
Software Version:	1.09																																
Data speed:	11b 1-11Mbps 11g 6-54Mbps 11n(H20) 6.5-72.2Mbps																																
Channel list:	For 2.4G Wi-Fi: <table><tr><th colspan="4">802.11b/g/n(HT20)</th></tr><tr><th>Ch</th><th>Fre(MHz)</th><th>Ch</th><th>Fre(MHz)</th></tr><tr><td>1</td><td>2412</td><td>7</td><td>2442</td></tr><tr><td>2</td><td>2417</td><td>8</td><td>2447</td></tr><tr><td>3</td><td>2422</td><td>9</td><td>2452</td></tr><tr><td>4</td><td>2427</td><td>10</td><td>2457</td></tr><tr><td>5</td><td>2432</td><td>11</td><td>2462</td></tr><tr><td>6</td><td>2437</td><td></td><td></td></tr></table>	802.11b/g/n(HT20)				Ch	Fre(MHz)	Ch	Fre(MHz)	1	2412	7	2442	2	2417	8	2447	3	2422	9	2452	4	2427	10	2457	5	2432	11	2462	6	2437		
802.11b/g/n(HT20)																																	
Ch	Fre(MHz)	Ch	Fre(MHz)																														
1	2412	7	2442																														
2	2417	8	2447																														
3	2422	9	2452																														
4	2427	10	2457																														
5	2432	11	2462																														
6	2437																																
Antenna Type:	Internal Antenna																																
Antenna Gain:	2.73 dBi																																



Description of the EUT: The Equipment Under Test (EUT) is a Snowball Pet Fountain SE with Wi-Fi Module. The EUT support Wi-Fi operated at 2.4GHz.

Test sample no.: SHA-864806-3 (Radiated sample)
SHA-864806-2 (Conducted sample)

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.



4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Measurement Guidance v05r02 and ANSI C63.10-2020.



5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition		Pages	Test Site	Test Result		
				Pass	Fail	N/A
§15.207	Conducted emission AC power port	14-16	Site 1	☒	☐	☐
§15.247 (b) (3)	Conducted peak output power	17-18	Site 1	☒	☐	☐
§15.247(a)(1)	20dB bandwidth and 99% Occupied Bandwidth	---	---	☐	☐	☒
§15.247(a)(1)	Carrier frequency separation	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Number of hopping frequencies	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Dwell Time - Average Time of Occupancy	---	---	☐	☐	☒
§15.247(a)(2)	6dB bandwidth	19-22	Site 1	☒	☐	☐
§15.247(e)	Power spectral density	23-26	Site 1	☒	☐	☐
§15.247(e)	Spurious RF conducted emissions	27-36	Site 1	☒	☐	☐
§15.247(d)	Band edge	37-43	Site 1	☒	☐	☐
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	44-66	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1		☒	☐	☐

Remark 1: N/A – Not Applicable.

Remark 2: The EUT only operation at 2.4G Wi-Fi.

Note 1: The EUT uses an Internal Antenna, which gain is 2.73 dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting



antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi



6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2BK23-P355, complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

SUMMARY:

All tests according to the regulations cited on page 6 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: September 18, 2024

Testing Start Date: October 10, 2024

Testing End Date: November 21, 2024

-TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:



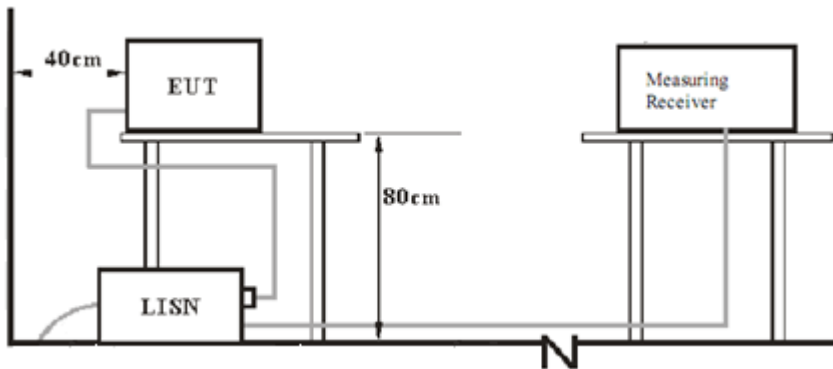
Hui TONG
Review Engineer

Wenqiang LU
Project Engineer

Tianji XU
Test Engineer

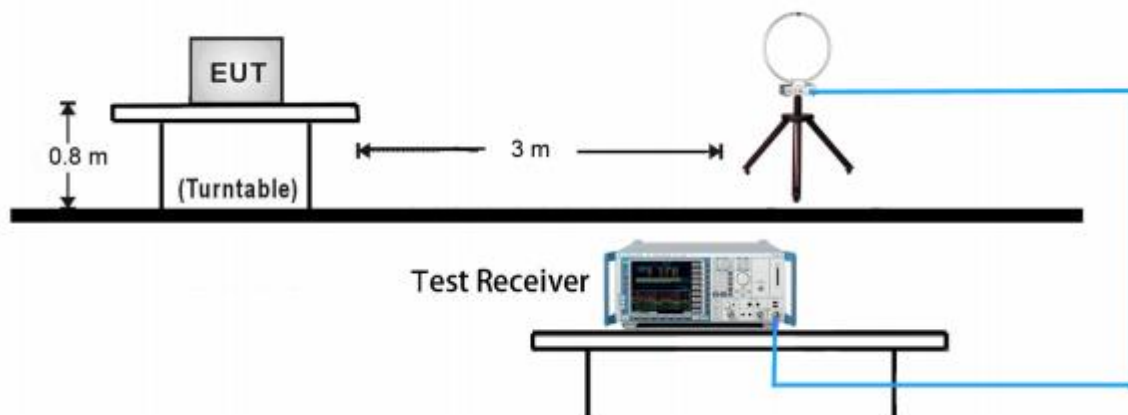
7 Test Setups

7.1 AC Power Line Conducted Emission test setups

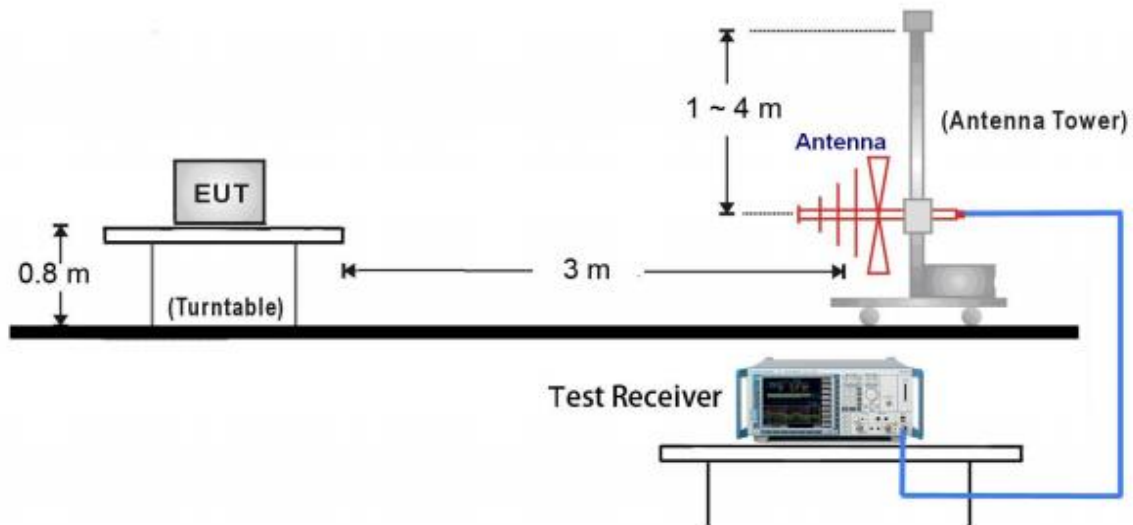


7.2 Radiated test setups

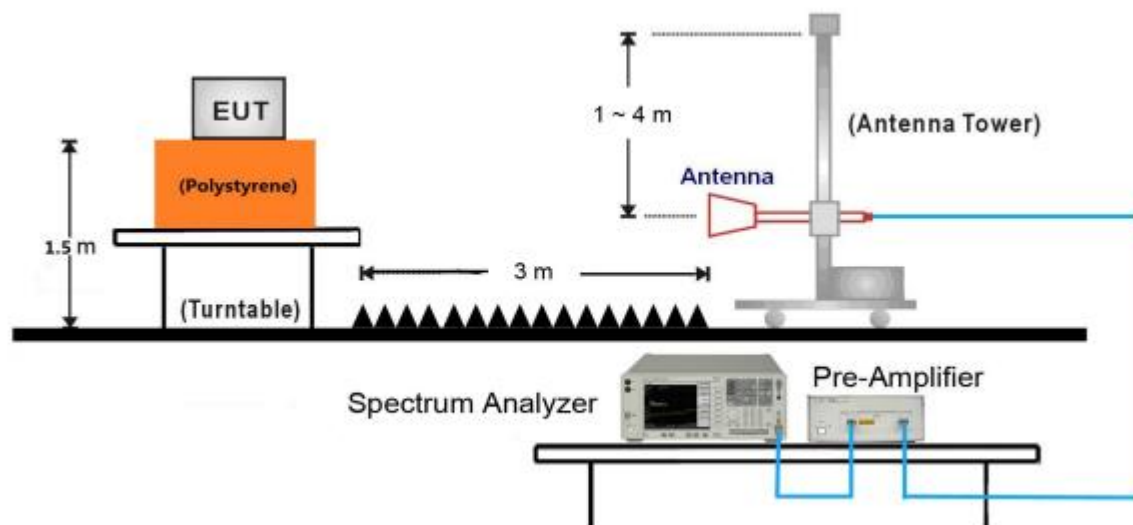
9kHz ~ 30MHz Test Setup:



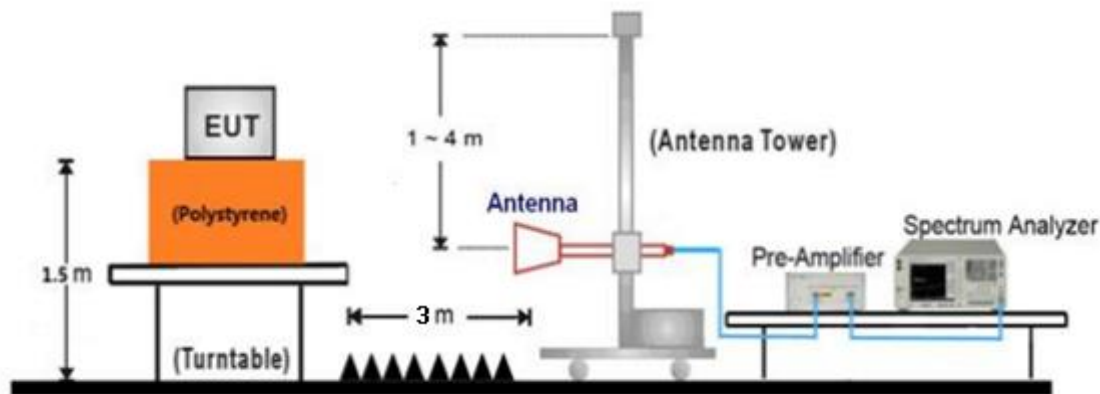
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:

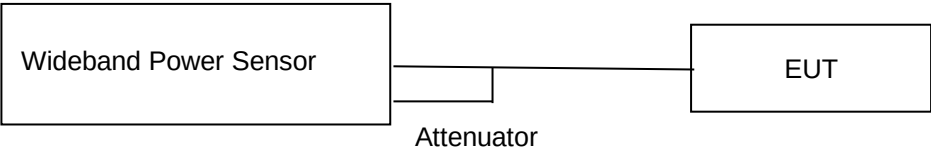


18GHz ~ 25GHz Test Setup:

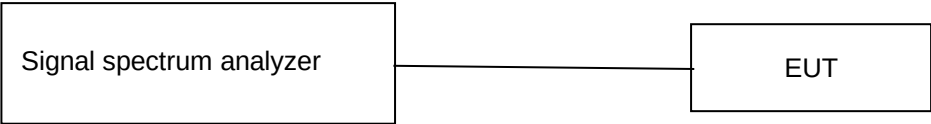


7.3 Conducted RF test setups

For Conducted peak output power



For other test items





8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenove	E470	PF-OU5TS7 17/09

Test software: sscom5.13.1.exe, which used to control the EUT in continues transmitting mode.

The system was configured to channel 1(2412MHz), 6(2437MHz), and 11(2462MHz).

Test Mode Applicability and Tested Channel Detail:

Mode	Tested Channel	Data Rate (Mbps)	Modulation	Index Value (Power level setting)
802.11b	1	1	CCK	-24
	6	1	CCK	-24
	11	1	CCK	-24
802.11g	1	6	OFDM	-24
	6	6	OFDM	-24
	11	6	OFDM	-24
802.11n HT20	1	MCS0	OFDM	-24
	6	MCS0	OFDM	-24
	11	MCS0	OFDM	-24

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.



9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. An EMI test receiver is used to test the emissions from both sides of AC line

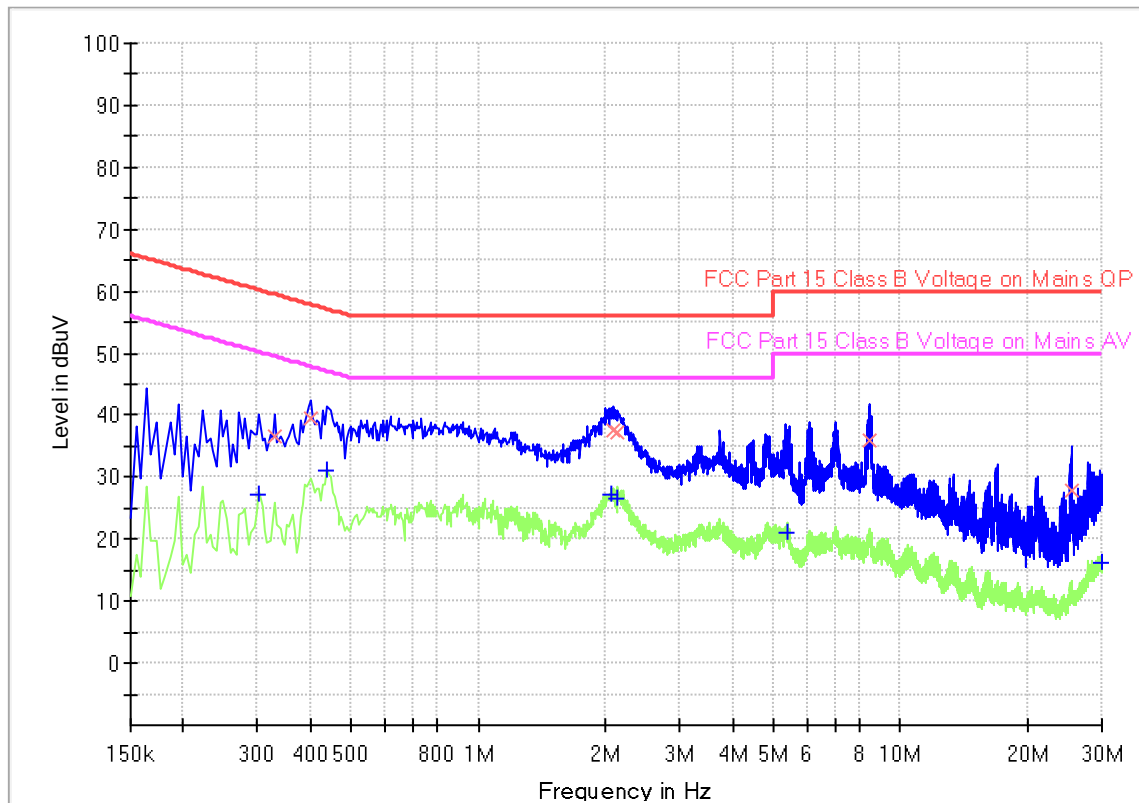
Limit

According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

Product Type : Snowball Pet Fountain SE
 M/N : PI3505
 Operating Condition : Mode 1: 802.11n20 Tx_2462MHz (worst case)
 Test Specification : L-line
 Comment : 5VDC (powered by adaptor whose input is 120V~, 60Hz)



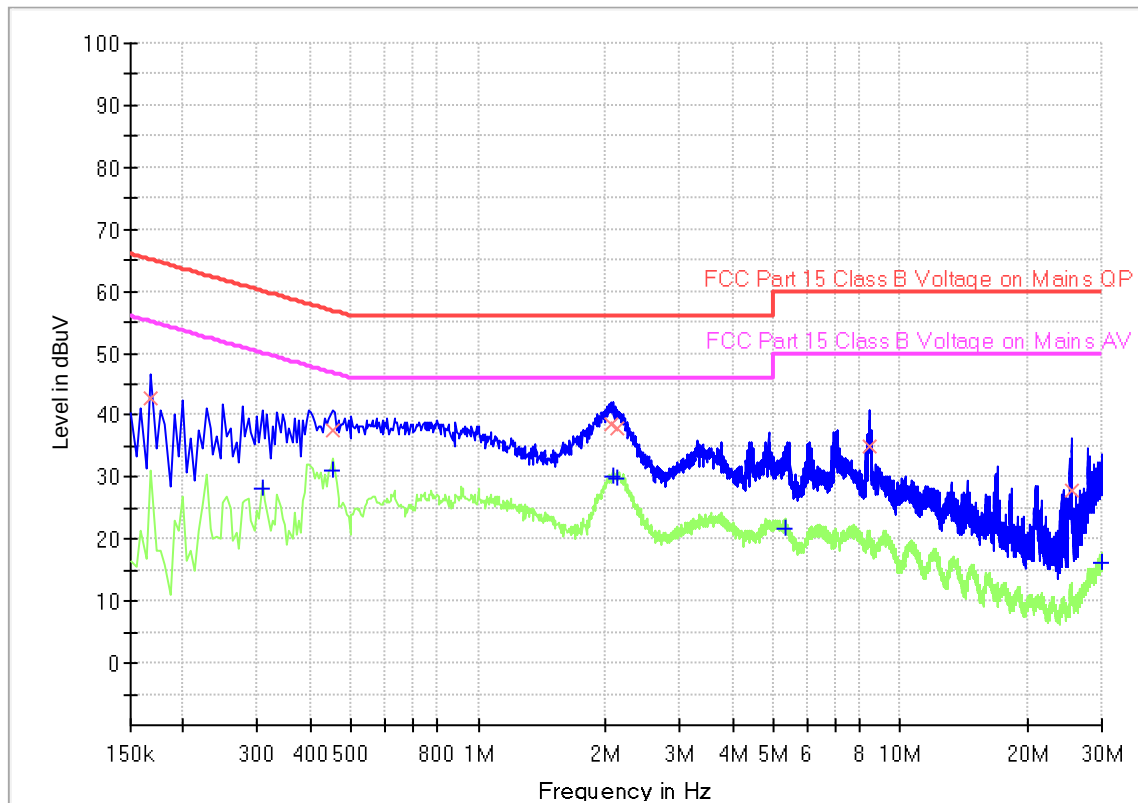
Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.303000	---	27.14	50.16	23.02	1000.0	9.000	L1	19.5
0.330000	36.58	---	59.45	22.87	1000.0	9.000	L1	19.5
0.402000	39.46	---	57.81	18.35	1000.0	9.000	L1	19.5
0.438000	---	30.99	47.10	16.11	1000.0	9.000	L1	19.5
2.071500	---	27.24	46.00	18.76	1000.0	9.000	L1	19.5
2.094000	37.51	---	56.00	18.49	1000.0	9.000	L1	19.5
2.143500	37.22	---	56.00	18.78	1000.0	9.000	L1	19.5
2.143500	---	26.69	46.00	19.31	1000.0	9.000	L1	19.5
5.397000	---	21.13	50.00	28.87	1000.0	9.000	L1	19.6
8.484000	35.80	---	60.00	24.20	1000.0	9.000	L1	19.7
25.399500	27.72	---	60.00	32.28	1000.0	9.000	L1	20.9
29.859000	---	16.35	50.00	33.65	1000.0	9.000	L1	21.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

Product Type : Snowball Pet Fountain SE
 M/N : PI3505
 Operating Condition : Mode 1: 802.11n20 Tx_2462MHz (worst case)
 Test Specification : N-line
 Comment : 5VDC (powered by adaptor whose input is 120V~, 60Hz)



Final Result

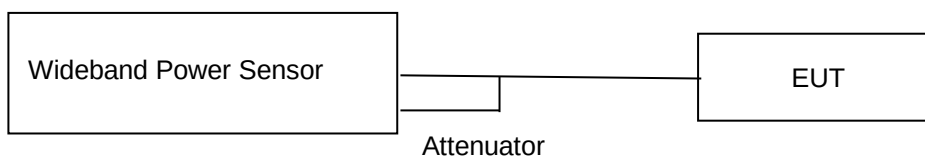
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.168000	42.66	---	65.06	22.40	1000.0	9.000	N	19.5
0.307500	---	28.14	50.04	21.90	1000.0	9.000	N	19.4
0.451500	---	31.13	46.85	15.72	1000.0	9.000	N	19.5
0.451500	37.63	---	56.85	19.22	1000.0	9.000	N	19.5
2.071500	38.49	---	56.00	17.51	1000.0	9.000	N	19.5
2.076000	---	30.04	46.00	15.96	1000.0	9.000	N	19.5
2.139000	37.87	---	56.00	18.13	1000.0	9.000	N	19.5
2.139000	---	29.86	46.00	16.14	1000.0	9.000	N	19.5
5.325000	---	21.76	50.00	28.24	1000.0	9.000	N	19.6
8.461500	35.07	---	60.00	24.93	1000.0	9.000	N	19.6
25.404000	28.01	---	60.00	31.99	1000.0	9.000	N	20.7
29.917500	---	16.12	50.00	33.88	1000.0	9.000	N	20.8

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

9.2 Conducted peak output power

Test Method

- 1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
- 2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
- 3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- 4) Measure the peak power of the transmitter. This measurement is a peak over both the ON and OFF periods of the transmitter.



Wideband Power Sensor conducted test setup

Limits

According to §15.247 (b) (3), conducted peak output power limit as below:

	Frequency Range	Limit	Limit
	MHz	W	dBm
Conducted peak output power	2400-2483.5	≤1	≤30

Test result (conducted peak) as below table

802.11b			
Frequency (MHz)	Conducted Peak Output Power (dBm)		
	§15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	10.12	≤30	Pass
2437MHz	10.09	≤30	Pass
2462MHz	10.31	≤30	Pass

802.11g			
Frequency (MHz)	Conducted Peak Output Power (dBm)		
	§15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	14.53	≤30	Pass
2437MHz	14.62	≤30	Pass
2462MHz	15.36	≤30	Pass



802.11n(HT20)			
Frequency (MHz)	Conducted Peak Output Power (dBm) §15.247 (b) (3)		
	Result	limit	Verdict
2412MHz	14.12	≤30	Pass
2437MHz	15.08	≤30	Pass
2462MHz	15.74	≤30	Pass

9.3 6dB bandwidth

Test Method for 6 dB Bandwidth

1. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
2. Set the VBW $\geq [3 \times \text{RBW}]$.
3. Detector = peak.
4. Trace mode = max-hold.
5. Sweep = No faster than coupled (auto) time.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.

Limit

6dB bandwidth Limit [kHz]

≥ 500

Test result

Test Mode	Frequency MHz	6dB bandwidth (MHz)		Result
		result	limit	verdict
802.11b	2412	10.235	≥ 0.5	Pass
	2437	10.215	≥ 0.5	Pass
	2462	10.206	≥ 0.5	Pass
802.11g	2412	16.426	≥ 0.5	Pass
	2437	16.318	≥ 0.5	Pass
	2462	16.261	≥ 0.5	Pass
802.11n(HT20)	2412	17.238	≥ 0.5	Pass
	2437	17.304	≥ 0.5	Pass
	2462	17.384	≥ 0.5	Pass



6 dB Bandwidth









9.4 Power spectral density

Test Method

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

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
4. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
5. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
6. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm/3KHz]
 ≤ 8

Test result
802.11 B

Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-9.17	Pass
Middle channel 2437MHz	-14.09	Pass
High channel 2462MHz	-13.07	Pass

802.11 G

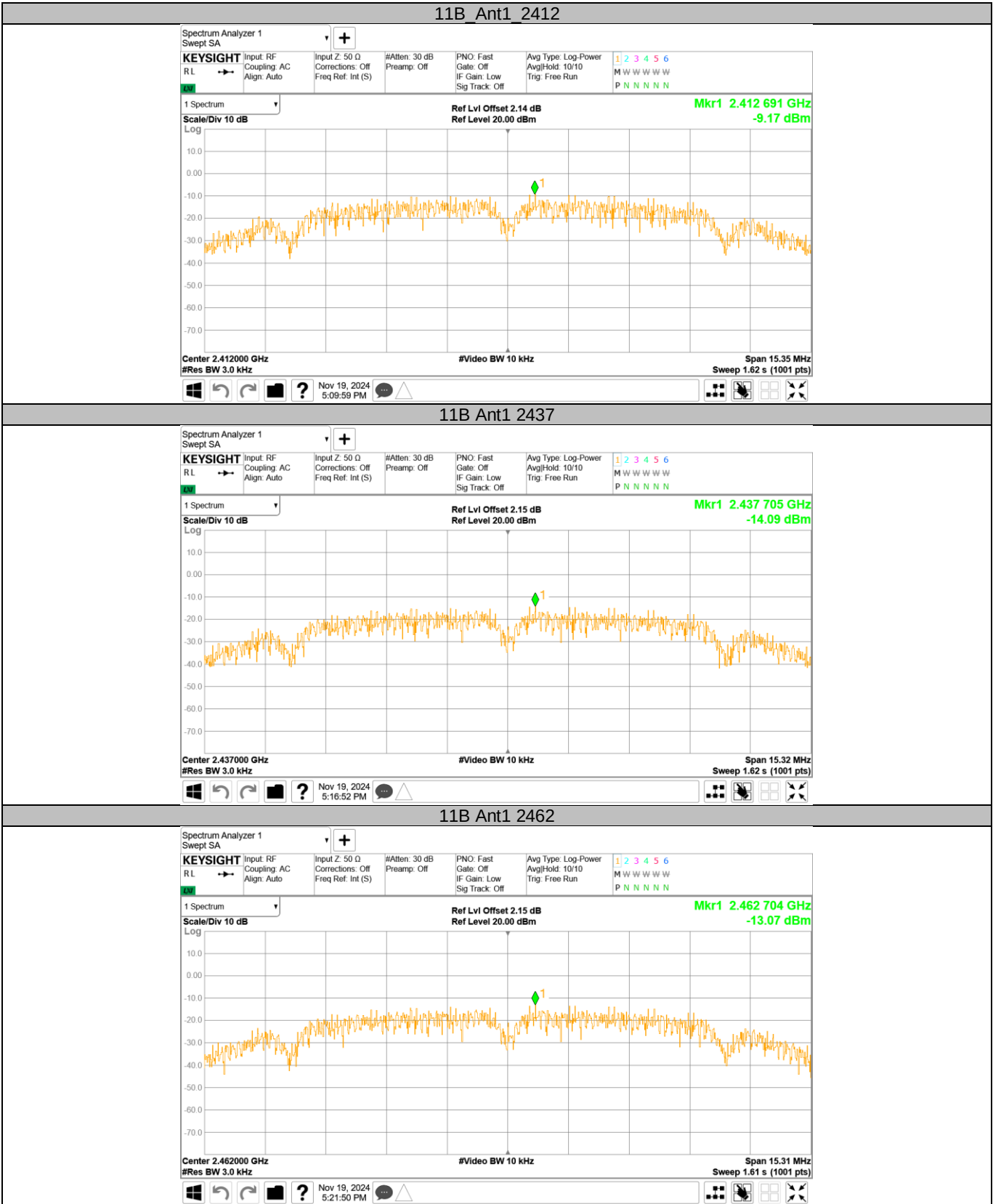
Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-17.87	Pass
Middle channel 2437MHz	-17.69	Pass
High channel 2462MHz	-16.36	Pass

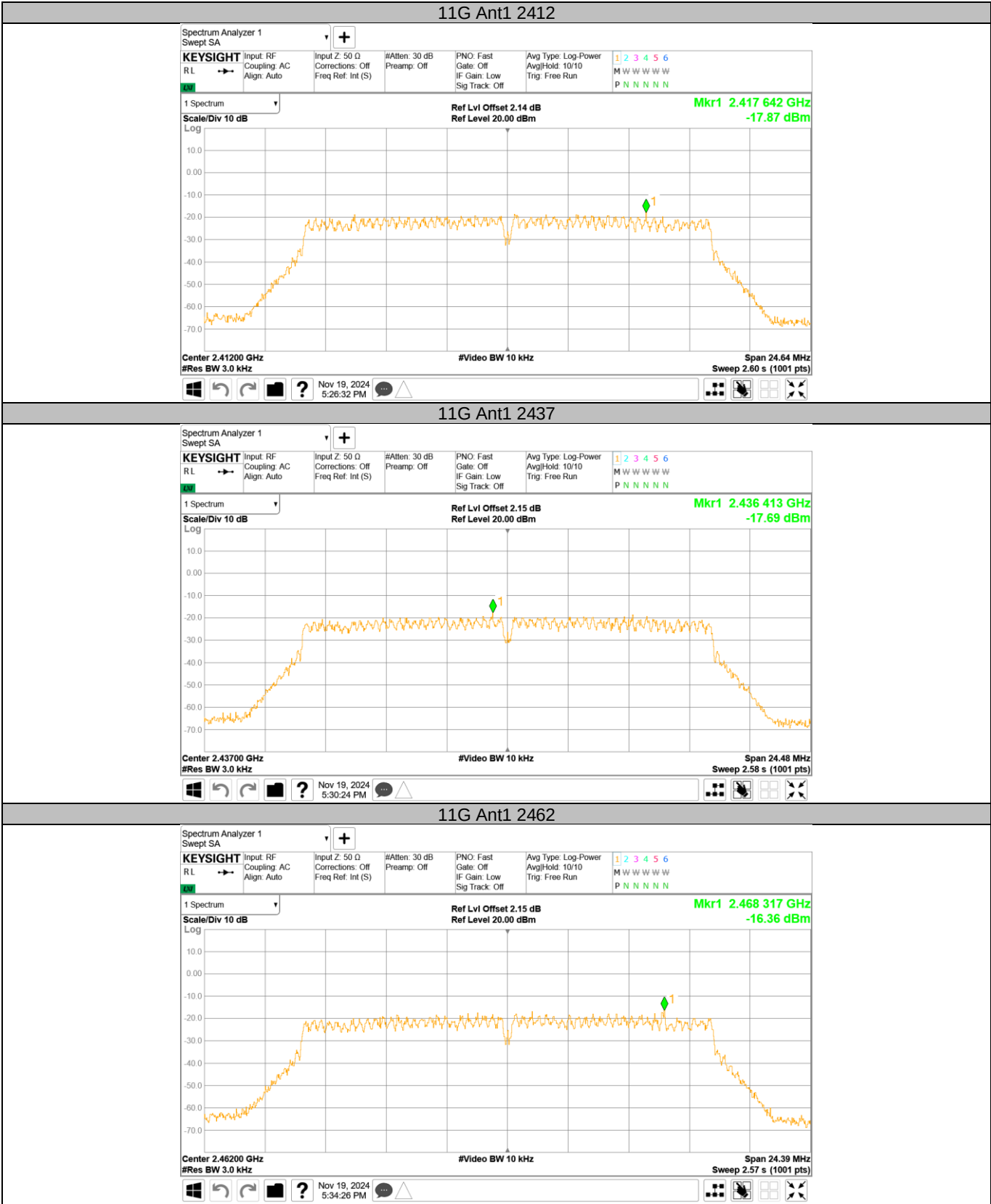
802.11 N20

Frequency MHz	Power spectral density dBm/3kHz	Result
Low channel 2412MHz	-19.7	Pass
Middle channel 2437MHz	-19.3	Pass
High channel 2462MHz	-18.03	Pass

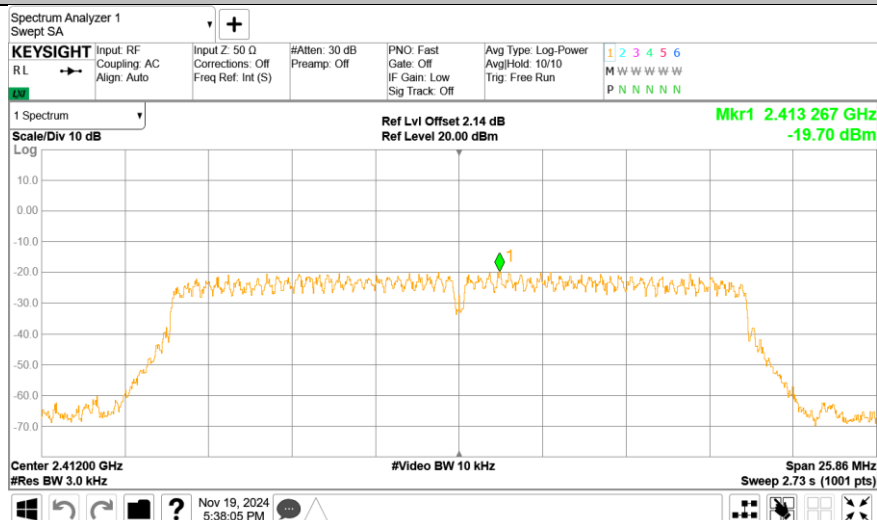


Power spectral density

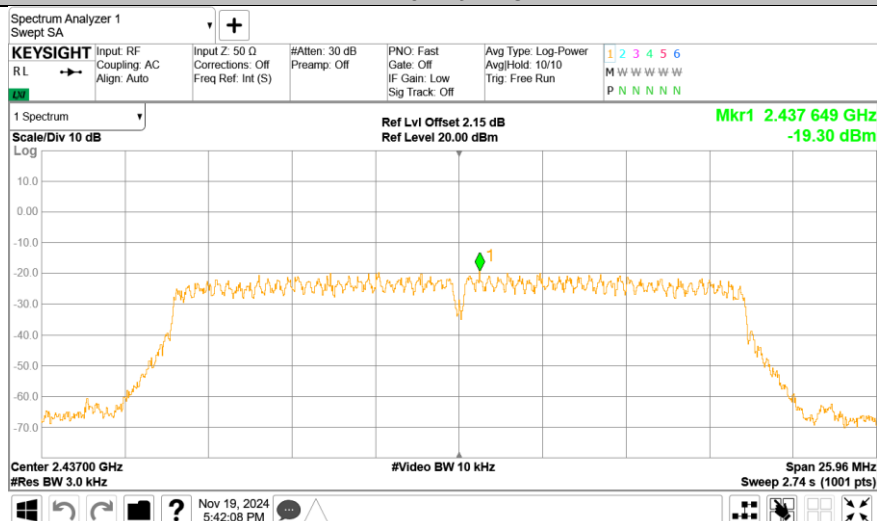




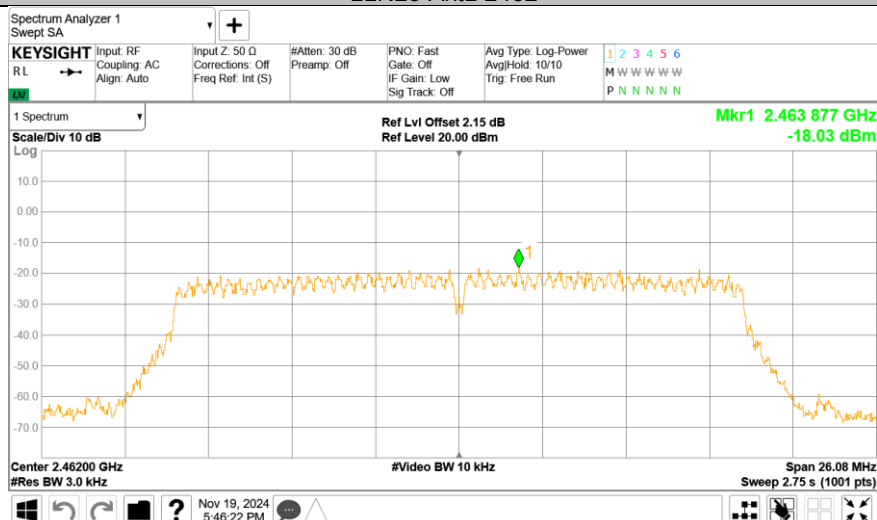
11N20 Ant1 2412



11N20 Ant1 2437



11N20 Ant1 2462





9.5 Spurious RF conducted emissions

Test Method

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
5. The level displayed must comply with the limit specified in this Section. Submit these plots.
6. Repeat above procedures until all frequencies measured were complete.

Limit

Frequency Range MHz	Limit (dBc)
30-25000	-20

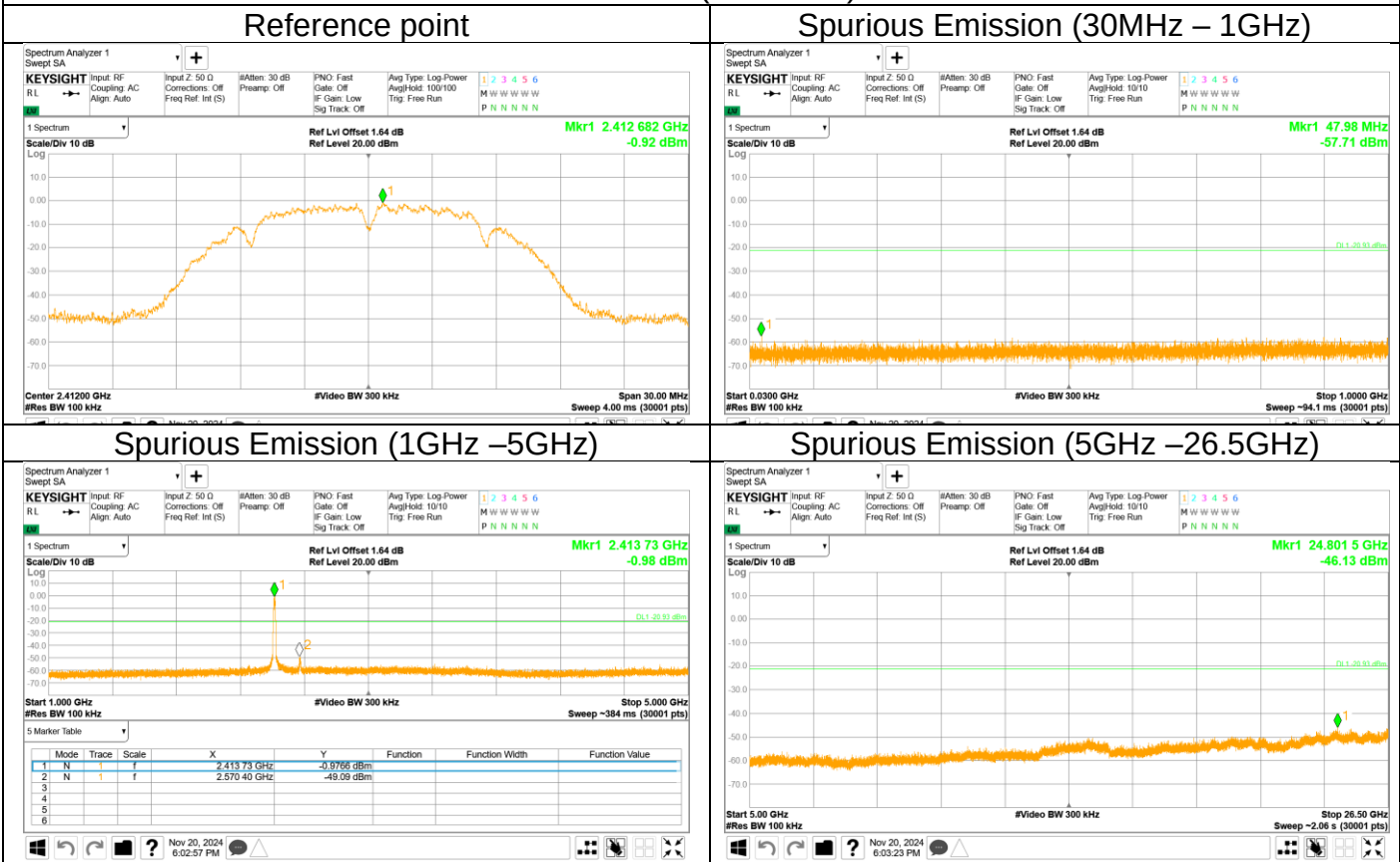


Spurious RF conducted emissions

802.11 B Ant1

Out-of-Band Emissions

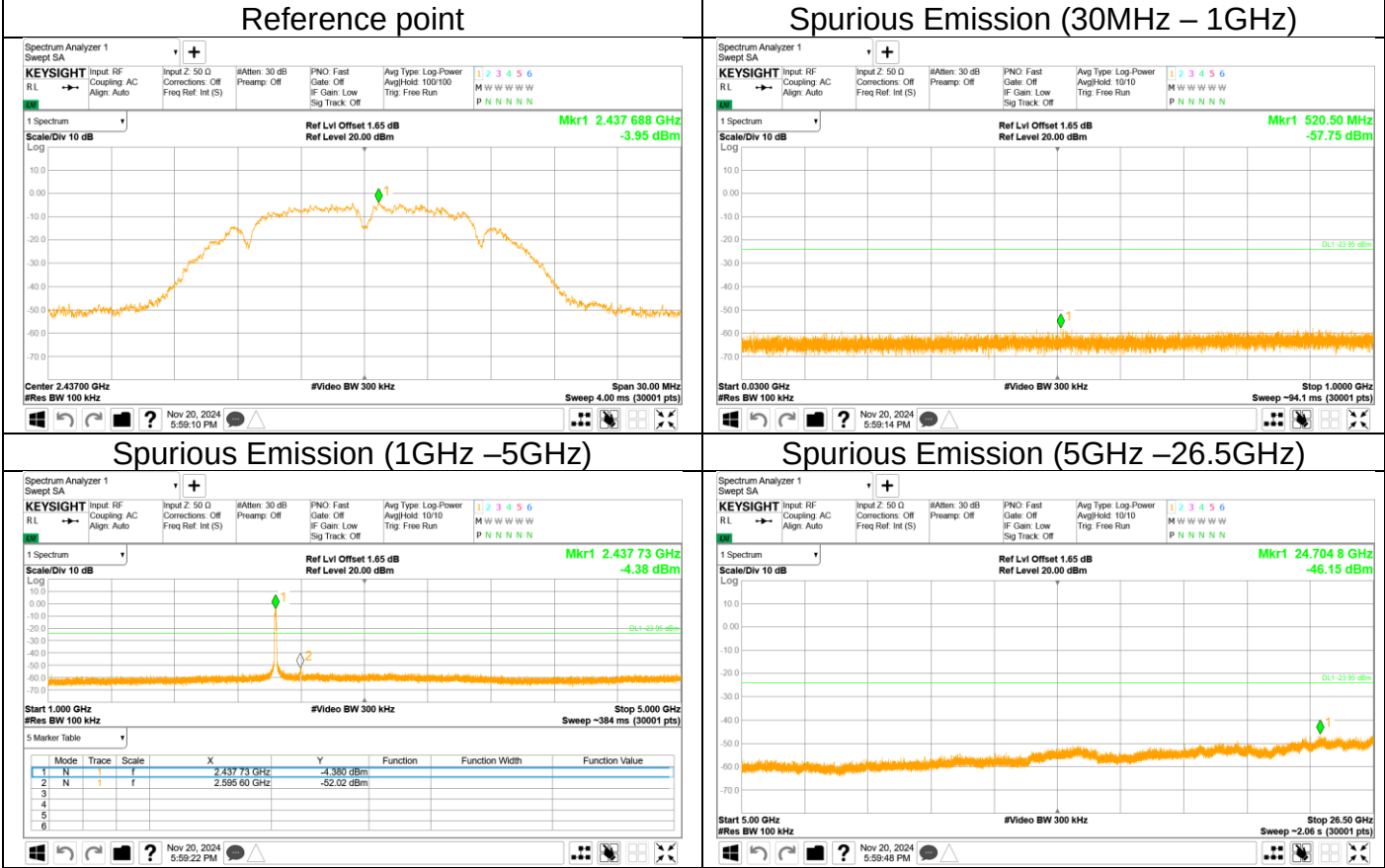
Channel 1 (2412MHz)



Note: The emission which exceed the limit is the fundamental.



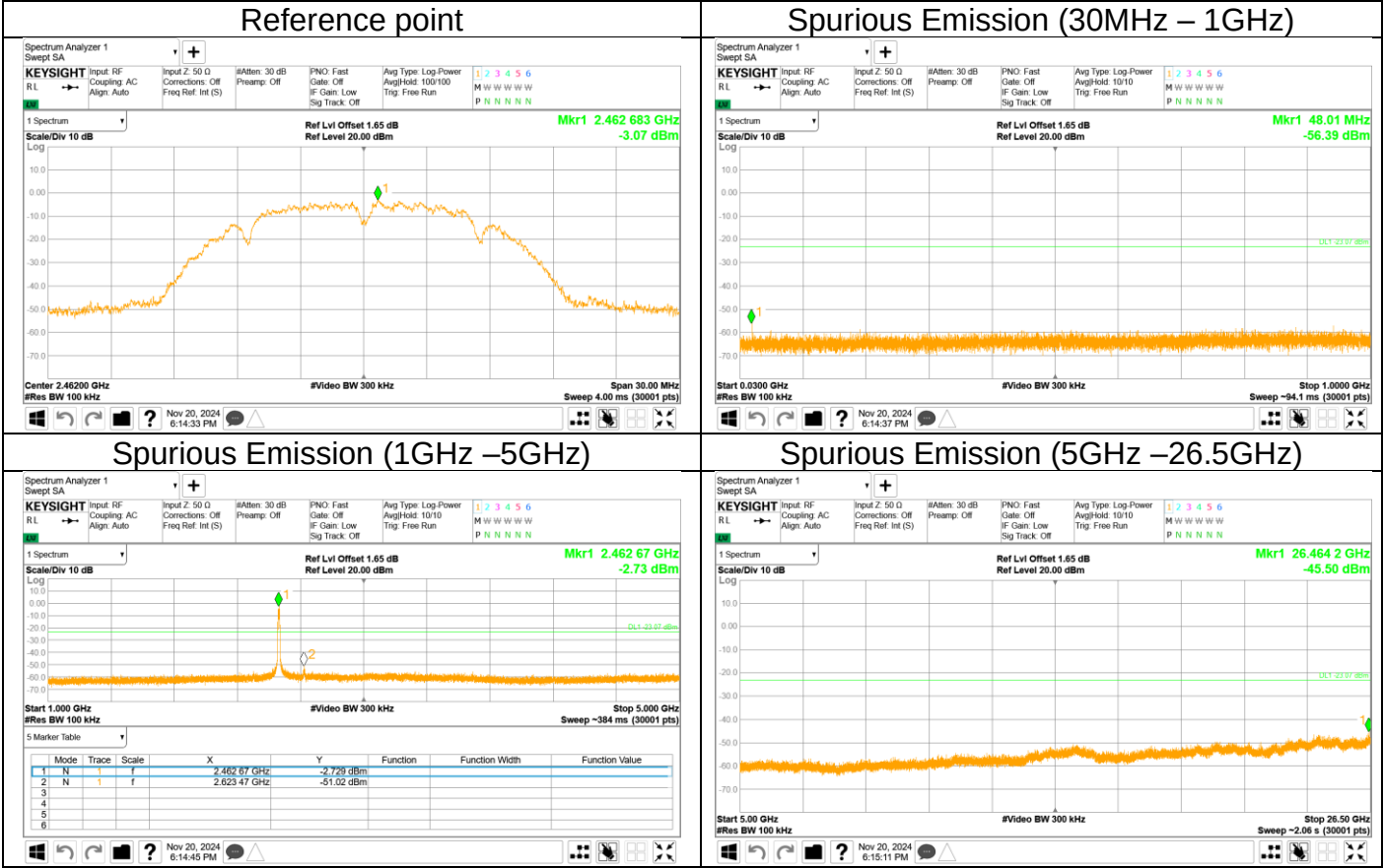
Out-of-Band Emissions
Channel 6 (2437MHz)



Note: The emission which exceed the limit is the fundamental.

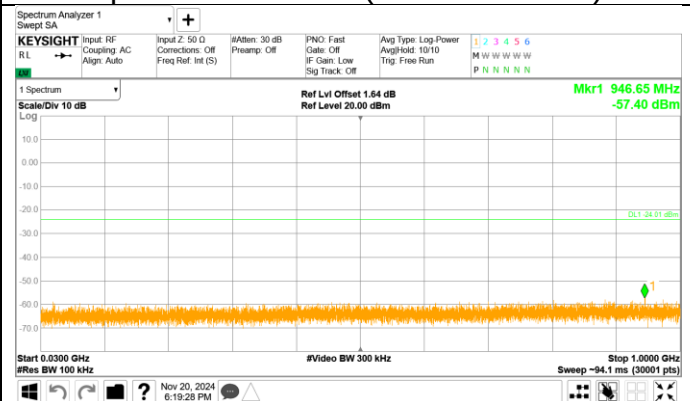


Out-of-Band Emissions
Channel 11 (2462MHz)



Note: The emission which exceed the limit is the fundamental.

Channel 1 (2412MHz)



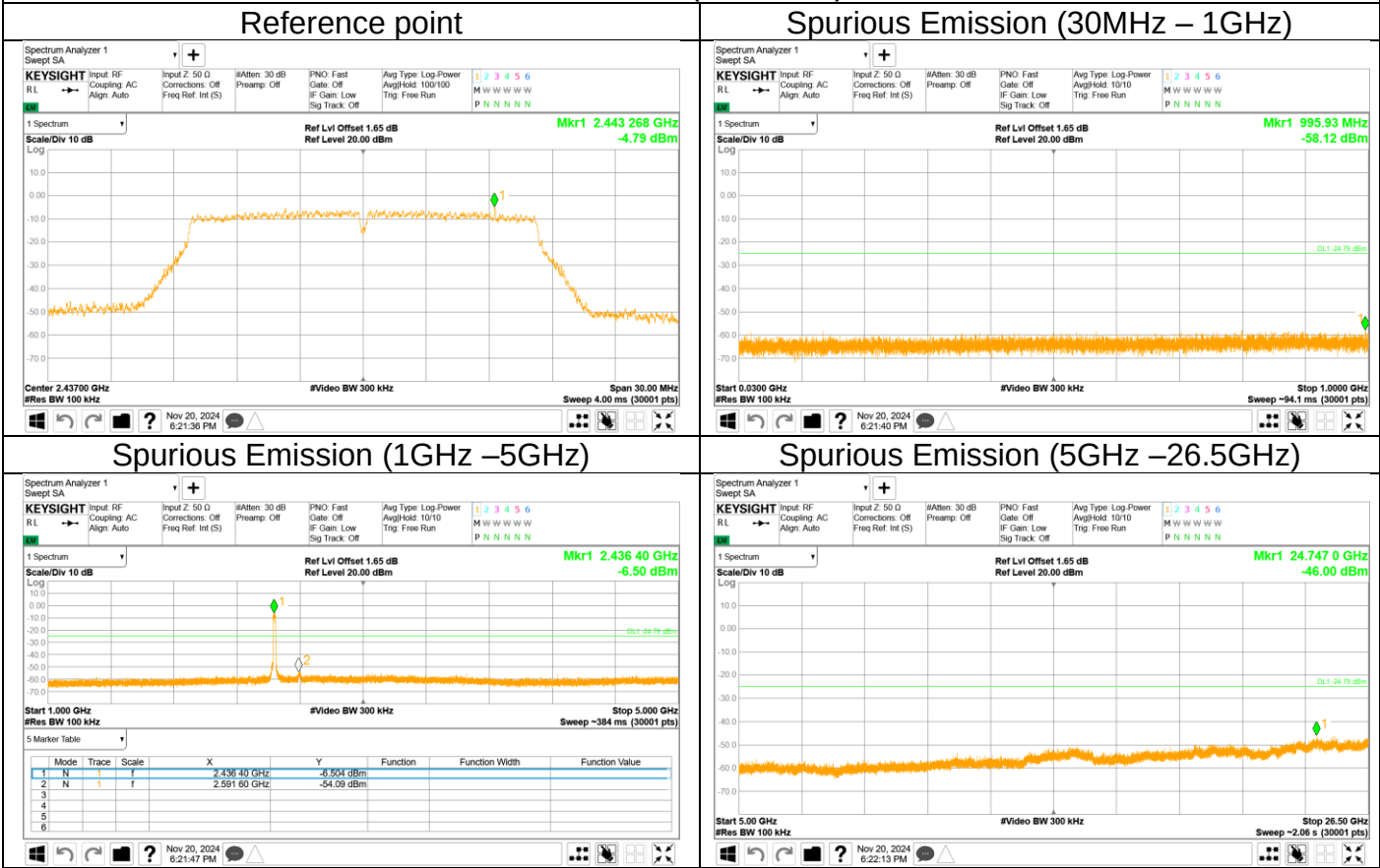
The screenshot displays a Spectrum Analyzer interface with the following details:

- Title Bar:** Spectrum Analyzer 1, Swept SA
- KEYSIGHT Controls:**
 - RL: Input RF, Coupling AC, Align Auto
 - Input Z: 50 Ω
 - Connections: Off
 - IF Attenu: 30 dB
 - IF Preamp: Off
 - IF Gain: Low
 - Sig Track: Off
 - IF BW: Fast
 - Gate: Off
 - Avg Type: Log Power
 - Avg Hold: 10/10
 - Trig: Free Run
- Measurement Data:**
 - Mkr1: 26.452 7 GHz
 - 46.13 dBm
 - OL1: 34.01 dBm
- Display Settings:**
 - Scale/Div: 10 dB
 - Ref Lvl Offset: 1.64 dBm
 - Ref Level: 20.00 dBm
 - Start: 5.00 GHz
 - Stop: 26.50 GHz
 - #Res BW: 100 kHz
 - #Video BW: 300 kHz
 - Sweep: ~2.06 s (30001 pts)
- Trace:** A noisy signal trace is visible, centered around -46 dBm at 26.45 GHz.
- Bottom Bar:** Windows taskbar showing the date Nov 20, 2024, and time 6:20:01 PM.

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Out-of-Band Emissions
Channel 6 (2437MHz)

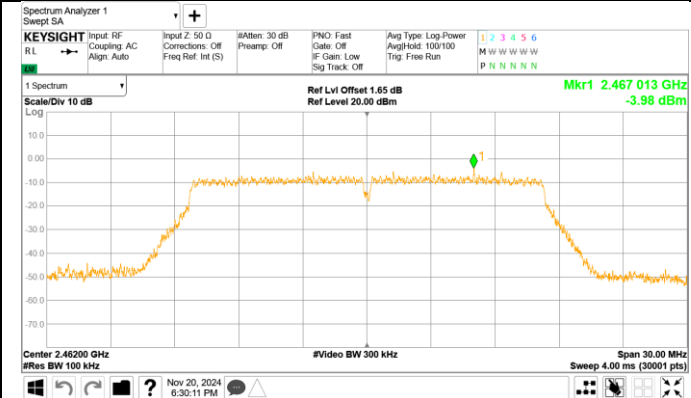


Note: The emission which exceed the limit is the fundamental.

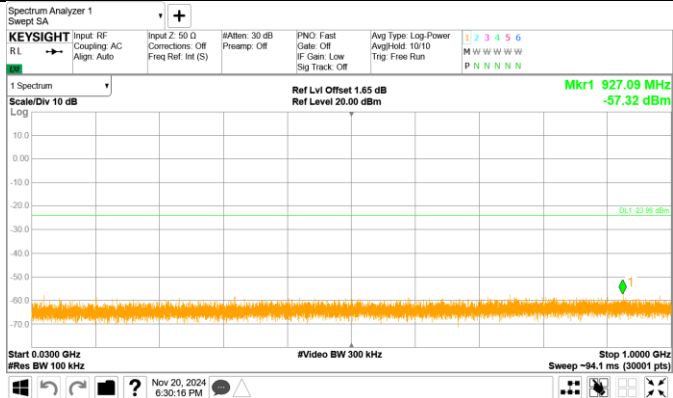


Out-of-Band Emissions
Channel 11 (2462MHz)

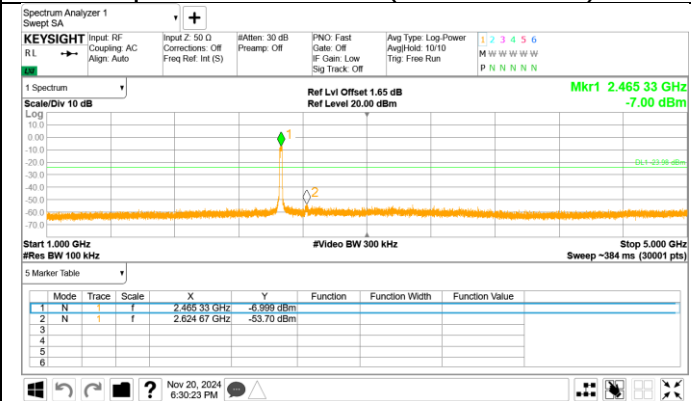
Reference point



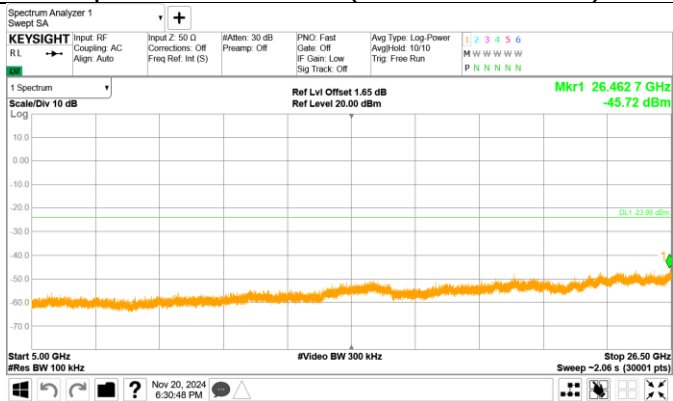
Spurious Emission (30MHz – 1GHz)



Spurious Emission (1GHz –5GHz)



Spurious Emission (5GHz –26.5GHz)

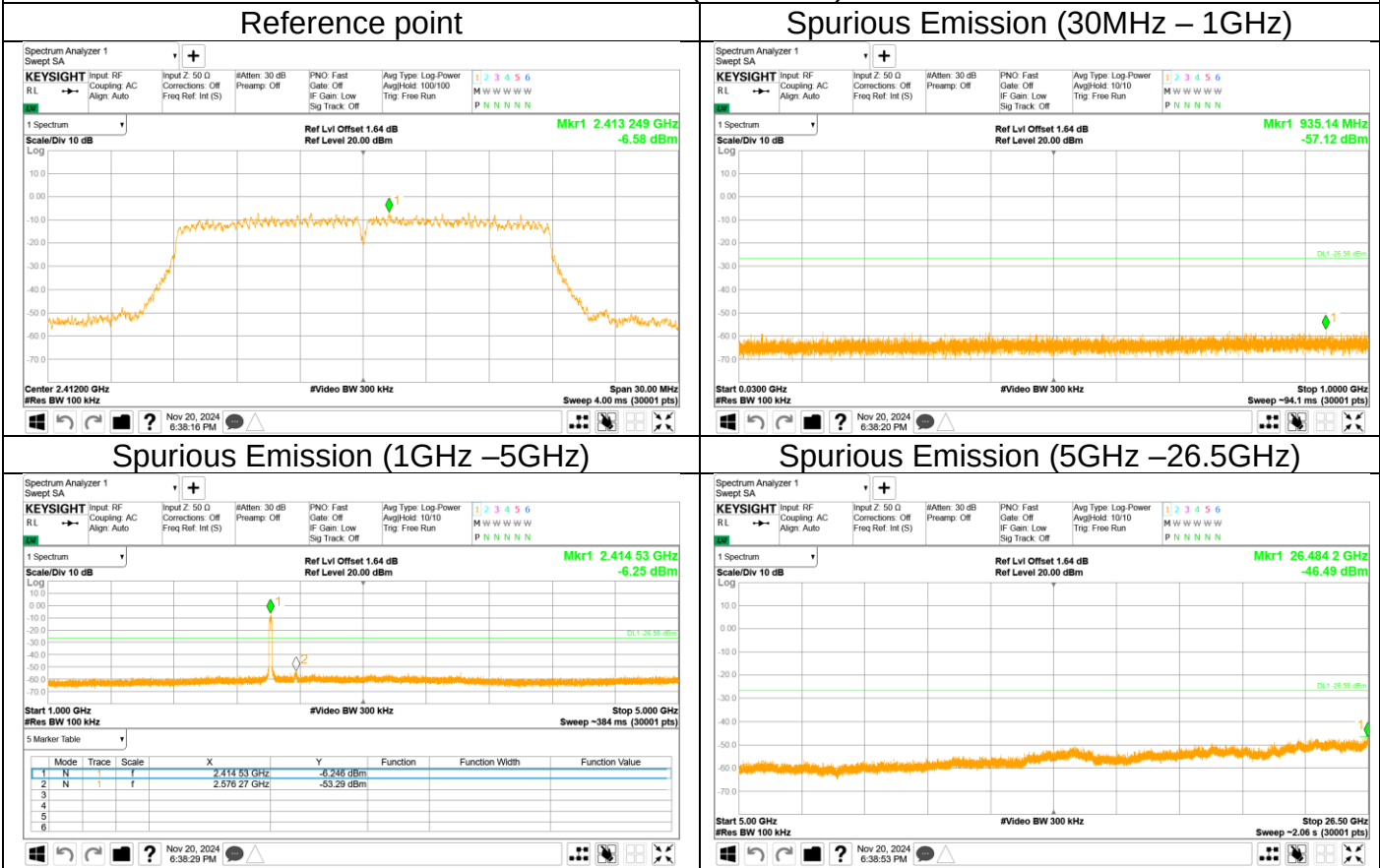


Note: The emission which exceed the limit is the fundamental.



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Out-of-Band Emissions
Channel 1 (2412MHz)

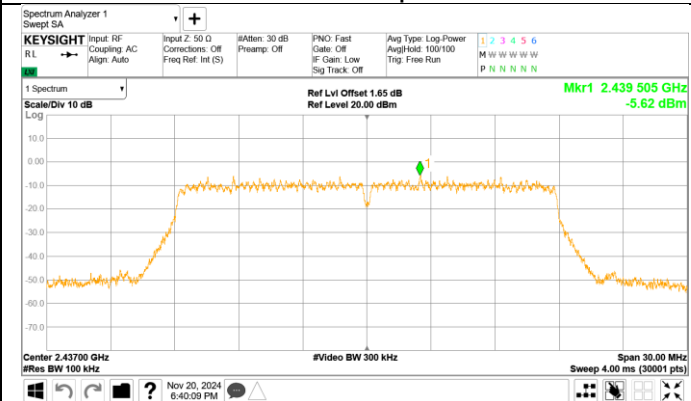


Note: The emission which exceed the limit is the fundamental.

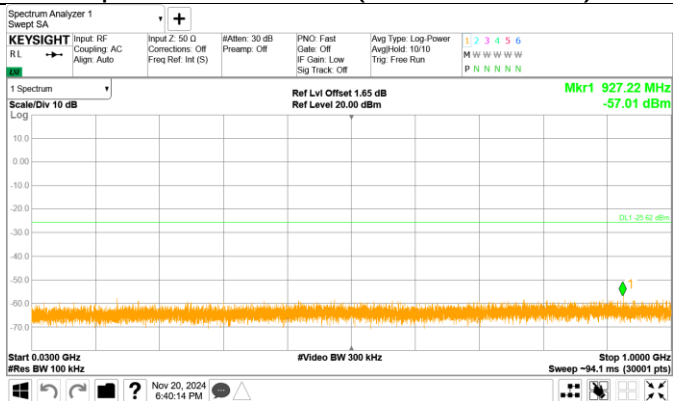


Out-of-Band Emissions
Channel 6 (2437MHz)

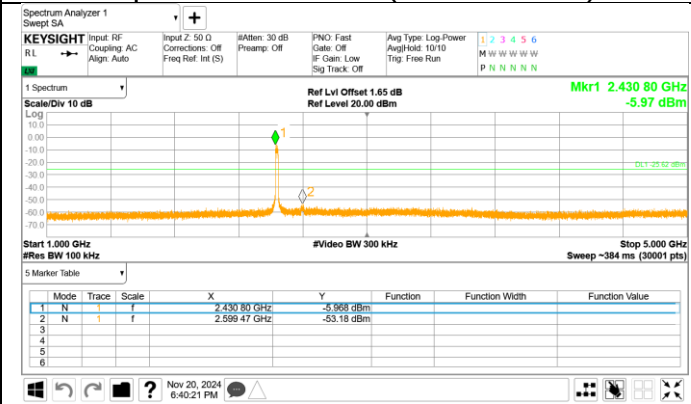
Reference point



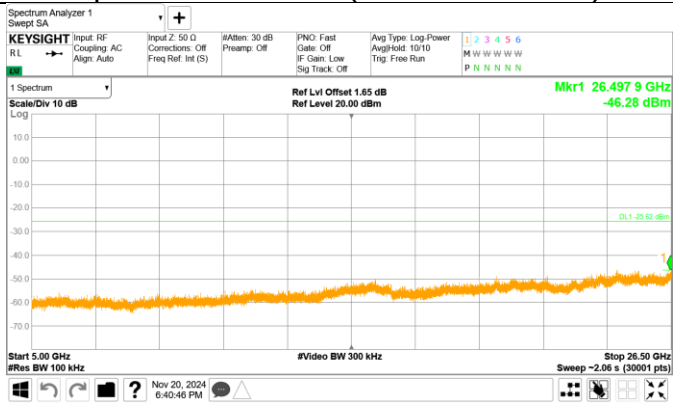
Spurious Emission (30MHz – 1GHz)



Spurious Emission (1GHz –5GHz)



Spurious Emission (5GHz –26.5GHz)



Note: The emission which exceed the limit is the fundamental.