

**FCC - TEST REPORT**

Report Number : **709502410258-00B** Date of Issue: January 16, 2025

Model : RC4803202/01R, RC480XXXX/XXR, RC480XXXX/XXBR
(‘X’=0-9, ‘B’ means packed with battery)

Product Type : Remote Control

Applicant : HCS (Suzhou) Limited

Address : 19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District,
Suzhou, 215011, China

Production Facility : Himit (Yueyang) Technology Ltd.

Address : Building 4, Lingang High-tech Industrial Park, Yueyang Area, China
(Hunan) Free Trade Pilot Zone, China

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

Total pages including
Appendices : 55



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1 Table of Contents

1	Table of Contents	2
2	Details about the Test Laboratory	3
3	Description of the Equipment under Test.....	4
4	Summary of Test Standards	6
5	Summary of Test Results	7
6	General Remarks	8
7	Test Setups	9
8	Systems test configuration	11
9	Technical Requirement.....	12
9.1	Conducted peak output power	12
9.2	6dB bandwidth	15
9.3	Power spectral density.....	18
9.4	Spurious RF conducted emissions	21
9.5	Band edge	28
9.6	Spurious radiated emissions for transmitter.....	33
10	Test Equipment List.....	52
11	System Measurement Uncertainty	53
12	Photographs of Test Set-ups.....	54
13	Photographs of EUT	55



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
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FCC Registration No.: 820234

FCC Designation Number: CN1183

ISED CAB identifier CN0101

IC Registration No.: 31668



3 Description of the Equipment under Test

Description of the Equipment Under Test

Product: Remote Control

Model no.: RC4803202/01R, RC480XXXX/XXR, RC480XXXX/XXBR
(‘X’=0-9, ‘B’ means packed with battery)

FCC ID: 2AGOFRC480F

Options and accessories: NA

Rating: DC 3V

RF Transmission Frequency: 2.4GHz BLE: 2402~2480 MHz

No. of Operated Channel: 2.4GHz BLE: 40

Modulation: 2.4GHz BLE: GFSK

Channel list: 2.4GHz BLE:

Bluetooth Low Energy							
Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Antenna Type: PCB Mono-pole Antenna for BLE

Antenna Gain: -1.72 dBi

Description of the EUT: The Equipment Under Test (EUT) is a Remote Control with BLE function. We tested it and listed the worst data in this report.



Test sample no.: SHA-855590-2 (Conducted sample),
 SHA-855590-3 (Radiated 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	---	---	☐	☐	☒
§15.247 (b) (3)	Conducted peak output power	12-14	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	15-17	Site 1	☒	☐	☐
§15.247(e)	Power spectral density	18-20	Site 1	☒	☐	☐
§15.247(d)	Spurious RF conducted emissions	21-27	Site 1	☒	☐	☐
§15.247(d)	Band edge	28-32	Site 1	☒	☐	☐
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	33-51	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1		☒	☐	☐

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses a PCB Mono-pole Antenna, which gain is -1.72 dBi for 2.4GHz BLE. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.



6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2AGOFRC480F complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

According to the client's declaration, all models are identical to electrical structure, mechanical structure. There are cosmetic differences (color /painting/printed). Basic software architecture remains unchanged.

So model RC4803202/01R was chosen to perform all the tests.

The model RC4803202/01R is a device with protocol-limited duty cycles.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

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

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

Sample Received Date: November 27, 2024

Testing Start Date: November 28, 2024

Testing End Date: December 13, 2024

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

Reviewed by:

Prepared by:

Tested by:



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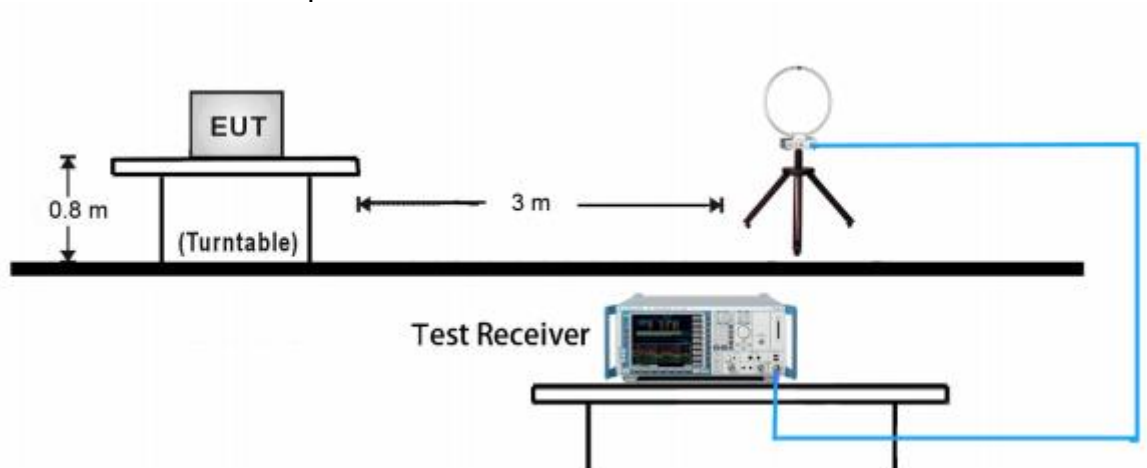
Wenqiang LU
EMC Project Engineer

Tianji XU
EMC Test Engineer

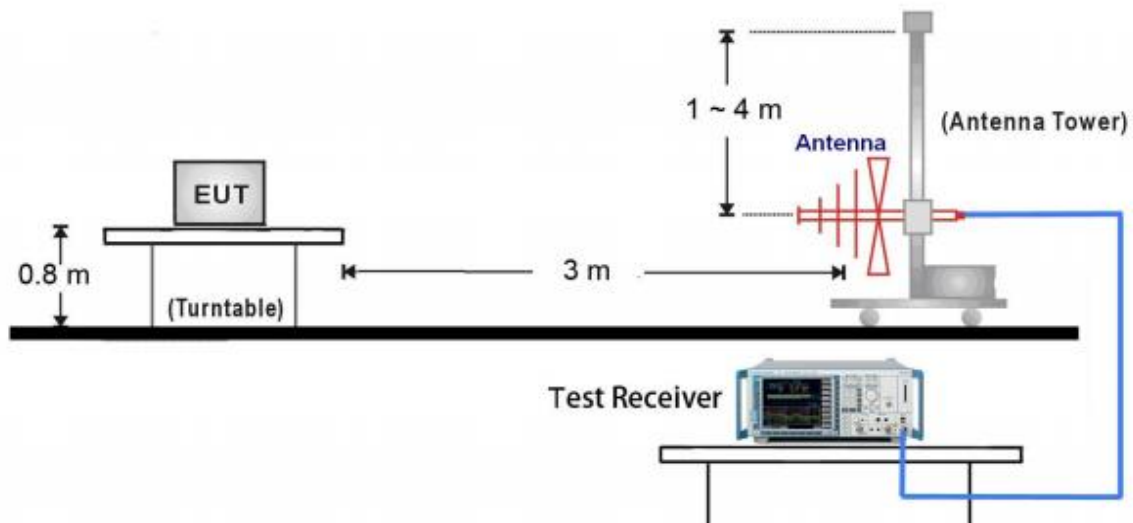
7 Test Setups

7.1 Radiated test setups

9kHz ~ 30MHz Test Setup:

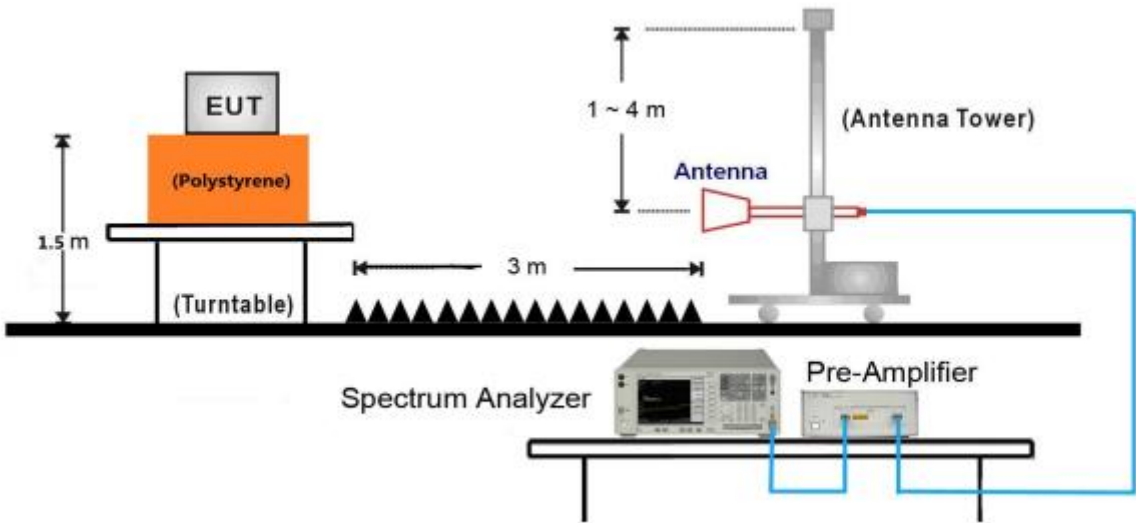


30MHz ~ 1GHz Test Setup:

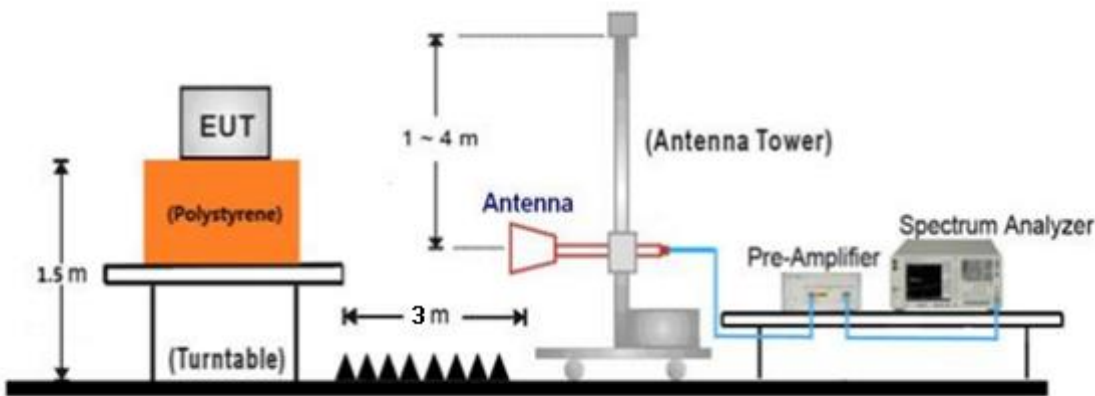




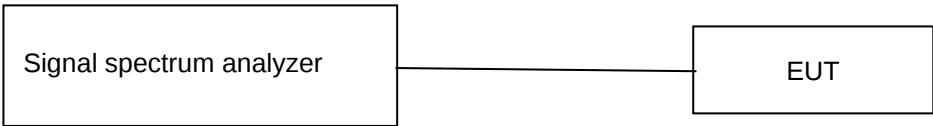
1GHz ~ 18GHz Test Setup:



18GHz ~ 25GHz Test Setup:



7.2 Conducted RF test setups





8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
---	---	---	---

The system was configured to channel 0, 19, and 39 for the test.

Test Mode Applicability and Tested Channel Detail:

Mode	Tested Channel	Data Rate (Mbps)	Modulation	Index Value (Power level setting)
Bluetooth LE	0	1	GFSK	Default
	19	1	GFSK	Default
	39	1	GFSK	Default
	0	2	GFSK	Default
	19	2	GFSK	Default
	39	2	GFSK	Default



9 Technical Requirement

9.1 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
RBW > the 6 dB bandwidth of the emission being measured, VBW $\geq$ 3RBW, Span $\geq$ 3RBW
Sweep = auto, Detector function = peak, Trace = max hold.
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

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 as below table

1Mbps

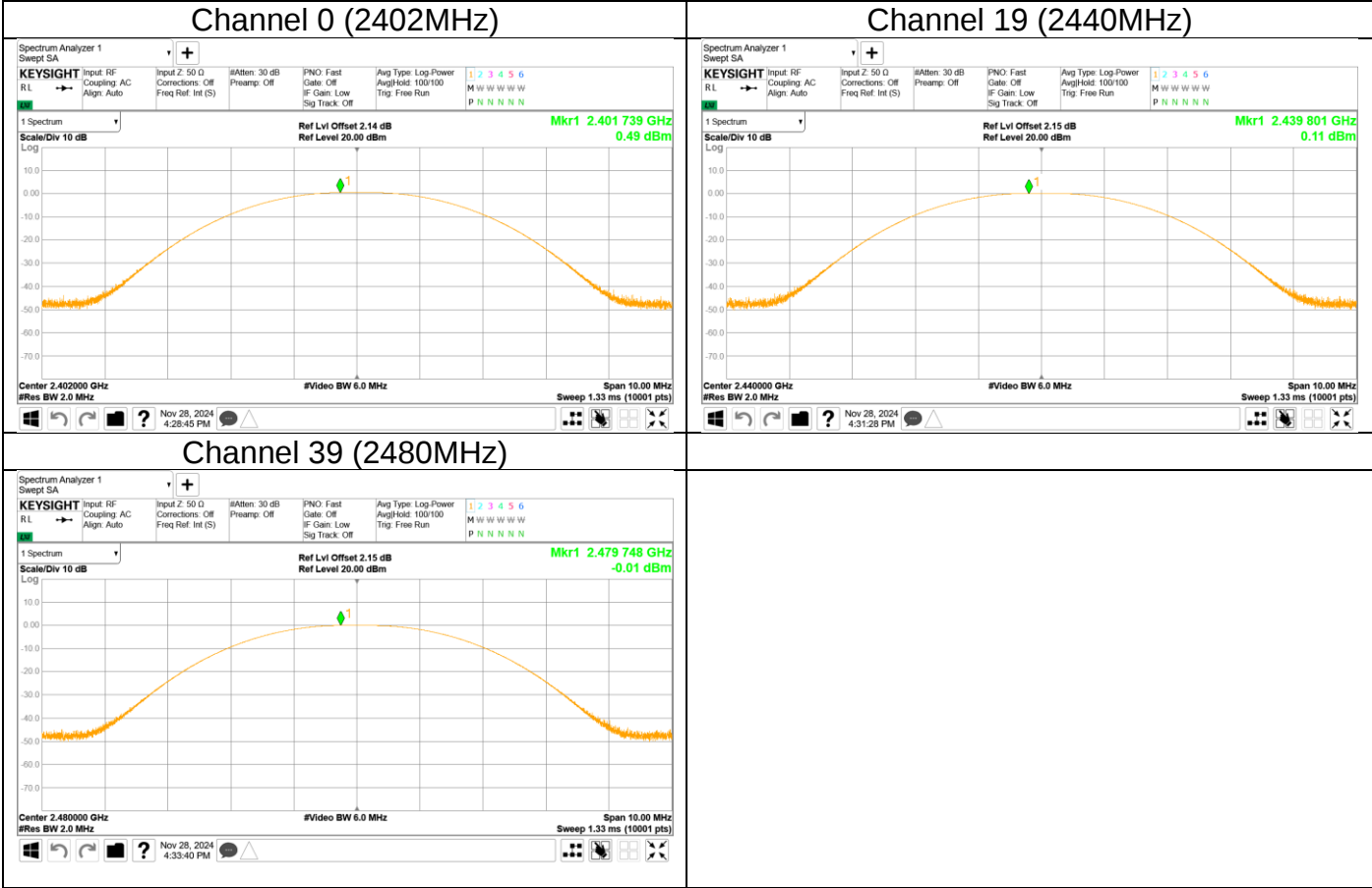
Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	0.49	Pass
Middle channel 2440MHz	0.11	Pass
High channel 2480MHz	-0.01	Pass

2Mbps

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	0.46	Pass
Middle channel 2440MHz	0.14	Pass
High channel 2480MHz	0.03	Pass

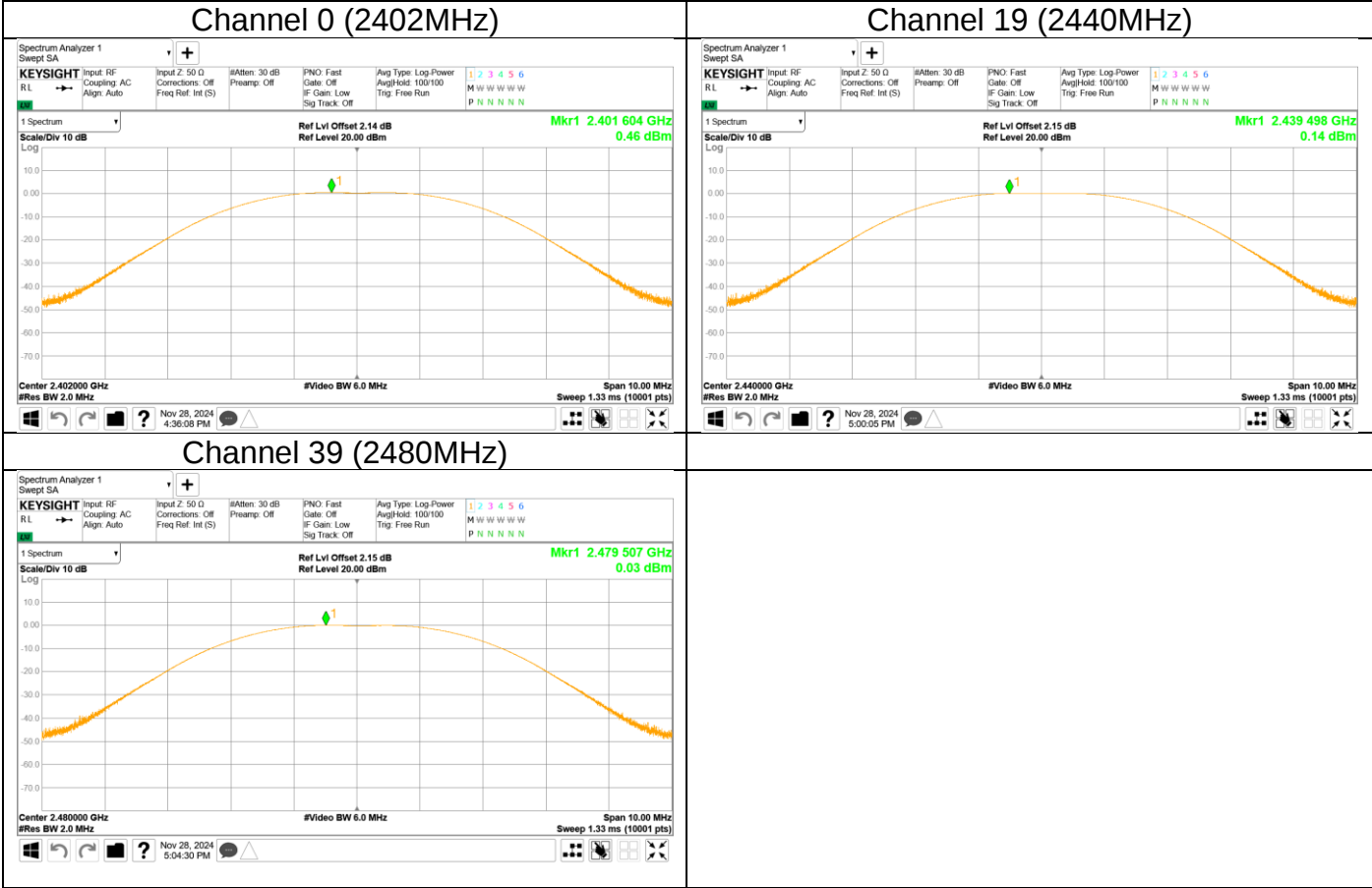


Peak output power (1Mbps)





Peak output power (2Mbps)





9.2 6dB bandwidth

Test Method for 6 dB Bandwidth

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. RBW=1% to 5% of the occupied bandwidth but not less than 100kHz, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
5. Use the automatic bandwidth measurement capability of an instrument, use the X dB bandwidth mode with X set to 6 dB.
6. Allow the trace to stabilize, record the 6 dB Bandwidth value.

Limit

According to §15.247(a)(2), 6dB bandwidth limit as below:

6dB bandwidth Limit [kHz]
≥ 500

Test result

1Mbps

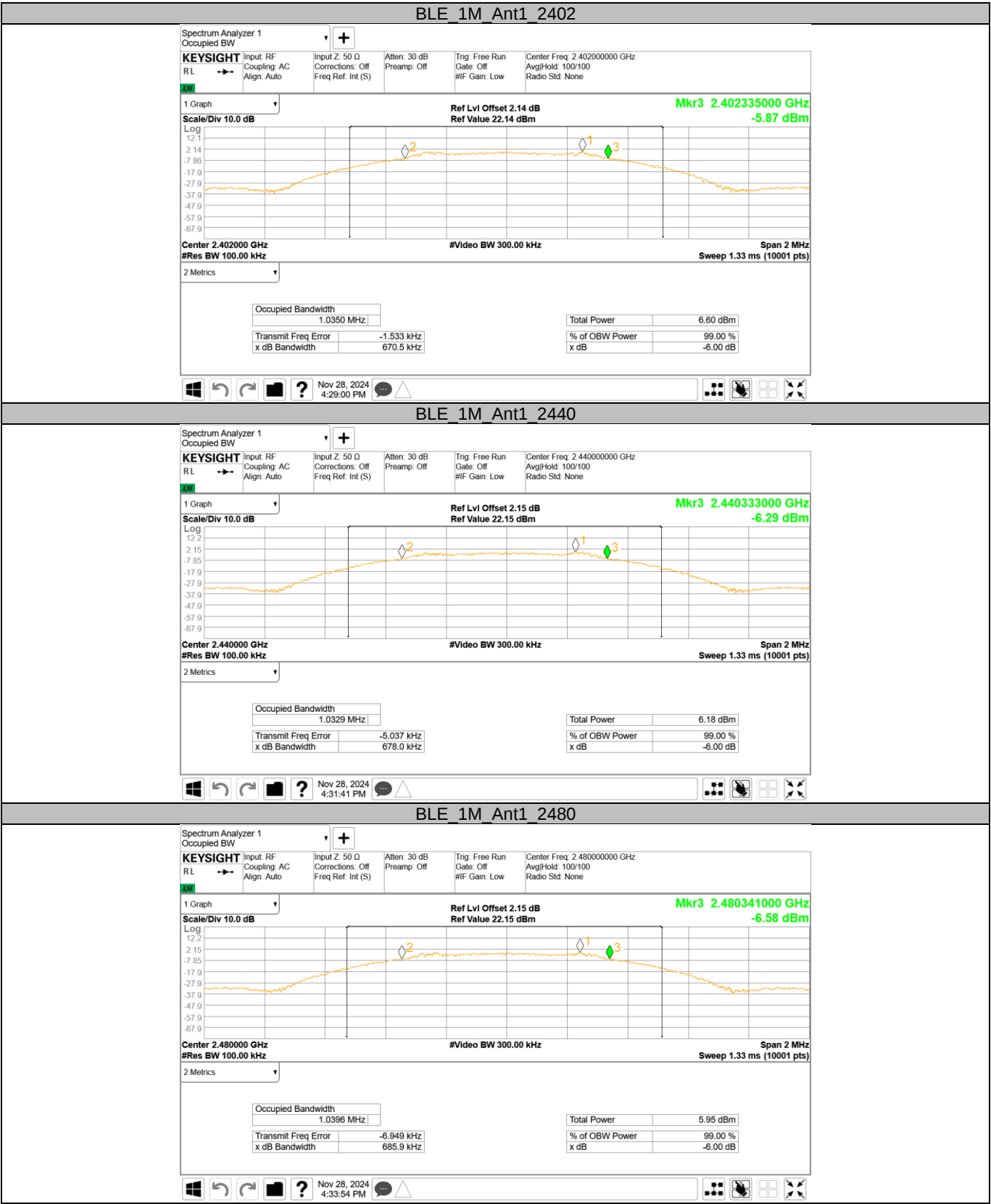
Frequency MHz	6dB bandwidth MHz	Result
Top channel 2402MHz	0.67	Pass
Middle channel 2440MHz	0.678	Pass
Bottom channel 2480MHz	0.686	Pass

2Mbps

Frequency MHz	6dB bandwidth MHz	Result
Top channel 2402MHz	1.374	Pass
Middle channel 2440MHz	1.335	Pass
Bottom channel 2480MHz	1.35	Pass



6dB Bandwidth







9.3 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

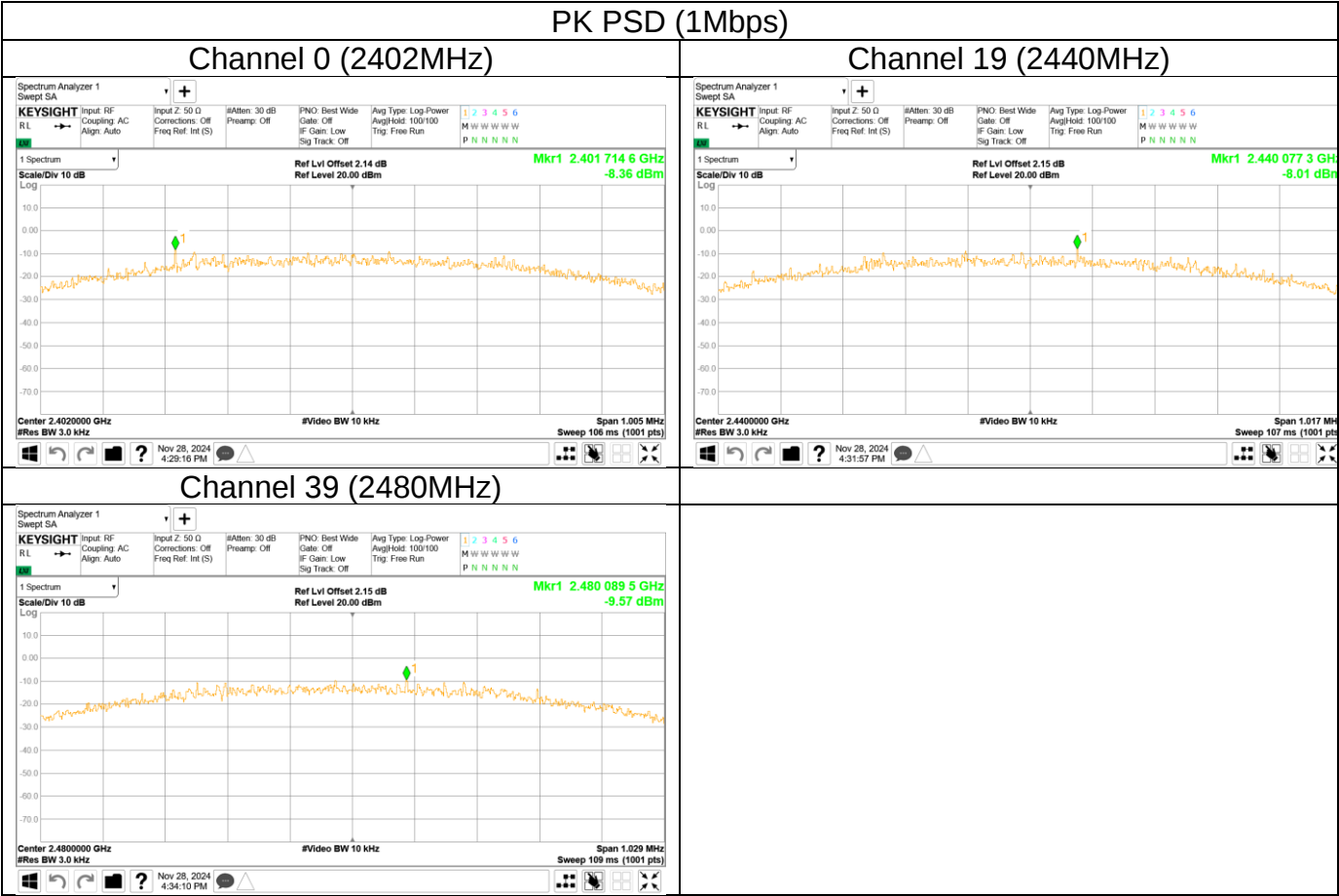
Test result

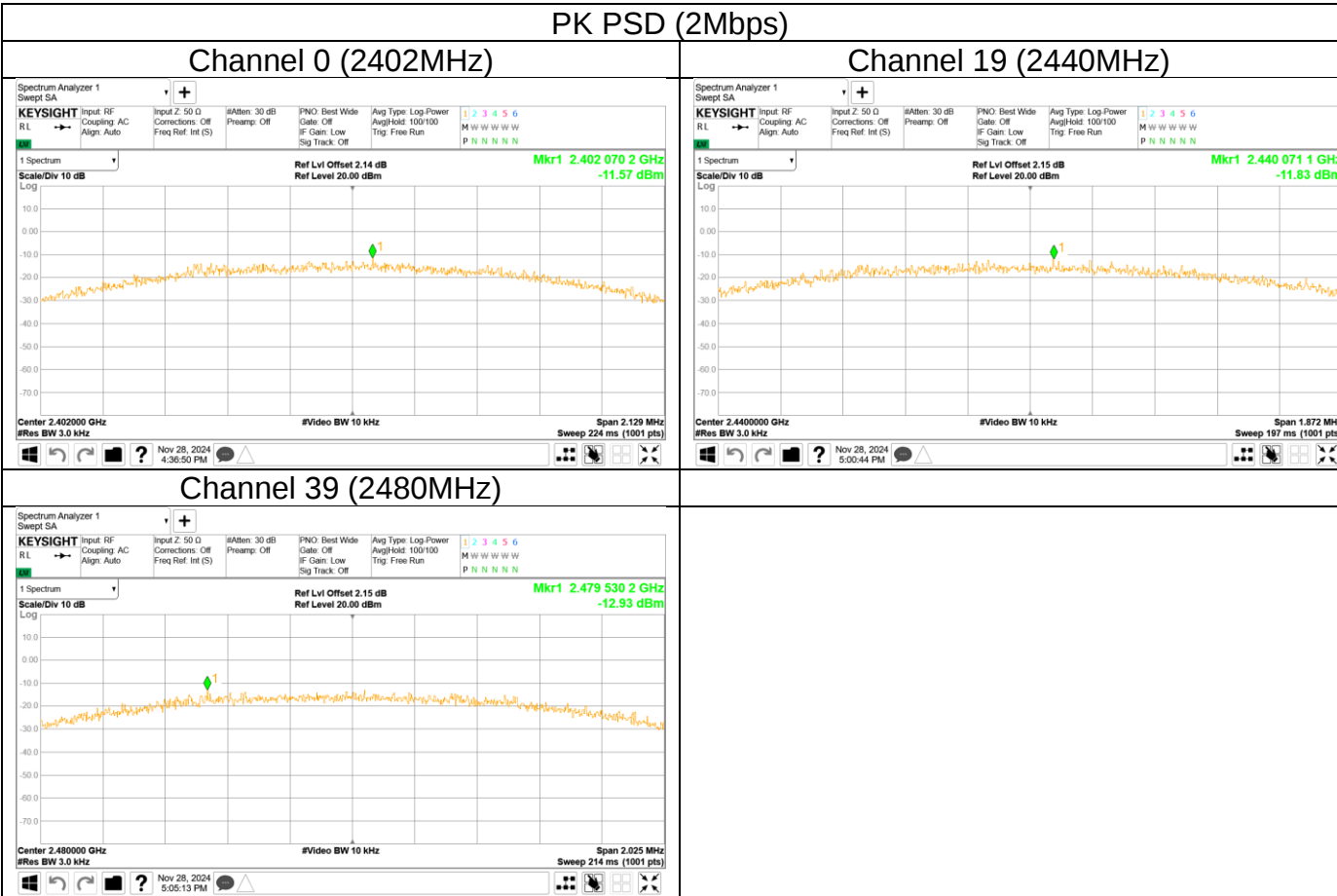
1Mbps

Frequency MHz	Power spectral density dBm/3kHz	Result
Top channel 2402MHz	-8.36	Pass
Middle channel 2440MHz	-8.01	Pass
Bottom channel 2480MHz	-9.57	Pass

2Mbps

Frequency MHz	Power spectral density dBm/3kHz	Result
Top channel 2402MHz	-11.57	Pass
Middle channel 2440MHz	-11.83	Pass
Bottom channel 2480MHz	-12.93	Pass







9.4 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

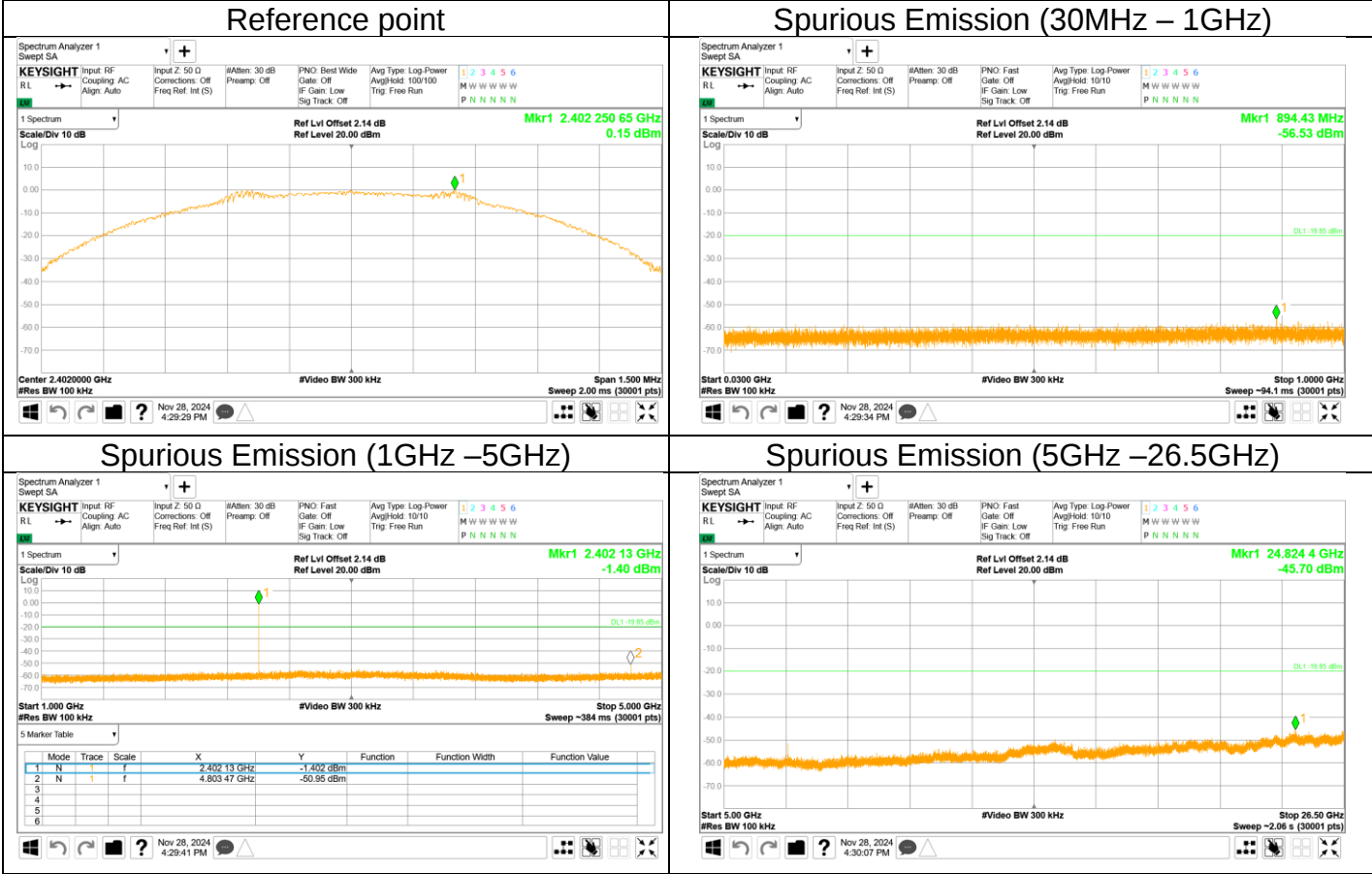
According to §15.247(d), spurious RF conducted emissions limit as below:

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



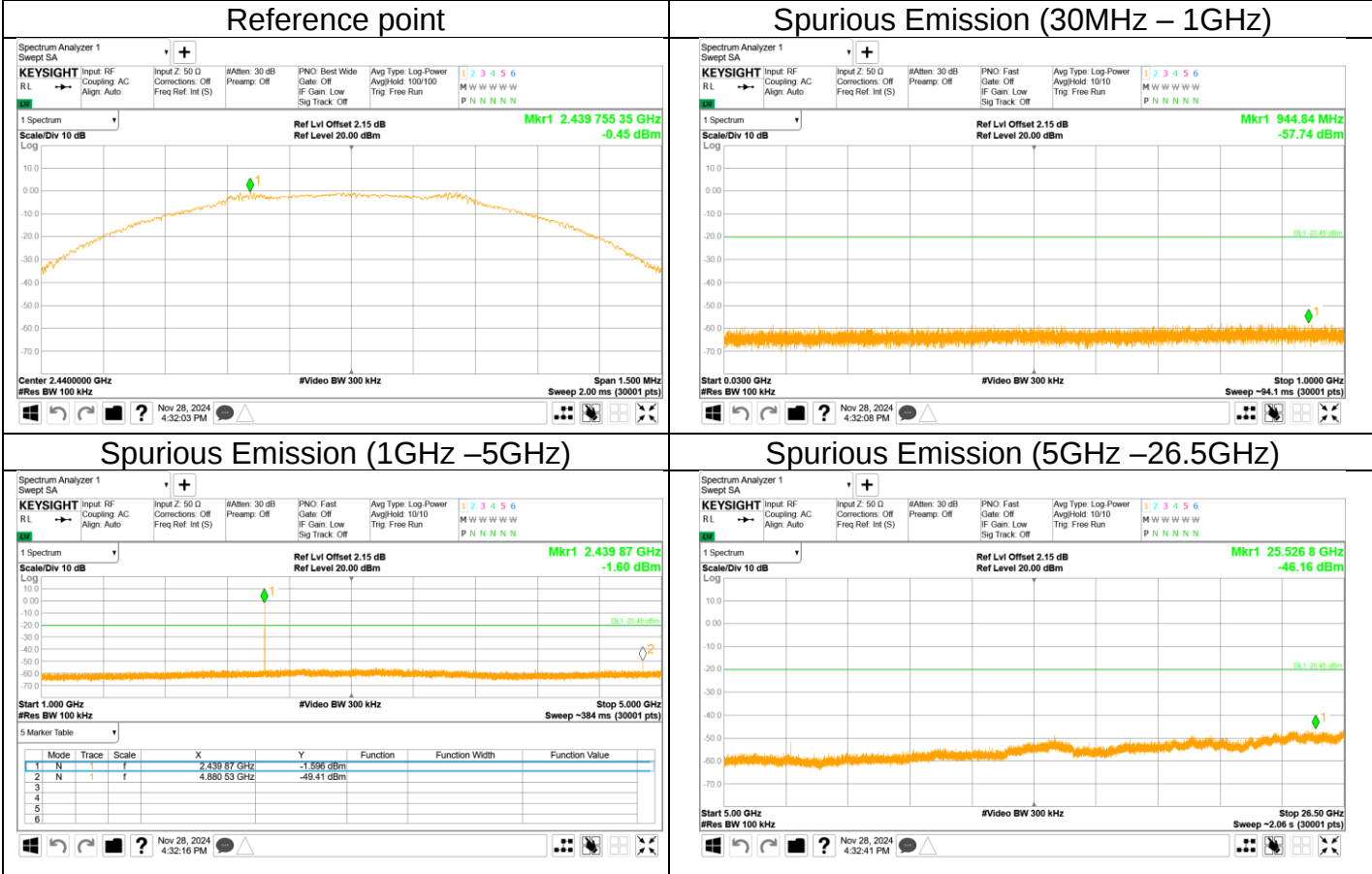
Spurious RF conducted emissions

Out-of-Band Emissions (1Mbps)
Channel 0 (2402MHz)





Out-of-Band Emissions (1Mbps)
Channel 19 (2440MHz)





Out-of-Band Emissions (1Mbps)
Channel 39 (2480MHz)

