



Japan - TEST REPORT

Report Number : 709502604275-00B Date of Issue: June 05, 2026

Model : 9290046104, 9290042949, 9290042951, 9290046080

Product Type : LED Light strip

Applicant : Signify (China) Investment Co., Ltd.

Address : Building No. 9, Lane 888, Tianlin Road, Minhang 200233
Shanghai PEOPLE'S REPUBLIC OF CHINA

Manufacturer : Signify (China) Investment Co., Ltd.

Address : Building No. 9, Lane 888, Tianlin Road, Minhang 200233
Shanghai PEOPLE'S REPUBLIC OF CHINA

Test Result :  ☒ Positive ☐ Negative

Total pages including Appendices : 25

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1 General Information

1.1 Notes

TÜV SÜD Products Testing (Shanghai) Co., Ltd. – EMC-Lab is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

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Prepared by
Project Engineer

2026.06.05

Date



Yong ZHANG

Name

Yong ZHANG

Signature

Approved by
Project Manager

2026.06.05

Date

Jiaxi XU

Name

Jiaxi XU

Signature



1.2 Testing Laboratory

Address of Test Laboratory:

Company name: TÜV SÜD Products Testing (Shanghai) Co., Ltd.

Company Address: 1F, No.16 Lane, 1951 Du Hui Road,
Shanghai 201108,
P.R. China

Telephone: +86 21 6037 6300

1.3 Details of Applicant

Applicant: Signify (China) Investment Co., Ltd.

Address: Building No. 9, Lane 888, Tianlin Road, Minhang 200233 Shanghai
PEOPLE'S REPUBLIC OF CHINA

Product Description: LED Light strip

Manufacturers Model No.: 9290046104, 9290042949, 9290042951, 9290046080

1.4 Application Details

Date of receipt of order: 04/21/2026

Date of receipt of test item: 05/11/2026

Date of test: 05/20/2026~05/28/2026

1.5 Test Item

Refer to table 1

1.6 Applied Standard

APPLIED PRODUCT STANDARD

Article 2 Paragraph 1 item(19): Ministry of Internal Affairs and Communications Notification Article 88 Appendix 43

1.7 Test Summary

Table 1. Summary of results

Essential parameter	Corresponding technical requirements: Article 88 Appendix 43	Result
Transmitter requirements	RF Output Power	PASS
	RF Output Power Tolerance	PASS
	Frequency Tolerance	PASS
	Occupied Bandwidth	PASS
	Spread Bandwidth	PASS
	Interference prevention function	PASS
	Unwanted (Spurious) Emission Strength	PASS
Receiver requirements	Secondary Emitted Radio Wave Strength*	PASS

NOTE 1: Measurement taken is within the measurement uncertainty of measurement system.

NOTE 2 “*” N/A is an abbreviation for Not Applicable.

Remark: It is compliance to the appropriate section of the Ordinance Article 2 paragraph 1 Item (19).

2 Equipment Specification

2.1 General Description

The EUT is a LED Light strip with 2.4GHz BLE and Zigbee function.

All models of RF box are exactly the same, the differences are the rated power, light strips and AC adapters.

So model 9290046104 was chosen to perform all the tests,

This report is only for 2.4G Zigbee.

For the 2.4GHz BLE test report please refer to 709502604275-00A.

2.2 Technical Data

Description:	LED Light strip
Model:	9290046104, 9290042949, 9290042951, 9290046080
Operation frequency:	2400MHz~2483.5MHz
Antenna type:	PIFA Antenna
Antenna gain:	1.78 dBi
Rated Input:	24V DC (from external AC Adapter)
Modulation:	DSSS, O-QPSK
Date Rate	250Kbps

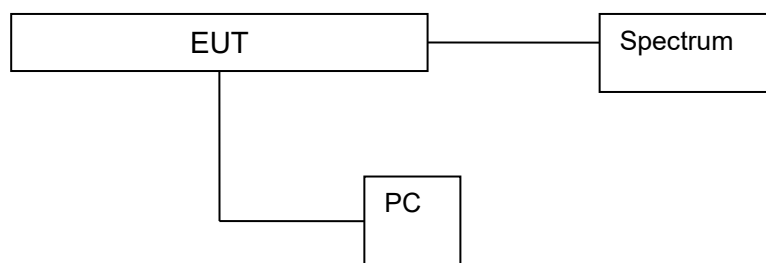
2.3 Test conditions and test Connections

2.3.1 Test Conditions

The EUT will be connected to test system in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment).

Power supply	The EUT is supplied DC 24V(from external AC Adapter). The fluctuation of input voltage to radio circuit section is under 1% when input voltage from DC 24V to the test equipment is fluctuated by 10%, So, all measurement has been conducted by only rated voltage.			
	DC Input		Input voltage to the circuit of RF unit	
				Deviation
	High Voltage	DC 24V	3.3V	0.00%
	Normal Voltage	DC 24V	3.3V	0.00%
	Low Voltage	DC 24V (declared by client)	3.3V	0.00%
Test Frequencies:	If the EUT can be set to 3 or more different(carrier) frequencies in allocated band, testing shall be performed using the Lowest, Middle and the Highest frequency (L, M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.			

2.3.2 Test Connections



Test Configuration

2.4 Auxiliary Equipment Used during Test

Table 3. Auxiliary Equipment Used during Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
PC	ThinkPad	T480S	---	---
Hue debug board	Provided by Client	--	---	---
Software in laptop	Provided by Client	Hue Approbation Tool (1.5.9.1)	---	---

2.5 Lists of Test Instruments

Table 4. Lists of Test Instruments

Description	Manufacturer	Model no.	Serial no.	CAL. DATE	CAL. DUE DATE
Signal spectrum analyzer	Agilent	N9020B	MY59050168	2026-2-24	2027-2-23
RF automatic control unit	MWRFTtest	MW100-RFCB	S2110418b -YQ-EMC	2025-10-9	2026-10-8
RF_Cable	UCWAVE ELECTRONIC	UCA500-NJWSM-1.5M	---	2025-8-1	2026-7-31

Remark:

- (a) Calibration conducted by the National institute of Information and Communications Technology (NICT in Japan (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 Act (Act No. 51 of 1992).
- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (c). the calibration corresponds to C described above.

From JRL Article 24-2, paragraph 4, Item 2

All the test instruments calibration by Jiangsu Electronic Information Product Quality Supervision & Inspection Institute (Jiangsu Information Security Evaluation Center).
Address: No.100, Jinshui Road, Wuxi, Jiangsu, China

2.6 Measurement Uncertainty (95% confidence levels, k=2)

System Measurement Uncertainty	
Test Items	Extended Uncertainty
RF Conducted Measurement	Power related: 1.16dB Frequency related: 6.00×10^{-8}

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3.

3 Measurements Result

3.1 RF Output Power

3.1.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.1.2 Limit

- a. The antenna power of a transmitting equipment (with a frequency band of 2,427 – 2,470.75 MHz, for spread spectrum systems using FH systems, hybrid systems of DS and FH, or hybrid systems of FH and OFDM) shall be such that the mean power within a bandwidth of 1 MHz is 3 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.
- b. The antenna power of a transmitting equipment using a spread spectrum system other than any of those in “a” and the OFDM system shall be such that the mean power within a bandwidth of 1 MHz is 10 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.

3.1.3 Test result

Date Rate	Frequency (MHz)	Voltage (VDC)	Reading (mW/MHz)	Limit (mW/MHz)
250Kbps	2405	24V DC	5.63	10
	2440	24V DC	5.53	10
	2480	24V DC	6.13	10

3.1.4 Result

The equipment met the requirement of this clause.

3.2 Tolerances for Antenna Power

3.2.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.2.2 Limit

Upper and lower limits of the tolerance for antenna power shall be 20%, respectively. Note that they represent the tolerance for the maximum rated antenna power and that no upper and lower limits of the tolerance are regulated in the case of antenna power reduction for communications reasons.

3.2.3 Test result

Date Rate	Frequency (MHz)	Voltage (VDC)	Declared Output Power (mW/MHz)	Result (mW/MHz)	Tolerances (%)	Limit
250Kbps	2405	24V DC	6	5.63	-6.17	+20%
	2440	24V DC	6	5.53	-7.83	+20%
	2480	24V DC	6	6.13	2.17	+20%
Conclusion: PASS						

Note: Deviation = (Output power – Declared Output Power) / Declared Output Power * 100%

3.2.4 Result

The equipment met the requirement of this clause.

3.3 Frequency Tolerance

3.3.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.3.2 Limit (ARIB STD-T66, Clause 3.2 (4))

Tolerance of frequency: $\pm 50 \times 10^{-6}$.

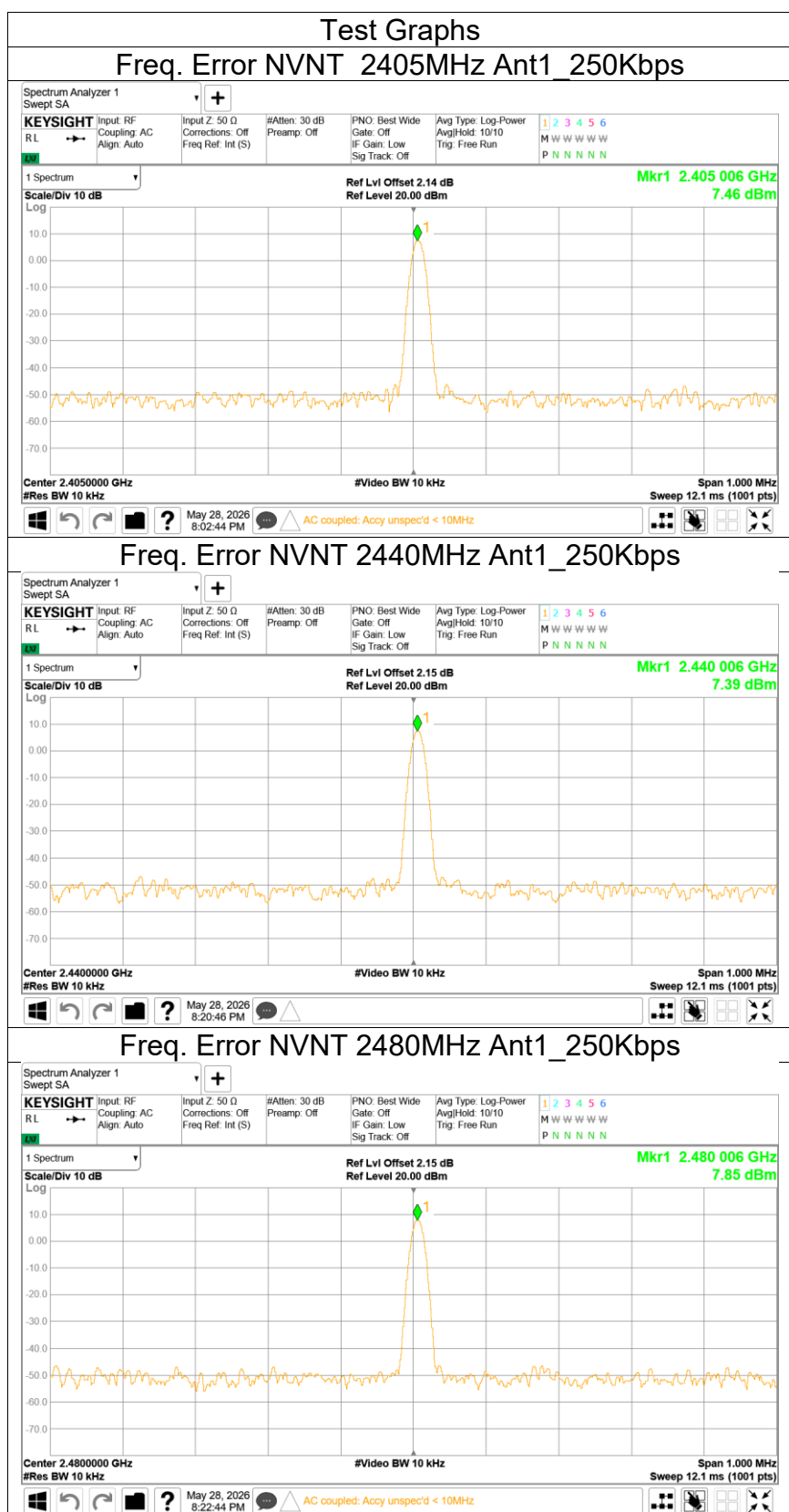
3.3.3 Test Result

Date Rate	Test Frequency (MHz)	Voltage (VDC)	Result (MHz)	Tolerance (Hz)	Tolerance (ppm)	Limit (ppm)
250Kbps	2405	24V DC	2405.006	6000	2.49	± 50
	2440	24V DC	2440.006	6000	2.46	± 50
	2480	24V DC	2480.006	6000	2.42	± 50
Conclusion: PASS						

3.3.4 Result

The equipment met the requirement of this clause.

3.3.5 Test Graph



3.4 Occupied Frequency Bandwidth

3.4.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.4.2 Limit

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a OFDM system is at most 40MHz; and for transmission devices using any other necessary frequency bandwidth is at most 26 MHz or less.

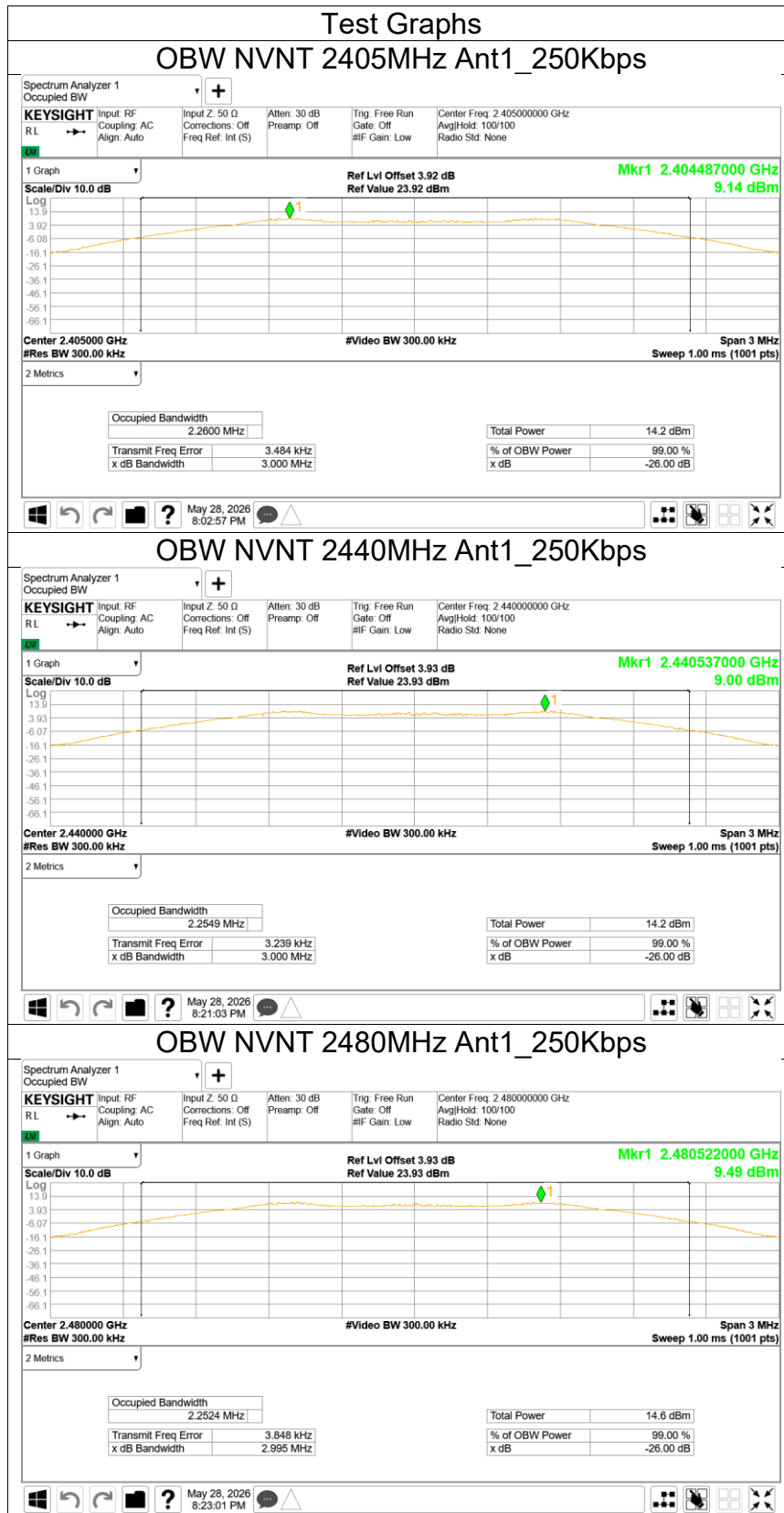
3.4.3 Test Result

Date Rate	Test Frequency (MHz)	Voltage (VDC)	Result (MHz)	Limit (MHz)
250Kbps	2405	24V DC	2.26	<26MHz
	2440	24V DC	2.255	<26MHz
	2480	24V DC	2.252	<26MHz

3.4.4 Result

The equipment met the requirement of this clause.

3.4.5 Test Graph



3.5 Spread Bandwidth

3.5.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.5.2 Limit

In spread spectrum systems, spread bandwidth (which refers to a frequency bandwidth with an upper limit and lower limit such that each of the mean powers radiated above the upper frequency limit and below the lower frequency limit is equal to 5 % of the total mean power radiated; this also applies hereafter) shall be 500 kHz or more

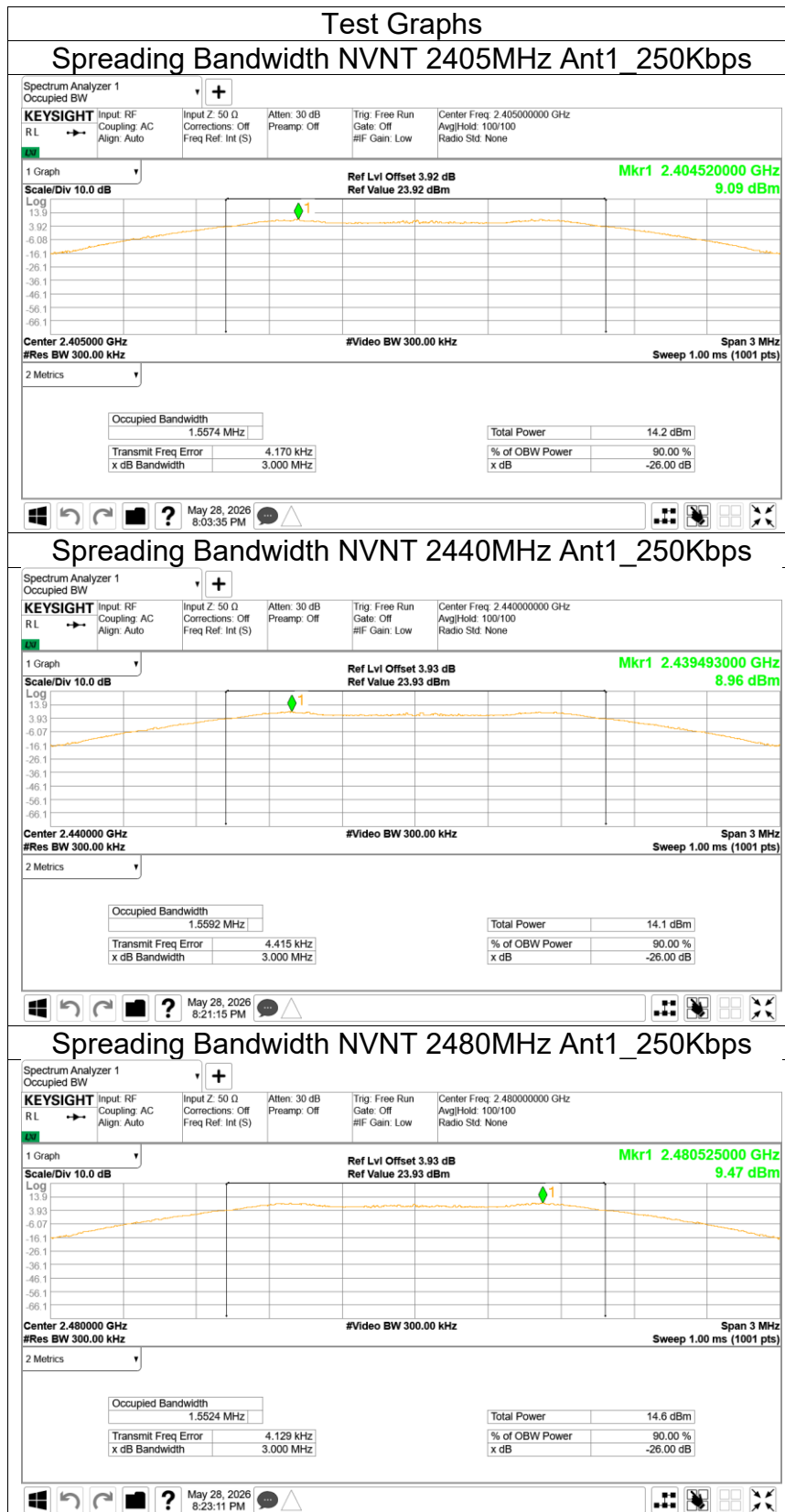
3.5.3 Test Result

Date Rate	Test Frequency (MHz)	Voltage (VDC)	Result (MHz)	Limit (KHz)
250Kbps	2405	24V DC	1.557	>500
	2440	24V DC	1.559	>500
	2480	24V DC	1.552	>500

3.5.4 Result

The equipment met the requirement of this clause

3.5.5 Test Graph



3.6 Unwanted (Spurious) Emission Strength

3.6.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.6.2 Limit

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows: a. $2,387\text{MHz} \leq f \leq 2,400\text{MHz}$ and $2,483.5\text{MHz} < f \leq 2,496.5\text{MHz}$ 25 μW or less b. $2,387\text{MHz} > f$ and $2,496.5\text{MHz} < f$ 2.5 μW or less

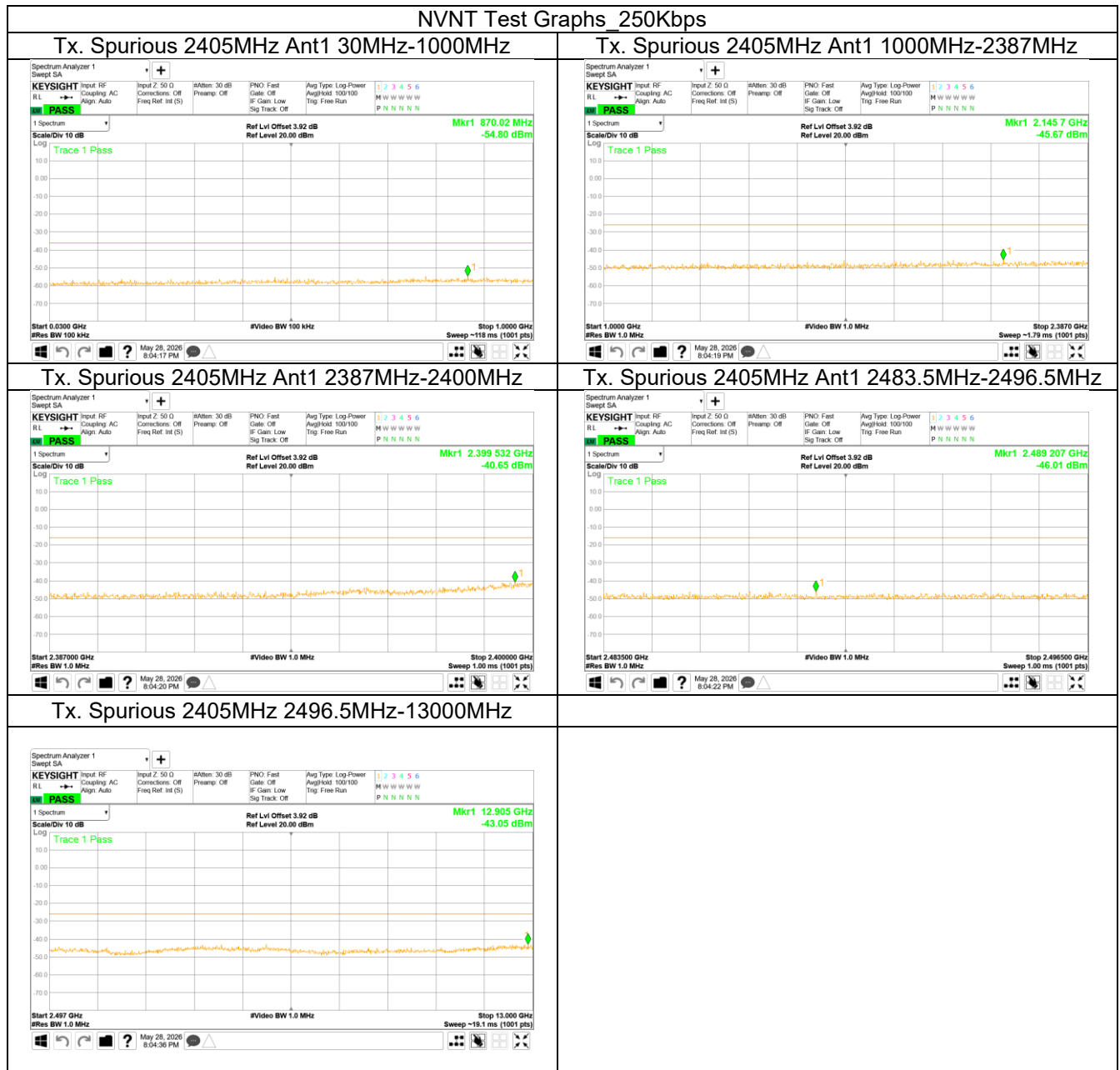
3.6.3 Test Result

Condition	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Value (dBm/MHz)	Limit (dBm/MHz)	Result [$\mu\text{W}/\text{MHz}$]	Limit [$\mu\text{W}/\text{MHz}$]	Verdict
NVNT	2405 (250Kbps)	30-1000	870.02	-44.8	-26	0.033113	≤ 2.5	Pass
NVNT		1000-2387	2145.66	-45.67	-26	0.027102	≤ 2.5	Pass
NVNT		2387-2400	2399.53	-40.65	-16	0.086099	≤ 25	Pass
NVNT		2483.5-2496.5	2489.21	-46.01	-16	0.025061	≤ 25	Pass
NVNT		2496.5-13000	12905.47	-43.05	-26	0.049545	≤ 2.5	Pass
NVNT	2440 (250Kbps)	30-1000	823.46	-45.01	-26	0.031550	≤ 2.5	Pass
NVNT		1000-2387	2260.78	-44.64	-26	0.034356	≤ 2.5	Pass
NVNT		2387-2400	2391.08	-46.11	-16	0.024491	≤ 25	Pass
NVNT		2483.5-2496.5	2487.89	-45.32	-16	0.029376	≤ 25	Pass
NVNT		2496.5-13000	7317.61	-42.71	-26	0.053580	≤ 2.5	Pass
NVNT	2480 (250Kbps)	30-1000	872.93	-44.95	-26	0.031989	≤ 2.5	Pass
NVNT		1000-2387	2249.69	-44.53	-26	0.035237	≤ 2.5	Pass
NVNT		2387-2400	2393.98	-46.1	-16	0.024547	≤ 25	Pass
NVNT		2483.5-2496.5	2483.53	-34.61	-16	0.345939	≤ 25	Pass
NVNT		2496.5-13000	7443.65	-42.74	-26	0.053211	≤ 2.5	Pass

3.6.4 Result

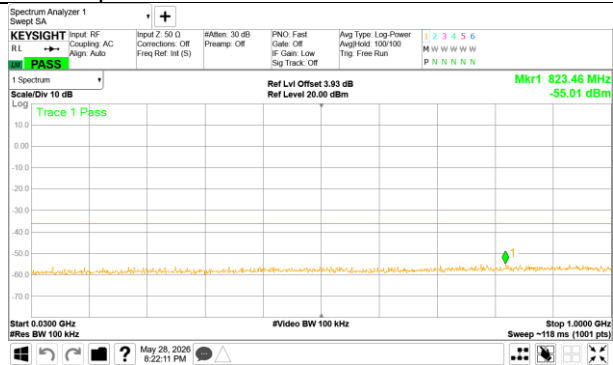
The equipment met the requirement of this clause.

3.6.5 Test Graph

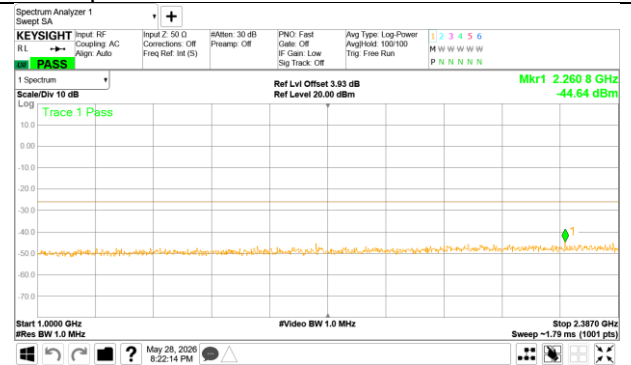


NVNT Test Graphs 250Kbps

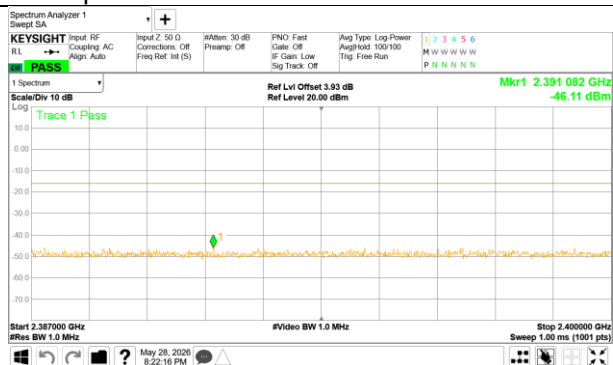
Tx. Spurious 2440MHz Ant1 30MHz-1000MHz



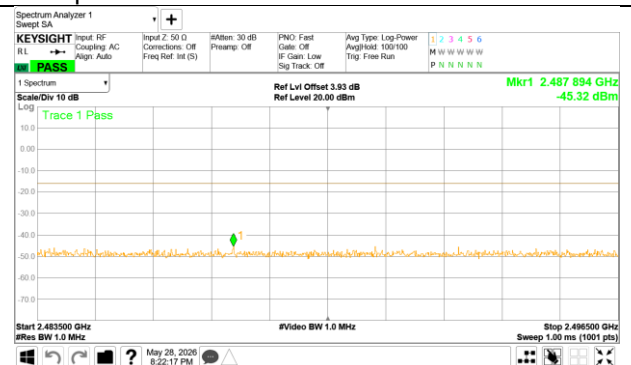
Tx. Spurious 2440MHz Ant1 1000MHz-2387MHz



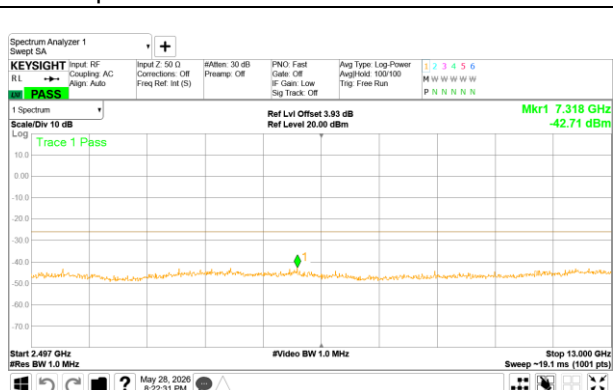
Tx. Spurious 2440MHz Ant1 2387MHz-2400MHz



Tx. Spurious 2440MHz Ant1 2483.5MHz-2496.5MHz

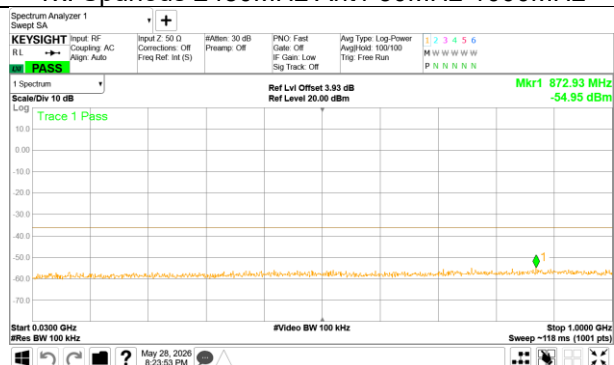


Tx. Spurious 2440MHz 2496.5MHz-13000MHz

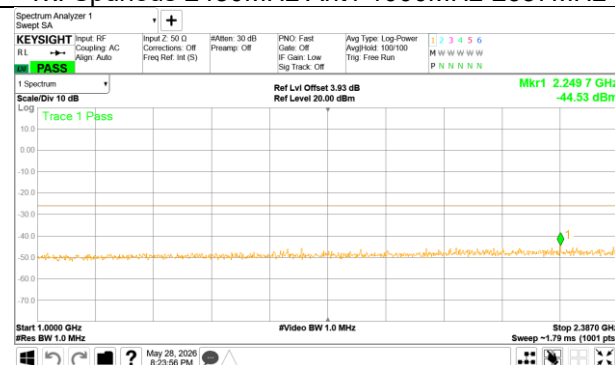


NVNT Test Graphs 250Kbps

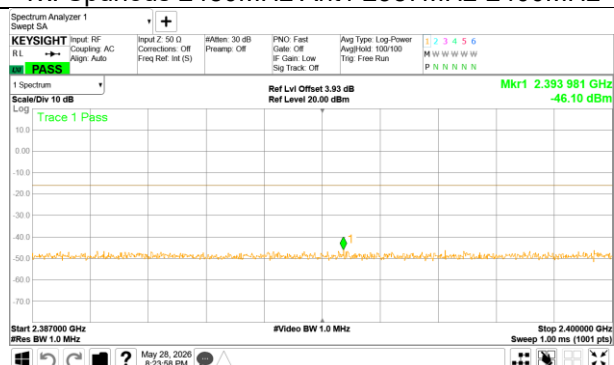
Tx. Spurious 2480MHz Ant1 30MHz-1000MHz



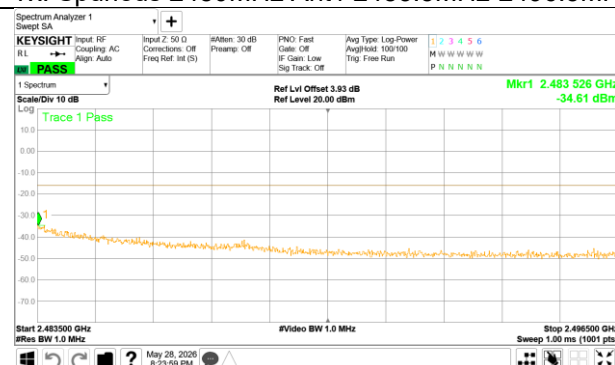
Tx. Spurious 2480MHz Ant1 1000MHz-2387MHz



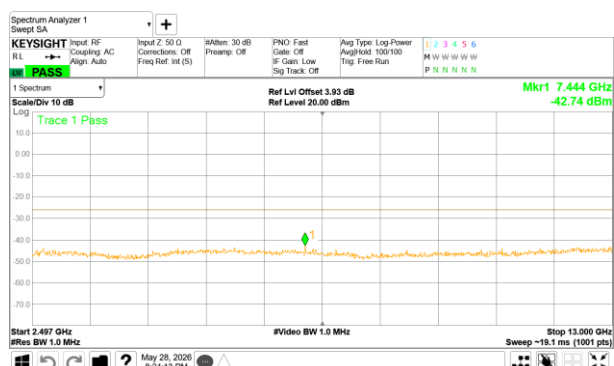
Tx. Spurious 2480MHz Ant1 2387MHz-2400MHz



Tx. Spurious 2480MHz Ant1 2483.5MHz-2496.5MHz



Tx. Spurious 2480MHz 2496.5MHz-13000MHz



3.7 Secondary Emitted Radio Wave Strength

3.7.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.7.2 Limit

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit.

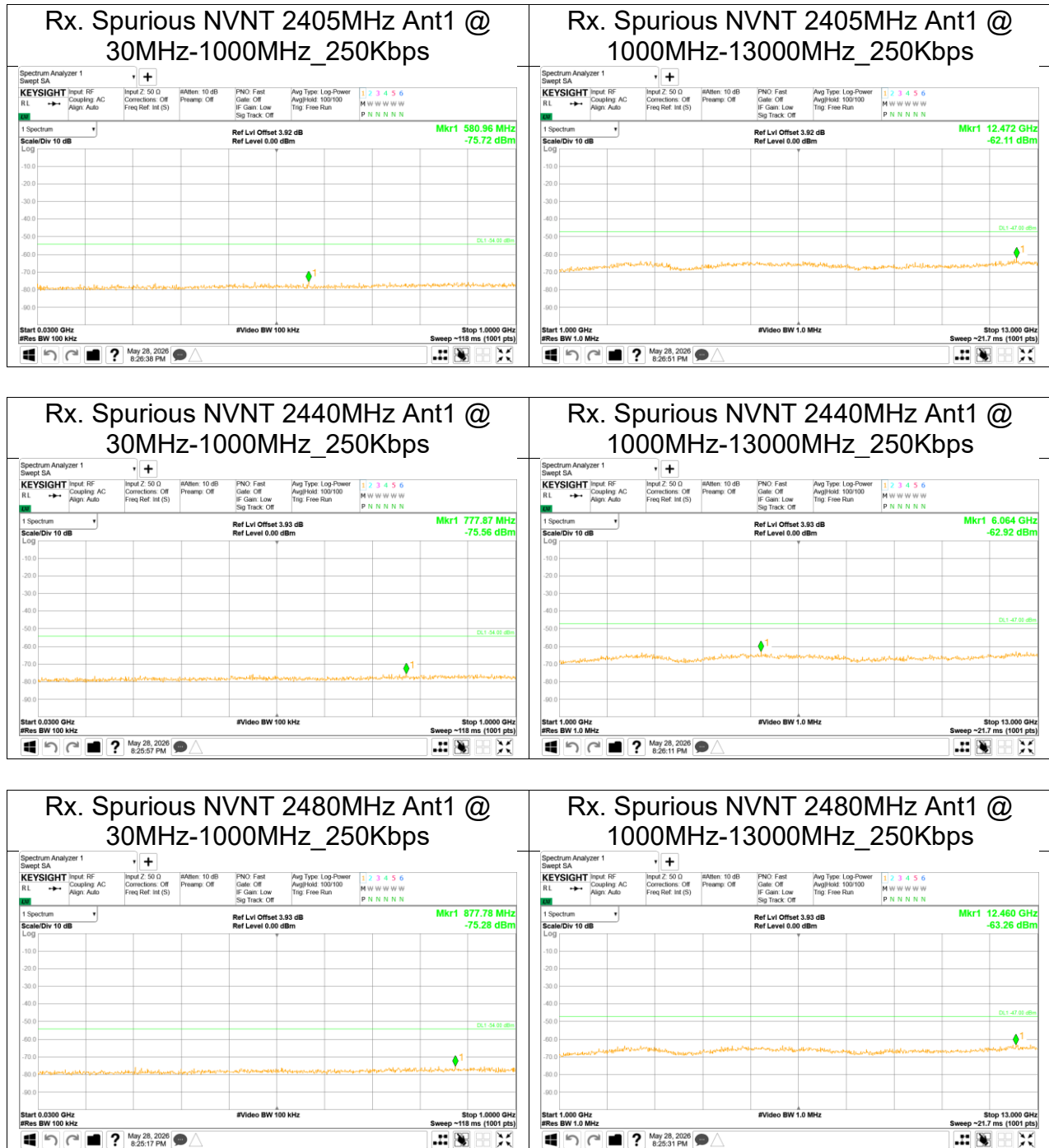
3.7.3 Test Result

Test Condition	Test Mode	Channel (MHz)	Freq., Range (MHz)	Emission Frequency (MHz)	Result (nW)	Limit (nW)	Verdict
NTNV	Zigbee 250Kbps	2405	30~1000	580.96	0.026792	4.0	PASS
NTNV	Zigbee 250Kbps	2405	1000~13000	12472	0.615177	20.0	PASS
NTNV	Zigbee 250Kbps	2440	30~1000	777.87	0.027797	4.0	PASS
NTNV	Zigbee 250Kbps	2440	1000~13000	6064	0.510505	20.0	PASS
NTNV	Zigbee 250Kbps	2480	30~1000	877.78	0.029648	4.0	PASS
NTNV	Zigbee 250Kbps	2480	1000~13000	12460	0.472063	20.0	PASS

3.7.4 Test Result

The equipment met the requirement of this clause.

3.7.5 Test Graph



3.8 Interference prevention function

3.8.1 Test condition

Date of testing:	05/20/2026~05/28/2026
Channel:	2405MHz, 2440MHz, 2480MHz
Test position:	Transmitting
Ambient temperature:	15-35 °C
Relative humidity:	30-60 %
Atmosphere Pressure:	860 – 1060 hPa

3.8.2 Limit

Item	Limits
Identification Code	≥48 bits

Measured Result: 00:17:88:01:10:87:71:2B

Complies. EUT displayed a valid identification. In real life applications, the EUT is programmed to connect with specific host only.

3.8.3 Result

The equipment met the requirement of this clause.



4 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



5 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

-----End of Test Report-----