



JAPAN RADIO TEST REPORT

Bluetooth

Product Name : Wireless Headset
Model Name : AR0207
Applicant : Logitech Far East Ltd
#2 Creation Rd., 4, Science-Based Ind. Park, HsinChu, Taiwan
Manufacturer : Logitech Far East Ltd
#2 Creation Rd., 4, Science-Based Ind. Park, HsinChu, Taiwan
Type Emissions : 78M2F1D(BR)
78M4G1D(EDR)
19M6F1D(BR_AFH)
20M0G1D(EDR_AFH)
1M13F1D(LE_1M)
2M06F1D(LE_2M)
Declaration Output Power : 0.050 mW/MHz (BR)
0.050 mW/MHz (EDR)
0.200 mW/MHz (BR_AFH)
0.200 mW/MHz (EDR_AFH)
3.700 mW (LE_1M)
3.700 mW (LE_2M)
Standard : Article 49-20 and the relevant articles of the Ordinance Regulating Radio Equipment
Test Procedure : MIC Notice No.88 Appendix No.43
The product was received on Jan. 07, 2026 and testing was performed from Jan. 29, 2026 to Jan. 29, 2026. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in MIC Notice No.88 Appendix No.43 and shown to be compliant with the applicable technical standards. Article 2 Paragraph 1 Item 19 of the Certificate Ordinance of the Radio Law indicates the classification of the specified radio equipment.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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History of This Test Report

Report No.	Version	Description	Issued Date
JR610201	01	Initial issue of report	Mar. 09, 2026



Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)
3.1	Frequency Tolerance	Pass
3.2	Occupied Bandwidth	Pass
3.3	Unwanted Emission Intensity	Pass
3.4	RF Output Power / Tolerance	Pass
3.5	Limitation of Collateral Emission of Receiver	Pass
3.6	Transmission Antenna Gain (EIRP Antenna Power)	NA
3.7	Transmission Radiation Angle Width (3dB Beam width)	NA
3.8	Radio Interference Prevention Capability	Pass
3.9	Hopping Frequency Dwell Time	Pass
3.10	Construction Protection Confirmation	Pass

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Benson Chen

Report Producer: Freda Wu



1 General Description

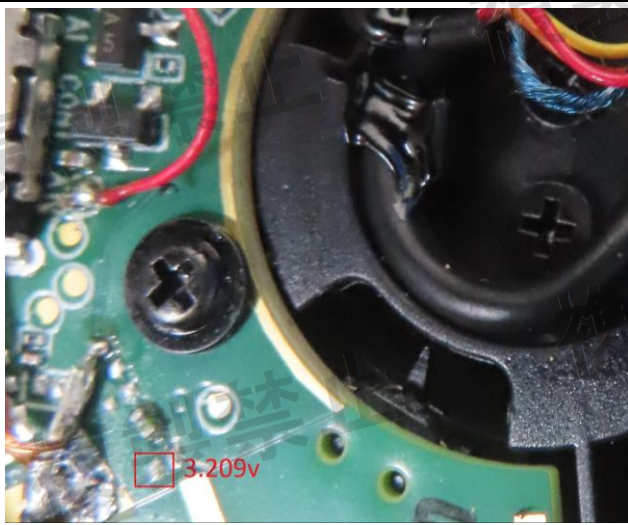
1.1 Feature of Equipment Under Test

Product Feature & Specification	
Product Name	Wireless Headset
Model Name	AR0207
Sample A	with teams button
Sample B	w/o teams button
SN	2549MHR0MUV9
Support Category / Frequency Range	Article 2-1-19 / 2400MHz ~ 2483.5MHz
Type of Modulation	☐ Direct Spreading (DS) ☐ Orthogonal frequency-division multiplexing (OFDM) ☒ Frequency Hopping (FH) ☒ Other : GFSK
Number of Channels	BR/EDR Mode 79
	AFH Mode 20
	Other : BT LE 40
Channel Spacing	Bluetooth BDR/BLE (1Mbps) GFSK
	Bluetooth BLE (2Mbps) GFSK
	Bluetooth EDR (2Mbps) $\pi/4$ DQPSK
	Bluetooth EDR (3Mbps) $\pi/4$ DQPSK & 8-DPSK
Declaration RF Output Power	0.050 mW/MHz (BR) ; 0.050 mW/MHz (EDR) ; 0.200 mW/MHz (BR_AFH) ; 0.200 mW/MHz (EDR_AFH) ; 3.700 mW (LE_1M) 3.700 mW (LE_2M)
Antenna Power (E.I.R.P)	-9.470 dBm/MHz (BR) -9.470 dBm/MHz (EDR) -3.450 dBm/MHz (BR_AFH) -3.450 dBm/MHz (EDR_AFH) 9.222 dBm (LE_1M) 9.222 dBm (LE_2M)
Modulation	☒ GFSK ☒ $\pi/4$ -DQPSK ☒ 8-DPSK ☒ Other : GFSK

Product Feature & Specification		
Power Source NOTE	☐ Commercial power	AC 100 ~ 240 V
	☒ External Power Source	DC 5.0 V
	☒ Li-ion battery	DC 3.7 V
	☐ UM battery	DC 1.2V

NOTE:

- For $\pi/4$ -DQPSK and 8-DPSK modes, the whole testing was performed for the $\pi/4$ -DQPSK mode, which is the worst case.
- 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.
- All the test items were performed with Sample A and Battery 1.

Power Supply voltage 3.7 Vdc (Nominal)	Power Supply voltage 4.07 Vdc (+10%)	Power Supply voltage 3.33 Vdc (-10%)
3.209v	3.209v	3.209v
Measurement point		
		

Antenna Information		
Main Antenna	Antenna Type : Monopole	Antenna Gain : 3.54 dBi

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.



1.3 Testing Site

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-3273456 / FAX: +886-3-3284978
Test Site No.	Sporton Site No.: TH02-HY

1.4 Measurement Uncertainty

Test Items	Uncertainty	Remark
Occupied Channel Bandwidth	$\pm 3.27\%$	Confidence 95%
RF output power, conducted	± 0.55 dB	Confidence 95%
Frequency Tolerance	± 5.3 Hz	Confidence 95%
Unwanted Emission	± 1.38 dB	Confidence 95%
Temperature	± 0.8 °C	Confidence 95%
Humidity	± 3 %	Confidence 95%

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- Article 49-20 and the relevant articles of the Ordinance Regulating Radio Equipment

Remark:

- All test items were verified and recorded according to the standards and without any deviation during the test.
- The measurement was implemented in accordance with MIC Notice No. 88 Appendix No. 43.

1.6 Ancillary Equipment List

None.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Channel (LE Channel)	Frequency (MHz)	Channel (LE Channel)	Frequency (MHz)	Channel (LE Channel)	Frequency (MHz)
0 (0)	2402	27	2429	54 (27)	2456
1	2403	28 (14)	2430	55	2457
2 (1)	2404	29	2431	56 (28)	2458
3	2405	30 (15)	2432	57	2459
4 (2)	2406	31	2433	58 (29)	2460
5	2407	32 (16)	2434	59	2461
6 (3)	2408	33	2435	60 (30)	2462
7	2409	34 (17)	2436	61	2463
8 (4)	2410	35	2437	62 (31)	2464
9	2411	36 (18)	2438	63	2465
10 (5)	2412	37	2439	64 (32)	2466
11	2413	38 (19)	2440	65	2467
12 (6)	2414	39	2441	66 (33)	2468
13	2415	40 (20)	2442	67	2469
14 (7)	2416	41	2443	68 (34)	2470
15	2417	42 (21)	2444	69	2471
16 (8)	2418	43	2445	70 (35)	2472
17	2419	44 (22)	2446	71	2473
18 (9)	2420	45	2447	72 (36)	2474
19	2421	46 (23)	2448	73	2475
20 (10)	2422	47	2449	74 (37)	2476
21	2423	48 (24)	2450	75	2477
22 (11)	2424	49	2451	76 (38)	2478
23	2425	50 (25)	2452	77	2479
24 (12)	2426	51	2453	78 (39)	2480
25	2427	52 (26)	2454	-	-
26 (13)	2428	53	2455	-	-

2.2 EUT Operation Test Setup

The equipment under test (EUT) was linked with Bluetooth simulator or operated by commands in order to make the EUT into the engineering modes for transmitting, receiving signals continuously, and hopping mode.

3 Test Result

3.1 Frequency Tolerance Measurement

3.1.1 Limit

Item	Limits
Frequency Tolerance	$\leq \pm 50\text{ppm}$

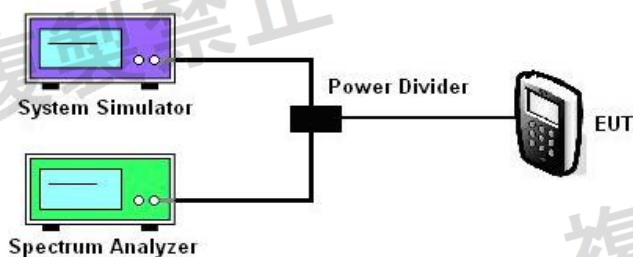
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

- Frequency accuracy of instrument shall be less than 10% of limits tolerance (5ppm).
- Three testing methods
 - Measure frequency tolerance by the system simulator.
 - CW Tone method
 - Setting of SA is following as: RBW:1kHz / VBW:30kHz.
 - Maker Max. level to get measuring frequency f.
 - 10dB down method
 - Setting of SA is following as: RBW:30kHz / VBW: 30kHz / Trace: MaxHold
 - Display line Level = Max. level – 10dB to place two markers, highest(fH) and lowest(fL) frequency
 - Determine measuring frequency $f = (fH - fL)/2$
- The frequency tolerance test case is directly measured using the frequency accuracy function of Bluetooth tester or spectrum analyzer. Then the frequency error formula is $(f - f_c)/f_c \times 10^6 \text{ ppm}$ and the limit is less than $\pm 50\text{ppm}$.

3.1.4 Test Setup



3.1.5 Test Result of Frequency Tolerance

Please refer to Appendix B.

3.2 Occupied Bandwidth Measurement

3.2.1 Limit

Item	Limits
Occupied Band Width	$\leq 83.5\text{MHz}$ (FH)
	$\leq 26\text{MHz}$ (OFDM, DS and Others)

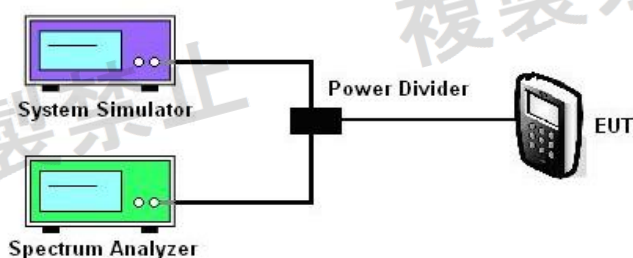
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. Setting of SA is following as: RBW $\leq 3\%$ of bandwidth / VBW = RBW / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
2. EUT have transmitted each modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode (For FHSS Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26MHz (For DSSS or OFDM Device) or 83.5MHz (For FHSS Device).

3.2.4 Test Setup



3.2.5 Test Result of Occupied Bandwidth Measurement

Please refer to Appendix B.

3.3 Unwanted Emission Intensity Measurement

3.3.1 Limit

Item	Limits
Tx Spurious Emission	$\leq 2.5 \mu\text{W}$ ($2387\text{MHz} > f ; 2496.5\text{MHz} < f$)
	$\leq 25 \mu\text{W}$ ($2387\text{MHz} \leq f < 2400\text{MHz}$) and ($2483.5\text{MHz} < f \leq 2496.5\text{MHz}$)

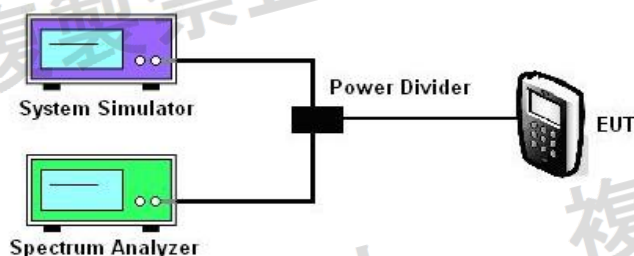
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. EUT have transmitted the maximum power and fixed channelize.
2. Setting of SA is following as: RBW:1MHz / VBW:1MHz above 1GHz, Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
3. Setting of SA is following as: RBW:100KHz / VBW:100KHz under 1GHz, Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
4. Setting of SA is following as 30MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW .
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25 μW .
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25 μW .
7. SA adjusted to start frequency 2496.5MHz and stop frequency 12500MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW .
8. If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.

3.3.4 Test Setup



3.3.5 Test Result of Unwanted Emission Intensity

Please refer to Appendix B.

3.4 RF Output Power / Tolerance

3.4.1 Limit

Item	Limits
Antenna Power Density	$\leq 3\text{mW/MHz}$ (FH form 2400 ~ 2483.5MHz)
	$\leq 10\text{mW/MHz}$ (OFDM,DS from 2400 ~ 2483.5MHz)
	$\leq 10\text{mW}$ (Other from 2400 ~ 2483.5MHz)
Antenna Power Error	+20% (Base on manufacturer declare antenna power density)

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. EUT have transmitted continuous maximum power on hopping mode (For FHSS Device).
2. Frequency hopping system or combined systems of direct spread and frequency hopping:
Test method 1:
 - i. Connect the high frequency power meter to the output of the attenuator and measure the total power (without bandwidth limitation)
 - ii. Divide the total power by the spread bandwidth to find the "average" power per MHz.
The average power per MHz is equal to the power meter value dBm + cable loss dB + $10 \log_{10} (1/\text{Duty Cycle})$ dB + $10 \log_{10} (1/\text{Spread Bandwidth})$ dB.
 - iii. Confirm that frequency distribution of the hopping frequencies is homogeneous according to the supporting data.
If frequency distribution of the frequencies is not homogeneous, consider other measurement or correction methods based on the supporting data.
 - iv. Set the antenna power as follows:
 - Continuous waves: value in ii.
 Test method 2:
 - i. Peak search by use setting of SA is following as:
 - Span = 2 time of occupied bandwidth
 - RBW = 1MHz / VBW = 3 time of RBW
 - Sweep Mode: Continuous sweep
 - Detect mode = Positive peak / Trace mode = Max hold.
 - Mark the peak value
 - ii. Measure maximum average power per MHz by use setting of SA is following as:
 - Center frequency = frequency of peak value
 - Span = 0Hz
 - RBW = 1MHz / VBW = RBW

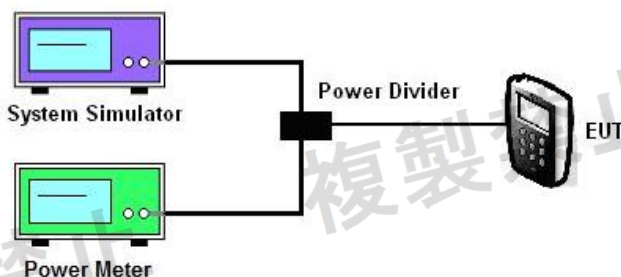
Sweep Mode: Continuous sweep

Detect mode = Sample / Trace mode = Max hold.

Calculated the mean power value

3. Antenna RF Output Power Tolerance is definition that actual measure antenna power tolerance is + 20% power range that manufacturer declare the conducted power density.

3.4.4 Test Setup



3.4.5 Test Result of RF Output Power / Tolerance

Please refer to Appendix B.

3.5 Limitation of Collateral Emission of Receiver Measurement

3.5.1 Limit

Item	Limits
Rx Spurious Emission	$\leq 4\text{nW}$ ($f < 1\text{GHz}$)
	$\leq 20\text{nW}$ ($1\text{GHz} \leq f$)

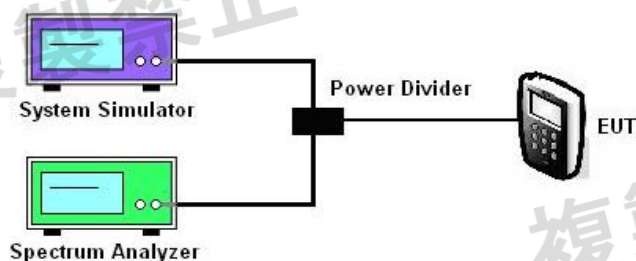
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. EUT have the continuous reception mode and fixed only one channelize.
2. SA set RBW: 100KHz and VBW: 100KHz. Then adjust to start frequency 30MHz and stop frequency 1GHz. Search to mark peak reading value + cable loss shall be less than 4nW.
3. SA set RBW: 1MHz and VBW: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12.5GHz. Search to mark peak reading value + cable loss shall be less than 20nW.
4. If power level of lower emissions are more than 1/10 of limit (.0.4nW for $f < 1\text{GHz}$, 2nW for $f \geq 1\text{GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

3.5.4 Test Setup



3.5.5 Test Result of Limitation of Collateral Emission of Receiver

Please refer to Appendix B.

3.6 Transmission Antenna Gain (EIRP Antenna Power) Measurement

3.6.1 Limit

Item	Limits
EIRP Power Density	$\leq 6.91\text{dBm/MHz}$ (FH form 2400 ~ 2483.5MHz)
	$\leq 12.14\text{dBm/MHz}$ (OFDM,DS from 2400 ~ 2483.5MHz)
	$\leq 12.14\text{dBm}$ (Other from 2400 ~ 2483.5MHz)
Remark: This test item will not be applied to EIRP power of EUT is lower than 12.14 dBm/MHz.	

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. EUT have transmitted continuous maximum power on hopping mode (For FHSS Device).
2. Frequency hopping system or combined systems of direct spread and frequency hopping:
Test method 1:
 - i. Connect the high frequency power meter to the output of the attenuator and measure the total power (without bandwidth limitation)
 - ii. Divide the total power by the spread bandwidth to find the "average" power per MHz.
The average power per MHz is equal to the power meter value dBm + cable loss dB + $10 \log_{10} (1/\text{Duty Cycle})$ dB + $10 \log_{10} (1/\text{Spread Bandwidth})$ dB.
 - iii. Confirm that frequency distribution of the hopping frequencies is homogeneous according to the supporting data.
If frequency distribution of the frequencies is not homogeneous, consider other measurement or correction methods based on the supporting data.
 - iv. Set the antenna power as follows:
 - Continuous waves: value in ii.
 Test method 2:
 - iii. Peak search by use setting of SA is following as:
 - Span = 2 time of occupied bandwidth
 - RBW = 1MHz / VBW = 3 time of RBW
 - Sweep Mode: Continuous sweep
 - Detect mode = Positive peak / Trace mode = Max hold.
 - Mark the peak value
 - iv. Measure maximum average power per MHz by use setting of SA is following as:
 - Center frequency = frequency of peak value
 - Span = 0Hz
 - RBW = 1MHz / VBW = RBW

Sweep Mode: Continuous sweep

Detect mode = Sample / Trace mode = Max hold.

Calculated the mean power value

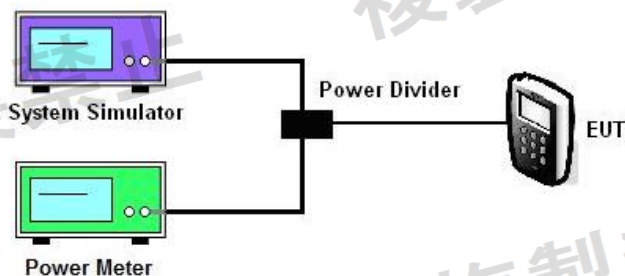
3. Antenna RF Output Power Tolerance is definition that actual measure antenna power tolerance is + 20% power range that manufacturer declare the conducted power density.

4. Calculate EIRP by the formula below $EIRP = Gt + Pt$.

Gt: gain of replacing antenna (dBi)

Pt: Output power

3.6.4 Test Setup



3.6.5 Test Result of Transmission Antenna Gain (EIRP Antenna Power)

Please refer to Appendix B.

For the antenna gain, please refer to antenna test report.

Remark: This test item will not be applied to EIRP power of EUT is lower than 12.14dBm/MHz.

3.7 Transmission Radiation Angle Width (3dB Beam-width) Measurement

3.7.1 Limit

Item	Limits
3dB antenna beam-width	$360/A$ (If $A < 1$; then $A = 1$) $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$
Remark: This test item will not be applied to EIRP power of EUT is lower than 12.14 dBm/MHz.	

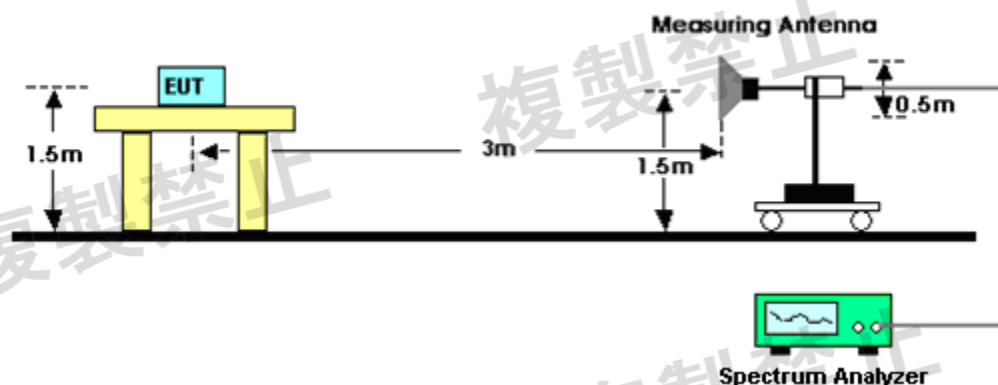
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 3.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E".
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$).
 $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$

3.7.4 Test Setup



3.7.5 Test Result of Transmission Radiation Angle Width (3dB Beam-width)

Please refer to Appendix B.

For the antenna gain, please refer to antenna test report.

Remark: This test item will not be applied to EIRP power of EUT is lower than 12.14 dBm/MHz.

3.8 Radio Interference Prevention Capability Measurement

3.8.1 Limit

Item	Limits
Identification code	≥ 48 bits

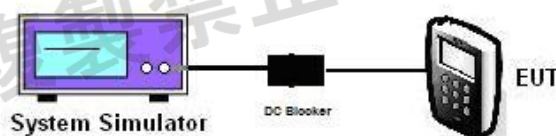
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

3.8.4 Test Setup



3.8.5 Test Result of Radio Interference Prevention Capability

Please refer to Appendix B.

3.9 Hopping Frequency Dwell Time Measurement

3.9.1 Limit

Item	Limits
Hopping Freq. Dwell Time	≤ 0.4 seconds

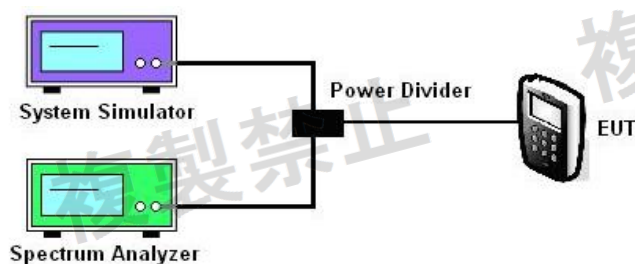
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Use a video trigger with the trigger level set to enable triggering only on full pulses.
4. Sweep Time is more than once pulse time.
5. Set the center frequency on any frequency would be measured and set the frequency span to zero span.
6. Measure the maximum time duration of one single pulse.
7. Set the EUT in continuous transmitting for each supported maximum packet format.
8. Measure the maximum time duration of one single pulse.
9. Use the marker-delta function to calculate the dwell time.
10. Dwell Time = Total Number of channels x 0.4(s) x Average Hopping Channel x package transfer time
11. Average Hopping Channel = Total Number of hopping / sweep time

3.9.4 Test Setup



3.9.5 Test Result of Hopping Frequency Dwell Time

Please refer to Appendix B.

3.10 Construction Protection Confirmation Method

3.10.1 Limit

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

3.10.2 Confirmation Method

☒	Sealed with special screws.
☐	Plastic chassis is being welded using ultrasonic waves.
☐	Chassis is glued using a special adhesive.
☐	Metal covers are spot-fused.
☐	Cover is specially interlocked.
☐	RF and Modulation components are covered with shielding case and this shielding case is soldered.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
☐	Other :

3.10.3 The Photos of Construction Protection





4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Calibration Date	Test Periods	Due Date	Calibration Body	Calibration Method
Spectrum Analyzer	Rohde & Schwarz	FSV 40	101909	Aug. 18, 2025	Jan. 29, 2026	Aug. 17, 2026	ETC, R.O.C	C
USB Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	Dec. 29, 2025	Jan. 29, 2026	Dec. 28, 2026	ETC, R.O.C	C
Programmable Power Supply	GW Instek	GPP-2323	GEU810970	Nov. 10, 2025	Jan. 29, 2026	Nov. 09, 2026	ETC, R.O.C	C
Multimeter	GW Instek	GDM-461	GUT210214	Oct. 31, 2025	Jan. 29, 2026	Oct. 30, 2026	ETC, R.O.C	C

Note: Above test equipment was used and kept valid calibration period during test.

Calibration Method :

a) : Calibration conducted by the National Institute of Information and Communications Technology ~ NICT ~ or a designated calibration agency under Article 102-18 paragraph

(1) TELEC Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc ~.

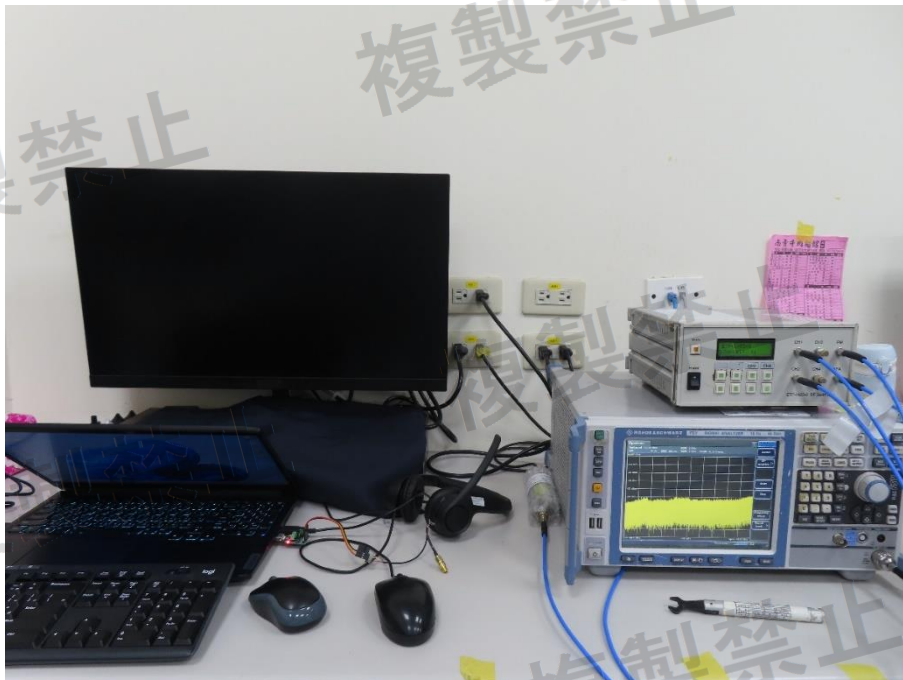
b) : Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) ~ Japan Calibration Service System ~

c) : Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph

(1) ~ TELEC Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc ~.

Appendix A. Setup Photographs

Front View



Near View





Appendix B. Test Results

Please refer to the following pages for test results.

1. TEST RESULTS DATA
BLUETOOTH - BR (Normal Voltage) - Antenna 1

Environment of Test Room	Temperature	19.5~23.3 °C
	Humidity	47.9~55.7 %
Tool & Version	AWRDLABV2 1.0.7	
Test Engineer	Benny Ku	

Modulatoion Type :	GFSK
Type Emissions :	78M2F1D

Declaration Output Power	0.050	mW/MHz
Declaration Output Power	-13.010	dBm/MHz
Antenna Power (E.I.R.P)	-9.470	dBm/MHz
Input Power Voltage	3.700	Vdc

Burst	Path Loss	23.20	dB
	ON TIME	0.475	msec
	OFF TIME	1.109	msec
Packet Type (Mode)	Ratio	29.99	%
	DH1	mode	

Antenna Information:

Antenna Model	Antenna Type	Gain(dBi)
Refer to antenna report	Monopole	3.54

1.1. Test Results (Normal Voltage)

Measurement Frequency	MHz	2402	2441	2480	Limit	Result			Note
Channel Number	Ch.	0	39	78		0	39	78	
Reading Frequency	MHz	2401.983	2440.980	2479.980		----	----	----	
Frequency Tolerance	ppm	-7.077	-8.193	-8.145	±50	PASS	PASS	PASS	

Occupied Bandwidth	MHz	78.21	83.5	PASS	
Spread Bandwidth	MHz	70.95	----		
RF Output Power	mW/MHz	0.043	3	PASS	
RF Output Power Tolerance	%	-14.875	+20	PASS	
Output Power (With burst radio)	dBm	4.80	----	----	

Unwanted Emission Intensity	Under 2387MHz	μW/MHz	0.02864	0.03141	0.02754	2.5	PASS	PASS	PASS	
		MHz	624.308	865.717	924.396		----	----	----	
	2387MHz - 2400MHz	μW/MHz	0.87096	0.02495	0.02312	25	PASS	PASS	PASS	
		MHz	2399.990	2397.671	2399.243		----	----	----	
	2483.5MHz - 2496.5MHz	μW/MHz	0.02871	0.02692	0.02716	25	PASS	PASS	PASS	
		MHz	2492.592	2489.786	2486.336		----	----	----	
	2496.5MHz - 12.5GHz	μW/MHz	0.03251	0.03126	0.02917	2.5	PASS	PASS	PASS	
		MHz	6981.121	6976.120	6993.124		----	----	----	
Limitation of Collateral Emission of Receiver	Under 1GHz	nW	0.003	0.002	0.002	4	PASS	PASS	PASS	
		MHz	836.507	836.507	949.124		----	----	----	
	1 -12.5GHz	nW	0.017	0.015	0.015	20	PASS	PASS	PASS	
		MHz	5951.229	6964.188	5742.313		----	----	----	

Dwell Time	mSec	341.55	400	PASS	DH5
Radio Interference Prevention Capability	----	good		PASS	

2. TEST RESULTS DATA

BLUETOOTH - EDR (Normal Voltage) - Antenna 1

Environment of Test Room	Temperature	19.5~23.3 °C
	Humidity	47.9~55.7 %
Tool & Version	AWRDLABV2 1.0.7	
Test Engineer	Benny Ku	

Modulatoin Type :	$\pi/4$ -DQPSK
Type Emissions :	78M4G1D

Declaration Output Power	0.050	mW/MHz
Declaration Output Power	-13.010	dBm/MHz
Antenna Power (E.I.R.P)	-9.470	dBm/MHz
Input Power Voltage	3.700	Vdc

Burst	Path Loss	23.20	dB
	ON TIME	0.488	msec
	OFF TIME	1.109	msec
Packet Type (Mode)	Ratio	30.56	%
	2-DH1	mode	

Antenna Information:

Antenna Model	Antenna Type	Gain(dBi)
Refer to antenna report	Monopole	3.54

2.1. Test Results (Normal Voltage)

Measurement Frequency	MHz	2402	2441	2480	Limit	Result			Note
Channel Number	Ch.	0	39	78		0	39	78	
Reading Frequency	MHz	2402.014	2440.994	2479.988		----	----	----	
Frequency Tolerance	ppm	5.662	-2.294	-4.758	±50	PASS	PASS	PASS	

Occupied Bandwidth	MHz	78.37	83.5	PASS	
Spread Bandwidth	MHz	71.05	----		
RF Output Power	mW/MHz	0.041	3	PASS	
RF Output Power Tolerance	%	-18.820	+20	PASS	
Output Power (With burst radio)	dBm	4.60	----	----	

Unwanted Emission Intensity	Under 2387MHz	μ W/MHz	0.02642	0.02985	0.03119	2.5	PASS	PASS	PASS	
		MHz	971.436	847.774	931.185		----	----	----	
	2387MHz - 2400MHz	μ W/MHz	4.39542	0.02249	0.02178	25	PASS	PASS	PASS	
		MHz	2399.951	2396.586	2394.676		----	----	----	
	2483.5MHz - 2496.5MHz	μ W/MHz	0.02655	0.02443	0.04385	25	PASS	PASS	PASS	
		MHz	2487.876	2494.359	2486.563		----	----	----	
	2496.5MHz - 12.5GHz	μ W/MHz	0.02786	0.02710	0.02931	2.5	PASS	PASS	PASS	
		MHz	5873.844	5881.846	6967.117		----	----	----	
Limitation of Collateral Emission of Receiver	Under 1GHz	nW	0.002	0.002	0.002	4	PASS	PASS	PASS	
		MHz	836.410	836.507	836.410		----	----	----	
	1 -12.5GHz	nW	0.015	0.016	0.014	20	PASS	PASS	PASS	
		MHz	6735.146	5888.938	6952.688		----	----	----	

Dwell Time	mSec	341.32	400	PASS	2DH5
Radio Interference Prevention Capability	----	good		PASS	

3. TEST RESULTS DATA

BLUETOOTH - AFH BR (Normal Voltage) - Antenna 1

Environment of Test Room	Temperature	19.5~23.3 °C
	Humidity	47.9~55.7 %
Tool & Version	AWRDLABV2 1.0.7	
Test Engineer	Benny Ku	

Modulatoion Type :	GFSK
Type Emissions :	19M6F1D

Declaration Output Power	0.200	mW/MHz
Declaration Output Power	-6.990	dBm/MHz
Antenna Power (E.I.R.P)	-3.450	dBm/MHz
Input Power Voltage	3.700	Vdc

Burst	Path Loss	23.20	dB
	ON TIME	0.475	msec
	OFF TIME	1.109	msec
Packet Type (Mode)	Ratio	29.99	%
	DH1	mode	

Antenna Information:

Antenna Model	Antenna Type	Gain(dBi)
Refer to antenna report	Monopole	3.54

3.1. Test Results (Normal Voltage)

Measurement Frequency	MHz	2402	2411	2421	Limit	Result			Note
Channel Number	Ch.	0	9	19		0	9	19	
Reading Frequency	MHz	2401.991	2410.980	2420.980		----	----	----	
Frequency Tolerance	ppm	-3.664	-8.129	-8.178	±50	PASS	PASS	PASS	

Occupied Bandwidth	MHz	19.59	83.5	PASS	
Spread Bandwidth	MHz	18.07	----		
RF Output Power	mW/MHz	0.167	3	PASS	
RF Output Power Tolerance	%	-16.428	+20	PASS	
Output Power (With burst radio)	dBm	4.80	----	----	

Unwanted Emission Intensity	Under 2387MHz	μW/MHz	0.02793	0.03656	0.02588	2.5	PASS	PASS	PASS	
		MHz	857.764	928.858	949.032		----	----	----	
	2387-2400MHz	μW/MHz	0.87297	0.02178	0.02028	25	PASS	PASS	PASS	
		MHz	2399.984	2391.551	2393.825		----	----	----	
	2483.5-2496.5MHz	μW/MHz	0.02393	0.03926	0.02099	25	PASS	PASS	PASS	
		MHz	2490.026	2483.705	2487.525		----	----	----	
	2496.5MHz -12.5GHz	μW/MHz	0.02805	0.03793	0.02710	2.5	PASS	PASS	PASS	
		MHz	6958.115	5886.847	6036.885		----	----	----	
Limitation of Collateral Emission of Receiver	Under 1GHz	nW	0.005	0.004	0.006	4	PASS	PASS	PASS	
		MHz	836.410	836.410	836.4095		----	----	----	
	1 -12.5GHz	nW	0.015	0.018	0.015	20	PASS	PASS	PASS	
		MHz	5857.313	6922.021	6960.354		----	----	----	

Dwell Time	mSec	341.55	400	PASS	DH5
Radio Interference Prevention Capability	----	good		PASS	

4. TEST RESULTS DATA

BLUETOOTH - AFH EDR (Normal Voltage) - Antenna 1

Environment of Test Room	Temperature	19.5~23.3 °C
	Humidity	47.9~55.7 %
Tool & Version	AWRDLABV2 1.0.7	
Test Engineer	Benny Ku	

Modulatoin Type :	$\pi/4$ -DQPSK
Type Emissions :	20M0G1D

Declaration Output Power	0.200	mW/MHz
Declaration Output Power	-6.990	dBm/MHz
Antenna Power (E.I.R.P)	-3.450	dBm/MHz
Input Power Voltage	3.700	Vdc

Burst	Path Loss	23.20	dB
	ON TIME	0.488	msec
	OFF TIME	1.109	msec
Packet Type (Mode)	Ratio	30.56	%
	2DH1	mode	

Antenna Information:

Antenna Model	Antenna Type	Gain(dBi)
Refer to antenna report	Monopole	3.54

4.1. Test Results (Normal Voltage)

Measurement Frequency	MHz	2402	2411	2421	Limit	Result			Note
Channel Number	Ch.	0	9	19		0	9	19	
Reading Frequency	MHz	2402.006	2410.994	2420.998		----	----	----	
Frequency Tolerance	ppm	2.415	-2.655	-0.991	±50	PASS	PASS	PASS	

Occupied Bandwidth	MHz	19.98	83.5	PASS	
Spread Bandwidth	MHz	18.23	----		
RF Output Power	mW/MHz	0.158	3	PASS	
RF Output Power Tolerance	%	-20.912	+20	PASS	
Output Power (With burst radio)	dBm	4.60	----	----	

Unwanted Emission Intensity	Under 2387MHz	μ W/MHz	0.02455	0.02244	0.02825	2.5	PASS	PASS	PASS	
		MHz	962.028	931.379	921.583		----	----	----	
	2387-2400MHz	μ W/MHz	4.61318	0.02624	0.03184	25	PASS	PASS	PASS	
		MHz	2399.860	2395.183	2394.994		----	----	----	
	2483.5-2496.5MHz	μ W/MHz	0.02000	0.02004	0.02506	25	PASS	PASS	PASS	
		MHz	2489.974	2485.628	2494.229		----	----	----	
	2496.5MHz -12.5GHz	μ W/MHz	0.03041	0.02667	0.02838	2.5	PASS	PASS	PASS	
		MHz	5833.834	5853.839	6907.102		----	----	----	
Limitation of Collateral Emission of Receiver	Under 1GHz	nW	0.006	0.011	0.006	4	PASS	PASS	PASS	
		MHz	836.313	836.410	836.3125		----	----	----	
	1 -12.5GHz	nW	0.017	0.016	0.014	20	PASS	PASS	PASS	
		MHz	5915.771	5872.646	6998.688		----	----	----	

Dwell Time	mSec	341.32	400	PASS	2DH5
Radio Interference Prevention Capability	----	good		PASS	

5. TEST RESULTS DATA

Low Energy 1M (Normal Voltage) - Antenna 1

Environment of Test Room	Temperature	19.5~23.3 °C
	Humidity	47.9~55.7 %
Tool & Version	AWRDLABV2 1.0.7	
Test Engineer	Benny Ku	

Modulatoin Type :	GFSK
Type Emissions :	1M13F1D

Declaration Output Power	3.700	mW
Declaration Output Power	5.682	dBm
Antenna Power (E.I.R.P)	9.222	dBm
Input Power Voltage	3.700	Vdc

Path Loss		23.20	dB
Burst	ON TIME	0.433	msec
	OFF TIME	0.192	msec
	Ratio	69.28	%
Packet Type (Mode)		Low Energy	mode

Antenna Information:

Antenna Model	Antenna Type	Gain(dBi)
Refer to antenna report	Monopole	3.54

5.1. Test Results (Normal Voltage)

Measurement Frequency	MHz	2402	2440	2480	Limit	Result			Note
Channel Number	Ch.	0	19	39		0	19	39	
Reading Frequency	MHz	2401.990	2439.988	2479.988		----	----	----	
Frequency Tolerance	ppm	-4.246	-5.082	-4.758	±50	PASS	PASS	PASS	

Occupied Bandwidth	MHz	1.11	1.12	1.13	26	PASS	
RF Output Power	mW	3.631	3.631	3.467	10	PASS	
E.I.R.P	dBm	9.140	9.140	8.940	12.14	PASS	
RF Output Power Tolerance	%	-1.871	-1.871	-6.287	+20	PASS	
Output Power (With burst radio)	dBm	5.60	5.60	5.40		----	

Unwanted Emission Intensity	Under 2387MHz		μW/MHz	0.02871	0.02951	0.03483	2.5	PASS	PASS	PASS	
			MHz	864.747	634.783	917.413		----	----	----	
	2387MHz - 2400MHz		μW/MHz	2.43781	0.02404	0.02495	25	PASS	PASS	PASS	
			MHz	2399.984	2391.129	2390.518		----	----	----	
	2483.5MHz - 2496.5MHz		μW/MHz	0.02218	0.02483	0.03373	25	PASS	PASS	PASS	
			MHz	2490.474	2485.719	2483.887		----	----	----	
	2496.5MHz -12.5GHz		μW/MHz	0.02529	0.03013	0.02716	2.5	PASS	PASS	PASS	
			MHz	6809.078	5743.812	5761.816		----	----	----	
Limitation of Collateral Emission of Receiver	Under 1GHz		nW	0.006	0.005	0.004	4	PASS	PASS	PASS	
			MHz	836.507	836.507	836.410		----	----	----	
	1 -12.5GHz		nW	0.015	0.015	0.016	20	PASS	PASS	PASS	
			MHz	5852.521	5850.604	6837.688		----	----	----	
Radio Interference Prevention Capability			----	good				PASS			

6. TEST RESULTS DATA

Low Energy 2M (Normal Voltage) - Antenna 1

Environment of Test Room	Temperature	19.5~23.3 °C
	Humidity	47.9~55.7 %
Tool & Version	AWRDLABV2 1.0.7	
Test Engineer	Benny Ku	

Modulatoion Type :	GFSK
Type Emissions :	2M06F1D

Declaration Output Power	3.700	mW
Declaration Output Power	5.682	dBm
Antenna Power (E.I.R.P)	9.222	dBm
Input Power Voltage	3.700	Vdc

Burst	Path Loss	23.20	dB
	ON TIME	0.250	msec
	OFF TIME	0.375	msec
	Ratio	40.00	%
Packet Type (Mode)		Low Energy	mode

Antenna Information:

Antenna Model	Antenna Type	Gain(dBi)
Refer to antenna report	Monopole	3.54

6.1. Test Results (Normal Voltage)

Measurement Frequency	MHz	2404	2440	2478	Limit	Result			Note
Channel Number	Ch.	1	19	38		1	19	38	
Reading Frequency	MHz	2403.989	2439.989	2477.990		----	----	----	
Frequency Tolerance	ppm	-4.493	-4.426	-4.116	±50	PASS	PASS	PASS	

Occupied Bandwidth	MHz	2.05	2.05	2.06	26	PASS	
RF Output Power	mW	3.631	3.631	3.467	10	PASS	
E.I.R.P	dBm	9.140	9.140	8.940	12.14	PASS	
RF Output Power Tolerance	%	-1.871	-1.871	-6.287	+20	PASS	
Output Power (With burst radio)	dBm	5.60	5.60	5.40		----	

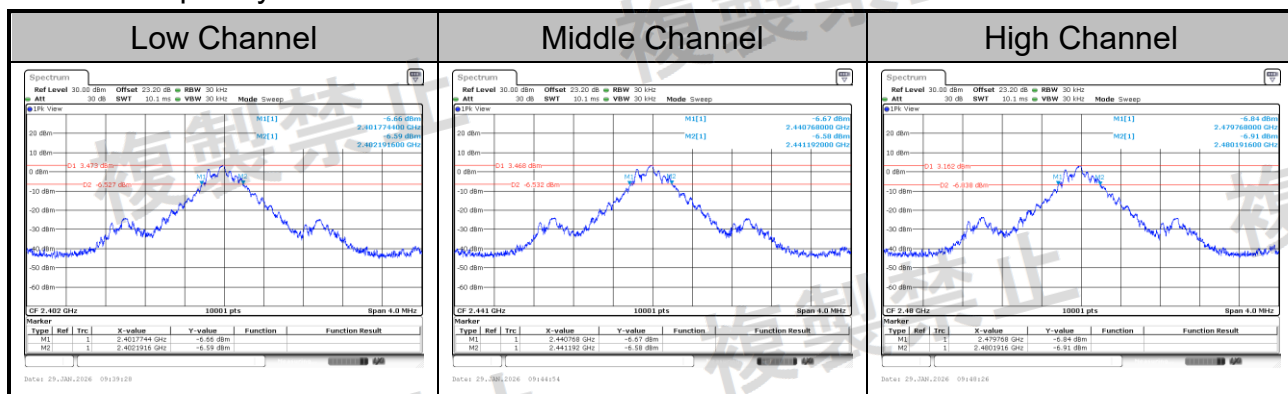
Unwanted Emission Intensity	Under 2387MHz	μW/MHz	0.02600	0.02698	0.03184	2.5	PASS	PASS	PASS	
		MHz	796.854	96.293	891.710		----	----	----	
	2387MHz - 2400MHz	μW/MHz	0.03020	0.02636	0.02218	25	PASS	PASS	PASS	
		MHz	2399.971	2395.676	2389.050		----	----	----	
	2483.5MHz - 2496.5MHz	μW/MHz	0.02178	0.02061	0.02891	25	PASS	PASS	PASS	
		MHz	2490.416	2487.798	2494.281		----	----	----	
	2496.5MHz -12.5GHz	μW/MHz	0.02698	0.02582	0.02729	2.5	PASS	PASS	PASS	
		MHz	6955.114	5775.820	5871.844		----	----	----	
Limitation of Collateral Emission of Receiver	Under 1GHz	nW	0.010	0.002	0.007	4	PASS	PASS	PASS	
		MHz	836.410	764.242	836.507		----	----	----	
	1 -12.5GHz	nW	0.015	0.015	0.018	20	PASS	PASS	PASS	
		MHz	5849.646	5841.979	5856.354		----	----	----	
Radio Interference Prevention Capability		----	good				PASS			



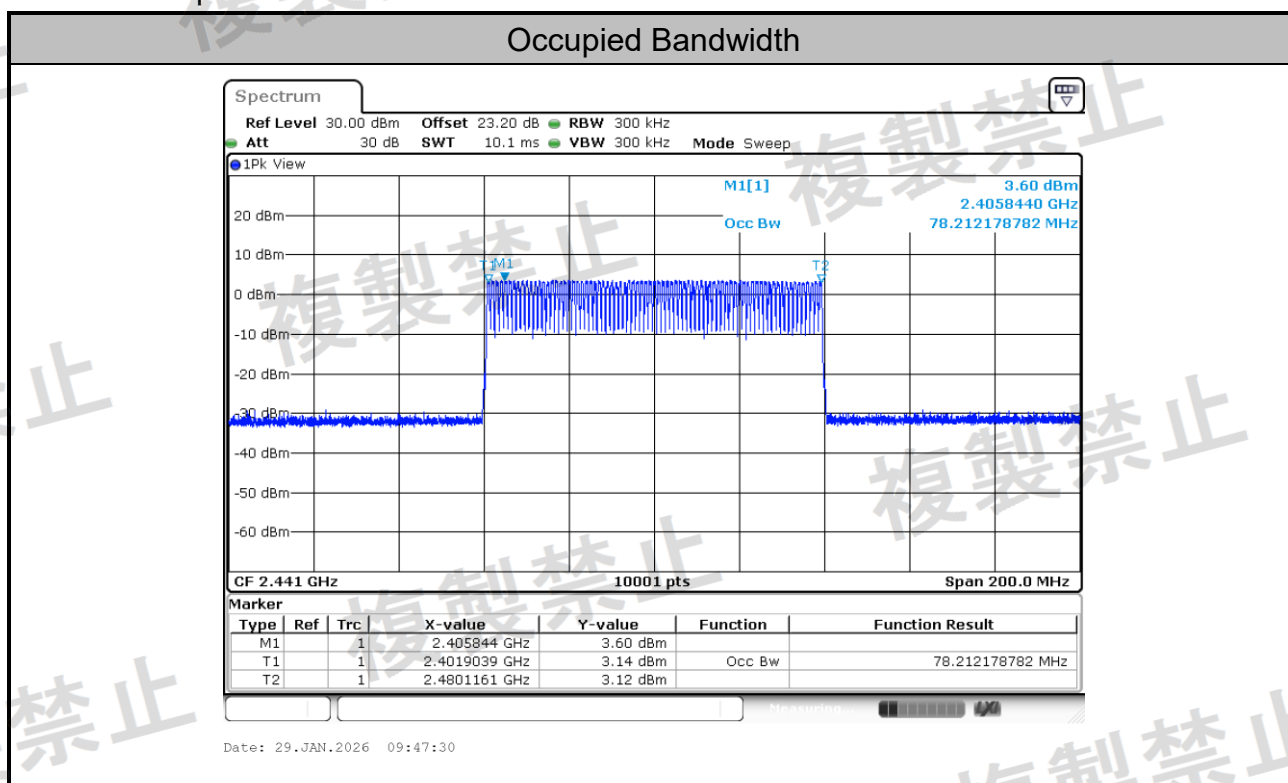
Appendix C. Test Plots

C.1. BR_NV (Basic Rate)

C.1.1. Frequency Tolerance

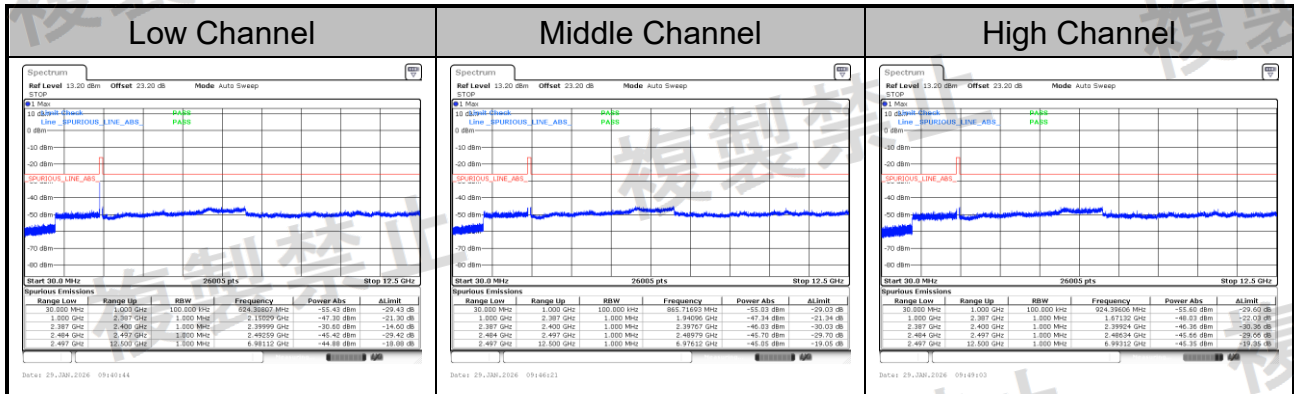


C.1.2. Occupied Bandwidth

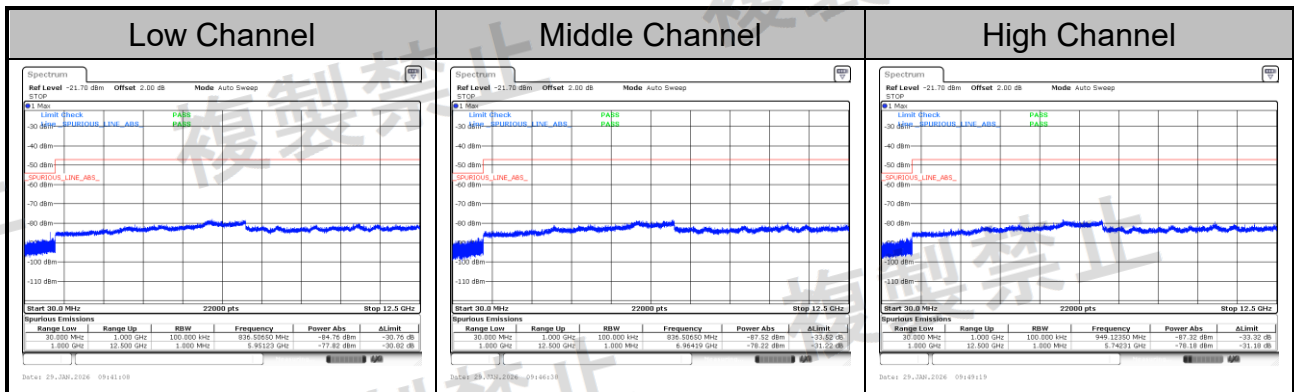




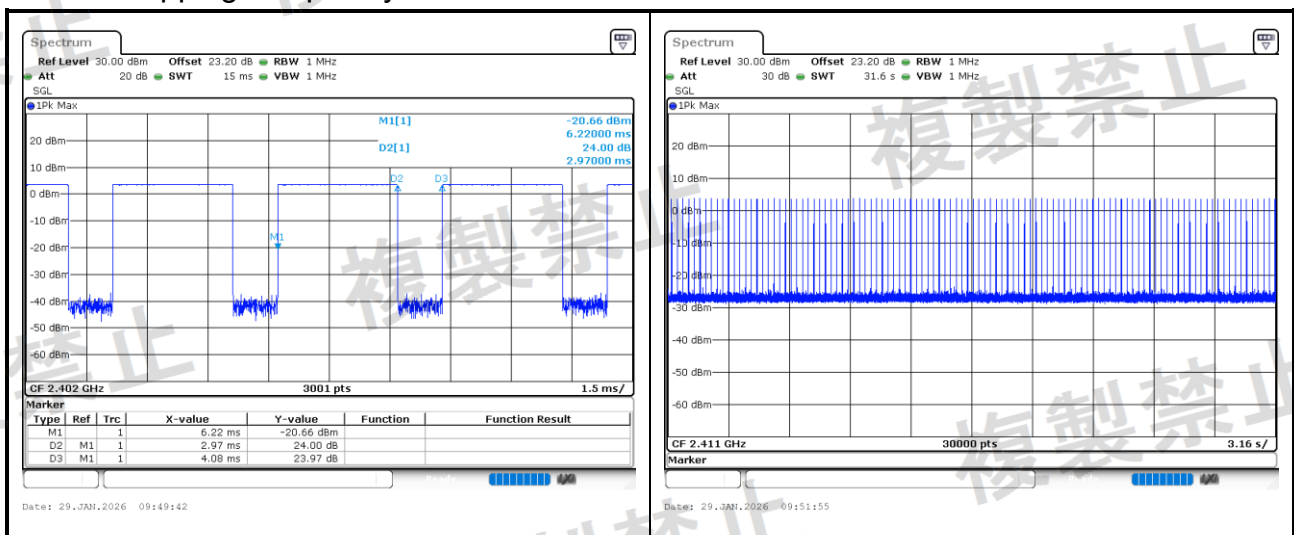
C.1.3. Unwanted Emission Intensity



C.1.4. Limitation of Collateral Emission of Receiver



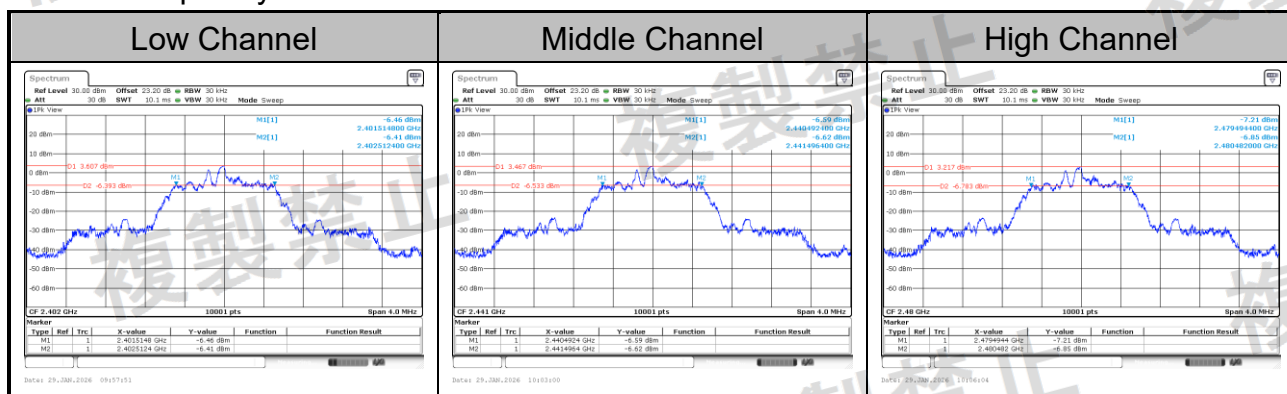
C.1.5. Hopping Frequency Dwell Time



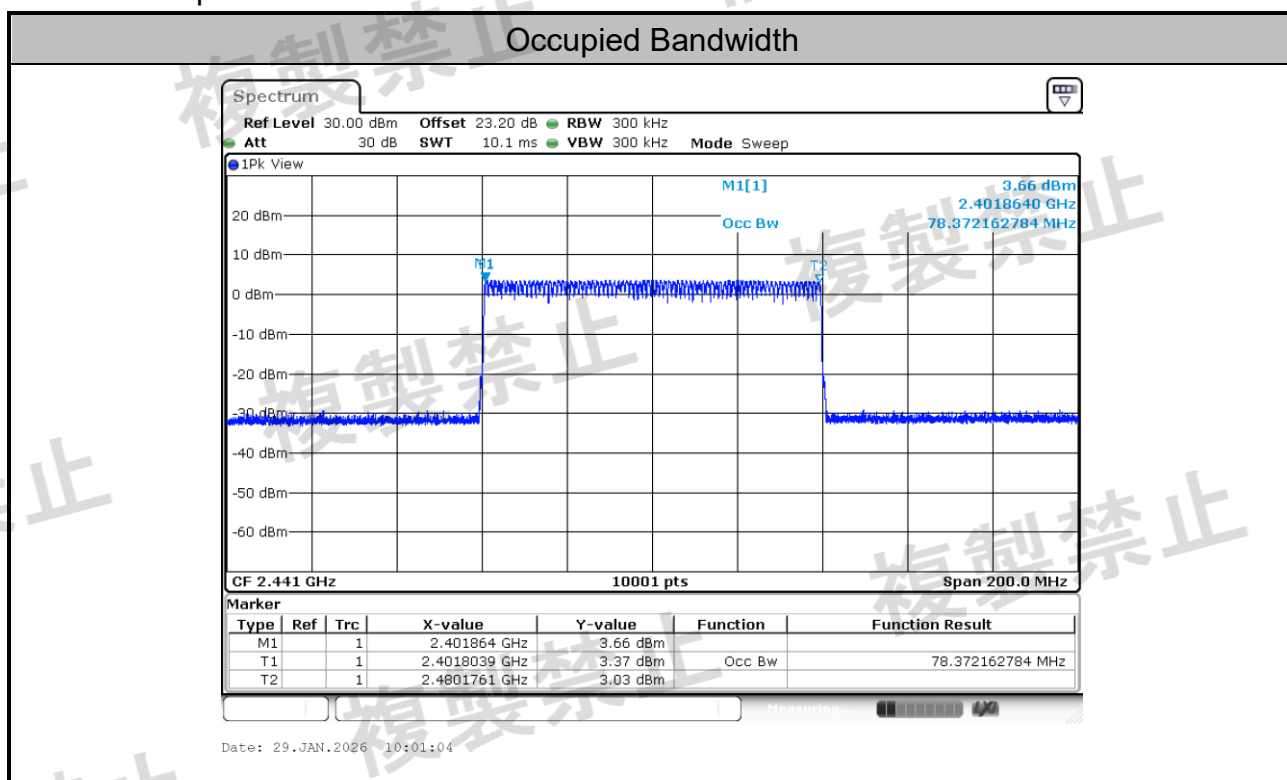


C.2. EDR_NV (Enhanced Data Rate)

C.2.1. Frequency Tolerance

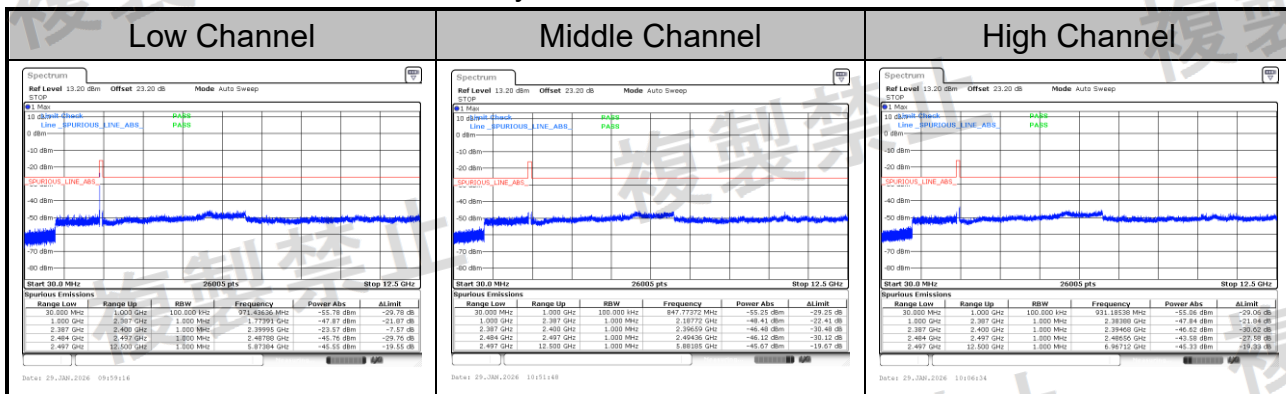


C.2.2. Occupied Bandwidth

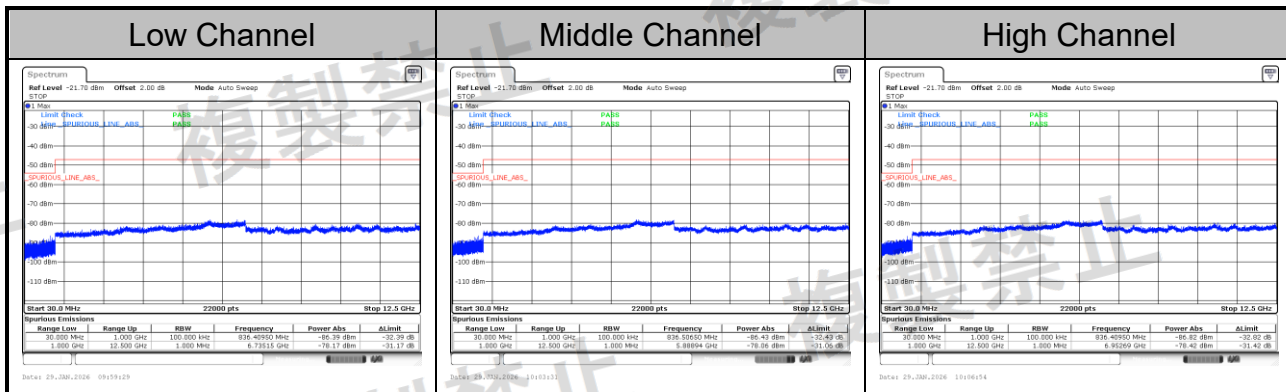




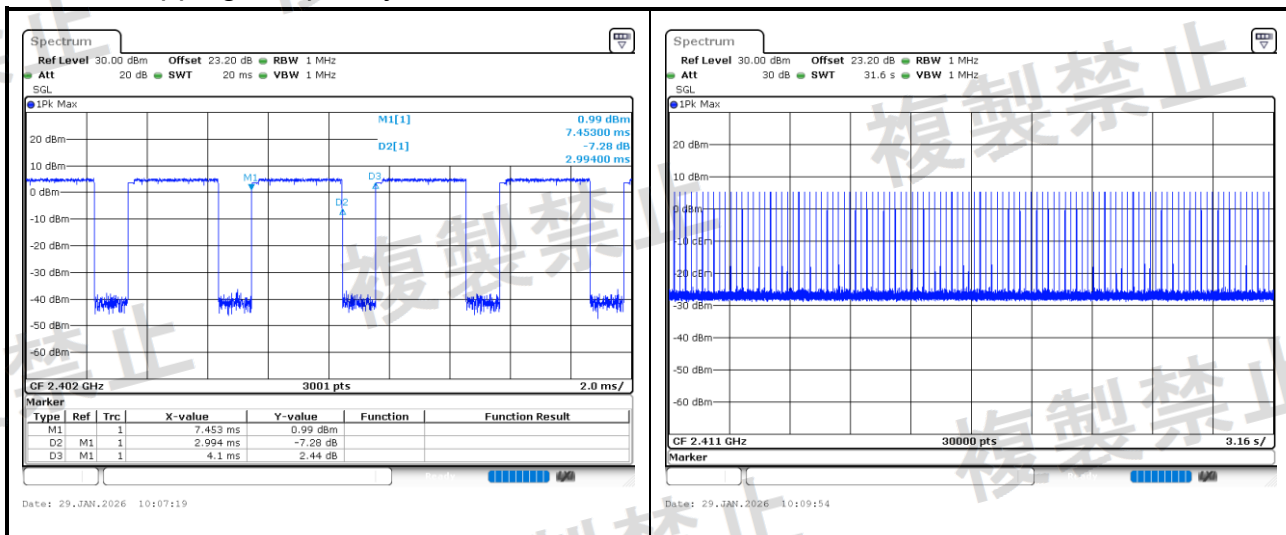
C.2.3. Unwanted Emission Intensity



C.2.4. Limitation of Collateral Emission of Receiver



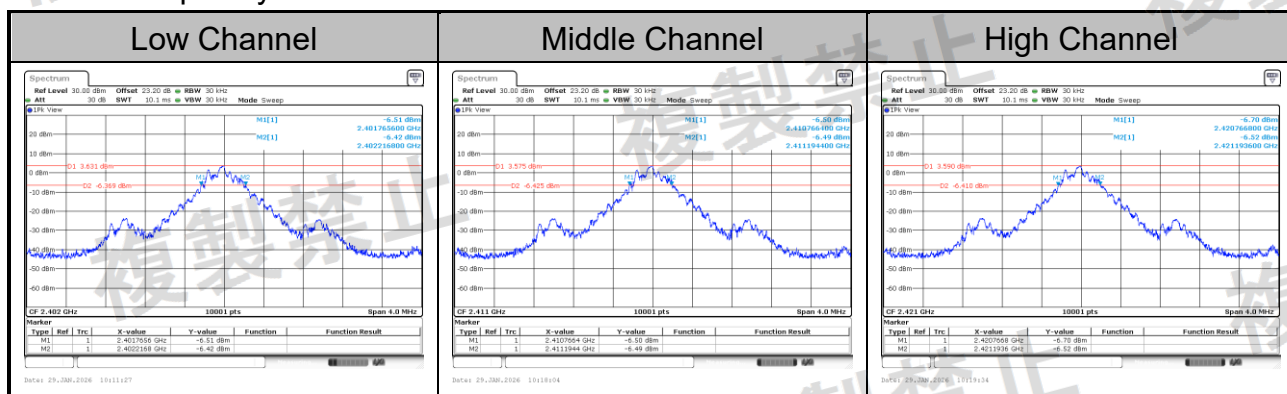
C.2.5. Hopping Frequency Dwell Time



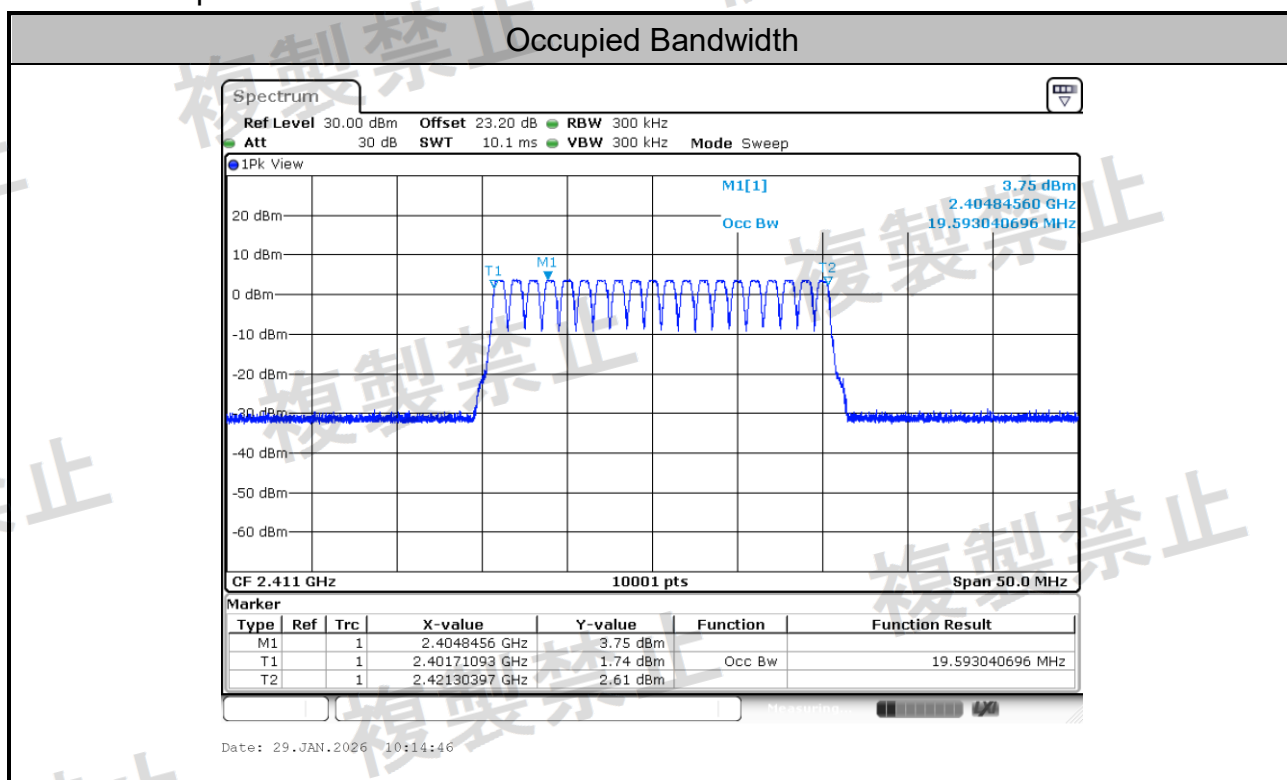


C.3. BR_AFH_NV (Adaptive Frequency Hopping)

C.3.1. Frequency Tolerance

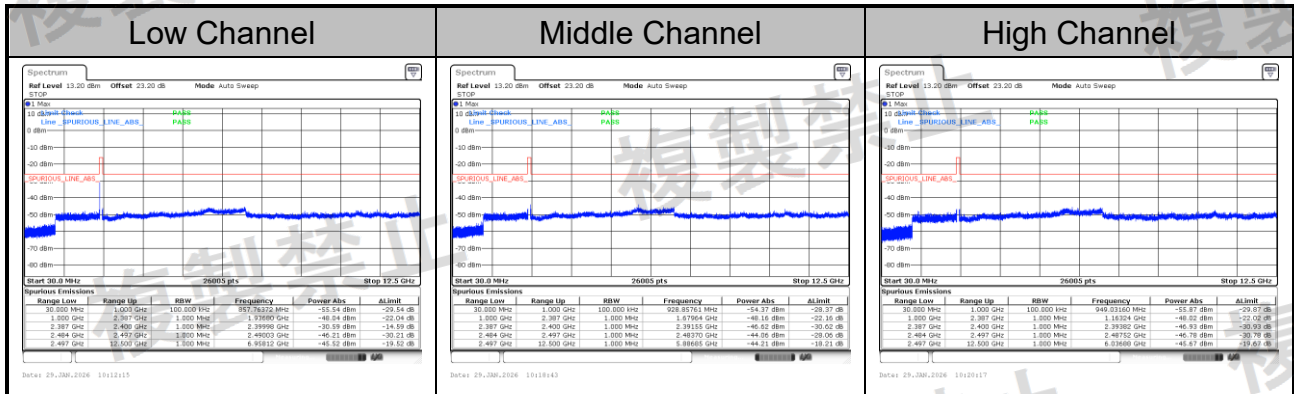


C.3.2. Occupied Bandwidth

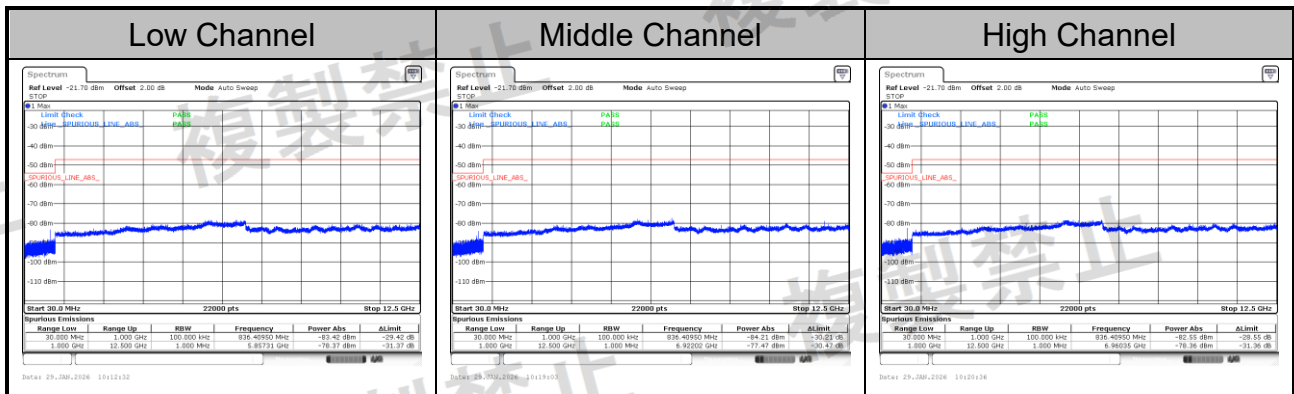




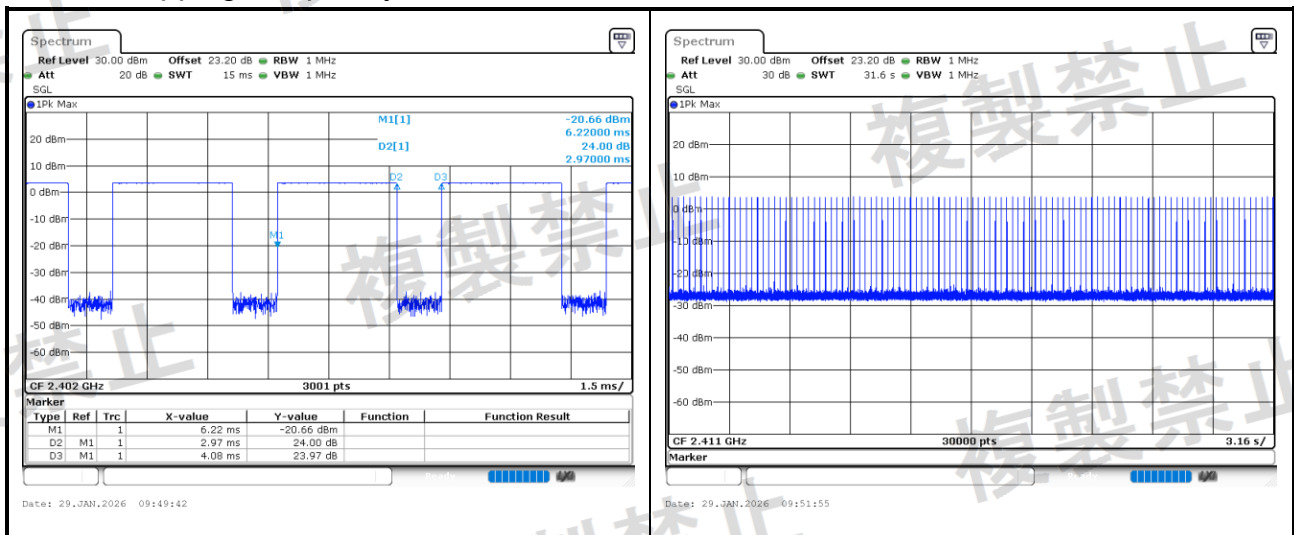
C.3.3. Unwanted Emission Intensity



C.3.4. Limitation of Collateral Emission of Receiver



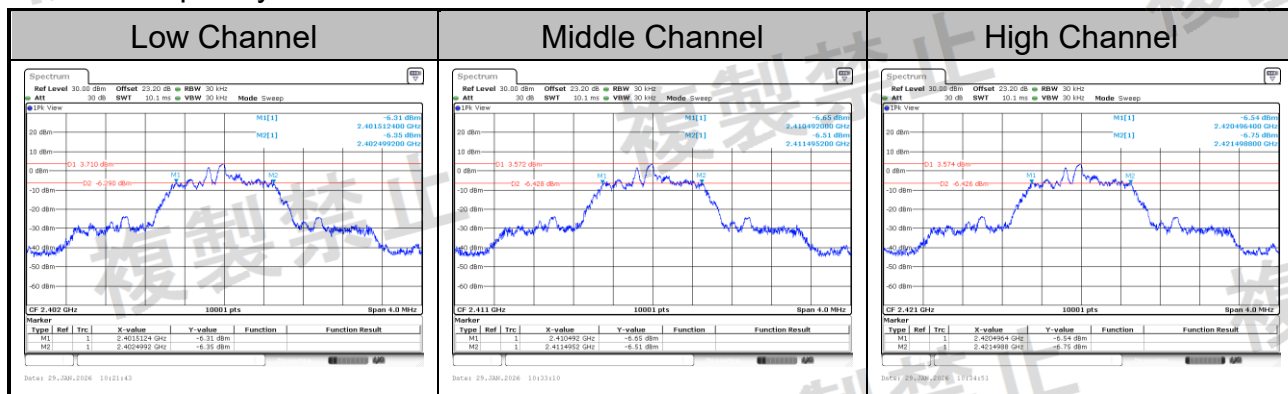
C.3.5. Hopping Frequency Dwell Time



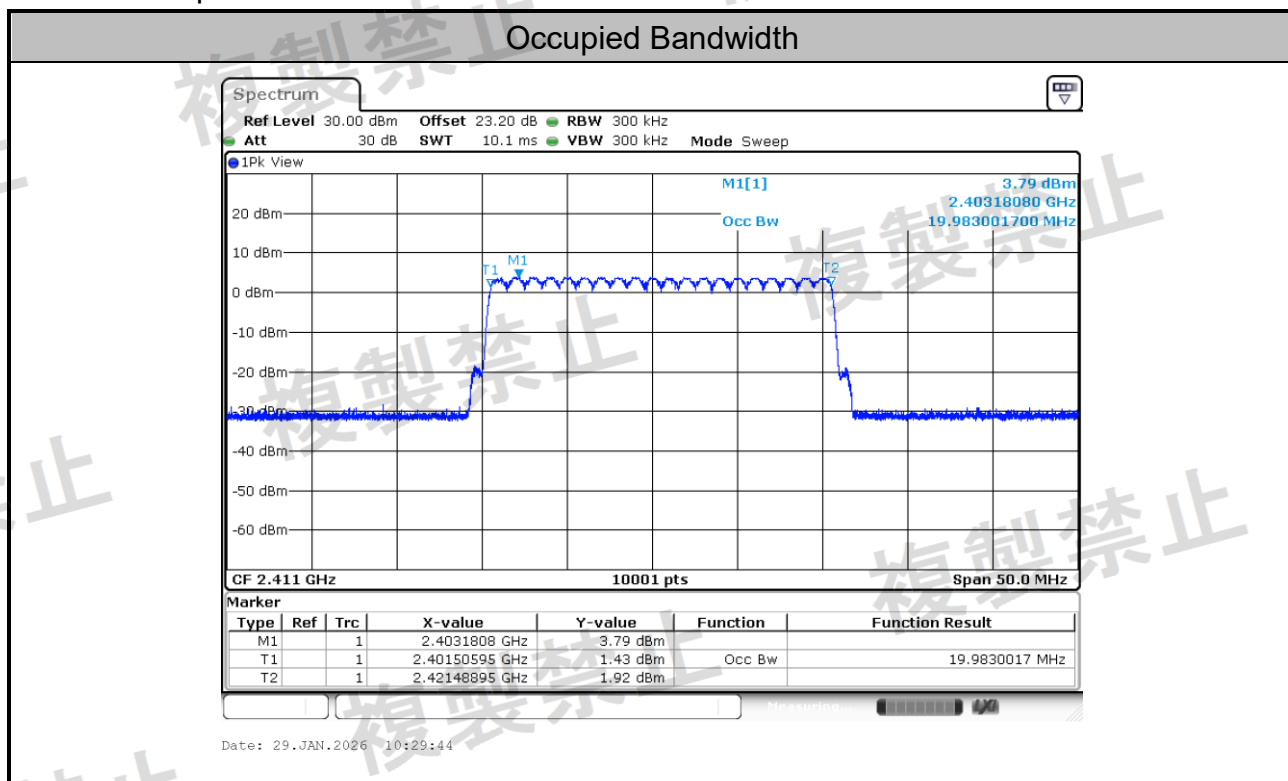


C.4. EDR_AFH_NV (Adaptive Frequency Hopping)

C.4.1. Frequency Tolerance

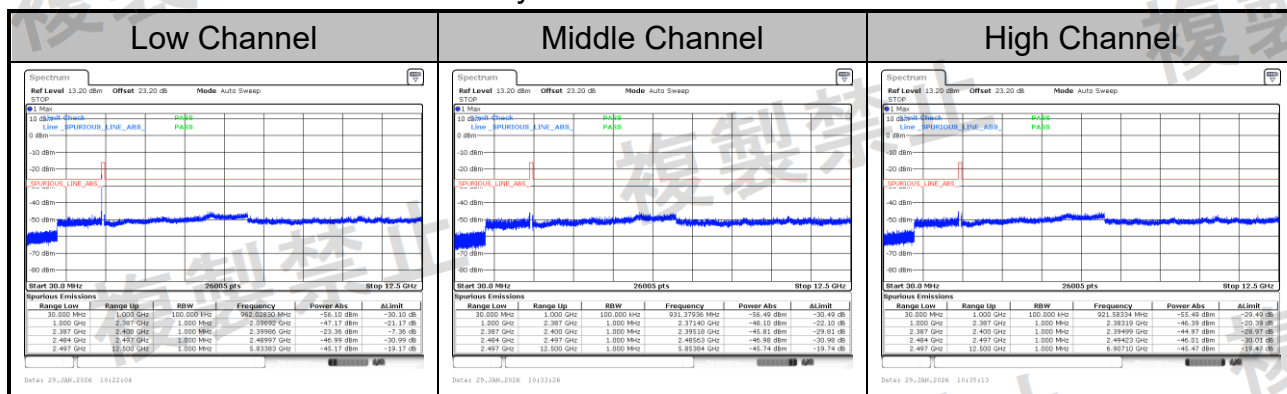


C.4.2. Occupied Bandwidth

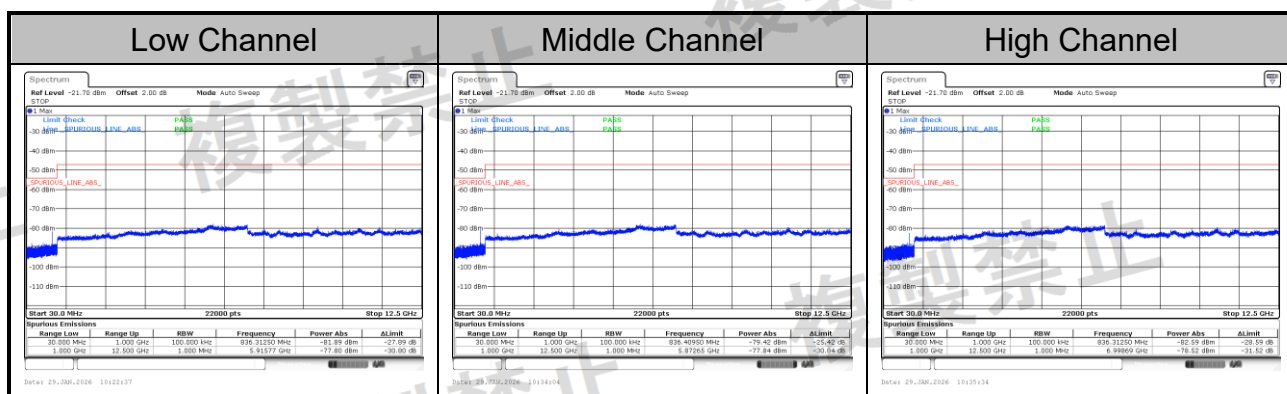




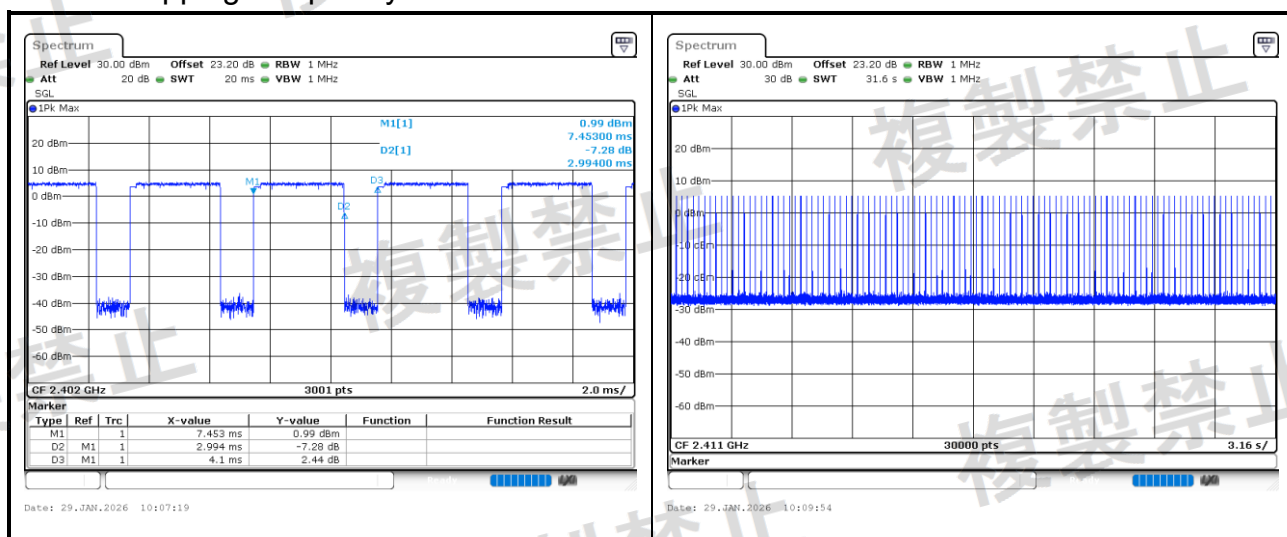
C.4.3. Unwanted Emission Intensity



C.4.4. Limitation of Collateral Emission of Receiver



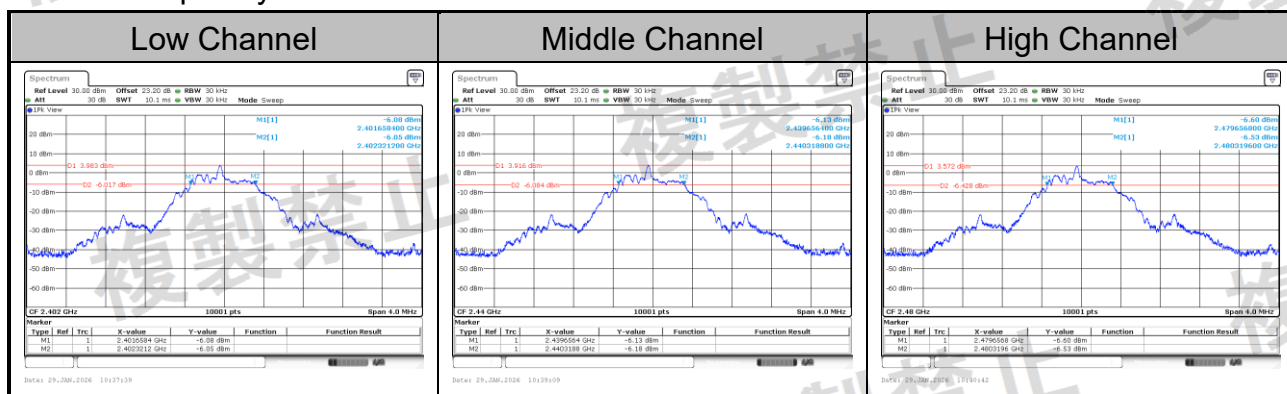
C.4.5. Hopping Frequency Dwell Time



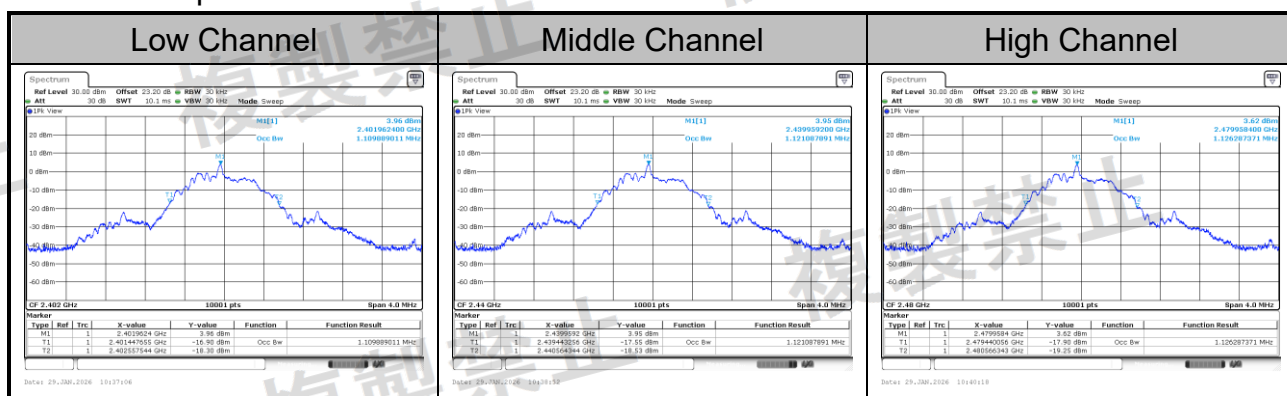


C.5. LE_1M_NV (Low Energy)

C.5.1. Frequency Tolerance

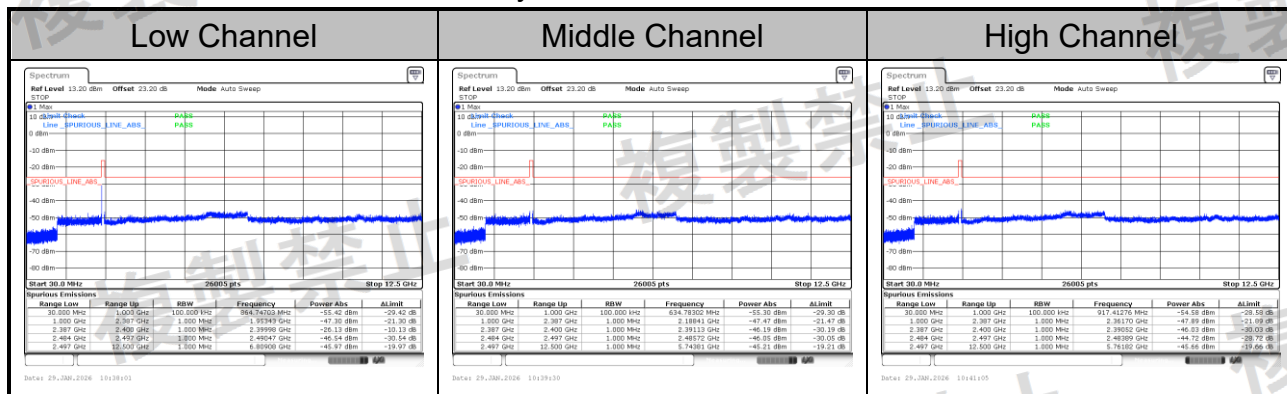


C.5.2. Occupied Bandwidth

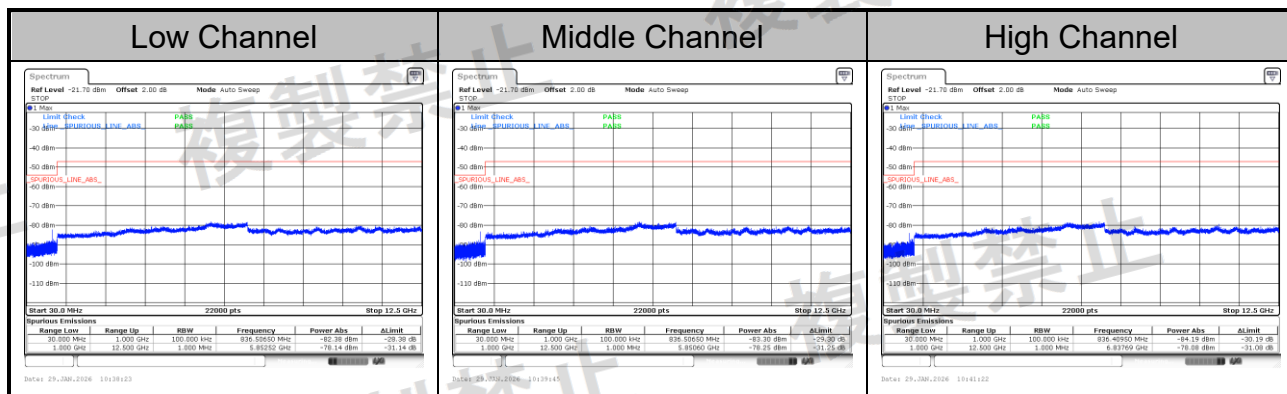




C.5.3. Unwanted Emission Intensity



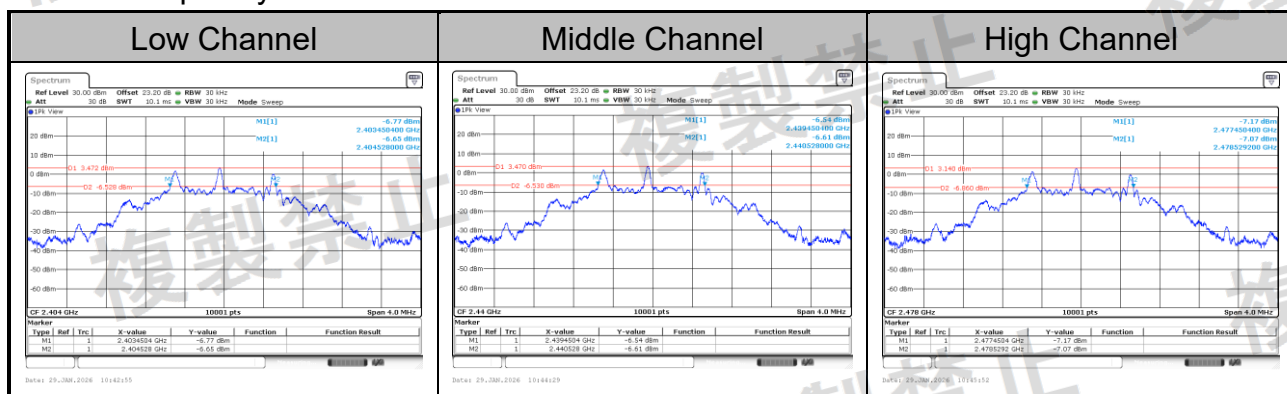
C.5.4. Limitation of Collateral Emission of Receiver



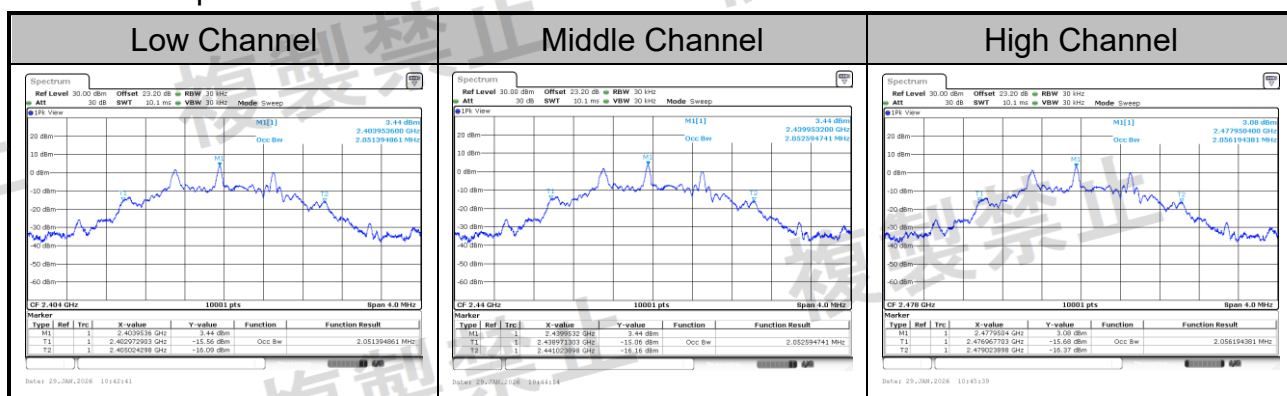


C.6. LE_2M_NV (Low Energy)

C.6.1. Frequency Tolerance

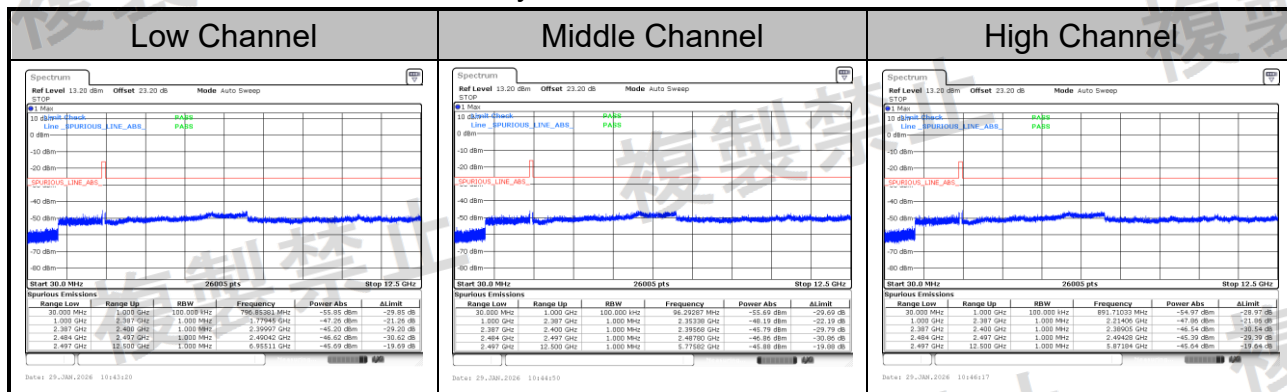


C.6.2. Occupied Bandwidth

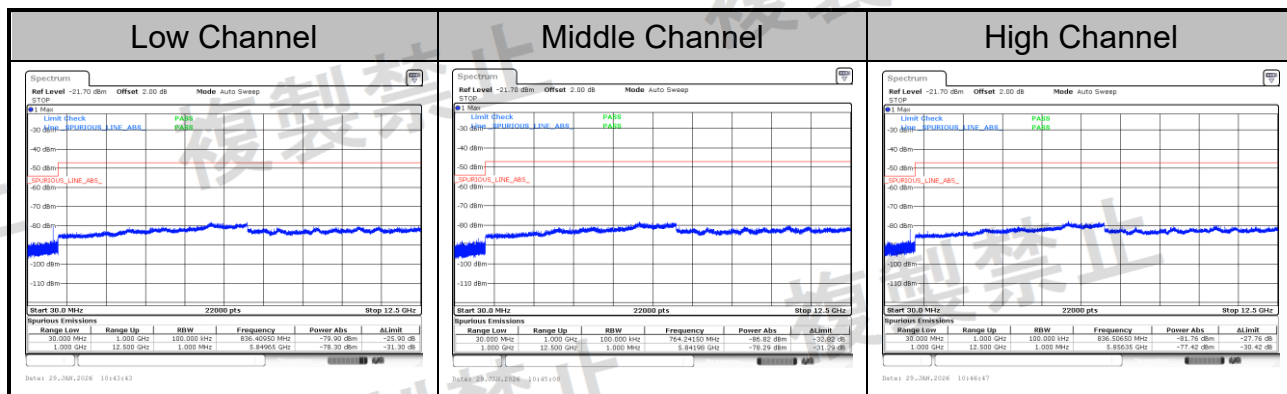




C.6.3. Unwanted Emission Intensity



C.6.4. Limitation of Collateral Emission of Receiver



—THE END—