



RADIO TEST REPORT-BLE

Article 2 paragraph 1 item (19)

MIC Notice No.88 Appendix No.43

Product : embedded wireless module

Trade Mark : N/A

Model Name : CBM-003C

Serial Model : N/A

Report No. : DGE251117008R

Prepared for

DongGuan JiaSheng Lighting Technology Co.,Ltd

Humen Town Shutian Village Dongguang Guangdong

Prepared by

Dongguan NTEK Testing Service Co., Ltd.

Room101/401, Building 3, No.1, Keji 8th Road, Songshan Lake High-Tech Industrial Development Zone, Dongguan, Guangdong, China

Tel: (86)-0769-2330 1618 Fax: (86)-0769-2330 1618

Website: <http://www.ntek-test.org.cn>

TEST RESULT CERTIFICATION

Applicant's name.....: DongGuan JiaSheng Lighting Technology Co.,Ltd
Address.....: Humen Town Shutian Village Dongguang Guangdong
Manufacturer's Name.....: DongGuan JiaSheng Lighting Technology Co.,Ltd
Address.....: Humen Town Shutian Village Dongguang Guangdong

Test specification:

Standard.....: Article 2 paragraph 1 item (19)
 MIC Notice No.88 Appendix No.43

Test item description

Product name.....: embedded wireless module
Model and/or type reference ..: CBM-003C

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with MIC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by Shenzhen NTEK Testing Technology Co., Ltd. personnel only, and shall be noted in the revision of the document

Testing.....

Date (s) of performance of tests..... Nov. 17, 2025 ~Jan. 12, 2026
Date of Issue..... Jan. 22, 2026
Test Result..... **Pass**

Testing Engineer : _____

Matt
 (Matt Sun)

Technical Manager : _____

Brian
 (Brian Yang)

Authorized Signatory : _____

Bart Fang
 (Bart Fang)



※ ※ Revision History ※ ※

REV.	REPORT NO.	Page Revised	ISSUED DATE	Contents
Original	DGE251117008R	Rev.01	Jan. 22, 2026	N/A

Table of Contents

Page

1. SUMMARY OF TEST RESULTS	6
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
2. GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
2.2 DESCRIPTION OF TEST MODES	9
2.3 TEST CONDITIONS	10
2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	11
2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	11
2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS	12
3. RF SHIELDING METHOD	13
4. TEST RESULT FOR BT	14
4.1 FREQUENCY ERROR	14
4.2 LIMIT	14
4.3 MEASURING INSTRUMENTS AND SETTING	14
4.4 TEST PROCEDURES	14
4.5 TEST SETUP LAYOUT	14
5. AENNA POWER	16
5.1 LIMIT	16
5.2 TEST PROCEDURES	16
5.3 TEST SETUP LAYOUT	17
5.4 TEST DEVIATION	17
5.5 TEST RESULT	17
6. OCCUPIED BANDWITH	18
6.1 LIMIT	18
6.2 TEST RESULT	18
7. UNWAED EMISSION IENSITY MEASUREME	19
7.1 LIMIT	19
7.2 MEASURING INSTRUMES AND SETTING	19
7.3 TEST PROCEDURES	19
7.4 TEST SETUP LAYOUT	20

Table of Contents

	Page
7.5 TEST DEVIATION	20
7.6 TEST RESULT	20
8. IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREME	21
8.1 LIMIT	21
8.2 MEASURING INSTRUMES AND SETTING	21
8.3 TEST PROCEDURES	21
8.4 TEST RESULT	21
9. TRANSMISSION AENNA GAIN (EIRP AENNA POWER) MEASUREME	22
9.1 LIMIT	22
9.2 RESULTS OF TRANSMISSION AENNA GAIN	22
10. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREME	23
10.1 LIMIT	23
10.2 MEASURING INSTRUMES AND SETTING	23
10.3 TEST PROCEDURES	23
10.4 TEST SETUP LAYOUT	24
10.5 TEST DEVIATION	24
10.6 EUT OPERATION DURING TEST	24
10.7 TEST RESULT OF TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH)	24
11. RADIO IERFERENCE PREVEION CAPABILITY MEASUREME	25
11.1 LIMIT	25
11.2 MEASURING ID CODE SOFTWARE	25
11.3 TEST PROCEDURES	25
11.4 TEST SETUP LAYOUT	25
11.5 TEST DEVIATION	25
11.6 EUT OPERATION DURING TEST	25
11.7 TEST RESULT OF RADIO IERFERENCE PREVEION CAPABILIT	25
12 CARRIER SENSE CAPABILITY	26
13. EUT TEST PHOTO	46

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Standard	Method	Description of Test	Result
Article 2 paragraph 1 item (19)	MIC Notice No.88 Appendix No.43.3	Frequency Error	Complies
	MIC Notice No.88 Appendix No.43.4	Occupied Bandwidth (99%) and Spread-spectrum Bandwidth (90%)	Complies
	MIC Notice No.88 Appendix No.43.5	Unwanted Emission Intensity	Complies
	MIC Notice No.88 Appendix No.43.6	Antenna Power Error	Complies
	MIC Notice No.88 Appendix No.43.7	Limitation of Collateral Emission of Receiver	Complies
	MIC Notice No.88 Appendix No.43.8	Transmission Antenna Gain (EIRP Antenna Power)	Complies
	MIC Notice No.88 Appendix No.43.9	Transmission Radiation Angle Width (3dB Beamwidth)	N/A
	MIC Notice No.88 Appendix No.43.10	Radio Interference Prevention Capability	Complies
	MIC Notice No.88 Appendix No.43.10	Spreading Factor	N/A
	MIC Notice No.88 Appendix No.43.8	Carrier Sense Capability	N/A
	Note 2	Construction Protection Confirmation	Complies

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) MIC Ordinance Regulating Radio Equipment Section 1.A of Article 49.20
- (3) Article 2 Paragraph 1 of Item 19, annex 43 and annex 1

TEST FACILITY

Dongguan NTEK Testing Service Co., Ltd.

Add. : Room101/401, Building 3, No.1, Keji 8th Road, Songshan Lake High-Tech Industrial Development Zone, Dongguan, Guangdong, China

CNAS-Lab. : The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L13824

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$ where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$ providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 3.2\text{dB}$
2	Radiated Emission Test	$\pm 4.7\text{dB}$
3	RF power,conducted	$\pm 0.16\text{dB}$
4	Spurious emissions,conducted	$\pm 0.21\text{dB}$
5	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions,radiated(>1G)	$\pm 5.0\text{dB}$
7		$\pm 1 \times 10^{-6}$

GENERAL INFORMATION**GENERAL DESCRIPTION OF EUT**

Equipment	embedded wireless module	
Model Name	CBM-003C	
Trade Mark	N/A	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a embedded wireless module	
	Operation Frequency:	2402~2480MHz
	Modulation Type:	GFSK
	Number Of Channel	40CH
	Antenna Designation:	1/4 wavelength monopole antenna
	Antenna Gain (dBi)	2 dBi
Channel List	Please refer to the Note 2.	
Battery	N/A	
Adapter	DC5V	
Rating	N/A	
Hardware Version	N/A	
Software Version	N/A	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel	Frequency (MHz)
00	2402
01	2404
.....	
.....	
...	...
.....	
38	2478
39	2480

3. Table for Filed Antenna

Antenna	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A(Aux)	N/A	CBM-003C	1/4 wavelength monopole antenna	N/A	2	BT Antenna

DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39

Final Test Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39

TEST CONDITIONS

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
RF Chip Input DC Power(V)	3.300	3.322	3.293
Voltage Variation (%)	/	0.667	-0.212

NOTE:

Voltage Variation (%)

$$= (\text{Output high or Low Voltage} - \text{Output Normal Voltage}) / \text{Output Normal Voltage} * 100$$

During the input supply voltage to the EUT from the external power source is varied by +/- 10%, + / - 10% of the external power change, will not affect the voltage of the RF, so only operated in normal voltage to test all regulations.

EUT test all voltages, but the report only the worst record data.

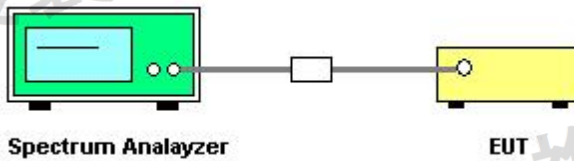
2.4 TEST ENVIRONMENTAL

During the measurement the environmental conditions

Normal Temperature: 24.1°C

Relative Humidity: 55 %

Air Pressure: 1003 hPa

2.5 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**2.6 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	embedded wireless module	N/A	CBM-003C	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.7 EQUIPMENTS LIST FOR ALL TEST ITEMS

Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	SPECTRUM ANALYZER	AGLIENT	E4440A	MY41000130	2025.04.10	2026.04.09	1 year
2	SPECTRUM ANALYZER	AGILENT	N9020A	MY49100060	2025.10.26	2026.10.25	1 year
3	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200983705	2025.06.06	2026.06.05	1 year
4	POWER METER	DARE	RPR3006 W	15100041SN O84	2025.08.07	2026.08.06	1 year
5	TEMPORARY ANTENNA CONNECTOR (NOTE)	NTS	R001	N/A	N/A	N/A	N/A
6	DC SOURCE	JIUYUAN	QJ6010E	N/A	2025.08.07	2026.08.06	1 year
7	AGILENT	PSG ANALOG SIGNAL GENERATOR	E8257D	MY51110112	2025.09.14	2026.09.13	1 year
8	MULTIMETER	FLUKE	17B+	N/A	2025.11.30	2026.11.29	N/A

Remark:

Notice: Calibration duration for above equipments is 1 year.

Test Equipment Calibration

All of the test equipment is effective use and calibration certification institution, Ti Testing & Certification Group Co., Ltd. Shenzhen Branch, the address is 103, Building B, Port Hongji High-tech Intelligent Industrial Park, No.1008, Songbai Road, Nanshan District, Shenzhen city China and according to calibration method of Article 102-18 paragraph (1)

Notice: Calibration duration for above equipments is 1 year.

. RF SHIELDING METHOD

We use the following methods to prevent unauthorized access and modification of RF and modulation parts.

We use the following methods to prevent unauthorized access and modification of RF and modulation parts.

1. The high-frequency section and modulation section use SMT technology, which is not easy to modify or tamper with.
2. A metal shielding cover is installed over the RF and modulation circuits. Removal of the cover requires tools, and any modification to the RF components will break the cover and void the device's warranty.

Please refer to following for photo for External Photos.

TEST RESULT FOR BT**4.1 FREQUENCY ERROR****4.2 LIMIT**

Item	Limits
Frequency Error	50ppm

4.3 MEASURING INSTRUMENTS AND SETTING

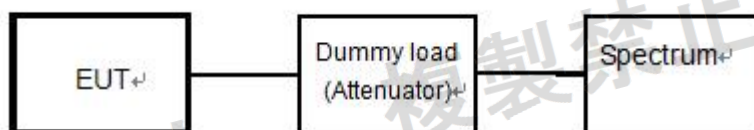
The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	10KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4 TEST PROCEDURES

- (1) In the case of unmodulated signal (continuous or continuous burst), measure the frequency directly by a frequency meter.
- (2) In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.
- (3) In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.
- (4) In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized). That is, observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

4.5 TEST SETUP LAYOUT**EUT OPERATION DURING TEST**

The EUT was placed on the test table and programmed in un-modulation function.

4.6 TEST RESULT

For the measurement records, refer to the appendix I.

AENNA POWER

5.1 LIMIT

Modulation	Frequency band	Aenna power	Max EIRP	
			Non-directional	Beam directional ^{Note1}
DS	2,400-2,483.5MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
OFDM1 ^{Note2}	2,400-2,483.5MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
OFDM2	2,400-2,483.5MHz	5mW/MHz	9.14dBm/MHz	19.14dBm/MHz
FH,DS-FH,FH-O FDM	2,400-2,483.5MHz	3mW/MHz	6.91dBm/MHz	16.91dBm/MHz
	2,427-2,470.75MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
Other than those above	2,400-2,483.5MHz	10mW	12.14dBm	22.14dBm

Note 1: The half-value angle of the beam directivity must be less than $360 \div A$ degrees. A shall be the rate at which the EIRP exceeds the upper limit of the omnidirectional EIRP.

Note 2: OFDM 1 in the modulation method column indicates that the occupied frequency band width is 26 MHz or less, and OFDM 2 indicates the occupied frequency bandwidth exceeding 26 MHz and 38 MHz or less.

5.2 TEST PROCEDURES

1. Step 1:

Connect the UUT to the spectrum analyser and use the following settings:

- Cere Frequency: The cere frequency of the channel under test.
- Resolution BW: 1.5 MHz.
- Video BW: 5 MHz.
- Span: Twice of the occupied bandwidth
- Detector: Peak.
- Trace Mode: Max Hold

2. When the trace is complete, find the peak value of the power envelope and record the frequency.

3. Make the following changes to the settings of the spectrum analyser:

- Cere Frequency: Equal to the frequency recorded in step 2.
- Span: 0 MHz.
- Resolution BW: 1.5 MHz.
- Video BW: 1.5 MHz.
- Sweep time: 1 minute.
- Detector: Average (see note).
- Trace Mode: Max Hold.

NOTE: The detector mode "Average" is often referred to as "RMS Average" or "Sample" but do not use Video Average.

4 . When the trace is complete, capture the trace, for example using the "View" option on the spectrum analyser.

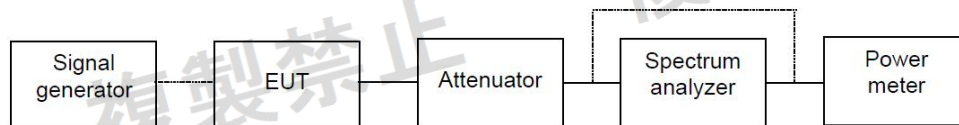
Find the peak value of the trace and place the analyser marker on this peak. This level is recorded as the highest mean power D in a 1 MHz band.

Alternatively, where a spectrum analyser is equipped with a facility to measure power, this facility may be used to display the D in dBm/MHz.

D shall be recorded in the test report

between + 20% to - 80% power range that base on manufacturer declare the conducted power density.

5.3 TEST SETUP LAYOUT



5.4 TEST DEVIATION

There is no deviation with the original standard.

5.5 TEST RESULT

For the measurement records, refer to the appendix I.

6. OCCUPIED BANDWIDTH

6.1 LIMIT

Item	Limits
Occupied Band Width:	FH 83.5MHz; OFDM1,DS ≤ 26 MHz; OFDM2(802.11n40) ≤ 38 MHz; Others ≤ 26 MHz
Spreading Bandwidth:	≥ 500 kHz (FH, DS)

6.1.2. MEASURING INSTRUMENTS AND SETTING

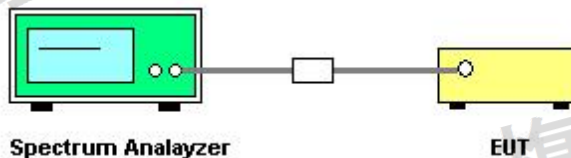
6.1.3. TEST PROCEDURES

Set the spectrum analyzer as follows :

Center frequency:	Test frequency
Frequency sweep width:	About 2~3.5 times of the Nominal bandwidth
Resolution bandwidth:	3% or less of the Nominal bandwidth
Video bandwidth:	Equal to RBW
Sweep time:	Minimum time to ensure the measuring accuracy (In the case of burst wave, one burst shall be included per data poi.)
Sweep mode:	Continuous sweep
Detection mode:	Positive peak
Display mode:	Maximum hold

Note: 1. Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
2. Spread Spectrum Factor limit is greater than 5

6.1.4. TEST SETUP LAYOUT



6.1.5. TEST DEVIATION

There is no deviation with the original standard.

6.1.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

6.2 TEST RESULT

For the measurement records, refer to the appendix I.

7. UNWAED EMISSION IENSITY MEASUREME

7.1 LIMIT

Item	Limits
TX Spurious Emission	$\leq 2.5 \mu\text{W}$ ($30\text{MHz} \leq f \leq 1000\text{MHz}$)
	$\leq 2.5 \mu\text{W}$ ($1000\text{MHz} < f \leq 2387\text{MHz}$)
	$\leq 25 \mu\text{W}$ ($2387\text{MHz} < f \leq 2400\text{MHz}$)
	$\leq 25 \mu\text{W}$ ($2483.5\text{MHz} \leq f < 2496.5\text{MHz}$)
	$\leq 2.5 \mu\text{W}$ ($2496.5\text{MHz} \leq f < 12500\text{MHz}$)

7.2 MEASURING INSTRUMES AND SETTING

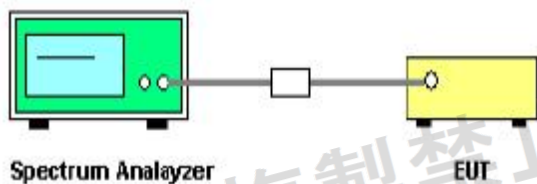
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RBW / VBW	100KHz/100KHz (Below 1GHz)
RBW / VBW	1MHz/1MHz (Above 1GHz)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.3 TEST PROCEDURES

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: Below 1GHz RBW:100KHz / VBW:100KHz
Above 1GHz RBW:1MHz / VBW:1MHz / AT: 10dB Ref: 0dBm / Sweep time: Auto
Sweep Mode: Coinuous sweep / Detect mode: Positive peak
Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW .
4. Setting of SA is following as 1000MHz 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. Measure side band spurious as follows: For 2.4GHz band: 2374MHz~2400MHz and 2483.5MHz~2509.5MHz RBW = VBW = 30kHz, Result_Value = Measured_Value + 15.2 [dBm]
9. If the Result_Value is over the requireme, take total sum of 1MHz band ceered at the spur frequency like ACLP measureme as Result_Value.

7.4 TEST SETUP LAYOUT



7.5 TEST DEVIATION

There is no deviation with the original standard.

7.6 TEST RESULT

For the measurement records, refer to the appendix I.

8. IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREME

8.1 LIMIT

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

8.2 MEASURING INSTRUMES AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
VB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.3 TEST PROCEDURES

- EUT have the coinuous reception mode and fixed only one channelize.
- Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Coinuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
- SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
- 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.

8.4 TEST RESULT

9. TRANSMISSION AENNA GAIN (EIRP AENNA POWER) MEASUREME**9.1 LIMIT**

Modulation	Frequency band	Aenna power	Max EIRP	
			Non-directional	Beam directional ^{Note1}
DS	2,400-2,483.5MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
OFDM1 ^{Note2}	2,400-2,483.5MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
OFDM2	2,400-2,483.5MHz	5mW/MHz	9.14dBm/MHz	19.14dBm/MHz
FH,DS-FH,FH-O FDM	2,400-2,483.5MHz	3mW/MHz	6.91dBm/MHz	16.91dBm/MHz
	2,427-2,470.75MHz Z	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
Other than those above	2,400-2,483.5MHz	10mW	12.14dBm	22.14dBm

Note 1: The half-value angle of the beam directivity must be less than $360 \div A$ degrees. A shall be the rate at which the EIRP exceeds the upper limit of the omnidirectional EIRP.

Note 2: OFDM 1 in the modulation method column indicates that the occupied frequency band width is 26 MHz or less, and OFDM 2 indicates the occupied frequency bandwidth exceeding 26 MHz and 38 MHz or less.

9.2 RESULTS OF TRANSMISSION AENNA GAIN

10. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREME**10.1 LIMIT**

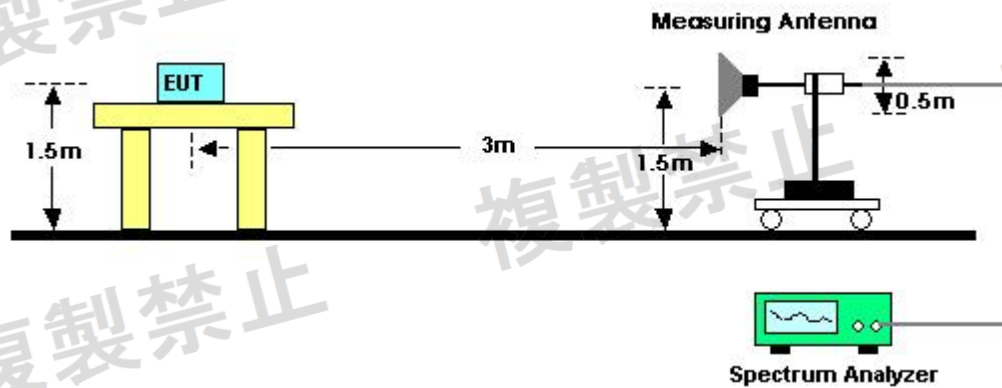
Item	Limits
3dB aenna beam width	$360/A$ (If $A < 1$; then $A = 1$) $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$
Note: This test item is not applied for radio equipme with equivale isotropic radiation power lower than 12.14dBm/MHz, but Aenna Power(Conducted) limit is 10 mW/MHz (10 dBm/MHz), So the test item will not be applied to the transmission aenna which has a gain of 2.14dBi or less	

10.2 MEASURING INSTRUMES AND SETTING

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1 MHz
VB	1 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

10.3 TEST PROCEDURES

1. Set EUT and measuring aenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizoally and ertically to find the maximum receiving power.
4. Move the measuring aenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuing aenna. The output level at the spectrum analyzer is read as "E"
5. Calculate permitted radiation angle in horizoal and vertical using EIRP measured in another test method.
6. Calculate 3dB aenna 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
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$

10.4 TEST SETUP LAYOUT**10.5 TEST DEVIATION**

There is no deviation with the original standard.

10.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

10.7 TEST RESULT OF TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH)

The max EIRP less than 12.14dBm, not applicable.

11. RADIO IERFERENCE PREVEION CAPABILITY MEASUREME**11.1 LIMIT**

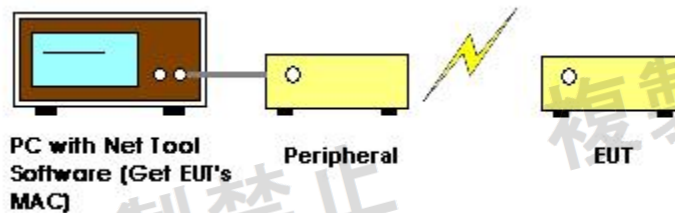
Item	Limits
Ideification code	≥ 48 bits

11.2 MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

11.3 TEST PROCEDURES

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

11.4 TEST SETUP LAYOUT**11.5 TEST DEVIATION**

There is no deviation with the original standard.

11.6 EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

11.7 TEST RESULT OF RADIO IERFERENCE PREVEION CAPABILIT

EUT:	embedded wireless module	Model Name:	CBM-003C
Temperature:	25°C	Tested by:	Matt Sun
Humidity:	55 % RH	Test result:	Compliance

MAC Address:85-A6-33-43-87-E4

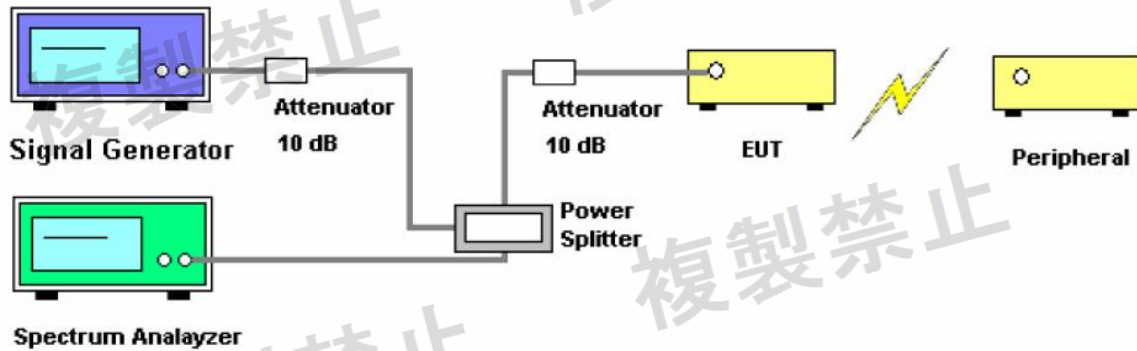
12 CARRIER SENSE CAPABILITY

Limit

EUT stop RF transmission signal after carrier inject to EUT

Test Procedure

Measureme System Diagram



1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is $(on\ 22.79+G-20*\log(f)dBm)$ (G is the aenna gain, f is the test frequency).
2. turn off the RF signal of the SG.
3. EUT have transmitted the maximum modulation signal and fixed channelize.
4. Setting of SA :RBW/VBW=1MHz/1MHz, Span=50MHz, Sweep time=auto, Sweep mode=coinuous, Detect mode=positive peak
5. SG RF signal on.
6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be coinuous transmitted signal.

	Normal Voltage	High Voltage	Low Voltage
Result	N/A	N/A	N/A

Note: N/A" denotes test is not applicable in this Test Report

APPENDIX I - TEST RESULTS

1. Duty Cycle

1.1 Test Result

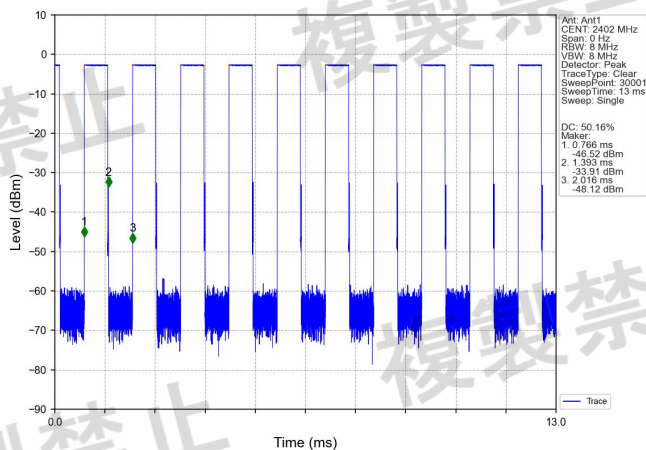
1.1.1 Ant1

Ant1								
ENV	Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
NTNV	1M	SISO	2402	0.627	1.250	50.16	3.00	0.03
	2M	SISO	2402	0.363	1.250	29.04	5.37	0.01

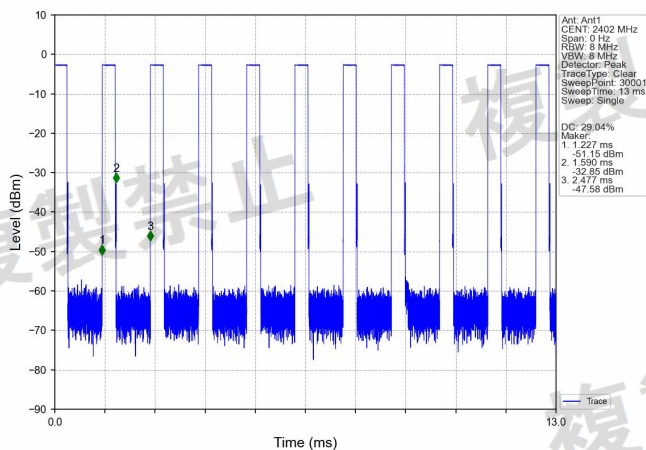
1.2 Test Graph

1.2.1 Ant1

1M_2402MHz_Ant1_NTNV



2M_2402MHz_Ant1_NTNV



2. Frequency Error

2.1 Test Result

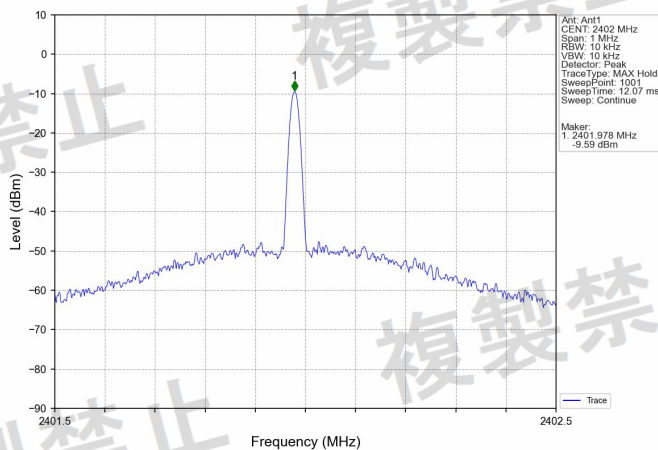
2.1.1 Ant1

Ant1							
ENV	Mode	TX Type	Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)		Verdict
					Result	Limit	
NTNV	Carrier Wave	SISO	2402	2401.978	-9.16	-50 to 50	Pass
			2480	2479.976	-9.68	-50 to 50	Pass

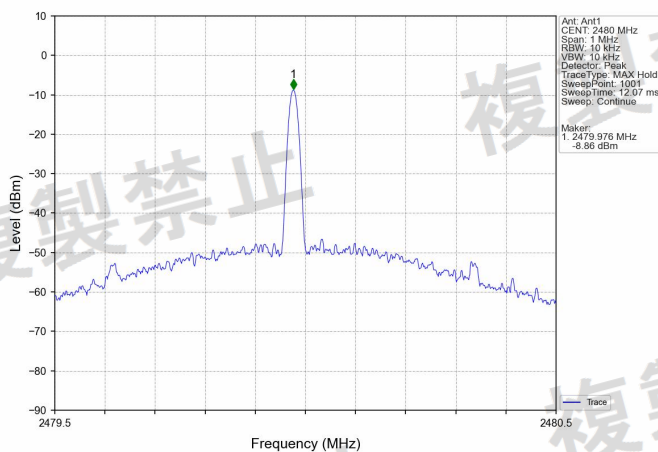
2.2 Test Graph

2.2.1 Ant1

Frequency Error_NTNV_Carrier Wave_2402MHz_Ant1_NTNV



Frequency Error_NTNV_Carrier Wave_2480MHz_Ant1_NTNV



3. Occupied Bandwidth

3.1 Test Result

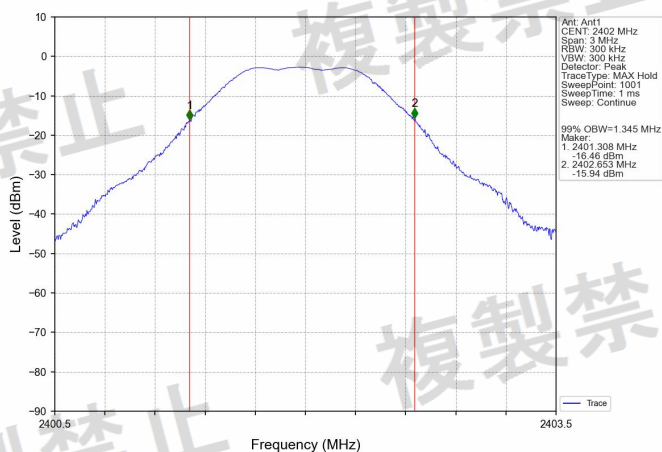
3.1.1 OBW

ENV	Mode	TX Type	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Verdict
				ANT1	Limit	
NTNV	1M	SISO	2402	1.345	≤ 26	Pass
			2480	1.384	≤ 26	Pass
	2M	SISO	2402	2.173	≤ 26	Pass
			2480	2.175	≤ 26	Pass

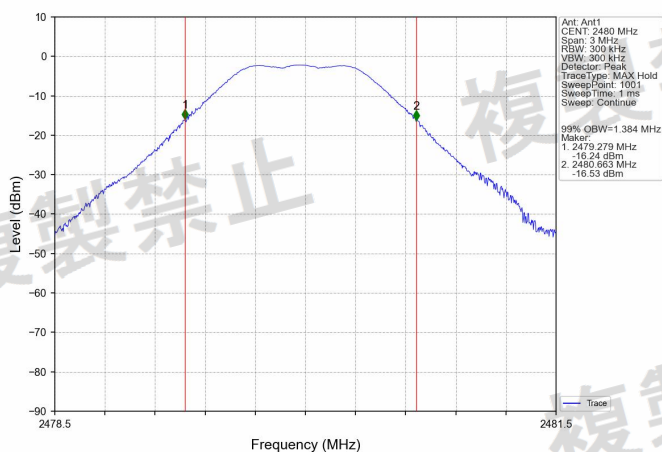
3.2 Test Graph

3.2.1 OBW

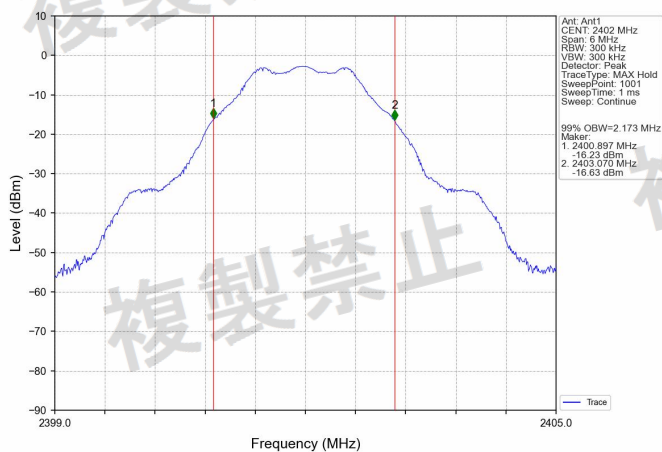
1M_2402MHz_Ant1_NTNV



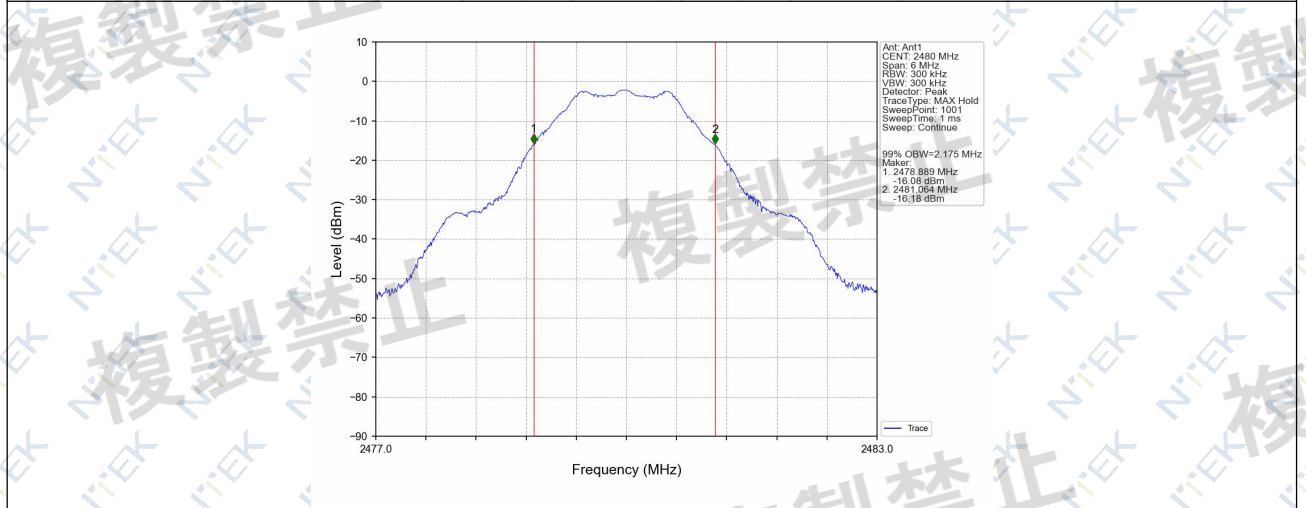
1M_2480MHz_Ant1_NTNV



2M_2402MHz_Ant1_NTNV



2M_2480MHz_Ant1_NTNV



4. Antenna Power

4.1 Test Result

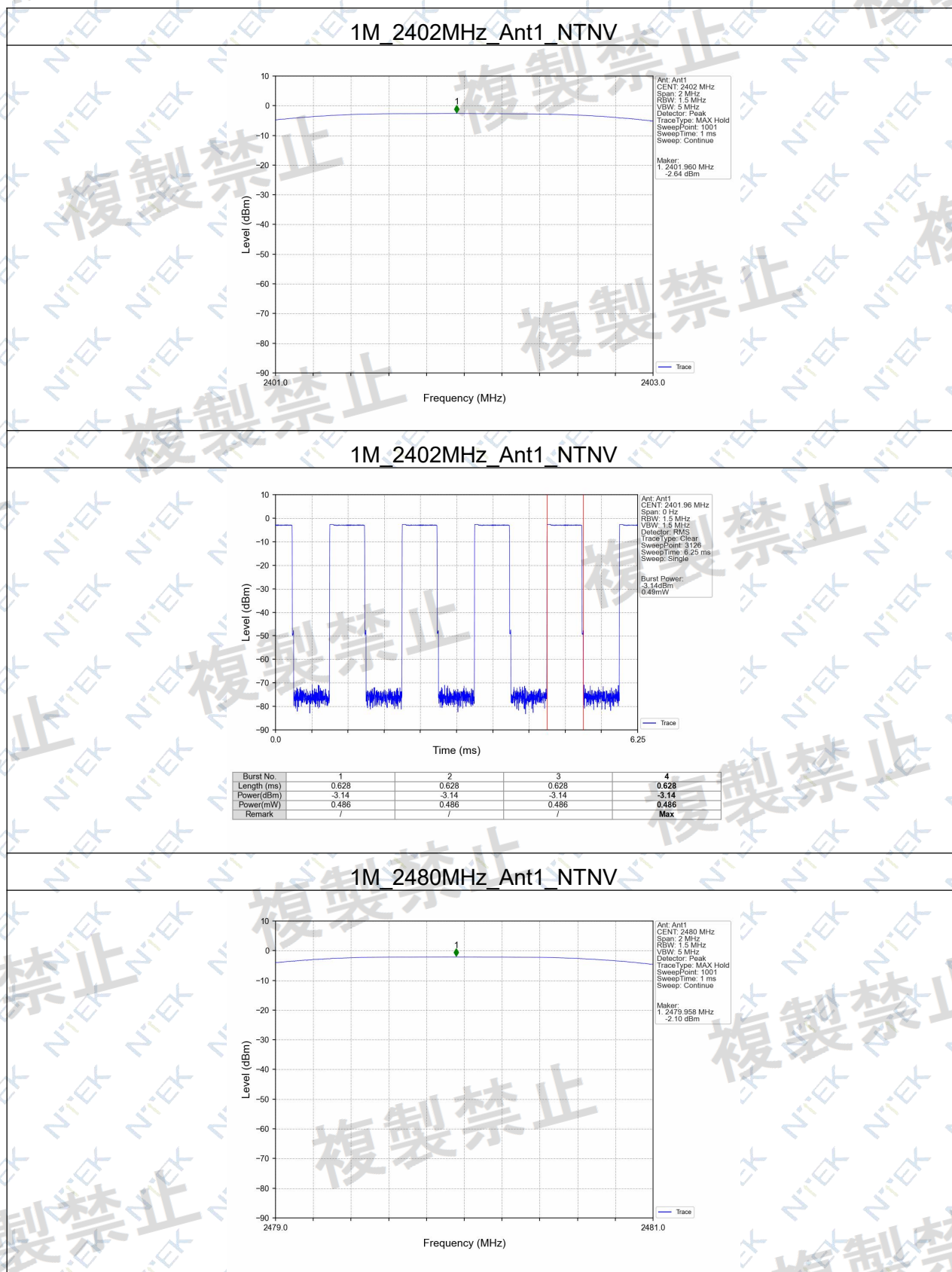
4.1.1 Power

ENV	Mode	TX Type	Frequency (MHz)	ANT	Antenna Power (mW)		Nominal Power (mW)	Tolerance (%)		Verdict
					Measured	Limit		Measured	Limit	
NTNV	1M	SISO	2402	1	0.486	≤ 10.00	0.490	-0.82	≤ 20	Pass
			2480	1	0.552	≤ 10.00	0.550	0.36	≤ 20	Pass
	2M	SISO	2402	1	0.457	≤ 10.00	0.460	-0.65	≤ 20	Pass
			2480	1	0.474	≤ 10.00	0.470	0.85	≤ 20	Pass

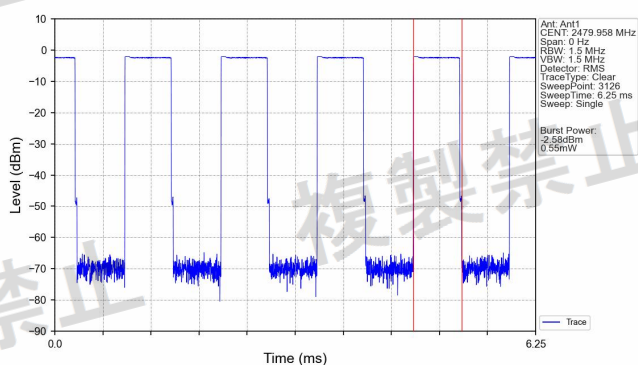
ENV	Mode	TX Type	Frequency (MHz)	ANT	Antenna Power	Gain	EIRP Power	Limit	Verdict
					(dBm)	(dBi)	(dBm)	(dBm)	
NTNV	1M	SISO	2402	1	-3.14	2.0	-1.14	≤ 12.14	Pass
			2480	1	-2.58	2.0	-0.58	≤ 12.14	Pass
	2M	SISO	2402	1	-3.40	2.0	-1.40	≤ 12.14	Pass
			2480	1	-3.24	2.0	-1.24	≤ 12.14	Pass

4.2 Test Graph

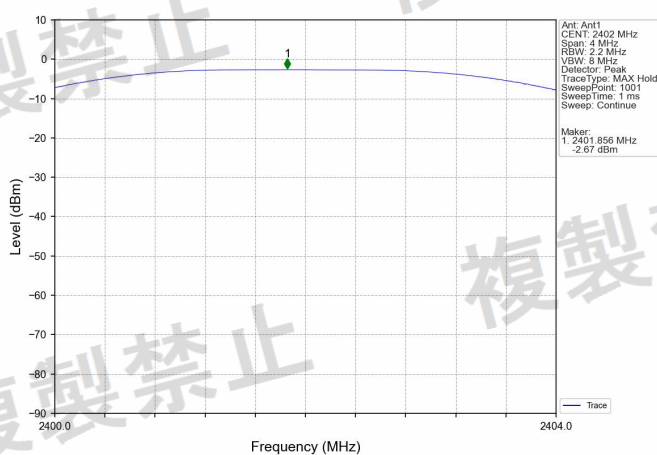
4.2.1 Power



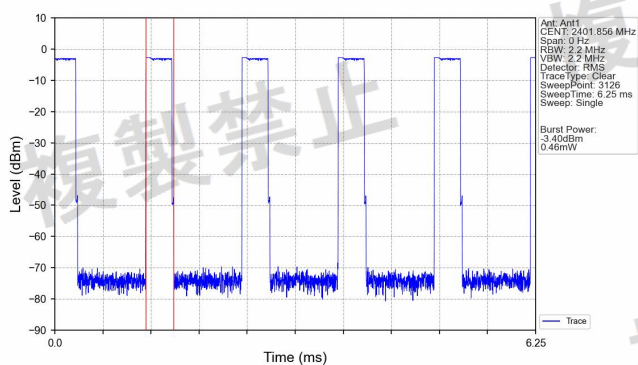
1M_2480MHz_Ant1_NTNV



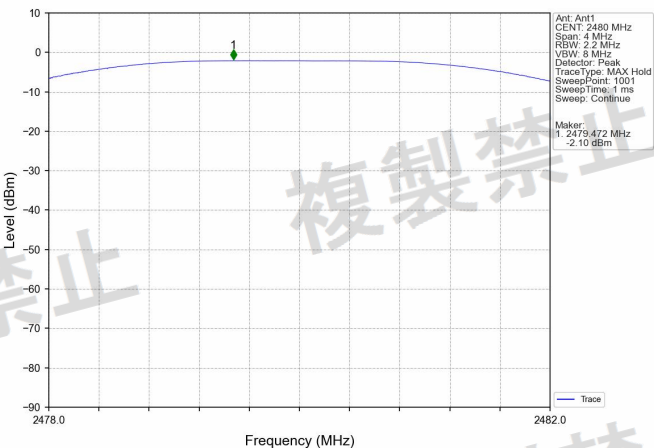
2M_2402MHz_Ant1_NTNV



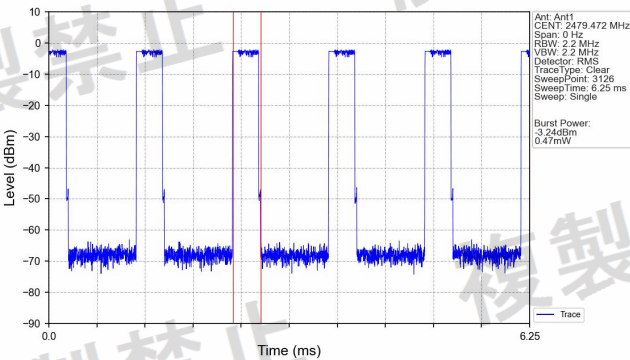
2M_2402MHz_Ant1_NTNV



2M_2480MHz_Ant1_NTNV



2M_2480MHz_Ant1_NTNV



Burst No.	1	2	3	4
Length (ms)	0.362	0.362	0.362	0.362
Power (dBm)	-3.24	-3.24	-3.24	-3.24
Power (mW)	0.474	0.474	0.474	0.474
Remark	/	Max	/	/

5. Spurious Emission Intensity

5.1 Test Result

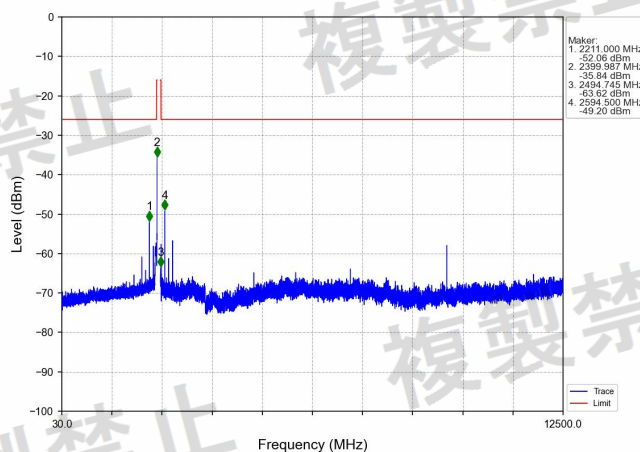
5.1.1 TxSe_NTNV

NTNV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (uW /MHz)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm /MHz)	PK Power (uW /MHz)	AV Power (dBm /MHz)	AV Power (uW /MHz)		
1M	SISO	2402	1	30	2387	2211	-52.06	0.006	/	/	2.5	Pass
				2387	2400	2399.987	-35.84	0.261	/	/	25	Pass
				2483.5	2496.5	2494.745	-63.62	0.000	/	/	25	Pass
				2496.5	12500	2594.5	-49.20	0.012	/	/	2.5	Pass
		2480	1	30	2387	2289	-48.86	0.013	/	/	2.5	Pass
				2387	2400	2396.464	-59.44	0.001	/	/	25	Pass
				2483.5	2496.5	2483.617	-52.95	0.005	/	/	25	Pass
				2496.5	12500	2672.5	-49.74	0.011	/	/	2.5	Pass
2M	SISO	2402	1	30	2387	2211	-52.27	0.006	/	/	2.5	Pass
				2387	2400	2399.987	-24.01	3.972	/	/	25	Pass
				2483.5	2496.5	2495.993	-63.62	0.000	/	/	25	Pass
				2496.5	12500	2594	-49.28	0.012	/	/	2.5	Pass
		2480	1	30	2387	2289	-49.11	0.012	/	/	2.5	Pass
				2387	2400	2397.595	-59.88	0.001	/	/	25	Pass
				2483.5	2496.5	2485.879	-41.95	0.064	/	/	25	Pass
				2496.5	12500	2672.5	-50.10	0.010	/	/	2.5	Pass

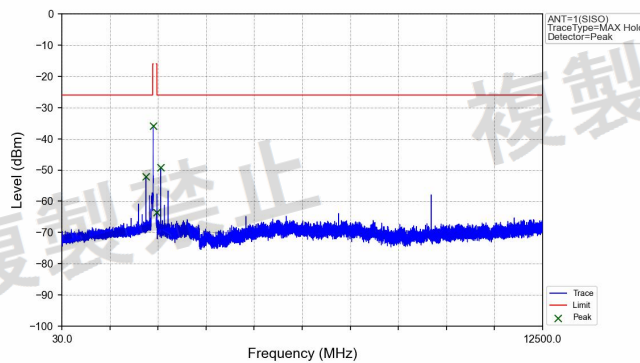
5.2 Test Graph

5.2.1 TxSe_NTNV

1M_2402MHz_Ant1_NTNV

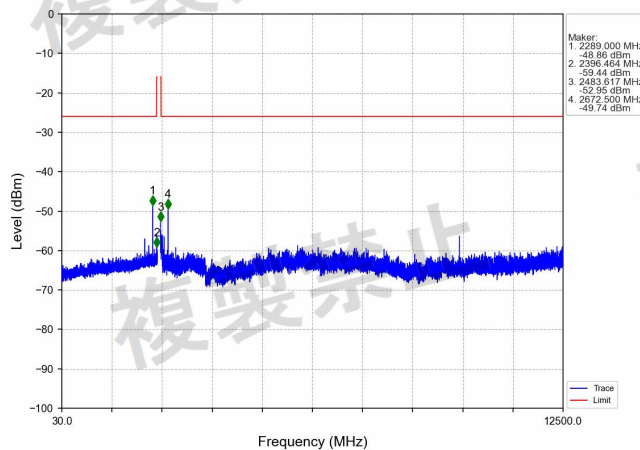


1M_2402MHz_Ant1_NTNV

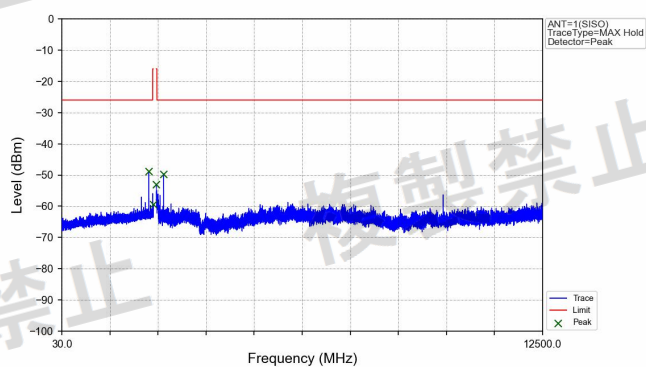


Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	2387	1	1	2211.000	-52.06	/	-26	Pass
2387	2400	1	1	2399.987	-35.84	/	-16	Pass
2483.5	2496.5	1	1	2494.745	-63.62	/	-16	Pass
2496.5	12500	1	1	2594.500	-49.20	/	-26	Pass

1M_2480MHz_Ant1_NTNV

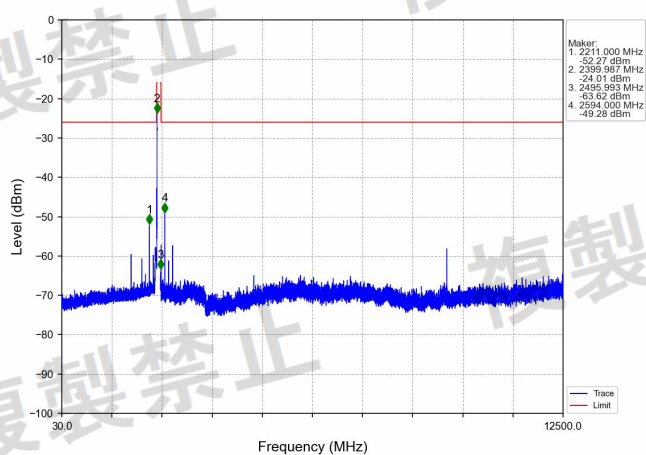


1M_2480MHz_Ant1_NTNV

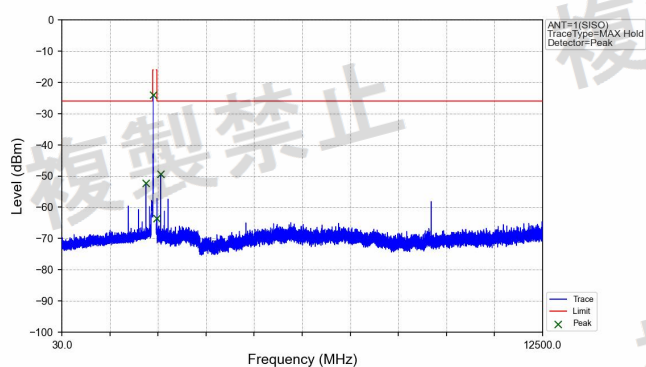


Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	2387	1	1	2289.000	-48.86	/	-26	Pass
2387	2400	1	1	2396.464	-59.44	/	-16	Pass
2483.5	2496.5	1	1	2483.617	-52.95	/	-16	Pass
2496.5	12500	1	1	2672.500	-49.74	/	-26	Pass

2M_2402MHz_Ant1_NTNV

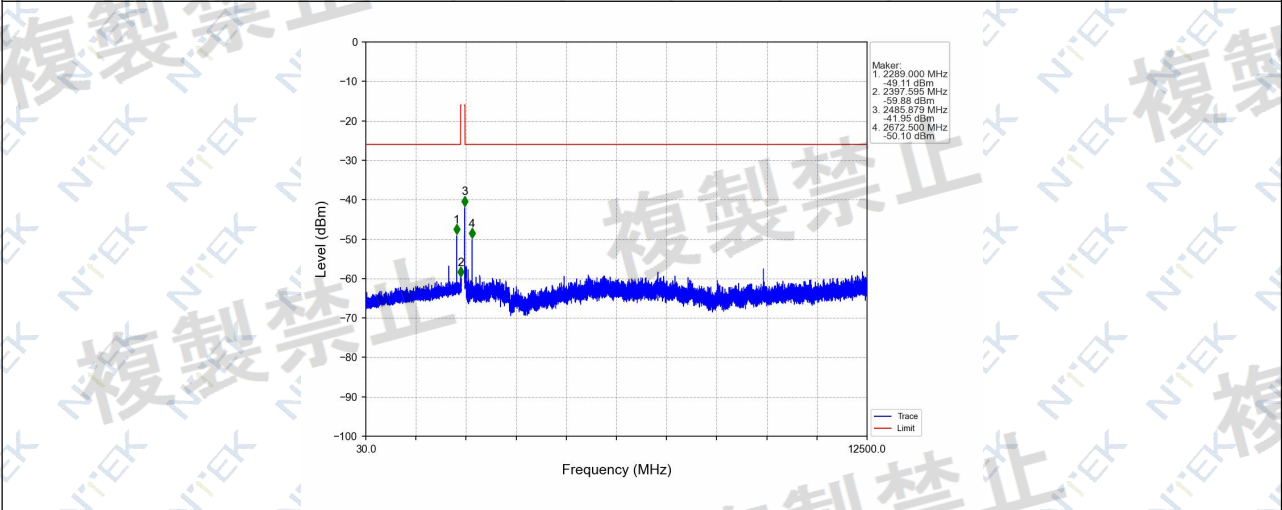


2M_2402MHz_Ant1_NTNV

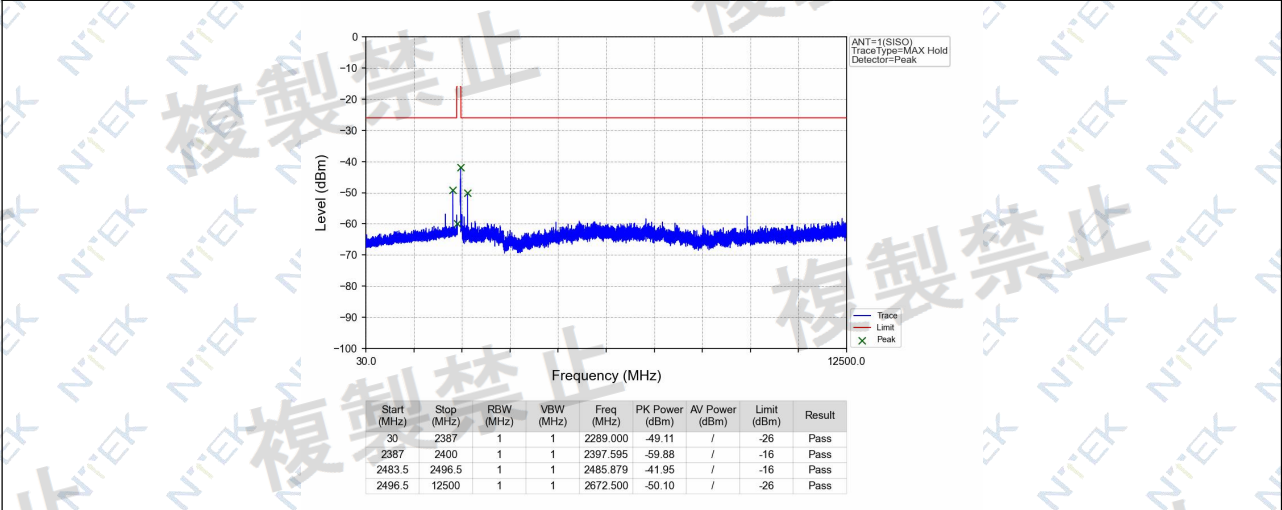


Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	2387	1	1	2211.000	-52.27	/	-26	Pass
2387	2400	1	1	2399.987	-24.01	/	-16	Pass
2483.5	2496.5	1	1	2495.993	-63.62	/	-16	Pass
2496.5	12500	1	1	2694.000	-49.28	/	-26	Pass

2M_2480MHz_Ant1_NTNV



2M_2480MHz_Ant1_NTNV



6. Secondary Radiated Emission

6.1 Test Result

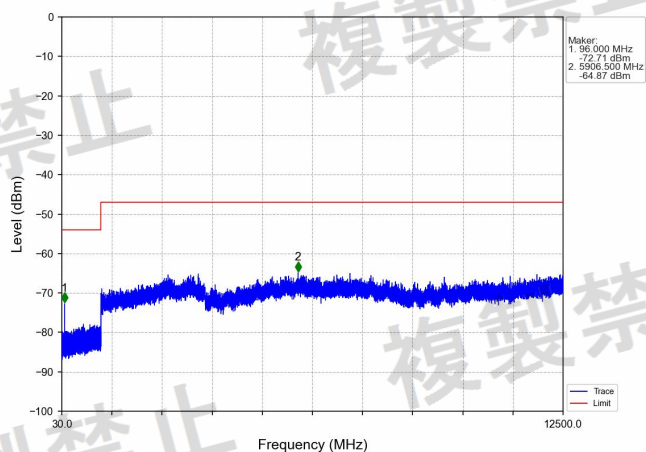
6.1.1 RxSe_NTNV

NTNV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (nW)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm)	PK Power (nW)	AV Power (dBm)	AV Power (nW)		
1M	SISO	2402	1	30	1000	96	-72.71	0.054	/	/	4	Pass
				1000	12500	5906.5	-64.87	0.326	/	/	20	Pass
		2480	1	30	1000	925.4	-77.49	0.018	/	/	4	Pass
				1000	12500	2424	-57.23	1.892	/	/	20	Pass
2M	SISO	2402	1	30	1000	889.45	-76.97	0.020	/	/	4	Pass
				1000	12500	12481	-64.84	0.328	/	/	20	Pass
		2480	1	30	1000	821.4	-77.99	0.016	/	/	4	Pass
				1000	12500	6054.5	-64.65	0.343	/	/	20	Pass

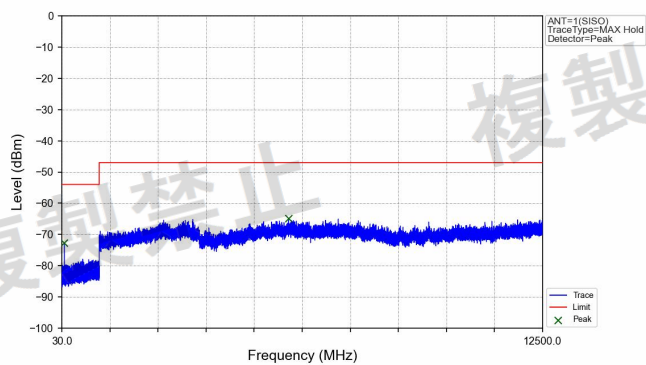
6.2 Test Graph

6.2.1 RxSe_NTNV

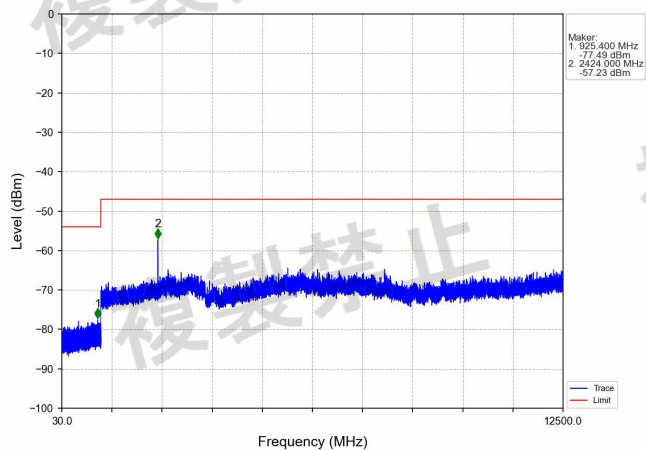
1M_2402MHz_Ant1_NTNV



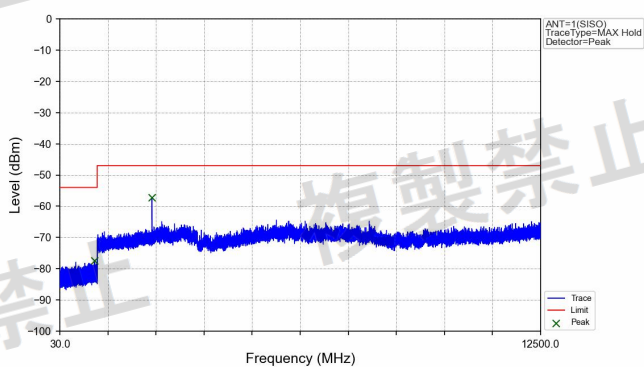
1M_2402MHz_Ant1_NTNV



1M_2480MHz_Ant1_NTNV

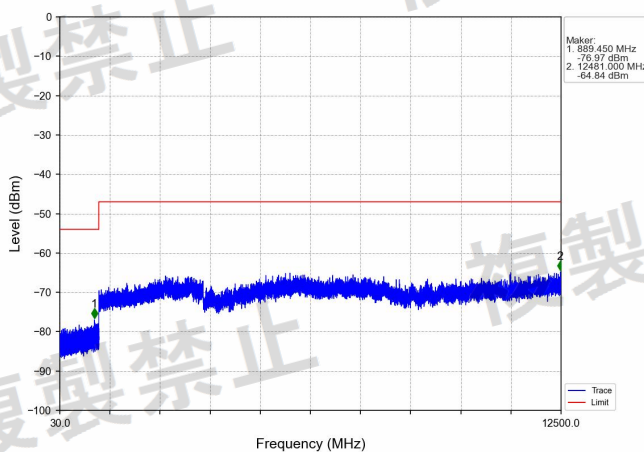


1M_2480MHz_Ant1_NTNV

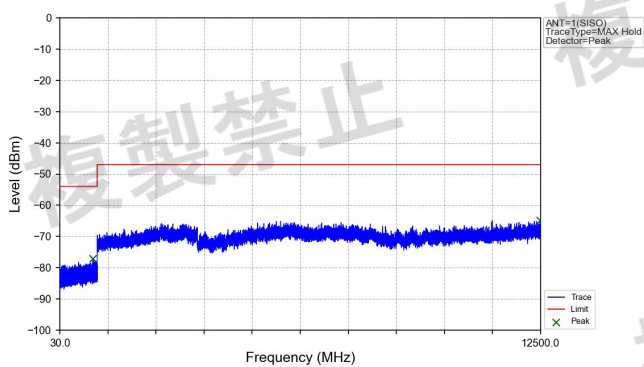


Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.1	925.400	-77.49	/	-54	Pass
1000	12500	1	1	2424.000	-57.23	/	-47	Pass

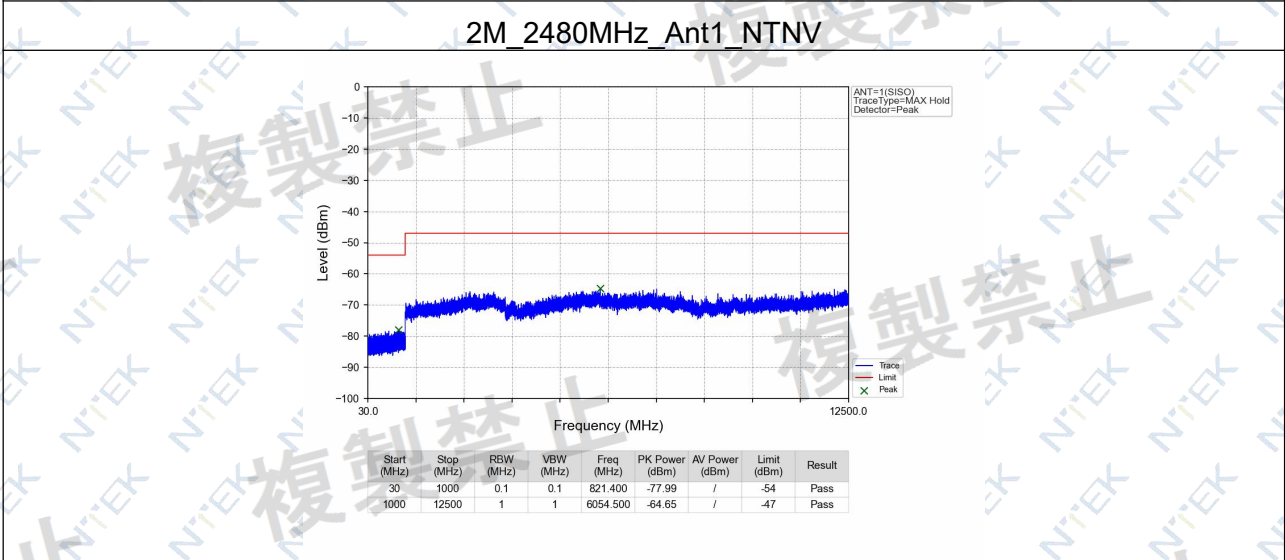
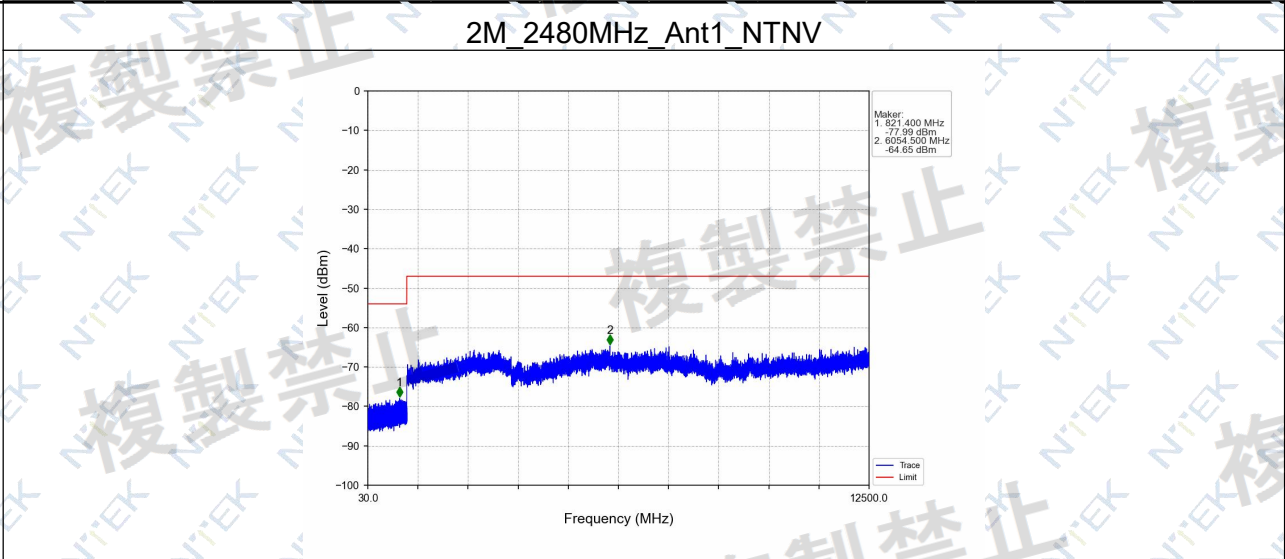
2M_2402MHz_Ant1_NTNV



2M_2402MHz_Ant1_NTNV

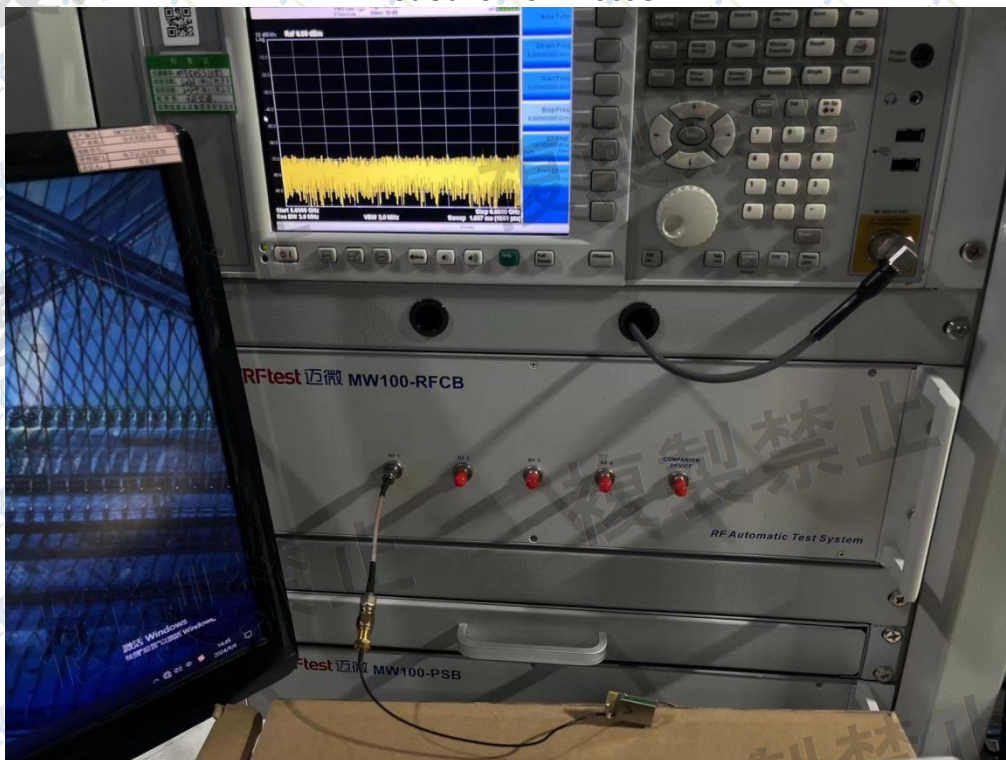


Start (MHz)	Stop (MHz)	RBW (MHz)	VBW (MHz)	Freq (MHz)	PK Power (dBm)	AV Power (dBm)	Limit (dBm)	Result
30	1000	0.1	0.1	889.450	-76.97	/	-54	Pass
1000	12500	1	1	12481.000	-64.84	/	-47	Pass



13. EUT TEST PHOTO

Measureme Photos



REPORT IS FINISHED.