

TEST REPORT

Report No..... : KS2601S0612E

Applicant..... : ALLPOWERS Industrial International Limited

Address..... : Floor 1-4, Building No.2, No.182 Kaiyuan Avenue, Huangpu District,
Guangzhou, China

Manufacturer..... : ALLPOWERS Industrial International Limited

Address..... : Floor 1-4, Building No.2, No.182 Kaiyuan Avenue, Huangpu District,
Guangzhou, China

Product Name..... : Bluetooth module

Trademark..... : N/A

Model/Type reference..... : ZBY-78S

Standard..... : Article 2-1, Item 19

Date of Receipt..... : January 27, 2026

Date of Test Date..... : January 27, 2026 to April 25, 2026

Date of issue..... : April 25, 2026

Test result..... : Pass

Conclusion..... : The submitted sample was found to COMPLY with the standards above.

Prepared by:	Name: Spencer Ou Title: Project Engineer	<i>Spencer Ou</i>
Approved by:	Name: Neil Wan Title: Technical Manager	<i>Neil Wan</i>

Testing Laboratory Name...: KSIGN(Guangdong) Testing Co., Ltd.

Address..... : West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial
Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong,
China

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

Article 2-1, Item 19 : 2.4GHz for SRD/BT/WIFI

1.2. Report Version

Revised No.	Date of issue	Description
01	April 25, 2026	Original

1.3. Test Description

Test Item	Standard	Requirement	Result
Tolerance of Frequency	Article 2-1, Item 19	Article 2-1, Item 19	Pass
Occupied Bandwidth (99%)	Article 2-1, Item 19	Article 2-1, Item 19	Pass
Antenna Power and Tolerance	Article 2-1, Item 19	Article 2-1, Item 19	Pass
Spurious Emission Intensity	Article 2-1, Item 19	Article 2-1, Item 19	Pass
Secondary Radiated Emissions	Article 2-1, Item 19	Article 2-1, Item 19	Pass
Interference Prevention Function	Article 2-1, Item 19	Article 2-1, Item 19	Pass

1.4. Test Facility

KSIGN(Guangdong) Testing Co., Ltd.

West Side of

1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park,
Minzhu, Shatou, Shajing, Bao'an District, Shenzhen,
Guangdong, China

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L13261

KSIGN(Guangdong) Testing Co.,Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025:2017 General Requirements)for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5457.01

KSIGN(Guangdong) Testing Co.,Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED#: 25693 CAB identifier.: CN0096

KSIGN(Guangdong) Testing Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

1.5. Measurement Uncertainty

Test Items	Measurement Uncertainty
Output Power, Conducted	$\pm 1.4\text{dB}$

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %. Otherwise required by the applicant or Product Regulations. Decision Rule in this report did not consider the uncertainty.

1.6. Environmental Conditions

Environment	Temperature (°C)	Voltage (VDC)
NTHV	25	3.63
NTLV	25	2.97
NTNV	25	3.30

1.7. Environmental Conditions

EUT supply voltage	Module's input voltage	Module's rated voltage	Tolerance (%)
DC 2.97V	DC 3.3V	DC 3.3V	0
DC 3.30V	DC 3.3V	DC 3.3V	0
DC 3.63V	DC 3.3V	DC 3.3V	0

Note:

When the input voltage to EUT from the external source changes at 10%, the change of the input voltage to RF Module circuit of EUT is less than 1%, thus test item only need to test for normal condition.

TRF No. RF_R1

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Shajing, Bao'an District, Shenzhen, Guangdong, China

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2. GENERAL INFORMATION

2.1. General Description Of EUT

Test Sample Number:	KS2601S0612E-001, KS2601S0612E-002
Product Name:	Bluetooth module
Trademark:	N/A
Model / Type reference:	ZBY-78S
Model Difference:	N/A
Power Supply:	DC 3.3V
Operation Frequency:	2402-2480MHz
Number of Channels:	40
Modulation Type:	GFSK
Antenna Type:	PCB
Antenna Gain:	0.18dBi
Max TX Power:	3.1842mW
Bluetooth Version:	V5.4
Hardware Version:	ZBY_78S_(D3B5A27B)
Software Version:	OTP_P0P5

Note:

1. Antenna gain provided by the applicant Can affect the validity of results
2. The test software is the LeKit_V3.1.13 which can set the EUT into the individual test modes

2.2. Accessory Equipment Information

Title	Manufacturer	Model No.	Technical Parameters	Provided by
Computer	HP	15-cd028AX	/	Laboratory

2.3. Description of Test Modes

No.	Title	Description of Mode
Test Mode1	TX mode_1M	Keep EUT in transmitting mode
Test Mode2	RX mode_1M	Keep EUT in receiving mode
Test Mode3	TX mode_2M	Keep EUT in transmitting mode
Test Mode4	RX mode_2M	Keep EUT in receiving mode

2.4. Operation channel list

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

2.5. Measurement Instruments List

Occupied Bandwidth (99%) Antenna Power and Tolerance Spurious Emission Intensity Secondary Radiated Emissions Tolerance of Frequency				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wideband Radio Communication Tester	R&S	CMU200	115297	2026-12-11
Audio Analyzer	R&S	UPL16	100001	2026-12-11
Shielding box	Gxiong	GX-5915A	2201113	2026-12-11
High Pass Filter	COM-MW Technology Co., Ltd	ZHPF-M1.2-9G-187	09203403	2026-12-11
Band Stop Filter	COM-MW Technology Co., Ltd	ZBSF6-C820-920-188	09203401	2026-12-11
Splitter	COM-MW Technology Co., Ltd	ZPD-M1-8-2103	09203407	2026-12-11
Coaxial Cable	BEBES	A40-2.92M2.92F-4.5M	1907021	2026-12-11
Hygrothermograph	Anymetre	JB913	/	2026-12-11
Climate Chamber	Angul	AGNH80L	1903042120	2026-12-11
Spectrum Analyzer	HP	8593E	3831U02087	2026-12-11
Dual Output DC Power Supply	Agilent	E3646A	MY40009992	2026-12-11
RF Control Unit	Tonscend	JS0806-2	/	2026-12-11
Analog Signal Generator	HP	83752A	3344A00337	2026-12-11
Vector Signal Generator	Agilent	N5182A	MY50142520	2026-12-11
Wideband Radio Communication Tester	R&S	CMW500	157282	2027-01-07
Spectrum Analyzer	R&S	FSV40-N	101798	2027-01-07

Note: Calibration method: Calibration conducted in foreign countries, which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 24-2, Paragraph 4 of the Radio Act.

3. Evaluation Results (Evaluation)

3.1. Interference Prevention Function

Test Requirement:	The EUT shall support one of the following functions: - Automatic identification transmission - Automatic identification reception
Test Method:	Notification No.88 of MIC, 2004
Procedure:	(1) For EUTs capable of automatically transmitting identification data a. Transmit identification data from EUT to Demodulator b. Confirm identification data is correctly received by Demodulator (2) For EUTs capable of automatically receiving identification data a. Transmit identification data from Link Partner to EUT b. Confirm communication link is established c. Link Partner shall respond by transmitting different identification data back to the EUT d. Confirm EUT stops transmitting, or confirm EUT recognizes that the two identification data are different

3.1.1. Conclusion:

The detected ID of the device is below:

E0:33:8E:A5:6E:40

Test result: The device meet the requirements
PASS

4. Radio Spectrum Matter Test Results (RF)

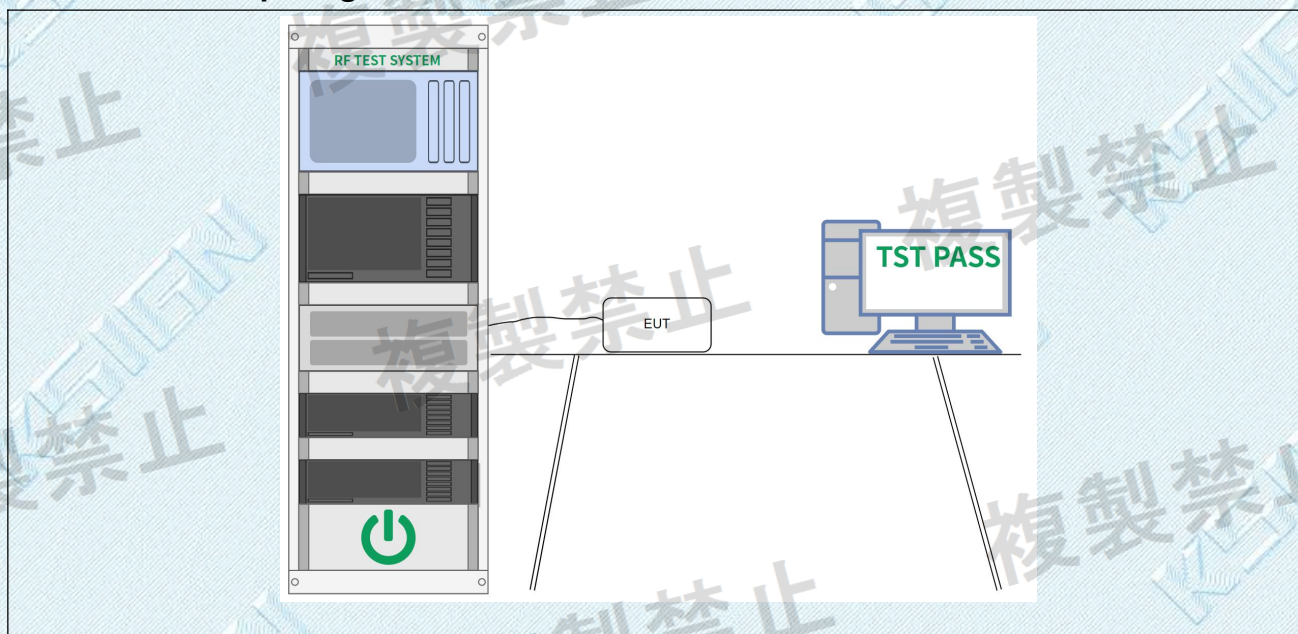
4.1. Tolerance of Frequency

Test Requirement:	Article 2-1, Item 19	
Test Limit:	± 50 ppm or less.	
Test Method:	Notification No.88 of MIC, 2004	
Procedure:	Center frequency:	Test frequency
	Span:	2 times channel bandwidth
	RBW:	100 kHz (Modulation ON)
	VBW:	100 kHz (Modulation ON)
	Sweep data points:	1001 or greater
	Sweep time:	Auto
	Detector mode:	Positive peak
	Indication mode:	Max hold
If the EUT cannot transmit in un-modulated mode then modulated mode measurements can be made, as follows: If the spectrum observed using the spectrum analyzer has a characteristic dip at the center, then the center frequency of the dip shall be regarded as the center frequency of the carrier.		

4.1.1. E.U.T. Operation:

Operating Environment:	
Temperature:	25.1 °C
Humidity:	48.6 %
Atmospheric Pressure:	101.8 kPa
Final test mode:	Test Mode1, Test Mode3

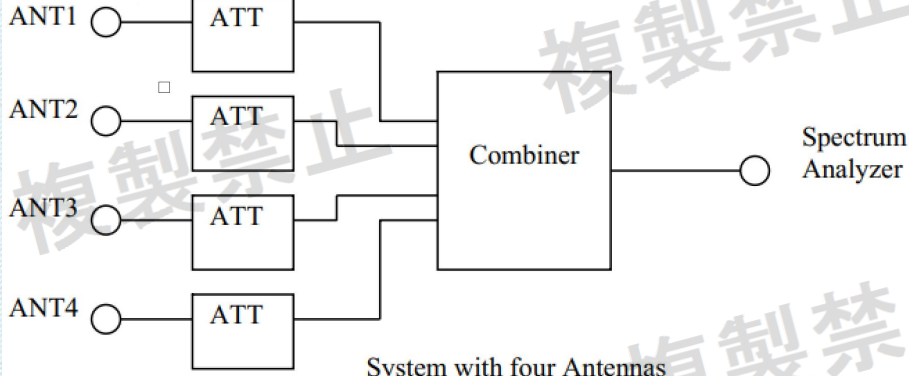
4.1.2. Test Setup Diagram:



4.1.3. Test Data:

Please Refer to Appendix for Details.

4.2. Occupied Bandwidth (99%)

Test Requirement:	Article 2-1, Item 19																		
Test Limit:	For DSSS or other modulation: The measured bandwidth at the low and high channels shall meet the following requirements: - The lowest frequency of the measured bandwidth shall not be less than 2400 MHz - The highest frequency of the measured bandwidth shall not be greater than 2483.5 MHz [Occupied Bandwidth] 26 MHz or less																		
Test Method:	Notification No.88 of MIC, 2004																		
Procedure:	<table border="1"> <tr> <td>Center Frequency:</td><td>Test frequency</td></tr> <tr> <td>Span:</td><td>2 - 3.5 times the technical standard</td></tr> <tr> <td>RBW:</td><td>Within 3% of the technical standard</td></tr> <tr> <td>VBW:</td><td>Same as RBW</td></tr> <tr> <td>Sweep time:</td><td>Auto</td></tr> <tr> <td>Sweep data points:</td><td>1001 or greater</td></tr> <tr> <td>Detector mode:</td><td>Positive peak</td></tr> <tr> <td>Indication mode:</td><td>Max hold</td></tr> <tr> <td>BW setting:</td><td>99%</td></tr> </table> (1) Measure the signal bandwidth using a spectrum analyzer (2) For multiple antenna systems: a) Each antenna shall be individually measured b) If the measured occupied bandwidth for any antenna exceeds [(Occupied Bandwidth Limit) – 100kHz] then, in addition, the occupied bandwidth shall be measured with all antennas combined – see diagram below:  System with four Antennas	Center Frequency:	Test frequency	Span:	2 - 3.5 times the technical standard	RBW:	Within 3% of the technical standard	VBW:	Same as RBW	Sweep time:	Auto	Sweep data points:	1001 or greater	Detector mode:	Positive peak	Indication mode:	Max hold	BW setting:	99%
Center Frequency:	Test frequency																		
Span:	2 - 3.5 times the technical standard																		
RBW:	Within 3% of the technical standard																		
VBW:	Same as RBW																		
Sweep time:	Auto																		
Sweep data points:	1001 or greater																		
Detector mode:	Positive peak																		
Indication mode:	Max hold																		
BW setting:	99%																		

4.2.1. E.U.T. Operation:

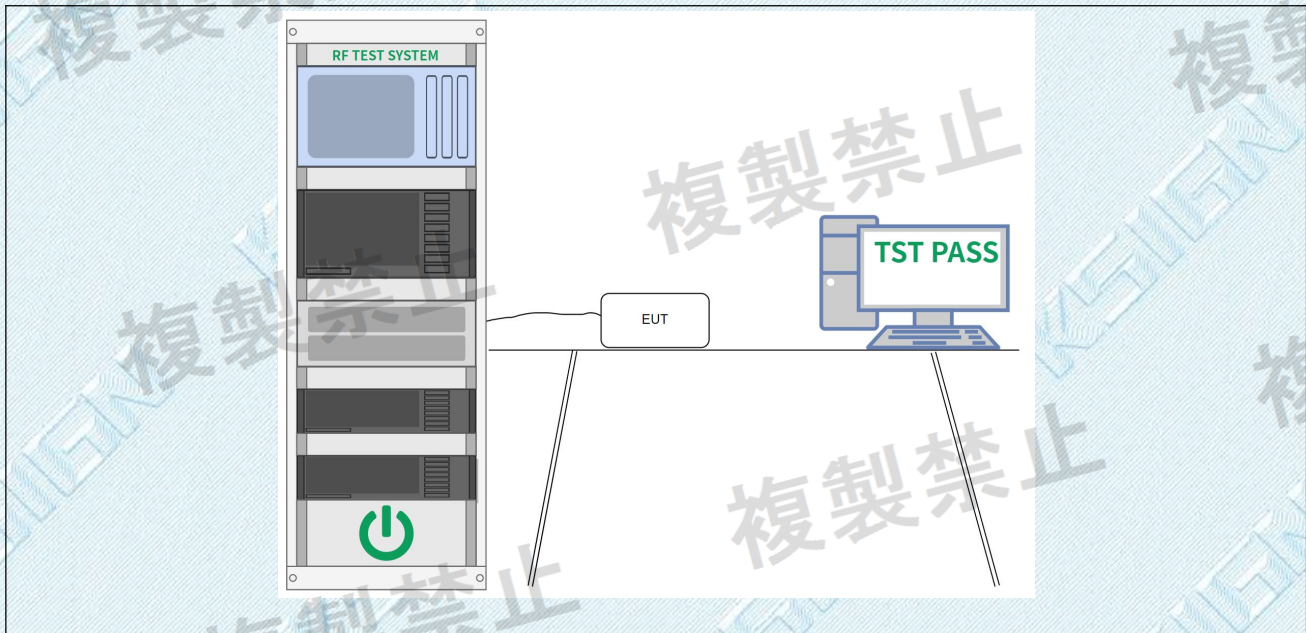
Operating Environment:	
Temperature:	24.9 °C
Humidity:	43.1 %
Atmospheric Pressure:	101.8 kPa
Final test mode:	Test Mode1, Test Mode3

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4.2.2. Test Setup Diagram:



4.2.3. Test Data:

Please Refer to Appendix for Details.

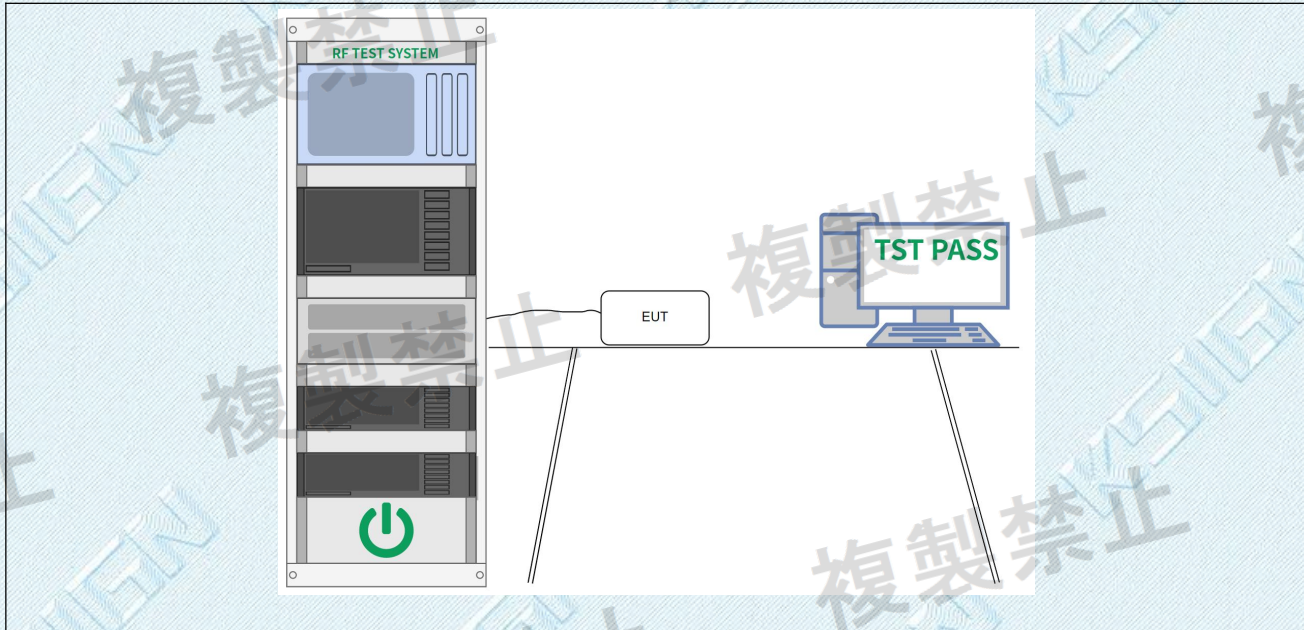
4.3. Antenna Power and Tolerance

Test Requirement:	Article 2-1, Item 19	
Test Limit:	Antenna Power: 10 mW/MHz or less Tolerance: +20% EIRP: 12.14dBm/MHz	
Test Method:	Notification No.88 of MIC, 2004	
Procedure:	[Setting 1] – Search for peak power frequency	
	Center Frequency:	Test frequency
	Span:	Approximately twice the occupied bandwidth
	RBW:	1MHz
	VBW:	Approximately three times the RBW
	Sweep time:	Auto
	Sweep data points:	1001 or greater
	Detector mode:	Positive peak
	Indication mode:	Max hold
	[Setting 2] – Measurement of average antenna power for FHSS, DSSS, OFDM	
	Frequency:	Frequency of peak power found using [Setting 1]
	Span:	0 Hz
	RBW:	3 MHz (FHSS-Channel Spacing $\leq$ 1MHz) 1MHz (DSSS, OFDM, FHSS-Channel Spacing $>$ 1MHz)
	Detector mode:	Sample
	Sweep:	Minimum time required to make an accurate measurement.
	For burst type (intermittent) transmission sweep time shall be greater than one burst interval	
	Sweep data points:	1001 or greater
	[Setting 3] – Measurement of average antenna power other than for FHSS, DSSS, OFDM	
	Frequency:	Frequency of peak power found using [Setting 1]
	Span:	0 Hz
	RBW:	Bandwidth sufficient to cover that occupied by the carrier
	VBW:	Bandwidth sufficient to cover that occupied by the carrier
	Detector mode:	Sample
	Sweep:	Minimum time required to make an accurate measurement.
	For burst type (intermittent) transmission sweep time shall be greater than one burst interval	
	Sweep data points:	1001 or greater
	(1) After configuring the spectrum analyzer to [Setting 1], find the frequency of maximum transmitted power (2) After configuring the spectrum analyzer to [Setting 3], measure the Average Burst Power of the frequency found in (1) Antenna Power (Watts) = Average Burst Power	

4.3.1. E.U.T. Operation:

Operating Environment:	
Temperature:	24.6 °C
Humidity:	51.7 %
Atmospheric Pressure:	101.8 kPa
Final test mode:	Test Mode1, Test Mode3

4.3.2. Test Setup Diagram:



4.3.3. Test Data:

Please Refer to Appendix for Details.

4.4. Spurious Emission Intensity

Test Requirement:	Article 2-1, Item 19	
Test Limit:	(1) Below 2387 MHz: 2.5 μ W (-26 dBm)/MHz or less (2) 2387 to 2400 MHz: 25.0 μ W (-16 dBm)/MHz or less (3) 2483.5 to 2496.5 MHz: 25.0 μ W (-16 dBm)/MHz or less (4) Over 2496.5 MHz: 2.5 μ W (-26 dBm)/MHz or less	
Test Method:	Notification No.88 of MIC, 2004	
Procedure:	[Setting 1]	
	Frequency range:	(see Note 1)
	RBW:	1 MHz
	VBW:	1 MHz
	Sweep time:	Minimum time required to make an accurate measurement
	Sweep Data Points:	1001 or greater
	Detector mode:	Positive peak
	Indication mode:	Max hold (see Note 2)
	Note 1:	Measurement range shall be 30 MHz to 12.5 GHz, except for the following cases: -FHSS, FHSS+DSSS, FHSS+OFDM:2374 MHz to 2509.5 MHz -Other than FHSS, FHSS+DSSS, FHSS+OFDM: 2400 MHz to 2483.5 MHz
	Note 2:	Sweep shall be repeated until the max hold waveform is stable.
	[Setting 2]	
	Center frequency:	Frequency of spurious emission found using [Setting 1]
	Span:	0 Hz
	RBW:	1 MHz
	VBW:	1 MHz
	Sweep time:	Minimum time required to make an accurate measurement. For burst type (intermittent) spurious emissions, sweep time shall be greater than one burst interval
	Sweep Data Points:	1001 or greater
	Detector mode:	Sample
	[Setting 3]	
	Frequency range:	2374 MHz to 2400 MHz 2483.5 MHz to 2509.5 MHz
	RBW:	30 kHz
	VBW:	30 kHz
	Sweep time:	Minimum time required to make an accurate measurement.
	Sweep data points:	1001 or greater
	Detector mode:	Positive peak
	Indication mode:	Max hold
	(1) After configuring the spectrum analyzer to [Setting 1], search for spurious emissions from 30 MHz to 12.5 GHz. If the sweep range does not cover the	

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required measurement frequency range then the measurement range will need to be divided into sufficient sections of size [RBW x Sweep Data Points]. If spurious emissions greater than [Limit - 3dB] are found, then more detailed measurements are required, go to step (2)

(2) Configure the spectrum analyzer using [Setting 2] and measure the average signal amplitude.

If the spurious emission is burst type (intermittent), then the average value shall not include signal OFF time.

If spurious emissions ranging from 30 MHz to 2374 MHz and from 2509.5MHz to 12.5GHz are over the limit, then the test result is Fail.

If spurious emissions ranging from 2374 MHz to 2400 MHz and from 2483.5 MHz to 2509.5 MHz are over the limit, then further detailed measurements are required, go to step (3)

(3) In the following cases, measure the spurious emissions using [Setting 3]

- Case1: FHSS, FHSS+DSSS, FHSS+OFDM

- Case2: Other than FHSS, FHSS+DSSS, FHSS+OFDM, and the spurious emissions in step (2) are over the limit

(4) Calculate the spurious emission value (Calculated Value) using following the formula below:

Calculated Value = (Measured Value using (3) + 15.2dB)

Note: 15.2dB adjustment is derived from the Conversion Factor of RBW

Conversion Factor of RBW = 10 x Log (Reference Bandwidth / RBW of measurement) = 15.2 [dB] Where: Reference Bandwidth = 1 MHz

RBW of measurement = 30 kHz

(5) If the calculated value using (4) is over the Limit (section 6.7), go to (6)

(6) Configure the spectrum analyzer to [Setting 3] then make the following changes: Frequency: Frequency of spurious emission

Span: 1 MHz

(7) After sweep, send the span data set to the PC

(8) Convert measured data from dBm to Watts

(9) Sum all the data using the formula below. If the sum is within the limit, the test result is Pass, otherwise, Fail

$$P_s = \left(\sum_{i=1}^n E_i \right) \times \frac{S_w}{RBW \times k \times n}$$

Ps: Sum (Watts)

Ei: Measured value at each point in the Span (Watts) Sw: Span (1MHz)

n: Number of measurement points in the Span

k: Correction factor for Equivalent Noise Bandwidth, specific to each spectrum analyzer, check the instrument user guide

RBW: Resolution Bandwidth (MHz).

(10) If the EUT has multiple antennas, measure the spurious emission from each individual antenna using steps (1) through (9)

(11) Convert the individual antenna spurious level measurements (step (10)) from dB to absolute values

(12) Combine (sum) the absolute values of the spurious measurements at each frequency for each antenna (to create a single composite spectrum of spurious emissions)

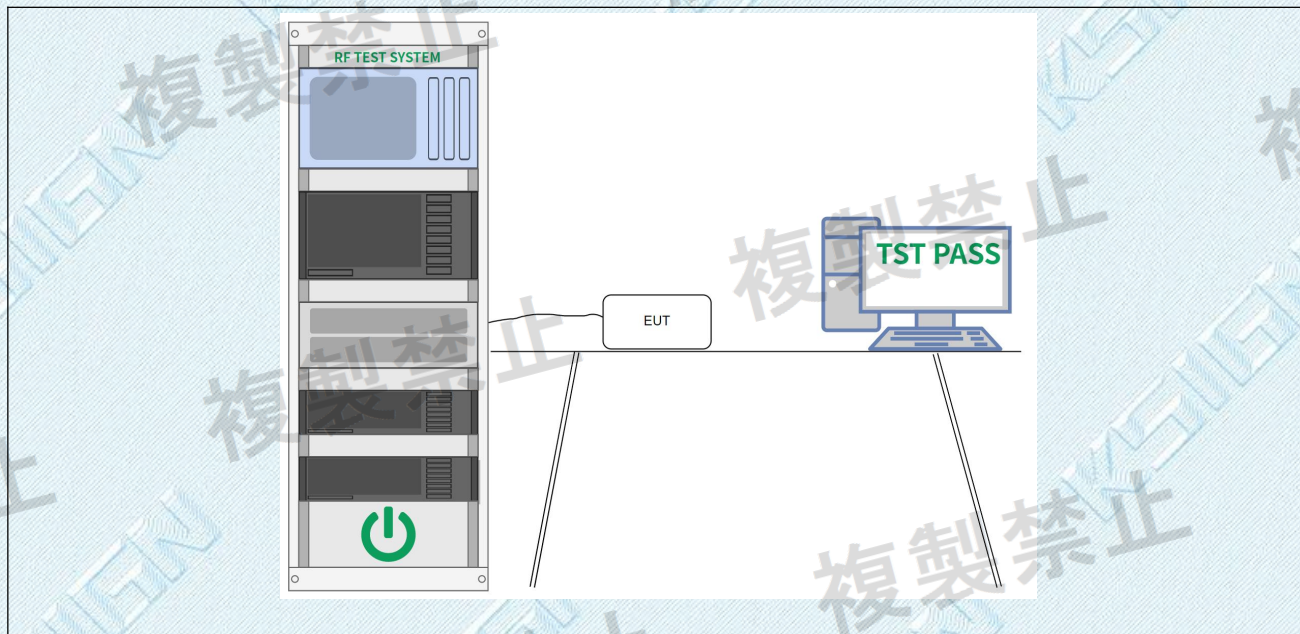
(13) Ensure that the composite spectrum does not exceed the Limit defined in 6.7 (Technical Standard)

(14) Configuring the spectrum analyzer using [Setting 3] and measure the spurious emissions with all the antennas electrically combined

4.4.1. E.U.T. Operation:

Operating Environment:	
Temperature:	26 °C
Humidity:	50.3 %
Atmospheric Pressure:	101.8 kPa
Final test mode:	Test Mode1, Test Mode3

4.4.2. Test Setup Diagram:



4.4.3. Test Data:

Please Refer to Appendix for Details.

4.5. Secondary Radiated Emissions

Test Requirement:	Article 2-1, Item 19	
Test Limit:	(1) Below 1 GHz: 4 nW (-54dBm) or less (2) Above 1 GHz: 20 nW (-47dBm) or less	
Test Method:	Notification No.88 of MIC, 2004	
Procedure:	[Setting 1]	
	Frequency range:	30 MHz ~ 12.5 GHz
	RBW:	Below 1 GHz:100 kHz Above 1 GHz:1 MHz
	VBW:	Below 1 GHz:100 kHz Above 1 GHz:1 MHz
	Sweep time:	Auto
	Sweep data points:	1001 or greater
	Detector mode:	Positive peak
	Indication mode:	Max hold
	[Setting 2]	
	Center Frequency:	Frequency of spurious emission found using [Setting 1]
	Span:	0 Hz
	RBW:	Below 1 GHz:100 kHz Above 1 GHz:1 MHz
	VBW:	Below 1 GHz:100 kHz Above 1 GHz:1 MHz
	Sweep time:	Auto
	Sweep data points:	1001 or greater
	Detector mode:	Sample
	(1) Configure the spectrum analyzer to [Setting 1] and then search for spurious emissions in the range 30 MHz to 12.5GHz. If the sweep range does not cover the required measurement frequency range then the measurement range will need to be divided into sufficient sections of size [RBW x Sweep Data Points].	
	(2) If spurious emissions are found with an amplitude greater than [Limit - 10dB] then perform further detailed measurements as described in (3)	
	(3) Configure the spectrum analyzer using [Setting 2] and measure the average signal amplitude.	

If the spurious emission is burst type (intermittent), then the average value shall not include signal OFF time Multiple Antenna Systems
If the EUT has multiple antennas then emissions from each antenna shall be measured individually, as described below
(4) For each antenna repeat steps (1) through (3). Convert all spurious level measurements from dB to absolute value
(5) Combine (sum) the absolute values of the spurious measurements at each frequency for each antenna (to create a single composite spectrum of spurious emissions)
(6) Ensure that the composite spectrum does not exceed the Limit

4.5.1. E.U.T. Operation:

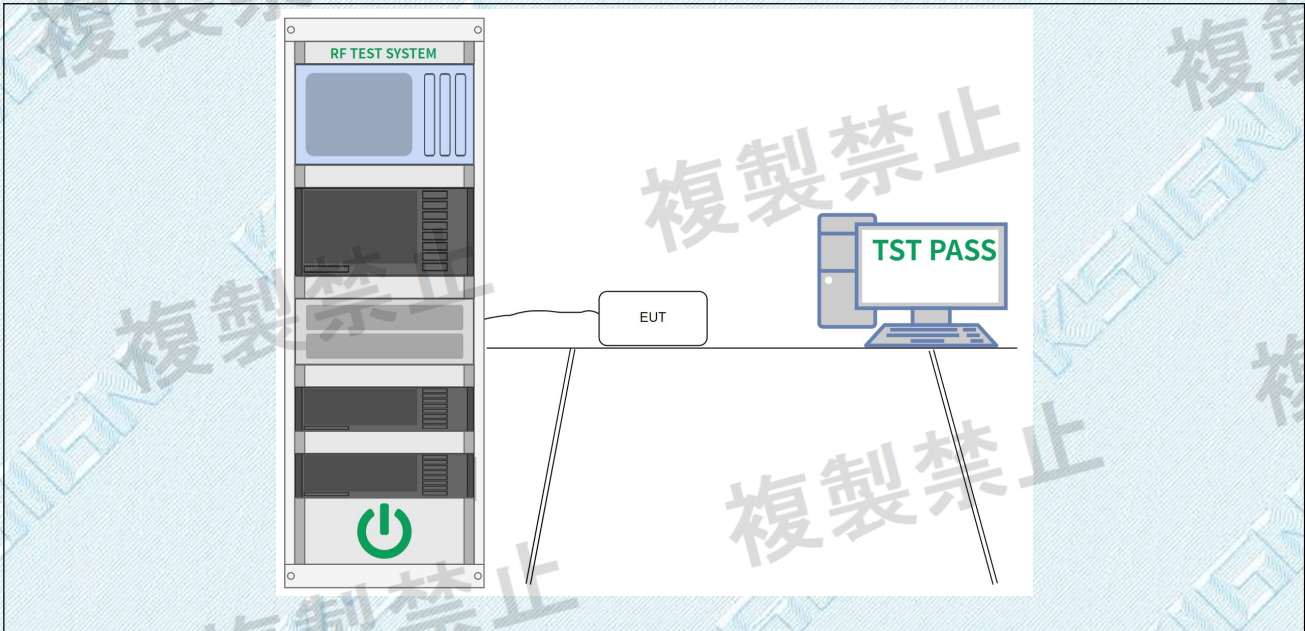
Operating Environment:	
Temperature:	23.6 °C
Humidity:	43.3 %
Atmospheric Pressure:	101.8 kPa
Final test mode:	Test Mode2, Test Mode4

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4.5.2. Test Setup Diagram:

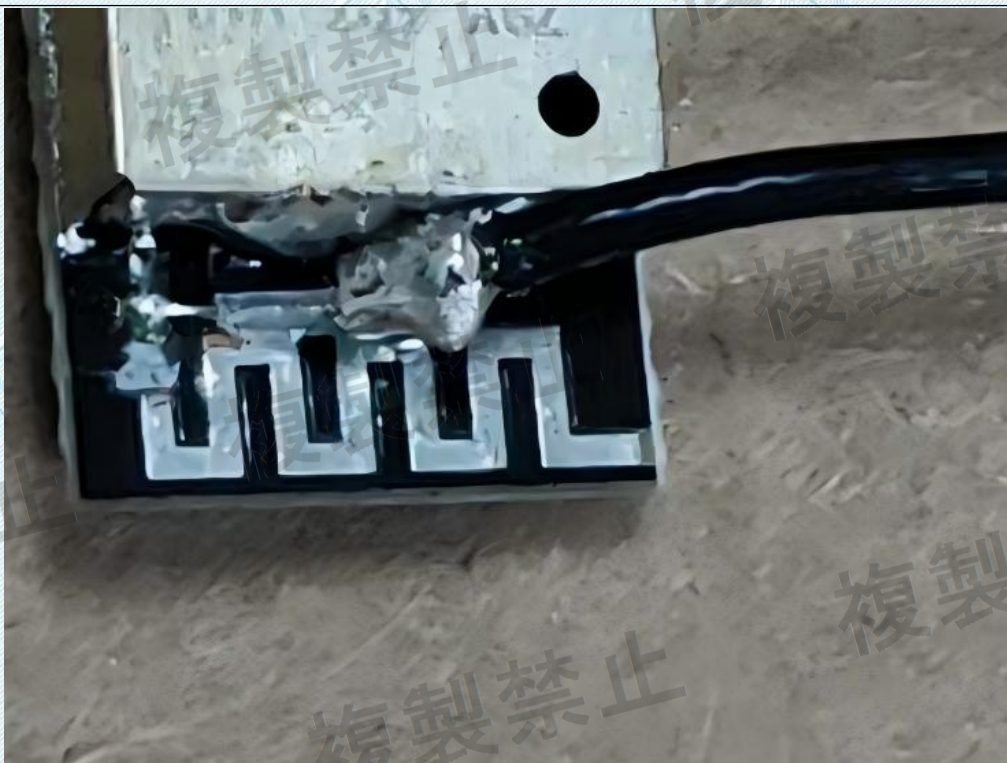


4.5.3. Test Data:

Please Refer to Appendix for Details.

5. EUT TEST PHOTOS

RF



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6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Refer to Appendix - EUT Photos for KS2601S0612E.docx

Appendix

6.1. Appendix A: Frequency Error

6.1.1. Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	BLE_1M	Ant1	2402	43.71357	±50	PASS
			2440	41.80328	±50	PASS
			2480	44.75807	±50	PASS
	BLE_2M	Ant1	2402	29.97502	±50	PASS
			2440	33.19672	±50	PASS
			2480	35.08065	±50	PASS

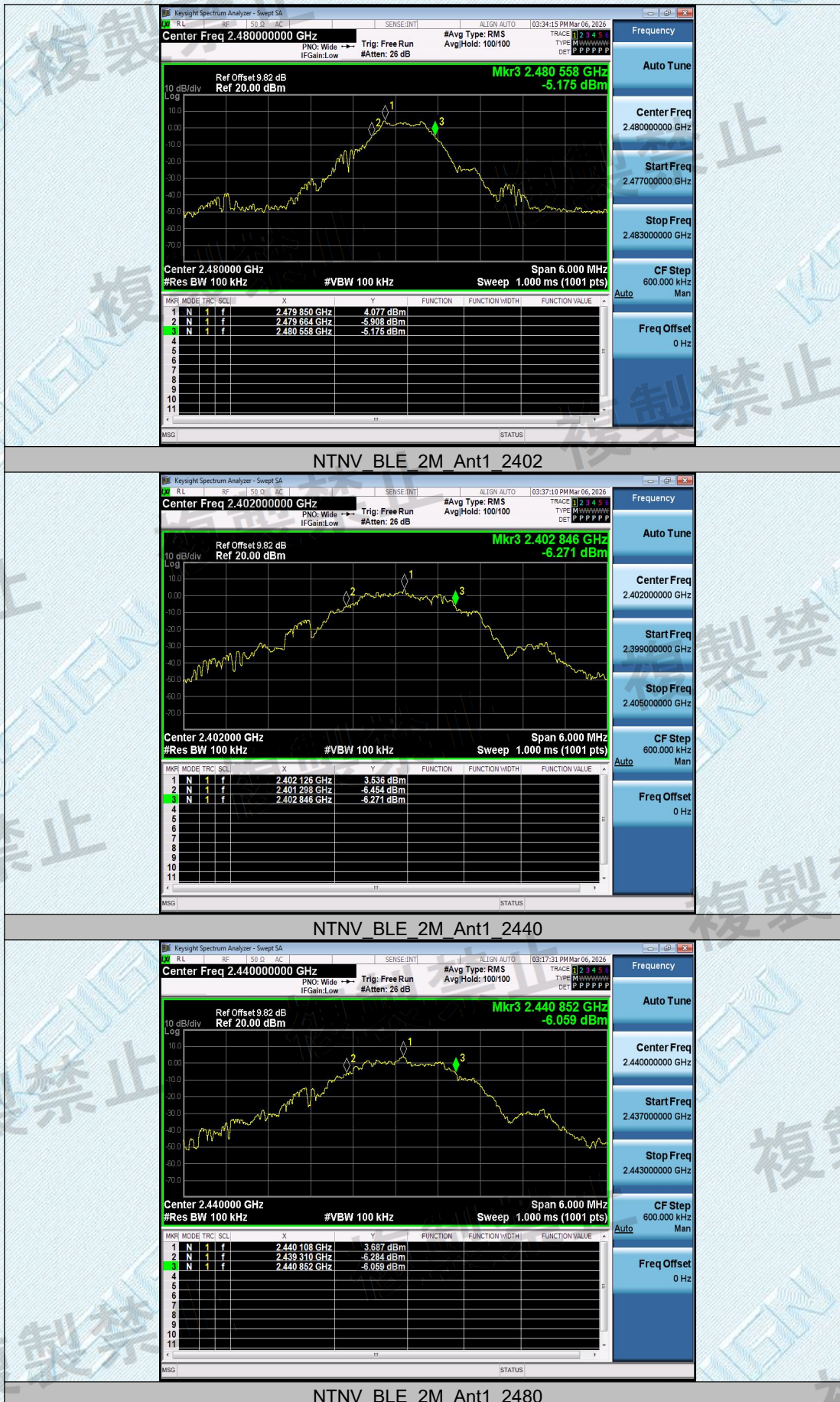
6.1.2. Test Graphs



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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6.2. Appendix B: Antenna Power

6.2.1. Test Result

Antenna Power							
TestCondition	TestMode	Antenna	Freq (MHz)	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTNV	BLE_1M	Ant1	2402	5.01	3.1696	≤10	PASS
			2440	4.54	2.8445	≤10	PASS
			2480	4.02	2.5235	≤10	PASS
	BLE_2M	Ant1	2402	5.03	3.1842	≤10	PASS
			2440	4.54	2.8445	≤10	PASS
			2480	4.02	2.5235	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Frequency[MHz]	Power (mW)	Rated Power (mW)	Result (%)	Limit (%)	Verdict
NTNV	BLE_1M	Ant1	2402	3.1696	10	-68.30	+20	PASS
			2440	2.8445	10	-71.56	+20	PASS
			2480	2.5235	10	-74.77	+20	PASS
	BLE_2M	Ant1	2402	3.1842	10	-68.16	+20	PASS
			2440	2.8445	10	-71.56	+20	PASS
			2480	2.5235	10	-74.77	+20	PASS

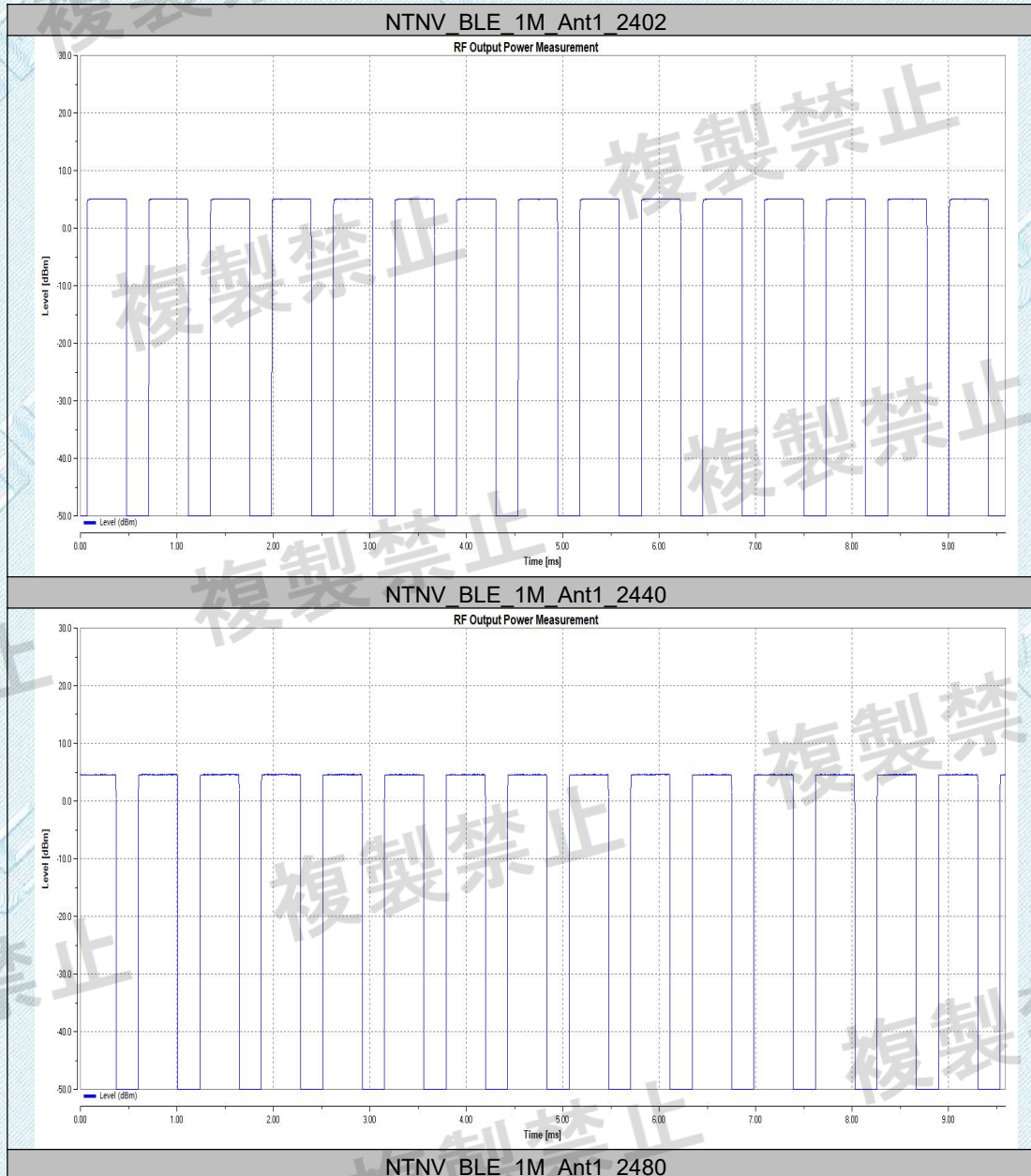
EIRP							
TestCondition	TestMode	Antenna	Frequency[MHz]	Result(dBm)	EIRP(dBm)	Limit(dBm)	Verdict
NTNV	BLE_1M	Ant1	2402	5.01	5.19	≤12.14	PASS
			2440	4.54	4.72	≤12.14	PASS
			2480	4.02	4.20	≤12.14	PASS
	BLE_2M	Ant1	2402	5.03	5.21	≤12.14	PASS
			2440	4.54	4.72	≤12.14	PASS
			2480	4.02	4.20	≤12.14	PASS

Note:

Gain=0.18dBi

EIRP=Power + Gain

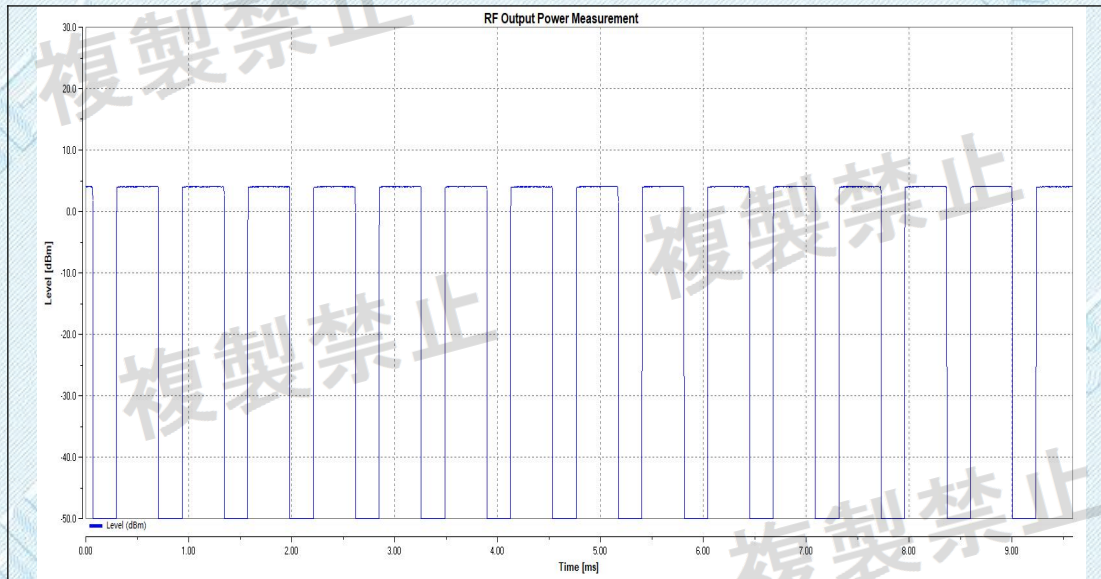
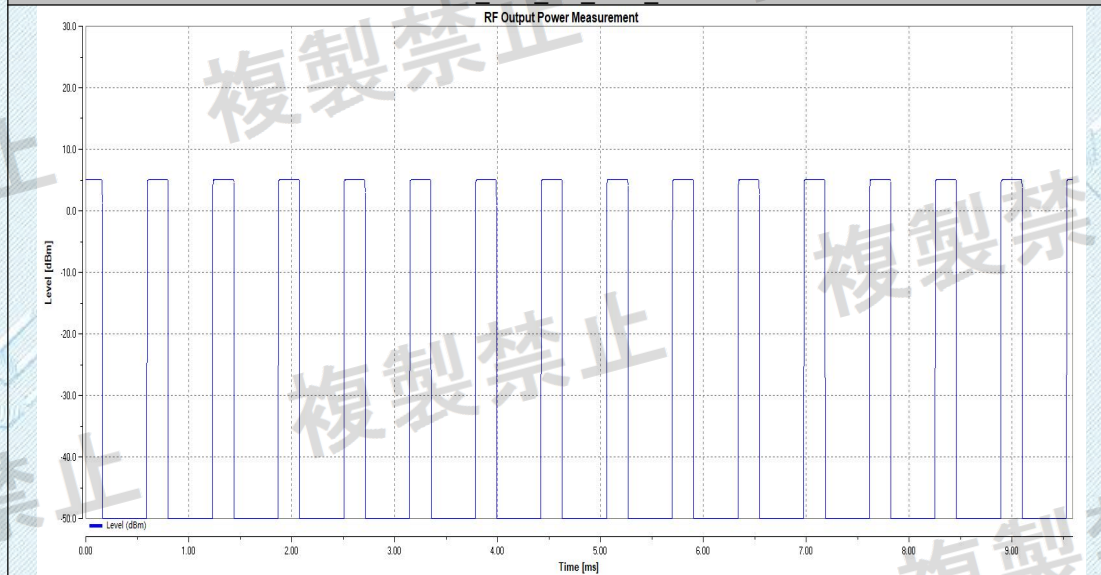
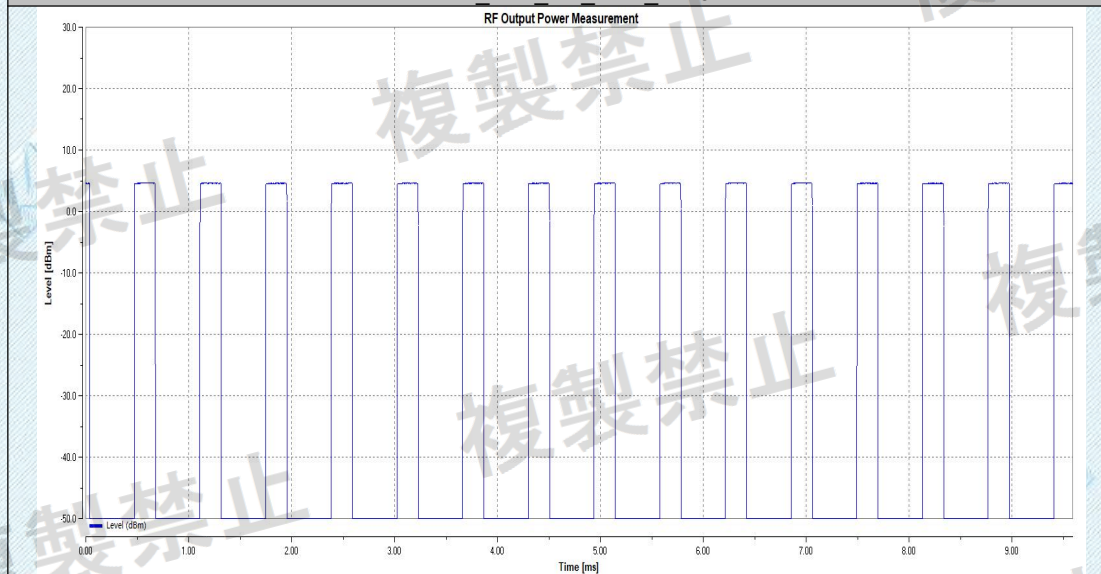
6.2.2. Test Graphs



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

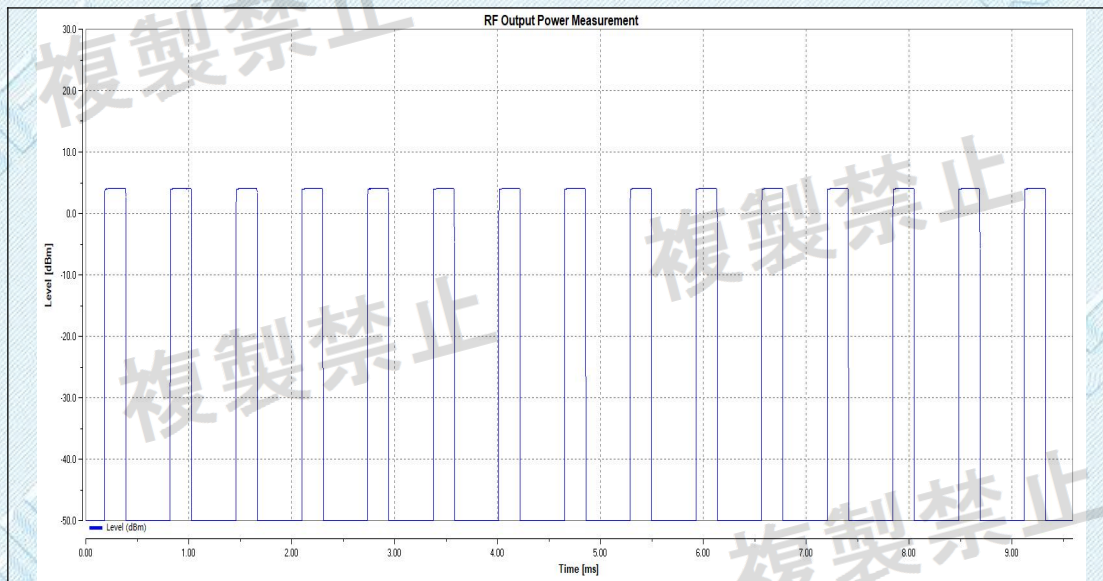
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NTNV BLE 2M Ant1 2402

NTNV BLE 2M Ant1 2440

NTNV BLE 2M Ant1 2480

TRF No. RF_R1

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6.3. Appendix C: Occupied Bandwidth

6.3.1. Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	1.423	≤26	PASS
			2440	1.509	≤26	PASS
			2480	1.555	≤26	PASS
	BLE_2M	Ant1	2402	2.408	≤26	PASS
			2440	2.446	≤26	PASS
			2480	2.338	≤26	PASS

6.3.2. Test Graphs



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

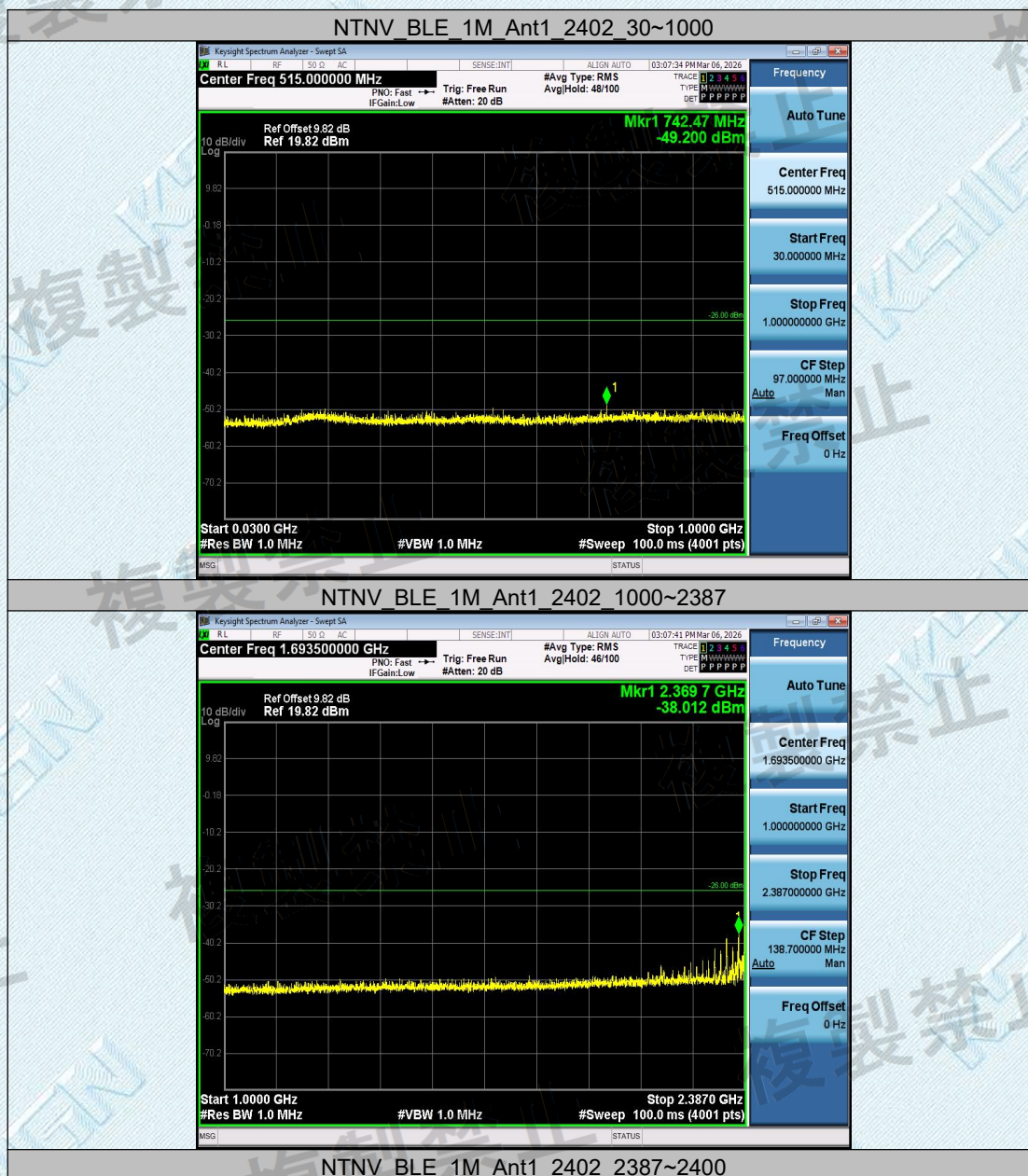
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6.4. Appendix E: Spurious Emission of TX

6.4.1. Test Result

TestCondition	TestMode	Antenna	Frequen cy[MHz]	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	742.47	-49.20	≤-26	0.012	≤2.5	PASS
				1000~2387	2369.66	-38.01	≤-26	0.158	≤2.5	PASS
				2387~2400	2399.98	-22.18	≤-16	6.053	≤25	PASS
				2483.5~2496.5	2489.42	-37.64	≤-16	0.172	≤25	PASS
				2496.5~13000	2642.50	-45.81	≤-26	0.026	≤2.5	PASS
			2440	30~1000	832.43	-49.33	≤-26	0.012	≤2.5	PASS
				1000~2387	2375.56	-40.26	≤-26	0.094	≤2.5	PASS
				2387~2400	2391.53	-35.94	≤-16	0.255	≤25	PASS
				2483.5~2496.5	2487.65	-36.12	≤-16	0.244	≤25	PASS
				2496.5~13000	2503.33	-39.60	≤-26	0.110	≤2.5	PASS
			2480	30~1000	807.21	-48.58	≤-26	0.014	≤2.5	PASS
				1000~2387	2383.88	-42.04	≤-26	0.063	≤2.5	PASS
				2387~2400	2399.51	-38.80	≤-16	0.132	≤25	PASS
				2483.5~2496.5	2483.64	-30.27	≤-16	0.940	≤25	PASS
				2496.5~13000	2511.20	-32.97	≤-26	0.505	≤2.5	PASS
	BLE_2M	Ant1	2402	30~1000	766.72	-48.70	≤-26	0.013	≤2.5	PASS
				1000~2387	2112.37	-47.43	≤-26	0.018	≤2.5	PASS
				2387~2400	2387.34	-38.57	≤-16	0.139	≤25	PASS
				2483.5~2496.5	2487.02	-38.85	≤-16	0.130	≤25	PASS
				2496.5~13000	5993.64	-45.73	≤-26	0.027	≤2.5	PASS
			2440	30~1000	257.71	-49.44	≤-26	0.011	≤2.5	PASS
				1000~2387	2375.56	-38.77	≤-26	0.133	≤2.5	PASS
				2387~2400	2391.23	-35.98	≤-16	0.252	≤25	PASS
				2483.5~2496.5	2487.34	-36.66	≤-16	0.216	≤25	PASS
				2496.5~13000	2503.33	-38.04	≤-26	0.157	≤2.5	PASS
			2480	30~1000	885.54	-47.67	≤-26	0.017	≤2.5	PASS
				1000~2387	2383.53	-41.79	≤-26	0.066	≤2.5	PASS
				2387~2400	2399.57	-38.17	≤-16	0.152	≤25	PASS
				2483.5~2496.5	2483.52	-30.77	≤-16	0.838	≤25	PASS
				2496.5~13000	2510.68	-32.38	≤-26	0.578	≤2.5	PASS

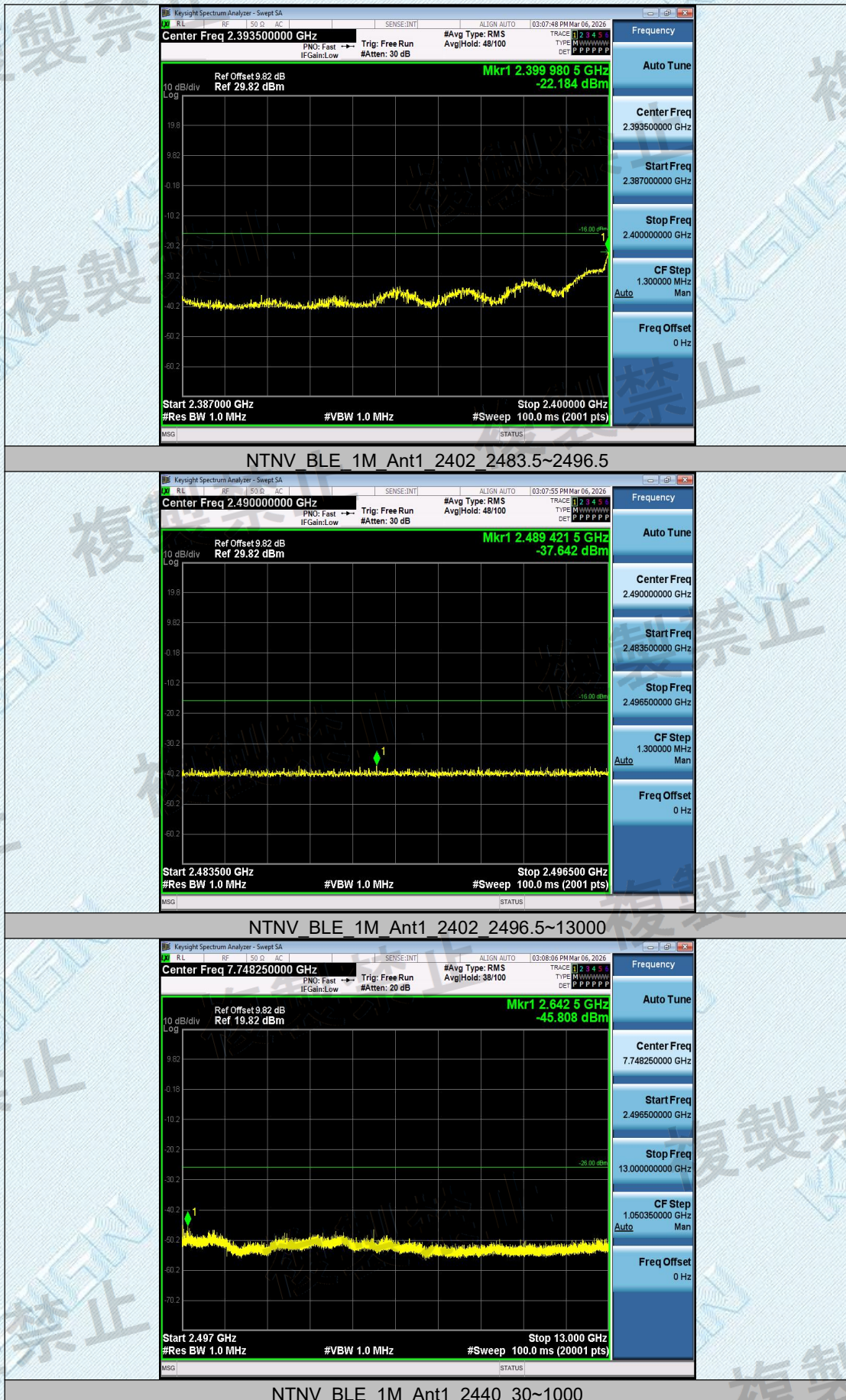
6.4.2. Test Graphs



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

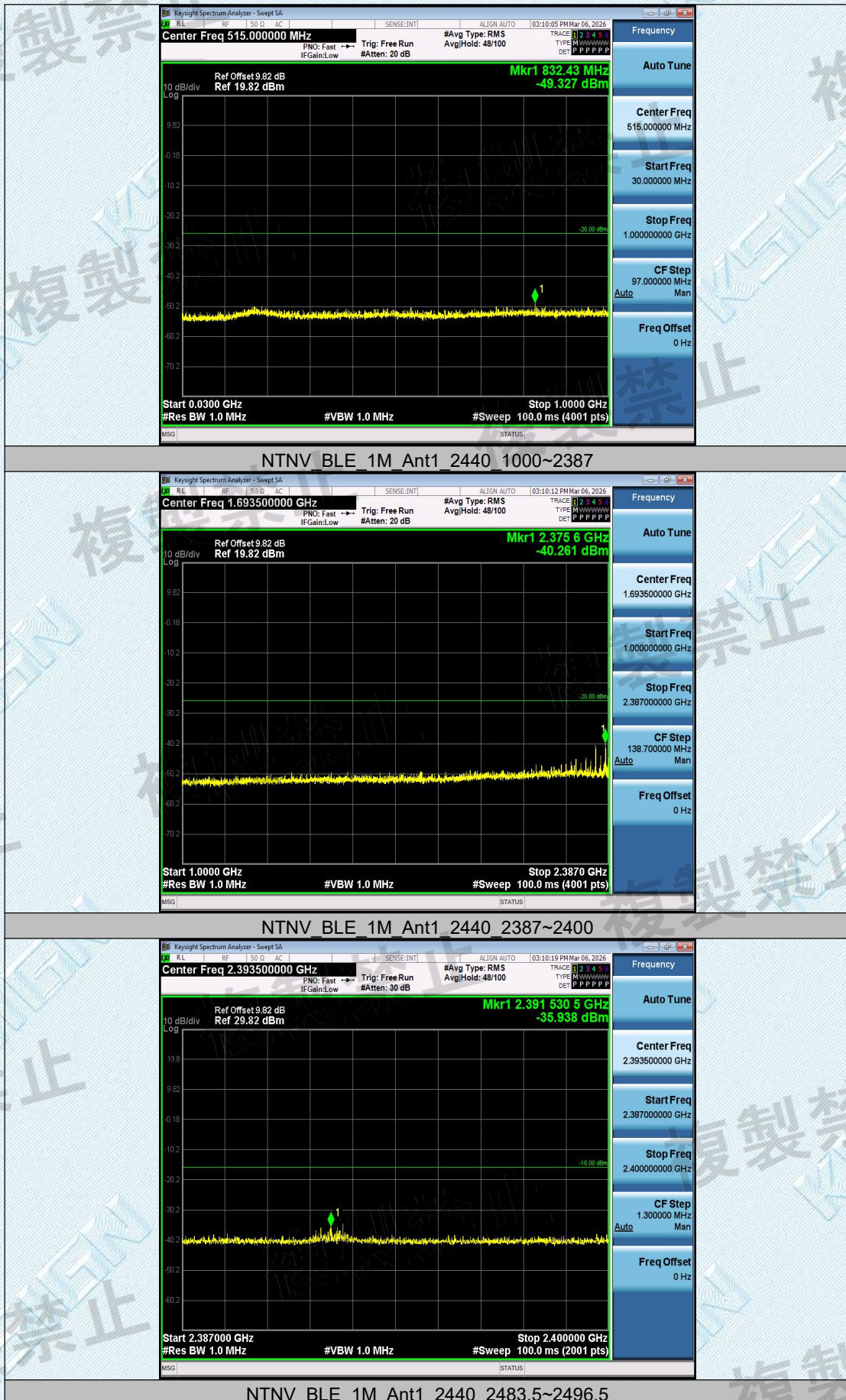
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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

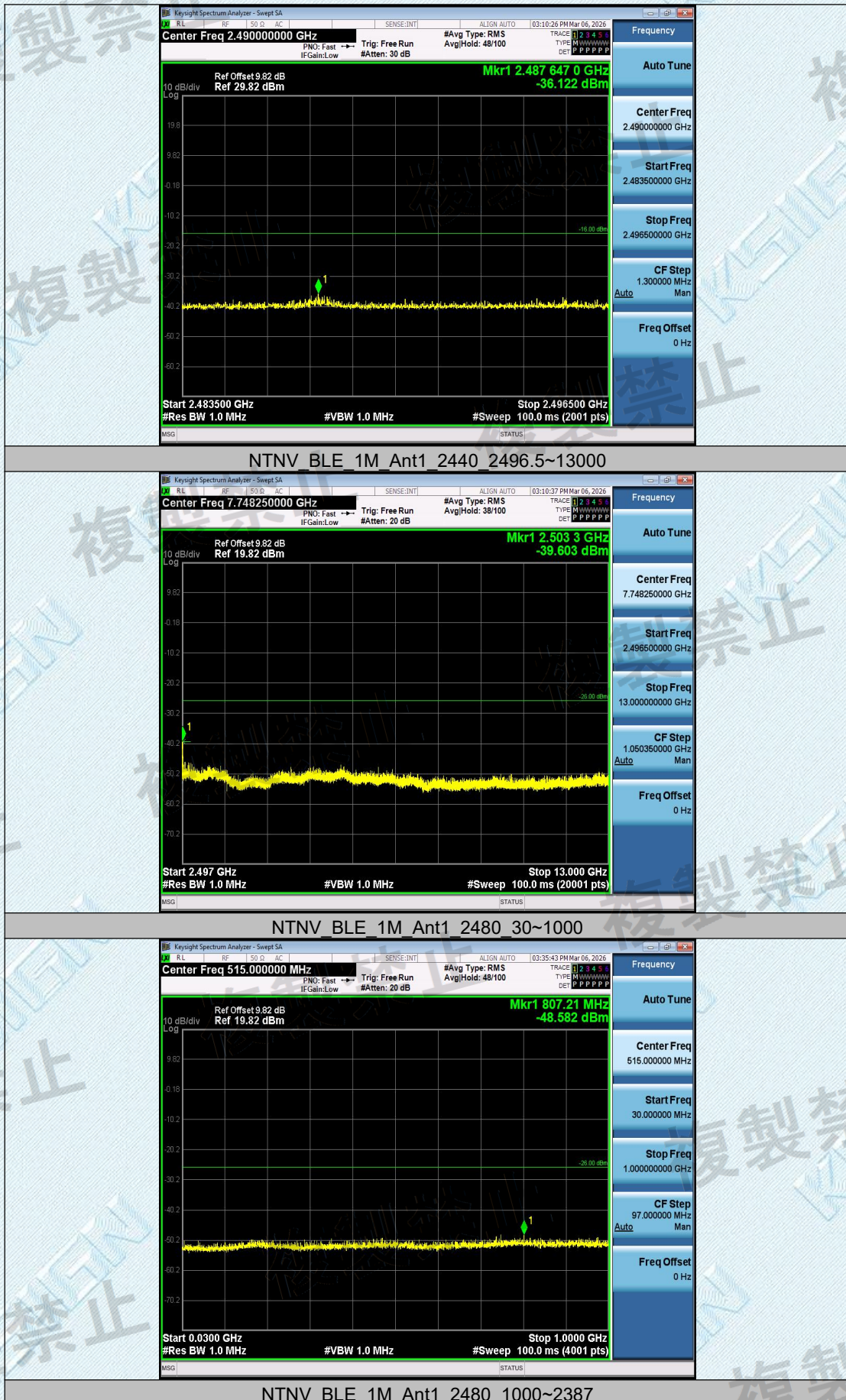
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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

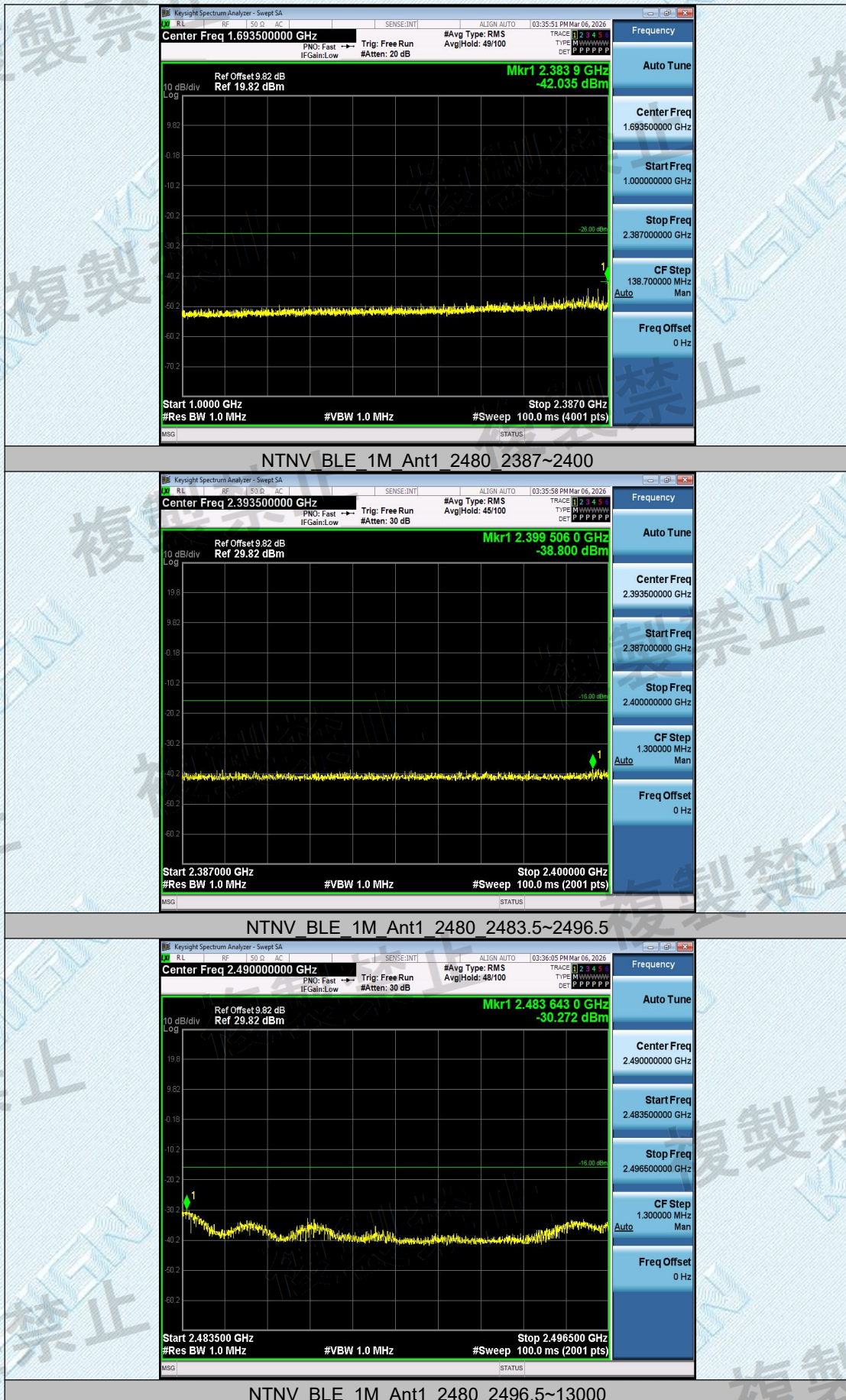
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

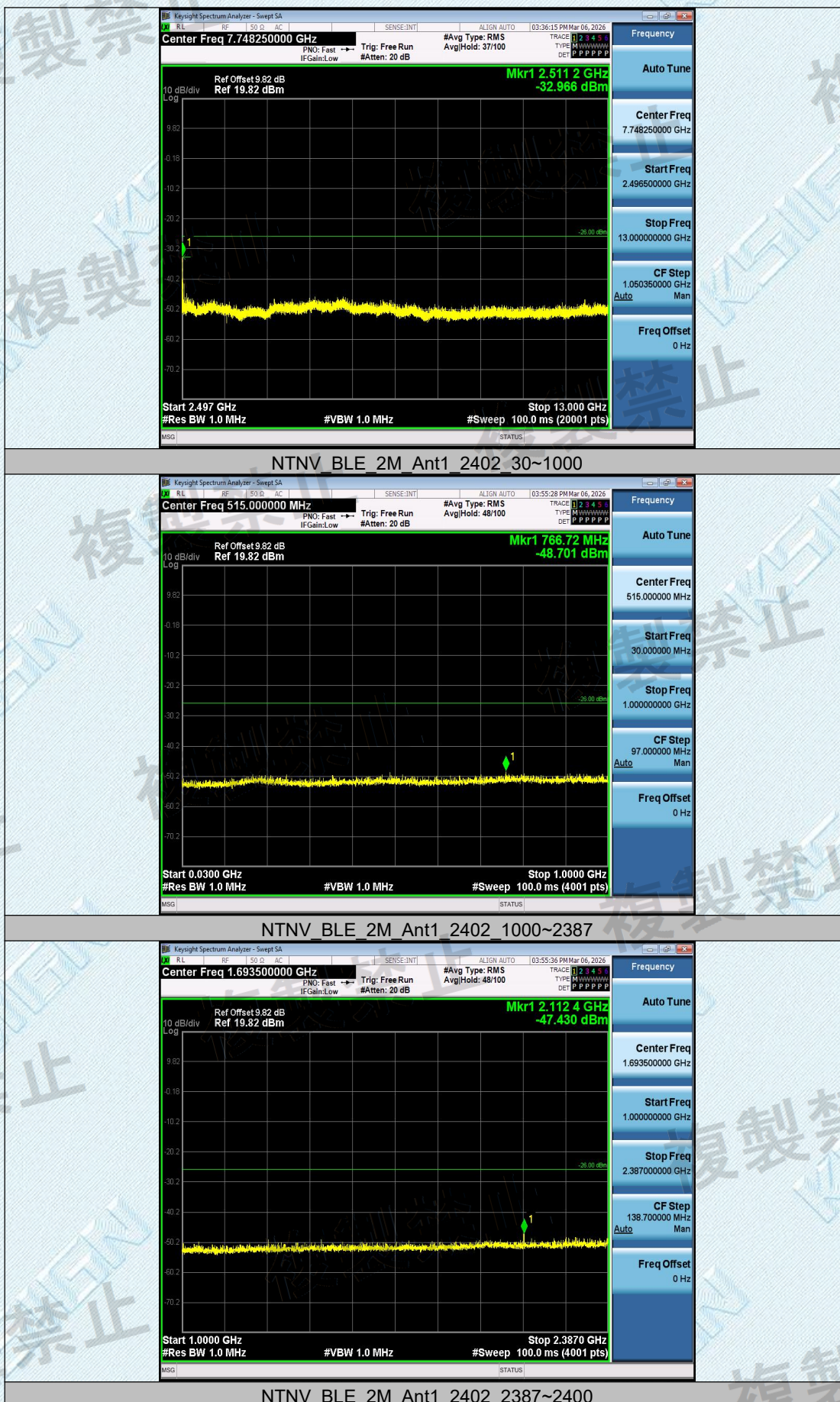
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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

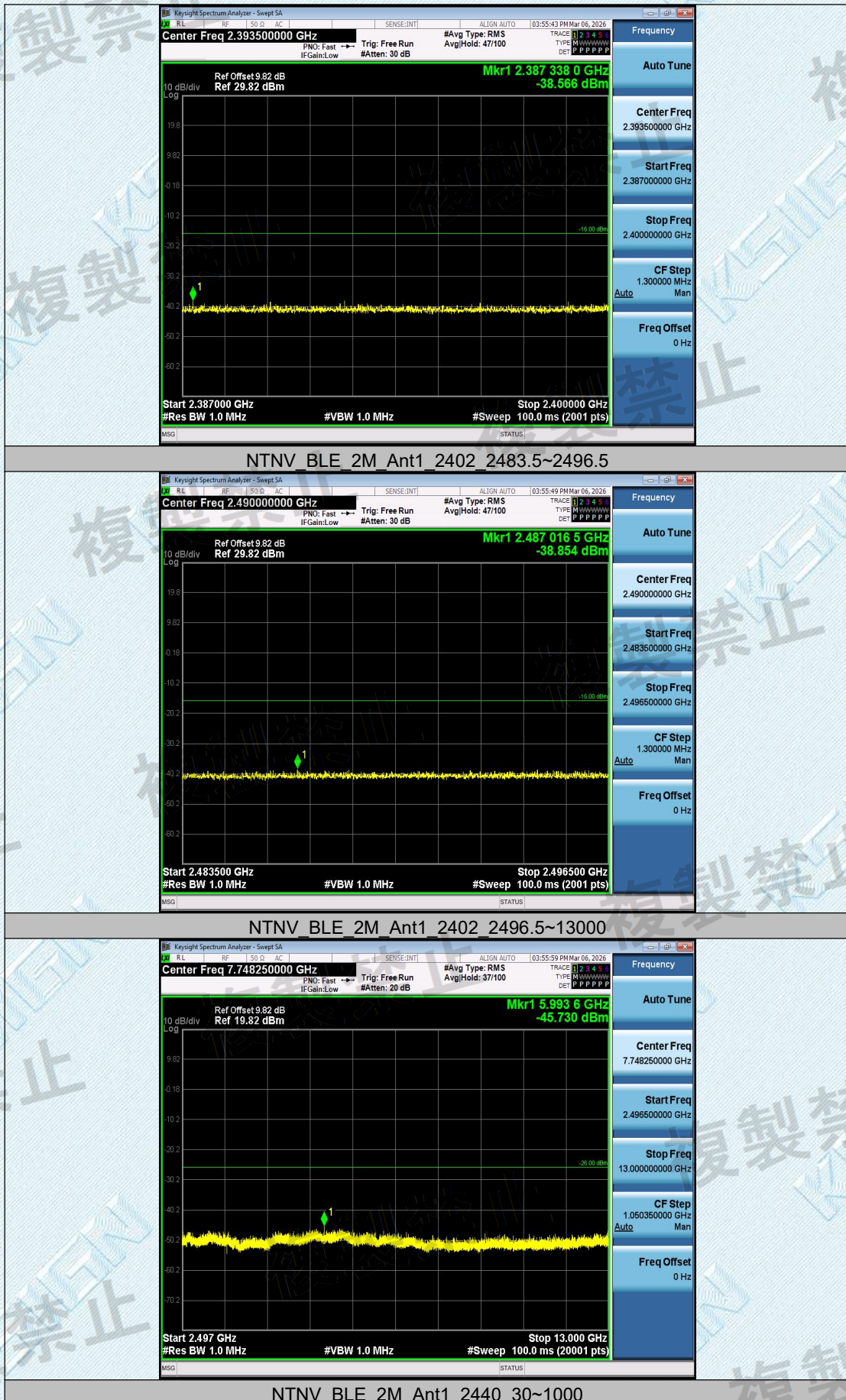
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

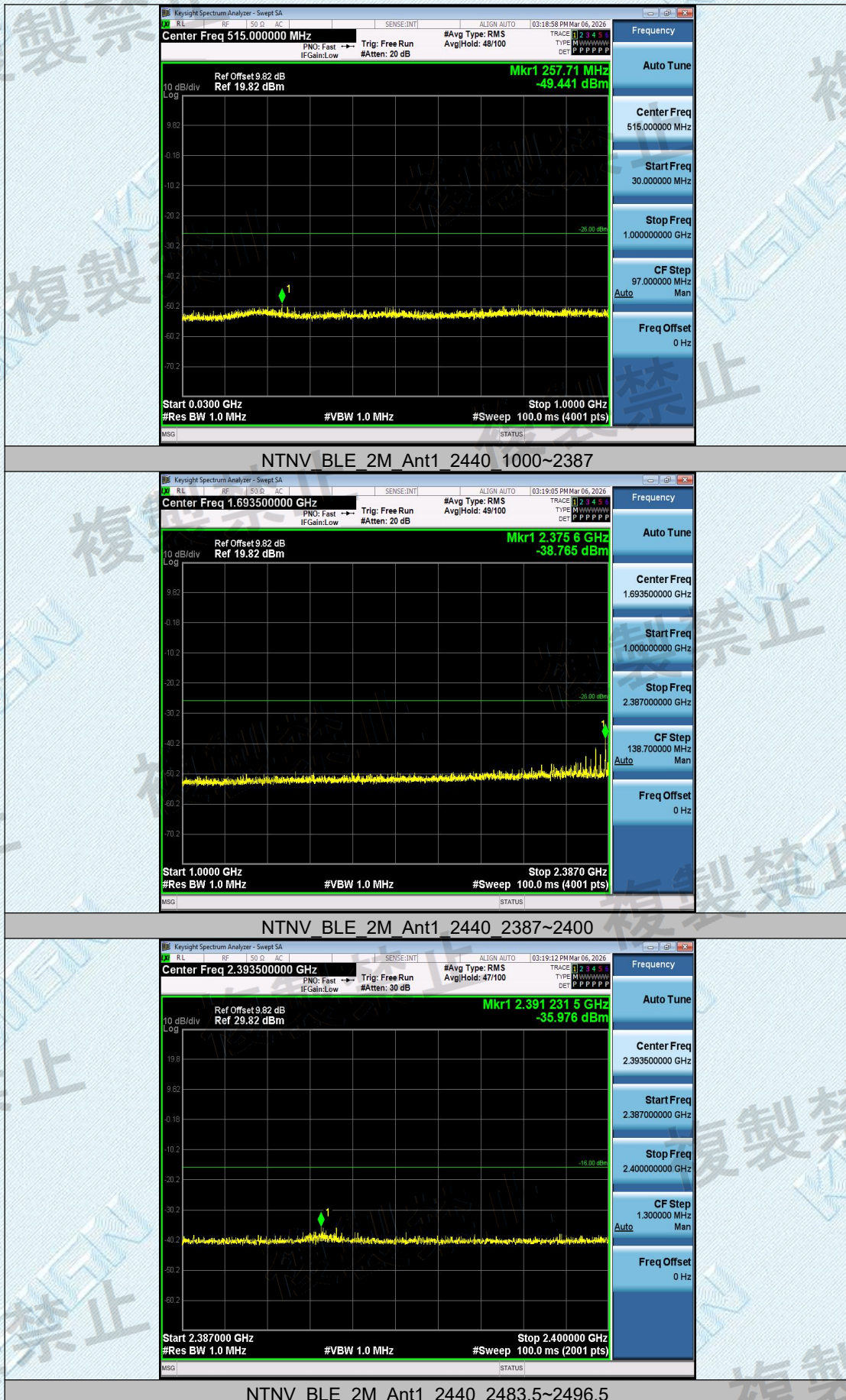
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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

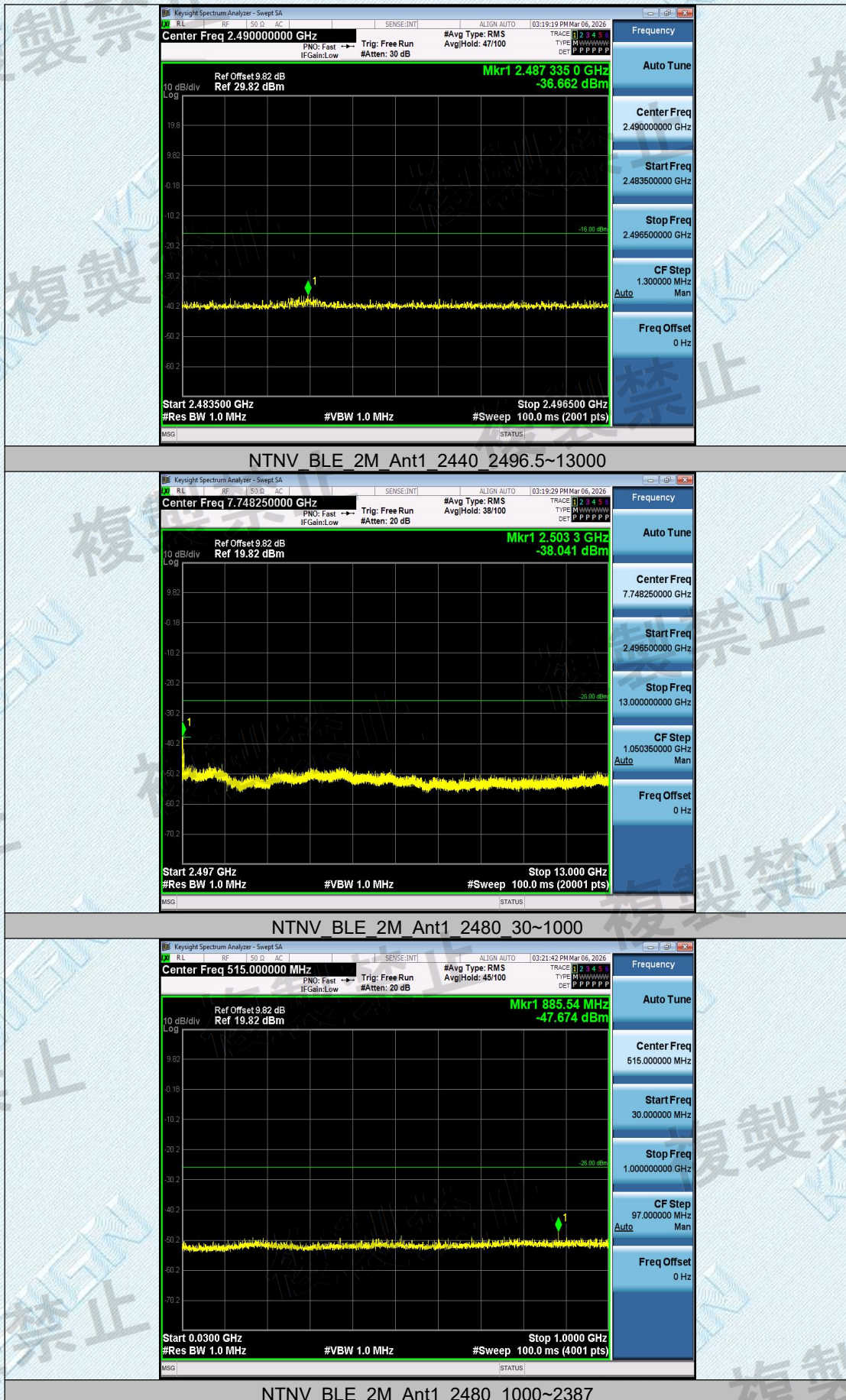
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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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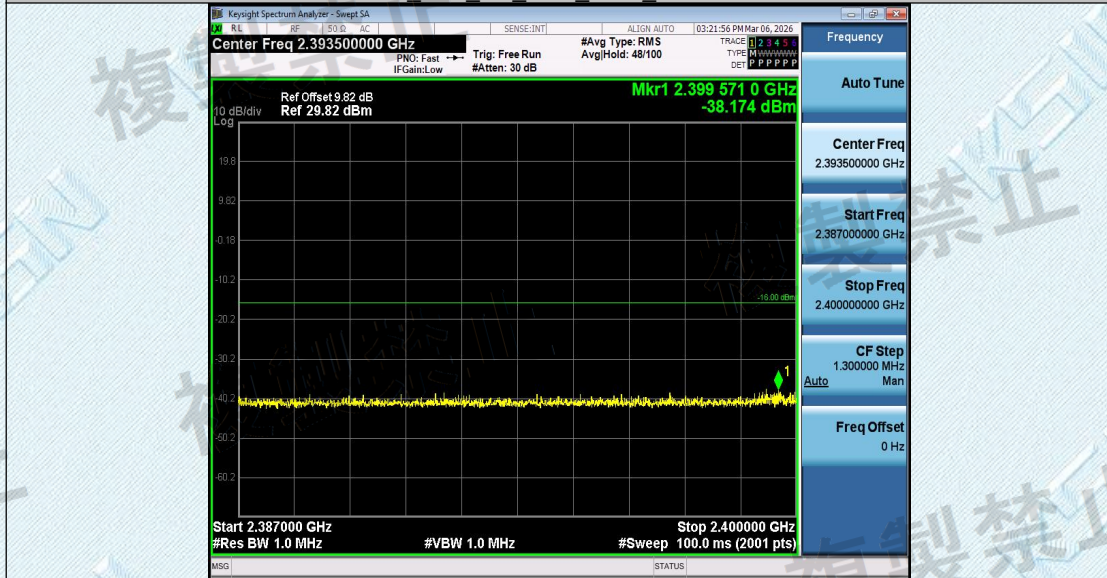
TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

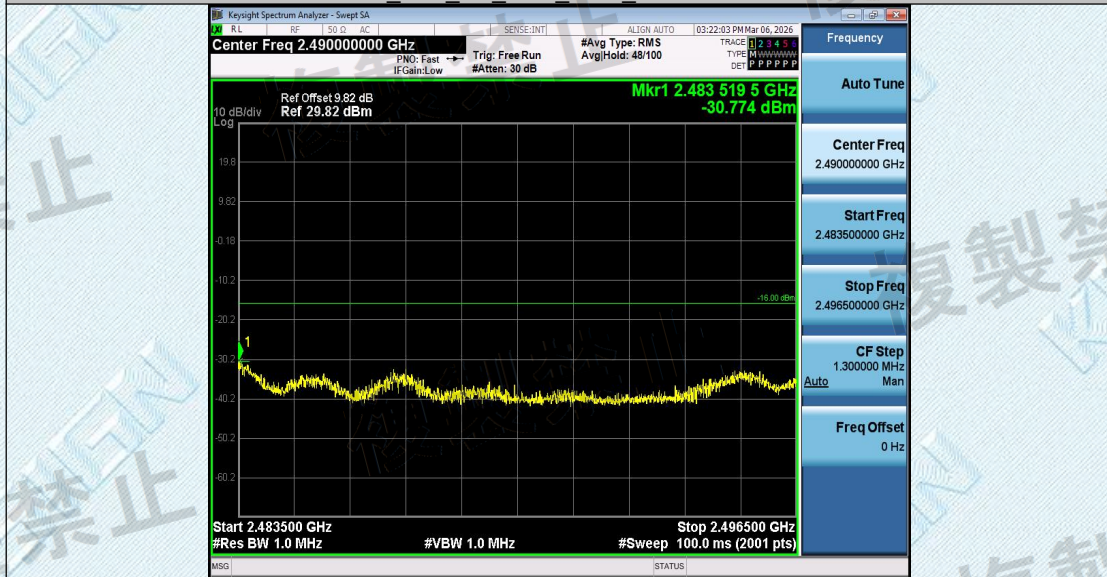
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



NTNV_BLE_2M_Ant1_2480_2387~2400



NTNV_BLE_2M_Ant1_2480_2483.5~2496.5



NTNV_BLE_2M_Ant1_2480_2496.5~13000

TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

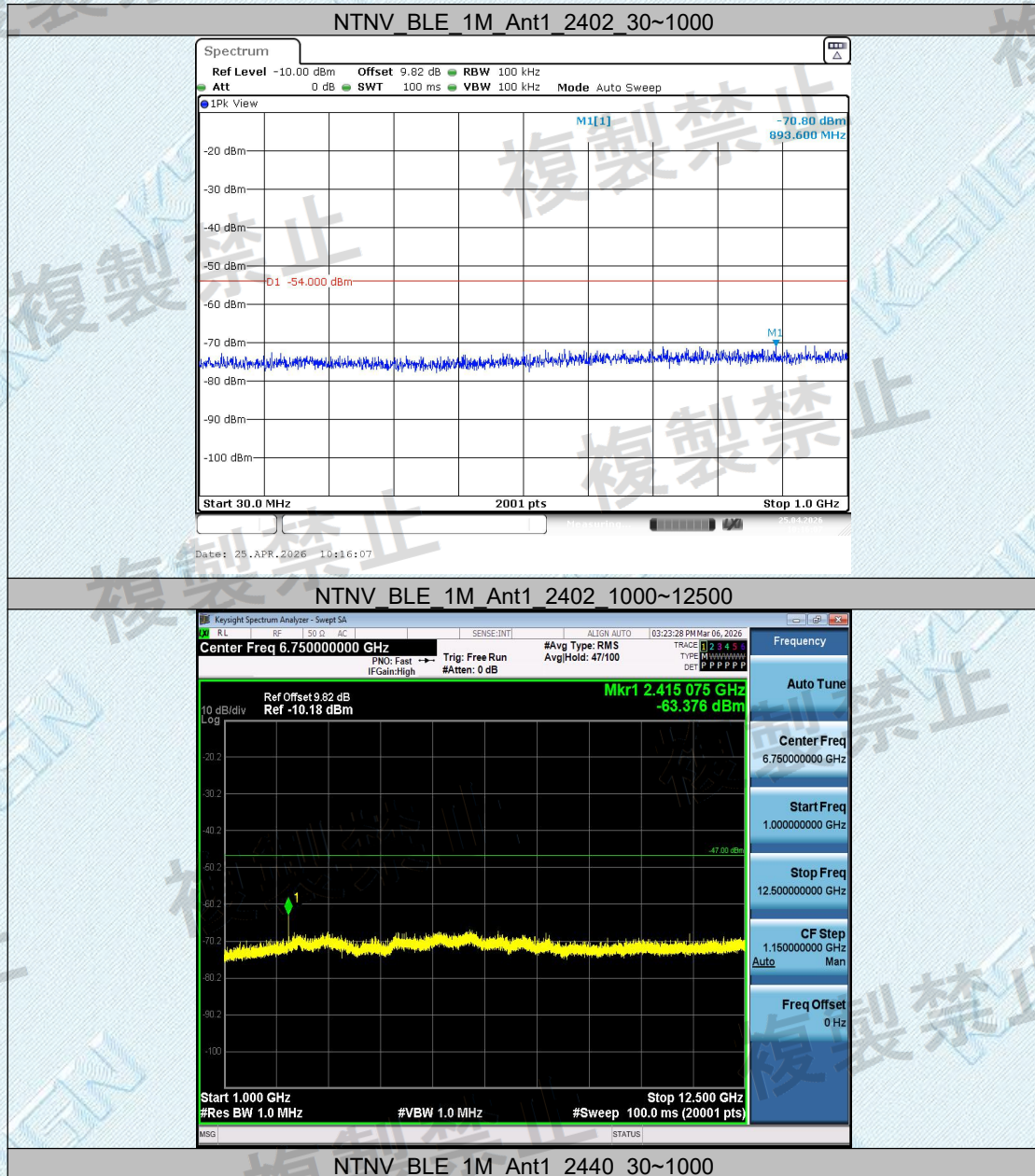
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com

6.5. Appendix F: Spurious Emission of RX

6.5.1. Test Result

TestCondition	TestMode	Antenna	Frequen cy[MHz]	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	893.60	-70.80	≤-54	0.08	≤4	PASS
				1000~12500	2415.08	-63.38	≤-47	0.46	≤20	PASS
			2440	30~1000	805.85	-70.96	≤-54	0.08	≤4	PASS
				1000~12500	2414.50	-63.06	≤-47	0.49	≤20	PASS
			2480	30~1000	865.48	-70.36	≤-54	0.09	≤4	PASS
				1000~12500	2414.50	-64.46	≤-47	0.36	≤20	PASS
	BLE_2M	Ant1	2402	30~1000	771.92	-70.80	≤-54	0.08	≤4	PASS
				1000~12500	6335.43	-67.24	≤-47	0.19	≤20	PASS
			2440	30~1000	874.69	-71.25	≤-54	0.07	≤4	PASS
				1000~12500	2413.93	-65.07	≤-47	0.31	≤20	PASS
			2480	30~1000	826.21	-70.30	≤-54	0.09	≤4	PASS
				1000~12500	6404.43	-66.76	≤-47	0.21	≤20	PASS

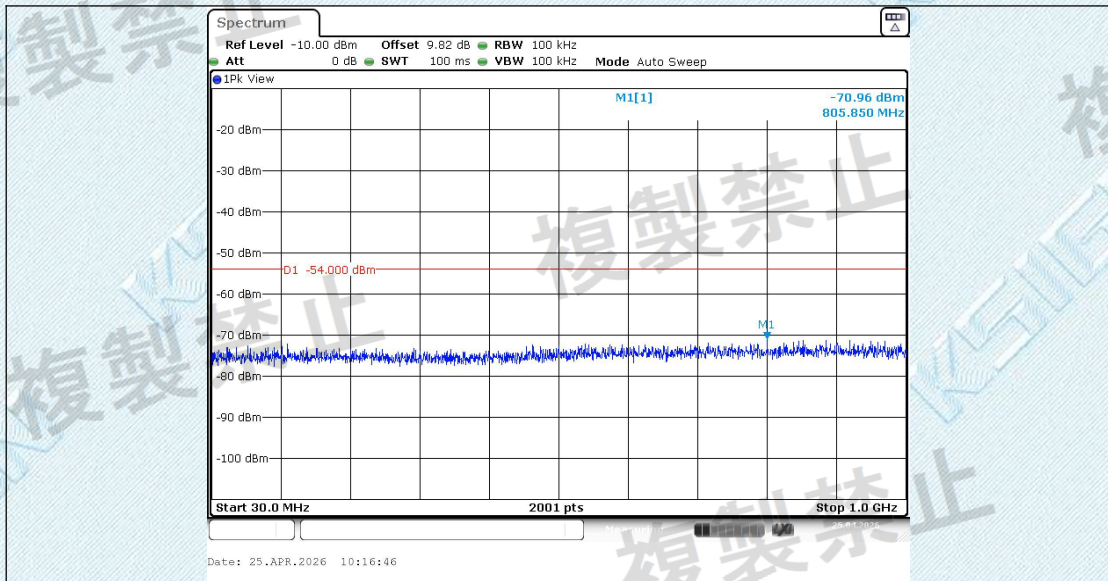
6.5.2. Test Graphs



TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

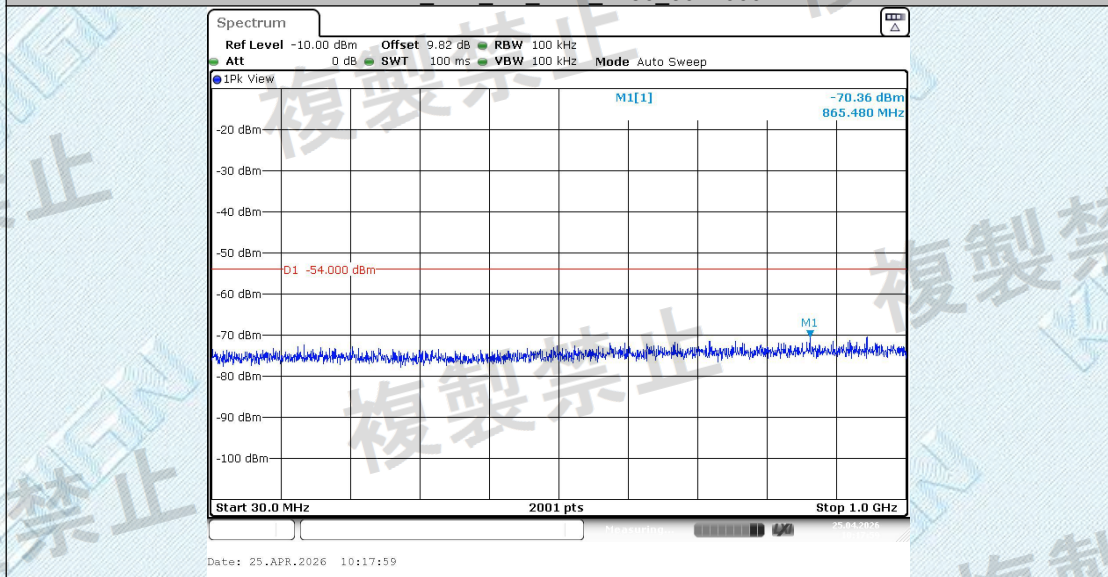
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



NTNV_BLE_1M_Ant1_2440_1000~12500



NTNV_BLE_1M_Ant1_2480_1000~12500

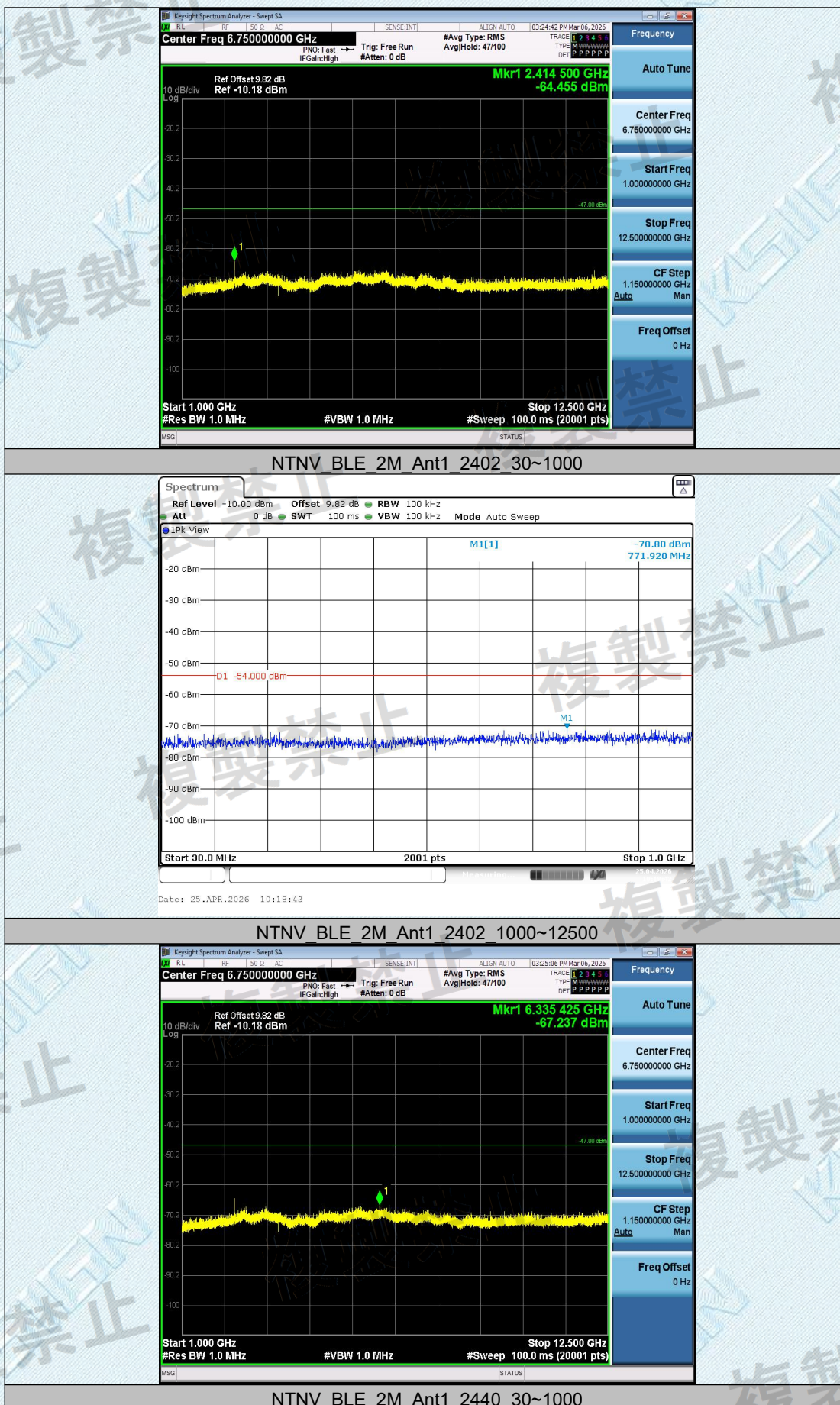


NTNV_BLE_1M_Ant1_2480_1000~12500

TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

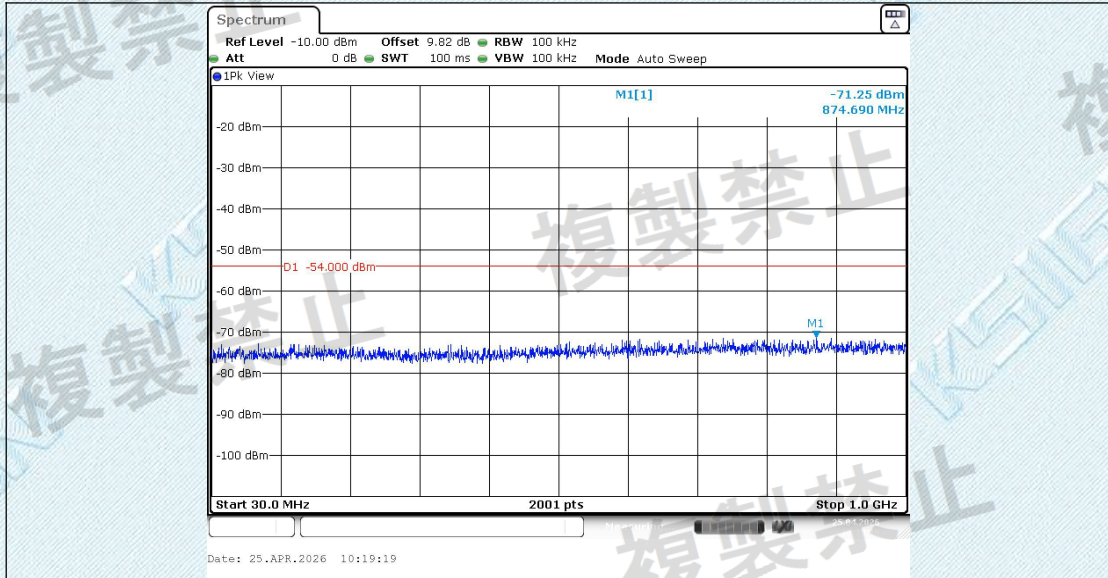
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TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

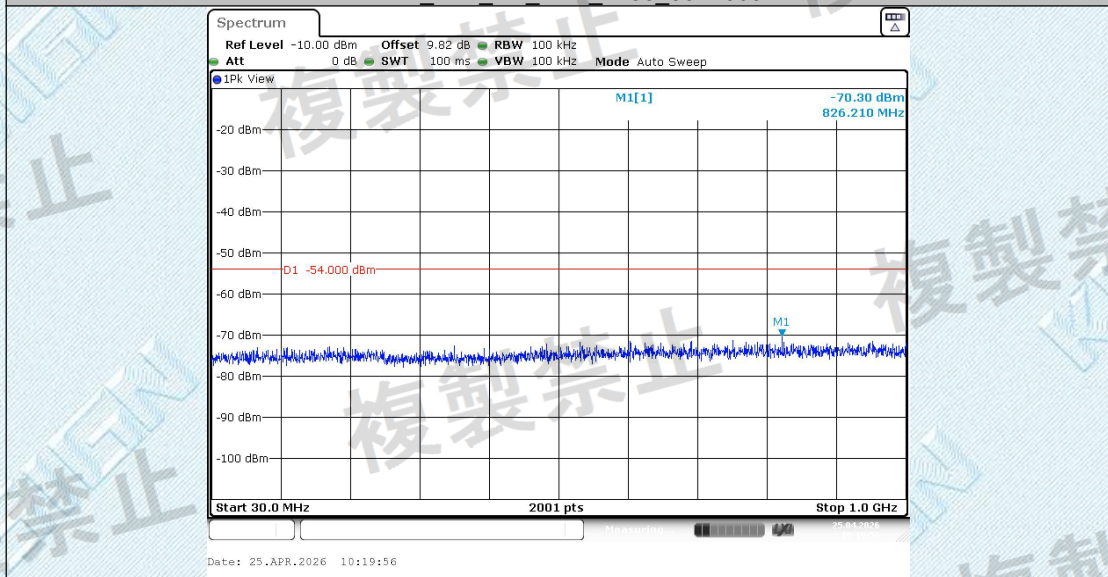
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NTNV_BLE_2M_Ant1_2440_1000~12500



NTNV_BLE_2M_Ant1_2480_1000~12500

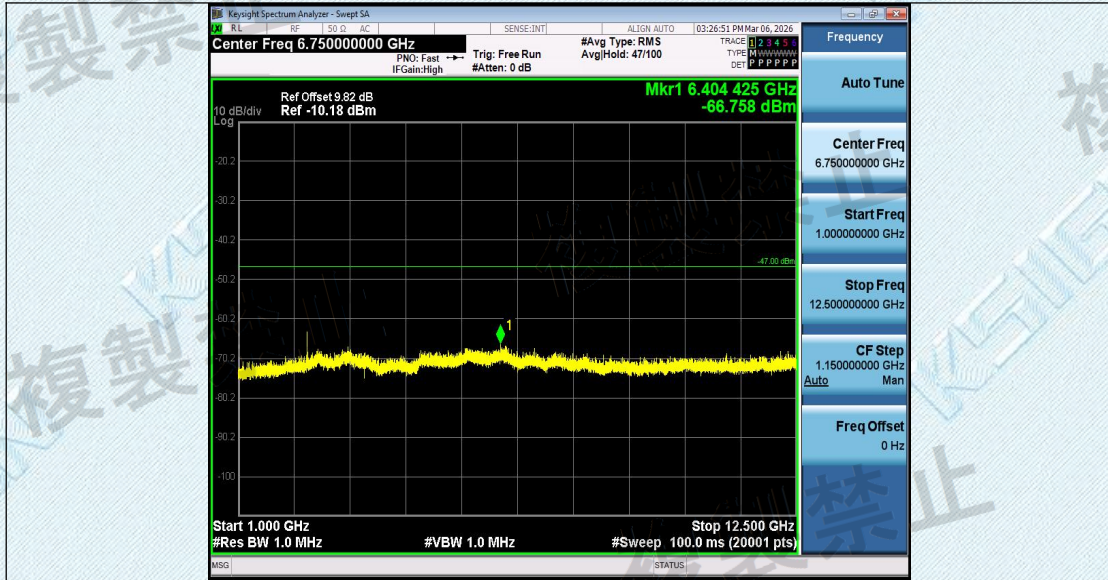


NTNV_BLE_2M_Ant1_2480_1000~12500

TRF No. RF_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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--THE END--

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Laboratory: KSIGN(Guangdong) Testing Co., Ltd.

Address: First Floor West Side, Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu Village, Shatou Community, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province, P. R. China. 518104

Tel.: +(86) 0755-29852678

Fax.: +(86) 0755-29852397

E-mail: info@gdksign.cn

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