

TEST REPORT

Application No.: SZEM1906015254CR(SGS SZ No.:T51910250004EM)
Applicant: AMAX INDUSTRIAL GROUP CHINA CO., LTD
Address of Applicant: OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L TUNG CHOI STREET MONGKOK KOWLOON HONG KONG
Manufacturer: AMAX INDUSTRIAL GROUP CHINA CO., LTD
Address of Manufacturer: OFFICE NO.3 10/F WITTY COMMERCIAL BUILDING 1A-1L TUNG CHOI STREET MONGKOK KOWLOON HONG KONG
Factory: Sheng Xinglong Plastic & Electronic Product(Shenzhen) Co., Ltd
Address of Factory: Building C, No.24 ZhenXing Rd., LiYuHe Industrial Estate, LouCun GuangMing, ShenZhen, China
Equipment Under Test (EUT):
EUT Name: Power Craze
Model No.: CT-2022, SC-2061, SC-2062, SC-2063, SC-2064, GV-4335, 2022888, GV-0326, 1344981
 * Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Requested Age Grading: 8+
Country of Origin: China
Standard(s) : MIC Item 19 of Article 2 Paragraph 1
Date of Receipt: 2019-06-17
Date of Test: 2019-06-24 to 2019-07-08
Date of Issue: 2019-07-08

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager



Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-07-08		Original

Authorized for issue by:			
		Gebin Sun	
		Gebin Sun /Project Engineer	
		Eric Fu	
		Eric Fu /Reviewer	



2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	MIC Item 19 of Article 2 Paragraph 1	N/A	MIC Item 19 of Article 2 Paragraph 1	Pass
Interference prevention capability	MIC Item 19 of Article 2 Paragraph 1	MIC Notice No.88 Appendix No.43	MIC Item 19 of Article 2 Paragraph 1	Pass
RF accessibility	MIC Item 19 of Article 2 Paragraph 1	N/A	MIC Item 19 of Article 2 Paragraph 1	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Frequency Error	MIC Item 19 of Article 2 Paragraph 1	MIC Notice No.88 Appendix No.43	MIC Item 19 of Article 2 Paragraph 1	Pass
Occupied Bandwidth(99%)	MIC Item 19 of Article 2 Paragraph 1	MIC Notice No.88 Appendix No.43	MIC Item 19 of Article 2 Paragraph 1	Pass
Antenna Power	MIC Item 19 of Article 2 Paragraph 1	MIC Notice No.88 Appendix No.43	MIC Item 19 of Article 2 Paragraph 1	Pass
Spurious emission Intensity	MIC Item 19 of Article 2 Paragraph 1	MIC Notice No.88 Appendix No.43	MIC Item 19 of Article 2 Paragraph 1	Pass
Limit of secondary radiated emissions	MIC Item 19 of Article 2 Paragraph 1	MIC Notice No.88 Appendix No.43	MIC Item 19 of Article 2 Paragraph 1	Pass

Remark:

Model No.: CT-2022, SC-2061, SC-2062, SC-2063, SC-2064, GV-4335, 2022888, GV-0326, 1344981

Only the model CT-2022 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on colors and model number.



3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	4
4 GENERAL INFORMATION	6
4.1 DETAILS OF E.U.T.	6
4.2 TEST CONDITIONS	6
4.3 DESCRIPTION OF SUPPORT UNITS	7
4.4 MEASUREMENT UNCERTAINTY	7
4.5 TEST LOCATION	8
4.6 TEST FACILITY	8
4.7 DEVIATION FROM STANDARDS	8
4.8 ABNORMALITIES FROM STANDARD CONDITIONS	8
5 EQUIPMENT LIST	9
6 RADIO SPECTRUM TECHNICAL REQUIREMENT	10
6.1 ANTENNA REQUIREMENT	10
6.1.1 Test Requirement:	10
6.1.2 Conclusion	10
6.2 INTERFERENCE PREVENTION CAPABILITY	12
6.2.1 Test Requirement:	12
6.2.2 Test Setup Diagram	12
6.2.3 Conclusion	12
6.3 RF ACCESSIBILITY	13
6.3.1 Test Requirement:	13
6.3.2 Conclusion	13
7 RADIO SPECTRUM MATTER TEST RESULTS	14
7.1 FREQUENCY ERROR	14
7.1.1 E.U.T. Operation	14
7.1.2 Measurement Procedure and Data	14
7.2 OCCUPIED BANDWIDTH(99%)	15
7.2.1 E.U.T. Operation	15
7.2.2 Test Setup Diagram	15
7.2.3 Measurement Procedure and Data	15
7.3 ANTENNA POWER	16
7.3.1 E.U.T. Operation	16
7.3.2 Test Setup Diagram	16
7.3.3 Measurement Procedure and Data	16
7.4 SPURIOUS EMISSION INTENSITY	17
7.4.1 E.U.T. Operation	17
7.4.2 Measurement Procedure and Data	18
7.5 LIMIT OF SECONDARY RADIATED EMISSIONS	19
7.5.1 E.U.T. Operation	19



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7.5.2	Test Setup Diagram.....	19
7.5.3	Measurement Procedure and Data.....	20
8	PHOTOGRAPHS.....	21
8.1	SETUP PHOTOS	21
8.2	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS).....	22
9	APPENDIX MIC19-2.....	23
9.1	APPENDIX MIC19-2-FOR CAR	23
9.2	APPENDIX MIC19-2-FOR REMOTER	38-52



4 General Information

4.1 Details of E.U.T.

Power supply:	3V DC(1.5V x 2 "AA" Size Batteries) for Remoter Rechargeable battery DC3.7V for Car, Charged by USB Charger USB Charger Model:CT-2022 Input:DC5V 1A Output:DC3.7V 280-350mA
Cable:	USB cable:60cm unshielded
Operating Frequency:	2.4GHz(2405MHz-2475MHz)
Sample Type:	Portable production
Modulation Type:	GFSK
Channel number:	71
Channel Spacing	1MHz
Antenna Type:	Integral
Antenna Gain:	0.17dBi

4.2 Test Conditions

Power Supply

3V DC(1.5V x 2 "AA" Size Batteries) for Remoter

The RF unit is supplied DC3.3V. The fluctuation of input voltage to the circuit of RF unit of test equipment is under $\pm 1\%$, when input voltage from DC3V to the test equipment is fluctuated by $\pm 10\%$, So, all measurement has been conducted by only rated voltage.

The measurement result of the voltage fluctuation at RF circuit when DC3V $\pm 10\%$.

DC Input	DC3V30
3.3V	3.33V
3V	3.30V
2.7V	3.27V

Rechargeable battery DC3.7V for Car

The RF unit is supplied DC3.3V. The fluctuation of input voltage to the circuit of RF unit of test equipment is under $\pm 1\%$, when input voltage from DC3.7V to the test equipment is fluctuated by $\pm 10\%$, So, all measurement has been conducted by only rated voltage.

The measurement result of the voltage fluctuation at RF circuit when DC3.7V $\pm 10\%$.

DC Input	DC3V30
4.07V	3.33V
3.7V	3.30V
3.33V	3.27V

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Temperature: 0 -45.0 °C
Humidity: 45-85 % RH
Atmospheric Pressure: 1000 -1010 mbar

Note:
VN: Normal Voltage
TN: Normal Temperature
TL: Low Extreme Test Temperature
TH: High Extreme Test Temperature

Test Frequencies: If the EUT can be set to 3 or more different (carrier) frequencies in 1 allocated band, testing shall be performed using the Lowest, Middle and the Highest frequency (L, M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.

4.3 Description of Support Units

The EUT has been tested as an independent unit.

4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	Duty cycle	$\pm 0.37\%$
3	Occupied Bandwidth	$\pm 3\%$
4	RF conducted power	$\pm 0.75\text{dB}$
5	RF power density	$\pm 2.84\text{dB}$
6	Conducted Spurious emissions	$\pm 0.75\text{dB}$
7	RF Radiated power	$\pm 4.5\text{dB}$ (Below 1GHz) $\pm 4.8\text{dB}$ (Above 1GHz)
8	Radiated Spurious emission test	$\pm 4.5\text{dB}$ (Below 1GHz) $\pm 4.8\text{dB}$ (Above 1GHz)
9	Temperature test	$\pm 1^\circ\text{C}$
10	Humidity test	$\pm 3\%$
11	Supply voltages	$\pm 1.5\%$
12	Time	$\pm 3\%$

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4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.6 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None



5 Equipment List

Equipment list							
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	Calibration body	Classification
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2018-09-25	2019-09-24	CEPREI	(c)
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2019-04-01	2020-03-31	CEPREI	(c)
Signal Generator (9kHz-40GHz)	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26	CEPREI	(c)
Multimeter	FLUKE	Fluke 73III	SEM022-01	2019-04-03	2020-04-02	CEPREI	(c)
Bluetooth Tester	Rohde & Schwarz	CBT	W060-01	2018-06-21	2019-06-20	CEPREI	(c)
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2019-04-02	2020-04-01	CEPREI	(c)
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2018-09-27	2019-09-26	CEPREI	(c)
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2019-04-04	2020-04-03	CEPREI	(c)

Remark:

- (a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1) in JRL.
- (b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992) .
- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (c).

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

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1

6.1.2 Conclusion

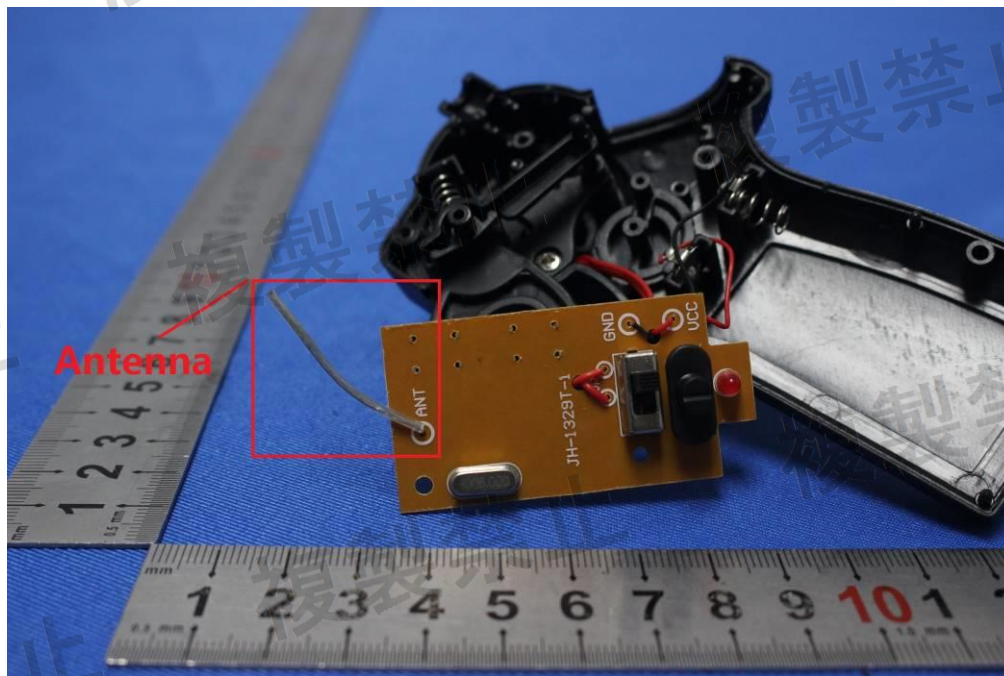
Standard requirement:

Applicable for equipment with an antenna terminal, including testing terminals. If an antenna connector is available, all relevant tests will be carried out conducted. If not, tests will be carried out in an anechoic room or with a suitable test-fixture.

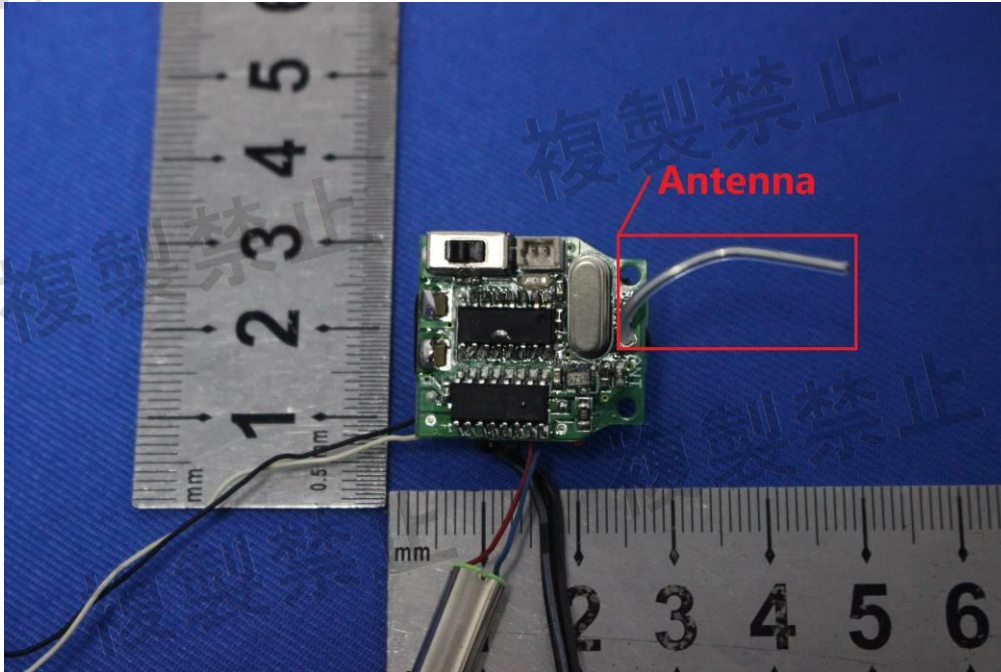
EUT Details:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0.17dBi.

For Remoter



For Car



Result:

An antenna connector is available, all relevant tests will be carried out conducted.

6.2 Interference prevention capability

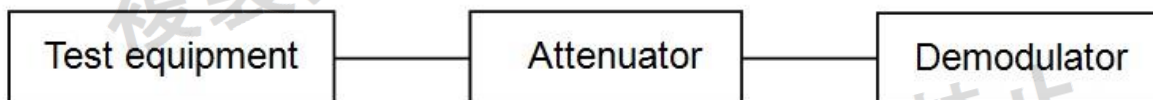
6.2.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1
Limit:

Article 2, Item (19) Notice 88 Appendix 43, 44, 45

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

6.2.2 Test Setup Diagram



6.2.3 Conclusion

Standard Requirement:

- 1) Measurement system diagram as shown above and test equipment keep transmitting identification code.
- 2) Condition of measuring instrument
 - (1) Demodulator must be able to demodulate the transmitting signal emitted by test equipment and to indicate the identification code.
- 3) Condition of test equipment The mode of normal use.
- 4) Measuring operation procedure
 - (1) When test equipment has the function to transmit identification code automatically:
 - A) Transmit the predetermined identification code from test equipment.
 - B) Confirm the transmitted identification code by demodulator.

EUT Details:

The device uses proprietary protocol. It's required to bind before to use. So, it's deemed to meet the requirements. (N/A)



6.3 RF accessibility

6.3.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1

6.3.2 Conclusion

Standard Requirement:

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

EUT Details:

RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable parts on PCB or adjustable parts are not exposed.



7 Radio Spectrum Matter Test Results

7.1 Frequency Error

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: Tolerance of frequency: $\pm 50\text{E-6}$

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 45.2 % RH Atmospheric Pressure: 1010 mbar
Pretest these a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK
modes to find modulation
the worst case: b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK
modulation
The worst case a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK
for final test: modulation
b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK
modulation

7.1.2 Measurement Procedure and Data

1. Test Conditions:
Spectrum Analyzer is used for measurement.
2. EUT conditions:
Modulation/Spread/Hopping OFF, CW Tx
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 1MHz
RBW 10 kHz (Modulation OFF),
VBW 10 kHz (Modulation OFF),
Sweep Time Auto
Detector mode Positive peak
Indication mode Max hold
Alternative method:
Frequency: Test Frequency
Span 2 times channel bandwidth
RBW 100 kHz (Modulation ON),
VBW 100 kHz (Modulation ON),
Sweep Time Auto
Detector mode Positive peak
Indication mode Max hold

The detailed test data see: Appendix MIC19-2



7.2 Occupied Bandwidth(99%)

Test Requirement	MIC Item 19 of Article 2 Paragraph 1
Test Method:	MIC Notice No.88 Appendix No.43
Limit:	FH: 83.5MHz or less FH + DS: 83.5MHz or less FH + OFDM: 83.5MHz or less OFDM: 38MHz or less Others: 26MHz or less

7.2.1 E.U.T. Operation

Operating Environment:

Temperature:	24.1 °C	Humidity:	45.1 % RH	Atmospheric Pressure:	1010 mbar
Pretest these modes to find the worst case:	a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation				
The worst case for final test:	a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation				

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON, Modulation Tx

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Frequency: Test Frequency

Span 83.5 MHz (FHSS); 40/60 MHz (OFDM; DSSS); 2-5 times OBW (Others)

RBW 1 MHz (FHSS); 300kHz (OFDM; DSSS); 3% OBW (Others)

VBW 1 MHz (FHSS); 300kHz (OFDM; DSSS); 3 times RBW (Others)

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

OBW 99%

The detailed test data see: Appendix MIC19-2



7.3 Antenna Power

Test Requirement	MIC Item 19 of Article 2 Paragraph 1
Test Method:	MIC Notice No.88 Appendix No.43
Limit:	Designated value (1) FH, FH+DS, FH+OFDM: 3mW/MHz (used in the range of 2427 - 2470.75 MHz) (2) OFDM, DS other than (1) 10mW/MHz (3) Other than (1) & (2) 10mW (4) OFDM OBW 26 - 38MHz: 5mW/MHz Tolerance:+20%,-80%

7.3.1 E.U.T. Operation

Operating Environment:

Temperature:	23.2 °C	Humidity:	49.4 % RH	Atmospheric Pressure:	1010 mbar
Pretest these modes to find the worst case:	a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation				
The worst case for final test:	a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation				

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON, Modulation Tx

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Frequency: Test Frequency

Span 25 MHz(FHSS); 40/60 MHz (OFDM; DSSS); Enough to capture the emission (Others)

RBW 1 MHz (FHSS; OFDM; DSSS); More than OBW (Others)

VBW 1 MHz (FHSS; OFDM; DSSS); More than RBW (Others)

Sweep Time Auto

detector mode RMS

Indication mode Max hold

The detailed test data see: Appendix MIC19-2



7.4 Spurious emission Intensity

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit:

- (1) Below 2387 MHz : 2.5 μ W/MHz
- (2) 2387 to 2400 MHz : 25 μ W/MHz
- (3) 2483.5 through 2496.5 MHz : 25 μ W/MHz
- (4) Over 2496.5 MHz : 2.5 μ W/MHz

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 45.5 % RH Atmospheric Pressure: 1010 mbar

Pretest these modes to find the worst case: a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation

b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation

The worst case for final test: a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation

b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation

7.4.2 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON, , Modulation Tx

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Step 1

All spurious are measured from 30 MHz to 13 GHz by peak mode.

Step 2

IF the value measured by Step1 is 2 dB or less, measure in average mode.

Test setup for Step 1:

Frequency: 30 MHz – 2400 MHz , 2483.5 MHz –13 GHz

RBW 1 MHz

VBW 1 MHz

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

Test setup for Step 2:

Frequency: Spurious Frequency

RBW 1 MHz

VBW 1 MHz

Sweep Time Auto

detector mode Sample

Indication mode Max hold

The detailed test data see: Appendix MIC19-2



7.5 Limit of secondary radiated emissions

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit:
(1) Below 1 GHz : 4 nW or less
(2) 1 GHz and over : 20 nW or less

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 45.4 % RH Atmospheric Pressure: 1010 mbar

Pretest these modes to find the worst case: a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation

b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation

The worst case for final test: a:TX mode_Keep the EUT(Remoter) in continuously transmitting mode with GFSK modulation

b:TX mode_Keep the EUT(Car) in continuously transmitting mode with GFSK modulation

7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Step 1

All spurious are measured from 30 MHz to 13 GHz by peak mode.

Step 2

IF the value measured by Step1 is 2 dB or less, measure in average mode.

Test setup for Step 1:

Frequency: 30 MHz – 2400 MHz , 2483.5 MHz –13 GHz

RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

Test setup for Step 2:

Frequency: Spurious Frequency

Span 0 Hz

RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

Sweep Time Auto

detector mode Sample

Indication mode Max hold

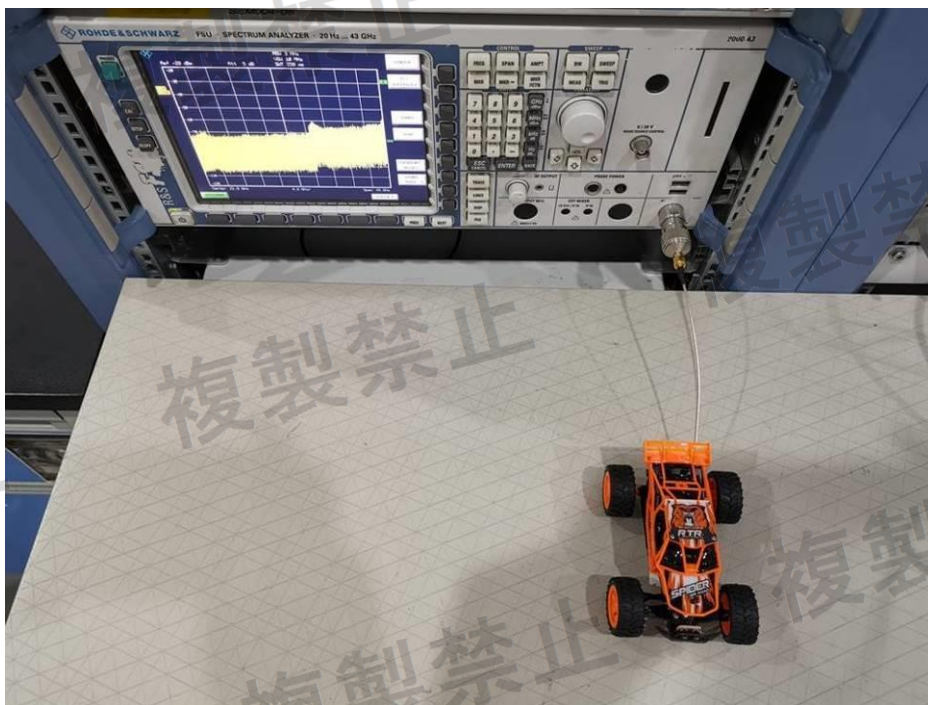
The detailed test data see: Appendix MIC19-2



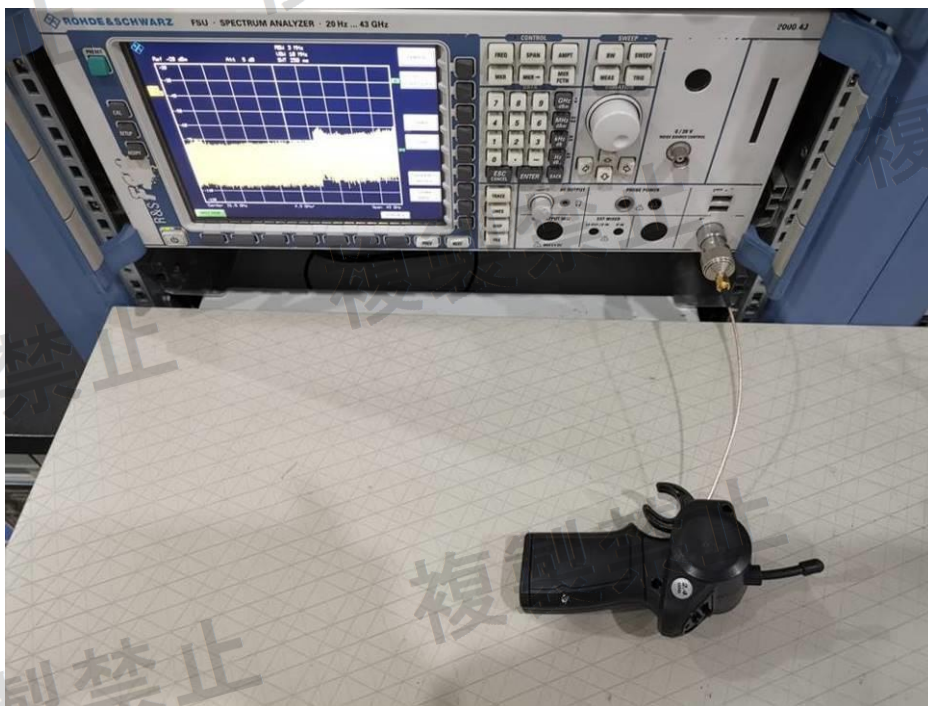
8 Photographs

8.1 Setup photos

For Car



For Remoter



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中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

8.2 EUT Constructional Details (EUT Photos)

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1906015254CR.

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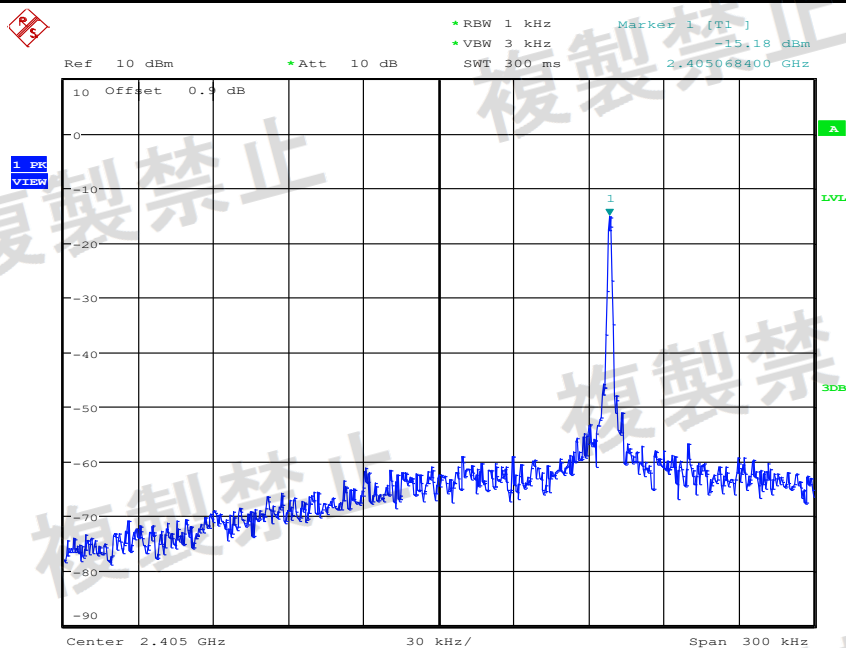
9 Appendix MIC19-2

9.1 Appendix MIC19-2-For Car

1.Frequency Error

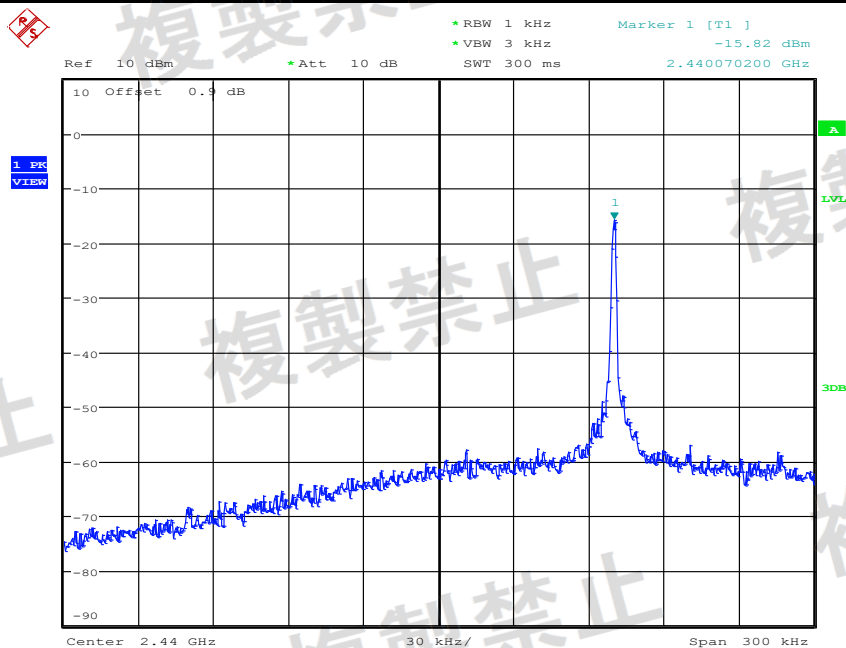
Test Condition	Test Mode	Test Channel	Ant	Result [MHz]	Result [PPM]	Limit [PPM]	Verdict
TNVN	TX	2405	Ant1	2405.068	28.27	$\leq \pm 50$	PASS
TNVN	TX	2440	Ant1	2440.070	28.69	$\leq \pm 50$	PASS
TNVN	TX	2475	Ant1	2475.071	28.69	$\leq \pm 50$	PASS

Frequency Error_TNVN_BLE_2405_Ant1



Date: 8.JUL.2019 12:52:42

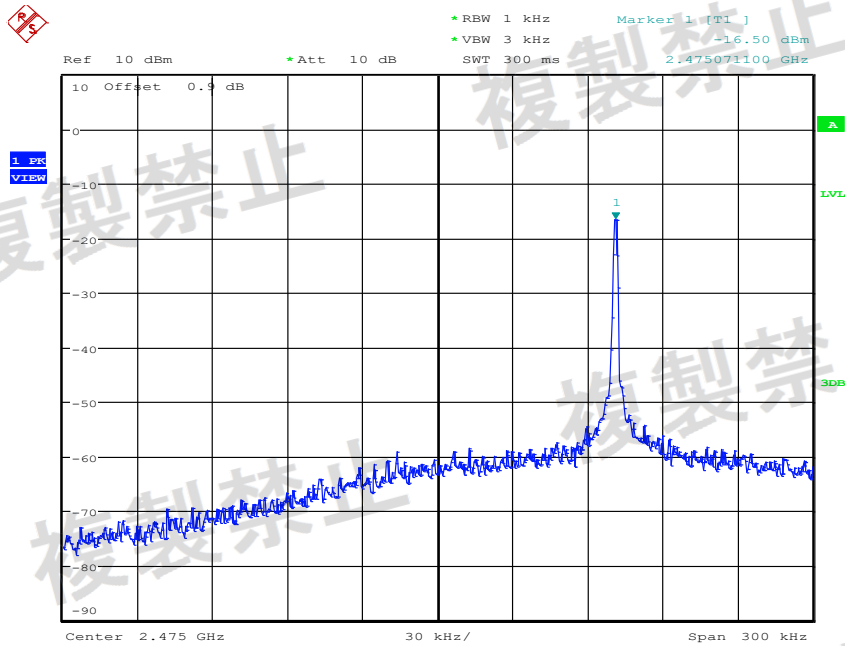
Frequency Error_TNVN_BLE_2440_Ant1



Date: 8.JUL.2019 12:50:33



Frequency Error_TNVN_BLE_2475_Ant1



Date: 8.JUL.2019 12:50:59

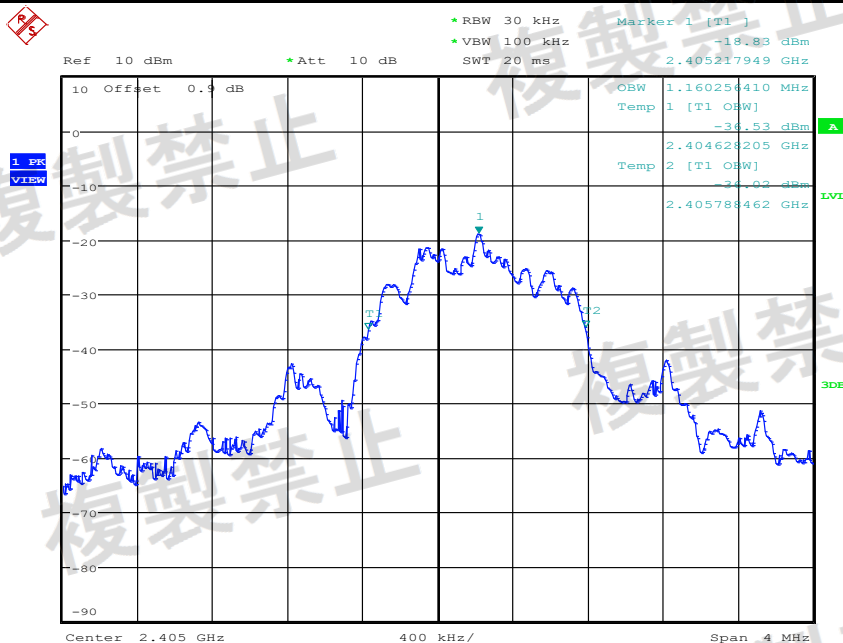
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2.Occupied Bandwidth (99%)

Test Condition	Test Mode	Test Channel	Ant	Test Result [MHz]	Limit [MHz]	Verdict
TNVN	TX	2405	Ant1	1.160	<=26	PASS
TNVN	TX	2440	Ant1	1.192	<=26	PASS
TNVN	TX	2475	Ant1	1.199	<=26	PASS

Occupied Bandwidth_TNVN_BLE_2405_Ant1



Date: 23.JUN.2019 18:04:49

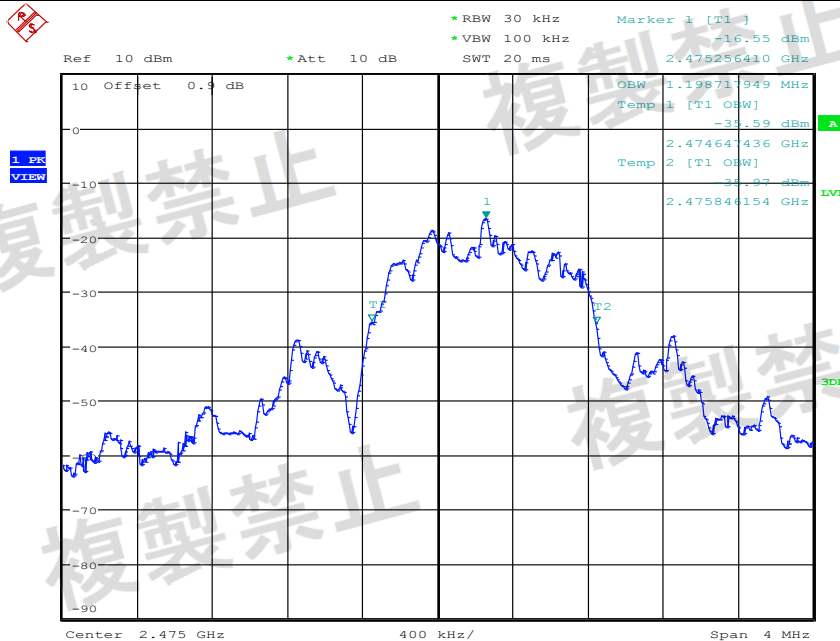
Occupied Bandwidth_TNVN_BLE_2440_Ant1



Date: 23.JUN.2019 18:26:21



Occupied Bandwidth_TNVN_BLE_2475_Ant1



Date: 23.JUN.2019 19:59:31

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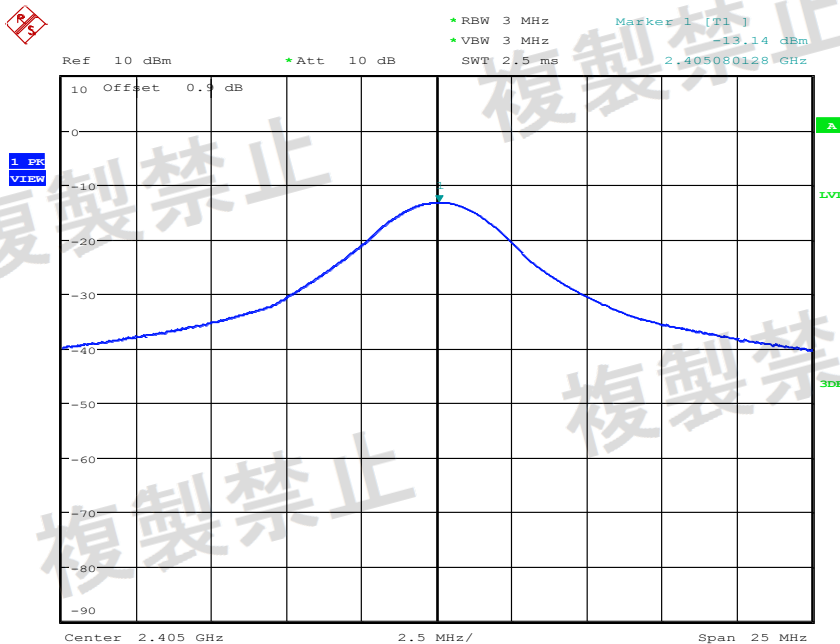
3. Antenna Power

Test Condition	Test Mode	Test Channel	Ant	Power [mW]	Limit [mW]	Normal Power [mW]	Tolerance[%]	Limit [%]	Verdict
TNVN	TX	2405	Ant1	0.05	10	0.06	-18.3	-80 to +20	PASS
TNVN	TX	2440	Ant1	0.04	10	0.06	-31.7	-80 to +20	PASS
TNVN	TX	2475	Ant1	0.04	10	0.06	-41.7	-80 to +20	PASS

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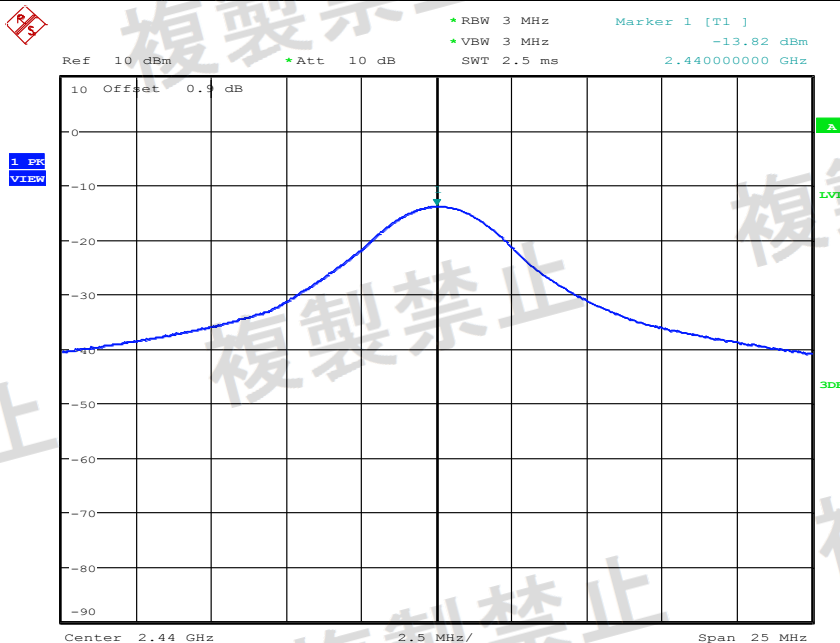
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Antenna Power_TNVN_BLE_2405_Ant1



Date: 8.JUL.2019 12:57:21

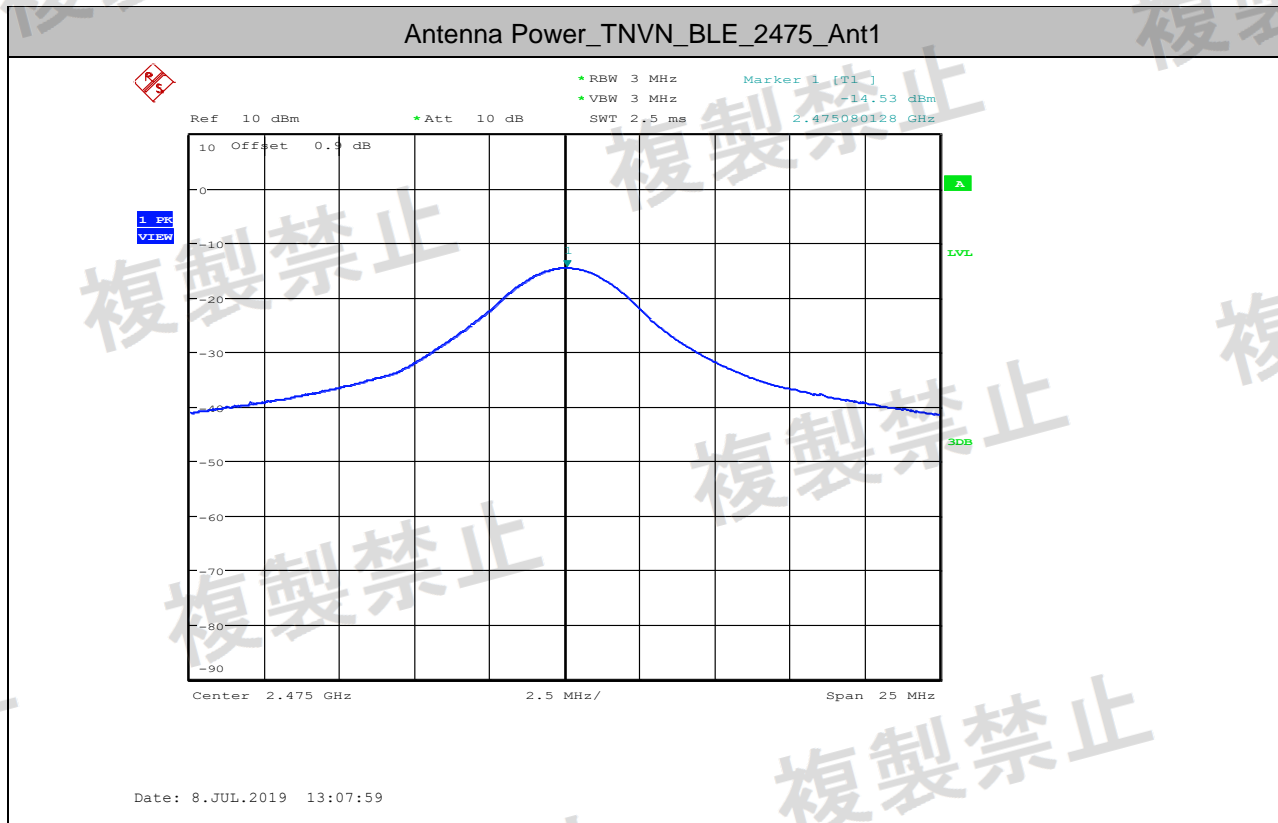
Antenna Power_TNVN_BLE_2440_Ant1



Date: 8.JUL.2019 12:59:51



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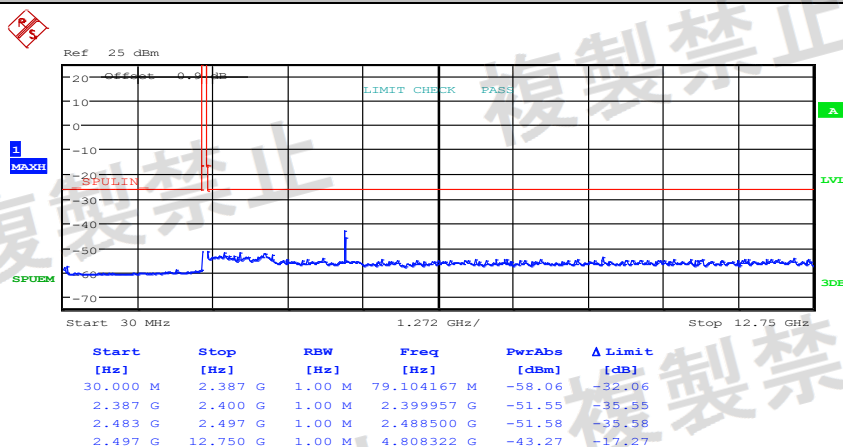
4. Spurious Emissions of Tx

Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[μW]	Limit [μW]	Verdict
TX	2405	30	2387	79.10	0.0016	2.5	PASS
TX	2405	2387	2400	2399.96	0.0070	25	PASS
TX	2405	2483.5	2496.5	2488.50	0.0070	25	PASS
TX	2405	2496.5	13000	4808.32	0.0471	2.5	PASS
TX	2440	30	2387	79.10	0.0042	2.5	PASS
TX	2440	2387	2400	2393.48	0.0021	25	PASS
TX	2440	2483.5	2496.5	2490.43	0.0067	25	PASS
TX	2440	2496.5	13000	4808.32	0.0440	2.5	PASS
TX	2475	30	2387	79.10	0.0027	2.5	PASS
TX	2475	2387	2400	2396.09	0.0022	25	PASS
TX	2475	2483.5	2496.5	2484.82	0.0155	25	PASS
TX	2475	2496.5	13000	4808.32	0.0502	2.5	PASS

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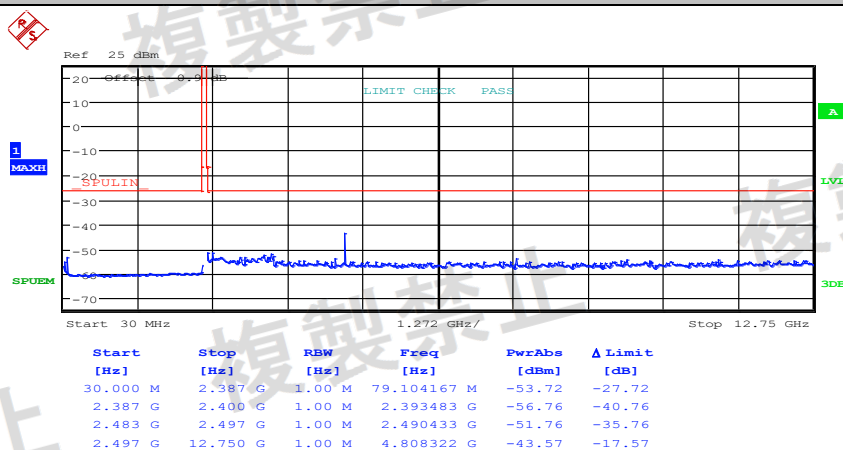
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Spurious Emissions of Tx_TNVN_BLE_2405_Ant1



Date: 23.JUN.2019 18:06:39

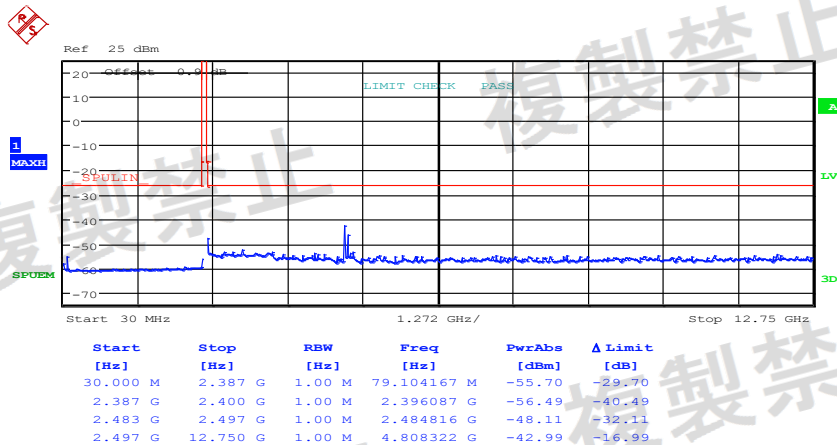
Spurious Emissions of Tx_TNVN_BLE_2440_Ant1



Date: 23.JUN.2019 18:29:50



Spurious Emissions of Tx_TNVN_BLE_2475_Ant1



Date: 23.JUN.2019 20:01:24

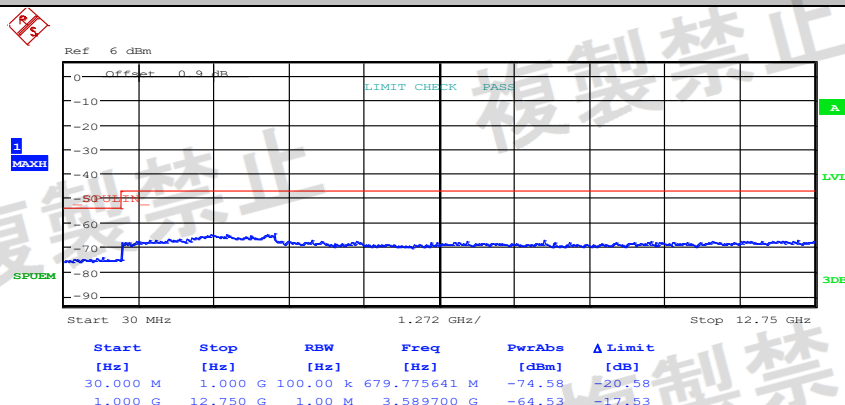
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5. Spurious Emissions of Rx

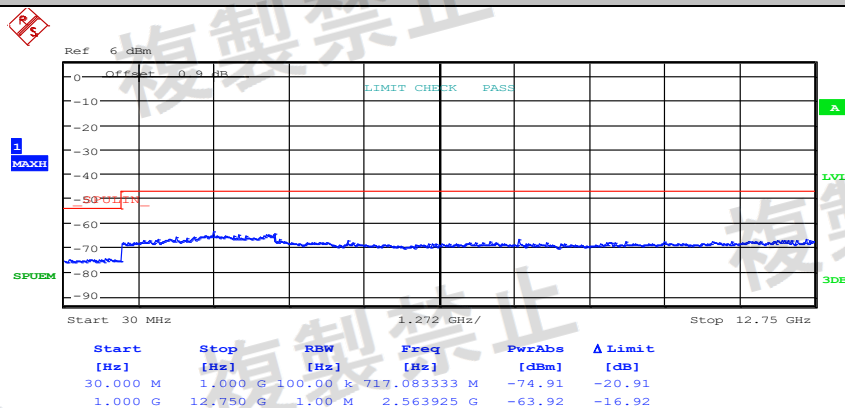
Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[nW]	Limit [nW]	Verdict
TX	2405	1000	13000	3589.70	0.352	20	PASS
TX	2405	30	1000	679.78	0.035	4	PASS
TX	2440	1000	13000	2563.92	0.406	20	PASS
TX	2440	30	1000	717.08	0.032	4	PASS
TX	2475	1000	13000	3577.95	0.365	20	PASS
TX	2475	30	1000	625.37	0.035	4	PASS

Spurious Emissions of Rx_TNVN_BLE_2405_Ant1



Date: 24.JUN.2019 11:57:01

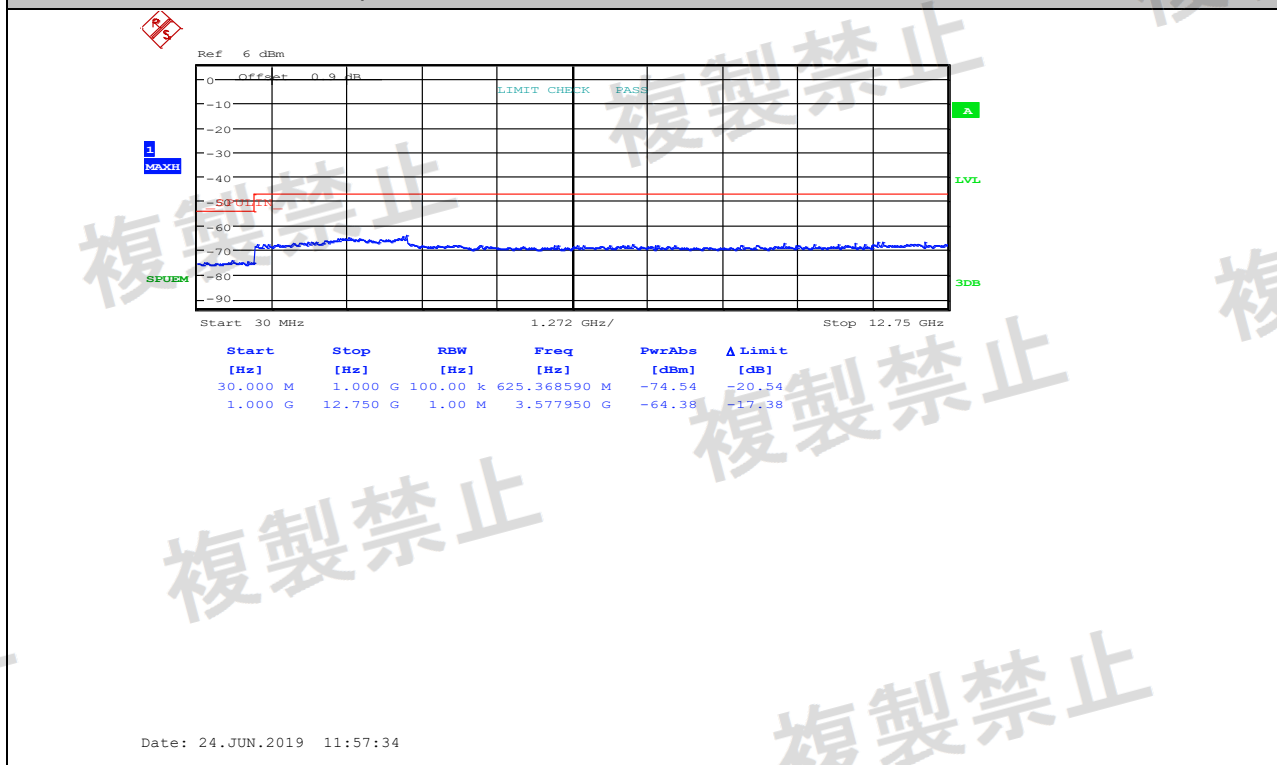
Spurious Emissions of Rx_TNVN_BLE_2440_Ant1



Date: 24.JUN.2019 11:57:18



Spurious Emissions of Rx_TNVN_BLE_2475_Ant1



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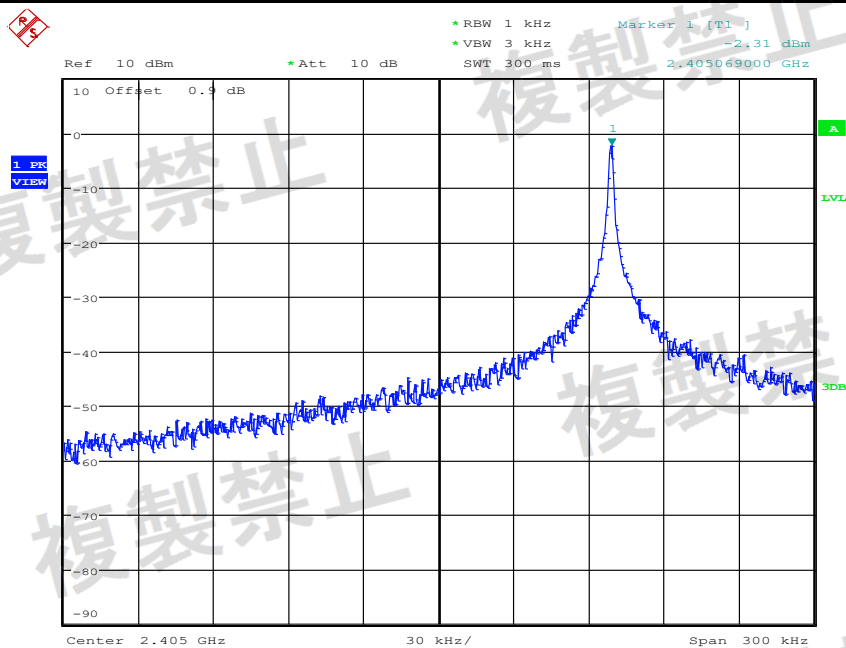
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9.2 Appendix MIC19-2-For Remoter

1.Frequency Error

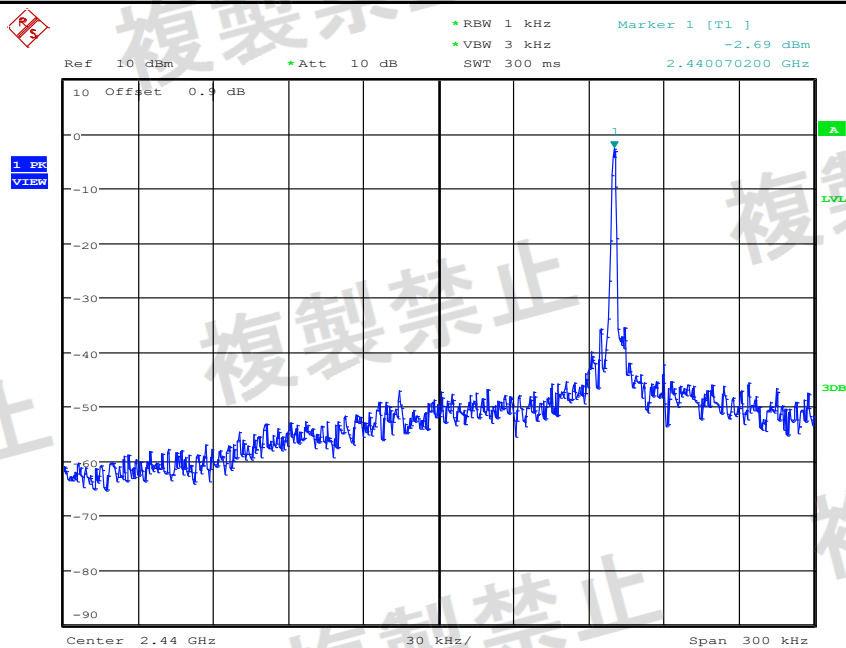
Test Condition	Test Mode	Test Channel	Ant	Result [MHz]	Result [PPM]	Limit [PPM]	Verdict
TNVN	TX	2405	Ant1	2405.069	28.69	$\leq \pm 50$	PASS
TNVN	TX	2440	Ant1	2440.070	28.77	$\leq \pm 50$	PASS
TNVN	TX	2475	Ant1	2475.071	28.61	$\leq \pm 50$	PASS

Frequency Error_TNVN_2.4G_2405_Ant1



Date: 8.JUL.2019 12:40:13

Frequency Error_TNVN_2.4G_2440_Ant1



Date: 8.JUL.2019 12:39:18

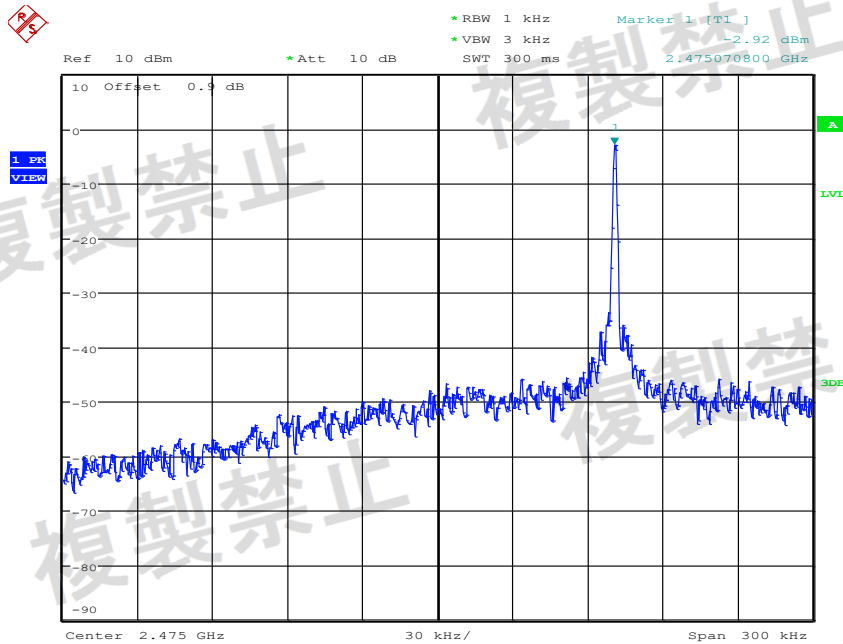


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中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Frequency Error_TNVN_2.4G_2475_Ant1



Date: 8.JUL.2019 12:39:37

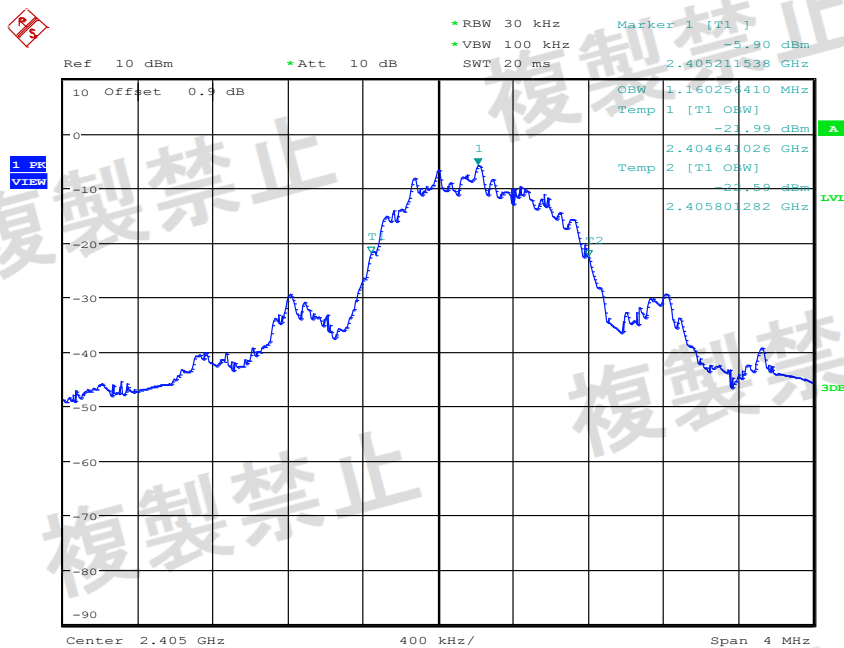
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2.Occupied Bandwidth (99%)

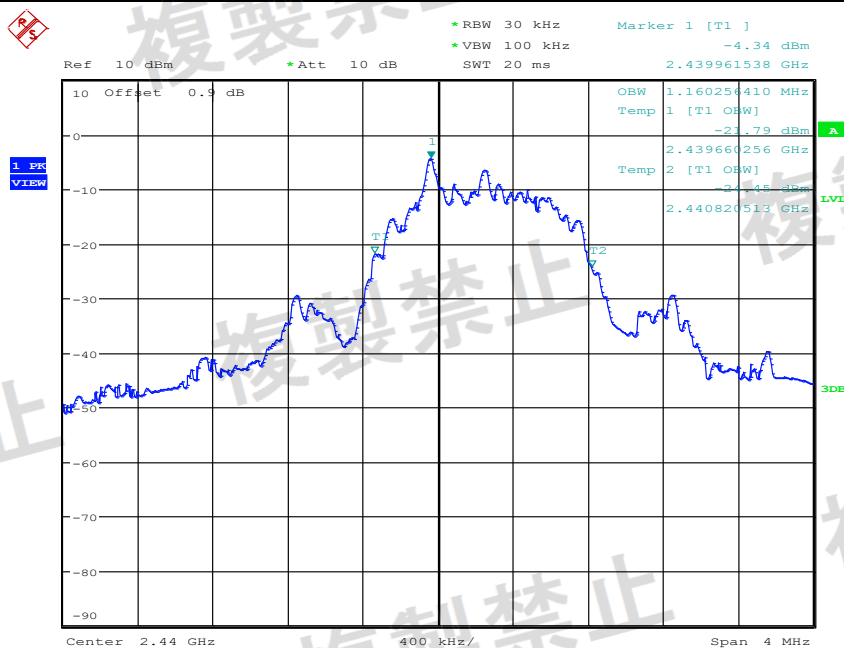
Test Condition	Test Mode	Test Channel	Ant	Test Result [MHz]	Limit [MHz]	Verdict
TNVN	TX	2405	Ant1	1.160	<=26	PASS
TNVN	TX	2440	Ant1	1.160	<=26	PASS
TNVN	TX	2475	Ant1	1.212	<=26	PASS

Occupied Bandwidth_TNVN_2.4G_2405_Ant1



Date: 24.JUN.2019 11:38:31

Occupied Bandwidth_TNVN_2.4G_2440_Ant1

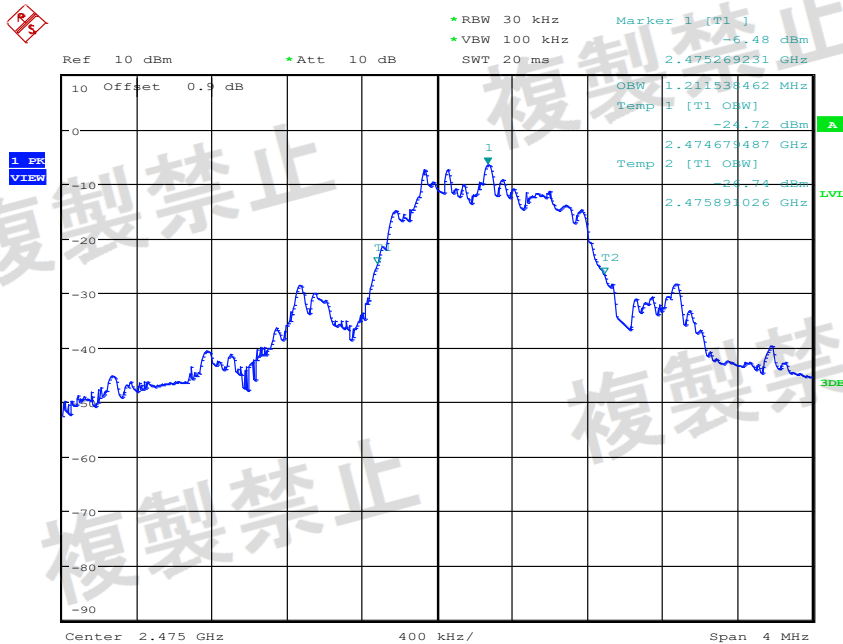


Date: 24.JUN.2019 11:45:26

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Occupied Bandwidth_TNVN_2.4G_2475_Ant1



Date: 24.JUN.2019 11:49:42

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3. Antenna Power

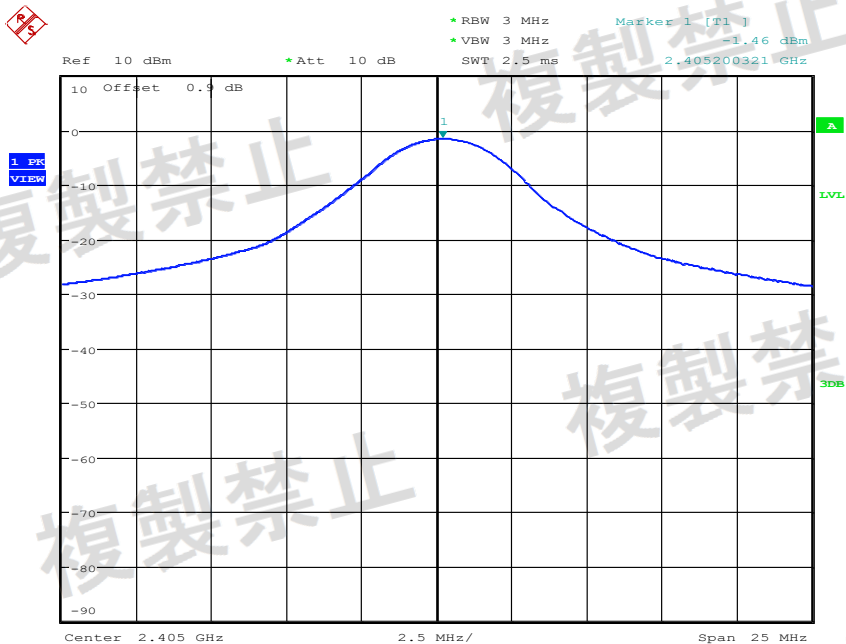
Test Condition	Test Mode	Test Channel	Ant	Power [mW]	Limit [mW]	Normal Power [mW]	Tolerance[%]	Limit [%]	Verdict
TNVN	TX	2405	Ant1	0.71	10	0.7	2.0	-80 to +20	PASS
TNVN	TX	2440	Ant1	0.63	10	0.7	-9.4	-80 to +20	PASS
TNVN	TX	2475	Ant1	0.65	10	0.7	-7.3	-80 to +20	PASS

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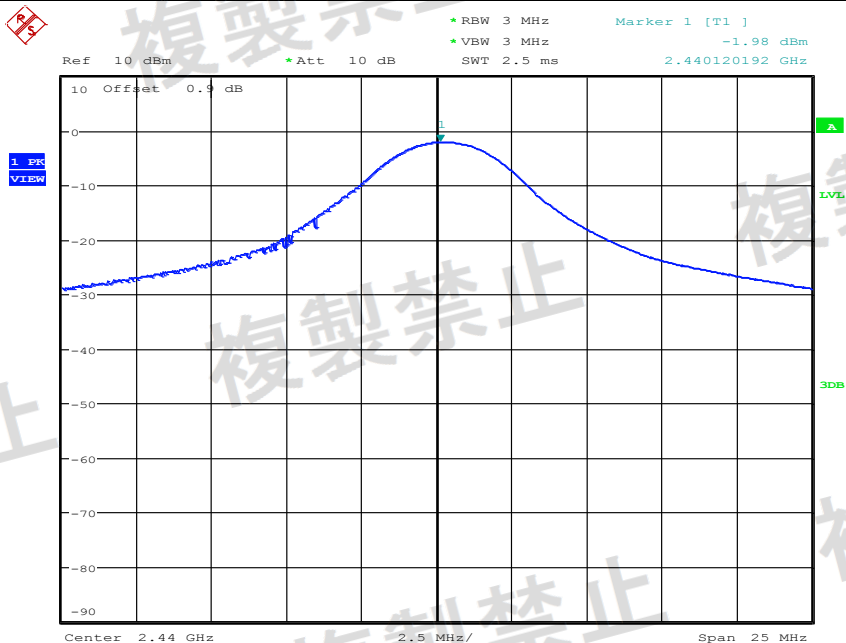


Antenna Power_TNVN_2.4G_2405_Ant1



Date: 24.JUN.2019 11:36:42

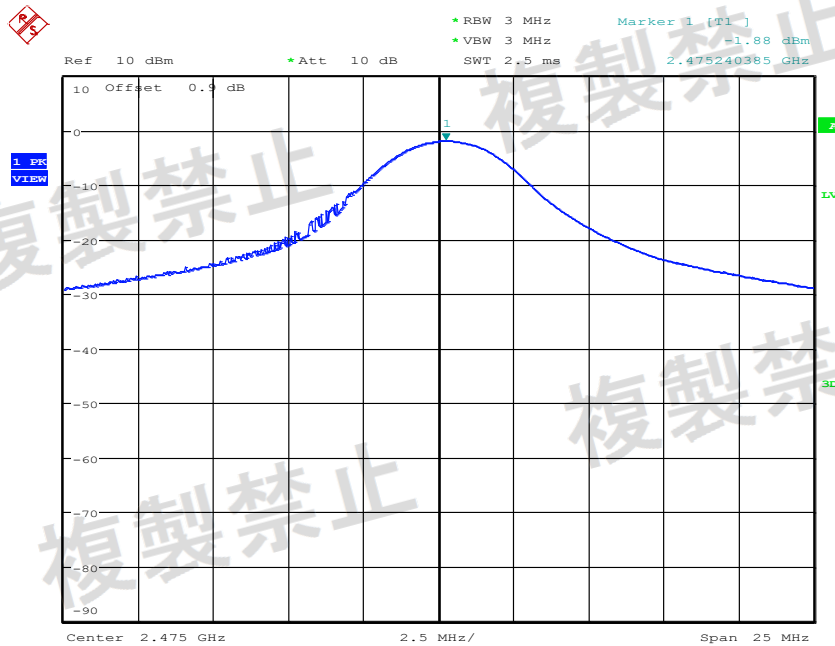
Antenna Power_TNVN_2.4G_2440_Ant1



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Antenna Power_TNVN_2.4G_2475_Ant1



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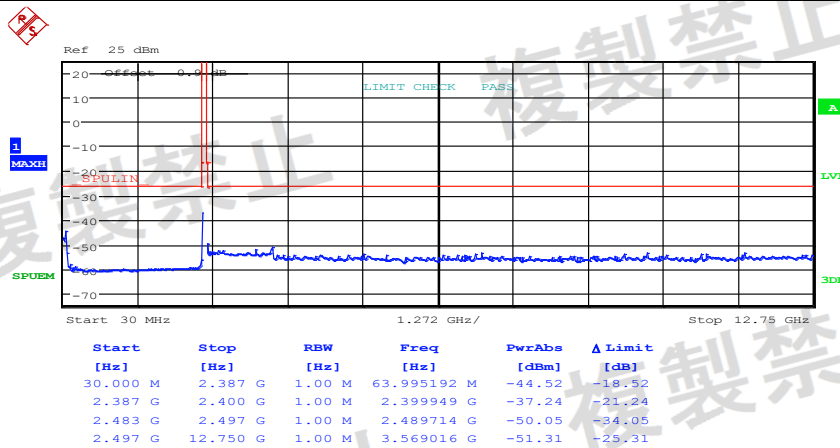
4. Spurious Emissions of Tx

Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[μW]	Limit [μW]	Verdict
TX	2405	30	2387	64.00	0.0353	2.5	PASS
TX	2405	2387	2400	2399.95	0.1888	25	PASS
TX	2405	2483.5	2496.5	2489.71	0.0099	25	PASS
TX	2405	2496.5	13000	3569.02	0.0074	2.5	PASS
TX	2440	30	2387	64.00	0.0415	2.5	PASS
TX	2440	2387	2400	2396.81	0.0054	25	PASS
TX	2440	2483.5	2496.5	2485.12	0.0221	25	PASS
TX	2440	2496.5	13000	2503.34	0.0082	2.5	PASS
TX	2475	30	2387	30.00	0.0292	2.5	PASS
TX	2475	2387	2400	2396.77	0.0027	25	PASS
TX	2475	2483.5	2496.5	2483.56	0.4256	25	PASS
TX	2475	2496.5	13000	2499.92	0.0057	2.5	PASS

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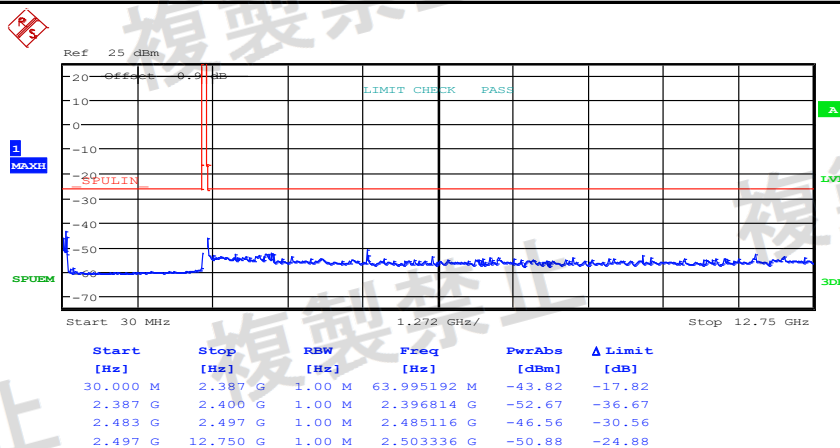
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Spurious Emissions of Tx_TNVN_2.4G_2405_Ant1



Date: 24.JUN.2019 11:41:38

Spurious Emissions of Tx_TNVN_2.4G_2440_Ant1



Date: 24.JUN.2019 11:46:12

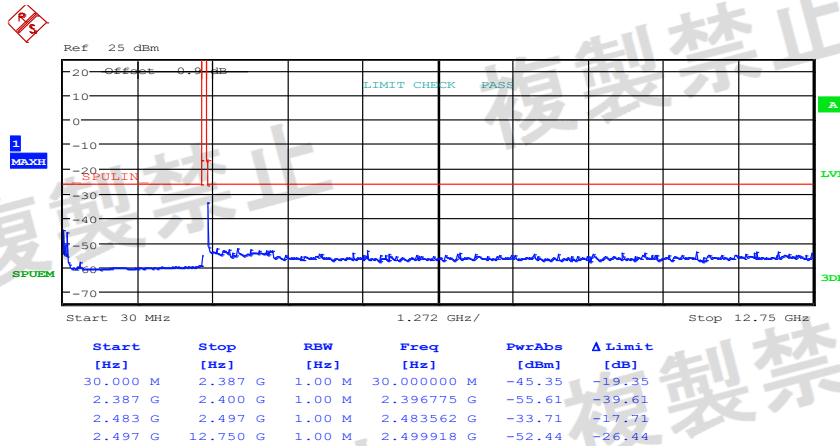
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Spurious Emissions of Tx_TNVN_2.4G_2475_Ant1



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5. Spurious Emissions of Rx

Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[nW]	Limit [nW]	Verdict
TX	2405	1000	13000	2755.45	0.360	20	PASS
TX	2405	30	1000	936.27	0.029	4	PASS
TX	2440	1000	13000	3572.08	0.323	20	PASS
TX	2440	30	1000	434.17	0.030	4	PASS
TX	2475	1000	13000	3368.80	0.327	20	PASS
TX	2475	30	1000	654.90	0.032	4	PASS



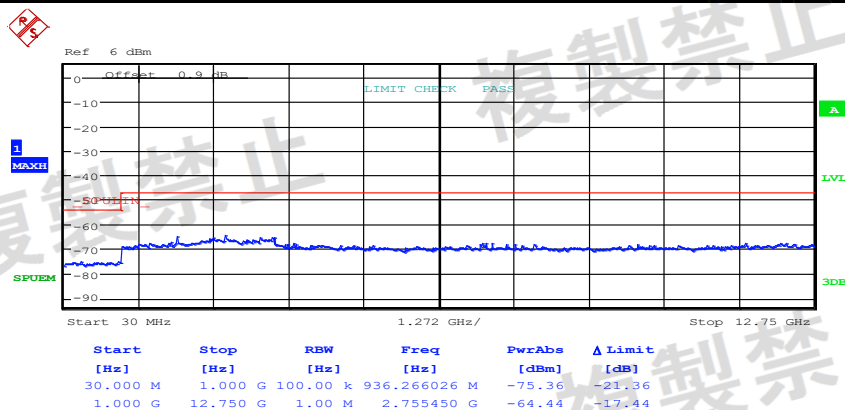
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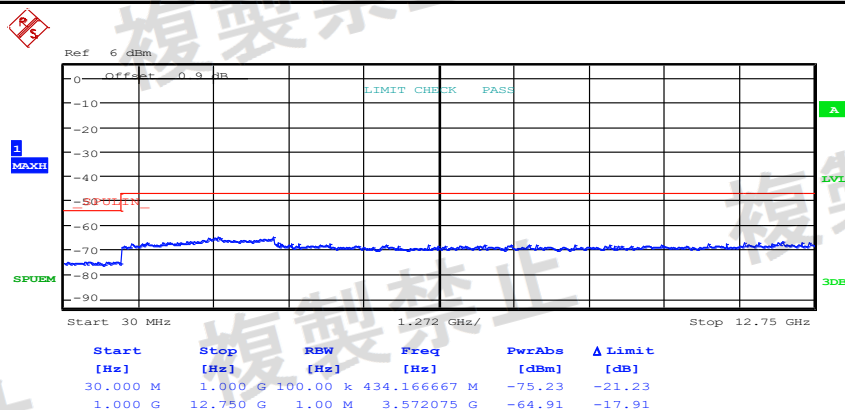
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Spurious Emissions of Rx_TNVN_2.4G_2405_Ant1



Date: 24.JUN.2019 11:55:10

Spurious Emissions of Rx_TNVN_2.4G_2440_Ant1



Date: 24.JUN.2019 11:55:50

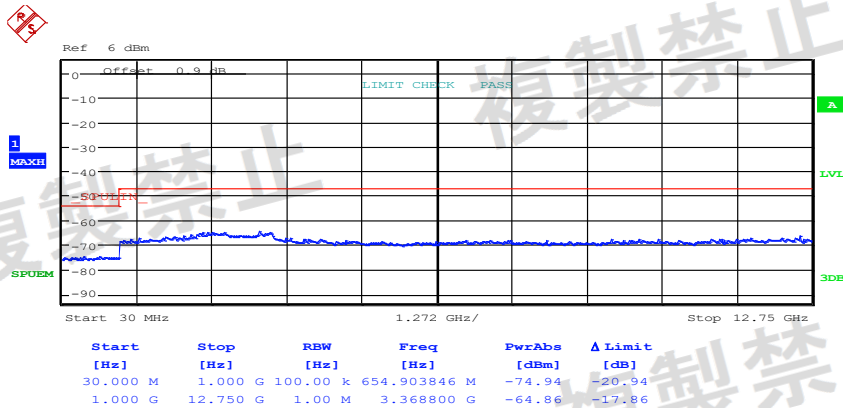
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Spurious Emissions of Rx_TNVN_2.4G_2475_Ant1



Date: 24.JUN.2019 11:56:06

- End of the Report -