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Report No.: SZEM180400323902
Page: 1 of 25

TEST REPORT

Application No.: SZEM1804003239CR
Applicant: OTF Distribution LLC
Address of Applicant: 6000 Broken Sound PKway North West, Suite 201 Boca Raton, FL 33487
Manufacturer: OTF Distribution, LLC
Address of Manufacturer: 6000 Broken Sound ParKway North West, Suite 201 Boca Raton, FL 33487
Factory: Shenzhen Fenda Technology Co., LTD.
Address of Factory: Fenda Science Park, Shiyanzhou Stone Road, Baoan District, Shenzhen City, Guangdong Prov., China

Equipment Under Test (EUT):

EUT Name: Otbeat burn
Model No.: Otbeat burn
Trade mark: OTbeat
Standard(s) : MIC Item 19 of Article 2 Paragraph 1
Date of Receipt: 2018-04-25
Date of Test: 2018-05-11
Date of Issue: 2018-05-16

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



Keny Xu
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-05-16		Original

Authorized for issue by:			
			
		Peter Geng /Project Engineer	
			
		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
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



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.8V, 70mAh rechargeable battery which charged from USB port
Antenna Gain	3.2dBi
Antenna Type	PIFA antenna
Operating Frequency:	2457MHz
Type of Modulation:	GFSK
Number of Channels:	1

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

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

4.4 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.

4.5 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.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

MIC Test Equipment List						
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Calibration body	Classification
Humi/ Temp Indicator	HYGRO	ZJ1-2B	SEL0033	2017-10-12	CEPREI	(c)
Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2017-10-17	CEPREI	(c)
Barometer	ChangChun	DYM3	SEL0088	2018-04-13	CEPREI	(c)
DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2017-10-09	CEPREI	(c)
Multi Meter	Fluke	15B	SEL250	2018-04-24	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

Notice: Calibration duration for above equipments is 1 year.

6 Radio Spectrum Technical Requirement

6.1 E.U.T. Test Conditions

Power Supply

DC 3.8V, 70mAh rechargeable battery

The RF unit is supplied DC3V. The fluctuation of input voltage to the circuit of RF unit of test equipment is under $\pm 1\%$, when input voltage from DC3.8V 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 DC3.8V $\pm 10\%$.

DC Input	DC3V
3.8V	3V
4.18V	3V
3.42V	3V

Temperature:

5 -35.0 °C

Humidity:

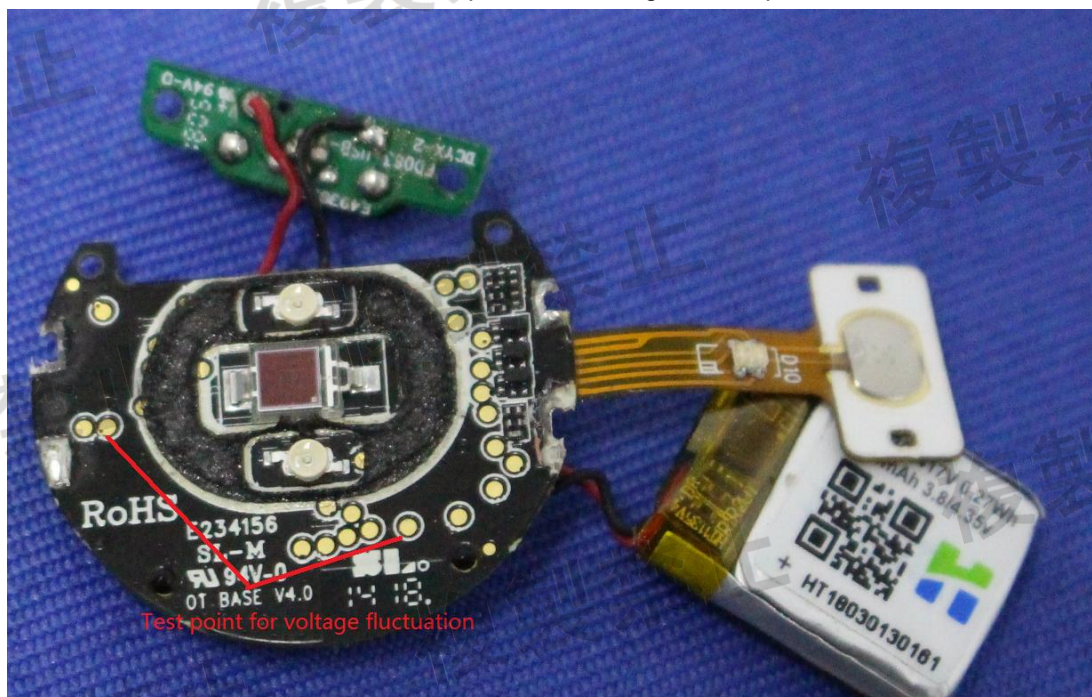
45-85 % RH

Atmospheric Pressure:

1000 -1010 mbar

Test Frequencies:

If the EUT can be set to 3 of 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.



6.2 Antenna Requirement

6.2.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1

6.2.2 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 3.2dBi.

Result:

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



6.3 Interference prevention capability

6.3.1 Test Requirement:

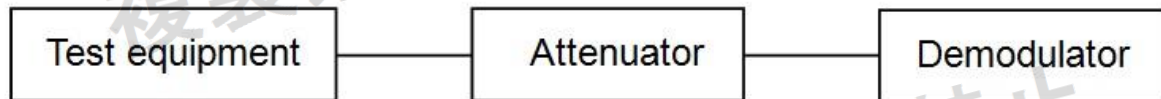
MIC Item 19 of Article 2 Paragraph 1

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.

6.3.2 Test Setup Diagram



6.3.3 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 unit does meet the requirements (Good).

6.4 RF accessibility

6.4.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1

6.4.2 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: 24.5 °C Humidity: 55.3 % RH Atmospheric Pressure: 1020 mbar

Test mode b:TX mode_Keep the EUT in continuously transmitting mode with unmodulated

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%)

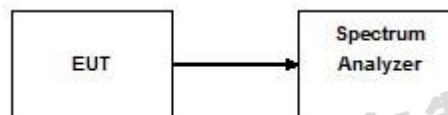
Test Requirement	MIC Item 19 of Article 2 Paragraph 1
Test Method:	MIC Notice No.88 Appendix No.43
Limit:	FH: 83.5MHz or less FH + DS: 83.5MHz or less FH + OFDM: 83.5MHz or less OFDM: 38MHz or less Others: 26MHz or less

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 55.4 % RH Atmospheric Pressure: 1020 mbar
Test mode b:TX mode_Keep the EUT 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

Test Method:

Limit:

MIC Item 19 of Article 2 Paragraph 1

MIC Notice No.88 Appendix No.43

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%

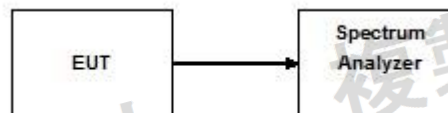
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C Humidity: 55.4 % RH Atmospheric Pressure: 1020 mbar

Test mode b:TX mode_Keep the EUT 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: 24.5 °C Humidity: 55.4 % RH Atmospheric Pressure: 1020 mbar
Test mode b:TX mode_Keep the EUT 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: 24.5 °C Humidity: 55.3 % RH Atmospheric Pressure: 1020 mbar
Test mode b:TX mode_Keep the EUT 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

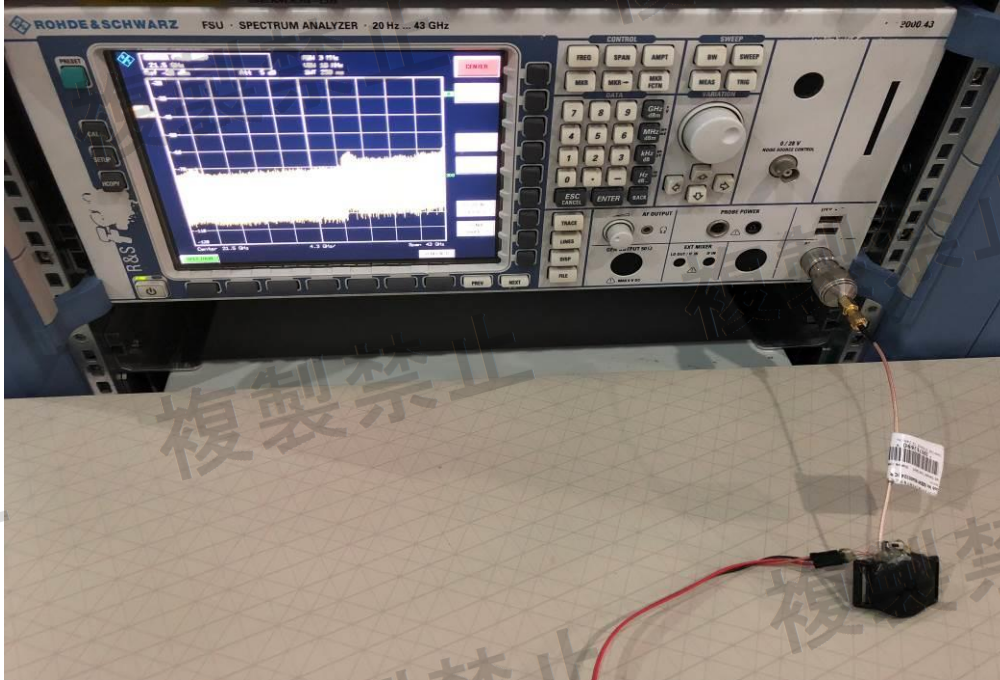
detector mode Sample

Indication mode Max hold

The detailed test data see: Appendix MIC19-2

8 Photographs

8.1 EUT Constructional Details (EUT Photos)



8.2 EUT Constructional Details (EUT Photos)

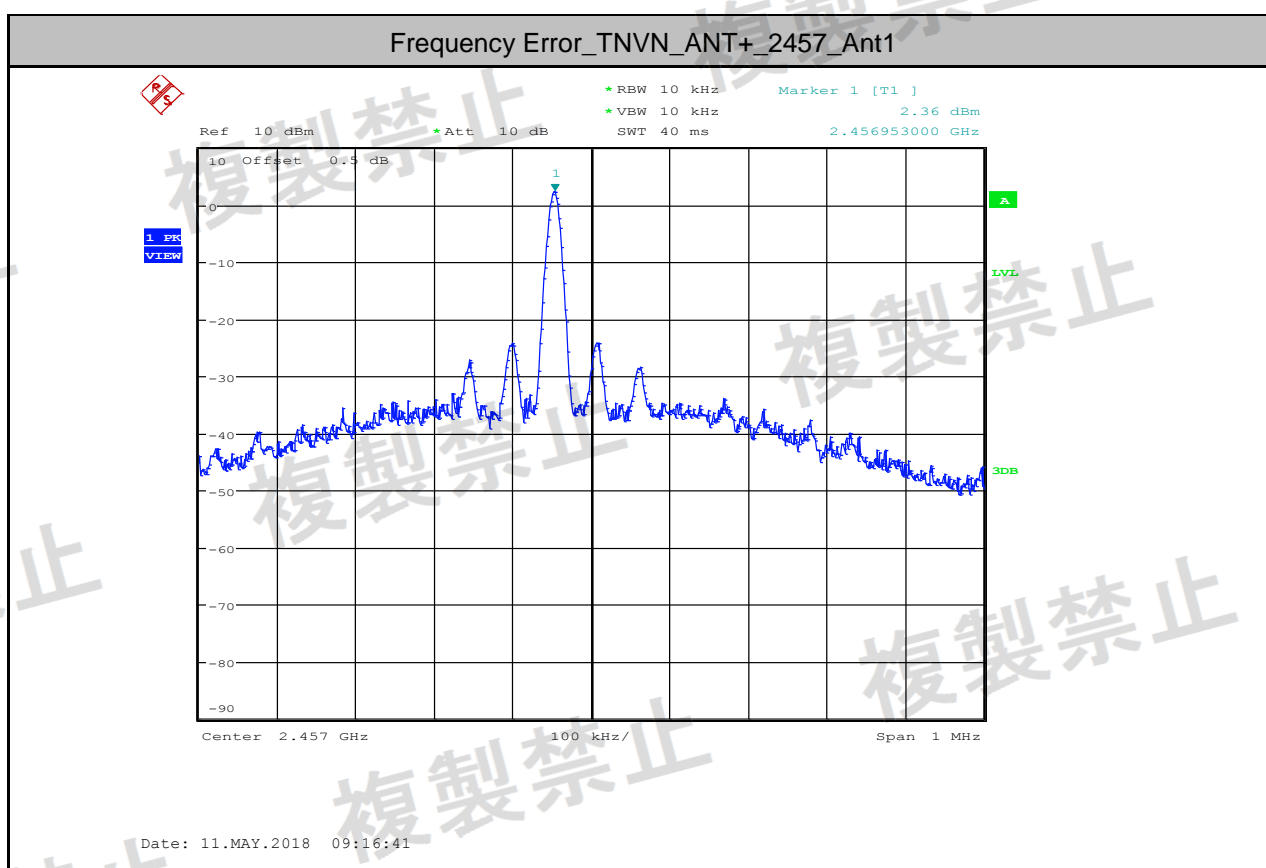
Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1804003239CR.

9 Appendix

9.1 Appendix MIC19-2

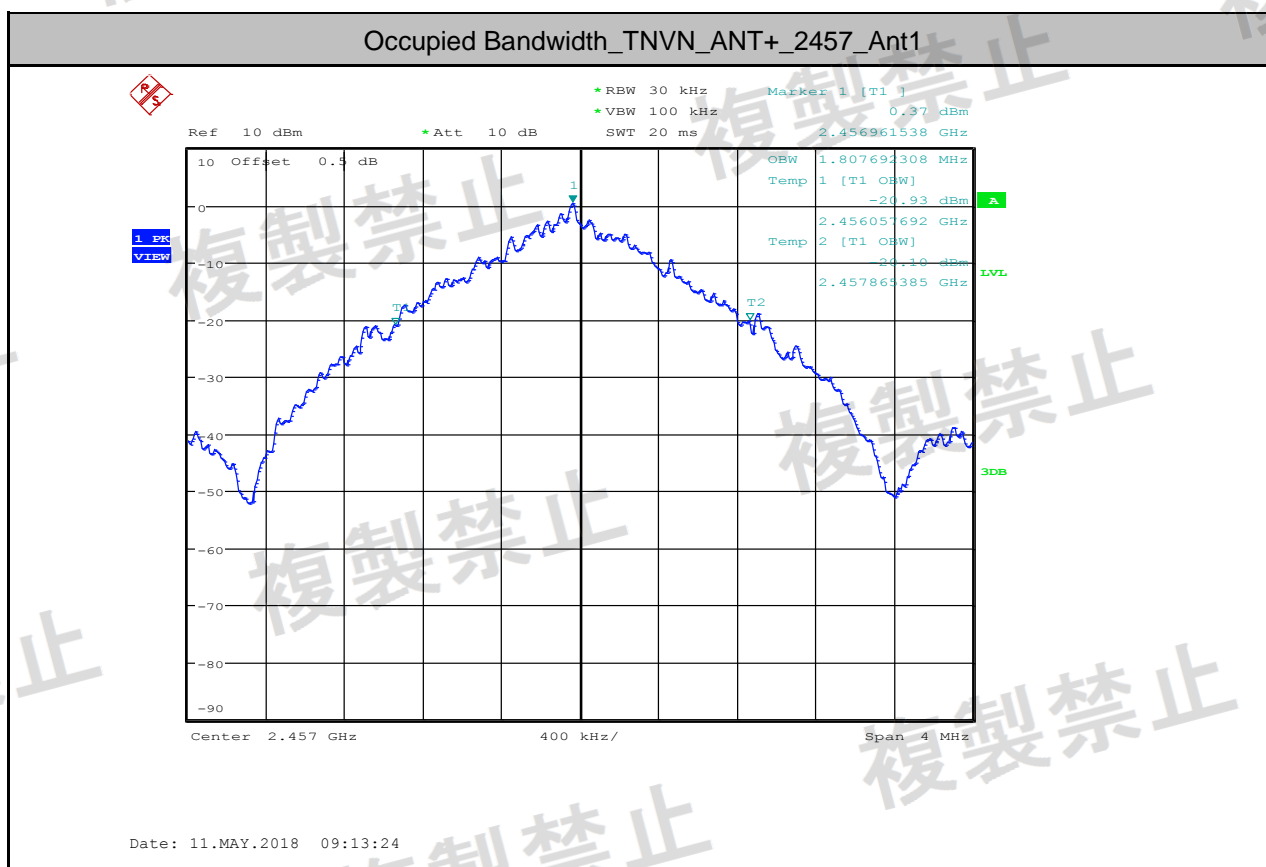
1.Frequency Error

Test Condition	Test Mode	Test Channel	Ant	Result [MHz]	Result [PPM]	Limit [PPM]	Verdict
TNVN	ANT+	2457	Ant1	2456.95	-19.13	$\leq \pm 50$	PASS



2.Occupied Bandwidth (99%)

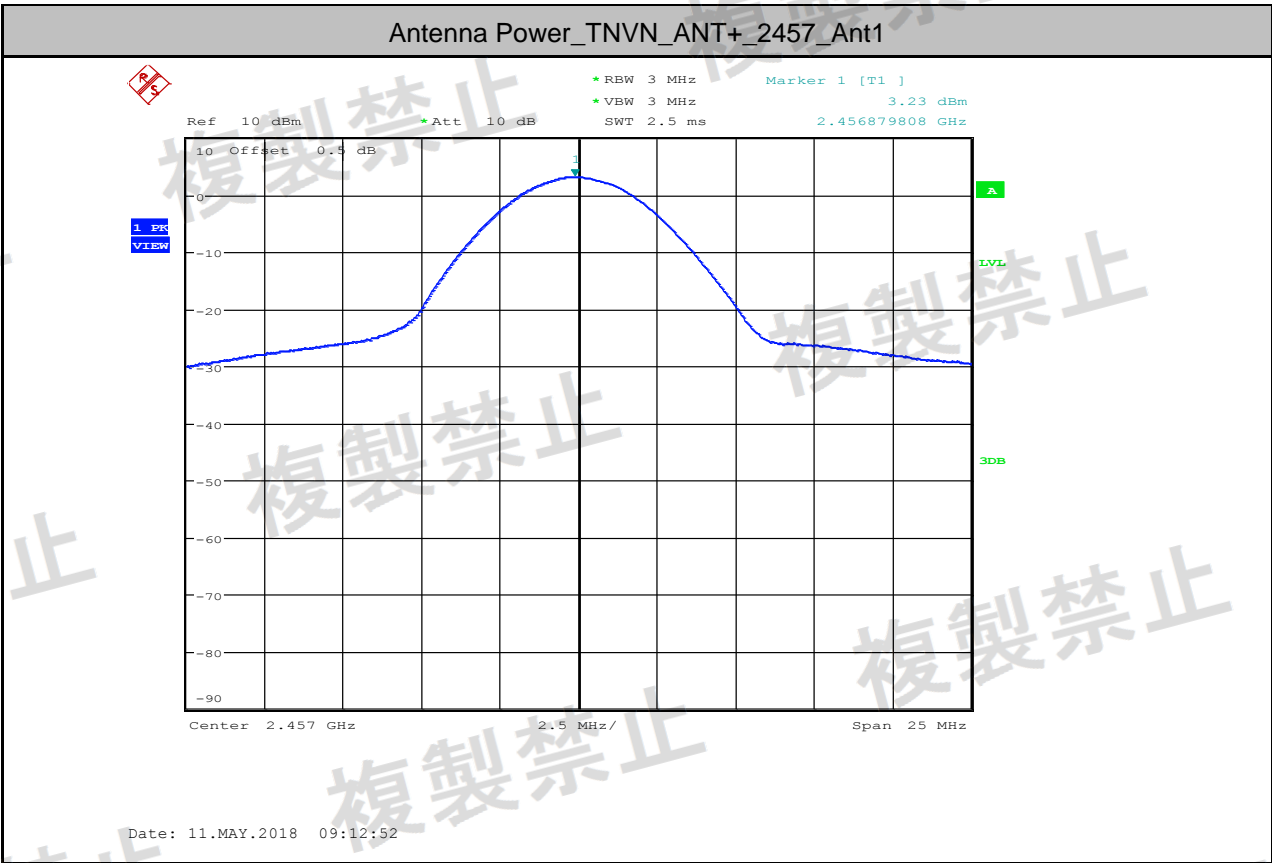
Test Condition	Test Mode	Test Channel	Ant	Test Result [MHz]	Limit [MHz]	Verdict
TNVN	ANT+	2457	Ant1	1.808	<=26	PASS





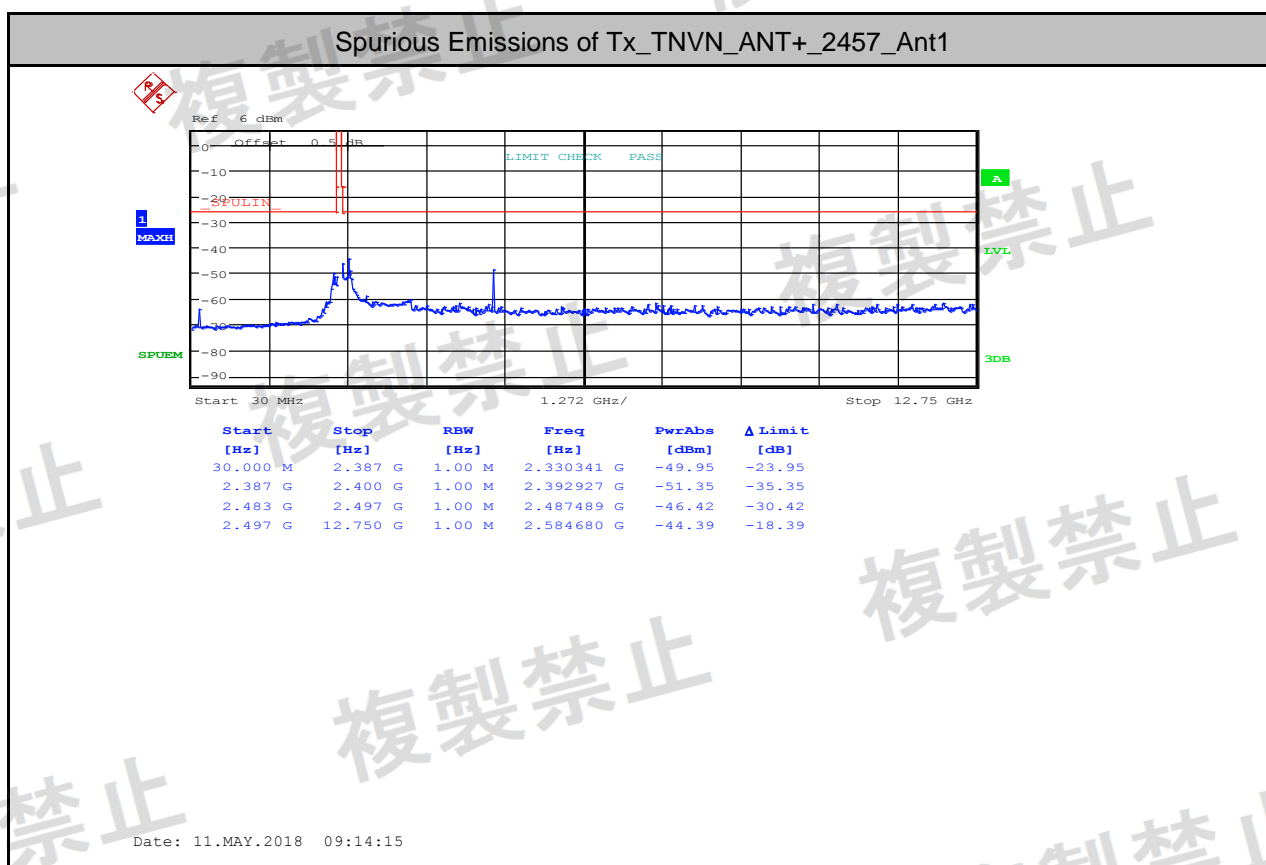
3.Antenna Power

Test Condition	Test Mode	Test Channel	Ant	Power [mW/MHz]	Limit [mW/MHz]	Normal Power [mW/MHz]	Tolera nce[%]	Limit [%]	Verdict
TNVN	ANT+	2457	Ant1	2.104	10	2.5	-15.849	-80 to +20	PASS



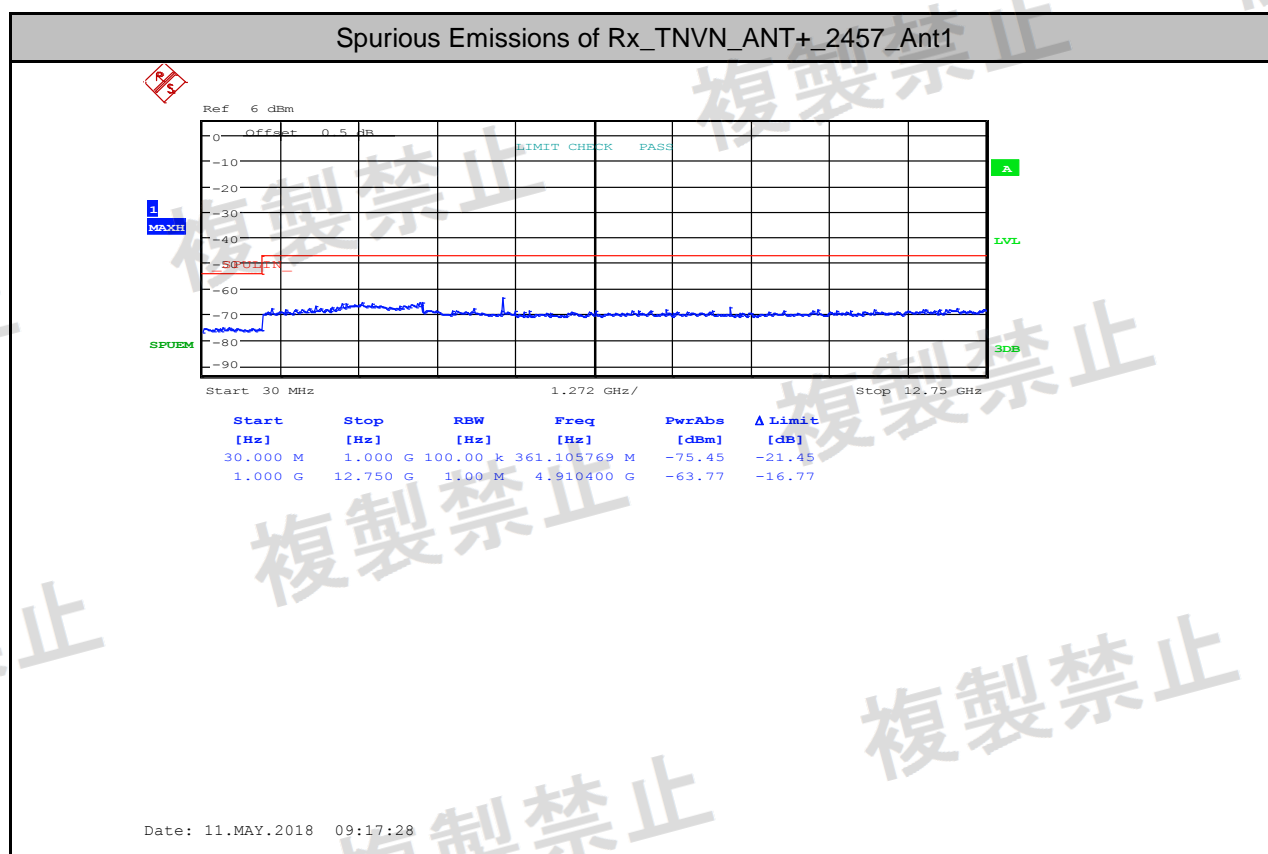
4.Spurious Emissions of Tx

Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[μW]	Limit [μW]	Verdict
ANT+	2457	30	2387	2330.34	0.0101	2.5	PASS
ANT+	2457	2387	2400	2392.93	0.0073	25	PASS
ANT+	2457	2483.5	2496.5	2487.49	0.0228	25	PASS
ANT+	2457	2496.5	13000	2584.68	0.0364	2.5	PASS



5.Spurious Emissions of Rx

Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[nW]	Limit [nW]	Verdict
ANT+	2457	1000	13000	4910.40	0.420	20	PASS
ANT+	2457	30	1000	361.11	0.029	4	PASS



- End of the Report -