

TEST REPORT

Application No.: SZEM1906015780CR
Applicant: Shure Incorporated
Address of Applicant: 5800 West Touhy Ave, Niles, IL 60714-4608, United States
Manufacturer: Shure Incorporated
Address of Manufacturer: 5800 West Touhy Ave, Niles, IL 60714-4608, United States
Factory: Innovation Sound Technology Company Limited
Address of Factory: Building 2nd, Building 3rd, and 2nd Floor, 3rd Floor & 4th Floor & 5th Floor of Building 4th, 1#Area, Industrial Area of Huaide Cuihai, Fengtang Road, Tangwei Community, Fuyong Street, Bao'an District, Shenzhen City, Guangdong Province 518103, P.R.China

Equipment Under Test (EUT):

EUT Name: Wireless Headphones
Model No.: SBH2350
Trade mark: Shure
Standard(s) : MIC Item 19 of Article 2 Paragraph 1
 ARIB STD-T66

Date of Receipt: 2019-06-30
Date of Test: 2019-06-30 to 2019-08-05
Date of Issue: 2019-08-6

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		2019-08-06		Original

Authorized for issue by:		
		
		Harry Wu /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
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
Spread spectrum Bandwidth(90%)	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
Dwell time	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 3.7V Rechargeable Battery which can be charged by Type C port
Cable:	Type C Cable: 110cm, Unshielded Aux In Cable: 110cm, Unshielded
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.0
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79
Channel Spacing:	1MHz
Antenna Type:	Monopole
Antenna Gain:	2.05dBi

4.2 Test Conditions

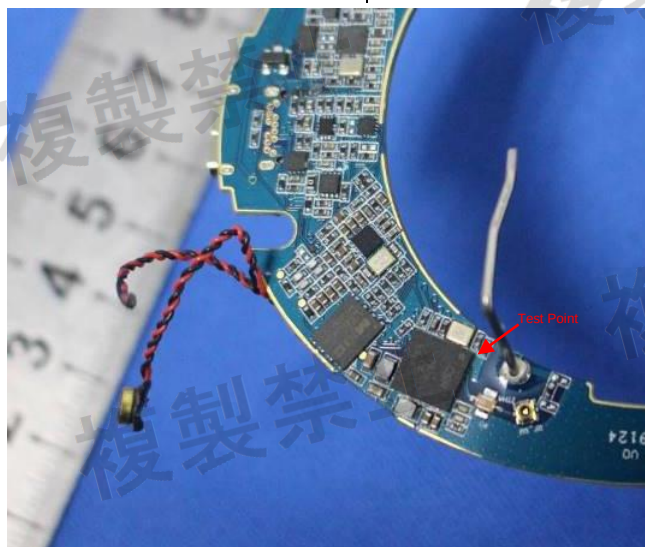
Power Supply

DC 3.7V Rechargeable Battery which can be charged by Type C port

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.



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

Selected Test Channel	
Channel	Frequency
The lowest channel	2402MHz
The middle channel	2440MHz
The highest channel	2480MHz

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	Conduction emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
5	RF conducted power	$\pm 0.75\text{dB}$
6	RF power density	$\pm 2.84\text{dB}$
7	Conducted Spurious emissions	$\pm 0.75\text{dB}$
8	RF Radiated power	$\pm 4.5\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (Above 1GHz)
9	Radiated Spurious emission test	$\pm 4.5\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (Above 1GHz)
10	Temperature test	$\pm 1^\circ\text{C}$
11	Humidity test	$\pm 3\%$
12	Supply voltages	$\pm 1.5\%$
13	Time	$\pm 3\%$



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	2019-06-20	2020-06-19	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:

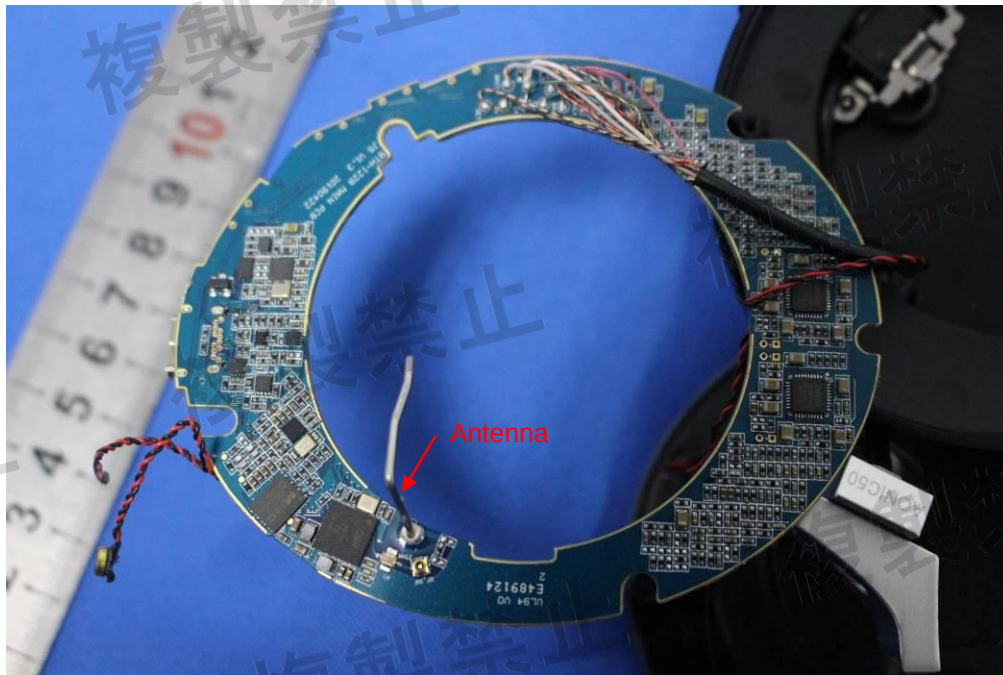
MIC Item 19 of Article 2 Paragraph 1

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-fixtue.

EUT Details:



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.05dBi.

Result:

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

6.2 Interference prevention capability

6.2.1 Test Requirement:

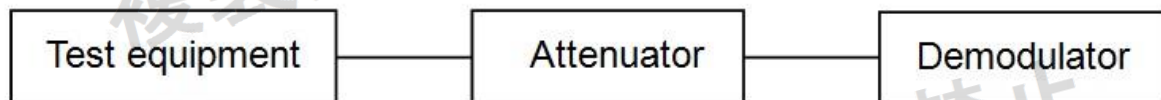
MIC Item 19 of Article 2 Paragraph 1

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:

00:0E:DD:0F:32:7C

The unit does meet the requirements (Good).



6.3 RF accessibility

6.3.1 Test Requirement:

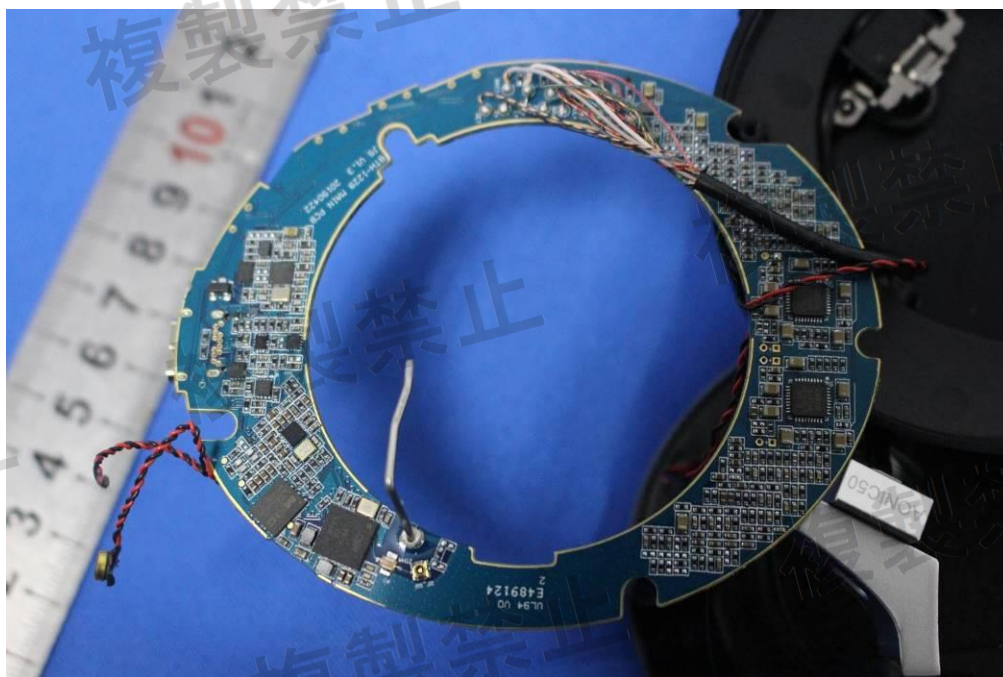
MIC Item 19 of Article 2 Paragraph 1

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: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar

Test mode a:TX_Keep the EUT in transmitting mode

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: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar

Test mode a:TX_Keep the EUT in transmitting mode

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 Spread spectrum Bandwidth(90%)

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: DS,FH,FH+DS,FH+OFDM: 500kHz or more

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar
Test mode a:TX_Keep the EUT in transmitting mode

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 83.5 MHz (FHSS); 40/60 MHz (OFDM; DSSS)

RBW 1 MHz (FHSS); 300kHz (OFDM; DSSS)

VBW 1 MHz (FHSS); 300kHz (OFDM; DSSS)

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

OBW 90%

The detailed test data see: Appendix MIC19-2

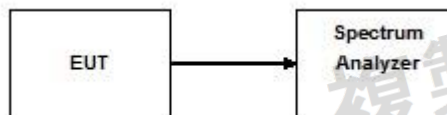
7.4 Antenna Power

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%

7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar
Test mode a: TX_Keep the EUT in transmitting mode

7.4.2 Test Setup Diagram



7.4.3 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



7.5 Dwell time

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: less than 0.4sec

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar
Test mode a:TX_Keep the EUT in transmitting mode

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, Hopping frequency is fixed, Bluetooth equipment is setting DH5 mode

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 (fixed hopping frequency)

Span 0 Hz

RBW 1 MHz

VBW 1 MHz

Sweep Time EUT condition

Trigger Video Trigger

Measures the Transmission time of 1 burst (sec)

Measures the Burst cycle (sec)

4. Calculation procedure:

Dwell time = (0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)]) / ([burst cycle(s)] x [No. of hopping channel])

Note:

* Spreading rate = [Spread bandwidth (actual measurement value)] / [Transmission rate]

The detailed test data see: Appendix MIC19-2



7.6 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



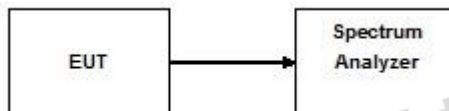
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar

Test mode a:TX_Keep the EUT in transmitting mode

7.6.2 Test Setup Diagram



7.6.3 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:

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



7.7 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



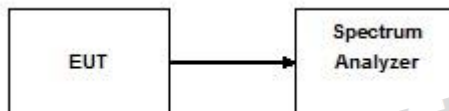
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23.8 °C Humidity: 48.4 % RH Atmospheric Pressure: 1000 mbar

Test mode b:RX_Keep the EUT in receiving mode

7.7.2 Test Setup Diagram



7.7.3 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

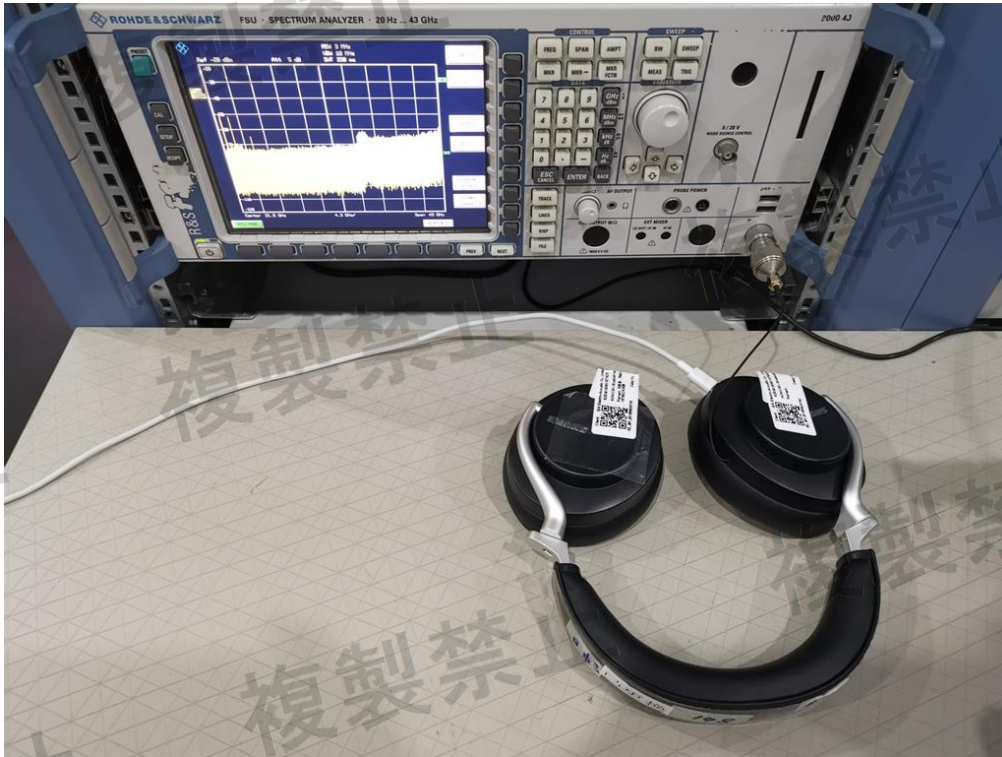
Indication mode Max hold

The detailed test data see: Appendix MIC19-2



8 Photographs

8.1 Setup Photos



8.2 EUT Constructional Details (EUT Photos)

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1906015780CR.



9 Appendix

9.1 Appendix MIC19-2

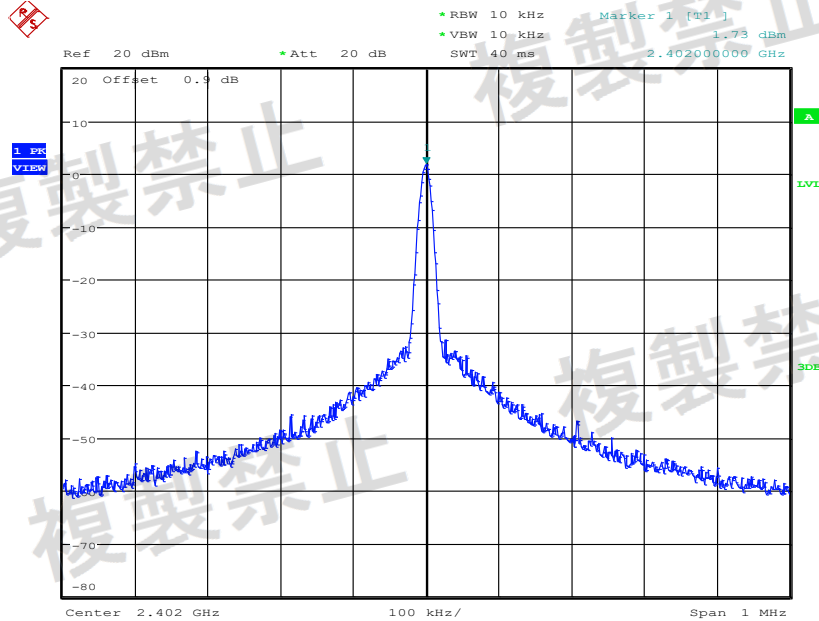
1.Frequency Error

Test Condition	Test Mode	Test Channel	Ant	Result[MHz]	Result[PPM]	Limit[PPM]	Verdict
TNVN	DH5	2402	Ant1	2402.000	0	$\leq \pm 50$	PASS
TNVN	DH5	2441	Ant1	2440.999	-0.41	$\leq \pm 50$	PASS
TNVN	DH5	2480	Ant1	2479.999	-0.4	$\leq \pm 50$	PASS

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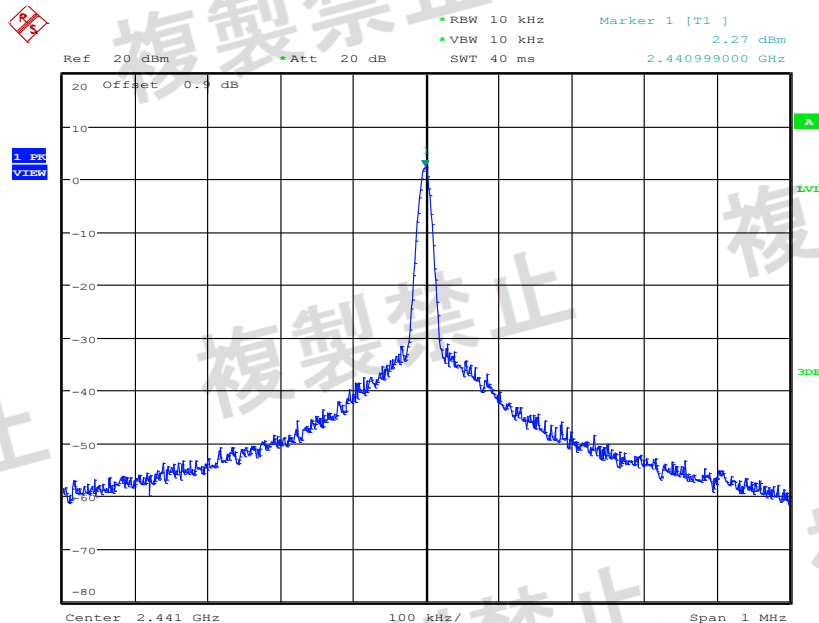
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Frequency Error_TNVN_DH5_2402_Ant1



Date: 5.JUL.2019 13:00:09

Frequency Error_TNVN_DH5_2441_Ant1



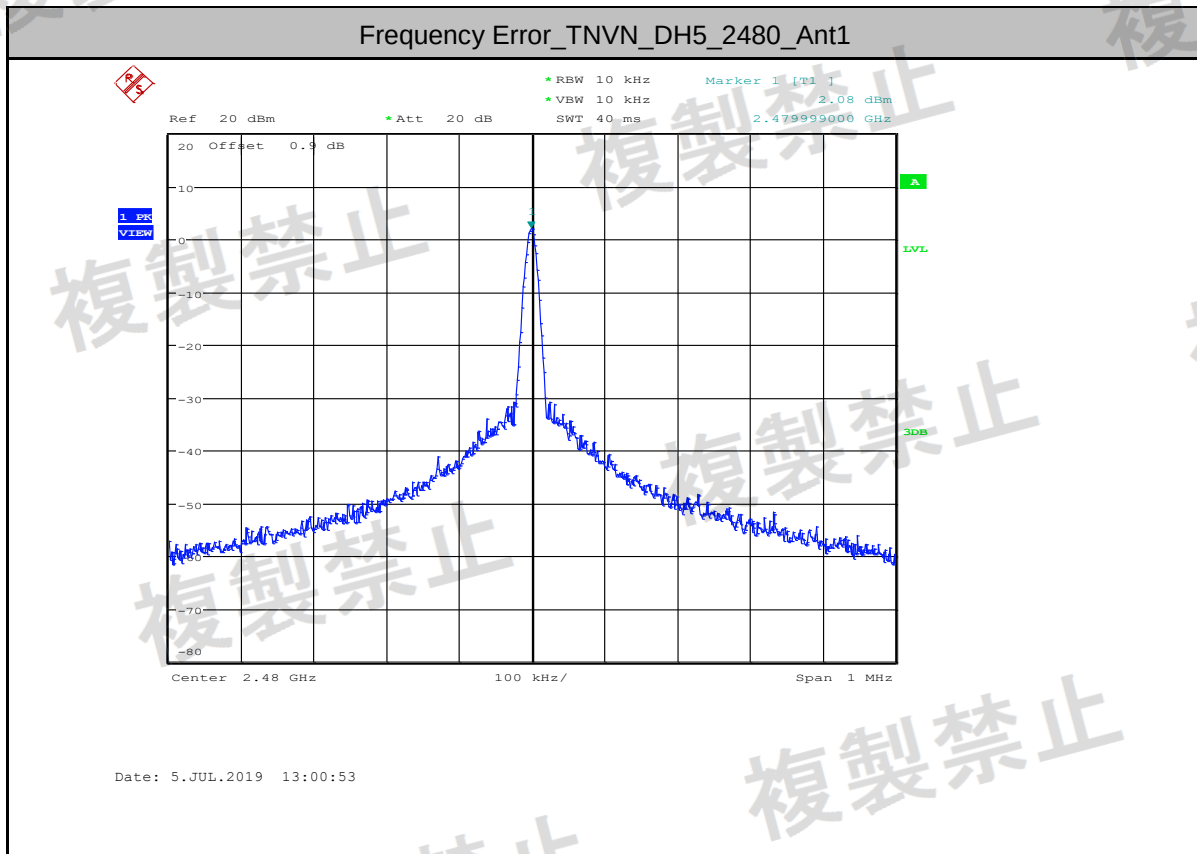
Date: 5.JUL.2019 13:00:38

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2.Occupied Bandwidth (99%)

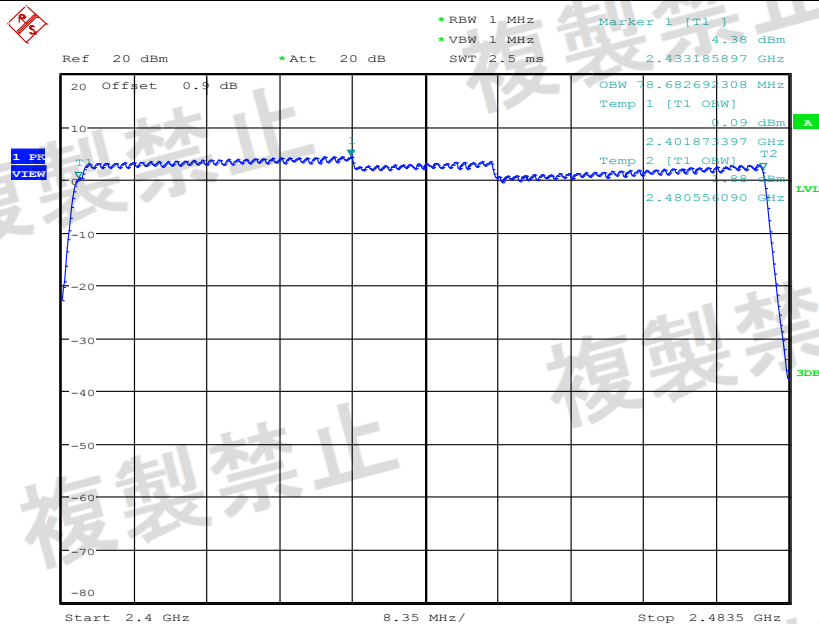
Test Condition	Test Mode	Test Channel	Ant	Test Result[MHz]	Limit [MHz]	Verdict
TNVN	DH5	2441	Ant1	78.683	<=83.5	PASS
TNVN	2DH5	2441	Ant1	78.683	<=83.5	PASS
TNVN	3DH5	2441	Ant1	78.817	<=83.5	PASS

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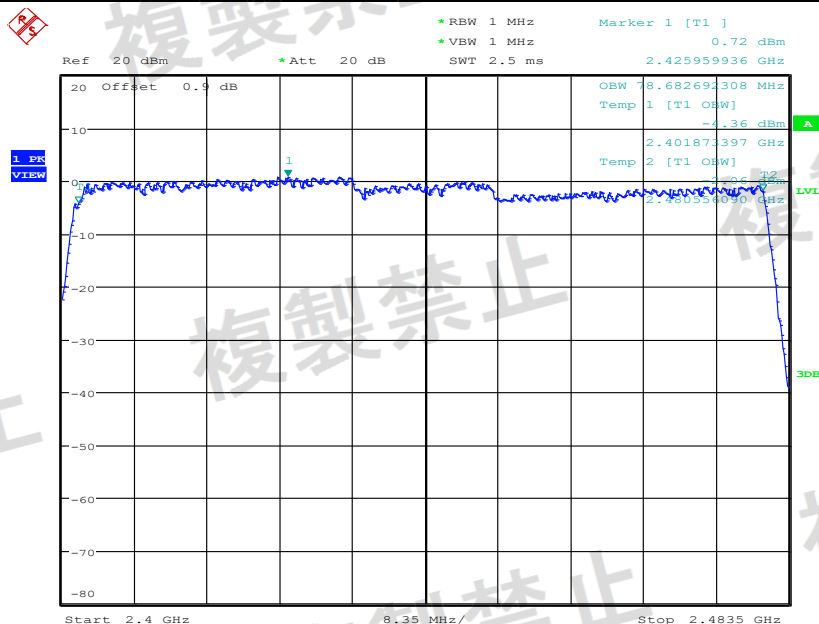


Occupied Bandwidth_TNVN_DH5_2441_Ant1



Date: 5.JUL.2019 11:49:55

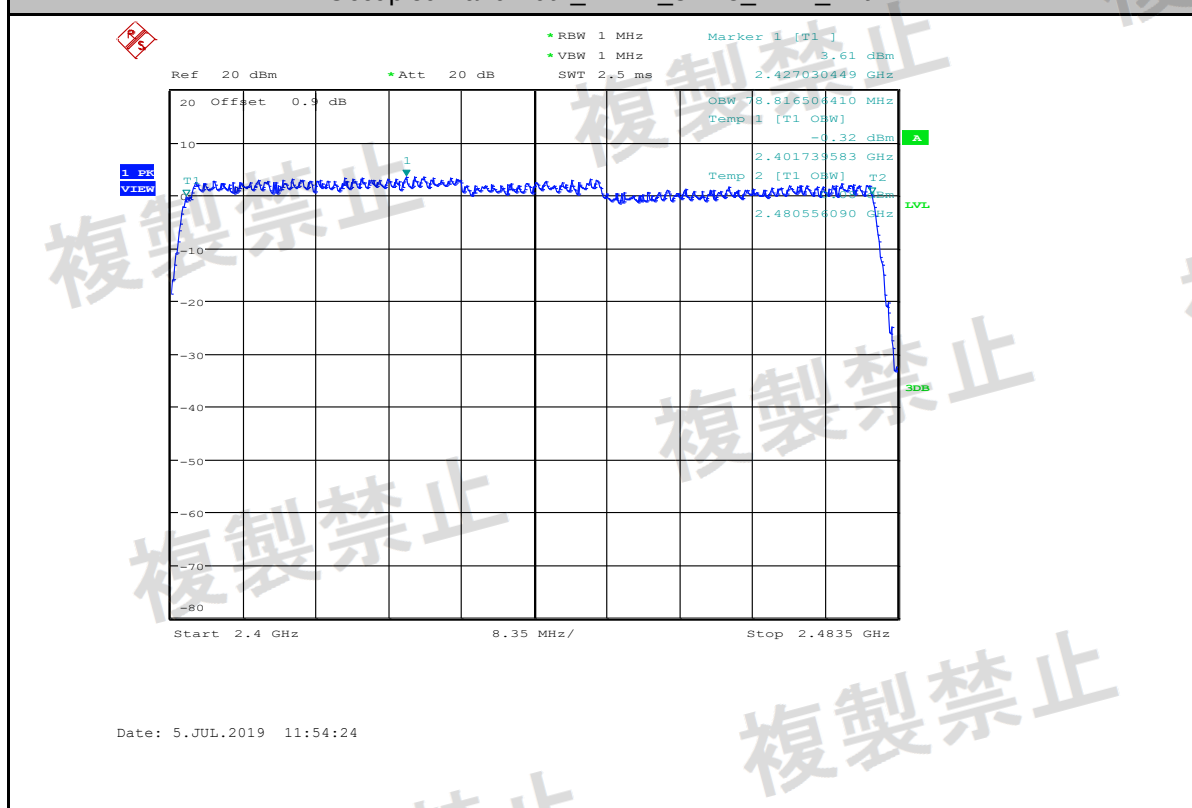
Occupied Bandwidth_TNVN_2DH5_2441_Ant1



Date: 5.JUL.2019 11:52:23



Occupied Bandwidth_TNVN_3DH5_2441_Ant1



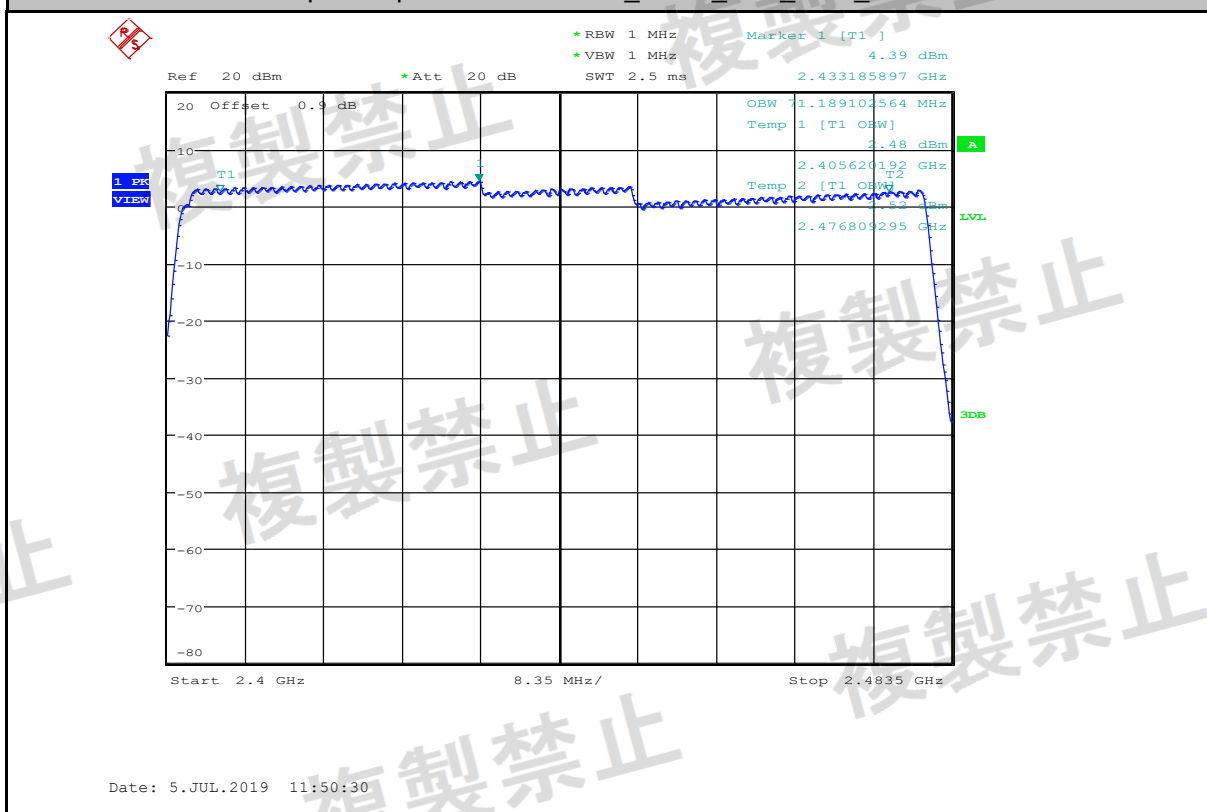
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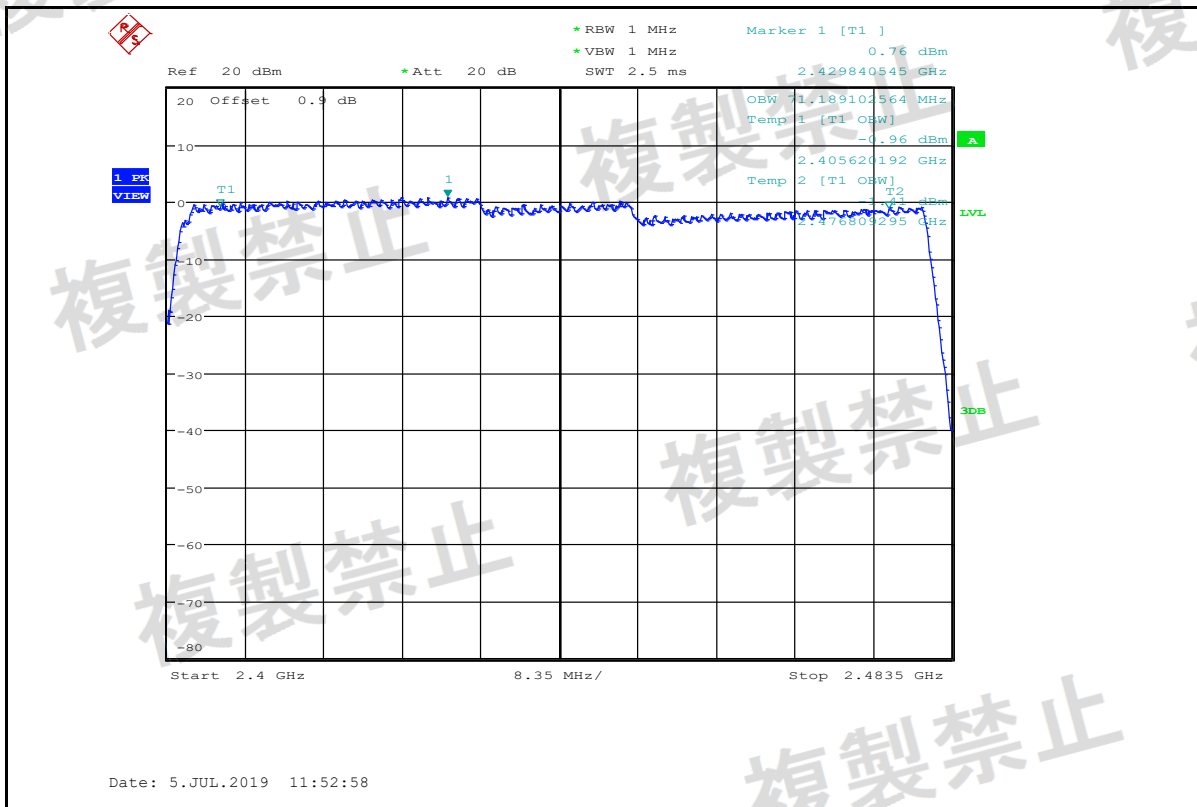
3. Spread spectrum Bandwidth (90%)

Test Condition	Test Mode	Test Channel	Ant	Test Result[MHz]	Limit [MHz]	Verdict
TNVN	DH5	2441	Ant1	71.189	≥ 0.5	PASS
TNVN	2DH5	2441	Ant1	71.189	≥ 0.5	PASS
TNVN	3DH5	2441	Ant1	71.323	≥ 0.5	PASS

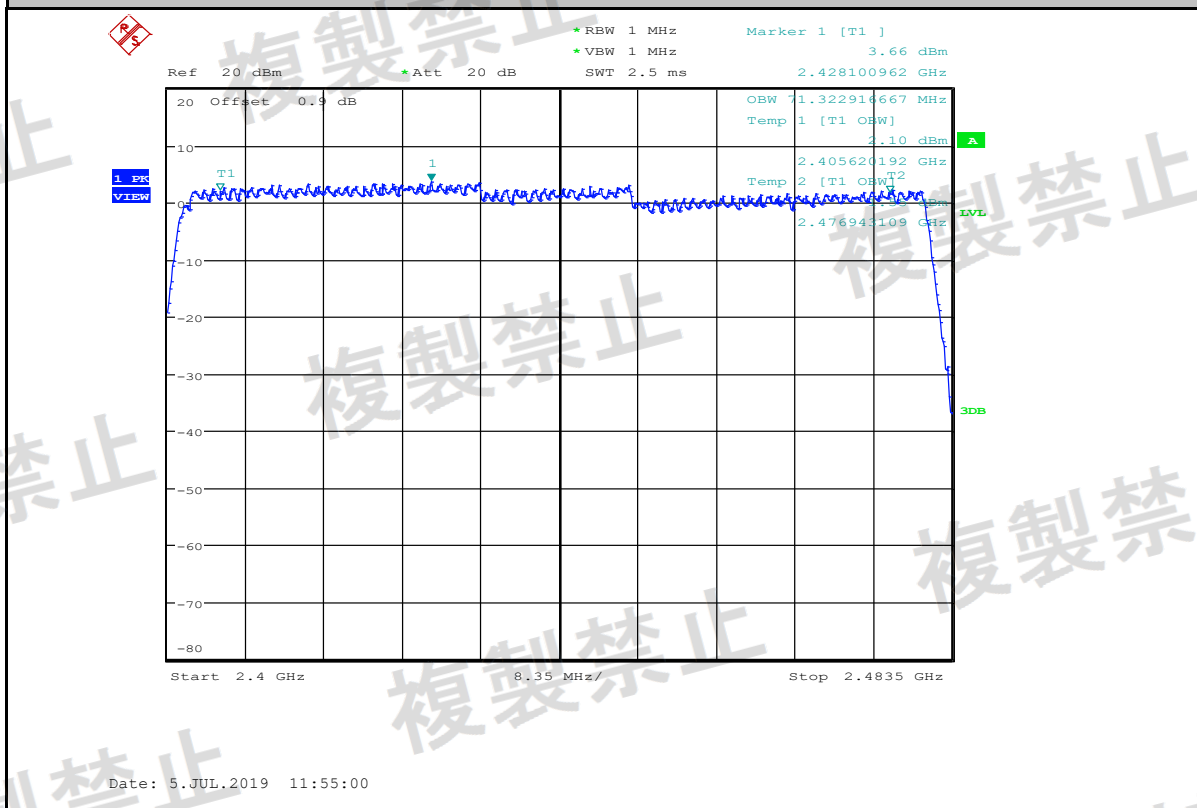
Spread spectrum Bandwidth_TNVN_DH5_2441_Ant1



Spread spectrum Bandwidth_TNVN_2DH5_2441_Ant1



Spread spectrum Bandwidth_TNVN_3DH5_2441_Ant1



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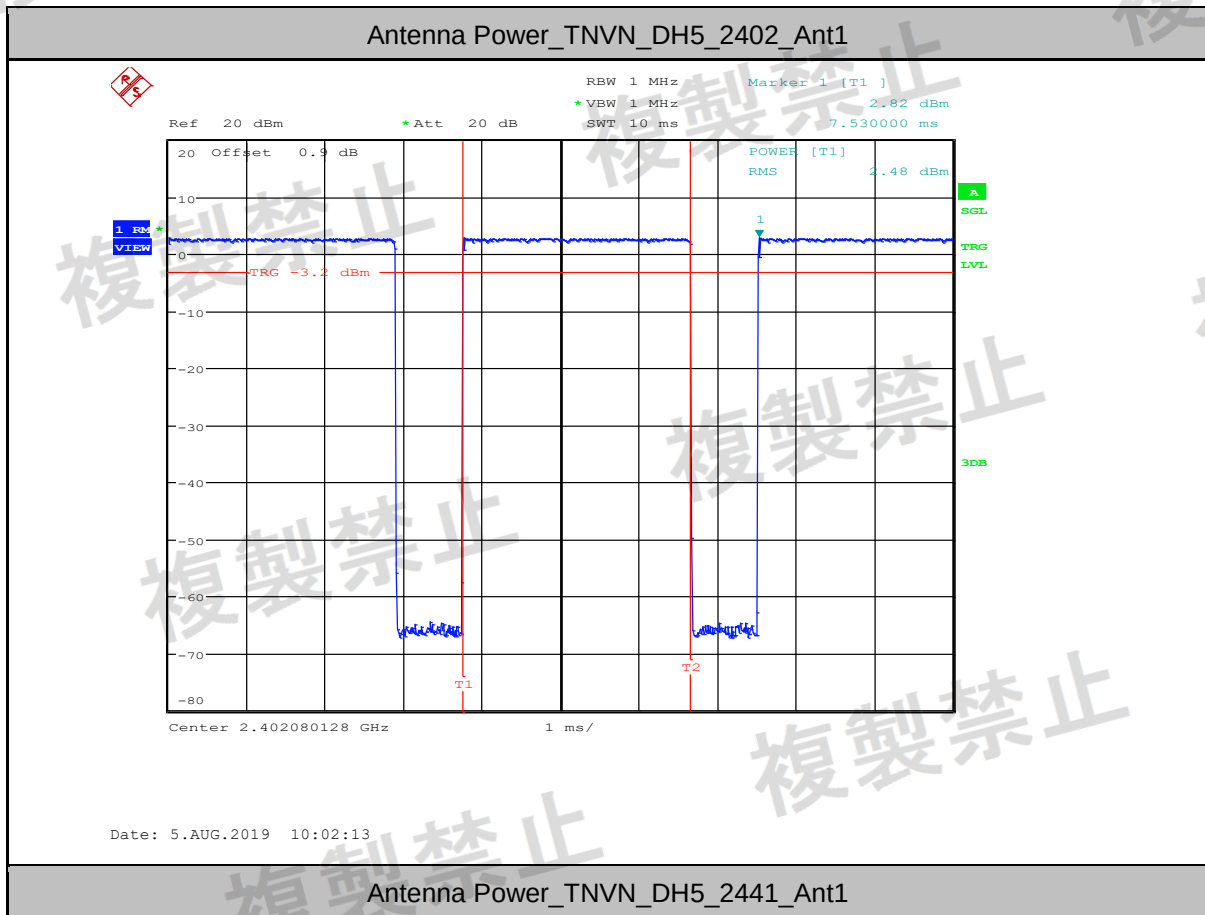
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4. Antenna Power

Test Condition	Test Mode	Test Channel	Ant	Power[mW/MHz]	Limit[mW/MHz]	Normal Power [mW/MHz]	Tolerance[%]	Limit [%]	Verdict
TNVN	DH5	2402	Ant1	1.77	3	2.0	-11.500	-80 to +20	PASS
TNVN	DH5	2441	Ant1	1.36	3	2.0	-32.000	-80 to +20	PASS
TNVN	DH5	2480	Ant1	1.55	3	2.0	-22.500	-80 to +20	PASS
TNVN	2DH5	2402	Ant1	0.92	3	1.0	-8.000	-80 to +20	PASS
TNVN	2DH5	2441	Ant1	1	3	1.0	0.000	-80 to +20	PASS
TNVN	2DH5	2480	Ant1	1.01	3	1.0	1.000	-80 to +20	PASS
TNVN	3DH5	2402	Ant1	0.88	3	1.0	-12.000	-80 to +20	PASS
TNVN	3DH5	2441	Ant1	0.88	3	1.0	-12.000	-80 to +20	PASS
TNVN	3DH5	2480	Ant1	0.91	3	1.0	-9.000	-80 to +20	PASS

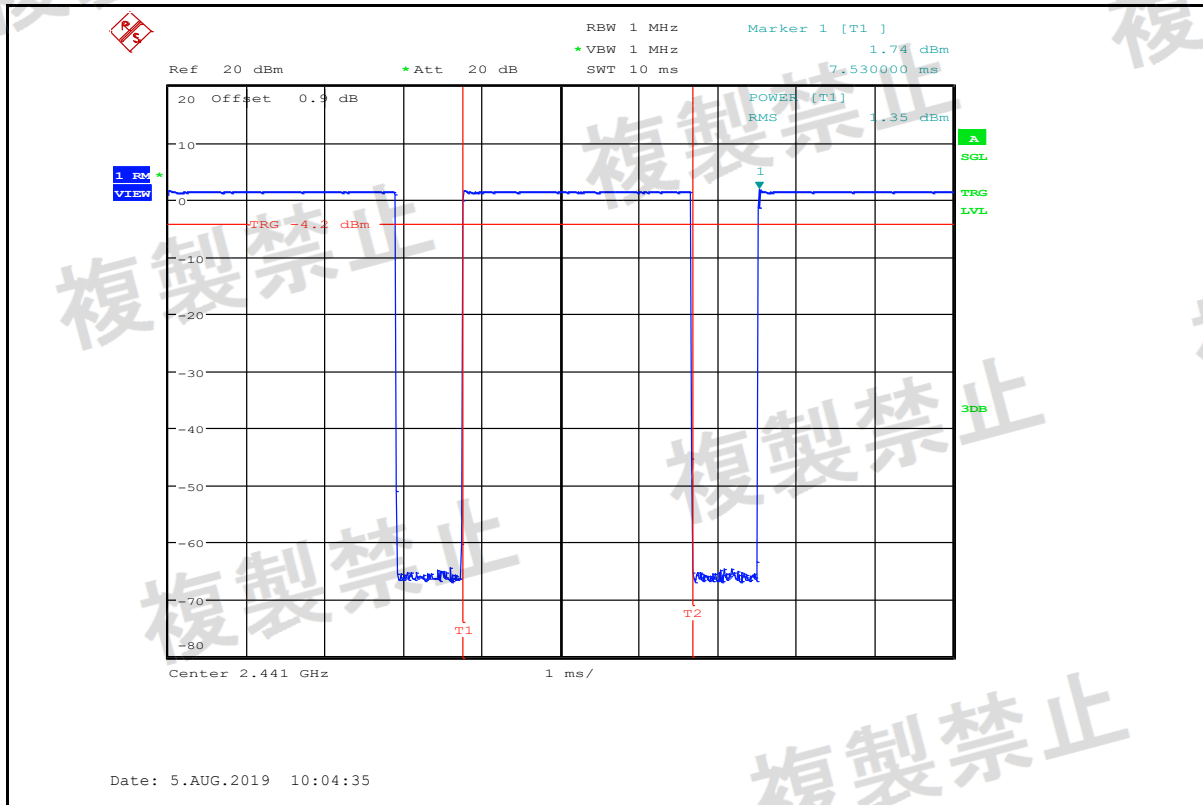
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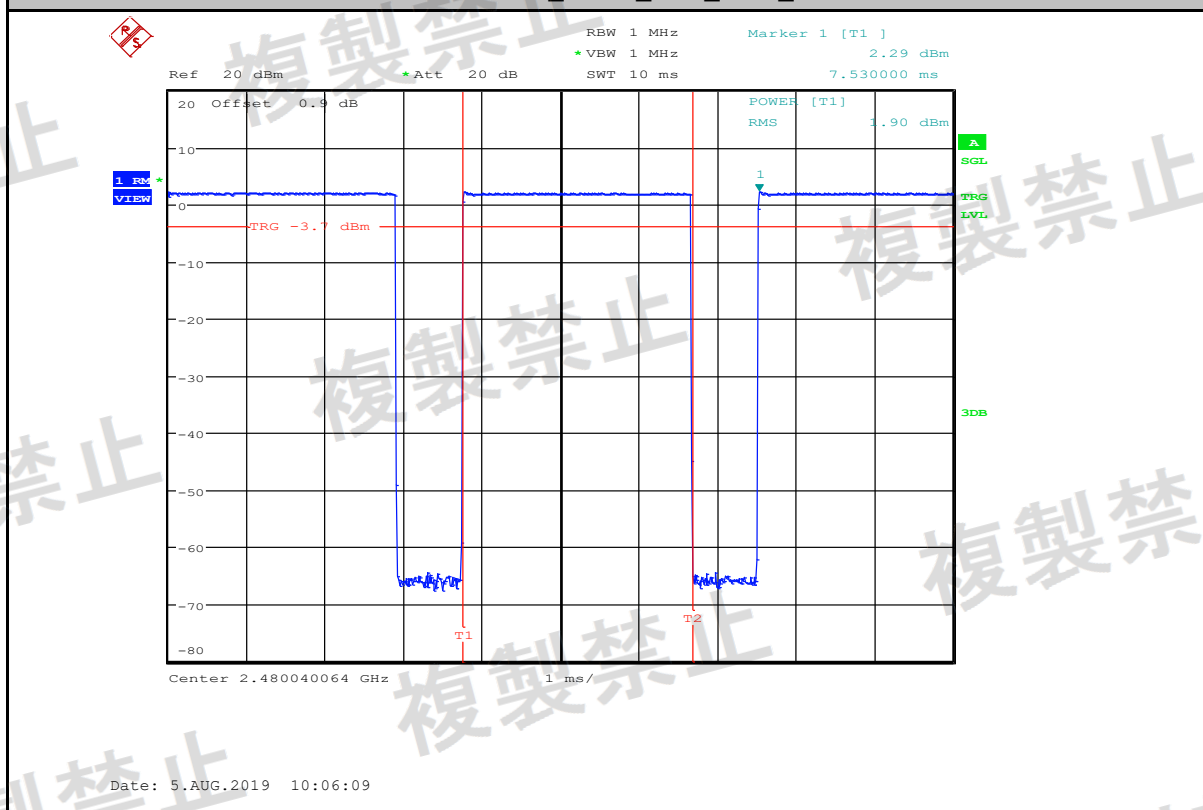


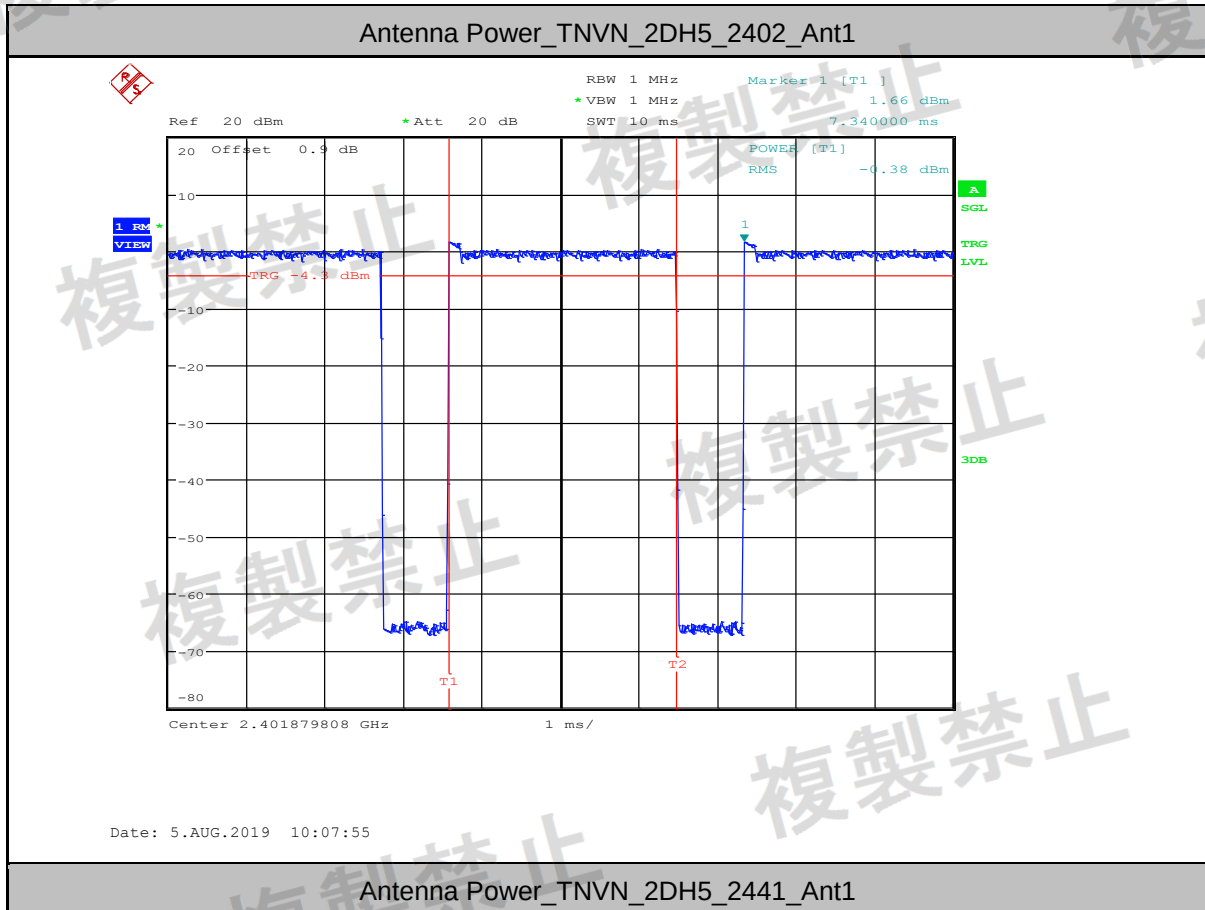
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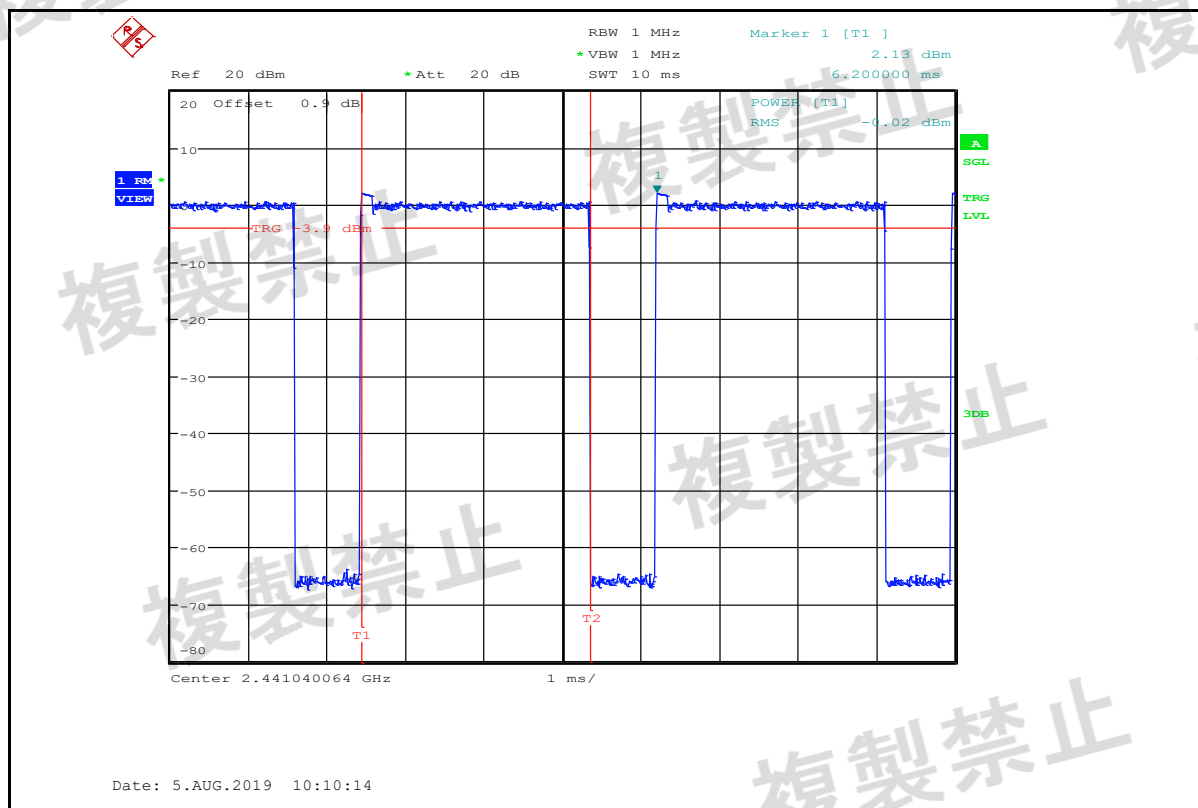
Antenna Power_TNVN_DH5_2480_Ant1



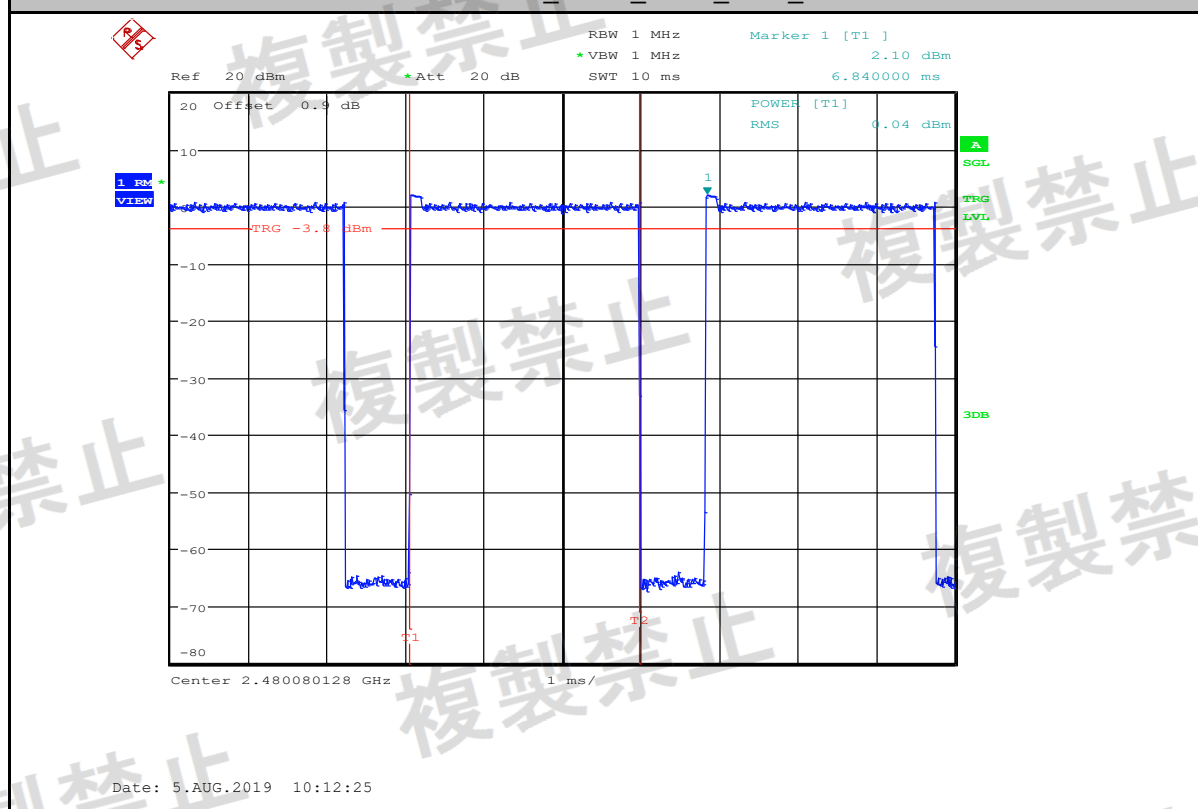


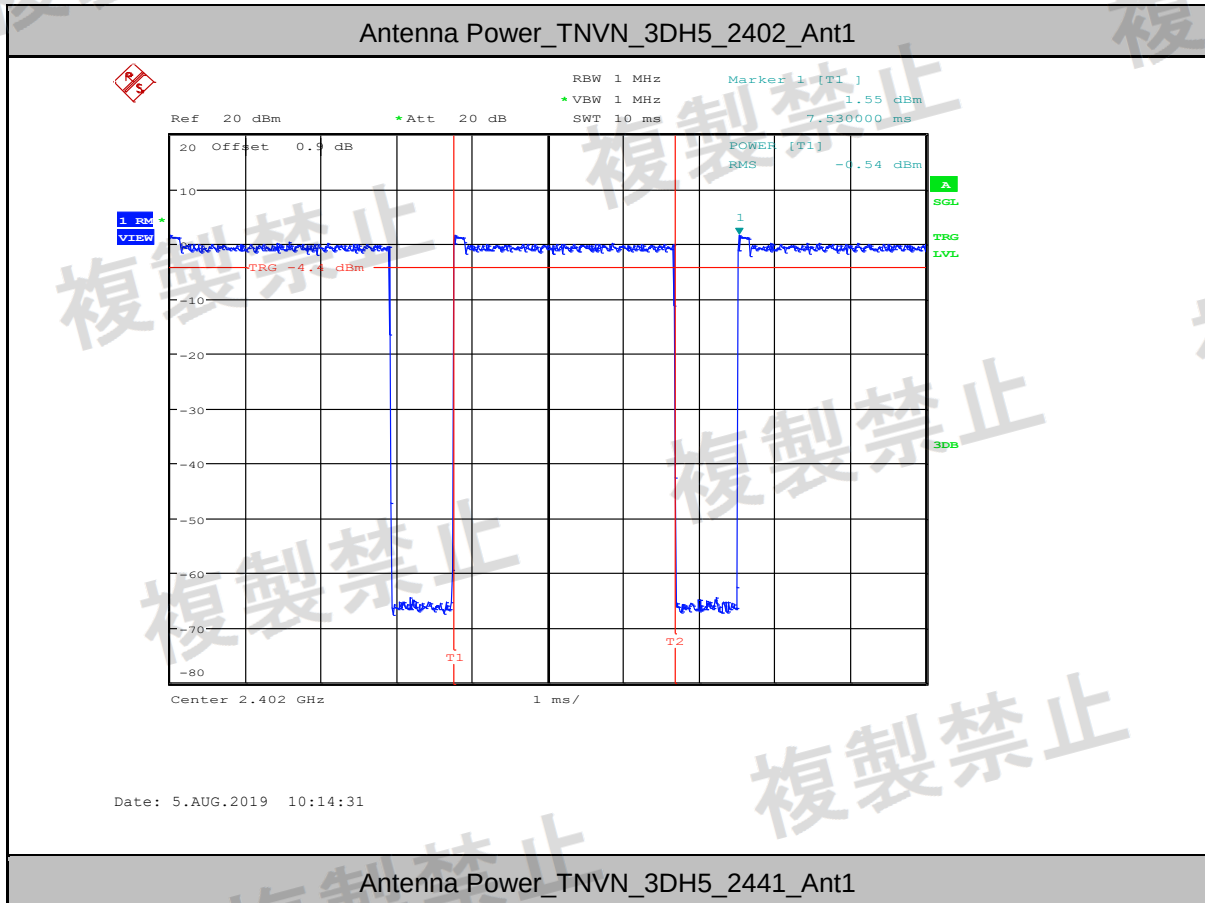
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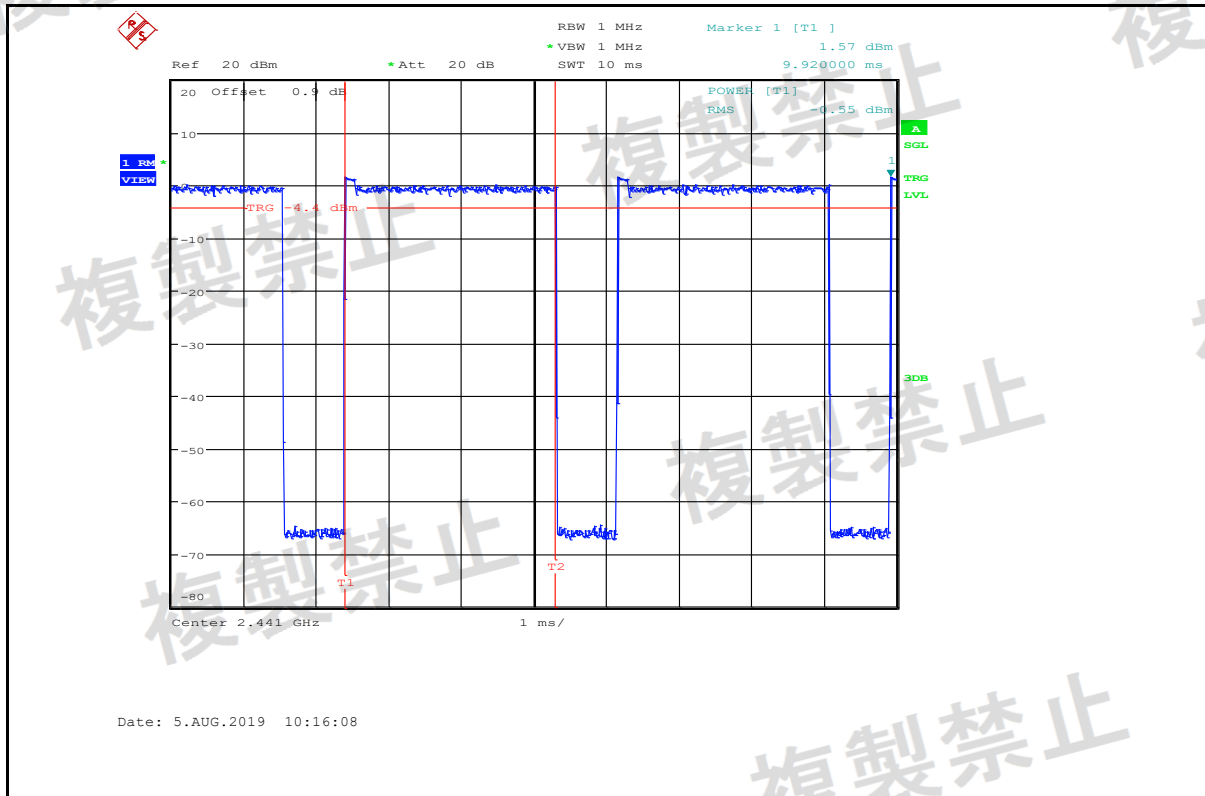
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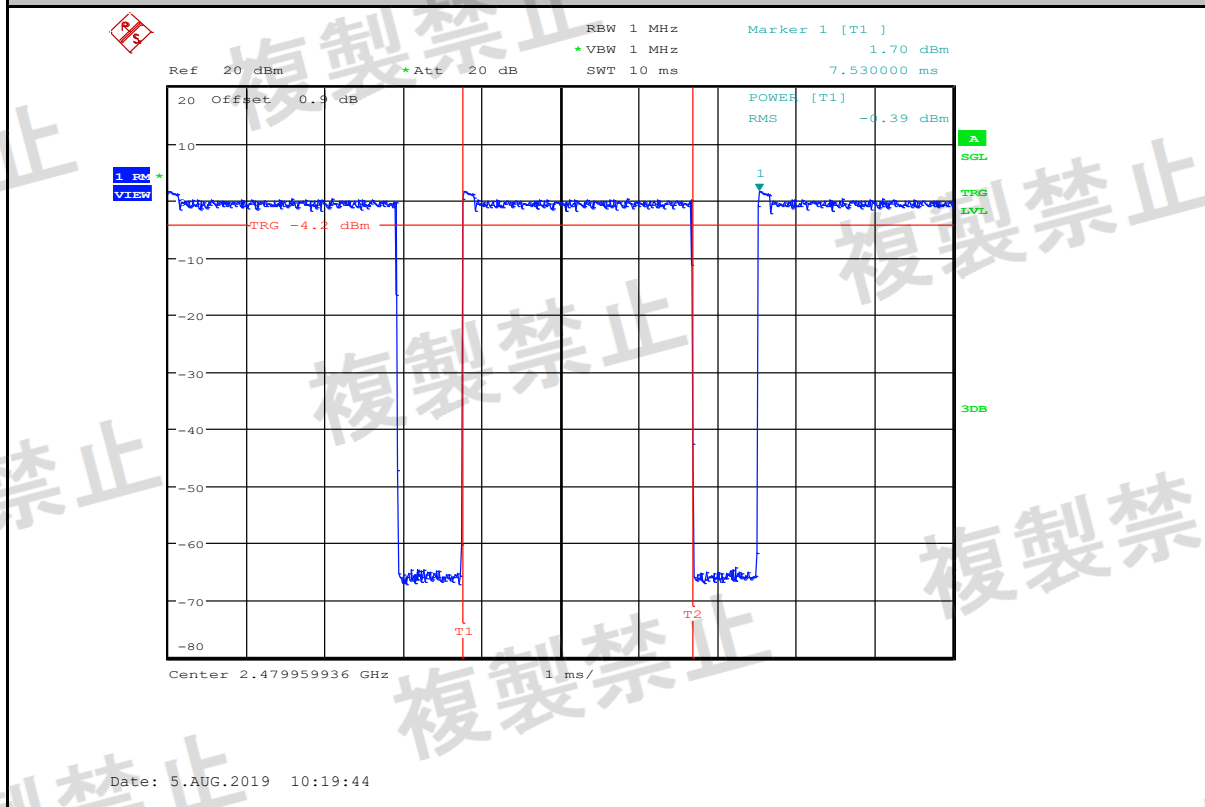


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Antenna Power_TNVN_3DH5_2480_Ant1



5.Spurious Emissions of Tx

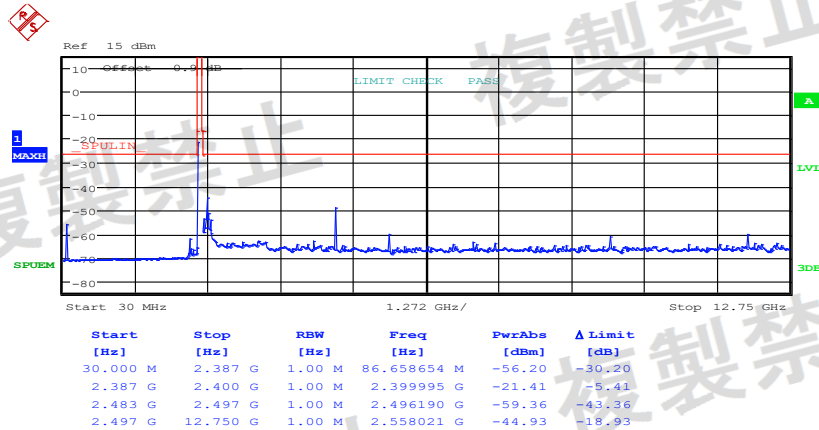
Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[μW]	Limit[μW]	Verdict
DH5	2402	30	2387	86.66	0.0024	2.5	PASS
DH5	2402	2387	2400	2399.99	7.2277	25	PASS
DH5	2402	2483.5	2496.5	2496.19	0.0012	25	PASS
DH5	2402	2496.5	13000	2558.02	0.0321	2.5	PASS
DH5	2441	30	2387	124.43	0.0011	2.5	PASS
DH5	2441	2387	2400	2389.04	0.0003	25	PASS
DH5	2441	2483.5	2496.5	2492.76	0.0015	25	PASS
DH5	2441	2496.5	13000	2596.64	0.0142	2.5	PASS
DH5	2480	30	2387	2326.56	0.0010	2.5	PASS
DH5	2480	2387	2400	2399.80	0.0003	25	PASS
DH5	2480	2483.5	2496.5	2483.52	0.1186	25	PASS
DH5	2480	2496.5	13000	2635.61	0.0120	2.5	PASS
2DH5	2402	30	2387	86.66	0.0005	2.5	PASS
2DH5	2402	2387	2400	2399.99	6.3680	25	PASS
2DH5	2402	2483.5	2496.5	2485.49	0.0010	25	PASS
2DH5	2402	2496.5	13000	2557.34	0.0163	2.5	PASS
2DH5	2441	30	2387	124.43	0.0005	2.5	PASS
2DH5	2441	2387	2400	2388.92	0.0003	25	PASS
2DH5	2441	2483.5	2496.5	2493.03	0.0016	25	PASS
2DH5	2441	2496.5	13000	2596.98	0.0102	2.5	PASS
2DH5	2480	30	2387	2326.56	0.0005	2.5	PASS
2DH5	2480	2387	2400	2389.83	0.0003	25	PASS
2DH5	2480	2483.5	2496.5	2483.50	0.2917	25	PASS
2DH5	2480	2496.5	13000	2635.95	0.0077	2.5	PASS
3DH5	2402	30	2387	86.66	0.0004	2.5	PASS
3DH5	2402	2387	2400	2399.96	7.8343	25	PASS
3DH5	2402	2483.5	2496.5	2485.49	0.0011	25	PASS
3DH5	2402	2496.5	13000	2557.68	0.0156	2.5	PASS
3DH5	2441	30	2387	124.43	0.0004	2.5	PASS

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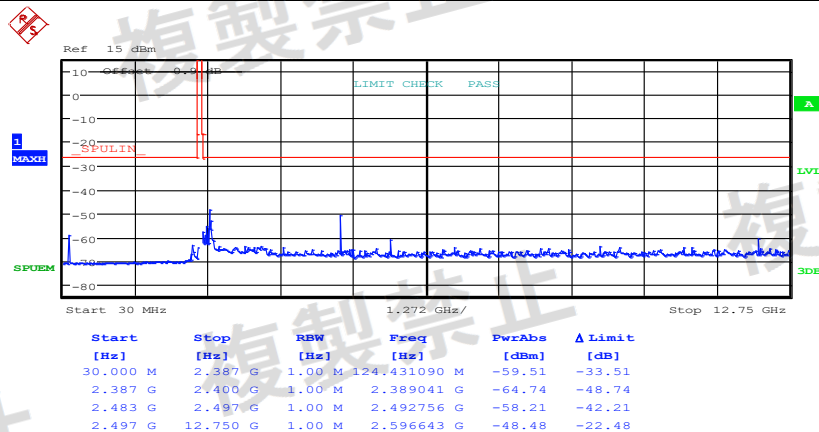
3DH5	2441	2387	2400	2399.86	0.0003	25	PASS
3DH5	2441	2483.5	2496.5	2492.55	0.0011	25	PASS
3DH5	2441	2496.5	13000	2596.98	0.0074	2.5	PASS
3DH5	2480	30	2387	2326.56	0.0005	2.5	PASS
3DH5	2480	2387	2400	2398.80	0.0003	25	PASS
3DH5	2480	2483.5	2496.5	2483.51	0.2254	25	PASS
3DH5	2480	2496.5	13000	2635.61	0.0057	2.5	PASS

Spurious Emissions of Tx_TNVN_DH5_2402_Ant1



Date: 5 JUL 2019 12:29:32

Spurious Emissions of Tx_TNVN_DH5_2441_Ant1



Date: 5 JUL 2019 12:35:52

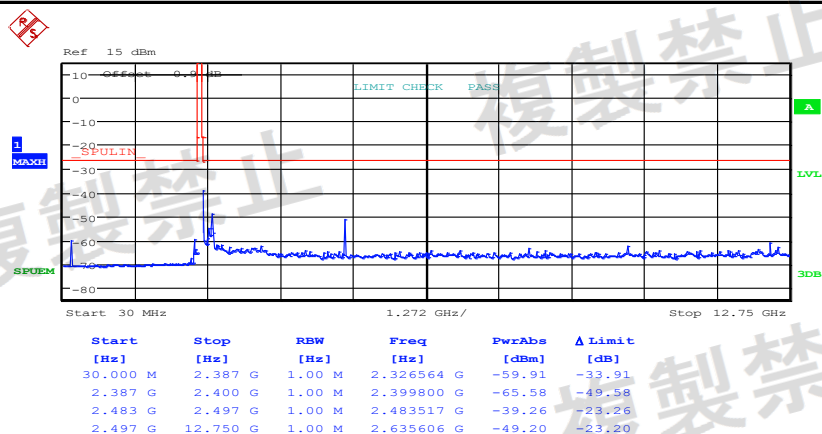
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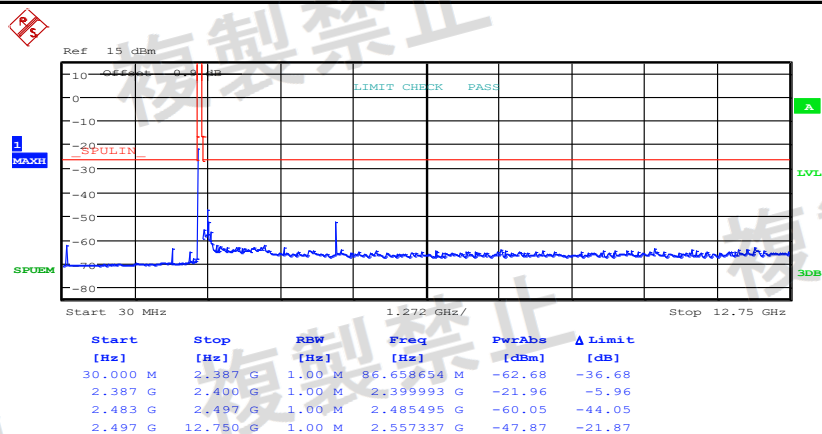
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Spurious Emissions of Tx TNVN DH5 2480 Ant1



Date: 5.JUL.2019 12:38:23

Spurious Emissions of Tx TNVN 2DH5 2402 Ant1



Date: 5.JUL.2019 12:40:35

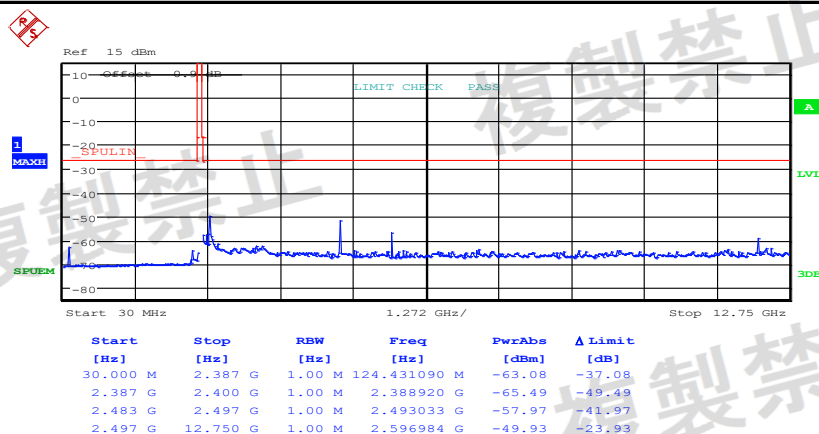
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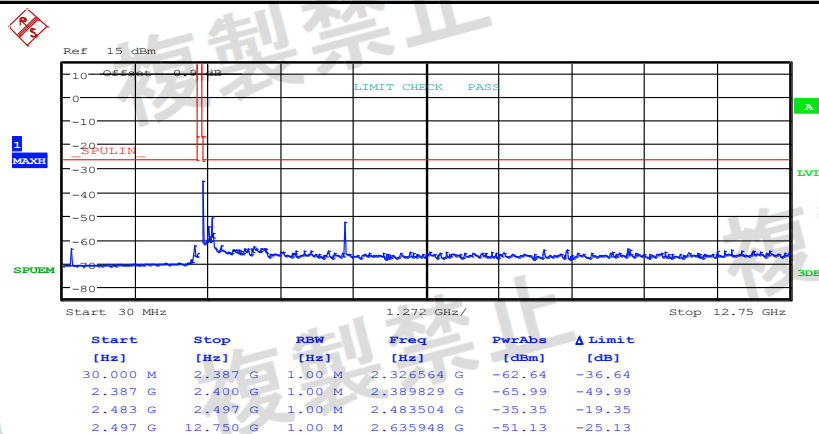
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Spurious Emissions of Tx_TNVN_2DH5_2441_Ant1



Date: 5.JUL.2019 12:44:27

Spurious Emissions of Tx_TNVN_2DH5_2480_Ant1

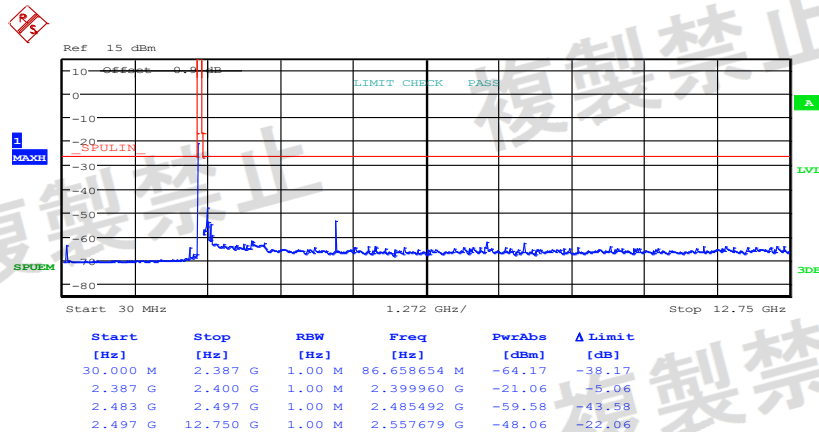


Date: 5.JUL.2019 12:47:23

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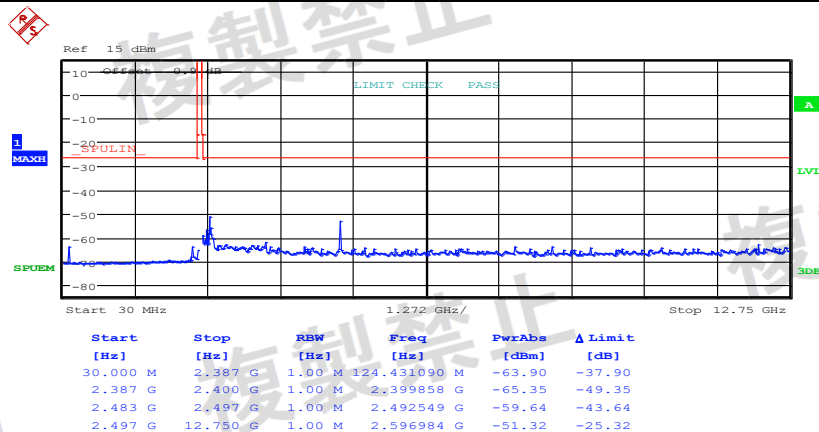
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Spurious Emissions of Tx_TNVN_3DH5_2402_Ant1



Date: 5.JUL.2019 12:53:09

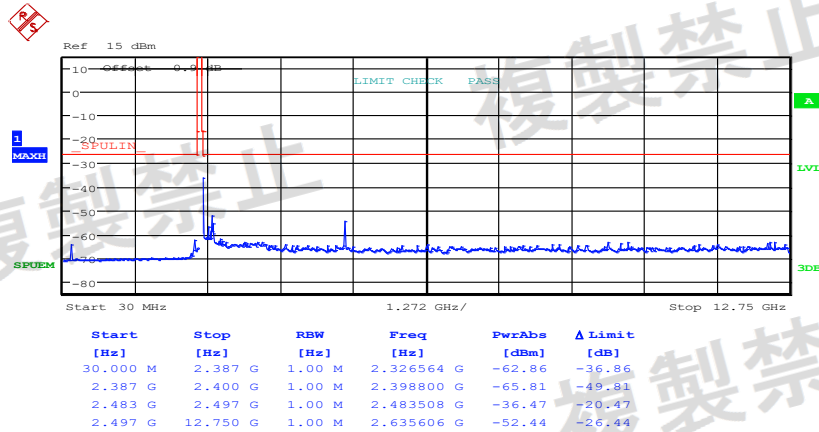
Spurious Emissions of Tx_TNVN_3DH5_2441_Ant1



Date: 5.JUL.2019 12:56:46



Spurious Emissions of Tx_TNVN_3DH5_2480_Ant1



Date: 5.JUL.2019 12:58:15

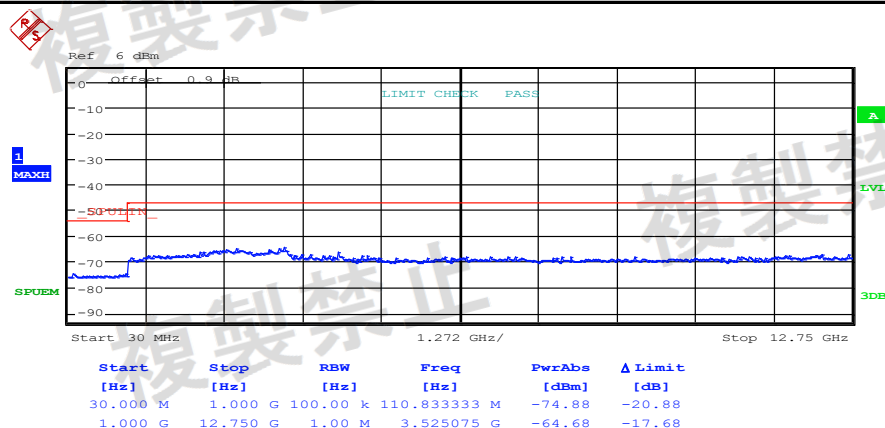
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6.Spurious Emissions of Rx

Test Mode	Test Channel	StartFre[MHz]	StopFre[MHz]	Max.Fre[MHz]	Max.Level[nW]	Limit[nW]	Verdict
DH5	2402	1000	13000	3525.07	0.340	20	PASS
DH5	2402	30	1000	110.83	0.033	4	PASS
DH5	2441	1000	13000	2553.35	0.305	20	PASS
DH5	2441	30	1000	937.82	0.033	4	PASS
DH5	2480	1000	13000	3523.90	0.370	20	PASS
DH5	2480	30	1000	497.90	0.033	4	PASS

Spurious Emissions of Rx_TNVN_DH5_2402_Ant1

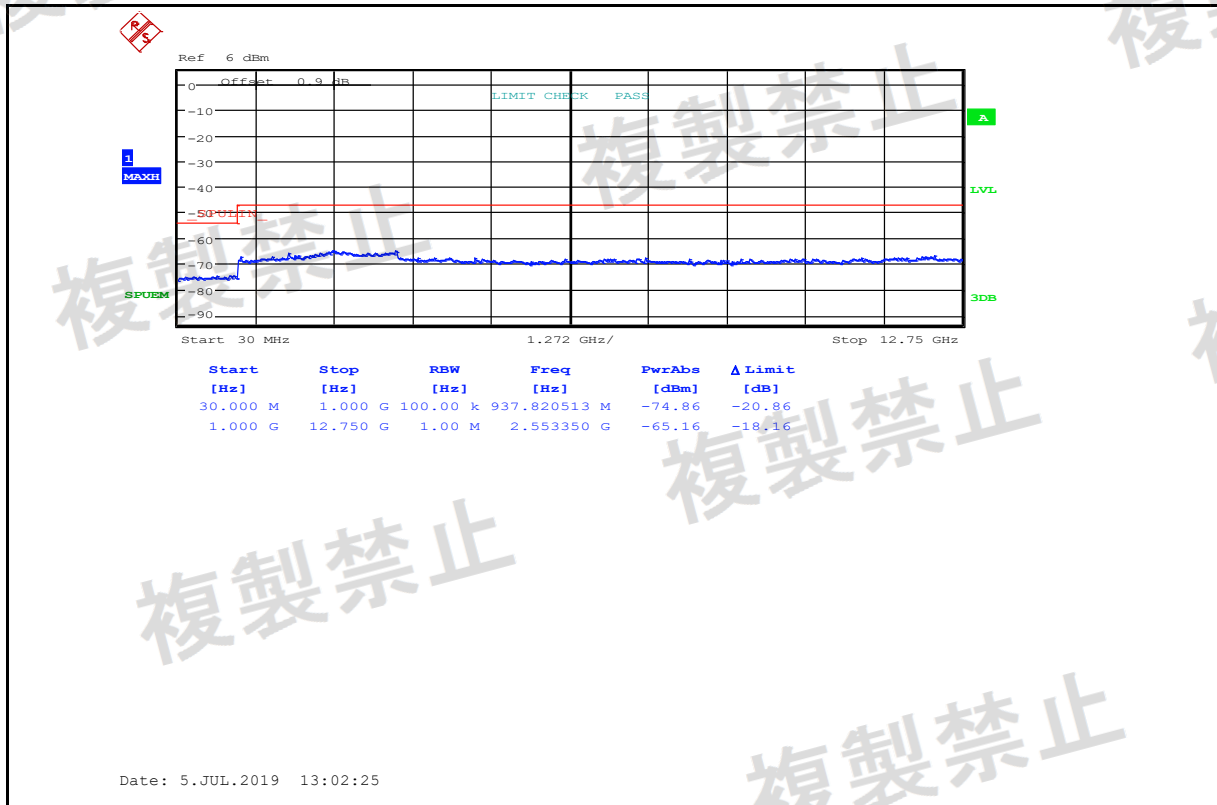


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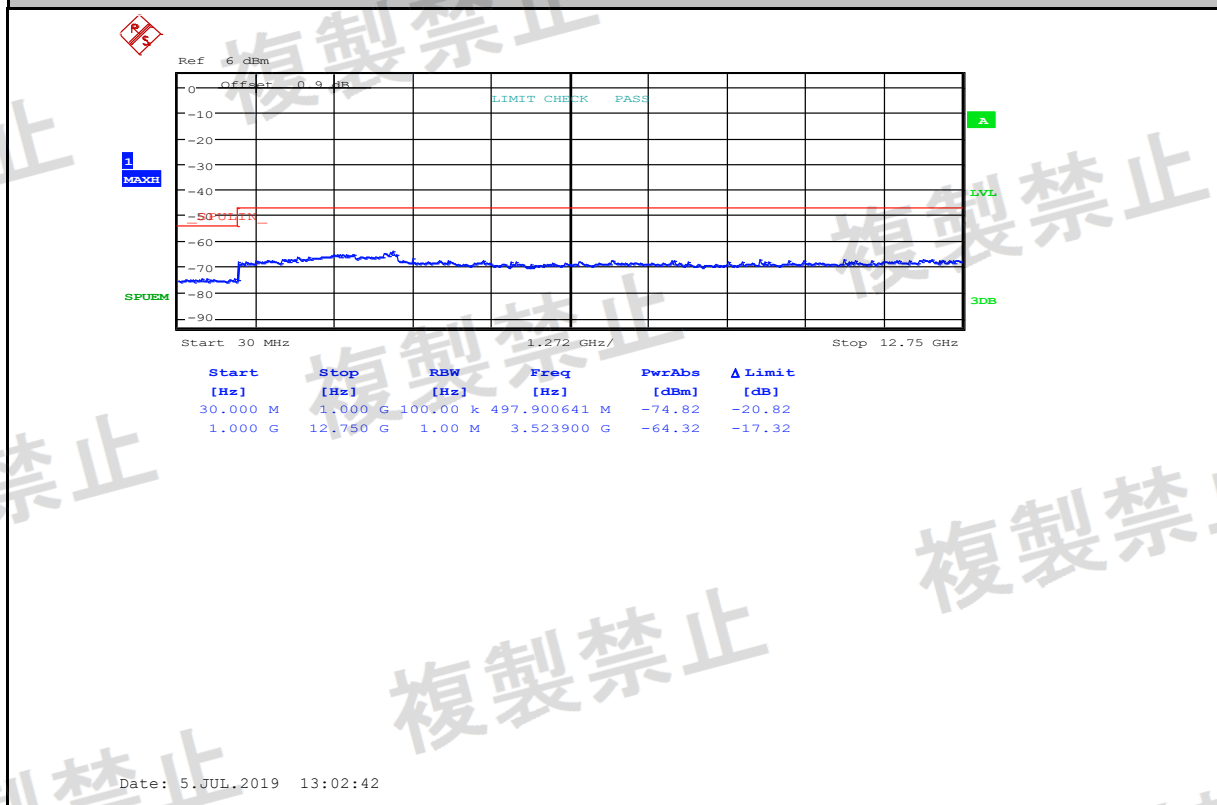
Spurious Emissions of Rx_TNVN_DH5_2441_Ant1

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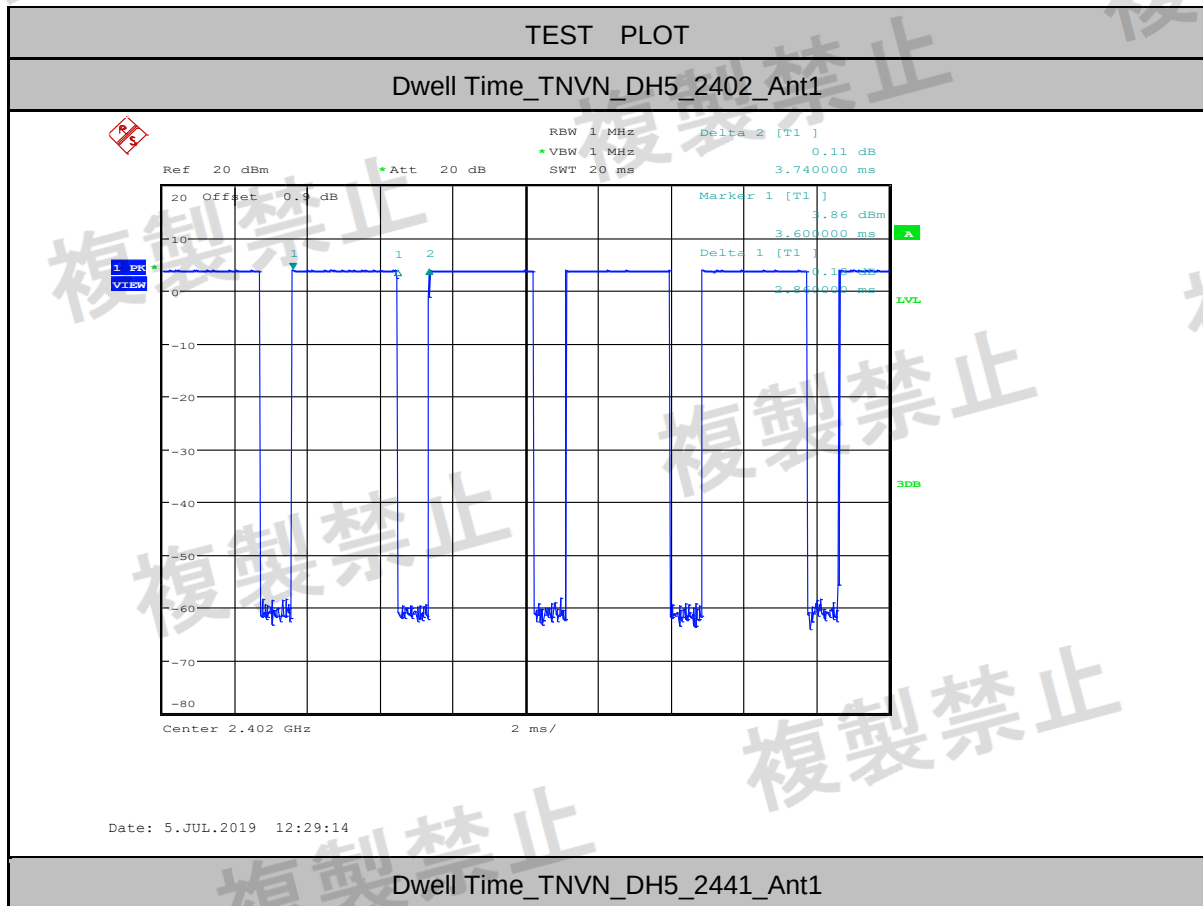


Spurious Emissions of Rx_TNVN_DH5_2480_Ant1



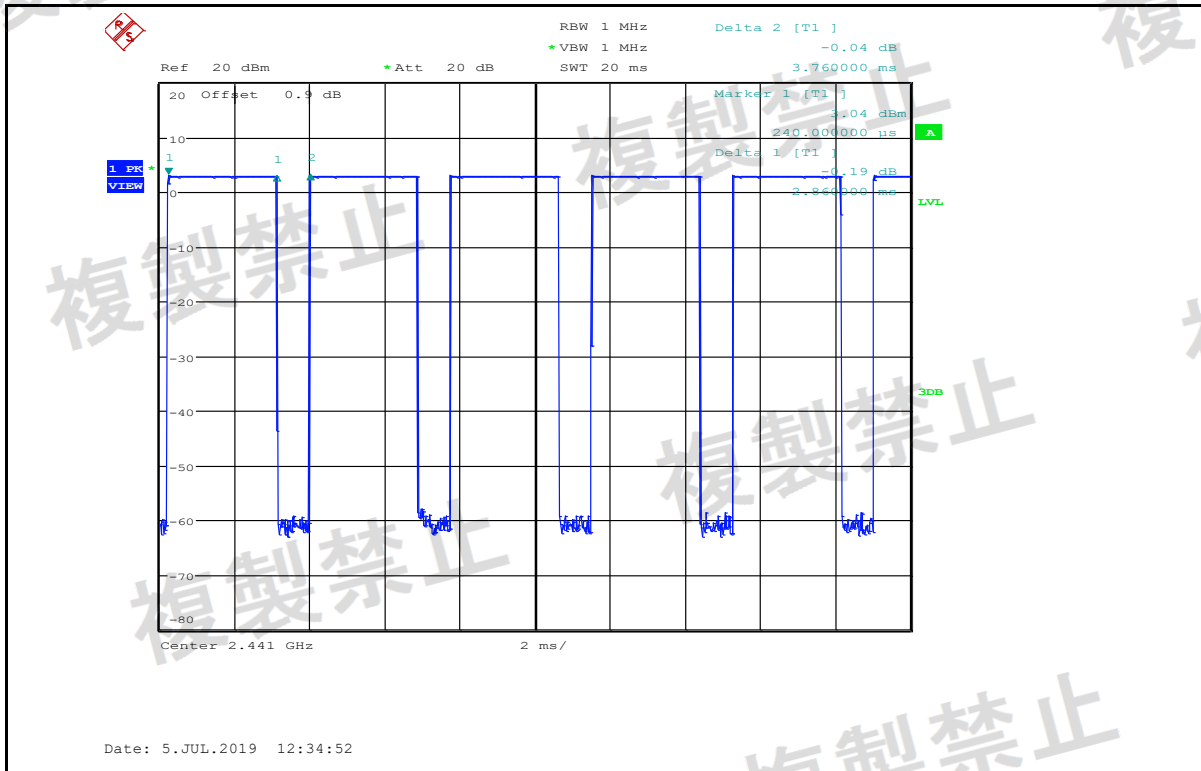
7.Dwell Time

Test Condition	Test Mode	Test Channel	Ant	Burst Width[ms]	Dwell Time[s]	Limit[s]	Verdict
TNVN	DH5	2402	Ant1	2.86	0.28	<0.4	PASS
TNVN	DH5	2441	Ant1	2.86	0.27	<0.4	PASS
TNVN	DH5	2480	Ant1	2.86	0.27	<0.4	PASS
TNVN	2DH5	2402	Ant1	2.88	0.28	<0.4	PASS
TNVN	2DH5	2441	Ant1	2.86	0.28	<0.4	PASS
TNVN	2DH5	2480	Ant1	2.88	0.28	<0.4	PASS
TNVN	3DH5	2402	Ant1	2.86	0.28	<0.4	PASS
TNVN	3DH5	2441	Ant1	2.86	0.28	<0.4	PASS
TNVN	3DH5	2480	Ant1	2.88	0.28	<0.4	PASS

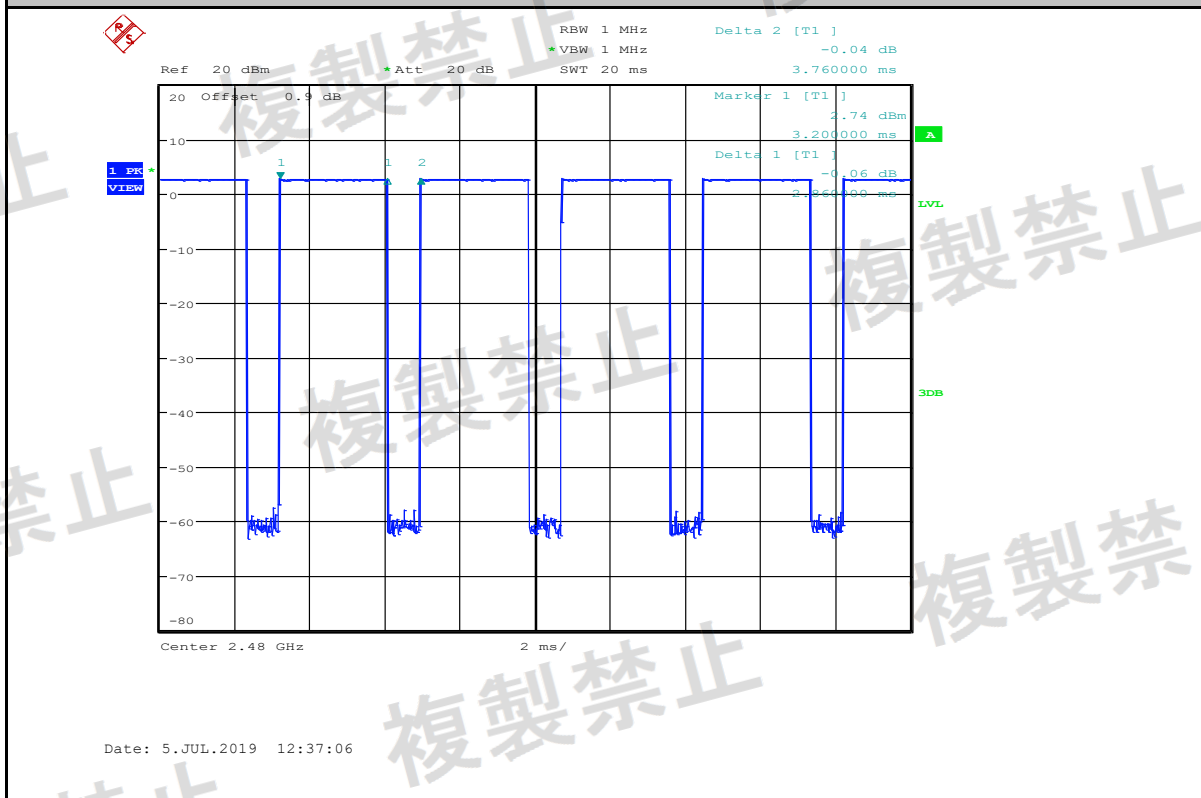


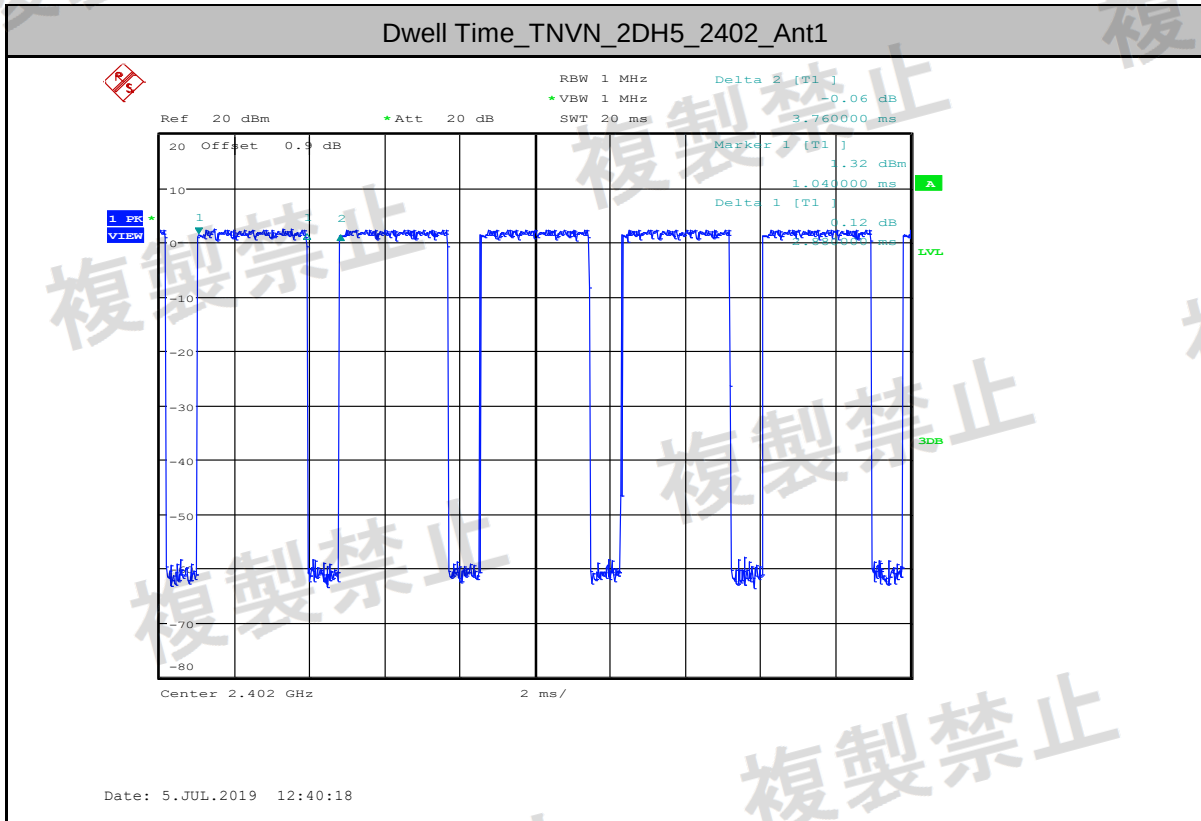
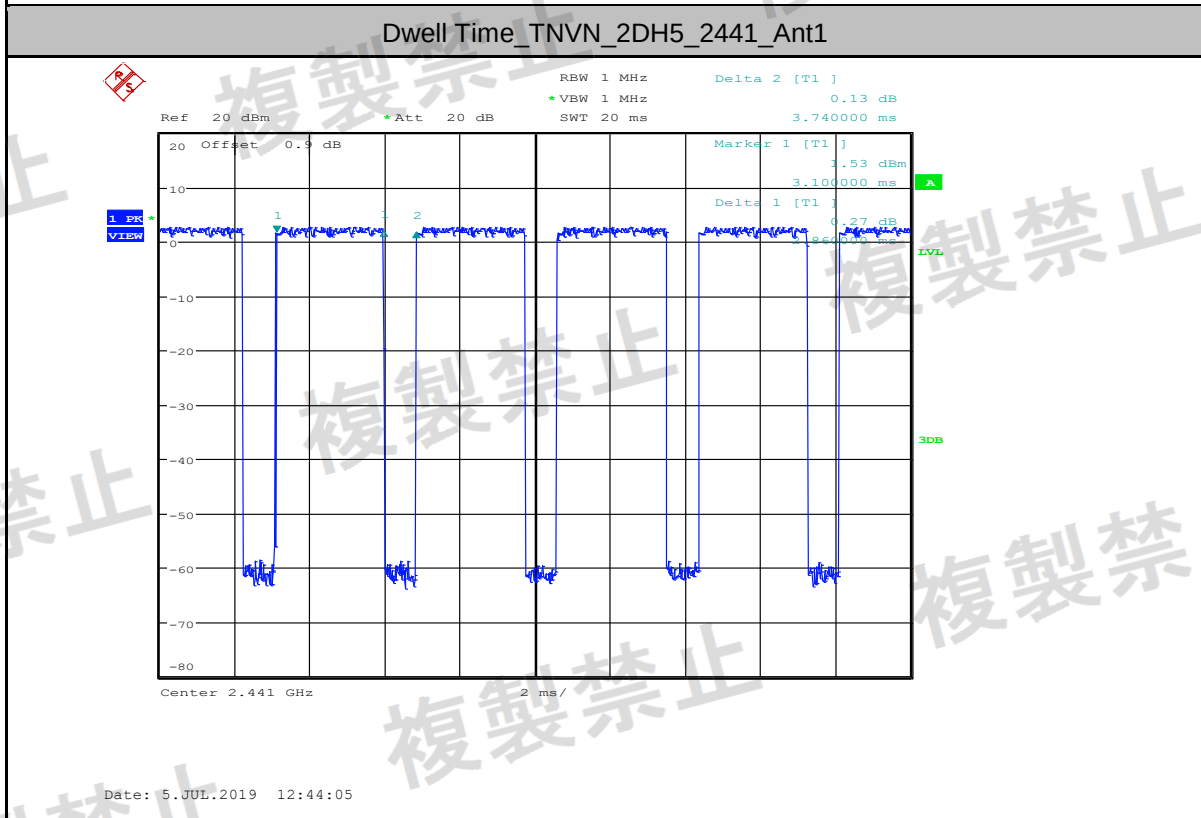
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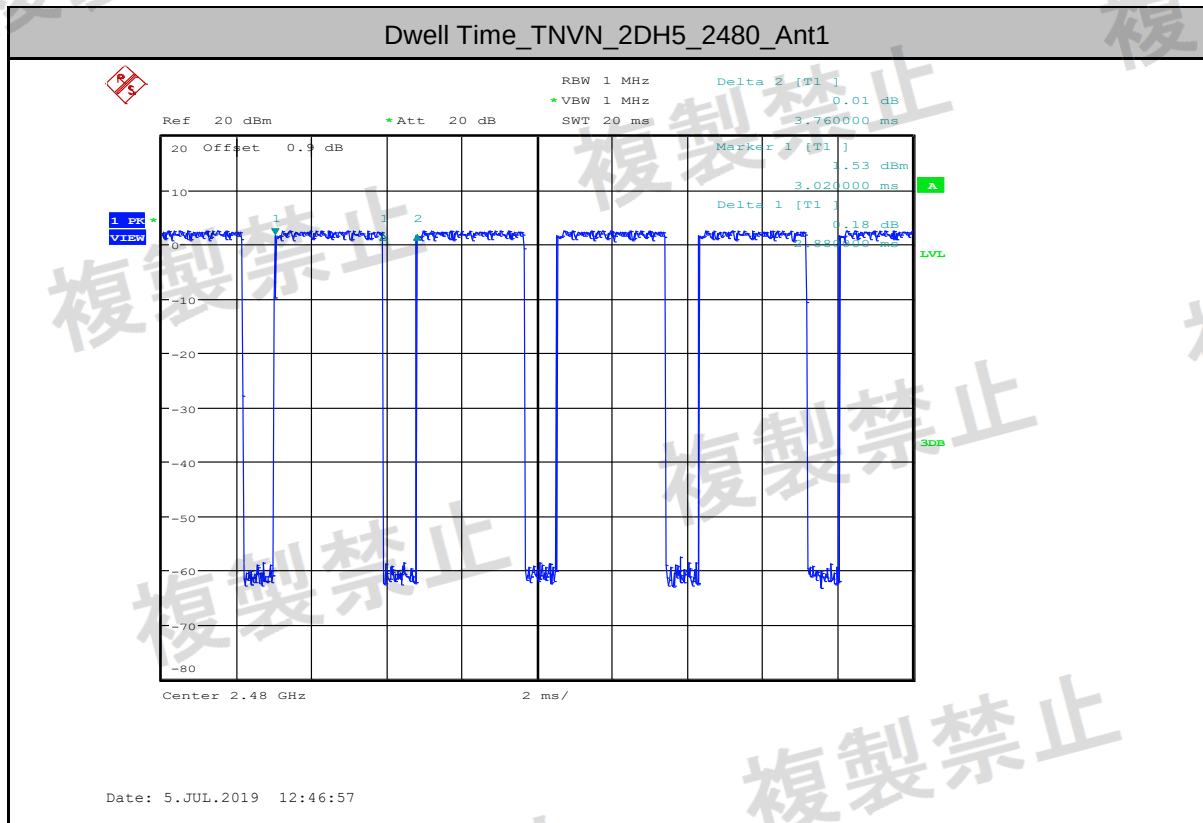
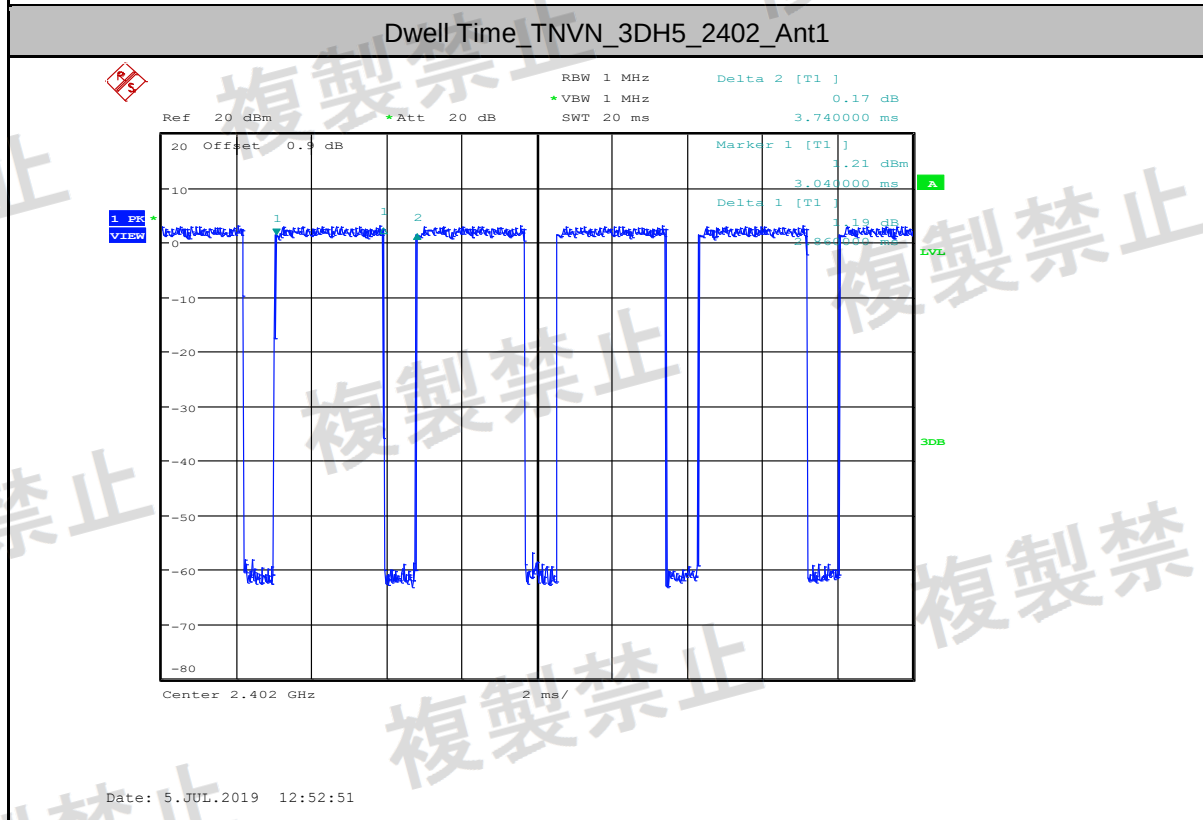
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Dwell Time_TNVN_DH5_2480_Ant1

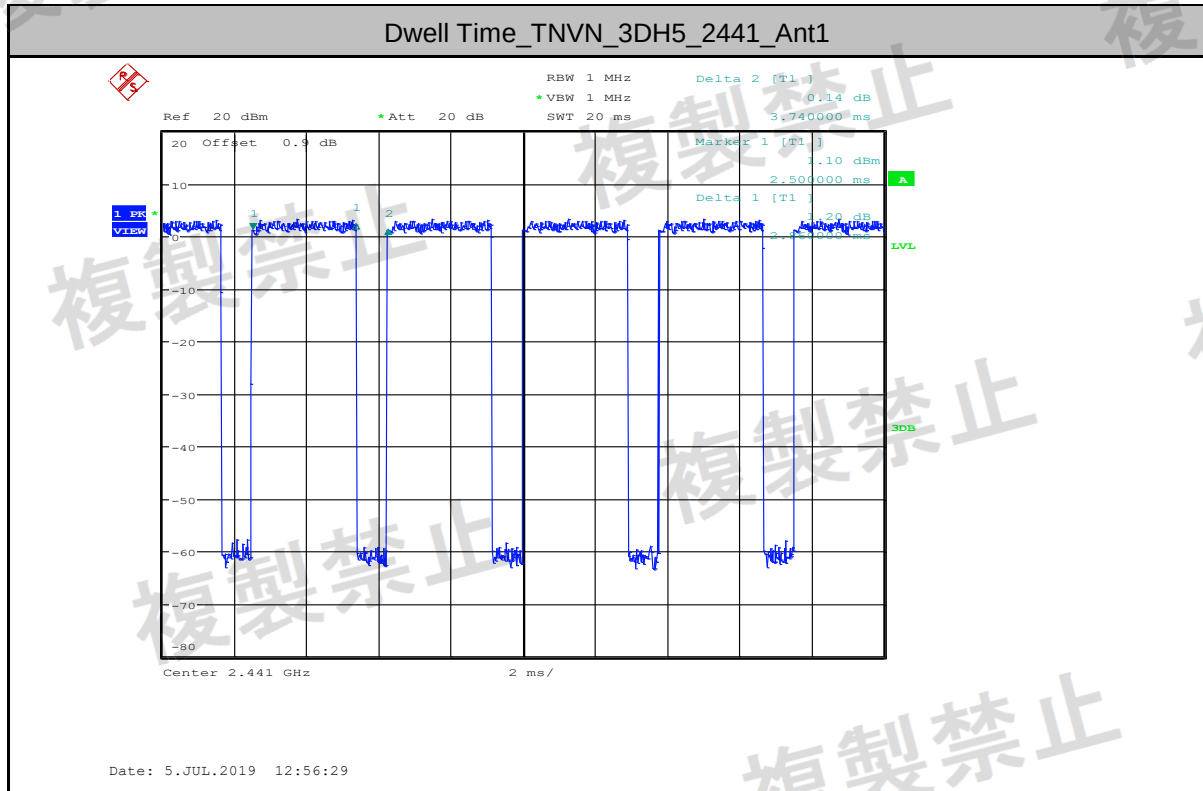
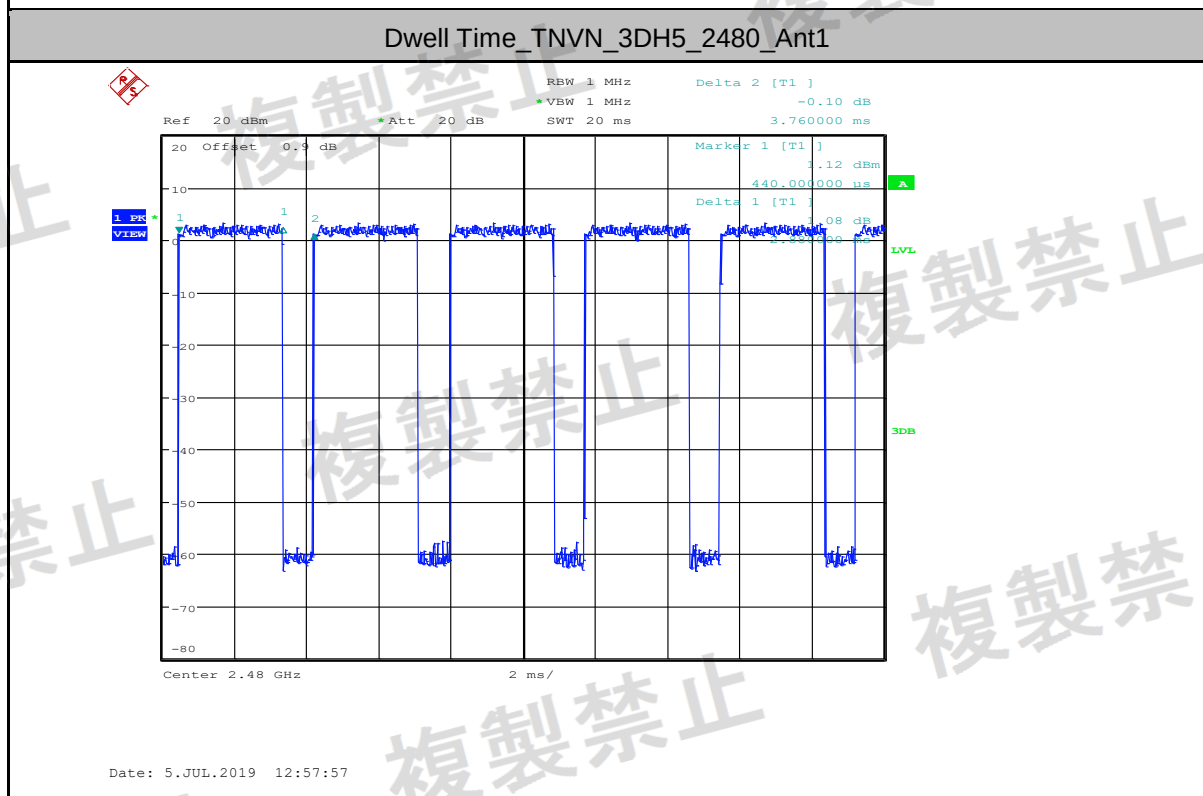






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