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Guangzhou Branch

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Report No.: GZEM191001665201
Page: 1 of 188

TEST REPORT

Application No.: GZEM1910016652CR
Applicant: AUSOUNDS INTELLIGENCE, LLC
Address of Applicant: 929 108TH AVE NE STE 1200, BELLEVUE, WA, 98004, UNITED STATES OF AMERICA
Manufacturer: AUSOUNDS INTELLIGENCE, LLC
Address of Manufacturer: 929 108TH AVE NE STE 1200, BELLEVUE, WA, 98004, UNITED STATES OF AMERICA
Factory: Risuntek Inc
Address of Factory: JiuWei Industrial Zone, Qishi Town, Dongguan City Guangdong, China
Equipment Under Test (EUT):
EUT Name: AU-stream
Model No.: AU-stream (for left earbud)
Trade Mark: Ausounds
Standard(s) : MIC Item 19 of Article 2 Paragraph 1
Date of Receipt: 2019-10-28
Date of Test: 2019-11-06
Date of Issue: 2019-12-13

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

Kobe Jian

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		2019-12-13		Original

Authorized for issue by:

Tested By

Kevin Zhang

Kevin_Zhang /Project Engineer

2019-11-06

Date

Checked By

Jerry Chan

Jerry_Chan /Reviewer

2019-12-13

Date

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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
Test Voltage:	DC 3.7V
Cable:	N/A
Antenna Gain:	0dBi
Antenna Type:	PCB Antenna
Channel Spacing:	1MHz
Modulation Type:	GFSK, π /4DQPSK, 8DPSK
Number of Channels:	79
Operation Frequency:	2402MHz to 2480MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Bluetooth Version:	V5.0 dual mode
This report is for classic mode.	

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	T430u	REF. No.SEA1800

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 5.5 \times 10^{-8}$
2	Duty cycle	$\pm 0.57\%$
3	Occupied Bandwidth	$\pm 3\%$
4	RF Conducted power	$\pm 0.68\text{dB}$
5	RF Power Density	$\pm 1.50\text{dB}$
6	Conducted Spurious Emissions	$\pm 1.04\text{dB}$
7	RF Radiated Power	$\pm 4.5\text{dB}$ (below 1GHz) $\pm 4.8\text{dB}$ (above 1GHz)
8	Radiated Spurious Emission Test	$\pm 4.5\text{dB}$ (30MHz-1GHz) $\pm 4.8\text{dB}$ (1GHz-18GHz)
9	Temperature	$\pm 0.4^{\circ}\text{C}$
10	Humidity	$\pm 1.3\%$
11	Supply Voltages	$\pm 1.5\%$
12	Time	$\pm 3\%$

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4.4 Test Location

All tests were performed at:

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198 Kezhu Road, Sciotech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

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4.5 Test Facility

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

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-10449 and T-11179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

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5 Equipment List

Frequency Error					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Occupied Bandwidth(99%)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

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Spread spectrum Bandwidth(90%)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Antenna Power

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Dwell time

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

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Spurious emission Intensity

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Limit of secondary radiated emissions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Antenna Requirement

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01



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General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2019-07-16	2020-07-15
DMM	Fluke	73	EMC0007	2019-07-16	2020-07-15

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6 Radio Spectrum Technical Requirement

6.1 EUT Test Conditions

Power supply:

the RF chip supplied by DC 3.7V.

The EUT has the input voltage to the circuit of RF chip doesn't comply with output voltage limitation ($\pm 1\%$) against input voltage fluctuation ($\pm 10\%$).

So, all measurements were conducted at rated voltage DC 3.7V(VN), DC 3.33V(VL), DC 4.07V(VH).

The measurement result of the voltage fluctuation at RF circuit when DC 3.7V $\pm 10\%$.

DC input (DC 3.7V)	Measured value (3.7V)
DC 3.7V	3.7V
DC 3.33V	3.33V
DC 4.07V	4.07V

Temperature: 5.0 -35.0 °C

Humidity: 45-85 % RH

Atmospheric Pressure: 1000 -1010 mbar

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, M and the Highest frequency (L, M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.

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EUT channels and frequencies list:

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	Remark
The lowest channel (CH0)	2402MHz	L
The M channel (CH39)	2441MHz	M
The highest channel (CH78)	2480MHz	H

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6.2 Antenna Requirement

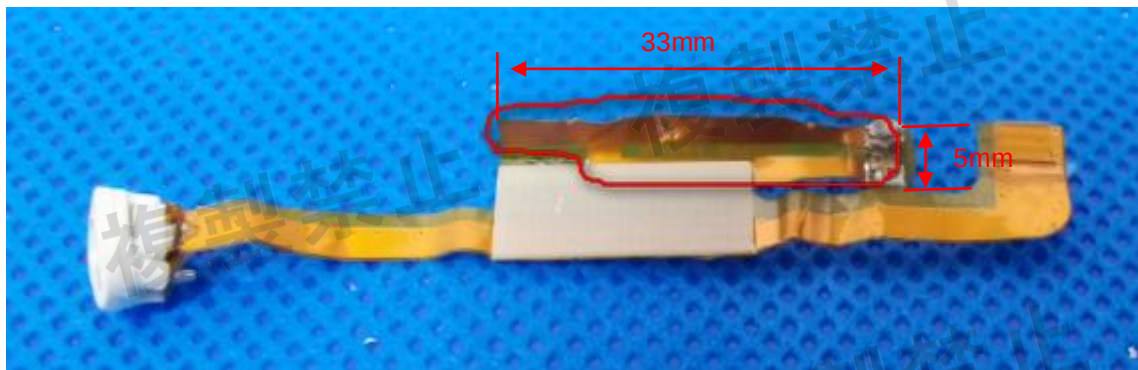
6.2.1 Test Requirement:

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 connected to the main PCB by welding and no consideration of replacement. The best case gain of the antenna is 0dBi.

Result:

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

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6.3 Interference prevention capability

6.3.1 Test Requirement:

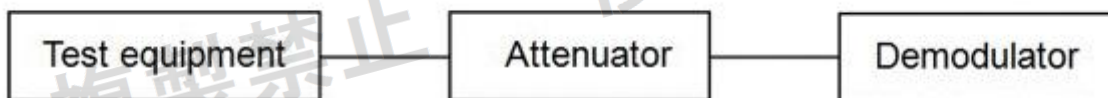
MIC Item 19 of Article 2 Paragraph 1

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.

5C:C5:D4:FA:1C:A6

EUT Details:

The unit does meet the requirements (Good).

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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.

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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: 25.1 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar
Test mode f: TX mode_Keep the EUT transmitting in CW mode.

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

1. Test Conditions:
Spectrum Analyzer is used for measurement.

2. EUT conditions:

- Continuous or burst transmission
- Un-modulated or modulated
- Spread/Hopping OFF

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: 25.1 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode a: TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, $\pi/4$ DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

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: 2-3.5 times the technical standard

RBW: Within 3% of the technical standard

VBW: Same as RBW

Sweep Time: Auto

Sweep data points: 1001 or greater

detector mode: Positive peak

Indication mode: Max hold

BW setting: OBW 99%

The detailed test data see: Appendix MIC19-2

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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: 25.1 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode a: TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, $\pi/4$ DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

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: 2-3.5 times the technical standard

RBW: Within 3% of the technical standard

VBW: Same as RBW

Sweep Time: Auto

Sweep data points: 1001 or greater

detector mode: Positive peak

Indication mode: Max hold

BW setting: OBW 90%

The detailed test data see: Appendix MIC19-2

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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: 25.1 °C

Humidity: 49.4 % RH

Atmospheric Pressure: 1020 mbar

Test mode

b: TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, $\pi/4$ DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

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:

- Continuous or burst transmission

- Modulated

- Rated output power declared in the construction design document

3. Spectrum Analyzer conditions:

Setting 1 - Search for peak power frequency

Frequency: Test Frequency

Span: Approximately twice the occupied bandwidth

RBW: 1MHz

VBW: Approximately three times the RBW

Sweep Time: Auto

Sweep data points: 1001 or greater

detector mode: Positive peak

Indication mode: Max hold

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Setting 2 - Measurement of average antenna power for FHSS, DSSS, OFDM
Frequency: Frequency of peak power found using [Setting 1]
Span: 0Hz

RBW: 3MHz (FHSS in below procedure 1)
1MHz (DSSS, OFDM, FHSS in below procedure 2)

Detector mode: Sample

Sweep: Minimum time required to make an accurate measurement.

For burst type (intermittent) transmission, sweep time shall be greater than one burst interval.

Sweep data points: 1001 or greater

Setting 3 - Measurement of average antenna power other than for FHSS, DSSS, OFDM

Frequency: Frequency of peak power found using [Setting 1]

Span: 0Hz

RBW: Bandwidth sufficient to cover that occupied by the carrier

VBW: Bandwidth sufficient to cover that occupied by the carrier

Detector mode: Sample

Sweep: Minimum time required to make an accurate measurement.

For burst type (intermittent) transmission, sweep time shall be greater than one burst interval.

Sweep data points: 1001 or greater

4. Test procedure:

Procedure 1 for FHSS systems with the following characteristics:

- A hopping transmission separation of 1MHz or less with a constant transmission interval
- The transmission probability is equal for all hopping frequencies.

① After configuring the spectrum analyser to [Setting 1], find the frequency of maximum transmitted power;

② After configuring the spectrum analyser to [Setting 2], measure the average burst power of the frequency found in (1)

③ Calculate antenna power using the following formula:

Antenna Power (W/MHz) = Average Burst Power (W) / Spread Bandwidth (MHz)

Note:

*Spread Bandwidth in the formula above is derived from the data collected in section 7.3 (Spread Bandwidth (90%))

④ If the EUT has multiple antennas then each antenna power output shall be measured individually – the sum of these individual measurements shall represent the power output value.



Procedure 2 for FHSS systems other than the above

- ① After configuring the spectrum analyser to [Setting 1], find the frequency of maximum transmitted power;
- ② After configuring the spectrum analyser to [Setting 2], measure the average burst power of the frequency found in (1)

$$\text{Antenna Power (W/MHz)} = \text{Average Burst Power}$$

Procedure 3 for DSSS, FHSS systems

- ① After configuring the spectrum analyser to [Setting 1], find the frequency of maximum transmitted power;
- ② After configuring the spectrum analyser to [Setting 2], measure the average burst power of the frequency found in (1)

$$\text{Antenna Power (W/MHz)} = \text{Average Burst Power}$$

Procedure 4 for other than FHSS, DSSS, FHSS systems

- ① After configuring the spectrum analyser to [Setting 1], find the frequency of maximum transmitted power;
- ② After configuring the spectrum analyser to [Setting 3], measure the average burst power of the frequency found in (1)

$$\text{Antenna Power (Watts)} = \text{Average Burst Power}$$

Procedure 2 for FHSS systems other than the above

- ① After configuring the spectrum analyser to [Setting 1], find the frequency of maximum transmitted power;
- ② After configuring the spectrum analyser to [Setting 2], measure the average burst power of the frequency found in (1)

$$\text{Antenna Power (W/MHz)} = \text{Average Burst Power}$$

Procedure 3 for DSSS, FHSS systems

- ① After configuring the spectrum analyser to [Setting 1], find the frequency of maximum transmitted power;
- ② After configuring the spectrum analyser to [Setting 2], measure the average burst power of the frequency found in (1)

$$\text{Antenna Power (W/MHz)} = \text{Average Burst Power}$$

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: 25.1 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode a: TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, $\pi/4$ DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

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:

Hopping sequence set to a single, fixed frequency.

3. Spectrum Analyzer conditions:

Frequency: Test Frequency

Span: 0 Hz

RBW: 1 MHz

VBW: 1 MHz

Sweep data points: 1001 or greater

Trigger: Video Trigger

Detection mode: Positive peak

4. Calculation procedure:

① Configure the spectrum analyser as above Setting

② Measure the Burst Cycle and Transmit ON Time

③ Total Dwell Time shall be calculated by the following formula:

$$\text{Dwell time} = (0.4 \times [\text{spreading rate}] \times \text{Transmission ON Time}) / (\text{Burst Cycle} \times \text{No. of hopping channels})$$

Notes:

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

* Transmit ON Time and Burst Cycle are both measured in Seconds

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: 25.1 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar
Test mode b: TX_non-Hop mode Keep the EUT in continuously transmitting mode with GFSK modulation, $\pi/4$ DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

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:

- Continuous or burst transmission
- Modulated
- Rated output power declared in the construction design document

3. Spectrum Analyzer conditions:

Setting 1

Frequency: (see Note 1)

RBW: 1 MHz

VBW: 1 MHz

Sweep Time: Minimum time required to make an accurate measurement

Sweep data points: 1001 or greater

detector mode: Positive peak

Indication mode: Max hold (see Note 2)

Note 1: Measurement range shall be 30 MHz to 12.5 GHz, except for the following cases:

- FHSS, FHSS+DSSS, FHSS+ODFM: 2374 MHz to 2509.5 MHz
- Other than FHSS, FHSS+DSSS, FHSS+ODFM: 2400 MHz to 2483.5 MHz

Note 2: Sweep shall be repeated until the max hold waveform is stable

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Setting 2

Frequency: 2374 MHz to 2400 MHz

2483.5MHz to 2509.5 MHz

RBW: 30 kHz

VBW: 30 kHz

Sweep Time: Minimum time required to make an accurate measurement

Sweep data points: 1001 or greater

detector mode: Positive peak

Indication mode: Max hold

The detailed test data see: Appendix MIC19-2



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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

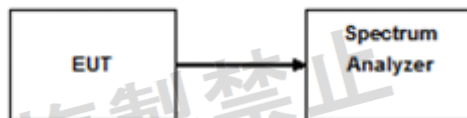
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 25.1 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode c: RX mode_Keep the EUT in receiving mode with GFSK modulation, $\pi/4$ DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

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:

- Continuous receive

3. Spectrum Analyzer conditions:

Frequency: 30MHz to 12.5 GHz

RBW: 100kHz (Below 1 GHz)

1MHz (above 1 GHz)

VBW 100kHz (Below 1 GHz)

1MHz (above 1 GHz)

Sweep Time: Auto

Sweep data points: 1001 or greater

Detector mode: Positive peak

Indication mode: Max hold

The detailed test data see: Appendix MIC19-2

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8 Photographs

8.1 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for GZEM1910016652CR



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9 Appendix

9.1 Appendix MIC19-2

9.2 Frequency Error

9.2.1 Test Result

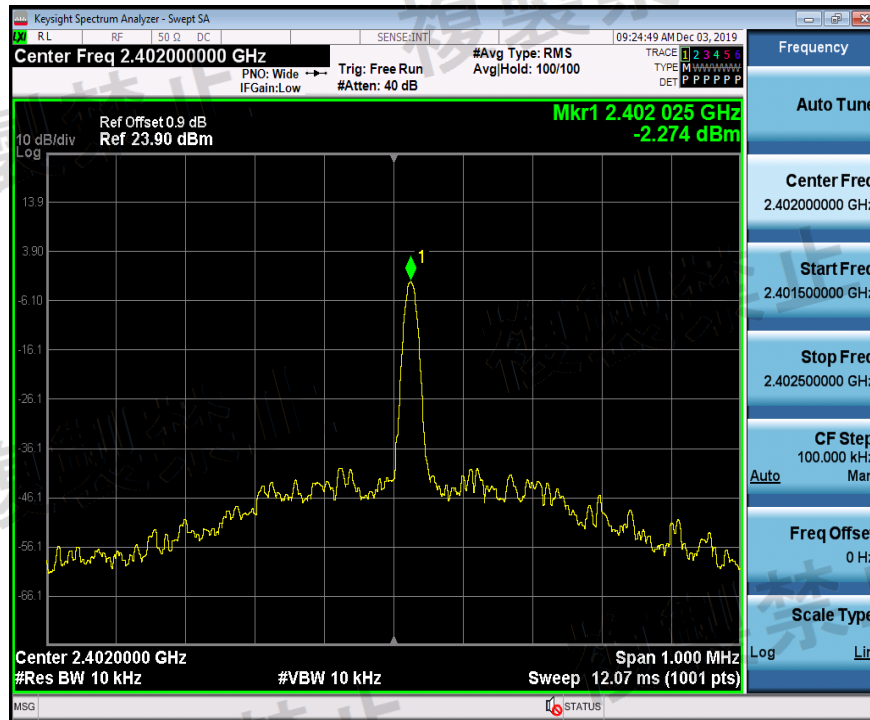
TestCondition	TestMode	Antenna	Channel	Deviation [MHz]	Result[ppm]	Limit[ppm]	Verdict
TNVN	CW	Ant1	2402	0.025	10.40799	±50	PASS
			2441	0.025	10.24170	±50	PASS
			2480	0.025	10.08065	±50	PASS
TNVH	CW	Ant1	2402	0.025	10.40799	±50	PASS
			2441	0.025	10.24170	±50	PASS
			2480	0.025	10.08065	±50	PASS
TNVL	CW	Ant1	2402	0.025	10.40799	±50	PASS
			2441	0.024	9.83204	±50	PASS
			2480	0.024	9.67742	±50	PASS

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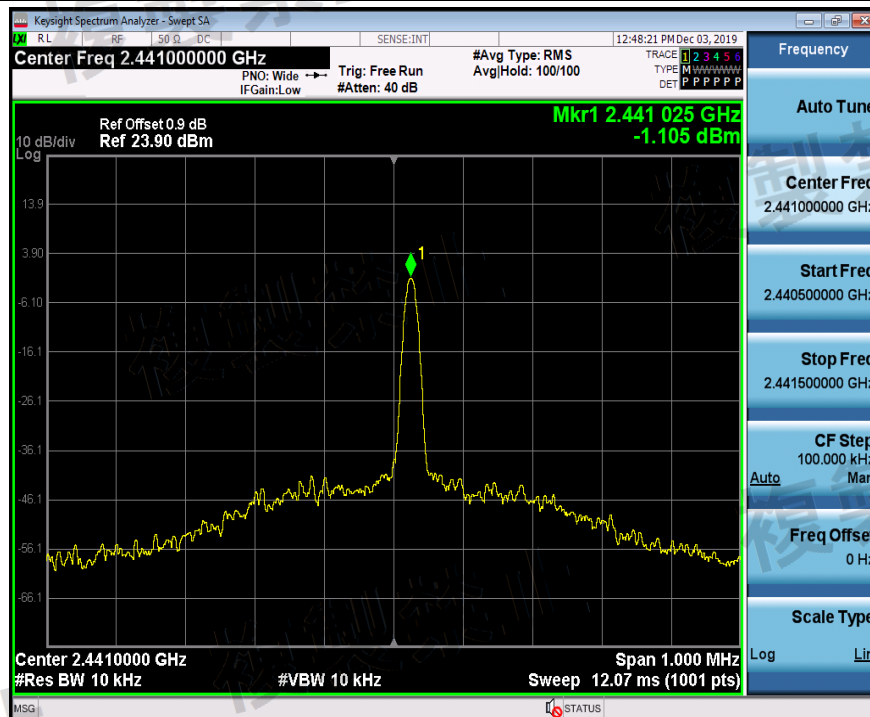
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9.2.2 Test Graphs

TNVN_CW_Ant1_2402



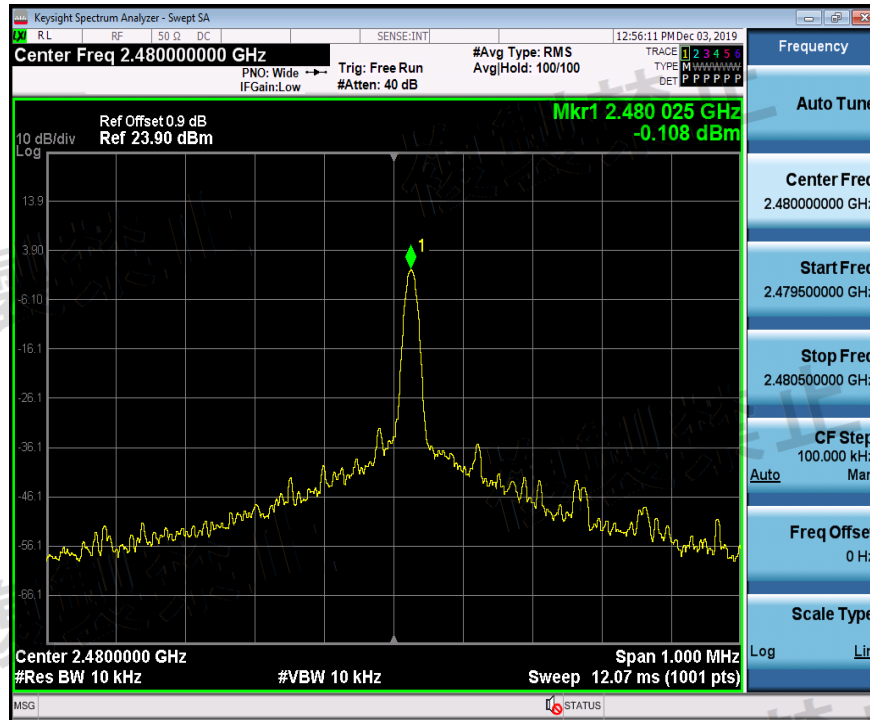
TNVN_CW_Ant1_2441



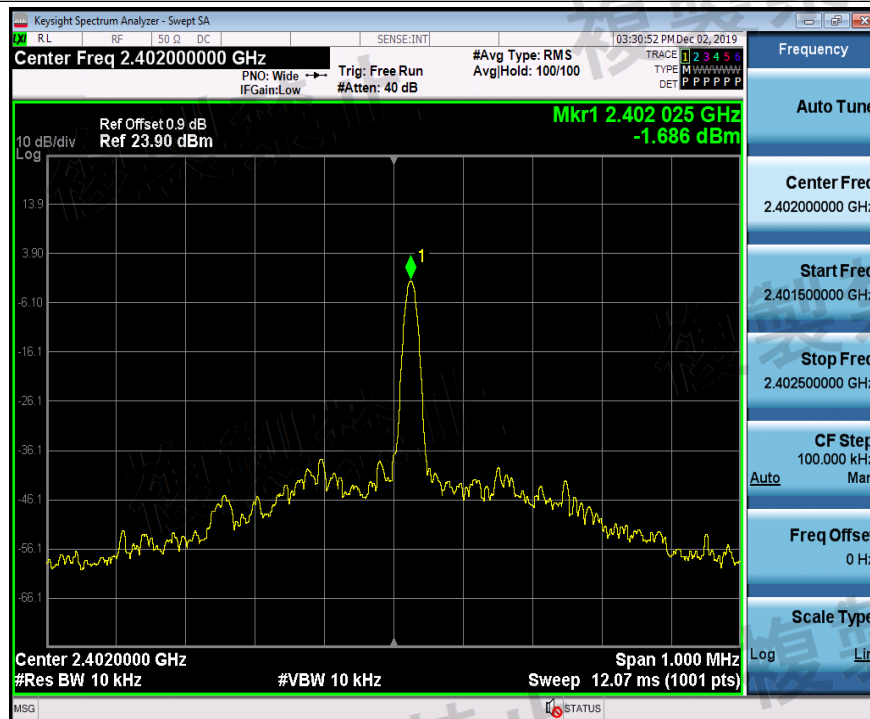
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TNVN_CW_Ant1_2480



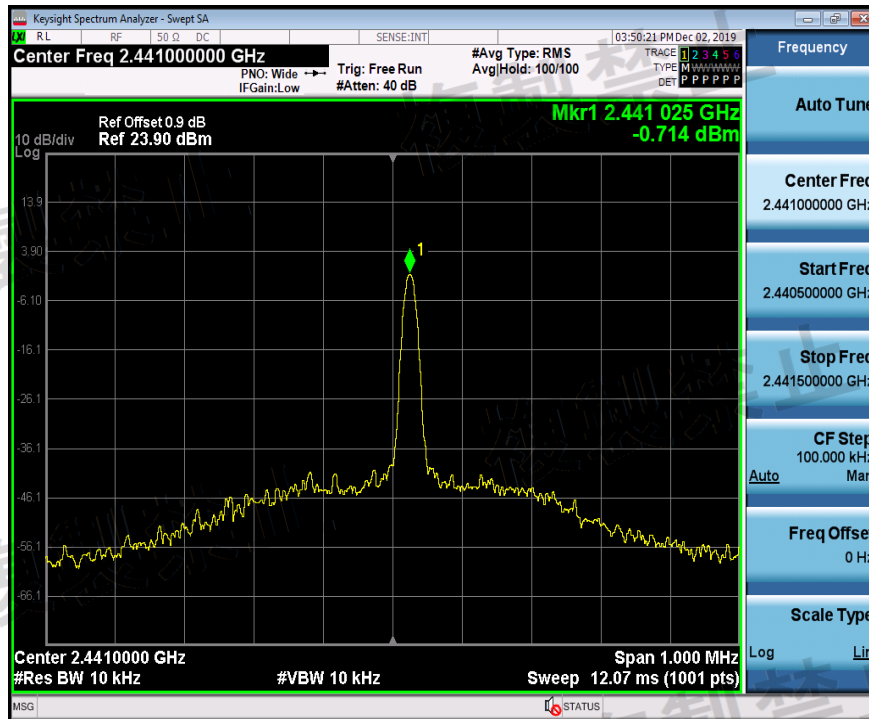
TNVH_CW_Ant1_2402



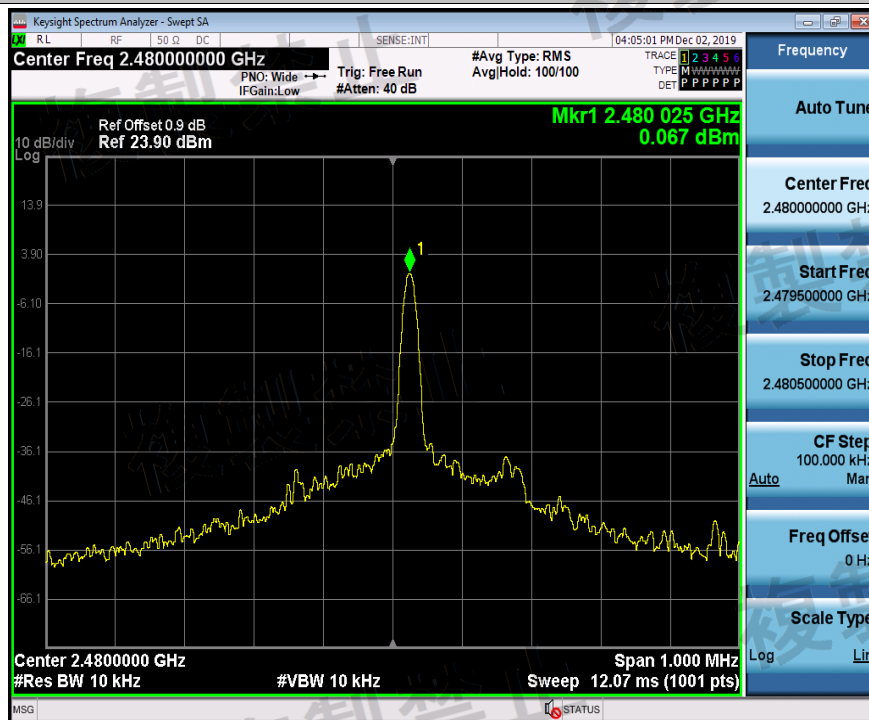
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TNVH_CW_Ant1_2441



TNVH_CW_Ant1_2480



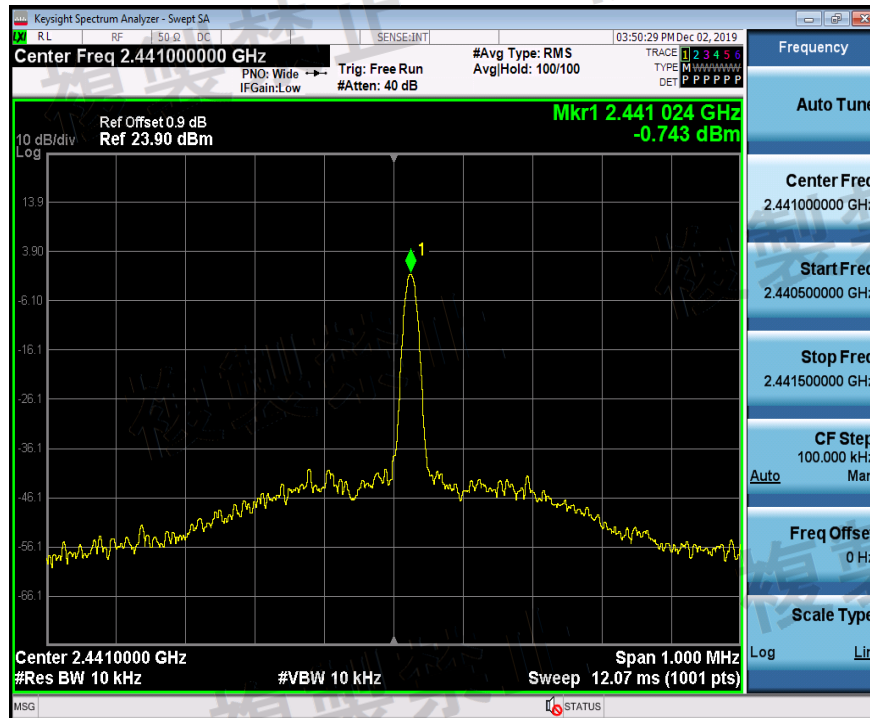
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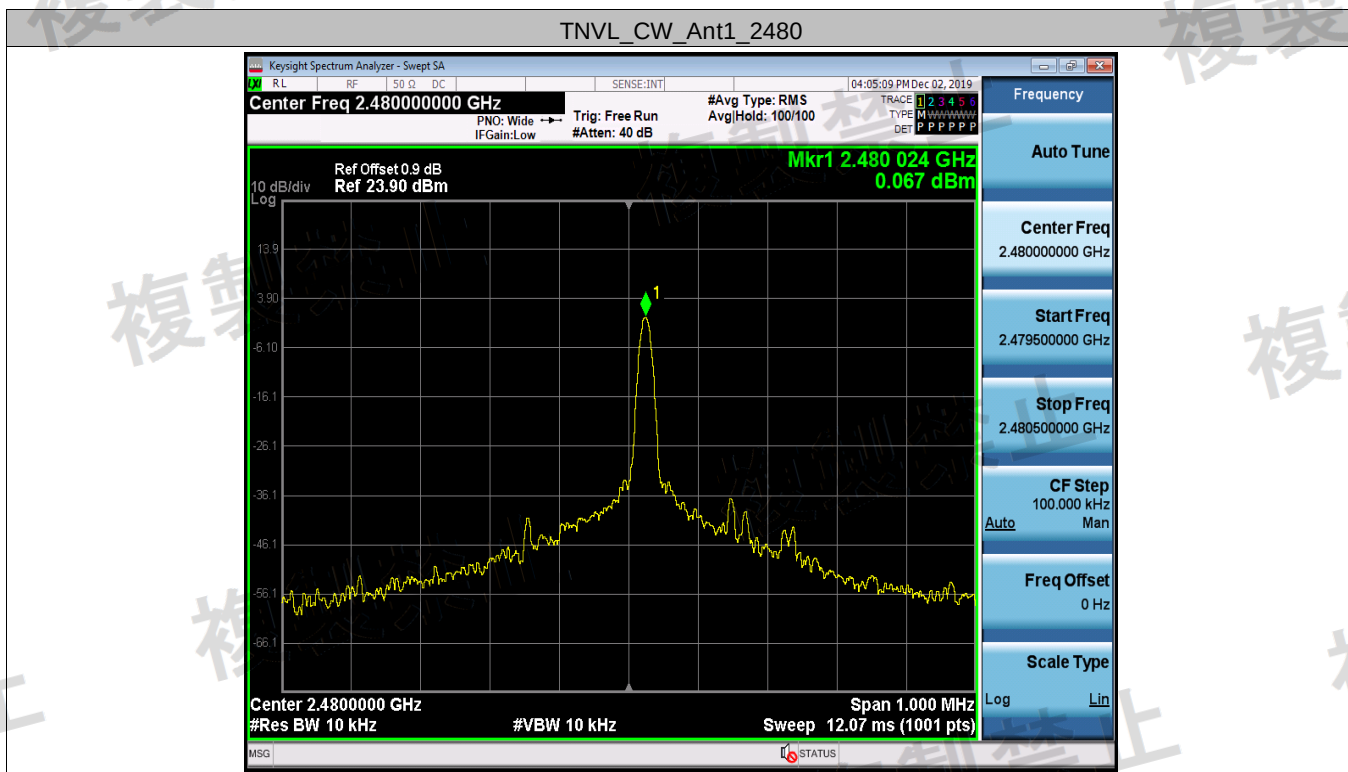
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TNVL_CW_Ant1_2402



TNVL_CW_Ant1_2441





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9.3 Occupied Bandwidth (99%)**9.3.1 Test Result**

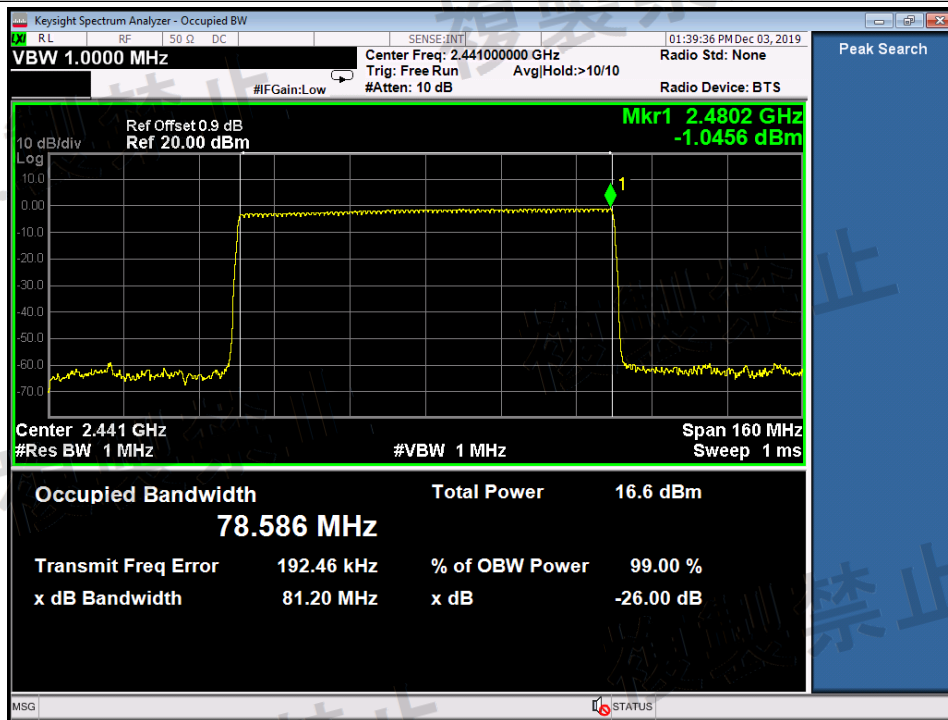
TestCondition	TestMode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
TNVN	DH5	Ant1	79 Hopping	78.586	<=83.5	PASS
	2DH5	Ant1	79 Hopping	78.787	<=83.5	PASS
	3DH5	Ant1	79 Hopping	78.744	<=83.5	PASS
TNVH	DH5	Ant1	79 Hopping	78.593	<=83.5	PASS
	2DH5	Ant1	79 Hopping	78.757	<=83.5	PASS
	3DH5	Ant1	79 Hopping	78.748	<=83.5	PASS
TNVL	DH5	Ant1	79 Hopping	78.602	<=83.5	PASS
	2DH5	Ant1	79 Hopping	78.765	<=83.5	PASS
	3DH5	Ant1	79 Hopping	78.734	<=83.5	PASS

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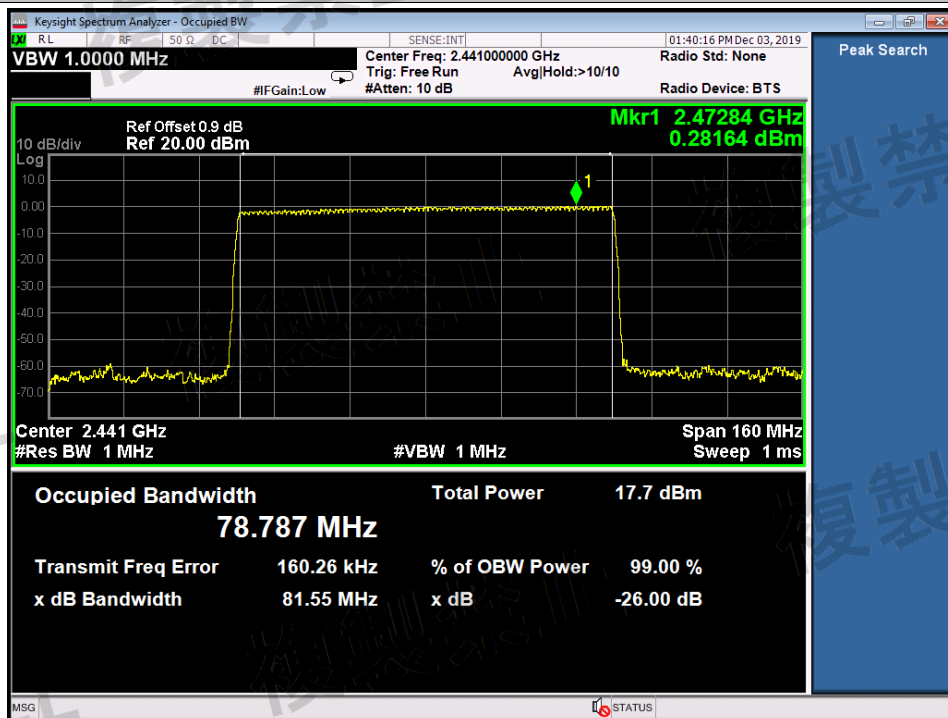
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9.3.2 Test Graphs

TNVN_DH5_Ant1_79 Hopping



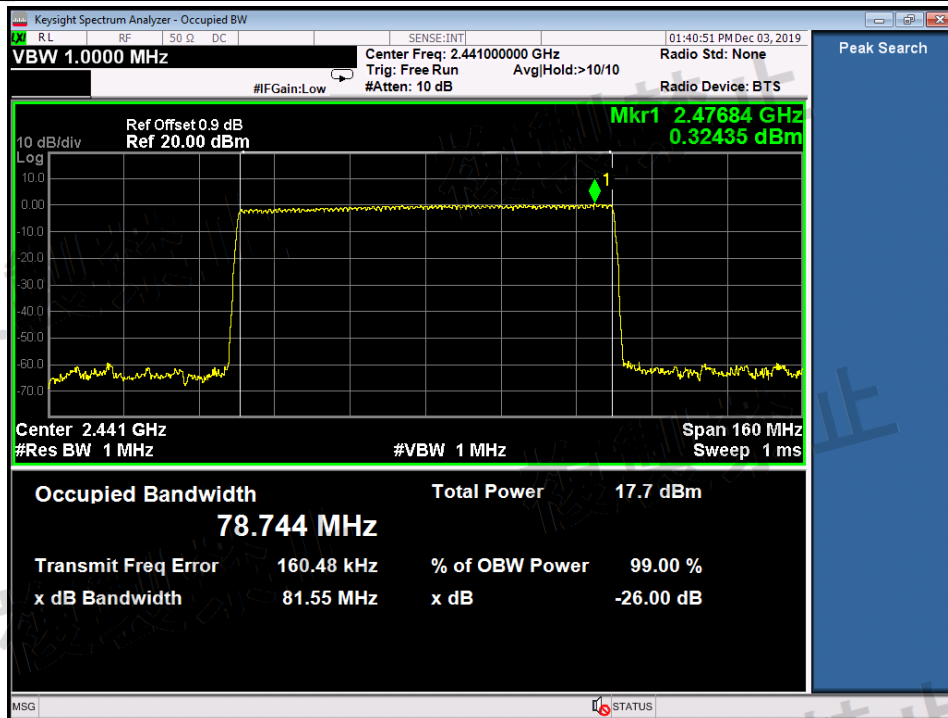
TNVN_2DH5_Ant1_79 Hopping



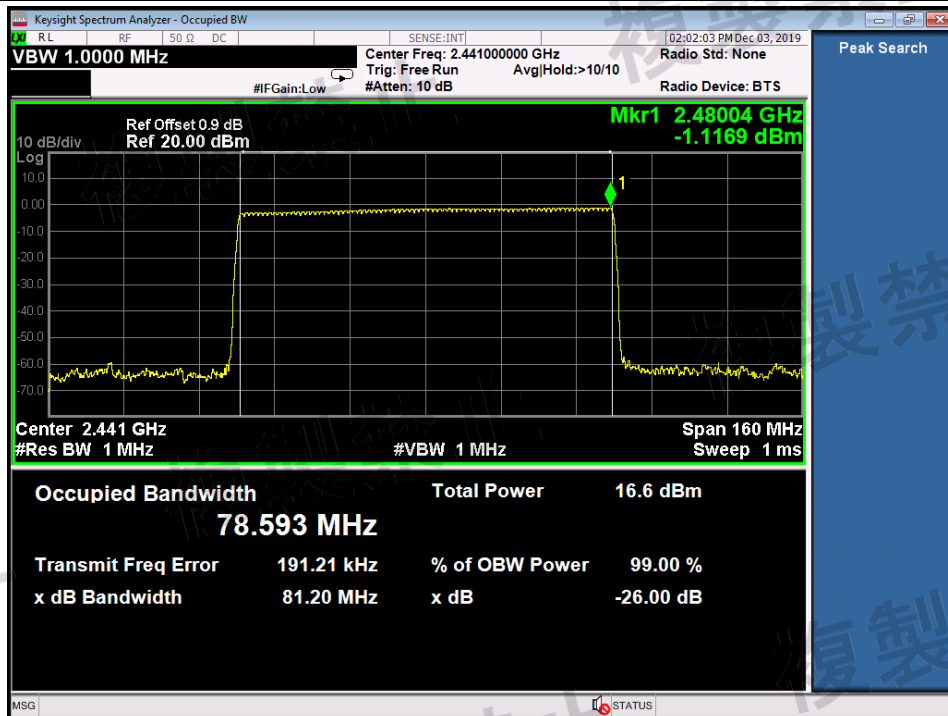
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TNVN_3DH5_Ant1_79 Hopping



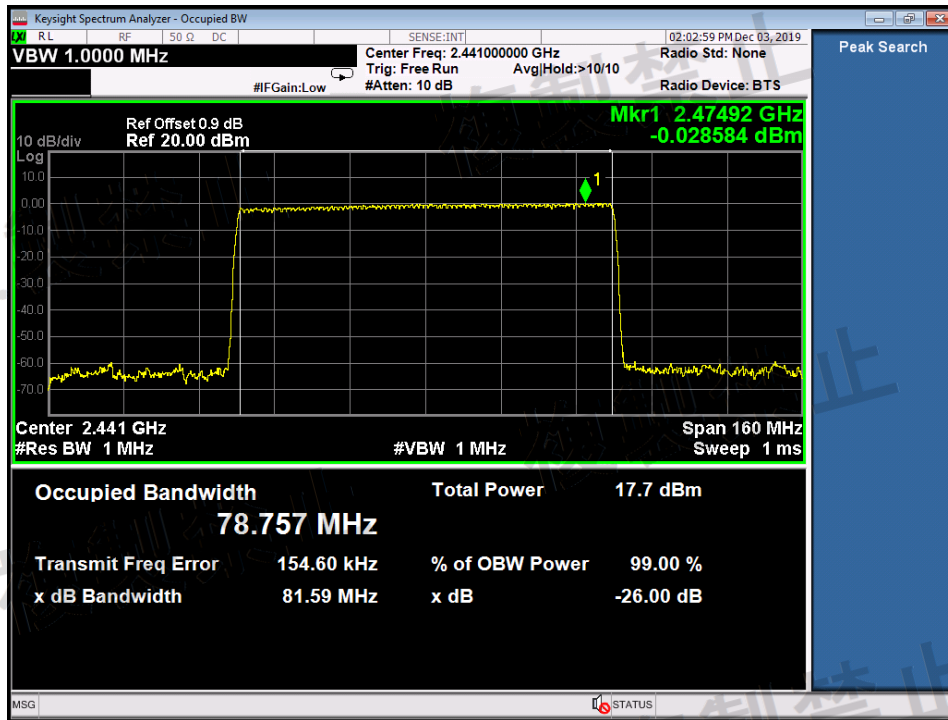
TNVH_DH5_Ant1_79 Hopping



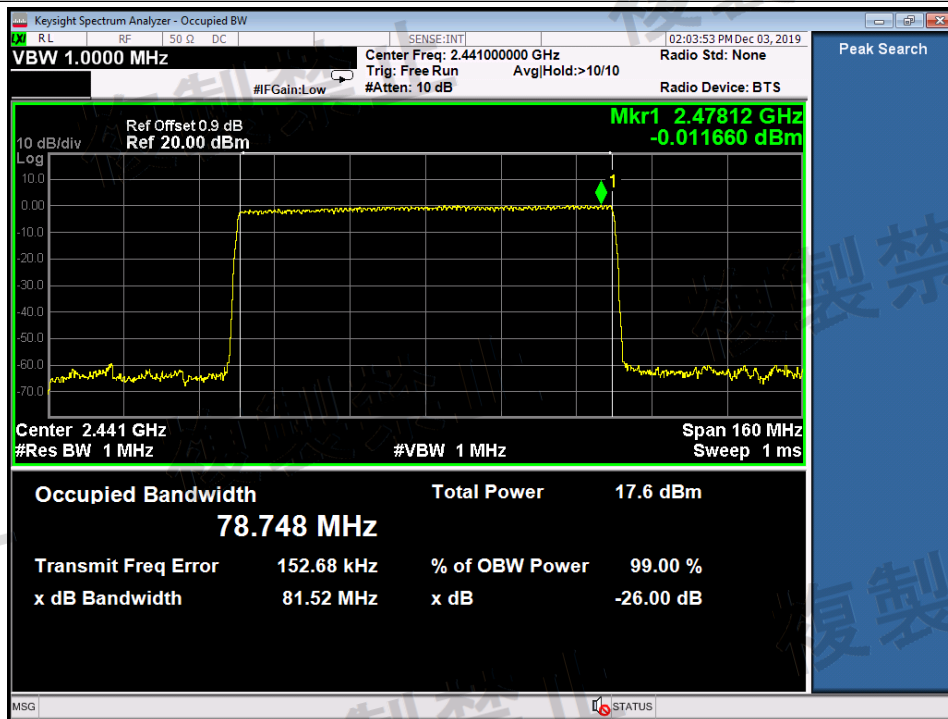
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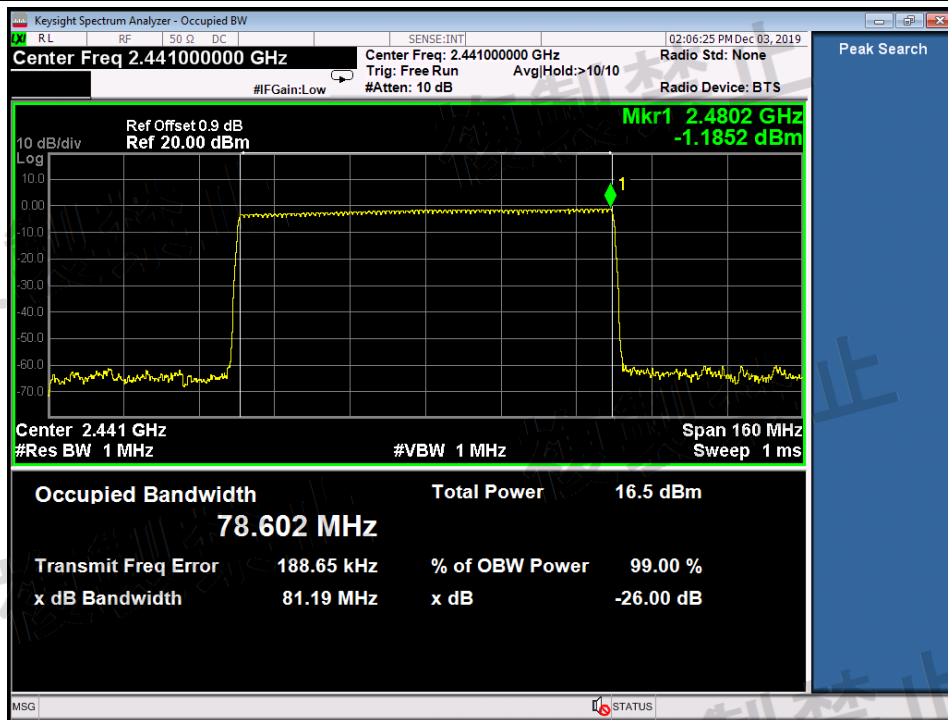
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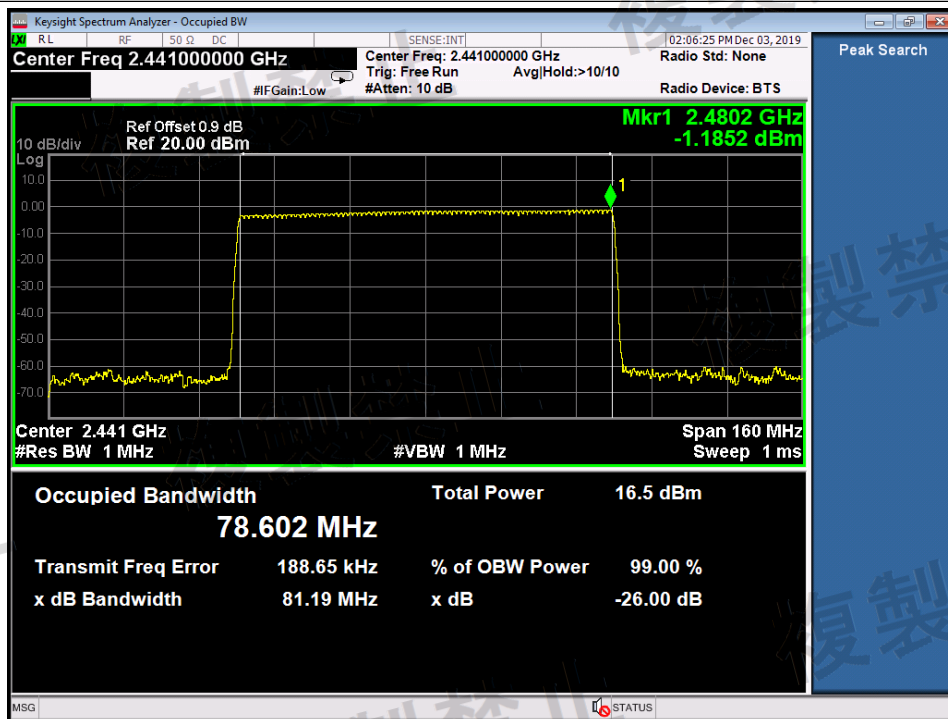
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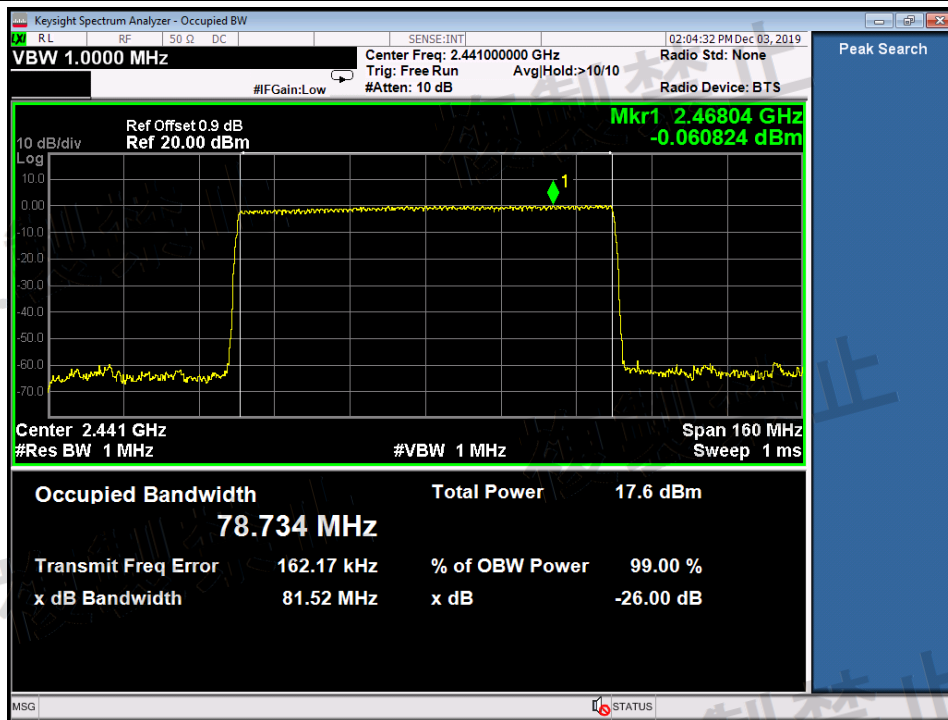
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9.4 Spread Bandwidth (90%)

9.4.1 Test Result

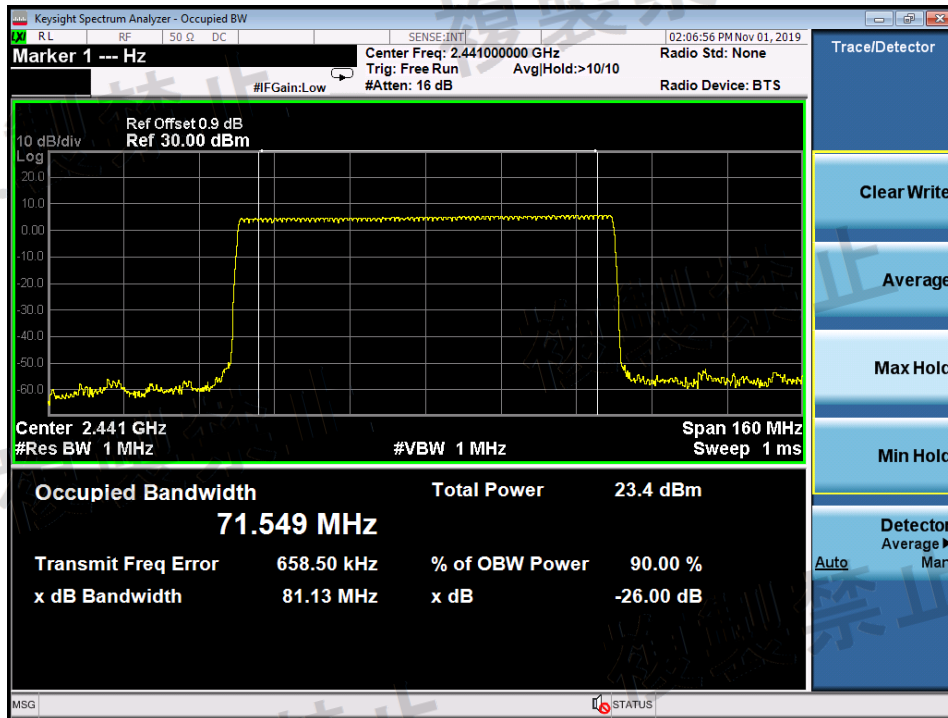
TestCondition	TestMode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
TNVN	DH5	Ant1	79 Hopping	71.549	>=0.5	PASS
	DH5	Ant1	20 Hopping	19.439	>=0.5	PASS
	2DH5	Ant1	79 Hopping	71.259	>=0.5	PASS
	2DH5	Ant1	20 Hopping	19.481	>=0.5	PASS
	3DH5	Ant1	79 Hopping	71.243	>=0.5	PASS
	3DH5	Ant1	20 Hopping	19.503	>=0.5	PASS
TNVH	DH5	Ant1	79 Hopping	71.355	>=0.5	PASS
	DH5	Ant1	20 Hopping	19.420	>=0.5	PASS
	2DH5	Ant1	79 Hopping	71.191	>=0.5	PASS
	2DH5	Ant1	20 Hopping	19.537	>=0.5	PASS
	3DH5	Ant1	79 Hopping	71.125	>=0.5	PASS
	3DH5	Ant1	20 Hopping	19.504	>=0.5	PASS
TNVL	DH5	Ant1	79 Hopping	71.387	>=0.5	PASS
	DH5	Ant1	20 Hopping	19.304	>=0.5	PASS
	2DH5	Ant1	79 Hopping	71.279	>=0.5	PASS
	2DH5	Ant1	20 Hopping	19.413	>=0.5	PASS
	3DH5	Ant1	79 Hopping	71.230	>=0.5	PASS
	3DH5	Ant1	20 Hopping	19.500	>=0.5	PASS

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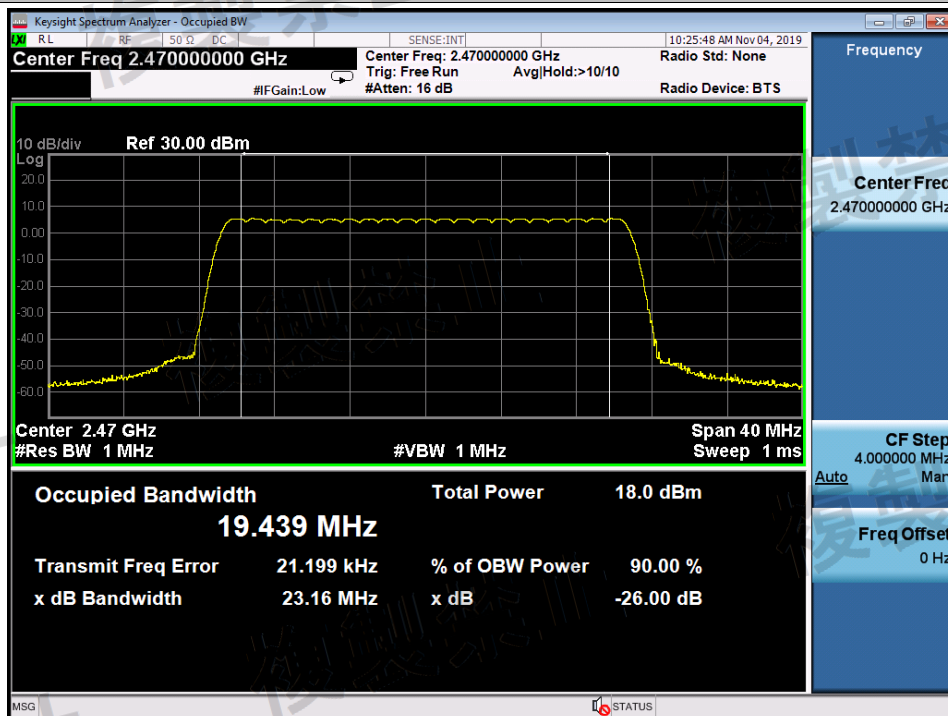
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9.4.2 Test Graphs

TNVN_DH5_Ant1_79 Hopping



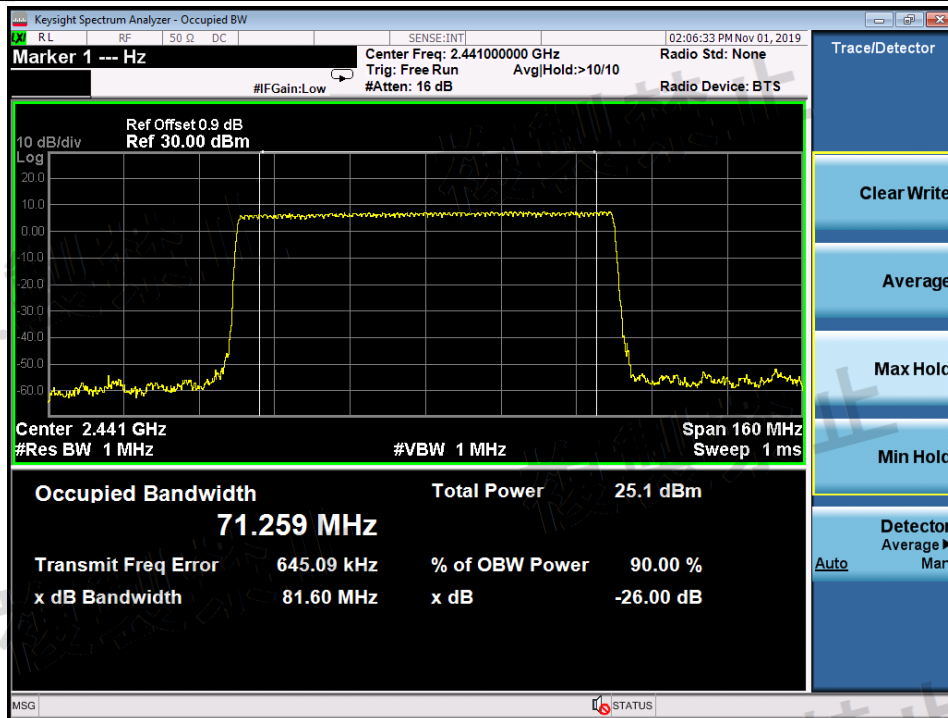
TNVN_DH5_Ant1_20 Hopping



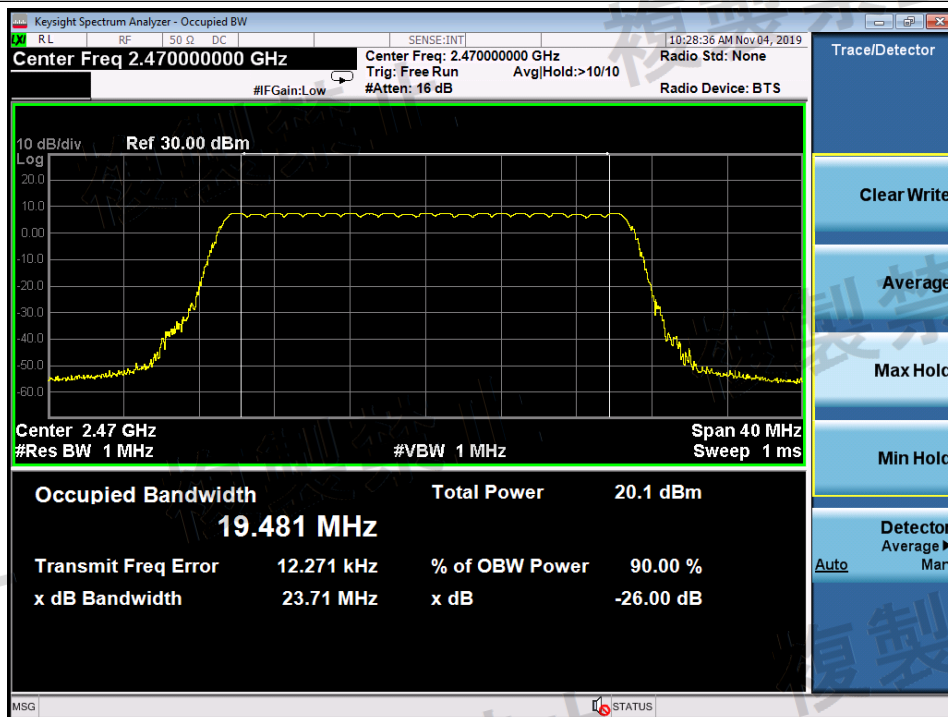
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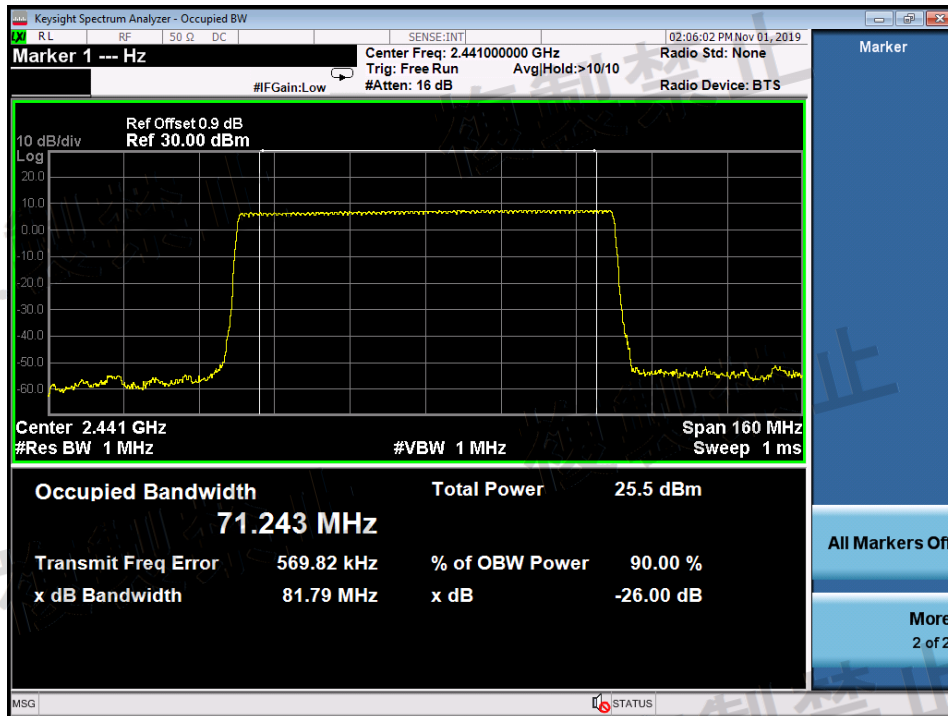
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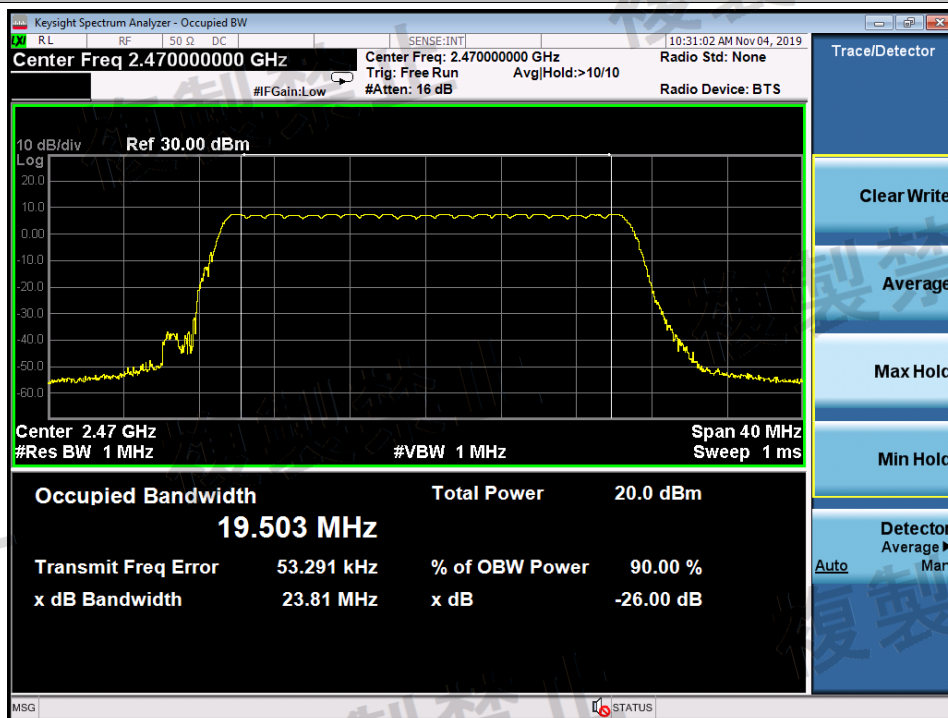
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TNVN_3DH5_Ant1_79 Hopping



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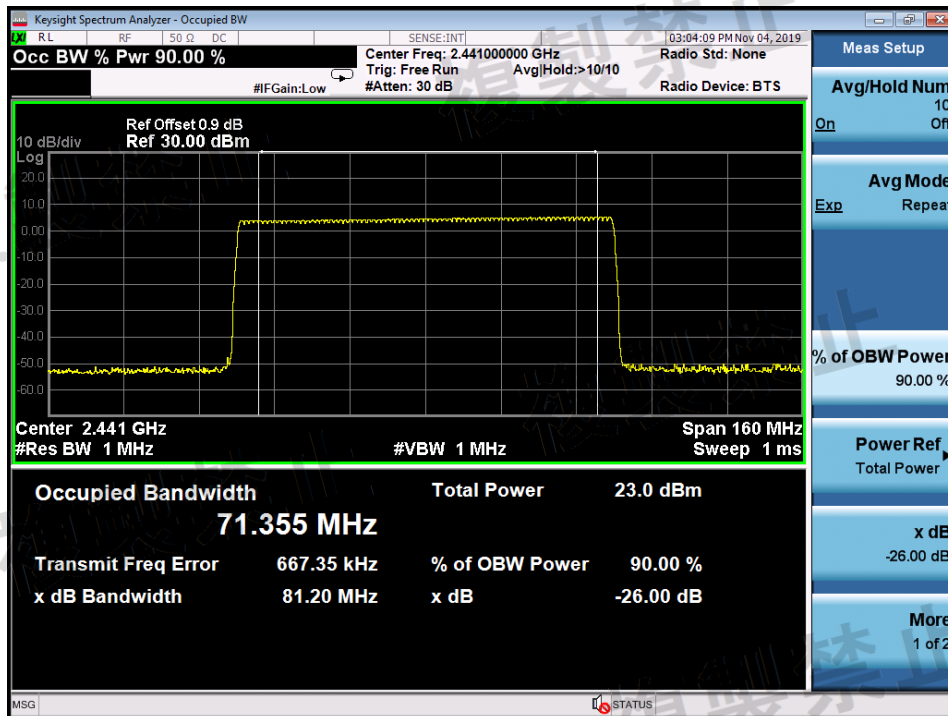


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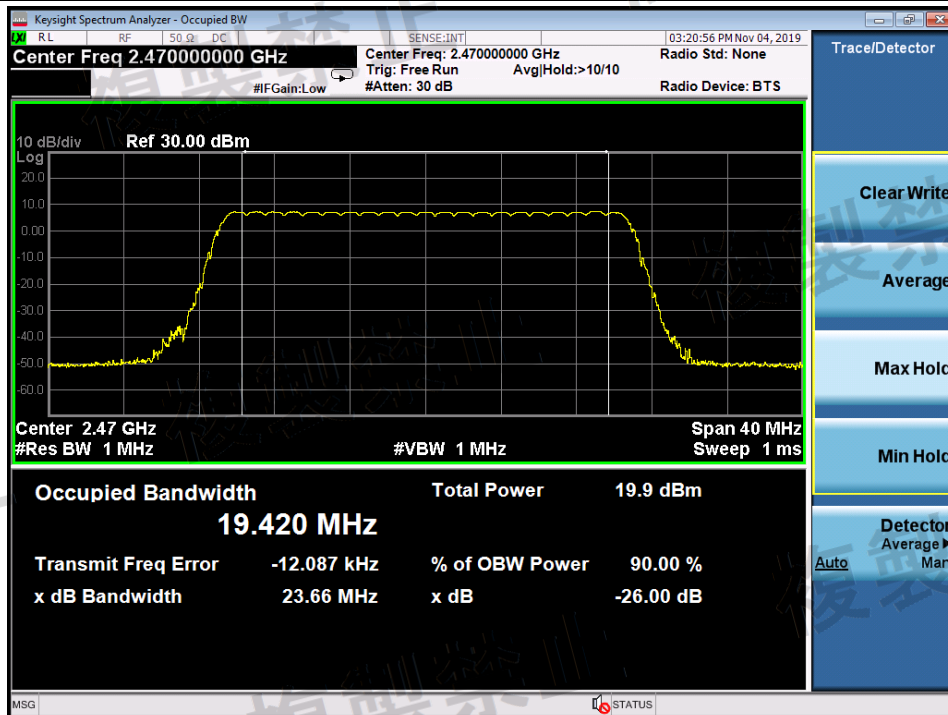
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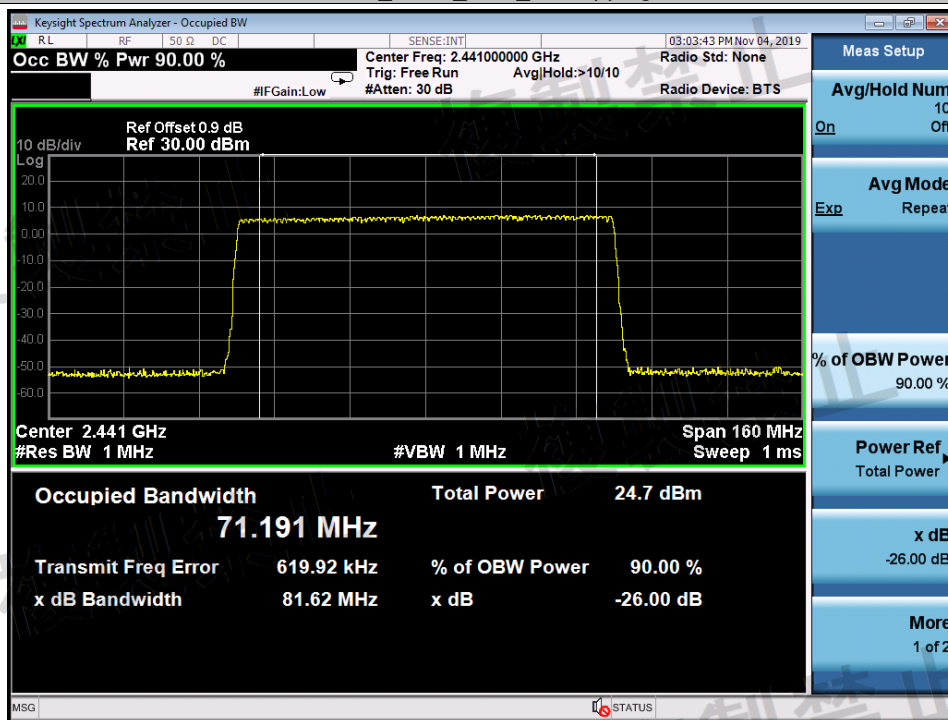
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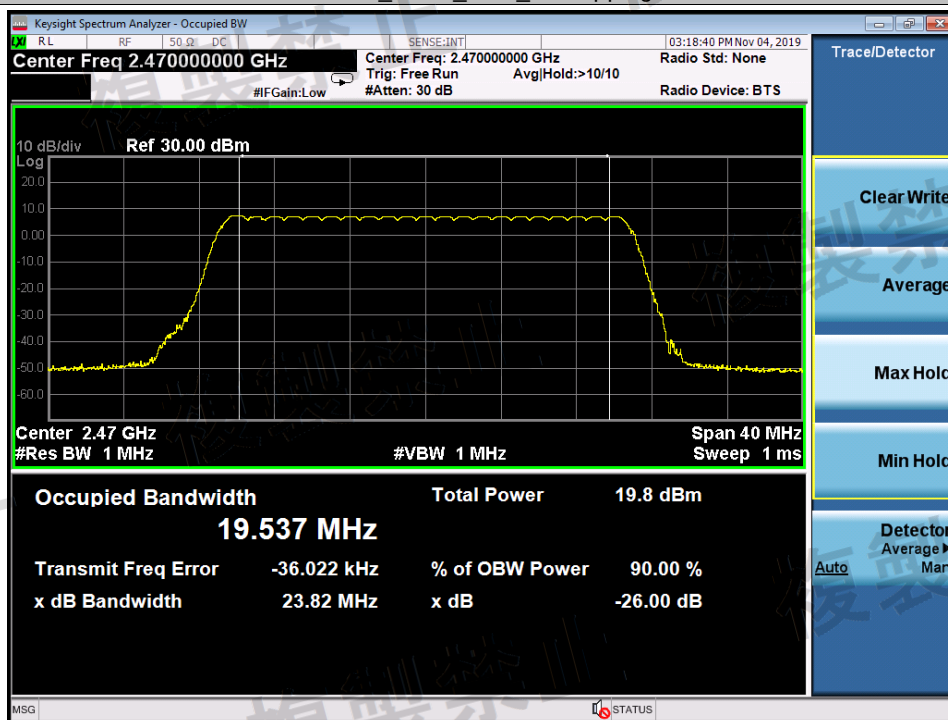
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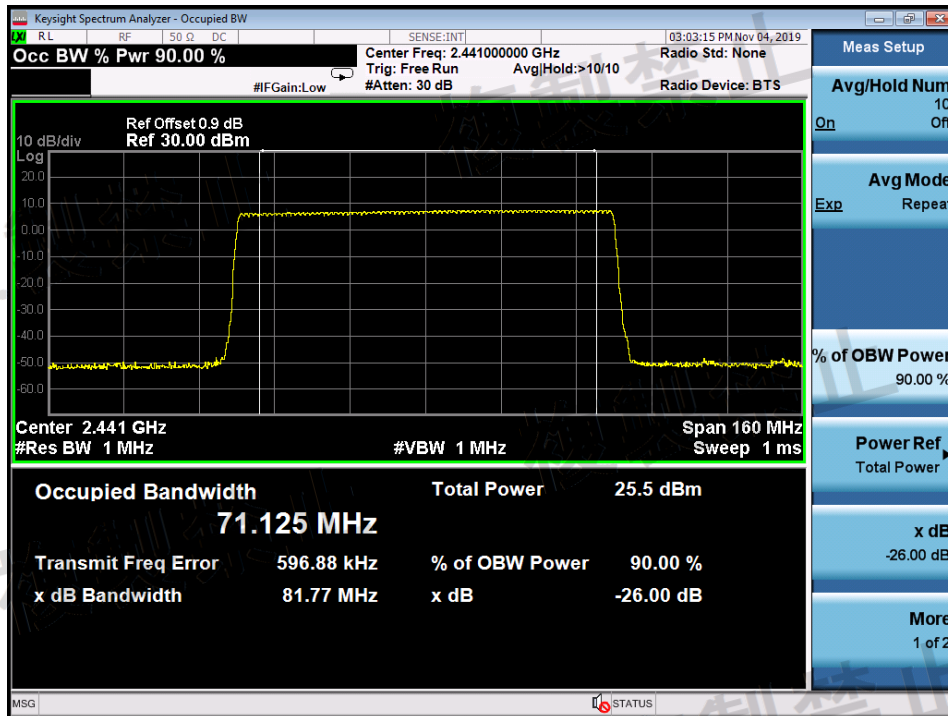
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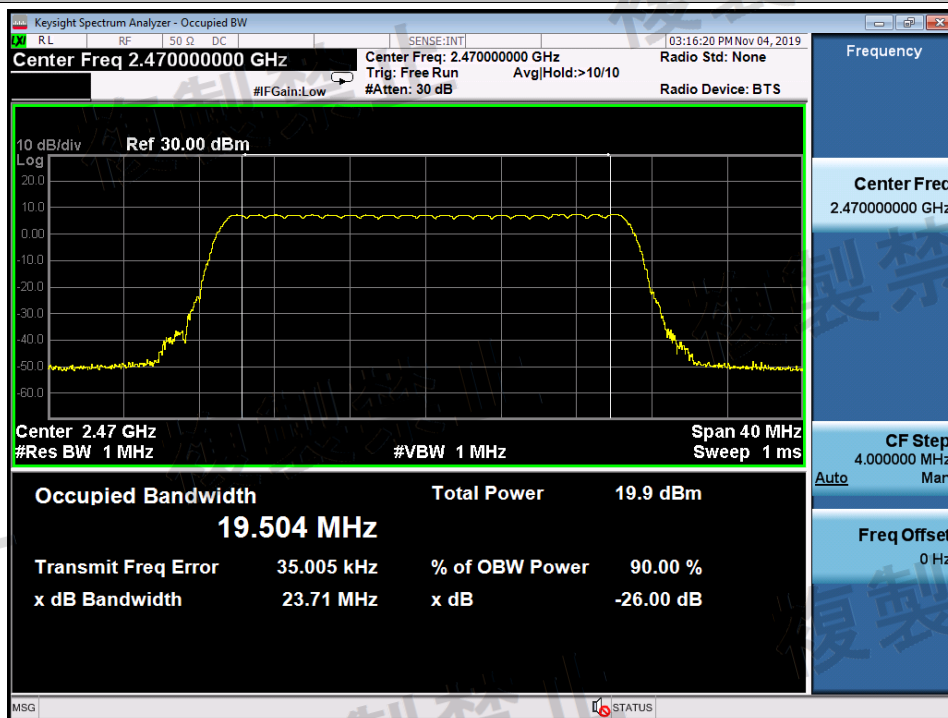
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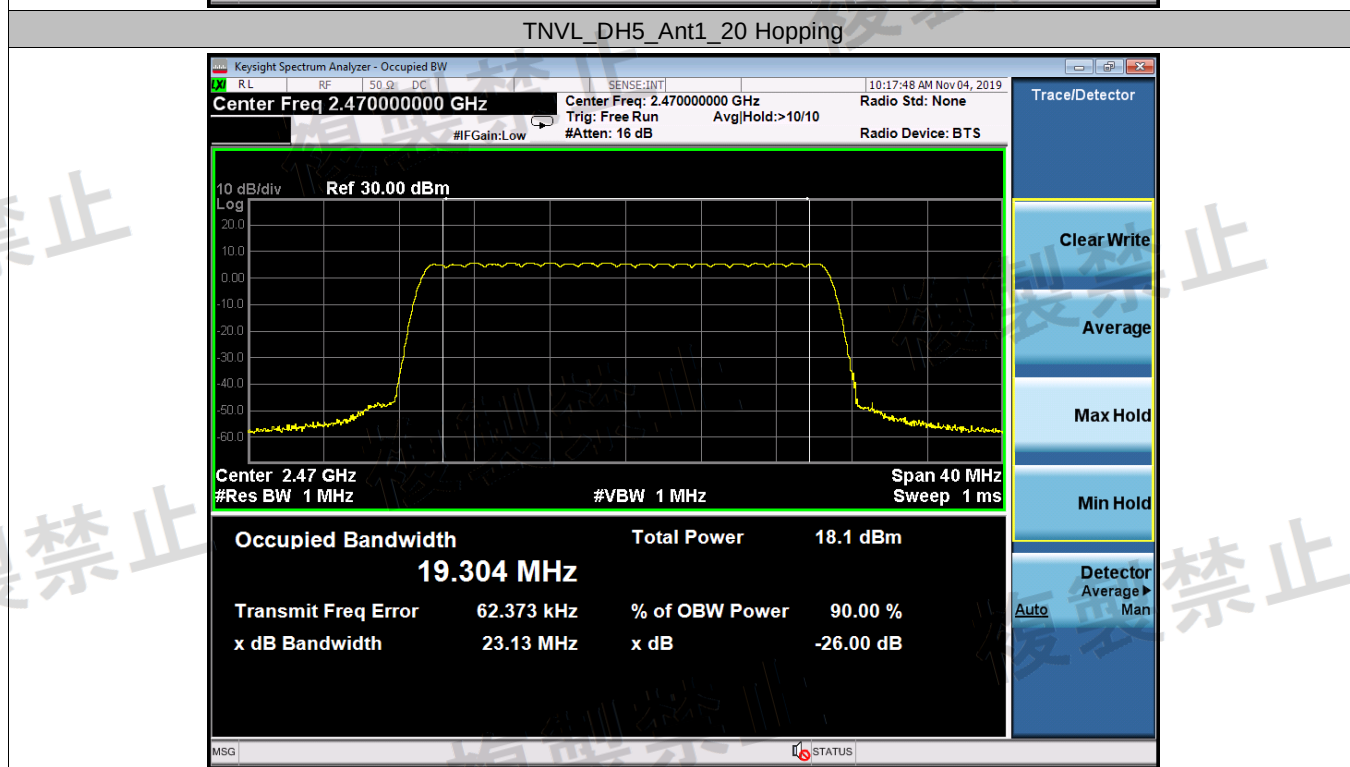
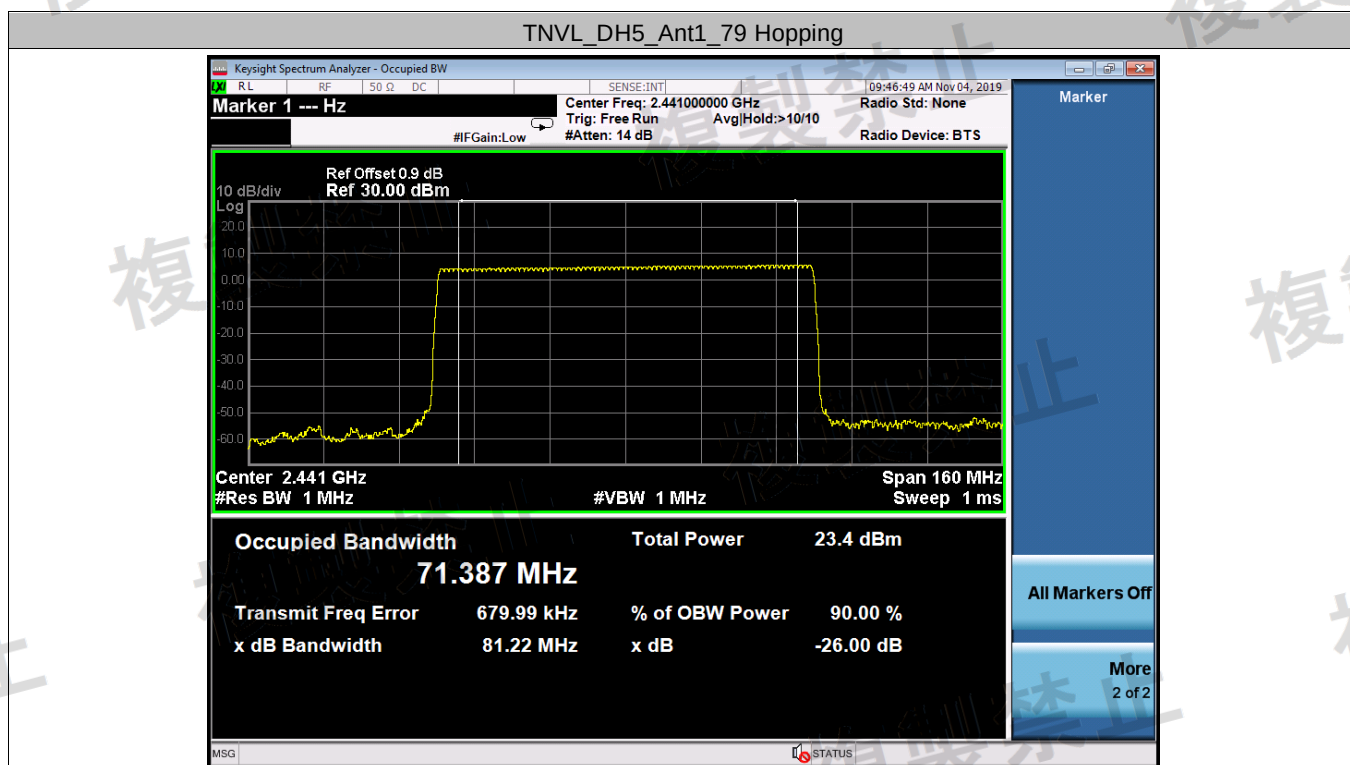


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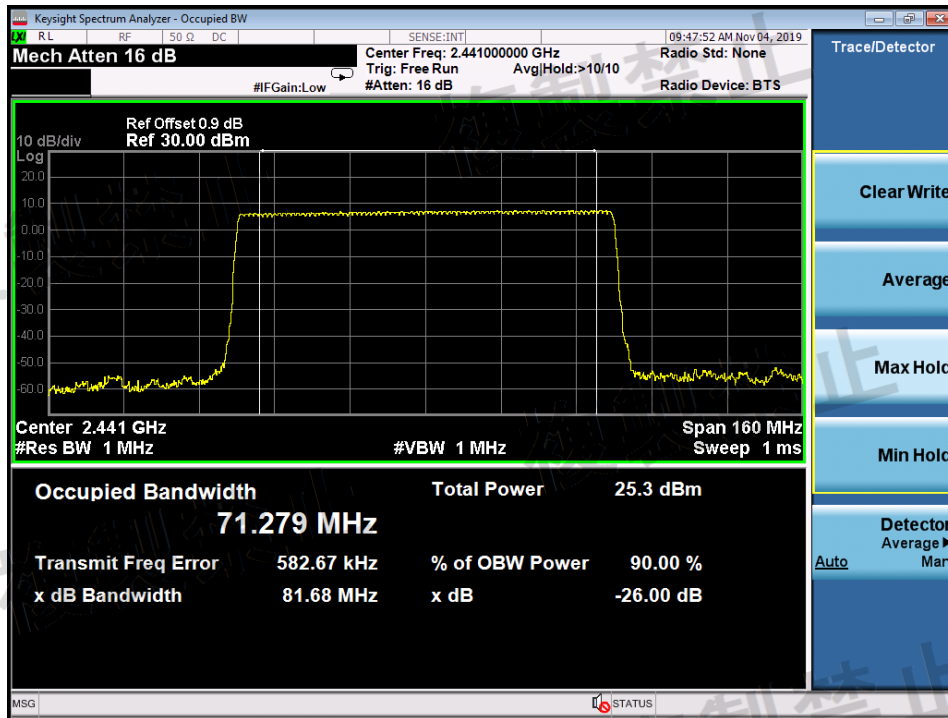


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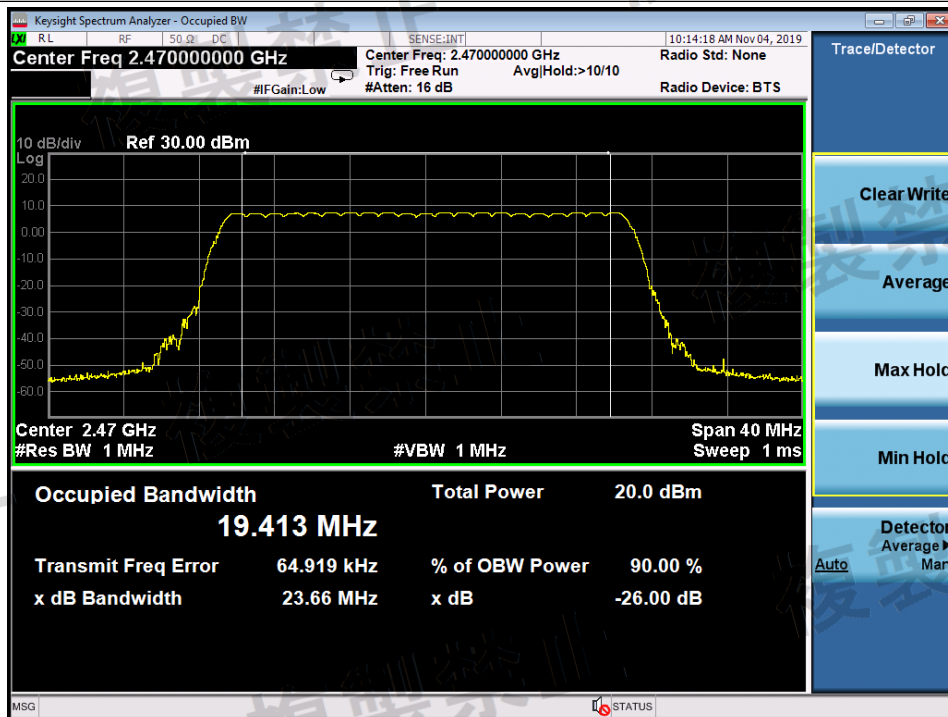
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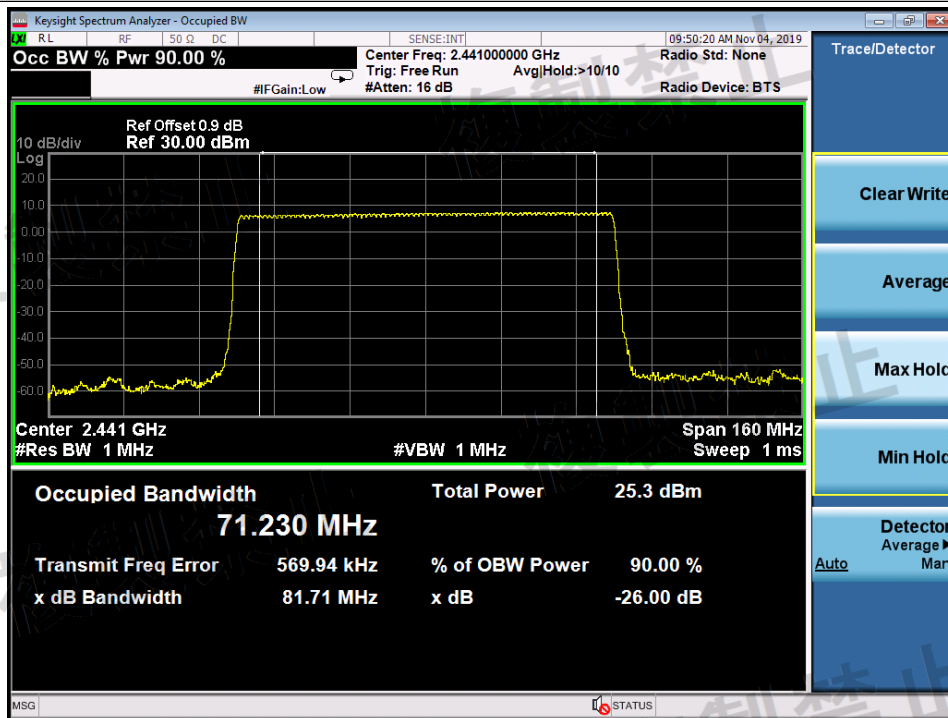
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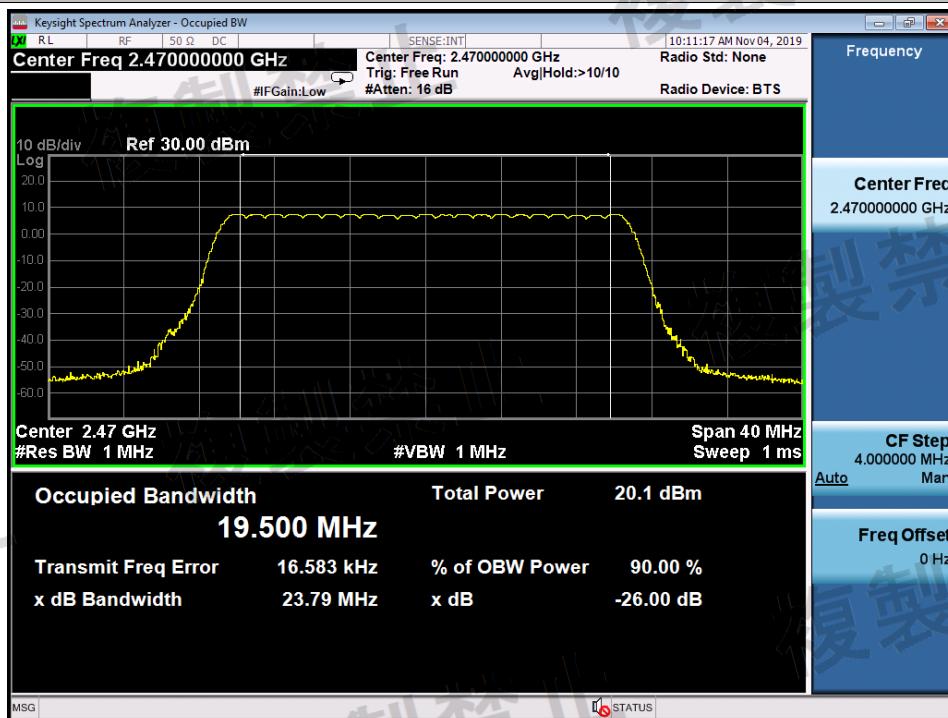
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9.5 Antenna Power

9.5.1 Test Result

Antenna Power								
Test Condition	Test Mode	Antenna	PeakPower Freq.	Power (mW)	Hopping Number	Result (mW/MHz)	Limit (mW/MHz)	Verdict
TNVN	DH5	Ant1	2480.2MHz	0.143	79	0.0020	<=3	PASS
					20	0.0074	<=3	PASS
	2DH5	Ant1	2475.24MHz	0.228	79	0.0032	<=3	PASS
					20	0.0117	<=3	PASS
	3DH5	Ant1	2479.88MHz	0.186	79	0.0026	<=3	PASS
					20	0.0095	<=3	PASS
TNVH	DH5	Ant1	2480MHz	0.181	79	0.0025	<=3	PASS
					20	0.0093	<=3	PASS
	2DH5	Ant1	2474.92MHz	0.174	79	0.0024	<=3	PASS
					20	0.0089	<=3	PASS
	3DH5	Ant1	2478.12MHz	0.173	79	0.0024	<=3	PASS
					20	0.0089	<=3	PASS
TNVL	DH5	Ant1	2480.2MHz	0.159	79	0.0022	<=3	PASS
					20	0.0082	<=3	PASS
	2DH5	Ant1	2470.92MHz	0.131	79	0.0018	<=3	PASS
					20	0.0067	<=3	PASS
	3DH5	Ant1	2468.04MHz	0.109	79	0.0015	<=3	PASS
					20	0.0056	<=3	PASS

Remark:

For the Peak Power Frequency test data, refer to the Appendix 9.1-2.

For the 90% Bandwidth test data, refer to the Appendix 9.1-3

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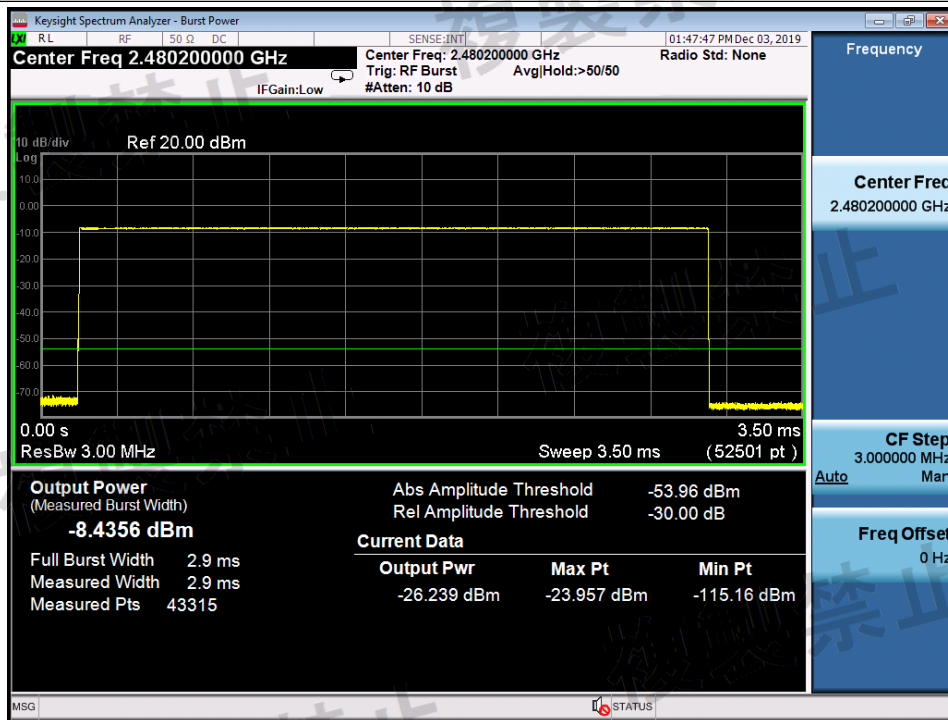
Tolerance								
Test Condition	Test Mode	Antenna	Hopping Number	Power (mW/MHz)	RatedPower (mW/MHz)	Result (%)	Limit (%)	Verdict
TNVN	DH5	Ant1	79	0.0020	0.003	-33.38	-80 to +20	PASS
			20	0.0074	0.011	-33.12		PASS
	2DH5	Ant1	79	0.0032	0.003	6.65		PASS
			20	0.0117	0.011	6.40		PASS
	3DH5	Ant1	79	0.0026	0.003	-12.97		PASS
			20	0.0095	0.011	-13.30		PASS
TNVH	DH5	Ant1	79	0.0025	0.003	-15.45	-80 to +20	PASS
			20	0.0093	0.011	-15.27		PASS
	2DH5	Ant1	79	0.0024	0.003	-18.53		PASS
			20	0.0089	0.011	-19.03		PASS
	3DH5	Ant1	79	0.0024	0.003	-18.92		PASS
			20	0.0089	0.011	-19.36		PASS
TNVL	DH5	Ant1	79	0.0022	0.003	-25.76	-80 to +20	PASS
			20	0.0082	0.011	-25.12		PASS
	2DH5	Ant1	79	0.0018	0.003	-38.74		PASS
			20	0.0067	0.011	-38.65		PASS
	3DH5	Ant1	79	0.0015	0.003	-48.99		PASS
			20	0.0056	0.011	-49.18		PASS

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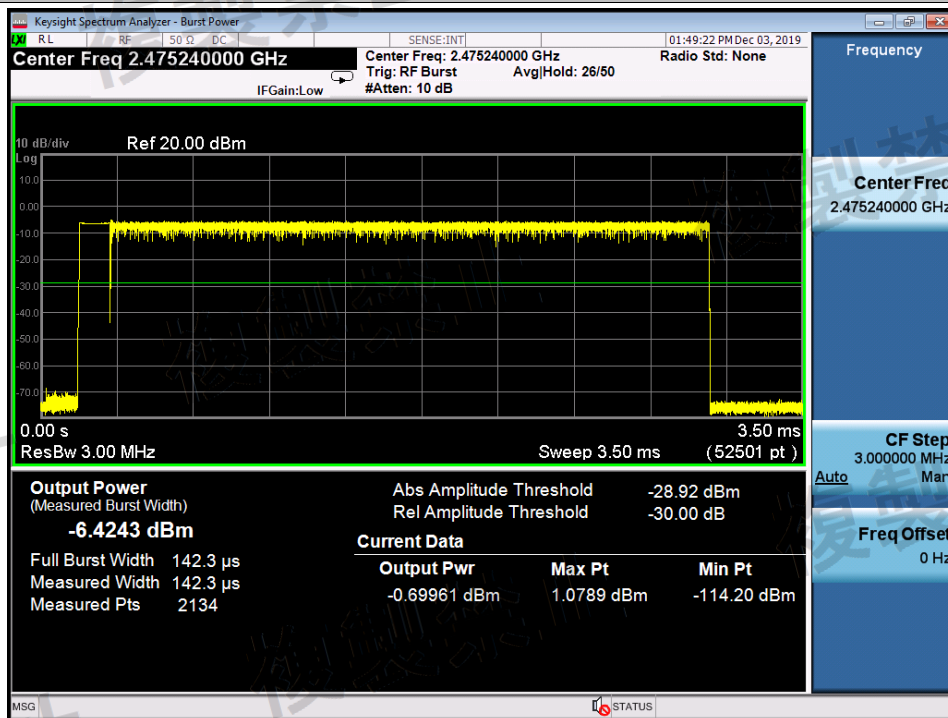
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9.5.2 Test Graphs

TNVN_DH5_Ant1



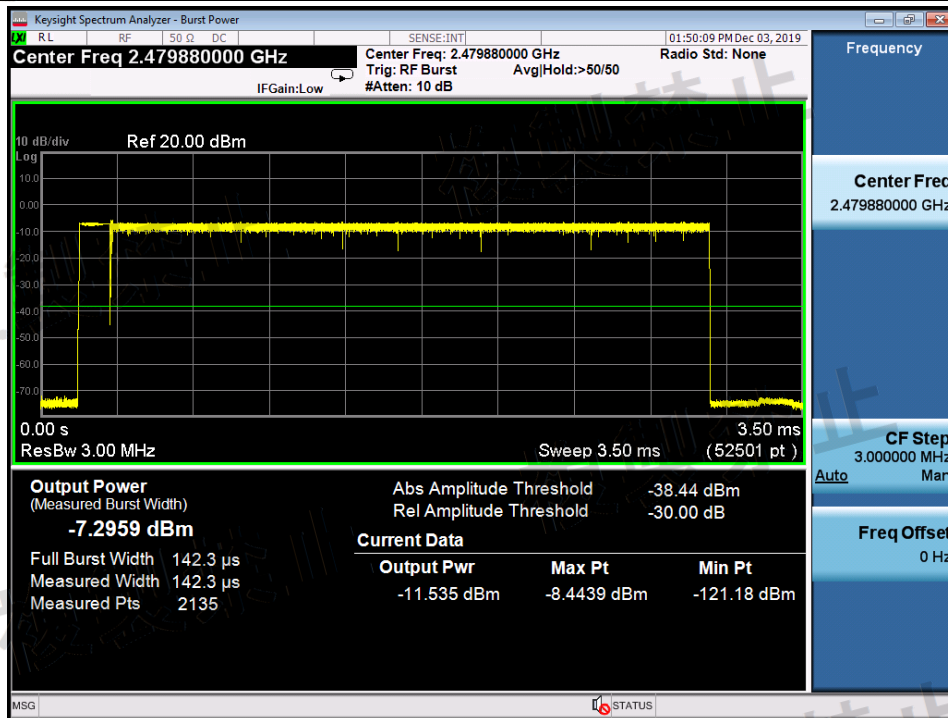
TNVN_2DH5_Ant1



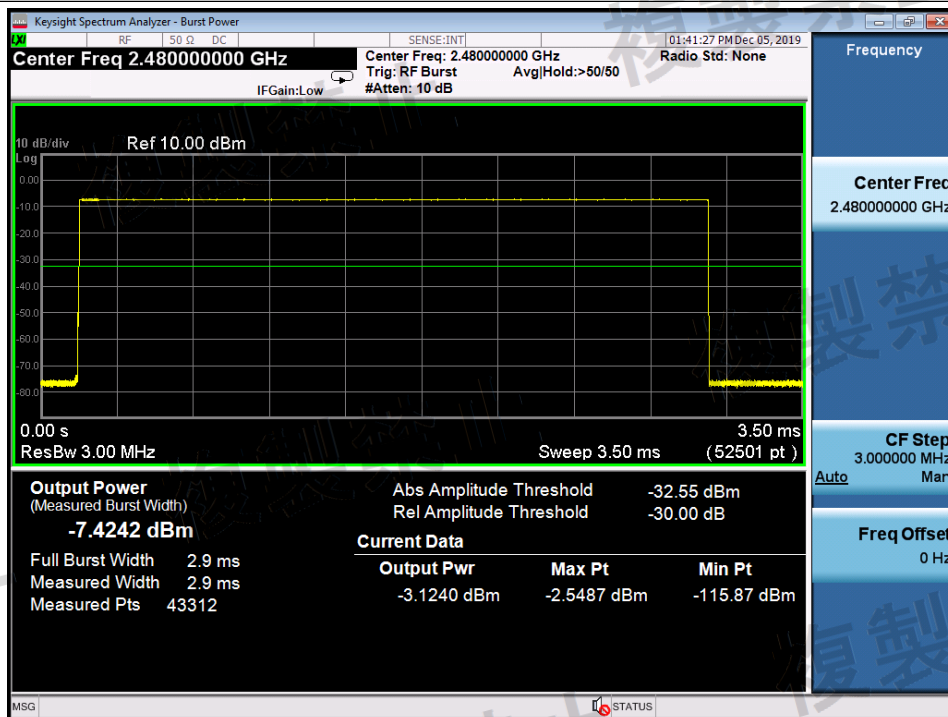
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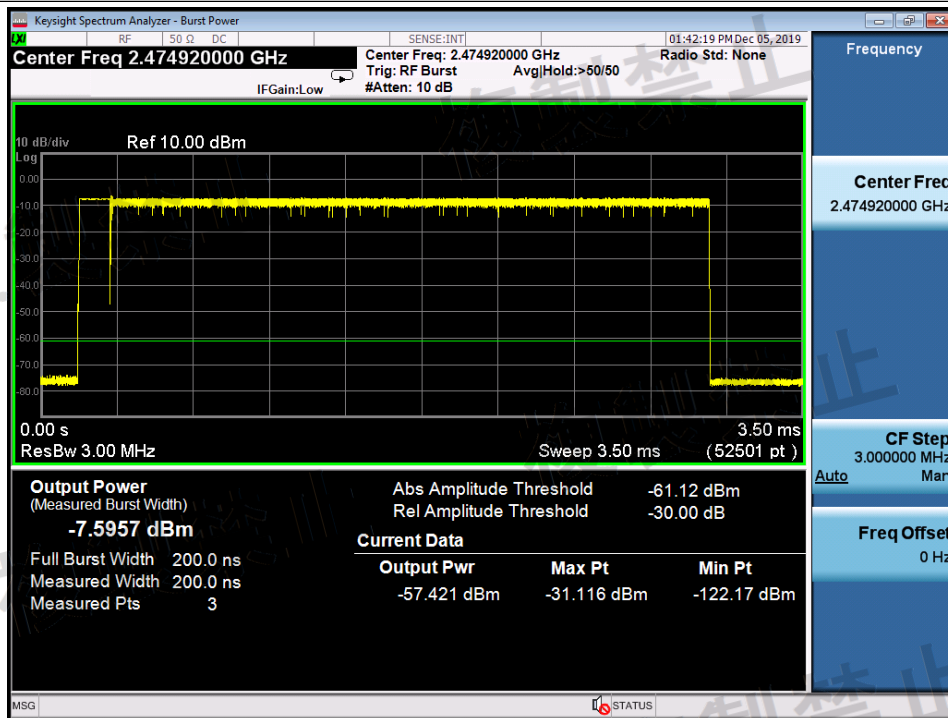
TNVN_3DH5_Ant1



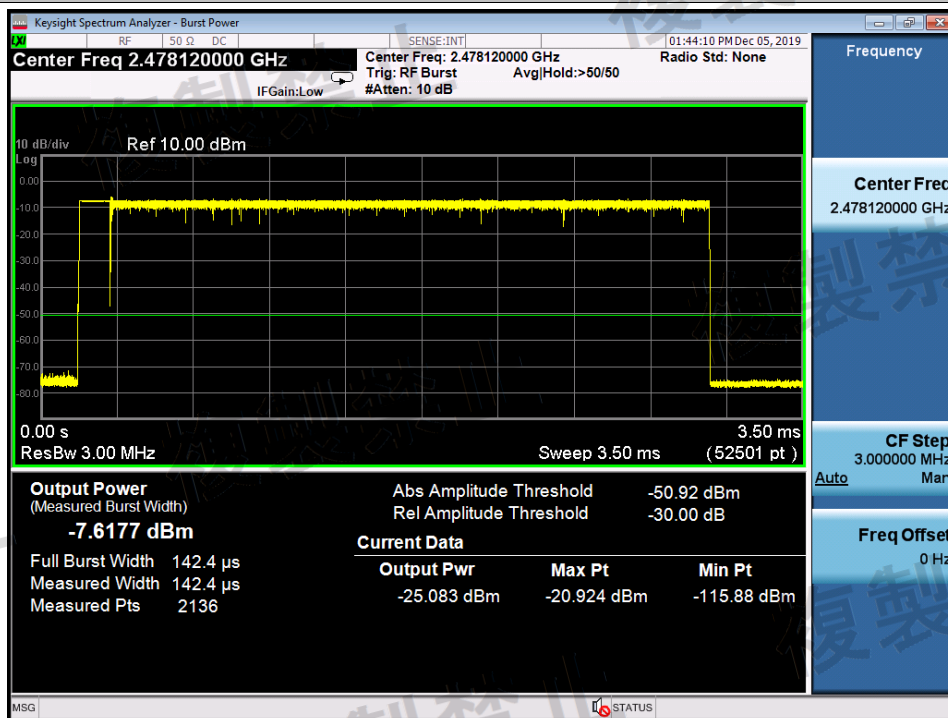
TNVH_DH5_Ant1



TNVH_2DH5_Ant1



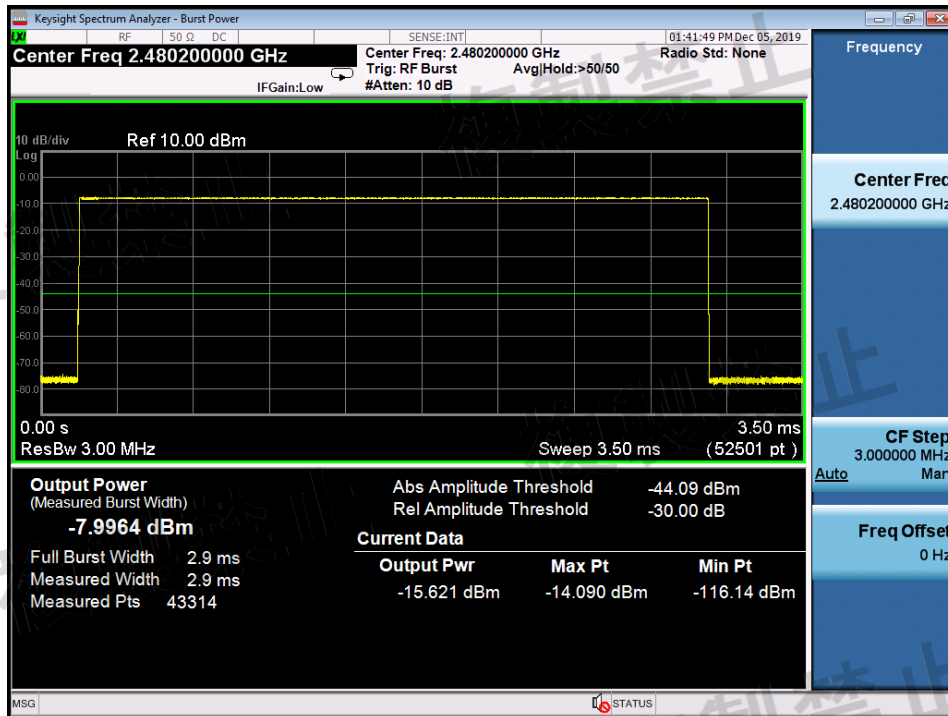
TNVH_3DH5_Ant1



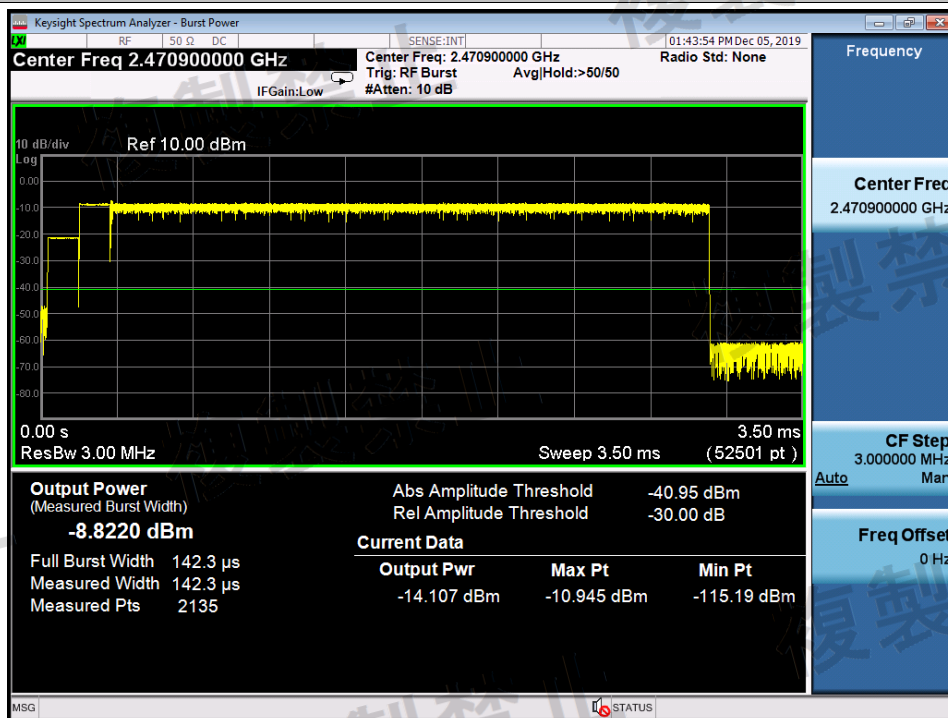
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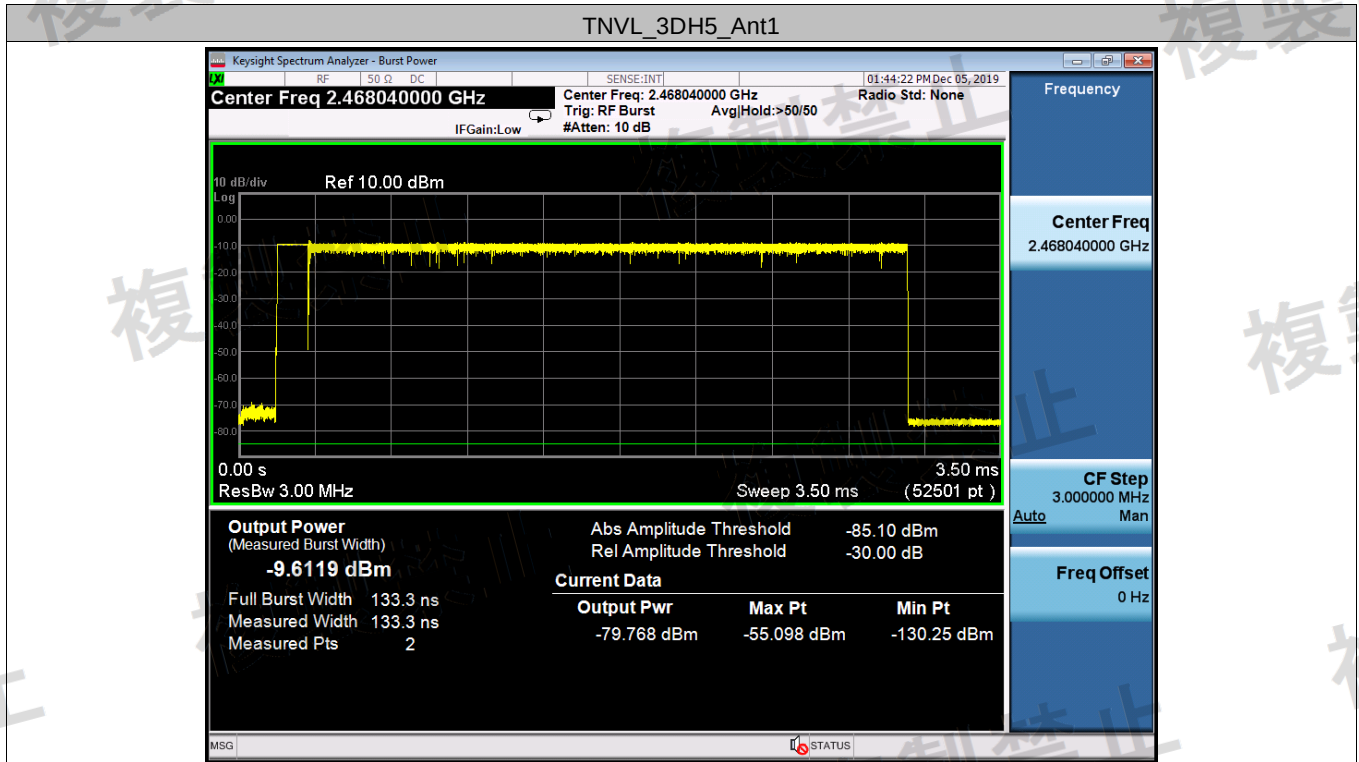
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TNVL_DH5_Ant1



TNVL_2DH5_Ant1





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9.6 Spurious Emission of TX

9.6.1 Test Result

TestCondition	TestMode	Antenna	Channel	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Verdict
TNVN	DH5	Ant1	2402	30~2374	-60.736	<=-26	PASS
				2374~2387	-54.358	<=-26	PASS
				2387~2400	-39.876	<=-16	PASS
				2483.5~2496.5	-60.437	<=-16	PASS
				2496.5~2509.5	-54.069	<=-26	PASS
				2509.5~12500	-39.54	<=-26	PASS
			2441	30~2374	-65.625	<=-26	PASS
				2374~2387	-56.702	<=-26	PASS
				2387~2400	-60.386	<=-16	PASS
				2483.5~2496.5	-55.45	<=-16	PASS
				2496.5~2509.5	-48.015	<=-26	PASS
				2509.5~12500	-39.141	<=-26	PASS
			2480	30~2374	-67.923	<=-26	PASS
				2374~2387	-62.936	<=-26	PASS
				2387~2400	-50.997	<=-16	PASS
				2483.5~2496.5	-49.521	<=-16	PASS
				2496.5~2509.5	-57.145	<=-26	PASS
				2509.5~12500	-38.601	<=-26	PASS
TNVN	2DH5	Ant1	2402	30~2374	-59.014	<=-26	PASS
				2374~2387	-53.315	<=-26	PASS
				2387~2400	-38.2	<=-16	PASS
				2483.5~2496.5	-57.278	<=-16	PASS
				2496.5~2509.5	-53.156	<=-26	PASS
				2509.5~12500	-37.458	<=-26	PASS
			2441	30~2374	-64.526	<=-26	PASS
				2374~2387	-55.719	<=-26	PASS
				2387~2400	-60.298	<=-16	PASS
				2483.5~2496.5	-54.674	<=-16	PASS
				2496.5~2509.5	-47.944	<=-26	PASS
				2509.5~12500	-35.283	<=-26	PASS
			2480	30~2374	-65.89	<=-26	PASS
				2374~2387	-63.063	<=-26	PASS
				2387~2400	-56.285	<=-16	PASS
				2483.5~2496.5	-47.022	<=-16	PASS
				2496.5~2509.5	-57.518	<=-26	PASS
				2509.5~12500	-36.419	<=-26	PASS

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TNVN	3DH5	Ant1	2402	30~2374	-58.536	<--26	PASS
				2374~2387	-52.401	<--26	PASS
				2387~2400	-32.996	<--16	PASS
				2483.5~2496.5	-57.887	<--16	PASS
				2496.5~2509.5	-53.156	<--26	PASS
				2509.5~12500	-37.67	<--26	PASS
			2441	30~2374	-64.846	<--26	PASS
				2374~2387	-54.296	<--26	PASS
				2387~2400	-59.369	<--16	PASS
				2483.5~2496.5	-54.45	<--16	PASS
				2496.5~2509.5	-48.618	<--26	PASS
				2509.5~12500	-35.483	<--26	PASS
			2480	30~2374	-64.957	<--26	PASS
				2374~2387	-61.788	<--26	PASS
				2387~2400	-50.566	<--16	PASS
				2483.5~2496.5	-48.582	<--16	PASS
				2496.5~2509.5	-56.489	<--26	PASS
				2509.5~12500	-34.883	<--26	PASS
TNVH	DH5	Ant1	2402	30~2374	-59.4	<--26	PASS
				2374~2387	-54.466	<--26	PASS
				2387~2400	-39.38	<--16	PASS
				2483.5~2496.5	-58.963	<--16	PASS
				2496.5~2509.5	-54.675	<--26	PASS
				2509.5~12500	-39.188	<--26	PASS
			2441	30~2374	-65.445	<--26	PASS
				2374~2387	-56.454	<--26	PASS
				2387~2400	-59.837	<--16	PASS
				2483.5~2496.5	-54.322	<--16	PASS
				2496.5~2509.5	-48.731	<--26	PASS
				2509.5~12500	-38.733	<--26	PASS
			2480	30~2374	-67.18	<--26	PASS
				2374~2387	-62.616	<--26	PASS
				2387~2400	-51.391	<--16	PASS
				2483.5~2496.5	-47.465	<--16	PASS
				2496.5~2509.5	-55.839	<--26	PASS
				2509.5~12500	-38.267	<--26	PASS



TNVH	2DH5	Ant1	2402	30~2374	-58.578	<=-26	PASS
				2374~2387	-52.696	<=-26	PASS
				2387~2400	-35.691	<=-16	PASS
				2483.5~2496.5	-59.2	<=-16	PASS
				2496.5~2509.5	-53.178	<=-26	PASS
				2509.5~12500	-36.648	<=-26	PASS
			2441	30~2374	-63.261	<=-26	PASS
				2374~2387	-55.263	<=-26	PASS
				2387~2400	-59.456	<=-16	PASS
				2483.5~2496.5	-54.431	<=-16	PASS
				2496.5~2509.5	-48.94	<=-26	PASS
				2509.5~12500	-36.131	<=-26	PASS
			2480	30~2374	-66.035	<=-26	PASS
				2374~2387	-61.645	<=-26	PASS
				2387~2400	-61.243	<=-16	PASS
				2483.5~2496.5	-47.826	<=-16	PASS
				2496.5~2509.5	-55.972	<=-26	PASS
				2509.5~12500	-36.145	<=-26	PASS
TNVH	3DH5	Ant1	2402	30~2374	-58.731	<=-26	PASS
				2374~2387	-52.28	<=-26	PASS
				2387~2400	-35.671	<=-16	PASS
				2483.5~2496.5	-58.186	<=-16	PASS
				2496.5~2509.5	-53.331	<=-26	PASS
				2509.5~12500	-36.872	<=-26	PASS
			2441	30~2374	-64.113	<=-26	PASS
				2374~2387	-54.941	<=-26	PASS
				2387~2400	-58.648	<=-16	PASS
				2483.5~2496.5	-55.353	<=-16	PASS
				2496.5~2509.5	-48.43	<=-26	PASS
				2509.5~12500	-35.763	<=-26	PASS
			2480	30~2374	-65.541	<=-26	PASS
				2374~2387	-62.735	<=-26	PASS
				2387~2400	-50.775	<=-16	PASS
				2483.5~2496.5	-40.209	<=-16	PASS
				2496.5~2509.5	-55.603	<=-26	PASS
				2509.5~12500	-35.928	<=-26	PASS



TNVL	DH5	Ant1	2402	30~2374	-60.609	<=-26	PASS
				2374~2387	-57.645	<=-26	PASS
				2387~2400	-40.171	<=-16	PASS
				2483.5~2496.5	-60.129	<=-16	PASS
				2496.5~2509.5	-59.285	<=-26	PASS
				2509.5~12500	-39.605	<=-26	PASS
			2441	30~2374	-65.783	<=-26	PASS
				2374~2387	-61.662	<=-26	PASS
				2387~2400	-59.962	<=-16	PASS
				2483.5~2496.5	-55.085	<=-16	PASS
				2496.5~2509.5	-53.443	<=-26	PASS
				2509.5~12500	-38.878	<=-26	PASS
			2480	30~2374	-67.508	<=-26	PASS
				2374~2387	-65.295	<=-26	PASS
				2387~2400	-51.069	<=-16	PASS
				2483.5~2496.5	-48.999	<=-16	PASS
				2496.5~2509.5	-57.565	<=-26	PASS
TNVL	2DH5	Ant1	2402	30~2374	-58.528	<=-26	PASS
				2374~2387	-57.974	<=-26	PASS
				2387~2400	-39.146	<=-16	PASS
				2483.5~2496.5	-59.408	<=-16	PASS
				2496.5~2509.5	-56.984	<=-26	PASS
				2509.5~12500	-36.676	<=-26	PASS
			2441	30~2374	-62.841	<=-26	PASS
				2374~2387	-58.945	<=-26	PASS
				2387~2400	-58.766	<=-16	PASS
				2483.5~2496.5	-53.909	<=-16	PASS
				2496.5~2509.5	-54.97	<=-26	PASS
				2509.5~12500	-36.37	<=-26	PASS
			2480	30~2374	-65.158	<=-26	PASS
				2374~2387	-63.002	<=-26	PASS
				2387~2400	-55.568	<=-16	PASS
				2483.5~2496.5	-45.186	<=-16	PASS
				2496.5~2509.5	-56.51	<=-26	PASS
				2509.5~12500	-35.879	<=-26	PASS



TNVL	3DH5	Ant1	2402	30~2374	-58.628	<=-26	PASS
				2374~2387	-57.451	<=-26	PASS
				2387~2400	-32.352	<=-16	PASS
				2483.5~2496.5	-59.196	<=-16	PASS
				2496.5~2509.5	-57.471	<=-26	PASS
				2509.5~12500	-36.921	<=-26	PASS
			2441	30~2374	-64.138	<=-26	PASS
				2374~2387	-58.864	<=-26	PASS
				2387~2400	-59.863	<=-16	PASS
				2483.5~2496.5	-55.199	<=-16	PASS
				2496.5~2509.5	-55.457	<=-26	PASS
				2509.5~12500	-35.864	<=-26	PASS
			2480	30~2374	-65.717	<=-26	PASS
				2374~2387	-62.404	<=-26	PASS
				2387~2400	-50.644	<=-16	PASS
				2483.5~2496.5	-47.804	<=-16	PASS
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				2509.5~12500	-35.24	<=-26	PASS

Remark:

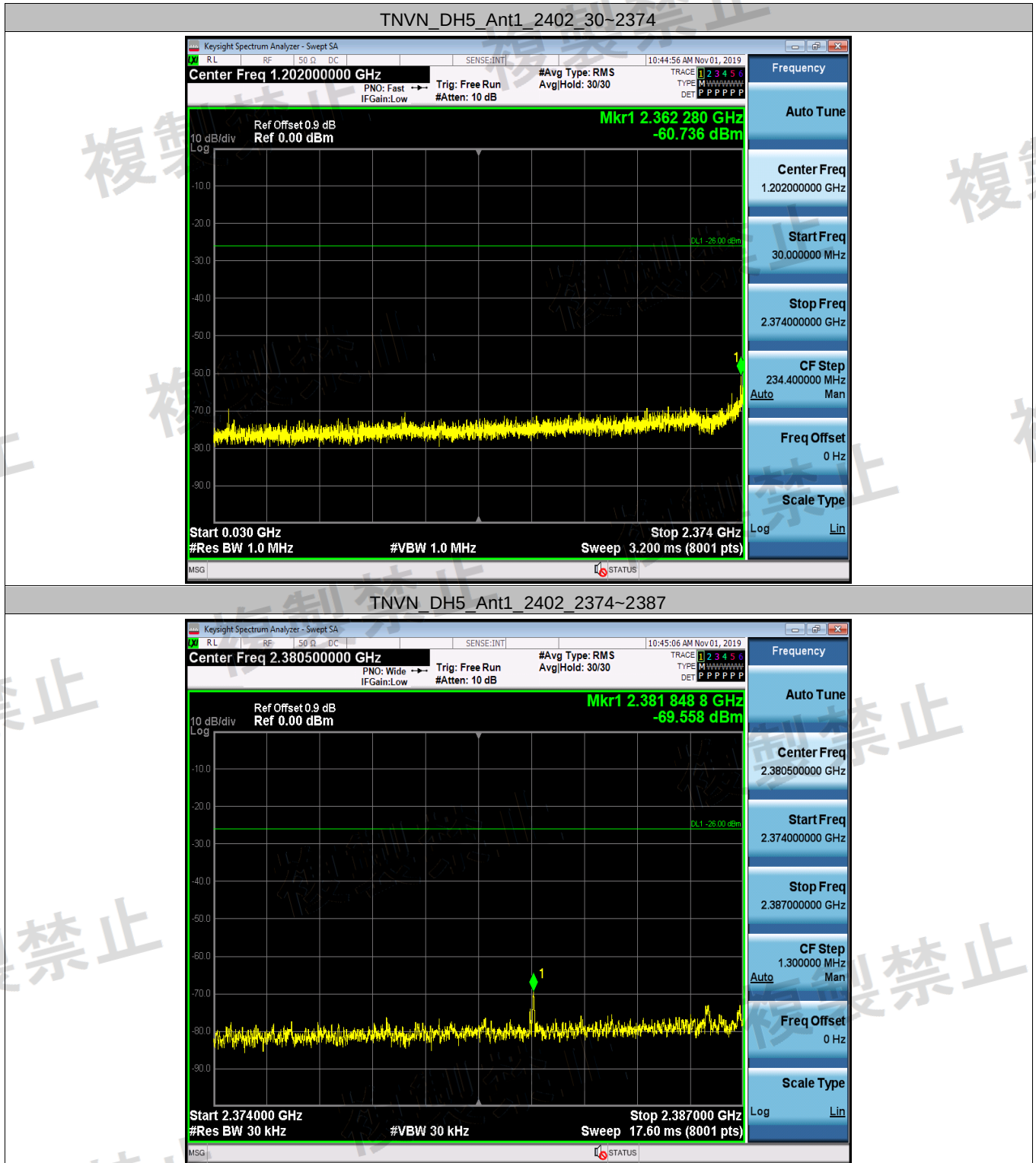
Since the test used 30kHz RBW, and the limit is under 1MHz RBW situation, calculated the spurious emission value (Calculated value) using following the formula:

Calculated value = Measured Value + 15.2dB

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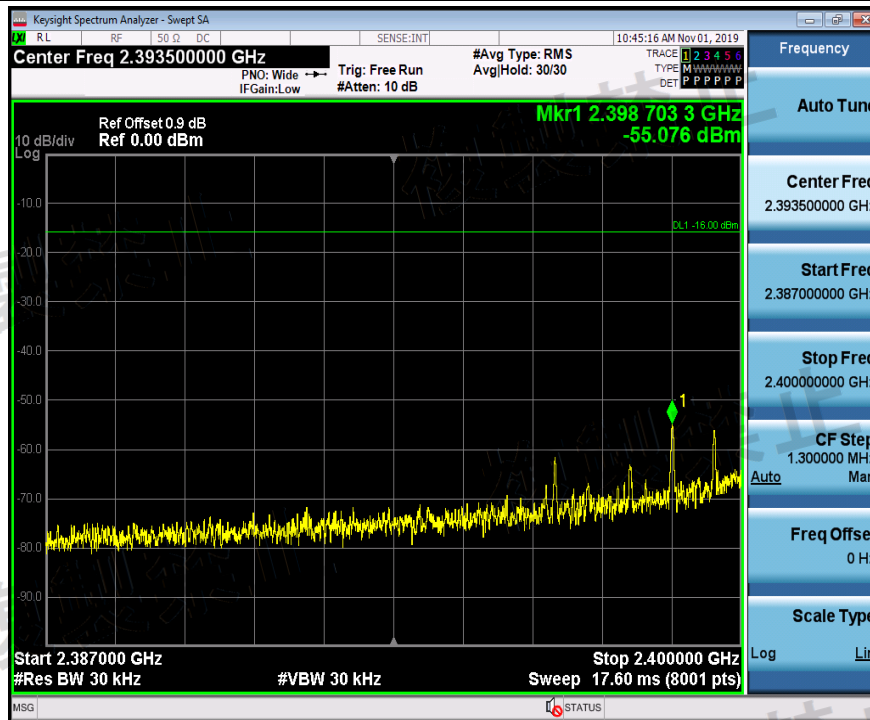
9.6.2 Test Graphs



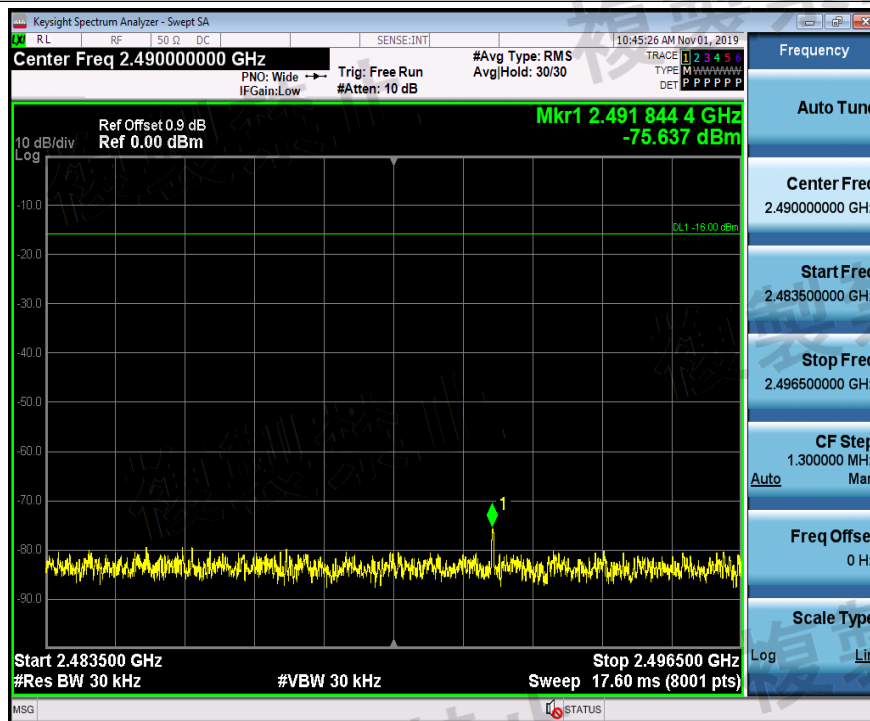
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TNVN_DH5_Ant1_2402_2387~2400



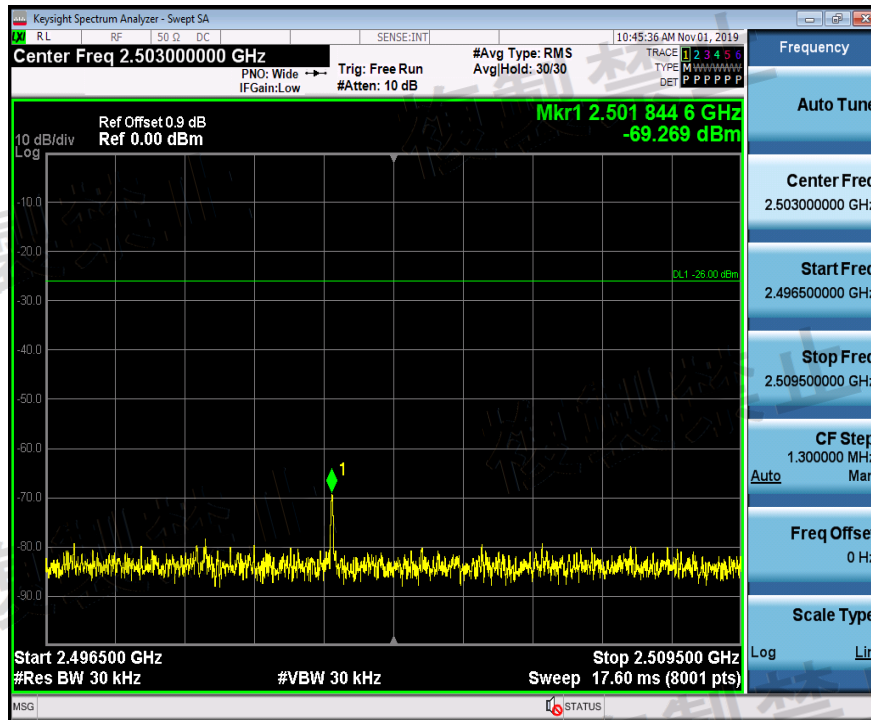
TNVN_DH5_Ant1_2402_2483.5~2496.5



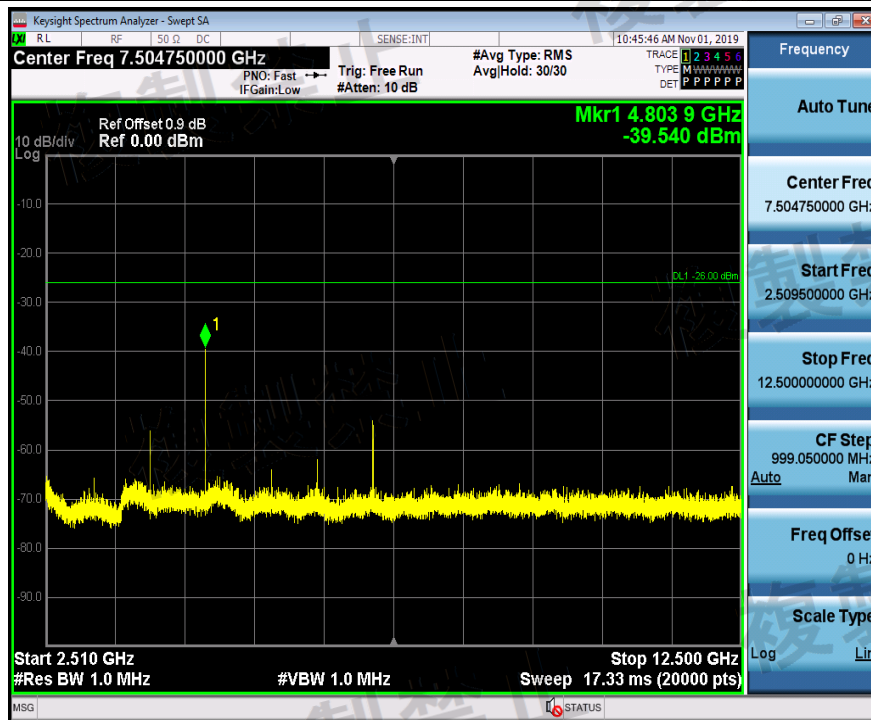
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TNVN_DH5_Ant1_2402_2496.5~2509.5



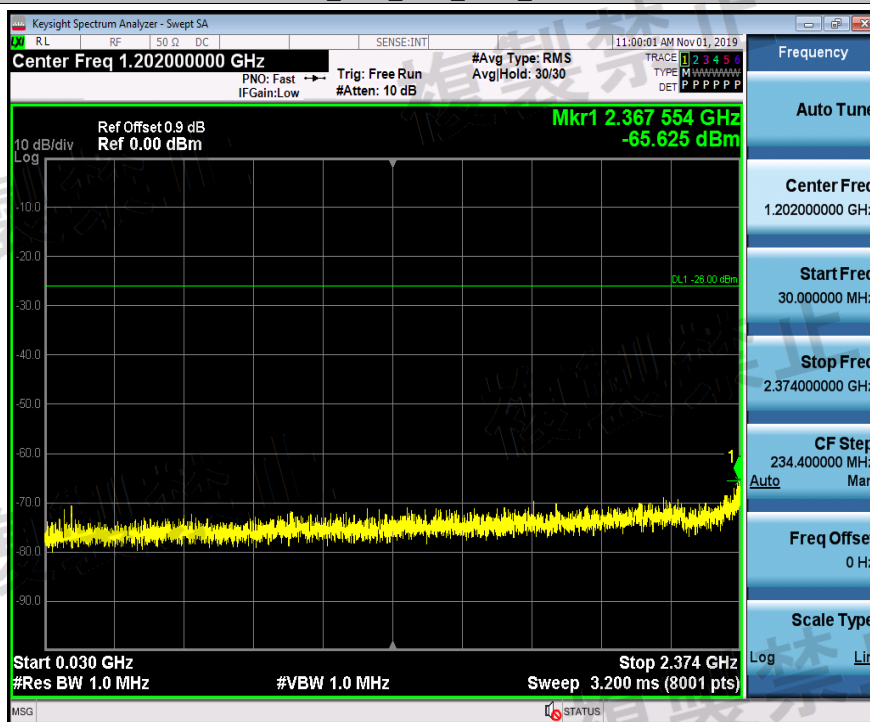
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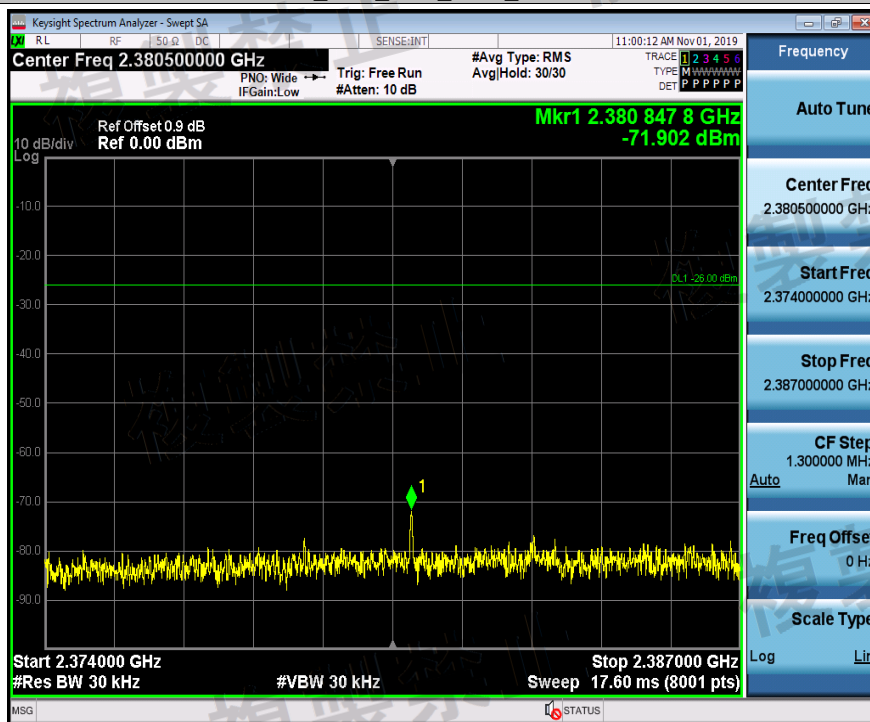
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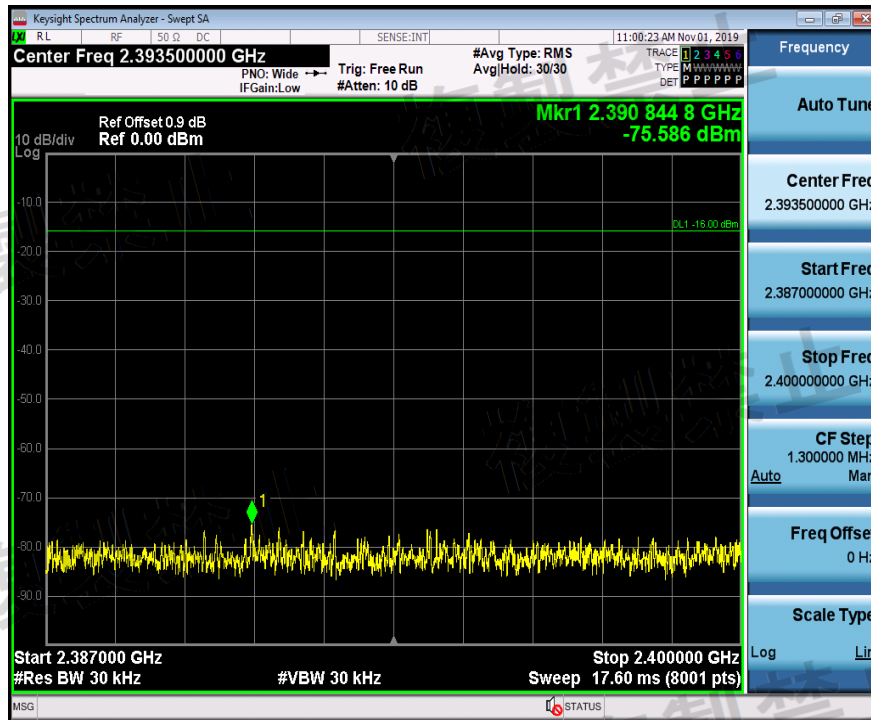
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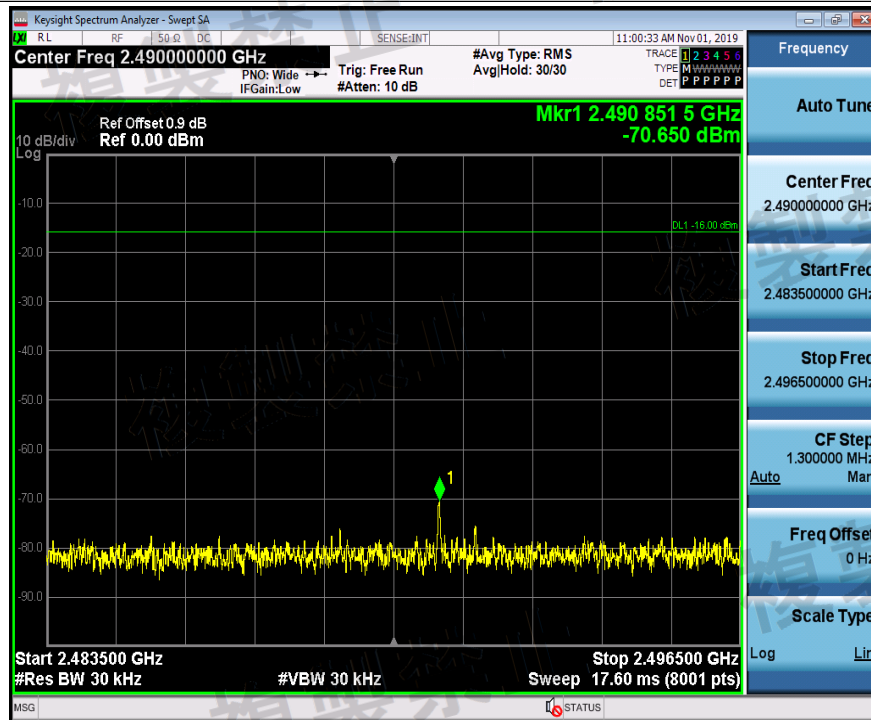
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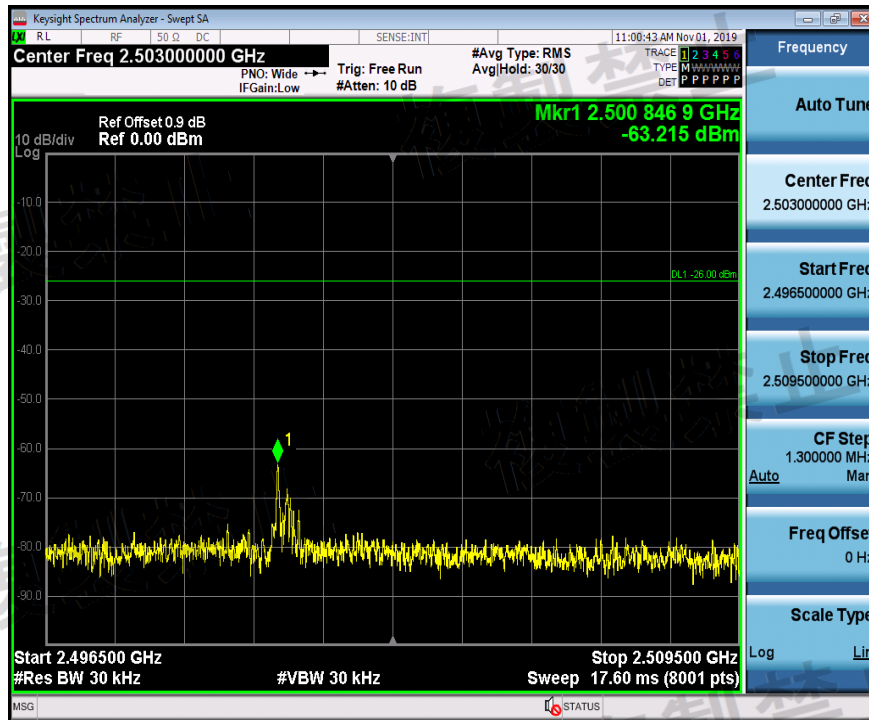
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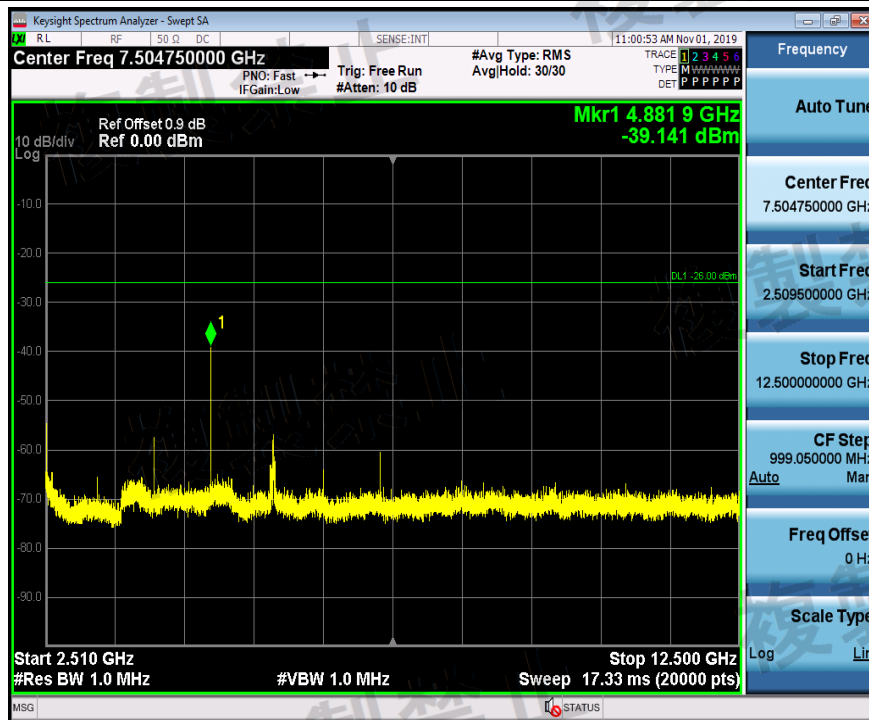
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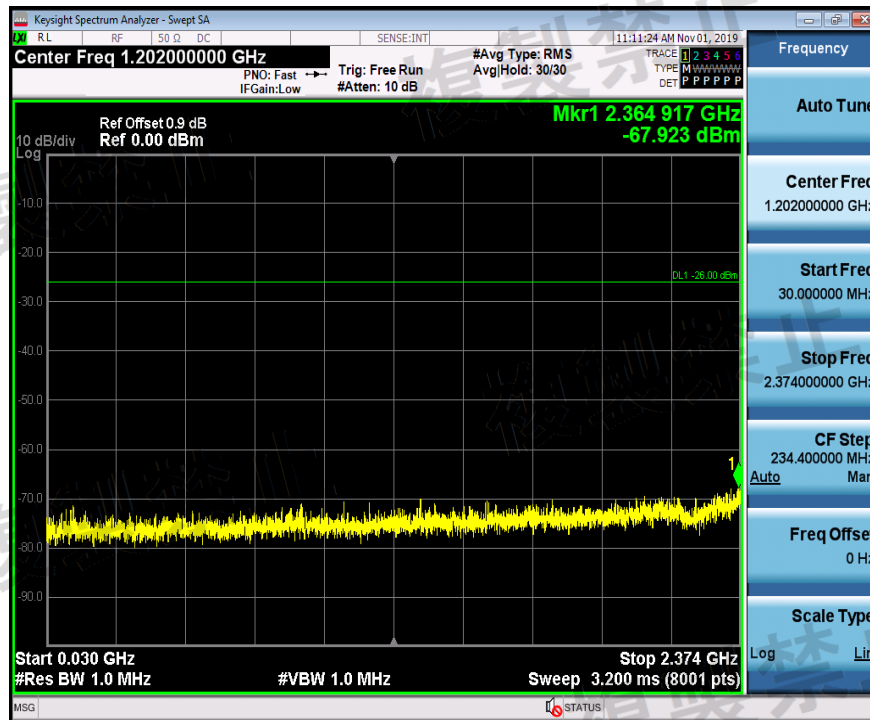
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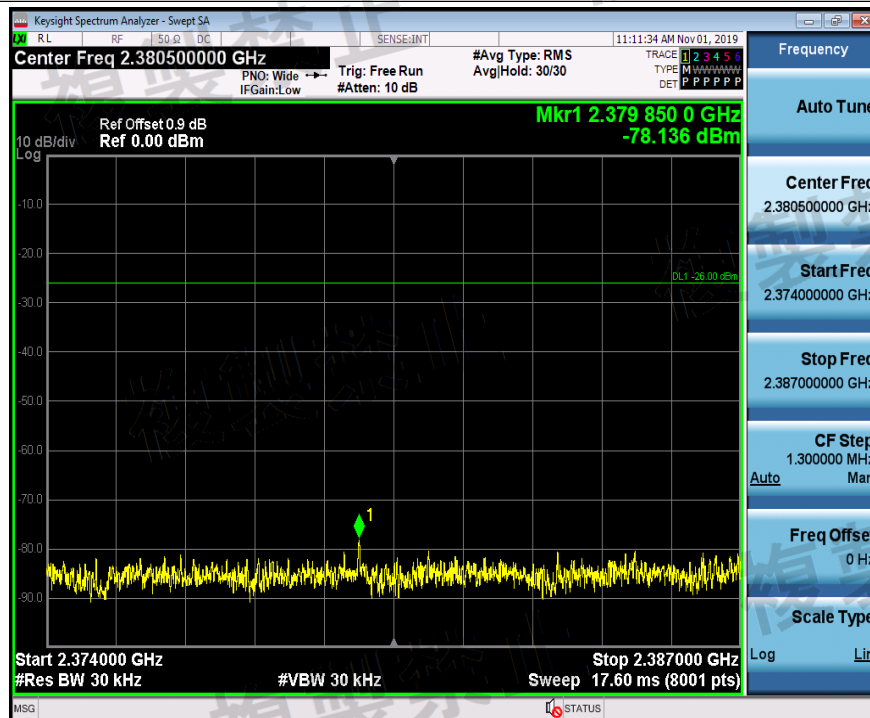
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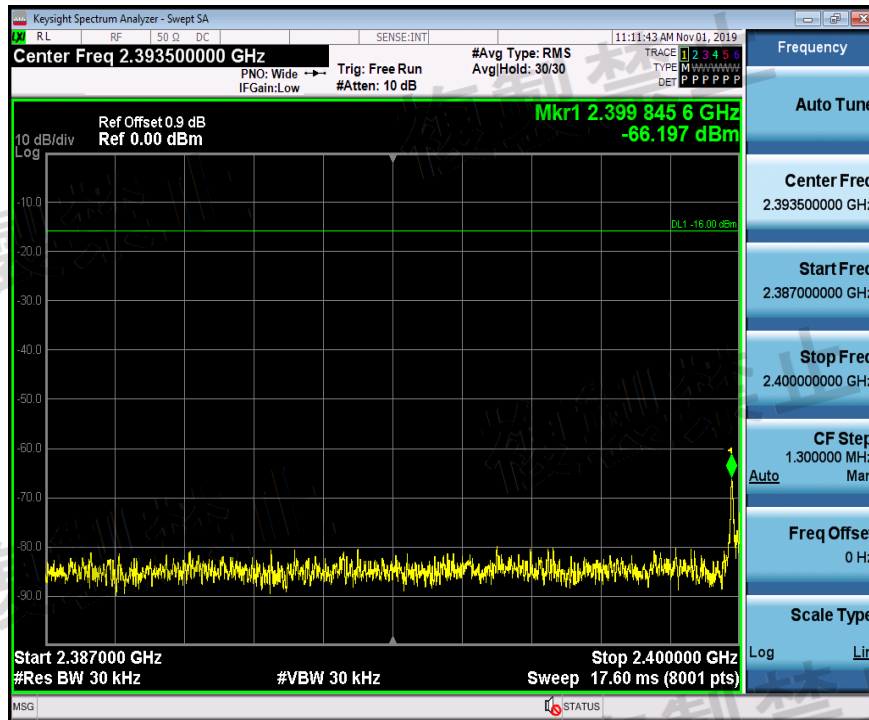
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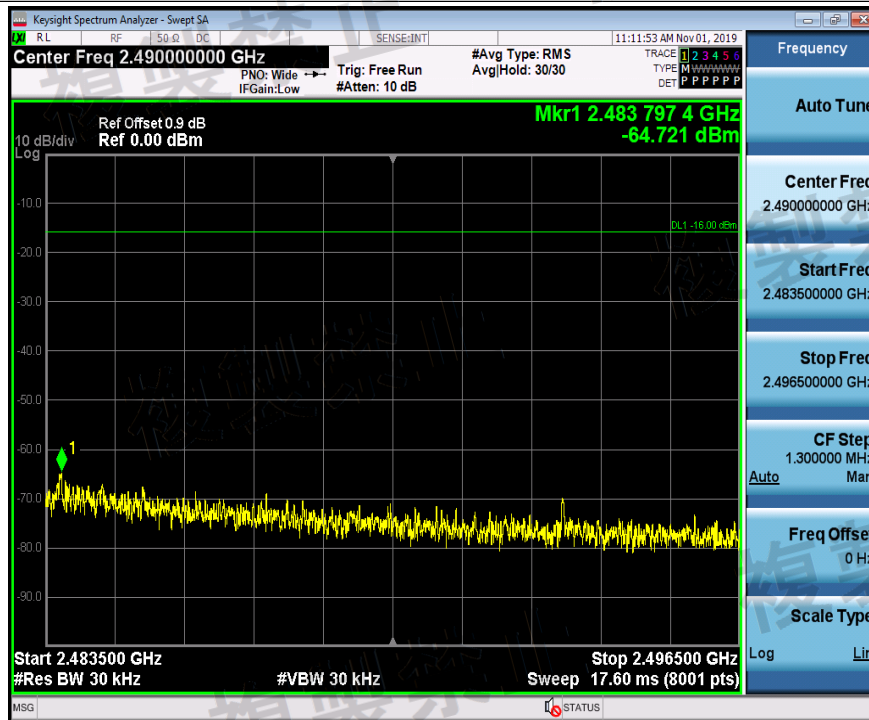
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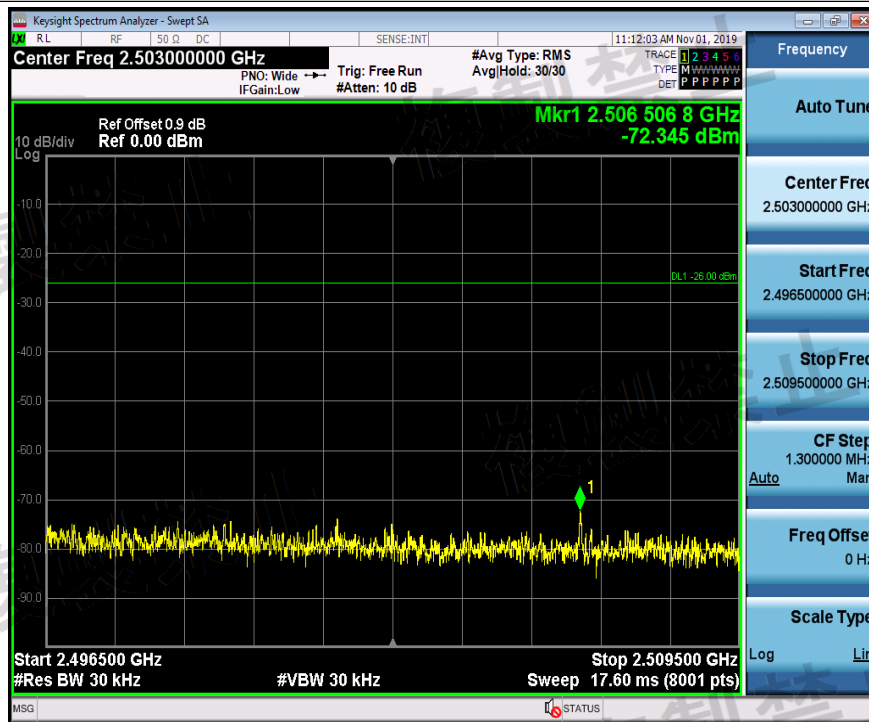
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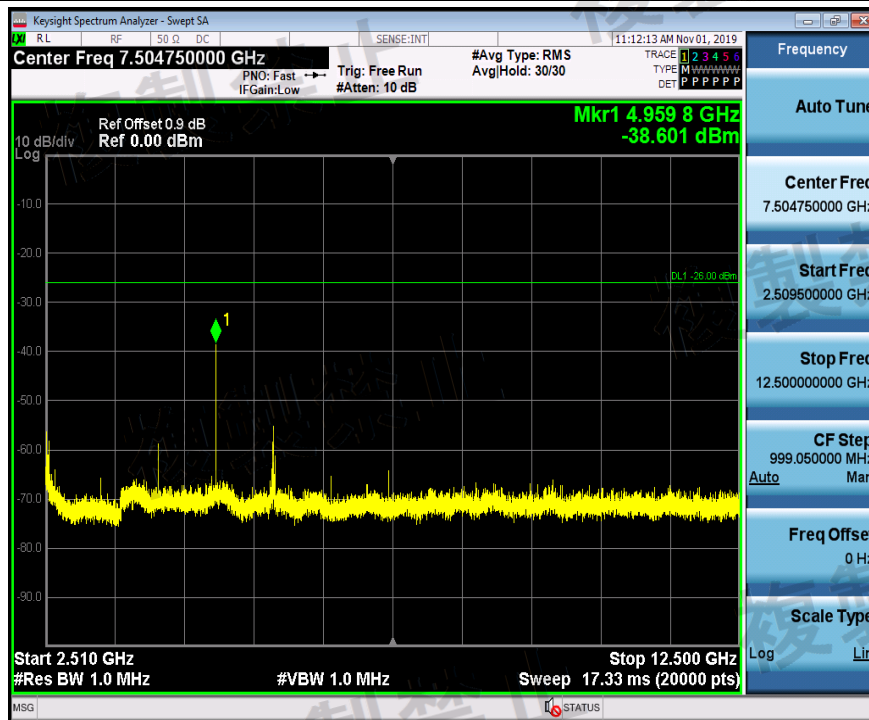
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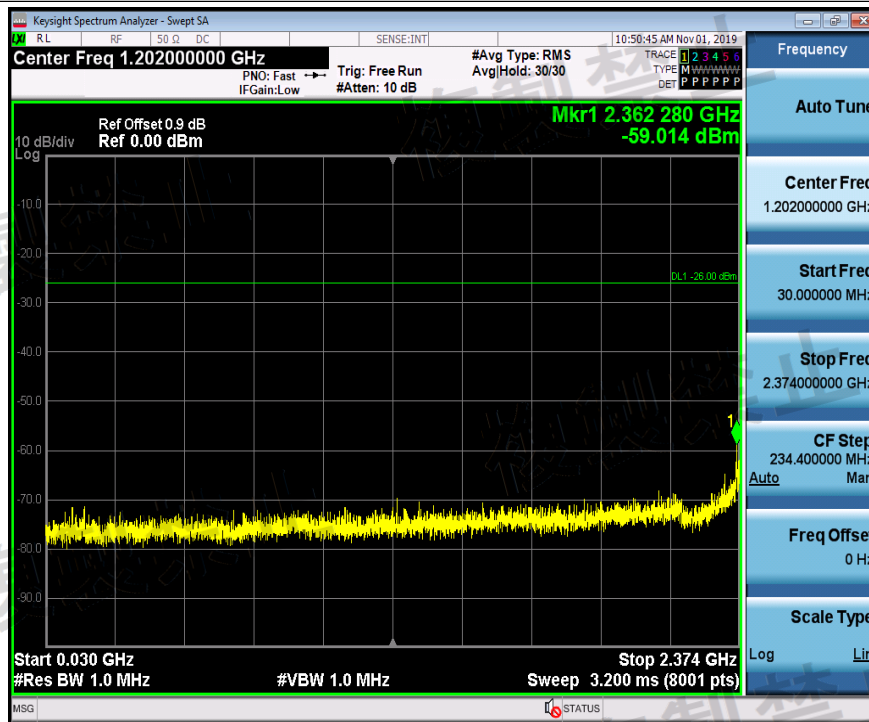
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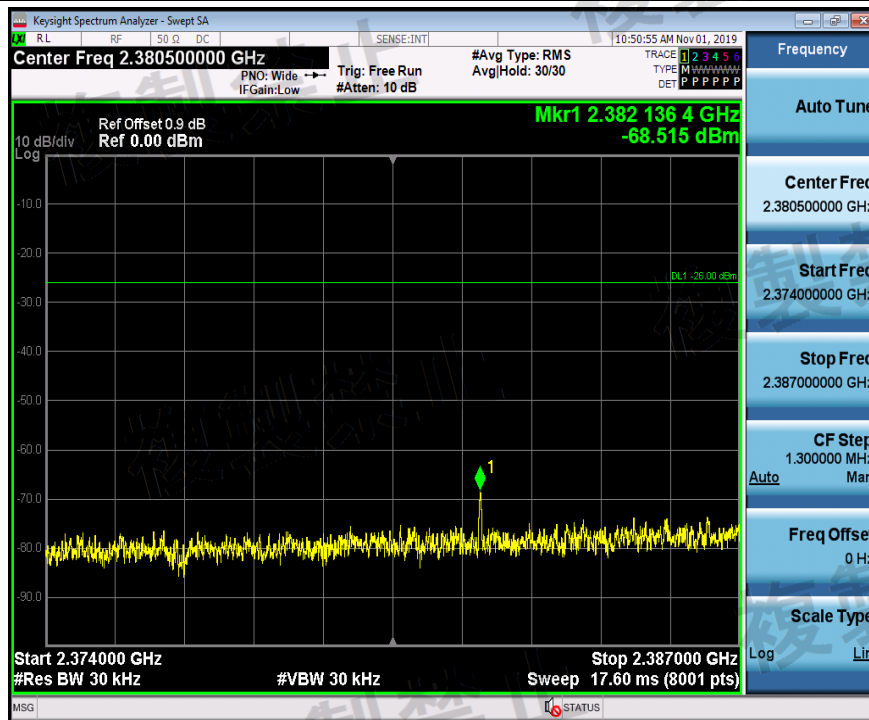
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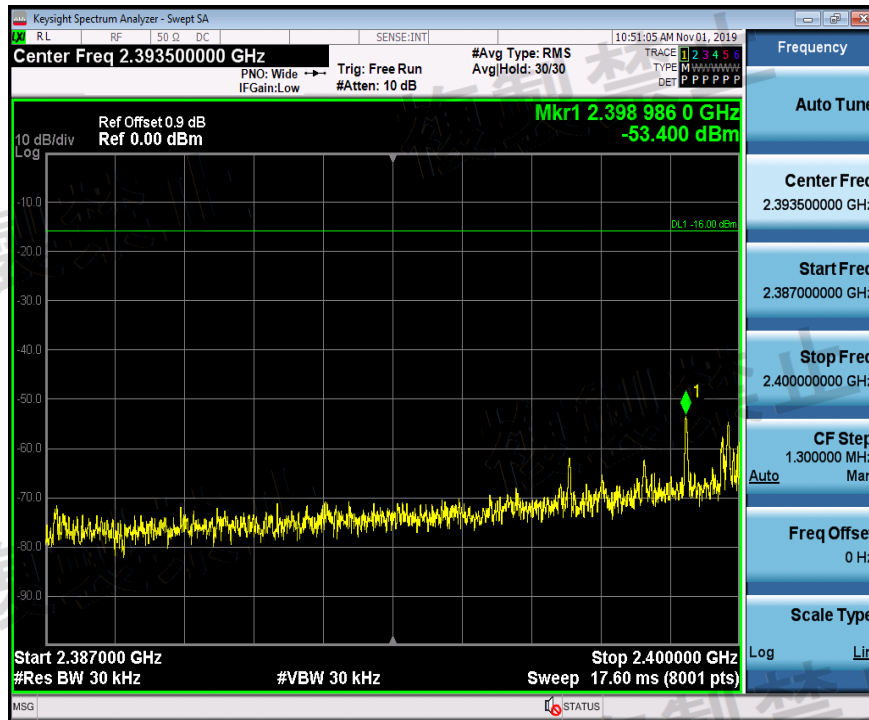
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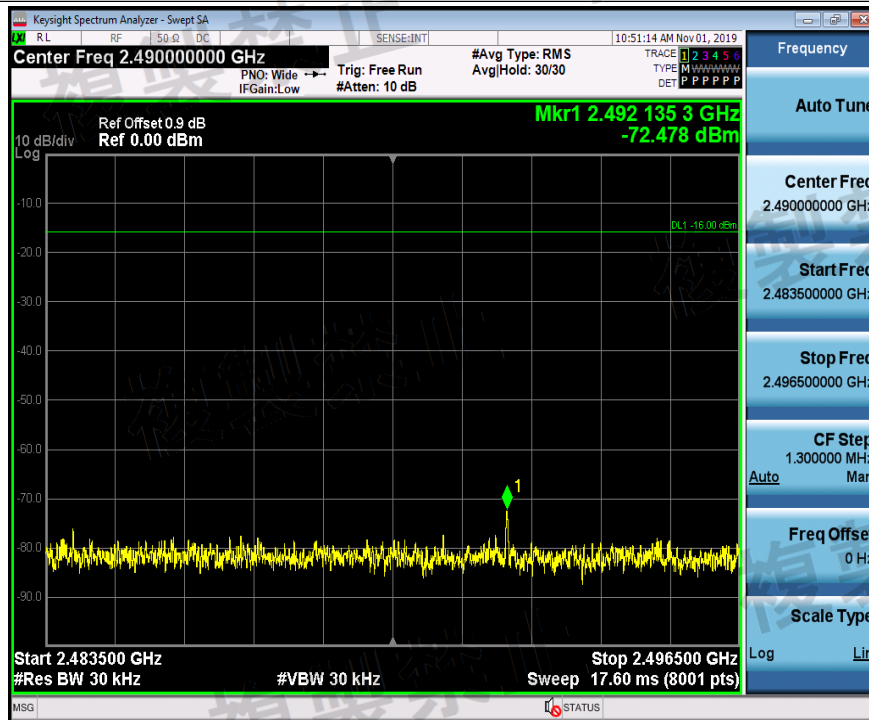
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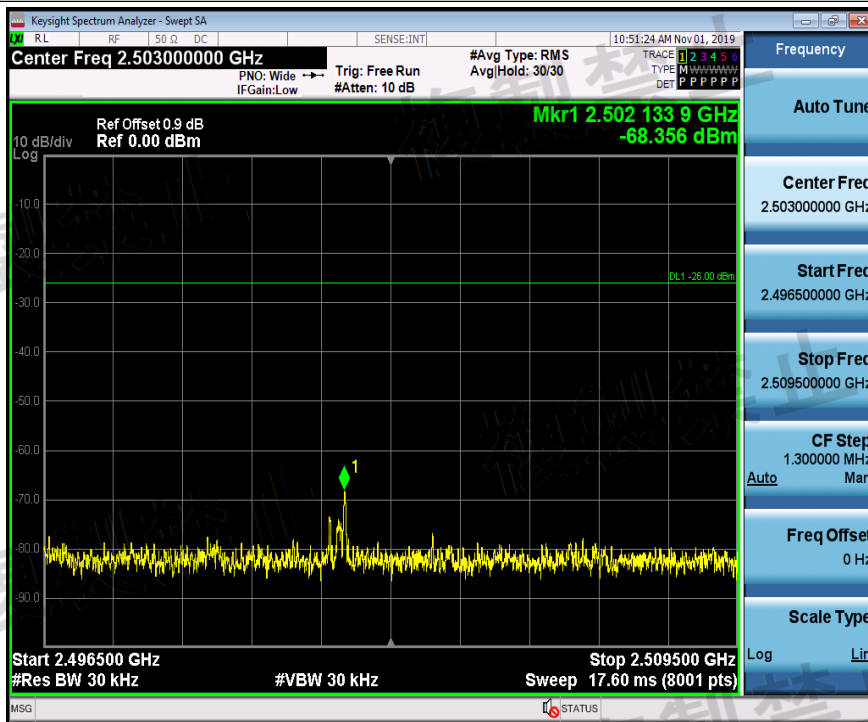
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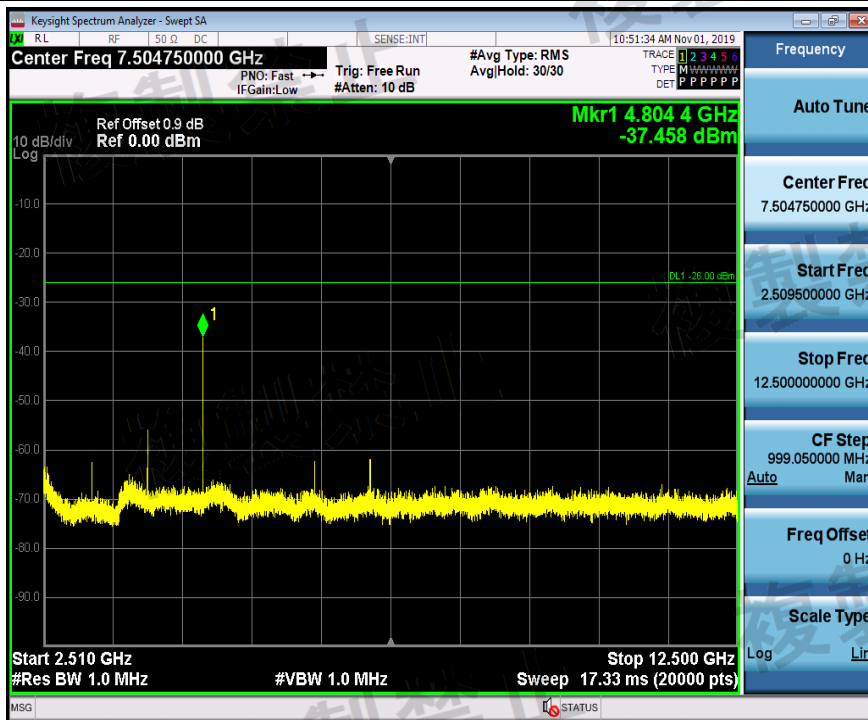
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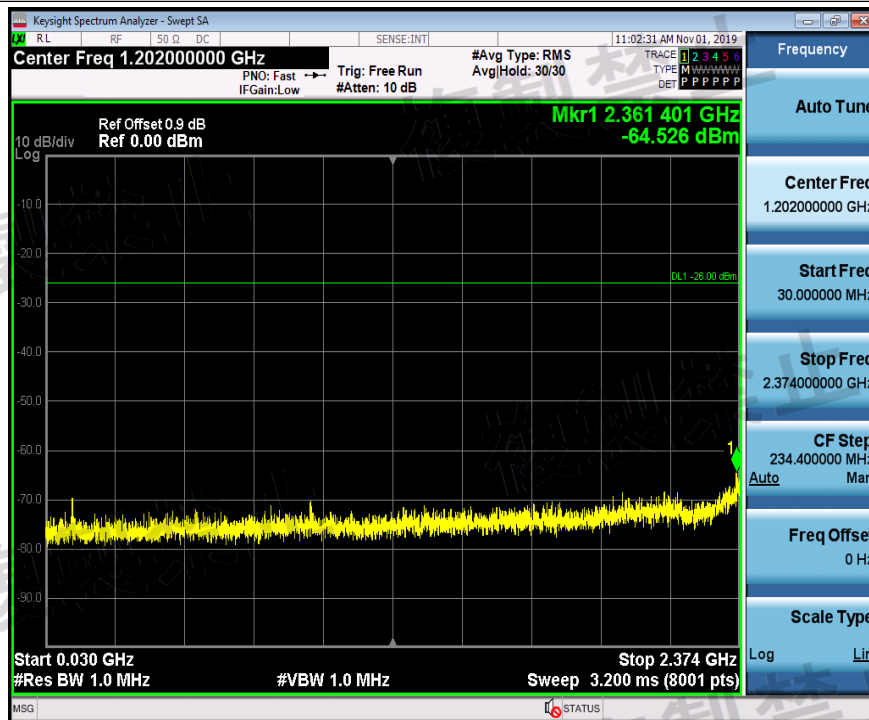
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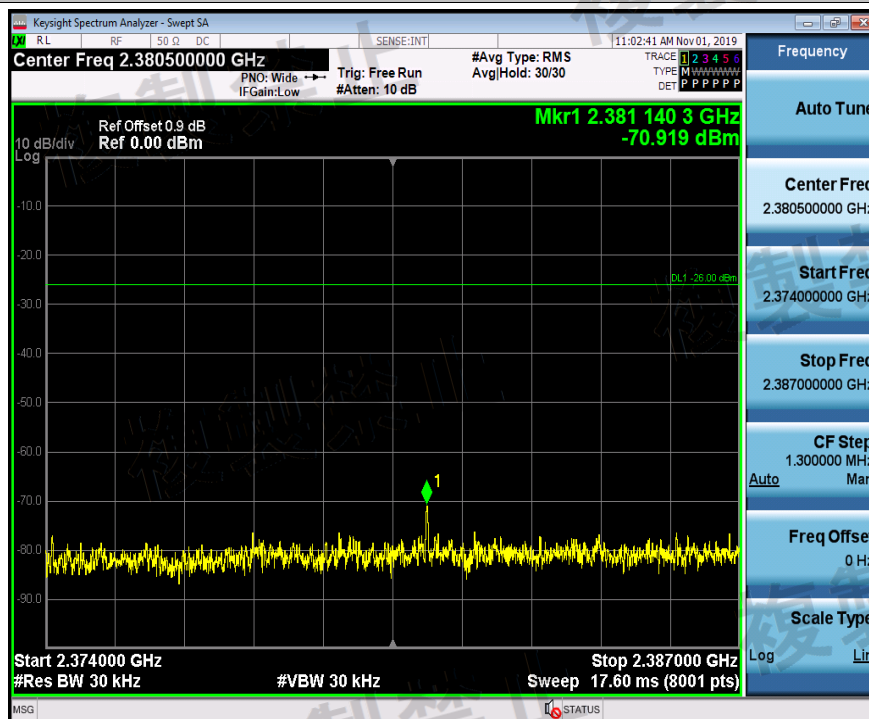
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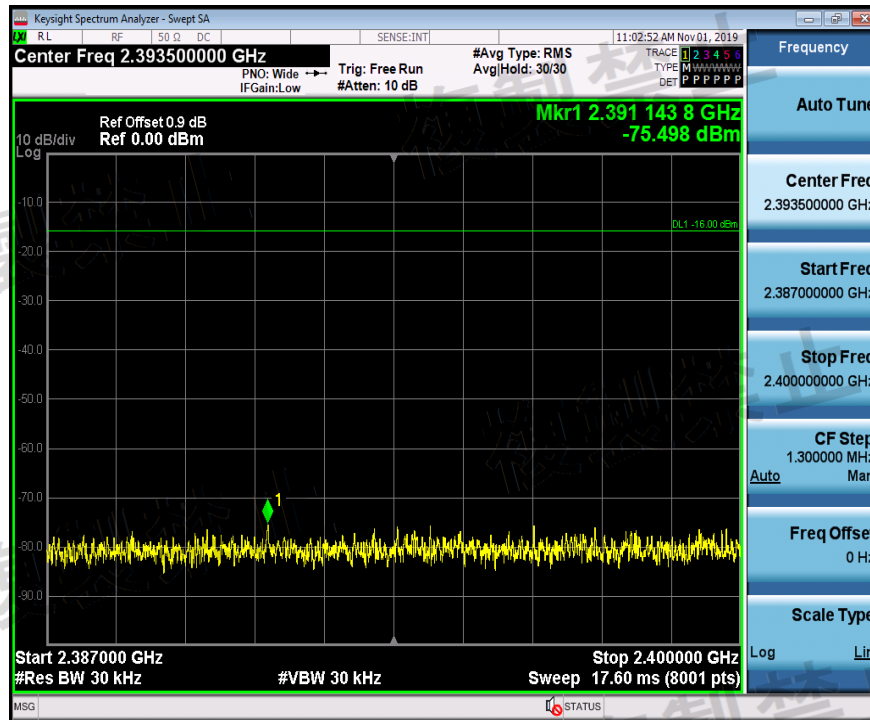
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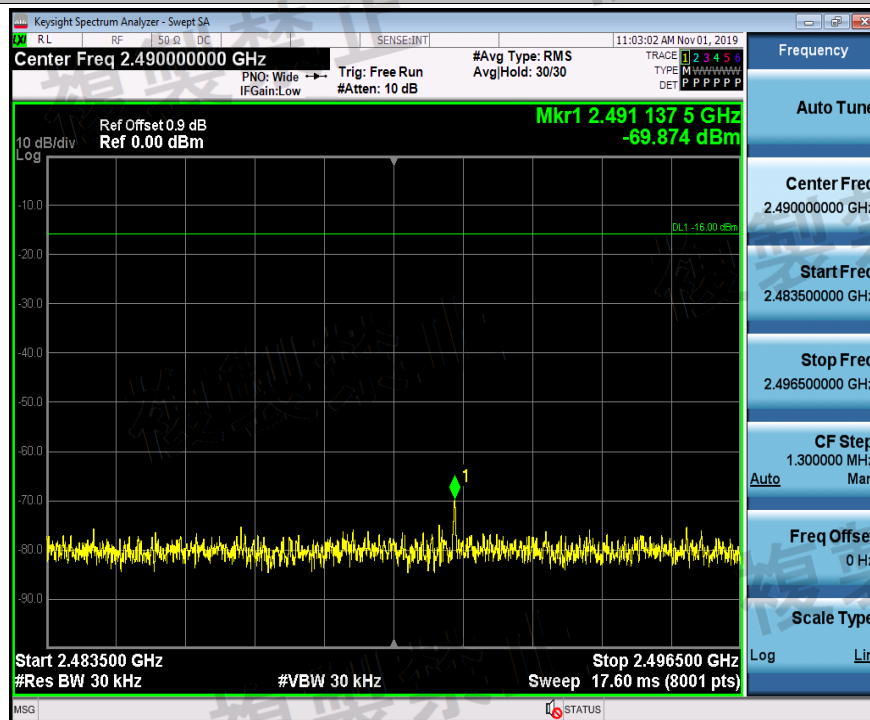
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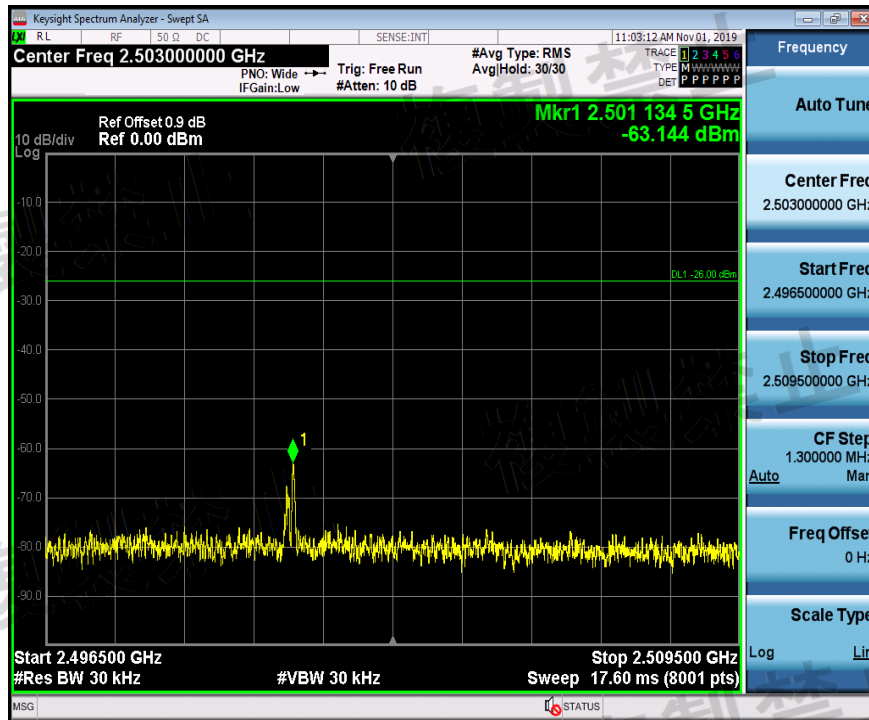
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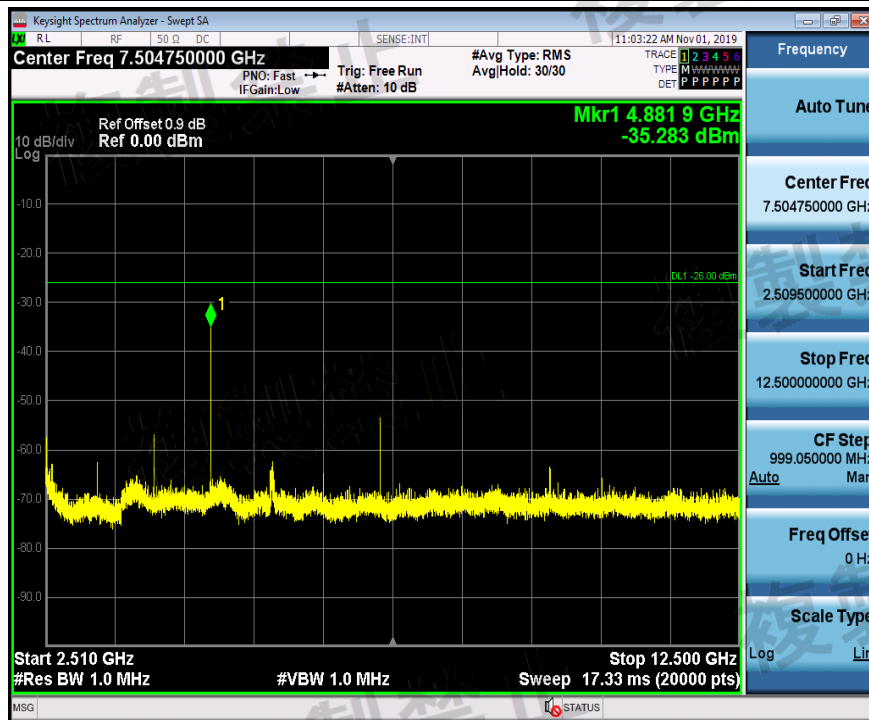
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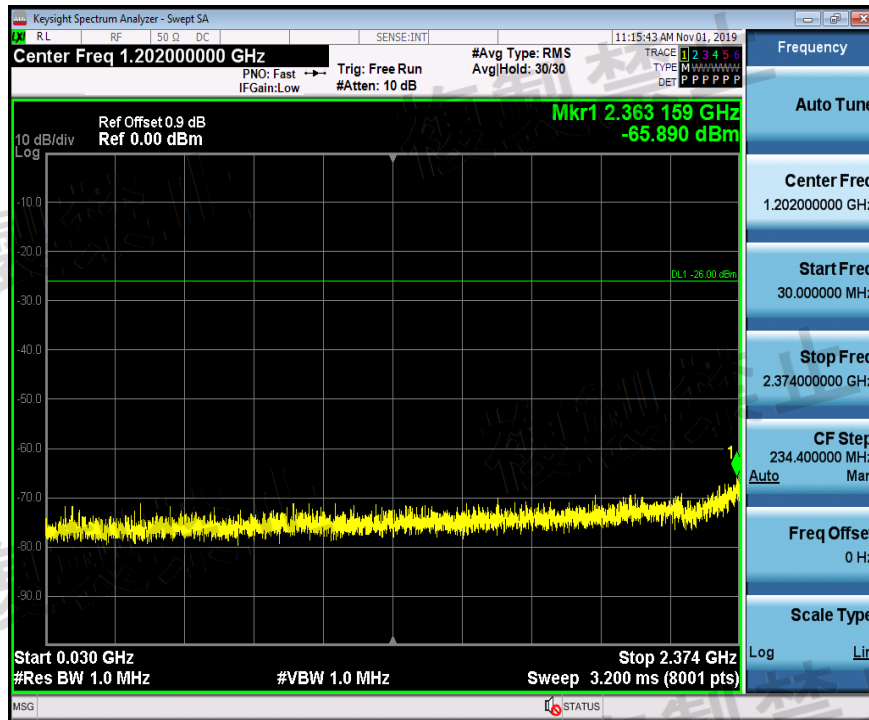
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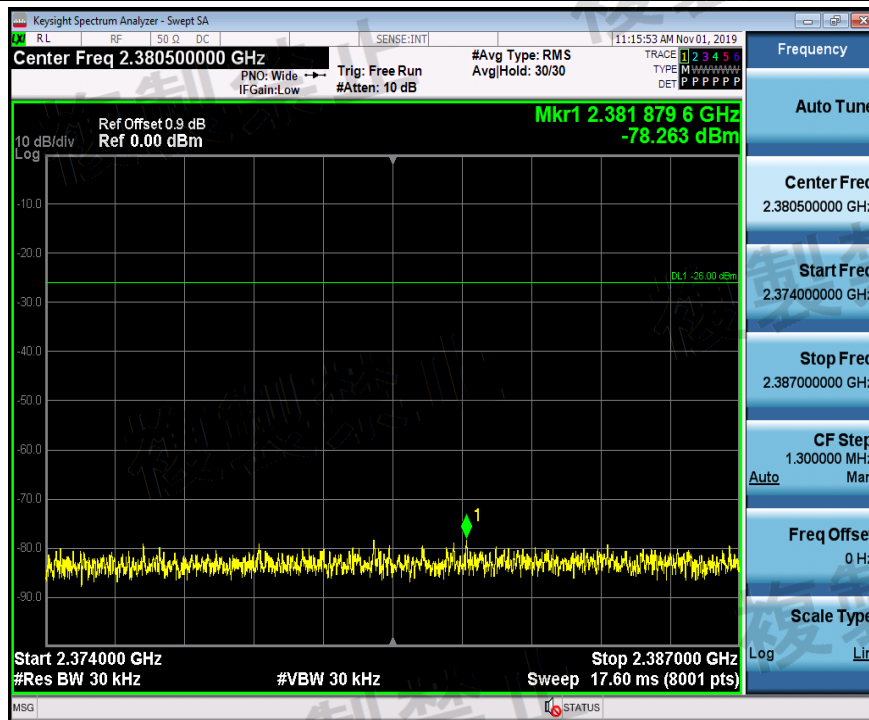
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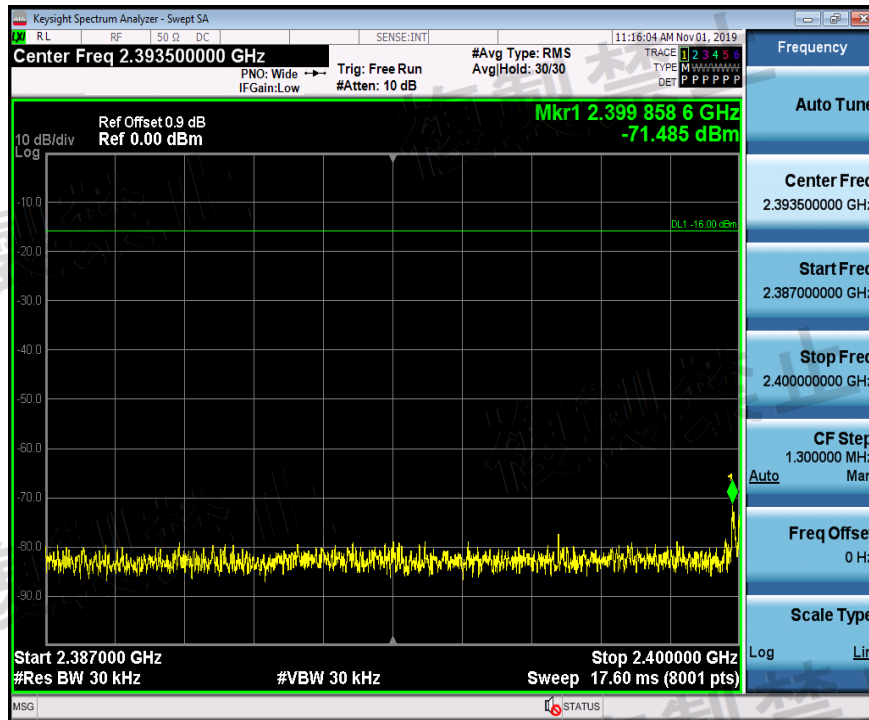
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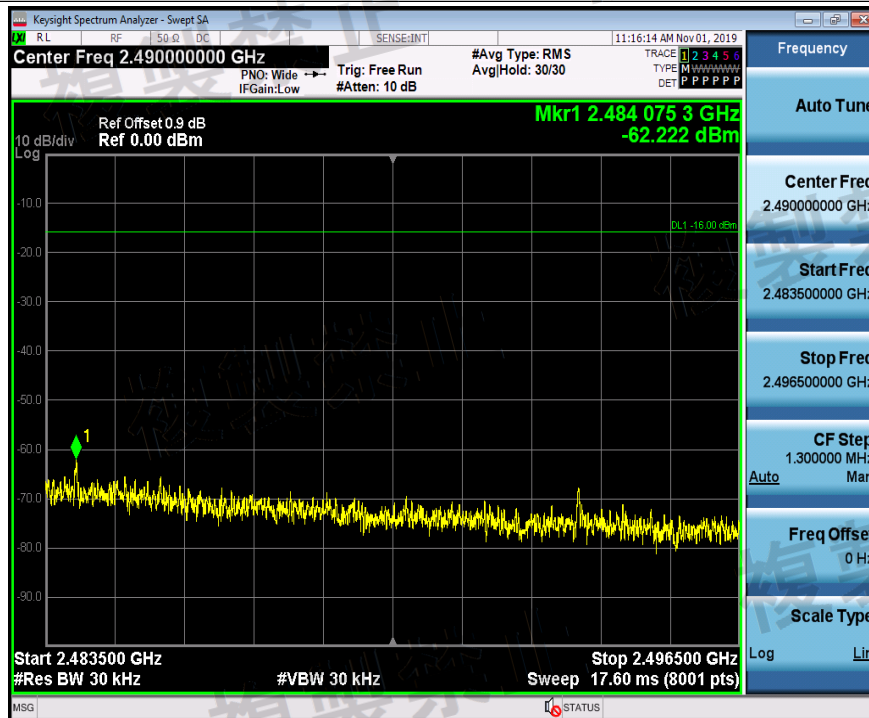
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