

Japan Radio Law TEST REPORT

Sharp Corporation

Portable Speaker Lantern

Model No.: DL-FS01L

S/N: 0016

Prepared for: Sharp Corporation
3-1-72 KITAKAKEI-CHO, YAO-CITY, OSAKA 581-8585,
JAPAN

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Report Number : ACS-P22009
Date of Test : Dec.17, 2021
Date of Report : Jan.06, 2022

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TEST REPORT VERIFICATION

Applicant : Sharp Corporation
Product : Portable Speaker Lantern
Model No. : DL-FS01L
Test Voltage : DC 5V(From USB Adaptor)

Measurement Standards Used:

証明規則第2条第1項第19号に掲げる無線設備 別表第四十三
2.4GHz 帯高度化小電力データ通信システム(2,400~2,483.5MHz)

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd.. The measurement results were contained in this test report and Audix Technology (Shenzhen) Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with. Article 49-20 and the relevant Articles in Ordinance Regulating Radio Equipment, and the device has been measured in accordance with the test method given in MIC notice No.88 Appendix No.43, or surpasses or is equal to the test method.

This report applies to single evaluation of one sample of above mentioned product. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Dec.17, 2021 Report of date: Jan.06, 2022

Prepared by :

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AUDIX[®]

信華科技(深圳)有限公司

Audix Technology (Shenzhen) Co., Ltd.

EMC 部門報告專用章

Stamp only for EMC Dept. Report

Approved & Authorized Signer : Signature:

David Jin
David Jin / Deputy General Manager

REPORT REVISION HISTORY

Edition No.	Revision	Issue Date	Report No.
Original	Initial issue of report	Jan.06, 2022	ACS-P22009

1. SUMMARY OF MEASUREMENTS AND RESULTS

1.1. Summary of test result

CLAUSE	TEST PARAMETER	RESULTS
Transmitter Parameters		
3.2 (2)	Antenna Power	PASS
3.2 (3)	Tolerances for Antenna Power	PASS
3.2 (4)	Frequency Tolerance	PASS
3.2 (5)	Transmission Rate	N/A
3.2 (6)	Spurious Emissions	PASS
3.2 (7)	Occupied Frequency Bandwidth	PASS
3.2 (8)	Spread-spectrum Bandwidth / Spread Factor	PASS
3.2 (9)	Process Gain	N/A
3.2 (10)	Number of Carriers	N/A
3.2 (11)	Dwell Time	PASS
Receiver Parameters		
3.3 (1)	Secondary Radiated Emissions	PASS
Other Parameters		
3.4.1	Interference Prevention Function	PASS
3.4.2	Construction Protection	PASS
N/A is an abbreviation for Not Applicable. Note: Measurement uncertainty affection to the result is considered, the EUT is technically compliant with standard requirements.		

2. GENERAL INFORMATION

2.1. Description of Equipment Under Test

Applicant	Sharp Corporation
Applicant Address	3-1-72 KITAKAKEI-CHO, YAO-CITY, OSAKA 581-8585, JAPAN
Manufacturer	Sharp Corporation
Manufacturer Address	3-1-72 KITAKAKEI-CHO, YAO-CITY, OSAKA 581-8585, JAPAN
Factory	Dongguan Finemost Electronics Co., Ltd.
Factory Address	8 Shangjiao Shangxing Road, Chang'an Town, Dongguan City, Guangdong Province, 523878 P. R. China
Product	Portable Speaker Lantern
Model No.	DL-FS01L
Sample Type	Prototype production
Date of Receipt	Dec.16, 2021
Date of Test	Dec.17, 2021

2.2.Feature of Equipment Under Test

Product Feature & Specification			
Product	Portable Speaker Lantern		
Model No.	DL-FS01L		
Power Source	☒ Commercial Power	AC 100-240V~50/60Hz	
	☒ External Power Source	DC 5V	
	☒ Li-polymer Battery	DC 3.6V	
	☐ UM battery	DC V	
Bluetooth			
Bluetooth Support Category/ Frequency Range	Article 2-1-19 /2400MHz ~ 2483.5MHz		
Specification	☒ BDR	☒ EDR	☐ BLE
Type of Modulation	☐ Direct Spreading (DS)		
	☐ Orthogonal frequency-division multiplexing (OFDM)		
	☒ Frequency Hopping (FH)		
	☒ Other: GFSK, $\pi/4$ DQPSK, 8-DPSK		
Antenna Information	Antenna Type: FPC Antenna		
	BT Peak Gain: 1.27dBi		

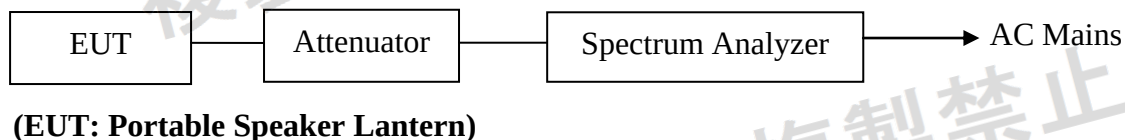
Operating Voltage	3.6V(From Battery)	3.240V	3.960V
Measuring Voltage	3.96V	3.95V	3.95V
Tolerance	-	-0.25%	-0.25%
Operating Voltage	5V(From USB Adaptor)	4.500V	5.500V
Measuring Voltage	3.96V	3.95V	3.95V
Tolerance	-	-0.25%	-0.25%

Pinout details from diagram:

- 58: GPIO07/I2C_SCL
- 57: GPIO02/ORX
- 56: GPIO01/I2C_SDA
- 55: GPIO03/OTX
- 54: GPIO19
- 53: RTCVDD
- 52: ON/OFF
- 51: **VBAT** (test point)
- 50: DC5V
- 49: VCC
- 48: GPIO07/PA_BYPASS
- 47: GPIO04
- 46: WIO0/ADC1
- 45: SVCC
- 2: RFIO
- 3: GND
- 4: GPIO042/IR
- 5: GPIO035/I2S_DOUT
- 6: GPIO034/I2S_LRCLK
- 7: GPIO033/I2S_BCLK
- 8: GPIO032/I2S_MCLK
- 9: GPIO16
- 10: GPIO11/ADC8
- 11: GPIO12/ADC9
- 12: GPIO10/ADC7
- 13: GPIO08/ADC5
- 14: GPIO09/ADC6
- 15: GPIO13
- 16: GPIO14/ADC11

NOTE: When EUT be operated at $\pm 10\%$ from the normal supply voltage, the supply Voltage of RF part was varied within $\pm 1\%$. All test cases were done under the normal supply voltage.

2.3. Block Diagram of Test Setup



2.4. Test information

The special test software was used to control EUT work in Continuous TX/RX mode, and select test channel.

Tested mode, channel, and data rate information			
Mode	data rate (Mbps)	Channel	Frequency (MHz)
Tx Mode GFSK modulation	1	CH 0	2402
	1	CH 19	2421
	1	CH 39	2441
	1	CH 78	2480
Tx Mode 8-DPSK modulation	3	CH 0	2402
	3	CH 19	2421
	3	CH 39	2441
	3	CH 78	2480

Note: $\pi/4$ DQPSK modulation is same type modulation with 8-DPSK, and after exploratory test, 8-DPSK will have worse emissions, so the final test were only performed with GFSK and 8-DPSK modulation.

2.5. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date	Calibration Body	Cal Method (Note)
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Apr.07,21	Apr.06,22	CCIC	c)
2.	Attenuator	N/A	1527	001	Oct.09,21	Oct.08,22	CCIC	c)
3.	RF Cable	Mini-Circuits	CBL-1M-S MSM+	No.4	Oct.11,21	Oct.10,22	CCIC	d)
4.	Power meter	Anritsu	ML2487A	6K00002472	Apr.07,21	Apr.06,22	CCIC	c)
5.	Power Sensor	Anritsu	MA2491A	033005	Apr.06,21	Apr.05,22	CCIC	c)
6.	USB Wideband Power Sensor	Agilent	U2021XA	MY53070008	Apr.08,21	Apr.07,22	CCIC	c)
7.	Signal Generator	Rohde & Schwarz	SMB100A	181375	Apr.08,21	Apr.07,22	CCIC	c)

Note: Calibration Method

- a):** Calibration conducted by the National Institute of Information and Communications Technology ~ [NICT](#) ~ or a designated calibration agency under Article 102-18 paragraph (1) ~ [TELEC Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc.](#) ~.
- b):** Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) ~ [Japan Calibration Service System](#) ~
- c):** Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the [NICT](#) or a designated calibration agency under Article 102-18 paragraph (1) ~ [TELEC Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc.](#) ~.
- d):** Calibration conducted by using other equipment that listed above from **a)** to **c)**

2.6. Description of Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Kefeng Road, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China

RF Anechoic Chamber : Dimensions are:
[L]10m × [W]5.5m × [H]5m

EMC Lab. : Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2022

Certificated by FCC USA.
Designation No.: CN5022
Valid Date: Mar.31, 2022

Accredited by TAF, Taiwan
Registration No.: 1418
Valid Date: Nov.30, 2023

2.7. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Radiated Spurious Emission test	3.7dB(30MHz-1000MHz)
	3.3dB(1GHz-26.5GHz)
Uncertainty for Conduction Spurious emission test	2.0dB
Uncertainty for Output power test	0.8dB
Uncertainty for Power density test	2.0dB
Uncertainty for Frequency range test	7×10^{-8}
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	1%
Uncertainty for test site temperature and humidity	0.6°C
	3%

3. MEASUREMENTS OF TRANSMITTER PARAMETERS

3.1. Antenna Power

3.1.1. Limit

Item	Limits
Antenna Power Density	$\leq 3\text{mW/MHz}$ (FH from 2400~2483.5MHz)
Antenna Power Error	+20%,-80% (Base on manufacturer declare antenna power density)
Antenna Gain	Gain > 2.14dBi Transmitting Angle Width $\leq (360/A)$ a. FH, FH+DS, FH+OFDM $A = \text{EIRP}(\text{mW/MHz}) / (4.91\text{mW/MHz})$ b. DS, OFDM with OBW $\leq 26\text{MHz}$ $A = \text{EIRP}(\text{mW/MHz}) / (16.37\text{mW/MHz})$ c. OFDM with OBW > 26MHz $A = \text{EIRP}(\text{mW/MHz}) / (8.18\text{mW/MHz})$

3.1.2. Measuring Instruments

See list of measuring instruments of the 2.5 section.

3.1.3. Test Procedures

1. Use power meter measure the total hopping power(P) at BDR and EDR mode
2. Use spectrum analyzer measure the spread bandwidth of DH1, DH3, DH5 at BDR mode and 3-DH1, 3-DH3, 3-DH5 at EDR mode
3. The antenna power = $P(\text{mw}) / \text{Spread Bandwidth}(\text{MHz})$
4. The antenna power for AFH(20 CH) = $P(\text{mw}) / \text{Spread Bandwidth}(\text{MHz})(\text{AFH})$

3.1.4. Test Results

Please refer to Appendix B and C.

3.2.Frequency Tolerance

3.2.1.Limit

Item	Limits
Frequency Tolerance	≤50ppm

3.2.2.Measuring Instruments

See list of measuring instruments of the 2.5 section.

3.2.3. Test Procedure

☒	a. Frequency accuracy of instrument shall be less than 10% of limits tolerance (5ppm). b. Setting of SA is following as: RBW: 10kHz / VBW: 10kHz. c. The frequency tolerance test case is directly measured using spectrum analyzer. Then the frequency error formula is $(f_c - f)/f \times 10^{-6}$ ppm and the limit is less than ±50ppm.
☐	a. Let the DUT transmit at Low/ Mid/ High channel with wave. b. Setting of SA is following as: RBW: 100kHz/ VBW: 300kHz. c. Use the peak search function of the SA get the max peak point. d. Down 10dB from the max peak point get the display level. e. The display level cross with the trace at Lowest Frequency f_a and Highest Frequency f_b. f. Get the test Result $F_c = (f_a + f_b)/2$. error formula is $(f_c - f)/f \times 10^{-6}$ ppm and the limit is less than ±50ppm.

3.2.4. Test Setup

See clause 2.3 for block diagram of test setup.

3.2.5. Test Results

Please refer to Appendix B and C.

3.3.Occupied Bandwidth and Spread-spectrum Bandwidth / Spread Factor Measurement

3.3.1.Limit

Item	Limits
Occupied Bandwidth	$FH \leq 83.5\text{MHz}$
Spreading Bandwidth	$FH \geq 500\text{kHz}$
Spread Factor	$\geq 5\text{MHz}$

3.3.2.Measuring Instruments

See list of measuring instruments of the 2.5 section.

3.3.3.Test Procedure

1. Setting of SA is following as: RBW: 100kHz / VBW:300kHz
Sweep Mode: Continuous sweep
Detect mode: Positive peak
Trace mode: Max hold.
2. EUT have transmitted each modulation signal and fixed channelize (For FHSS Device).
SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 83.5MHz (For FHSS Device).
3. SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth and must greater than 500kHz.
4. Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.

3.3.4.Test Setup

See clause 2.3 for block diagram of test setup.

3.3.5.Test Results

Please refer to Appendix B and C.

3.4.Dwell Time

3.4.1.Limit

Frequency dwell time (time during which radio waves continue to be emitted at a specified frequency) of a transmitting equipment using the FH system shall be 0.4 seconds or less.

3.4.2. Test Procedures

1. Set EUT to hopping mode
2. Setting of SA is following as:
RBW: 100kHz / VBW: 100kHz
Sweep Mode: Single
Detect mode: Positive peak
Trace mode: Auto
Span: 0Hz
Sweep time: sweep time is big enough to measure dwell time of each hopping channel
3. Setup the EUT and simulator as shown as 2.3 section.

3.4.3. Test Setup

See clause 2.3 for block diagram of test setup.

3.4.4. Test Results

Please refer to Appendix B and C.

3.5. Transmitter Spurious Emissions (Conducted)

3.5.1. Limit

Item	Limits
Tx Spurious Emission	$\leq 2.5 \mu W$ ($2387\text{MHz} > f ; 2496.5\text{MHz} < f$)
	$\leq 25 \mu W$ ($2387\text{MHz} \leq f < 2400\text{MHz}$) and ($2483.5\text{MHz} < f \leq 2496.5\text{MHz}$)

3.5.2. Measuring Instruments

See list of measuring instruments of the 2.5 section.

3.5.3. Test Procedures

3.5.4. EUT has transmitted the maximum power and fixed channelize.

1. Setting of SA is following as: RBW: 1MHz / VBW: 1MHz, Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
2. Setting of SA is following as: start frequency 30MHz and stop frequency 2387MHz Then to mark peak reading Value + cable loss shall be less than $2.5 \mu W$.
3. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading Value + cable loss shall be less than $25 \mu W$.
4. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz. Then to mark peak reading Value + cable loss shall be less than $25 \mu W$.
5. SA adjusted to start frequency 2500MHz and stop frequency 13000MHz. Then to mark peak reading Value + cable loss shall be less than $25 \mu W$.
6. If the Result-Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result Value.

3.5.5. Test Setup

See clause 2.3 for block diagram of test setup.

3.5.6. Test Result

Please refer to Appendix B and C.

4. MEASUREMENTS OF RECEIVER PARAMETERS

4.1. Secondary Radiated Emissions (Conducted)

4.1.1. Limit

Item	Limits
Rx Spurious Emission	$\leq 4\text{nW}(f < 1\text{GHz})$
	$\leq 20\text{nW}(1\text{GHz} \leq f)$

4.1.2. Measuring Instruments

See list of measuring instruments of 2.5 section.

4.1.3. Test Procedures

1. EUT have the continuous reception mode and fixed only one channelize.
2. SA set RBW: 100kHz and VBW: 300kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW.
3. SA set RBW: 1MHz and VBW: 3MHz. Then adjust to start frequency 1000MHz and stop frequency 13000MHz. Search to mark peak reading value + cable loss shall be less than 20nW.
4. If power level of lower emissions are more than 1/10 of limit (0.4nW for $f < 1\text{GHz}$, 2nW for $f \geq 1\text{GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit no necessary to be indicated.

4.1.4. Test Setup

See clause 2.3 for block diagram of test setup.

4.1.5. Test Results

Please refer to Appendix B and C.

5. MEASUREMENT OF OTHER PARAMETERS

5.1. Interference Prevention Function

5.1.1. Limit

Item	Limits
Identification	≥48bits

5.1.2. Test Procedures

1. In the case that the EUT has the function of automatically transmitting the identification code:
 - a. Transmit the predetermined identification codes form EUT.
 - b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code:
 - a. Transmit the predetermined identification codes form the counterpart.
 - b. Check if communication is normal.
 - c. Transmit the signals other than predetermined ID codes form the counterpart.
 - d. check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

5.1.3. Test Results

TX: The transmitting mode of EUT is on normal operating, the interference prevention function is okay.

RX: The receiving mode of EUT is on normal operating, the interference prevention function is okay.

The ID code of this Bluetooth device is 0×08EBEDF4BD68 as below list:



5.2. Construction Protection

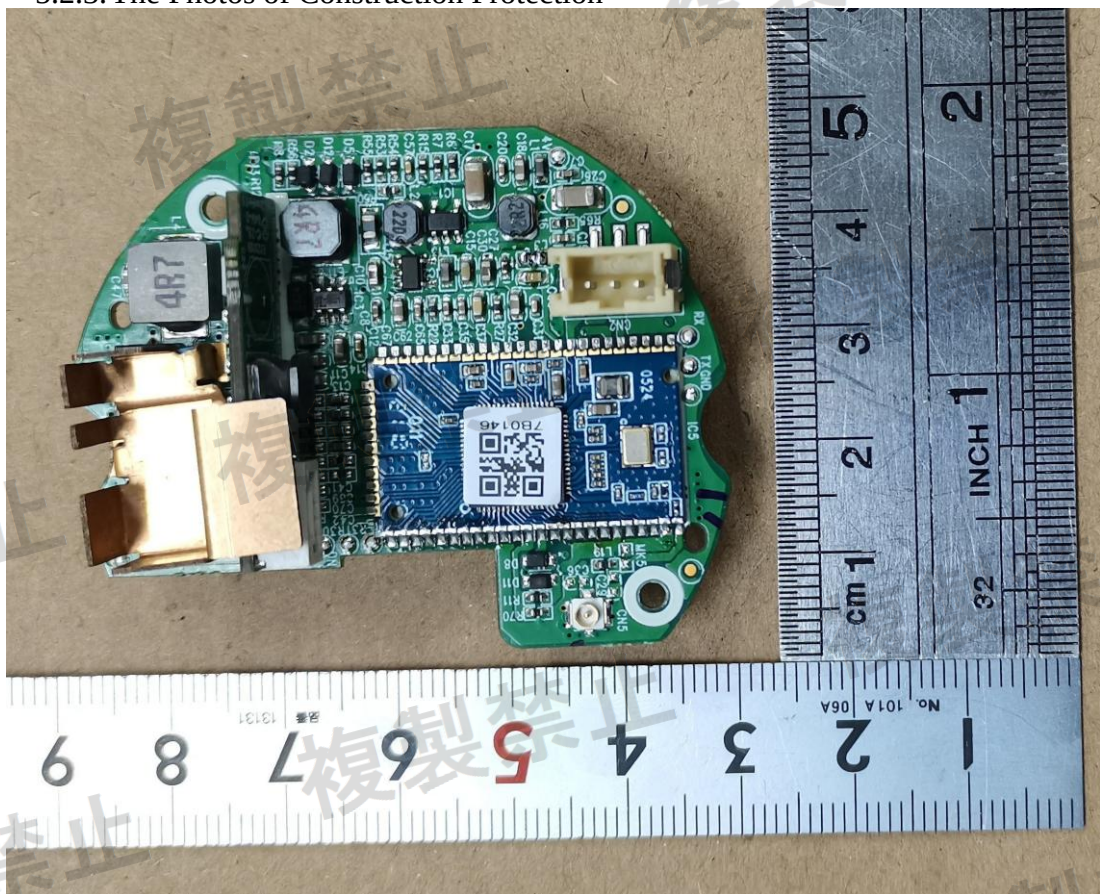
5.2.1. Limit

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

5.2.2. Confirmation Method

☐	Sealed with special screws.
☐	Plastic chassis is being welded using ultrasonic waves.
☐	Chassis is glued using a special adhesive.
☐	Metal covers are spot-fused.
☐	Cover is specially interlocked.
☐	RF and Modulation components are covered with shielding case and this shielding case is soldered.
☐	RF modulation parts and ID-ROM be welded using the BGA Method.
☐	Shield case is welded at RF and modulation parts and ID-ROM is glued at its lead with a special adhesive.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
☒	Other: RF and Modulation part are mounted on PCB with surface mount technology and there are no any adjustable parts on PCB or adjustable parts are not exposed.

5.2.3. The Photos of Construction Protection



Appendix A. Setup Photographs



Appendix B Test Results

B.1 Antenna Power

EUT: Portable Speaker Lantern		
M/N: DL-FS01L		
Date: 2021-12-17	Pressure: 102.1±1.0 kpa	Humidity: 52.2±3.0%
Tested by: Lynn	Test Site: RF site	Temperature: 23.3±0.6℃

Test Mode	Channel	Antenna Power (mW/MHz)	Tolerance (%)	Limit (mW/MHz)
BDR	DH1	0.020	-33.33	3.0 or less Tolerance:-80%～+20%
	AFH(20ch)	0.077	-23.00	
	DH3	0.020	-33.33	
	AFH(20ch)	0.077	-23.00	
	DH5	0.020	-33.33	
	AFH(20ch)	0.076	-24.00	
EDR	3-DH1	0.020	-33.33	
	AFH(20ch)	0.078	-22.00	
	3-DH3	0.021	-30.00	
	AFH(20ch)	0.082	-18.00	
	3-DH5	0.021	-30.00	
	AFH(20ch)	0.081	-19.00	
BDR Rated Power: 0.03 mW/MHz				
BDR Rated Power(AFH): 0.1 mW/MHz				
EDR Rated Power: 0.03 mW/MHz				
EDR Rated Power(AFH): 0.1 mW/MHz				
Conclusion: PASS				

B.2 Frequency Tolerance

EUT: Portable Speaker Lantern		
M/N: DL-FS01L		
Date: 2021-12-17	Pressure: 102.1 ±1.0 kpa	Humidity: 52.2 ±3.0%
Tested by: Lynn	Test Site: RF site	Temperature: 23.3 ±0.6 °C

Test Mode	CH	Reading (MHz)	Target Frequency (MHz)	Result (ppm)	Limit (ppm)
BT3.0	CH0	2402.0155	2402	6.45	±50
	CH19	2421.0180	2421	7.43	
	CH39	2441.0160	2441	6.55	
	CH78	2480.0160	2480	6.45	
Conclusion: PASS					

B.3 Occupied Bandwidth and Spread-spectrum Bandwidth / Spread Factor Measurement

(99% BW)

EUT: Portable Speaker Lantern		
M/N: DL-FS01L		
Date: 2021-12-17	Pressure: 102.1 ±1.0 kpa	Humidity: 52.2 ±3.0%
Tested by: Lynn	Test Site: RF site	Temperature: 23.3 ±0.6°C

Test Mode	99% Spread bandwidth Hopping On (MHz)		Limit (MHz)
GFSK	DH1	78.123	≧83.5
	DH3	78.138	
	DH5	78.139	
	AFH	19.436	
8-DPSK	3-DH1	78.202	
	3-DH3	78.224	
	3-DH5	78.175	
	AFH	19.766	
Conclusion: PASS			

(90% BW)

EUT: Portable Speaker Lantern

M/N: DL-FS01L

Date: 2021-12-17

Pressure: 102.1±1.0 kpa

Humidity: 52.2±3.0%

Tested by: Lynn

Test Site: RF site

Temperature: 23.3±0.6℃

Test Mode	90% Spread bandwidth Hopping On (MHz)		Limit (kHz)
GFSK	DH1	71.116	≥500
	DH3	71.121	
	DH5	71.081	
	AFH	18.566	
8-DPSK	3-DH1	71.101	≥500
	3-DH3	71.267	
	3-DH5	70.713	
	AFH	18.369	
Conclusion: PASS			

Spread Spectrum Factor

Test Mode	90% Bandwidth (MHz)	Symbol Rate (Mbps)	Spread Spectrum Factor (MHz)	Limit (MHz)
GFSK	71.116	1	71.116	≧5
	71.121	1	71.121	
	71.081	1	71.081	
GFSK-AFH	18.566	1	18.566	
8-DPSK	71.101	1	71.101	
	71.267	1	71.267	
	70.713	1	70.713	
8-DPSK-AFH	18.369	1	18.369	
Conclusion: PASS				

B.4 Dwell Time

EUT: Portable Speaker Lantern

M/N: DL-FS01L

Date: 2021-12-17

Pressure: 102.1 ±1.0 kpa

Humidity: 52.2 ±3.0%

Tested by: Lynn

Test Site: RF site

Temperature: 23.3 ±0.6 °C

Mode		dwell time			Limit
GFSK	DH1	48	hops/5s*0.4*79channels*	0.424 ms =128.625ms	≦ 400ms
	DH3	25	hops/5s*0.4*79channels*	1.683 ms =265.914ms	≦ 400ms
	DH5	16	hops/5s*0.4*79channels*	2.930 ms =296.282ms	≦ 400ms
8-DPSK	3-DH1	49	hops/5s*0.4*79channels*	0.431 ms =133.472ms	≦ 400ms
	3-DH3	24	hops/5s*0.4*79channels*	1.683 ms =255.277ms	≦ 400ms
	3-DH5	16	hops/5s*0.4*79channels*	2.960 ms =299.315ms	≦ 400ms

Conclusion: PASS

Note: All the lower levels were signaled from receiver, and should not be considered in here.

B.5 Transmitter Spurious Emissions (Conducted)

EUT: Portable Speaker Lantern		
M/N: DL-FS01L		
Date: 2021-12-17	Pressure: 102.1 ±1.0 kpa	Humidity: 52.2 ±3.0%
Tested by: Lynn	Test Site: RF site	Temperature: 23.3 ±0.6 °C

Test Mode	GFSK(CH0,CH19,CH39,CH78)				Remarks
Test Frequency (MHz)	2402	2421	2441	2480	Low/Mid/High of test frequency range
30~1000MHz (dBm/MHz)	-51.630	-51.432	-51.831	-51.627	Limit ≤ 2.5μW/MHz (-26dBm/MHz)
1000~2387MHz (dBm/MHz)	-48.491	-48.391	-47.304	-49.196	Limit ≤ 2.5μW/MHz (-26dBm/MHz)
2387~2400MHz (dBm/MHz)	-40.162	-48.530	-46.415	-48.716	Limit ≤ 25μW/MHz (-16dBm/MHz)
2483.5~2496.5MHz (dBm/MHz)	-49.503	-49.279	-49.573	-48.775	Limit ≤ 25μW/MHz (-16dBm/MHz)
2496.5~13000MHz (dBm/MHz)	-46.293	-47.369	-46.343	-46.838	Limit ≤ 2.5μW/MHz (-26dBm/MHz)
Test Mode	8-DPSK(CH0,CH19,CH39,CH78)				Remarks
Test Frequency (MHz)	2402	2421	2441	2480	Low/Mid/High of test frequency range
30~1000MHz (dBm/MHz)	-51.576	-50.978	-50.602	-51.562	Limit ≤ 2.5μW/MHz (-26dBm/MHz)
1000~2387MHz (dBm/MHz)	-47.355	-48.674	-48.536	-49.643	Limit ≤ 2.5μW/MHz (-26dBm/MHz)
2387~2400MHz (dBm/MHz)	-33.151	-48.619	-47.975	-48.147	Limit ≤ 25μW/MHz (-16dBm/MHz)
2483.5~2496.5MHz (dBm/MHz)	-49.477	-49.503	-50.025	-49.419	Limit ≤ 25μW/MHz (-16dBm/MHz)
2496.5~13000MHz (dBm/MHz)	-47.055	-47.644	-47.733	-48.005	Limit ≤ 2.5μW/MHz (-26dBm/MHz)
Conclusion: PASS					

B.6 Secondary Radiated Emissions (Conducted)

EUT: Portable Speaker Lantern		
M/N: DL-FS01L		
Date: 2021-12-17	Pressure: 102.1 ±1.0 kpa	Humidity: 52.2 ±3.0%
Tested by: Lynn	Test Site: RF site	Temperature: 23.3 ±0.6 °C

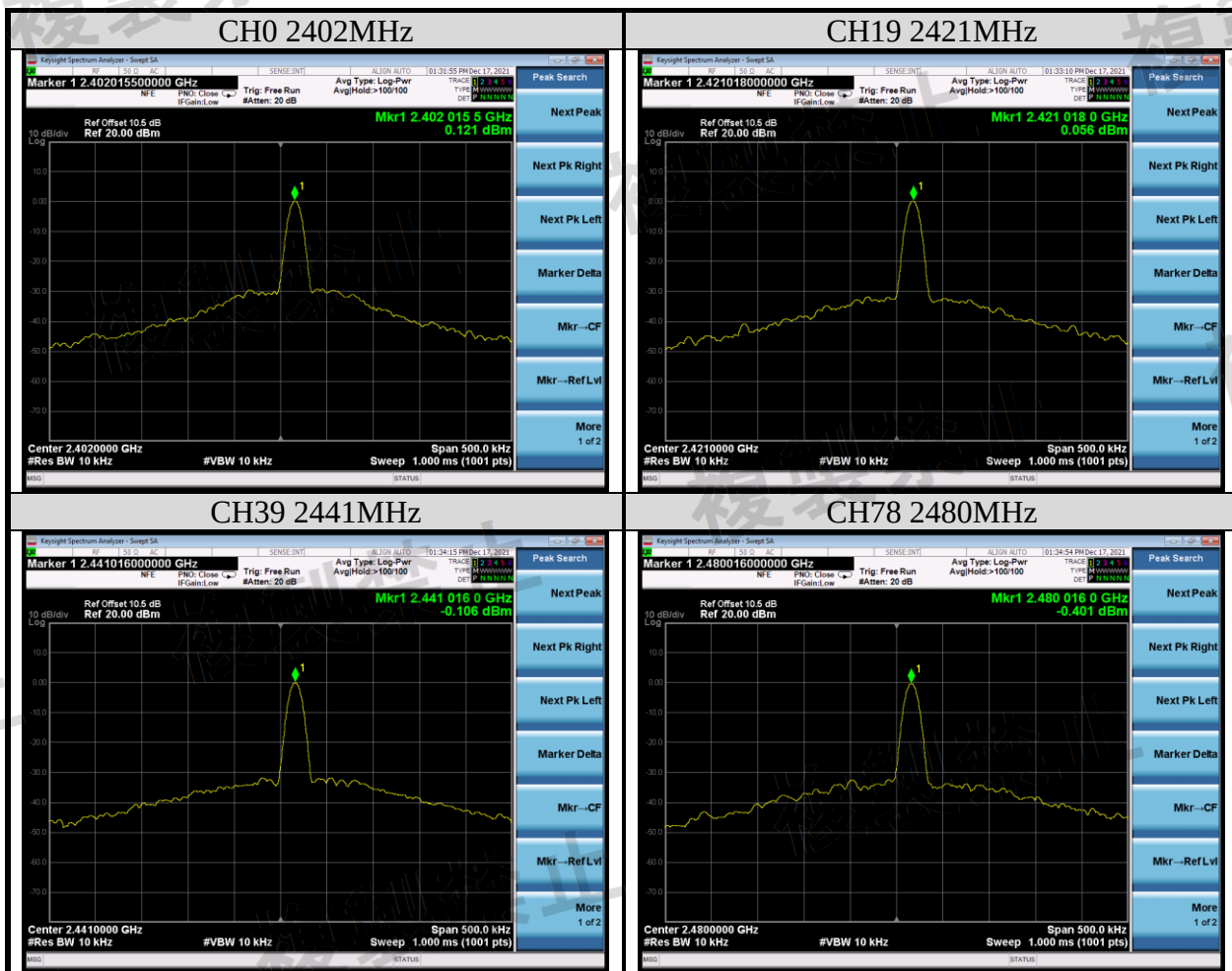
Test Mode	GFSK(CH0,CH19,CH39,CH78)				Remarks
Test Frequency	2402	2421	2441	2480	Low/Mid/High of test frequency range
30~1000MHz (dBm/100kHz)	-79.807	-80.323	-80.511	-80.141	Limit ≤ 4nW (-54dBm/100kHz)
1000 ~13000MHz (dBm/MHz)	-66.904	-67.207	-66.720	-66.510	Limit ≤ 20nW (-47dBm/MHz)
Test Mode	8-DPSK(CH0,CH19,CH39,CH78)				Remarks
Test Frequency	2402	2421	2441	2480	Low/Mid/High of test frequency range
30~1000MHz (dBm/100kHz)	-80.118	-80.202	-80.441	-79.532	Limit ≤ 4nW (-54dBm/100kHz)
1000 ~13000MHz (dBm/MHz)	-66.624	-66.867	-66.461	-66.379	Limit ≤ 20nW (-47dBm/MHz)
Conclusion: PASS					

Appendix C Test Plots

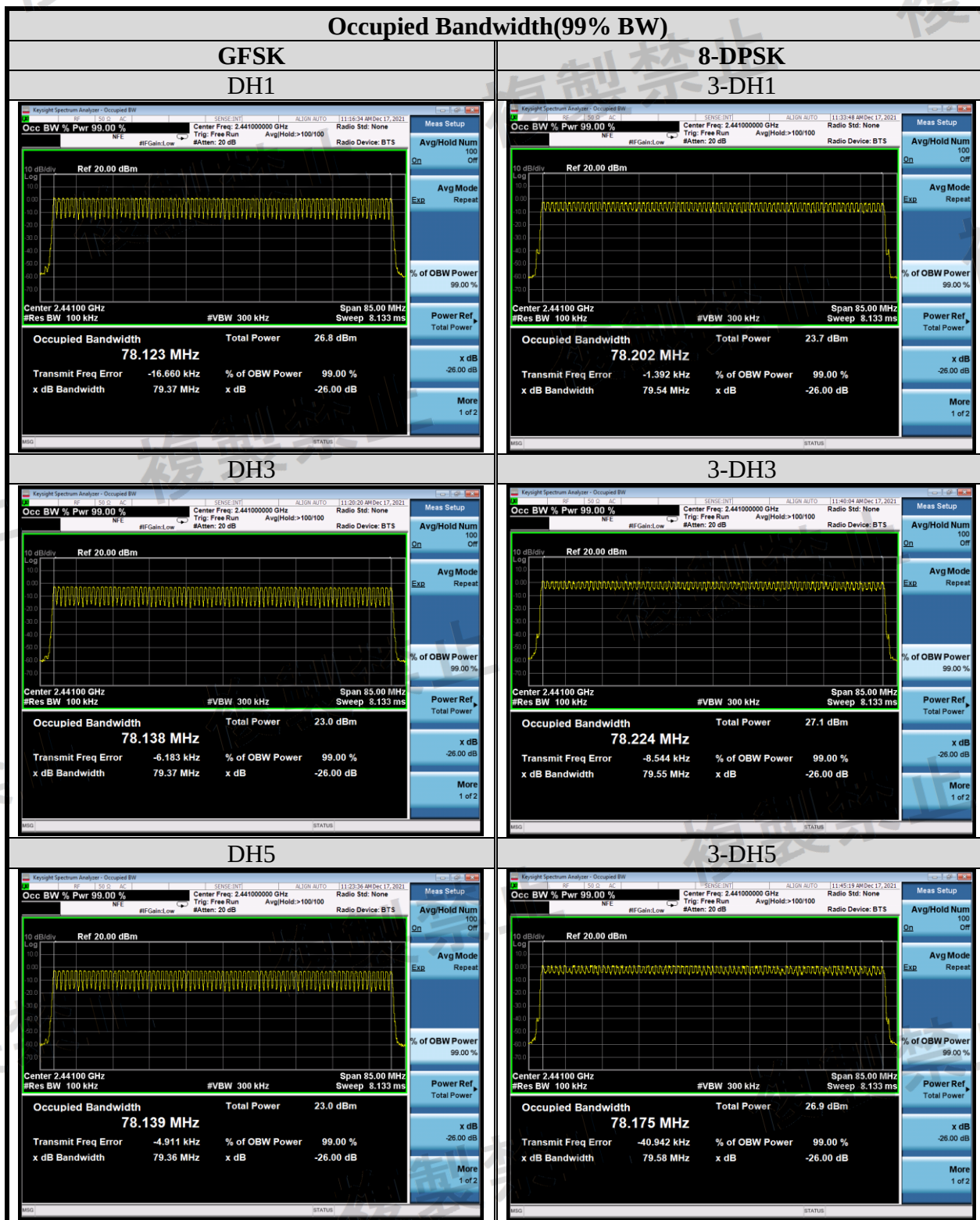
C.1 Antenna Power

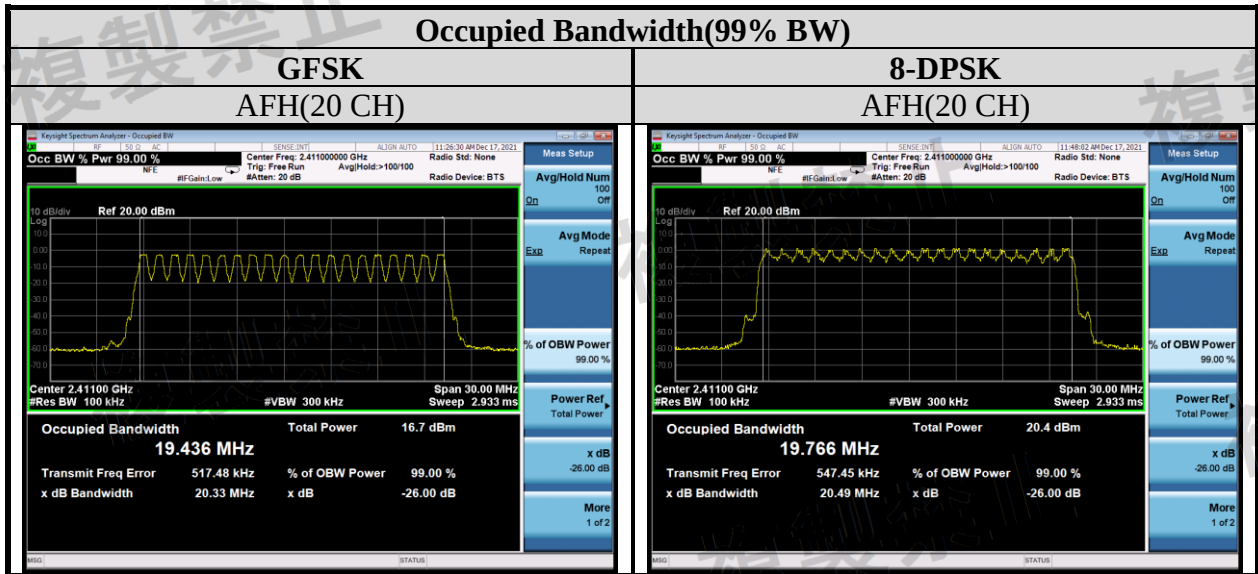
GFSK	8-DPSK
DH1	3-DH1
OFS Min : 1 . 4 1 m Max : 1 . 4 3 m 1 . 4 1 m W	OFS Min : 1 . 3 8 m Max : 1 . 4 3 m 1 . 3 9 m W
DH3	3-DH3
OFS Min : 1 . 3 5 m Max : 1 . 4 2 m 1 . 4 1 m W	OFS Min : 1 . 3 8 m Max : 1 . 5 0 m 1 . 4 8 m W
DH5	3-DH5
OFS Min : 1 . 3 0 m Max : 1 . 4 1 m 1 . 4 0 m W	OFS Min : 1 . 3 5 m Max : 1 . 4 9 m 1 . 3 8 m W

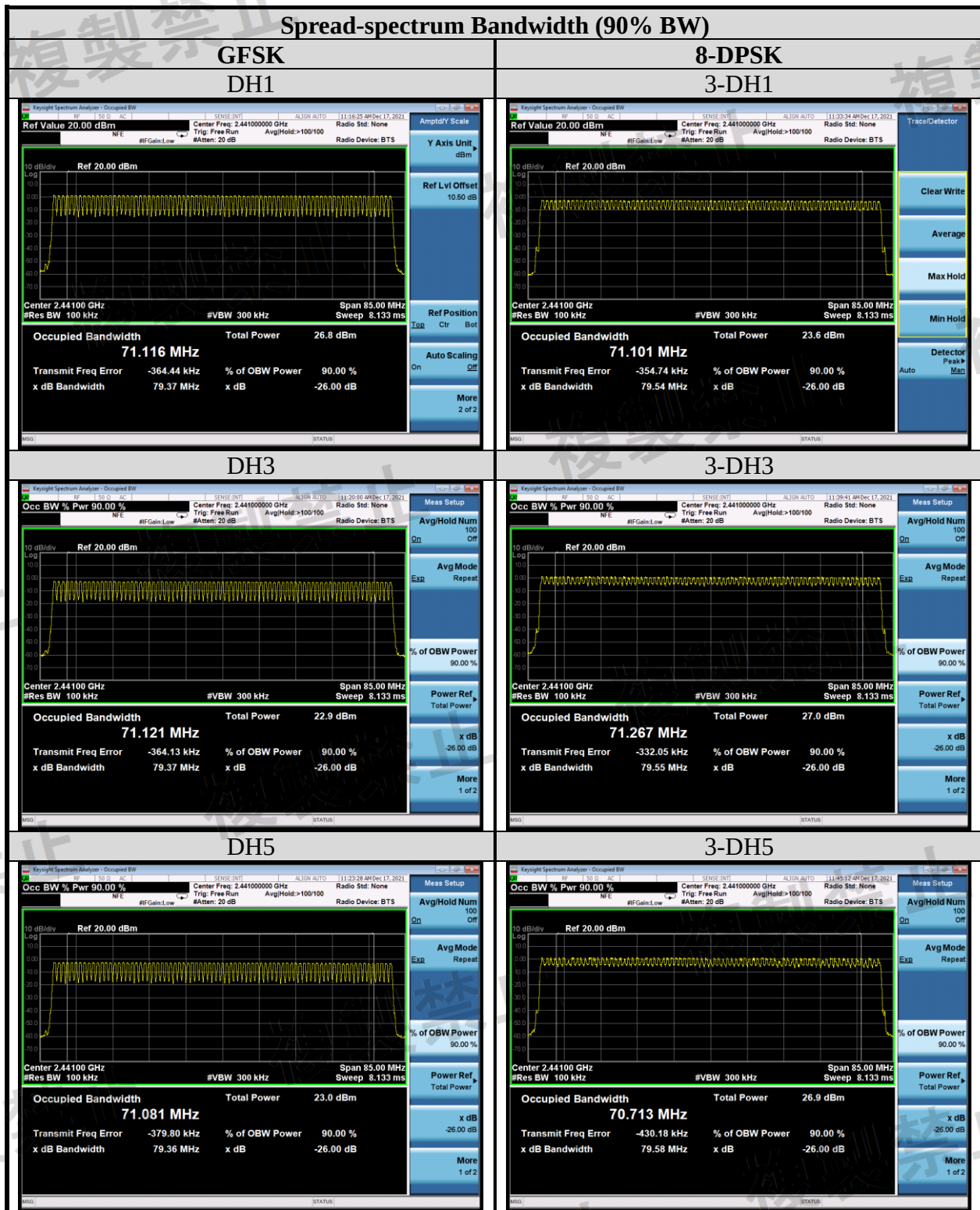
C.2 Frequency Tolerance

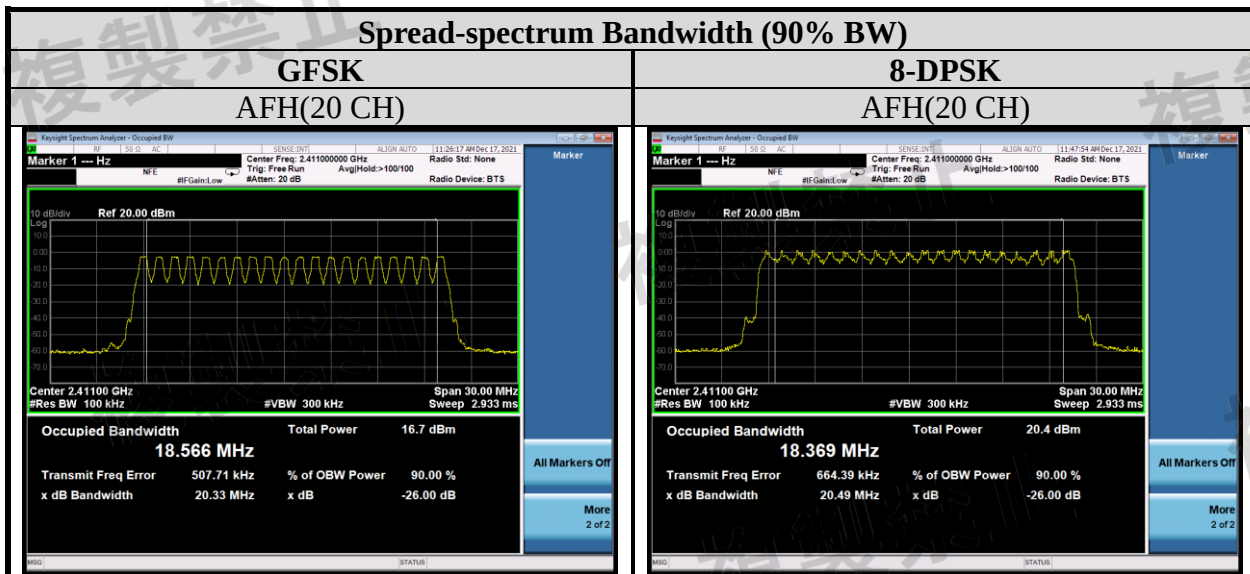


C.3 Occupied Bandwidth and Spread-spectrum Bandwidth / Spread Factor Measurement

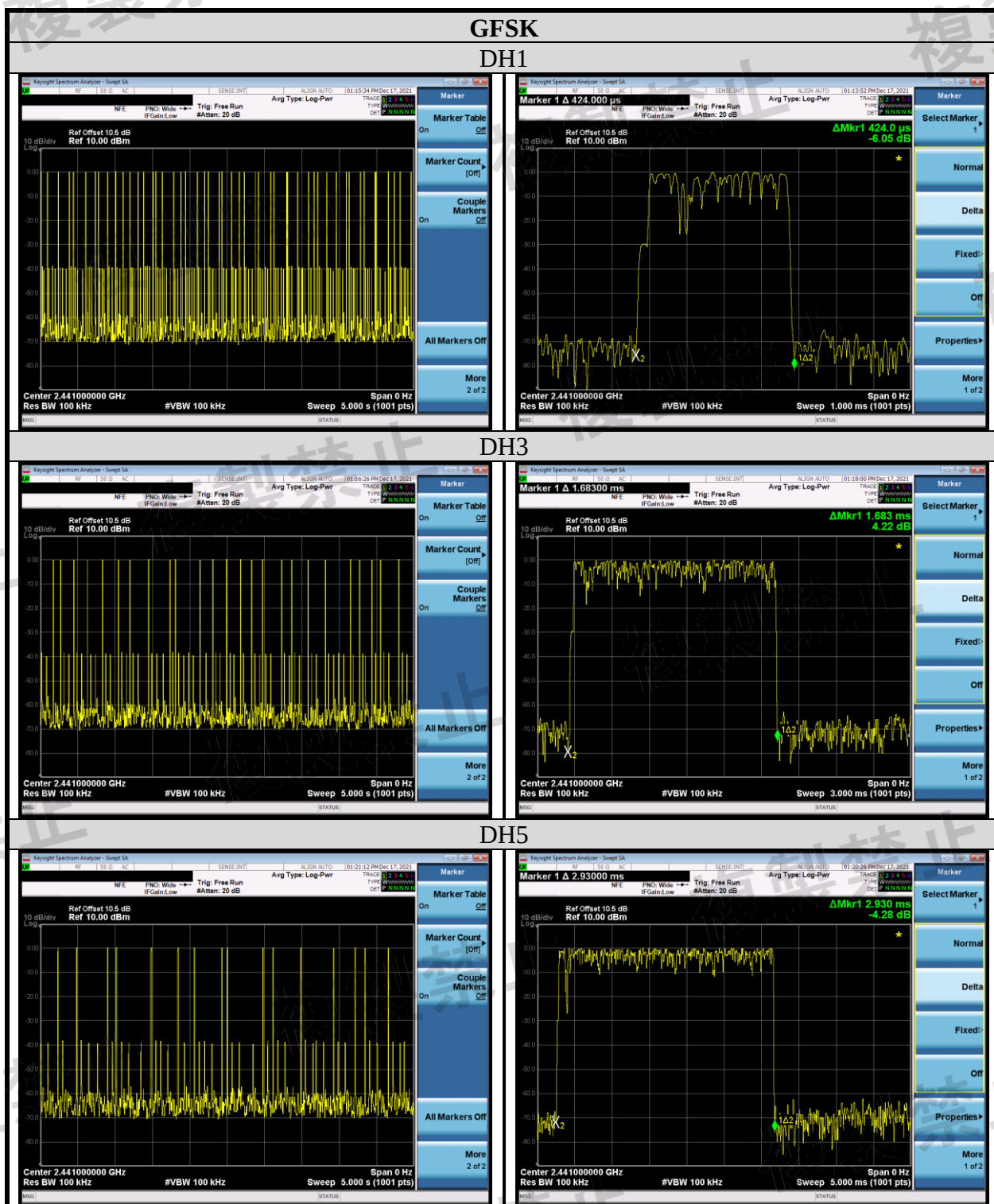




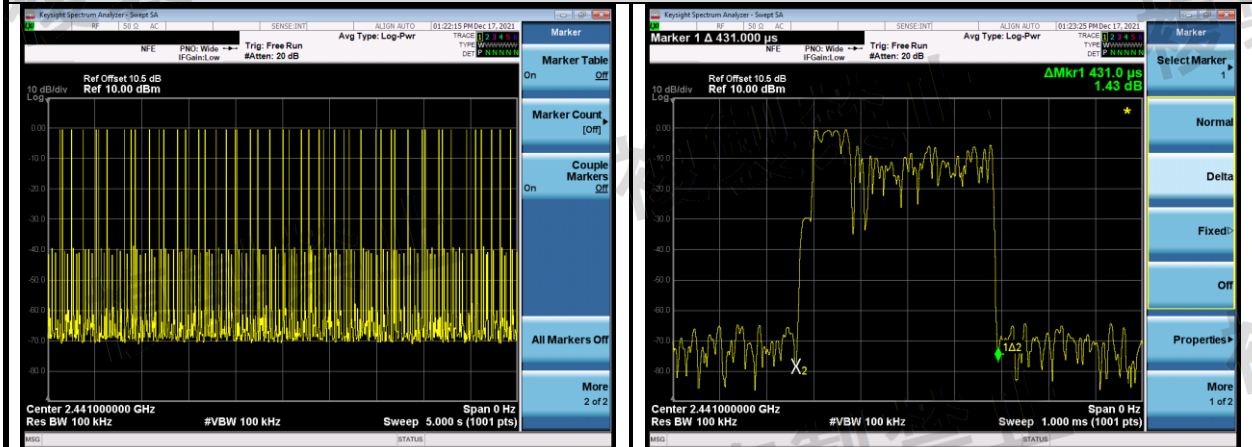




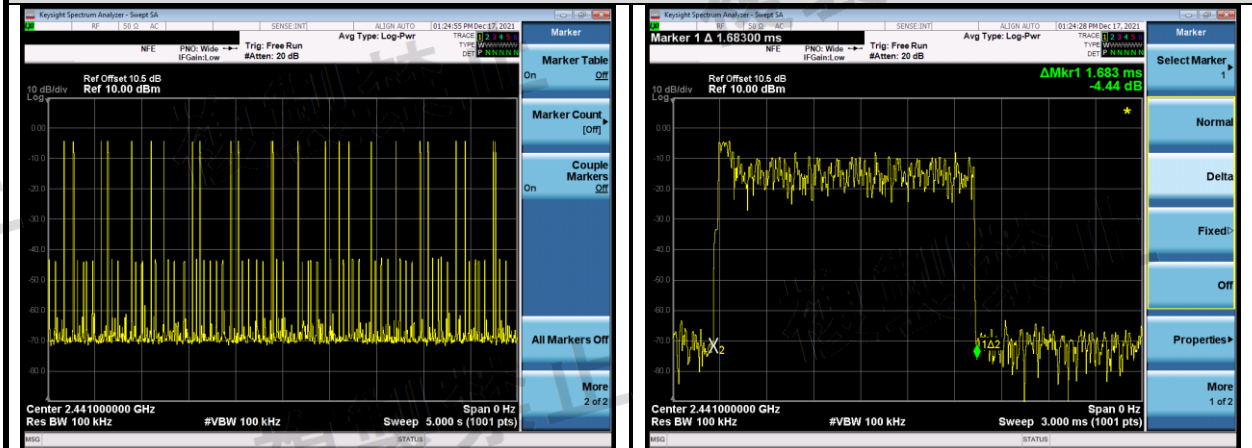
C.4 Dwell Time



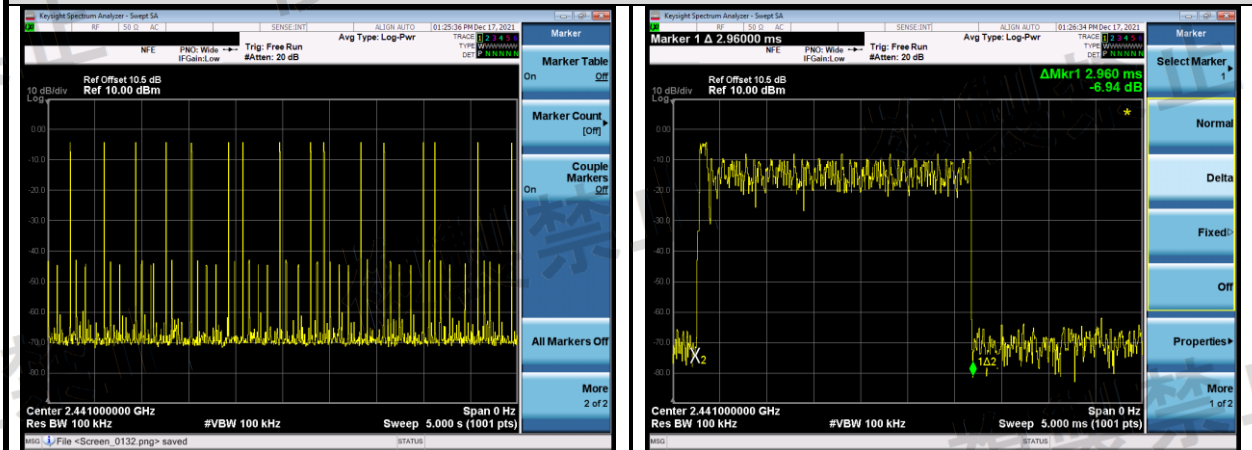
8-DPSK 3-DH1



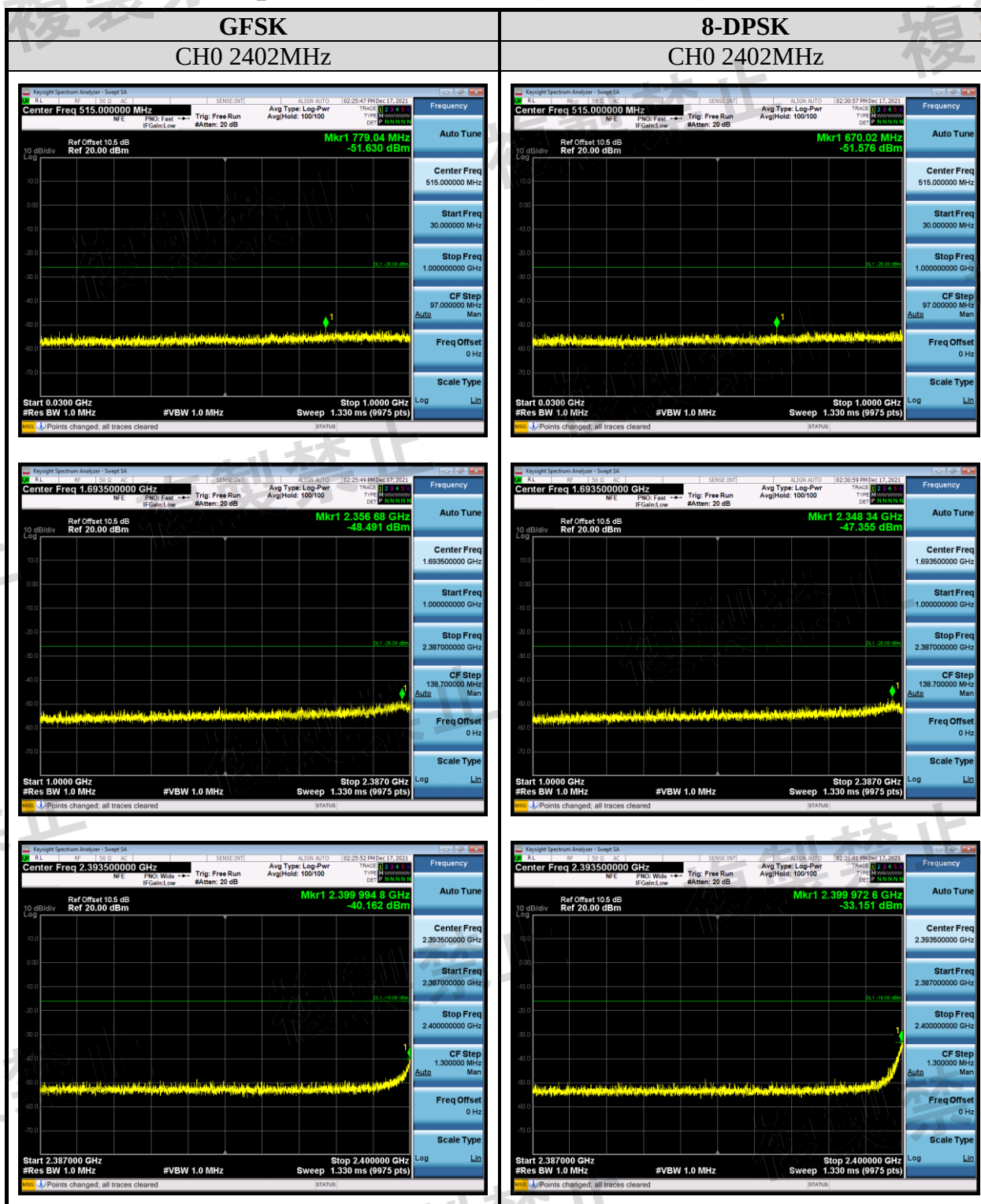
3-DH3

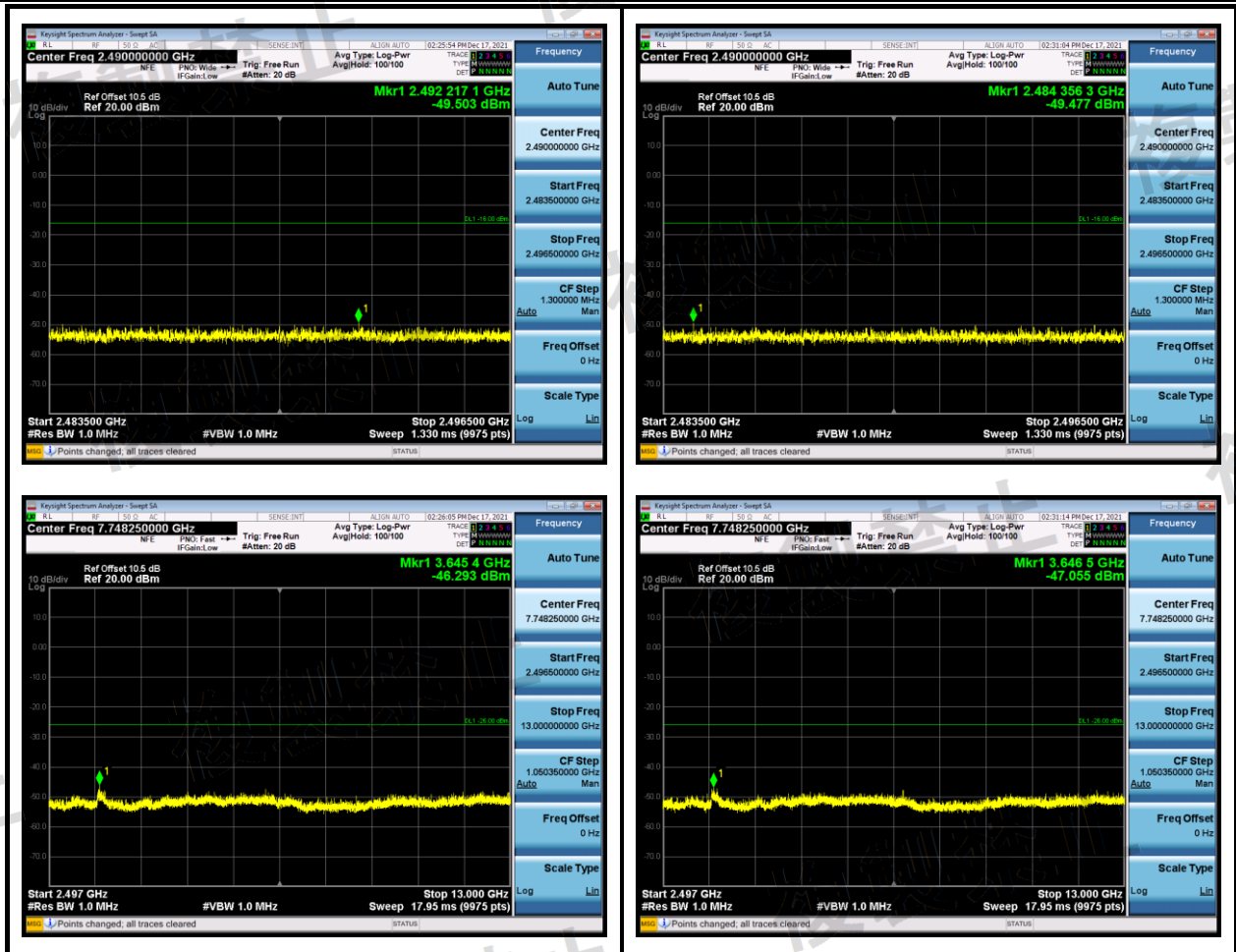


3-DH5

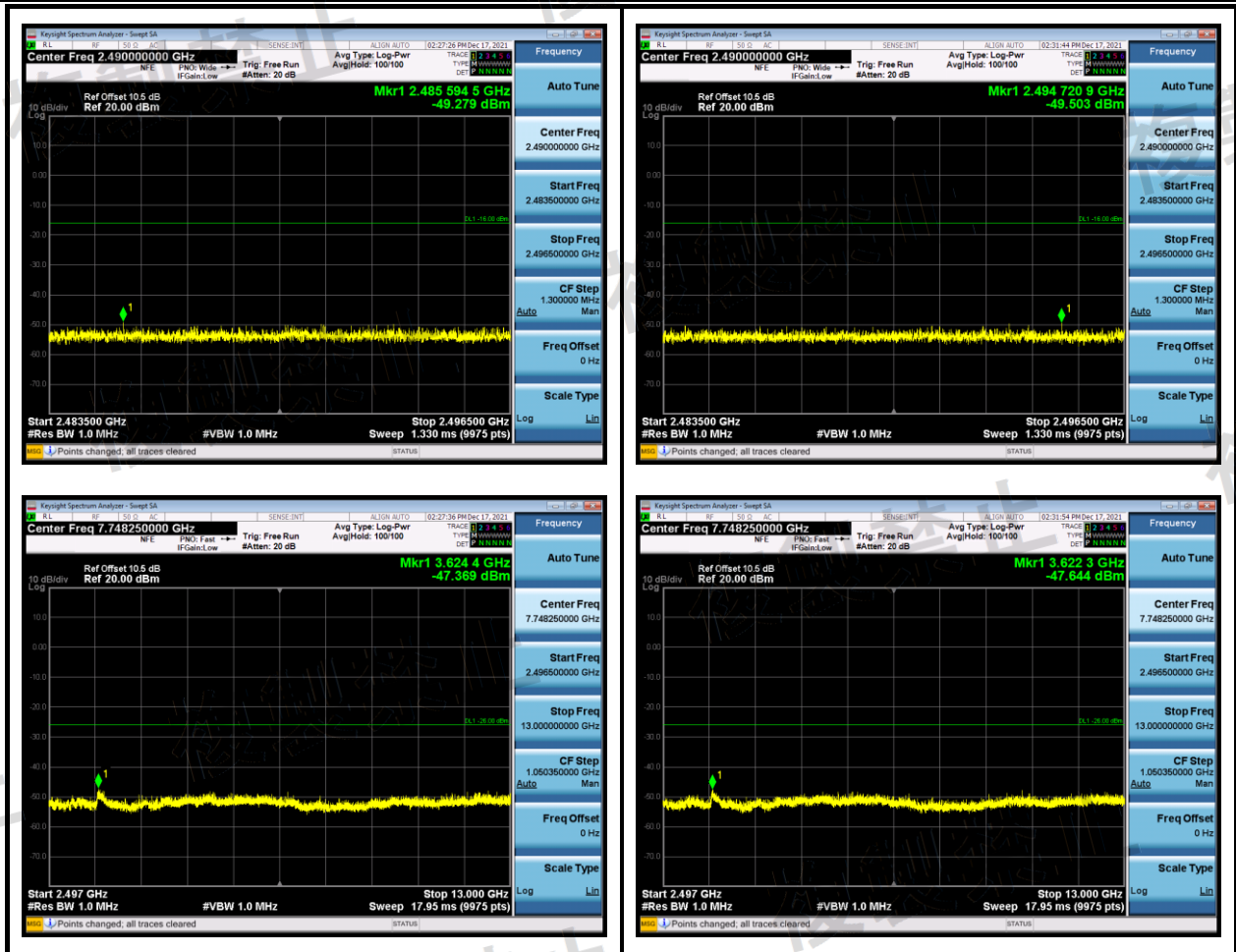


C.5 Transmitter Spurious Emissions (Conducted)

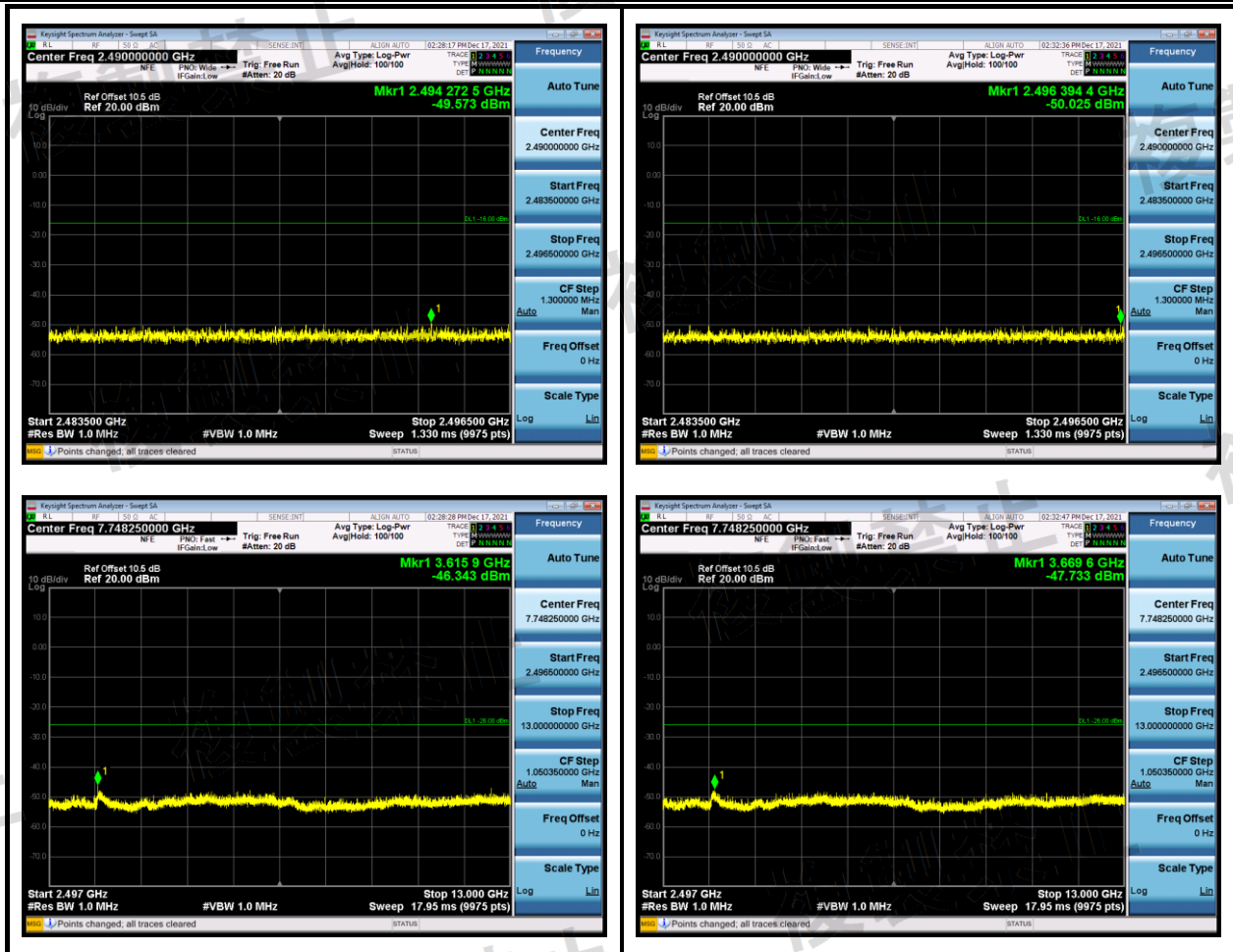


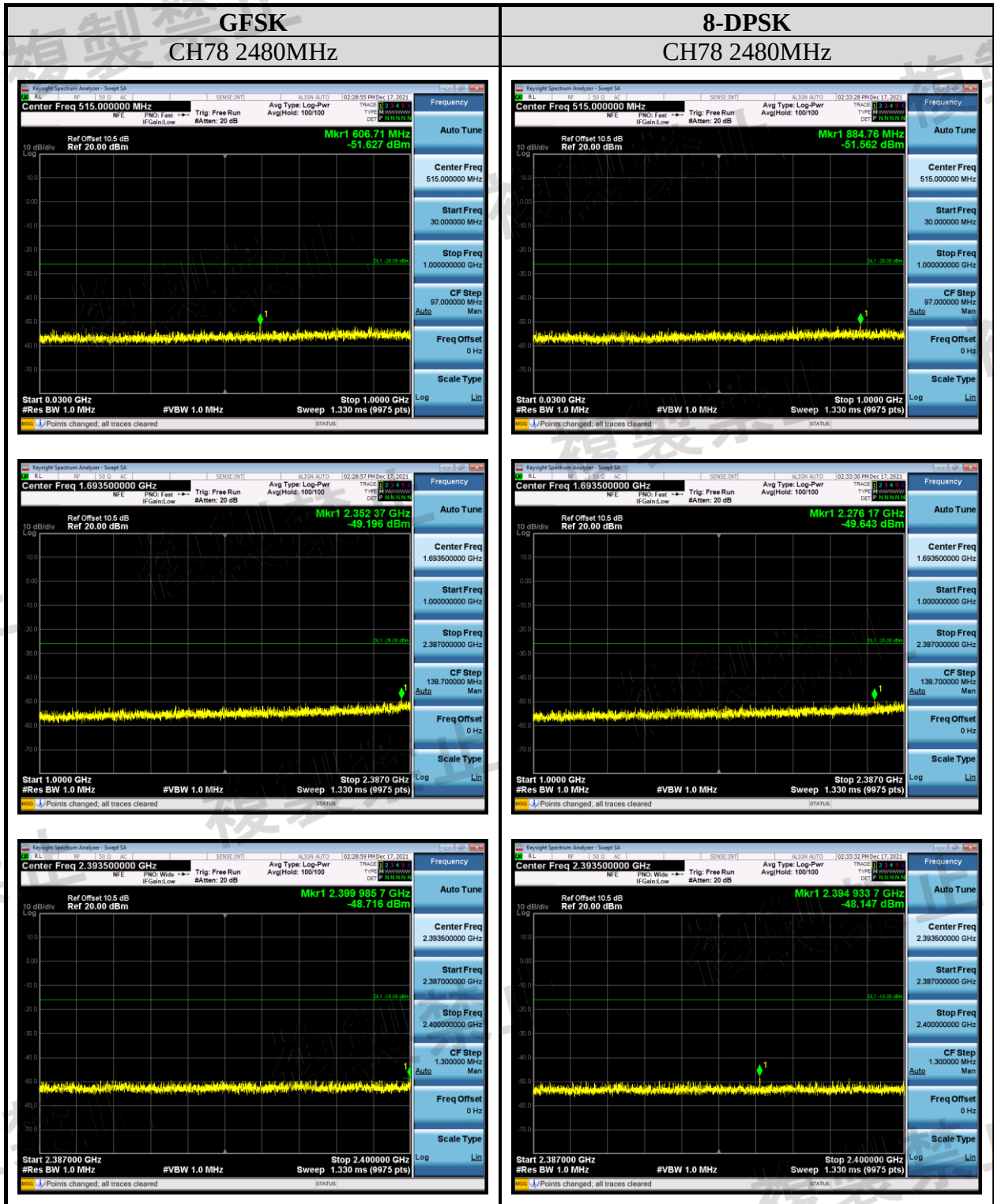


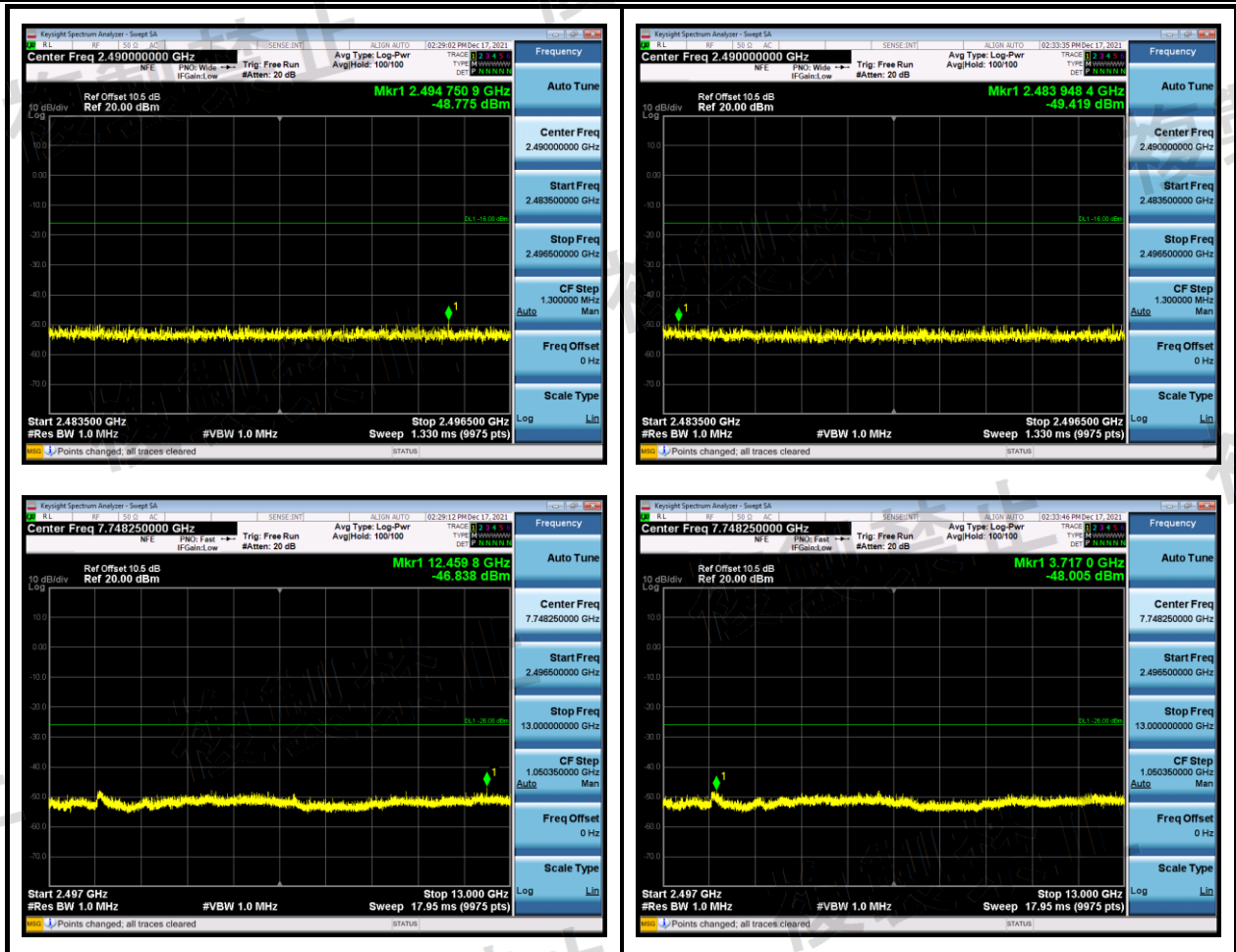












C.6 Secondary Radiated Emissions (Conducted)

