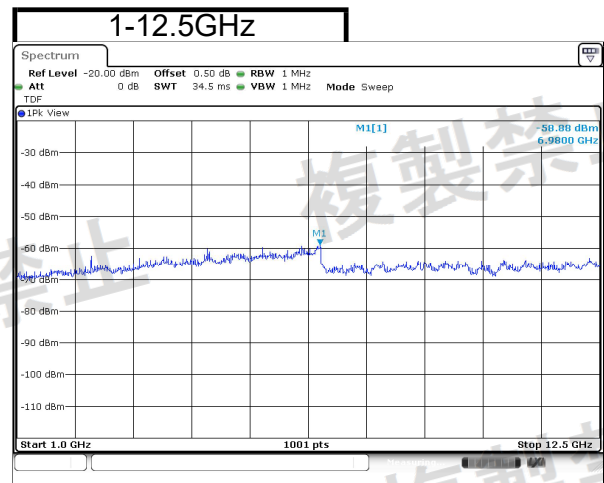
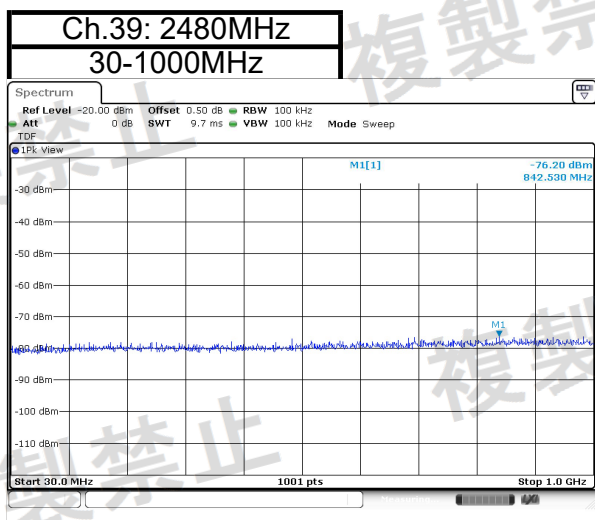
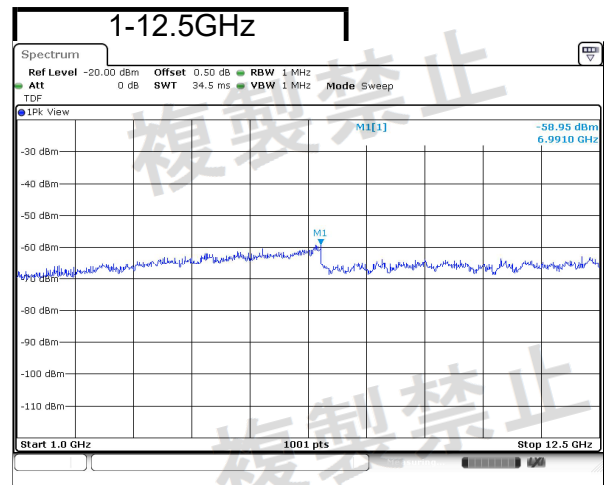
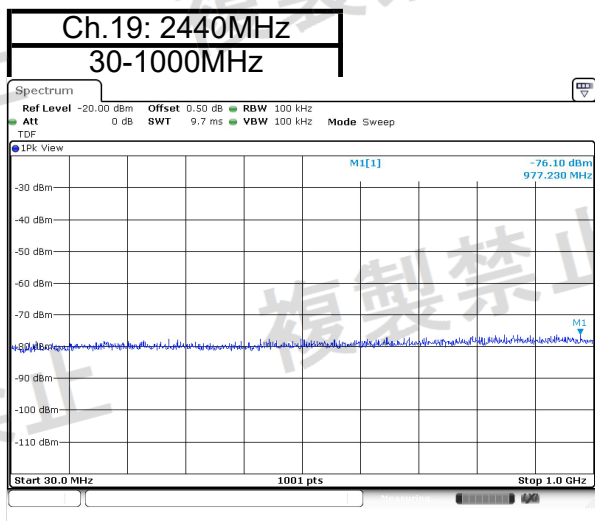
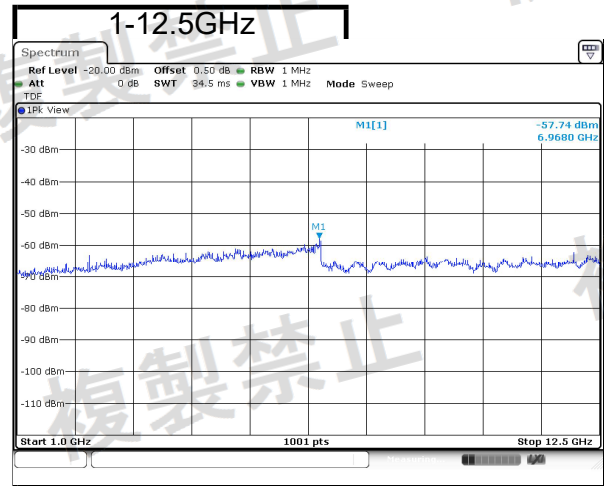
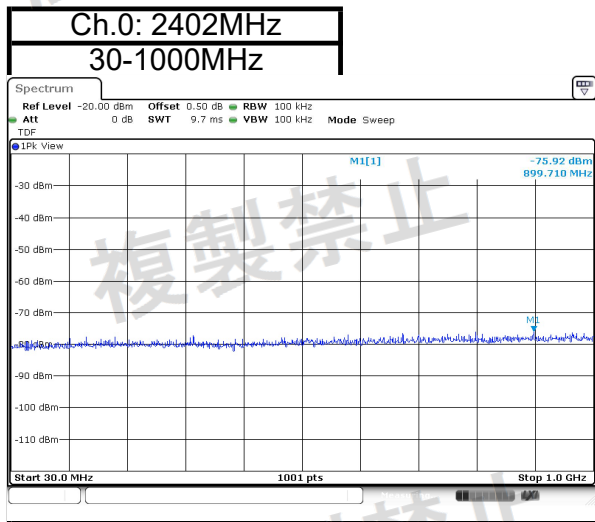


7. Test chart

7.5 Secondary emitted radio wave strength (+10% voltage)



3. Test results (Rated voltage)

S/N : N/A

Environment of test room	Date of test	2022-10-17	2022-10-18
	Temperature	22 °C	24 °C
	Humidity	53 %	51 %

Peak Antenna Gain	1.80	dBi
Declaration Output Power	3	mW
Declaration Output Power	4.7712	dBm
E.I.R.P.	6.5712	dBm
Input Power Voltage	3.7	VDC

Tested Circit Insertion Loss		0	dB
Frequency equal to the Transmission rate		-	MHz
Transmission Time	ON TIME (1sec or less)	0.2	ms
	OFF TIME (0.1sec or more)	0.43	ms
	Ratio	0.3175	%
Packet Type (Mode)		37	mode
Transmit Speed		2	MHz

Using TDF and offset function in Spectrum Analyzer.
Measurement of plots are included Loss value.

(Att : 10dB + Cable loss + EUT cable: 0.5dB offset)

Test category :	2.4GHz Band Low-Power Data Communication System (GFSK/0-39ch)
-----------------	---

Measurement Frequency	MHz	2402	2440	2480	Result	Limit	Note
Channel Number	Ch.	0	19	39	---	---	
Frequency Measurements	MHz	2401.965	2439.970	2479.970	---	---	
Frequency Tolerance	ppm	-14.557	-12.283	-12.085	PASS	$\pm 50 \times 10^{-6}$ (50ppm)	
Occupied Bandwidth	MHz	2.090	2.090	2.090	PASS	26MHz or below	
RF Output Power	mW	3.253	3.329	3.179	PASS	10mW/MHz or below	
RF Output Power Tolerance	%	8.440	10.966	5.972		+20 to -80%	
Unwanted (Spurious) Emission Strength	30 to 2387MHz	uW/MHz	0.026	0.028	0.030	PASS	2.5uW/MHz or below
		MHz	2275.200	2213.900	2383.500	-----	
	2387 to 2400MHz	uW/MHz	8.375	0.028	0.029	PASS	25uW/MHz or below
		MHz	2399.994	2391.422	2389.071	-----	
	2483.5 to 2496.5MHz	uW/MHz	0.032	0.034	0.287	PASS	25uW/MHz or below
		MHz	2493.818	2494.831	2483.532	-----	
	2496.5 to 12500MHz	uW/MHz	0.118	0.125	0.121	PASS	2.5uW/MHz or below
		MHz	6968.500	6468.500	6938.500	-----	
Secondary Emitted Radio Wave Strength	30 to 1000MHz	nW	0.026	0.024	0.027	PASS	4nW or below
		MHz	991.760	801.830	863.850	-----	
	1000 to 12500MHz	nW	1.483	1.197	1.117	PASS	20nW or below
		MHz	7003.000	6934.000	6612.000	-----	
Interference Prevention Function	Good				PASS		
Transmitting antenna absolute gain	-				-----	*1	
Angular width of the main radiation of the transmitting antenna	-				-----	*1	

*1 Measurement only if the E.I.R.P. exceeds 12.14dBm/MHz

3. Test results (-10% voltage)

S/N : N/A

Environment of test room	Date of test	2022-10-17	2022-10-18
	Temperature	22 °C	24 °C
	Humidity	53 %	51 %

Peak Antenna Gain	1.80	dBi
Declaration Output Power	3	mW
Declaration Output Power	4.7712	dBm
E.I.R.P.	6.5712	dBm
Input Power Voltage	3.3	VDC

Tested Circuit Insertion Loss		0	dB
Frequency equal to the Transmission rate		-	MHz
Transmission Time	ON TIME (1sec or less)	0.2	ms
	OFF TIME (0.1sec or more)	0.42	ms
	Ratio	0.3226	%
Packet Type (Mode)		37	mode
Transmit Speed		2	MHz

Using TDF and offset function in Spectrum Analyzer.
Measurement of plots are included Loss value.

(Att : 10dB + Cable loss + EUT cable: 0.5dB offset)

Test category :	2.4GHz Band Low-Power Data Communication System (GFSK/0-39ch)
-----------------	---

Measurement Frequency		MHz	2402	2440	2480	Result	Limit	Note
Channel Number		Ch.	0	19	39	---	---	
Frequency Measurements		MHz	2401.965	2439.965	2479.965	---	---	
Frequency Tolerance		ppm	-14.557	-14.330	-14.099	PASS	±50×10 ⁻⁶ (50ppm)	
Occupied Bandwidth		MHz	2.090	2.090	2.090	PASS	26MHz or below	
RF Output Power		mW	3.352	3.202	3.202	PASS	10mW/MHz or below	
RF Output Power Tolerance		%	11.748	6.719	6.719		+20 to -80%	
Unwanted (Spurious) Emission Strength	30 to 2387MHz	uW/MHz	0.033	0.027	0.027	PASS	2.5uW/MHz or below	
		MHz	1778.300	1969.100	1971.400	----		
	2387 to 2400MHz	uW/MHz	8.054	0.030	0.034	PASS	25uW/MHz or below	
		MHz	2399.994	2396.773	2397.877	----		
	2483.5 to 2496.5MHz	uW/MHz	0.034	0.031	0.274	PASS	25uW/MHz or below	
		MHz	2490.753	2486.442	2483.532	----		
	2496.5 to 12500MHz	uW/MHz	0.155	0.117	0.176	PASS	2.5uW/MHz or below	
		MHz	6648.500	6688.500	6988.500	----		
Secondary Emitted Radio Wave Strength	30 to 1000MHz	nW	0.022	0.028	0.023	PASS	4nW or below	
		MHz	998.550	831.870	755.320	----		
	1000 to 12500MHz	nW	1.380	1.035	1.213	PASS	20nW or below	
		MHz	6922.000	6991.000	6957.000	----		
Interference Prevention Function			Good			PASS		
Transmitting antenna absolute gain			-			----	*1	
Angular width of the main radiation of the transmitting antenna			-			----	*1	

*1 Measurement only if the E.I.R.P. exceeds 12.14dBm/MHz

3. Test results (+10% voltage)

S/N : N/A

Environment of test room	Date of test	2022-10-17	2022-10-18
	Temperature	22 °C	24 °C
	Humidity	53 %	51 %

Peak Antenna Gain	1.80	dBi
Declaration Output Power	3	mW
Declaration Output Power	4.7712	dBm
E.I.R.P.	6.5712	dBm
Input Power Voltage	4.1	VDC

Tested Circit Insertion Loss		0	dB
Frequency equal to the Transmission rate		-	MHz
Transmission Time	ON TIME (1sec or less)	0.2	ms
	OFF TIME (0.1sec or more)	0.42	ms
	Ratio	0.3226	%
Packet Type (Mode)		37	mode
Transmit Speed		2	MHz

Using TDF and offset function in Spectrum Analyzer.
Measurement of plots are included Loss value.

(Att : 10dB + Cable loss + EUT cable: 0.5dB offset)

Test category :	2.4GHz Band Low-Power Data Communication System (GFSK/0-39ch)
-----------------	---

Measurement Frequency		MHz	2402	2440	2480	Result	Limit	Note
Channel Number		Ch.	0	19	39	---	---	
Frequency Measurements		MHz	2401.970	2439.965	2479.960	---	---	
Frequency Tolerance		ppm	-12.477	-14.330	-16.113	PASS	±50×10 ⁻⁶ (50ppm)	
Occupied Bandwidth		MHz	2.080	2.090	2.090	PASS	26MHz or below	
RF Output Power		mW	3.202	3.276	3.202	PASS	10mW/MHz or below	
RF Output Power Tolerance		%	6.719	9.204	6.719		+20 to -80%	
Unwanted (Spurious) Emission Strength	30 to 2387MHz	uW/MHz	0.026	0.028	0.030	PASS	2.5uW/MHz or below	
		MHz	1745.400	1785.400	2279.900	----		
	2387 to 2400MHz	uW/MHz	8.318	0.028	0.029	PASS	25uW/MHz or below	
		MHz	2399.994	2392.162	2395.370	----		
	2483.5 to 2496.5MHz	uW/MHz	0.035	0.033	0.269	PASS	25uW/MHz or below	
		MHz	2484.208	2487.584	2483.571	----		
	2496.5 to 12500MHz	uW/MHz	0.158	0.125	0.137	PASS	2.5uW/MHz or below	
		MHz	6978.500	6998.500	6998.500	----		
Secondary Emitted Radio Wave Strength	30 to 1000MHz	nW	0.025	0.025	0.025	PASS	4nW or below	
		MHz	972.380	921.020	984.010	----		
	1000 to 12500MHz	nW	1.291	1.247	1.387	PASS	20nW or below	
		MHz	6968.000	6980.000	6968.000	----		
Interference Prevention Function			Good			PASS		
Transmitting antenna absolute gain			-			----	*1	
Angular width of the main radiation of the transmitting antenna			-			----	*1	

*1 Measurement only if the E.I.R.P. exceeds 12.14dBm/MHz

4. Measurement equipment list

USE	Equipment	Company	Model No.	Serial No.	Calibrated by	Cal. Method	Cal. Due	Cal. Date
X	Spectrum Analyzer	R&S	FSV30	100732	HCT	(c)	2023-09-27	2022-09-27
X	DC Power Supply	TOYOTECH	TL305TP	20100121	HCT	(c)	2023-08-11	2022-08-11
X	Attenuator	API inmet	40AHW2W-10	10	HCT	(c)	2023-07-12	2022-07-12
X	Signal generator	R&S	SMB100A	176206	HCT	(c)	2023-01-19	2022-01-19
X	Attenuator	R&S	DNF Dämpfungsglied 10 dB in N-50 Ohm	0003	HCT	(c)	2023-02-09	2022-02-09
X	Power Sensor	R&S	NRP-Z81	1137.9009.02-106223-bB	HCT	(c)	2023-05-03	2022-05-03
X	Vector Signal Generator	R&S	SMBV100A	257566	HCT	(c)	2023-07-04	2022-07-04

Note1: "X" used equipment.

Note2: The validity of measurement equipment is one year from the first day of the following month of the calibration date.

Note3: Cal.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)~ TELECOM 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)~ TELECOM Engineering Center, Intertek Japan K.K., Keysight Technologies, Inc~.

d) : Calibration conducted by using other equipment that listed above from a) to c)

5. Uncertainty

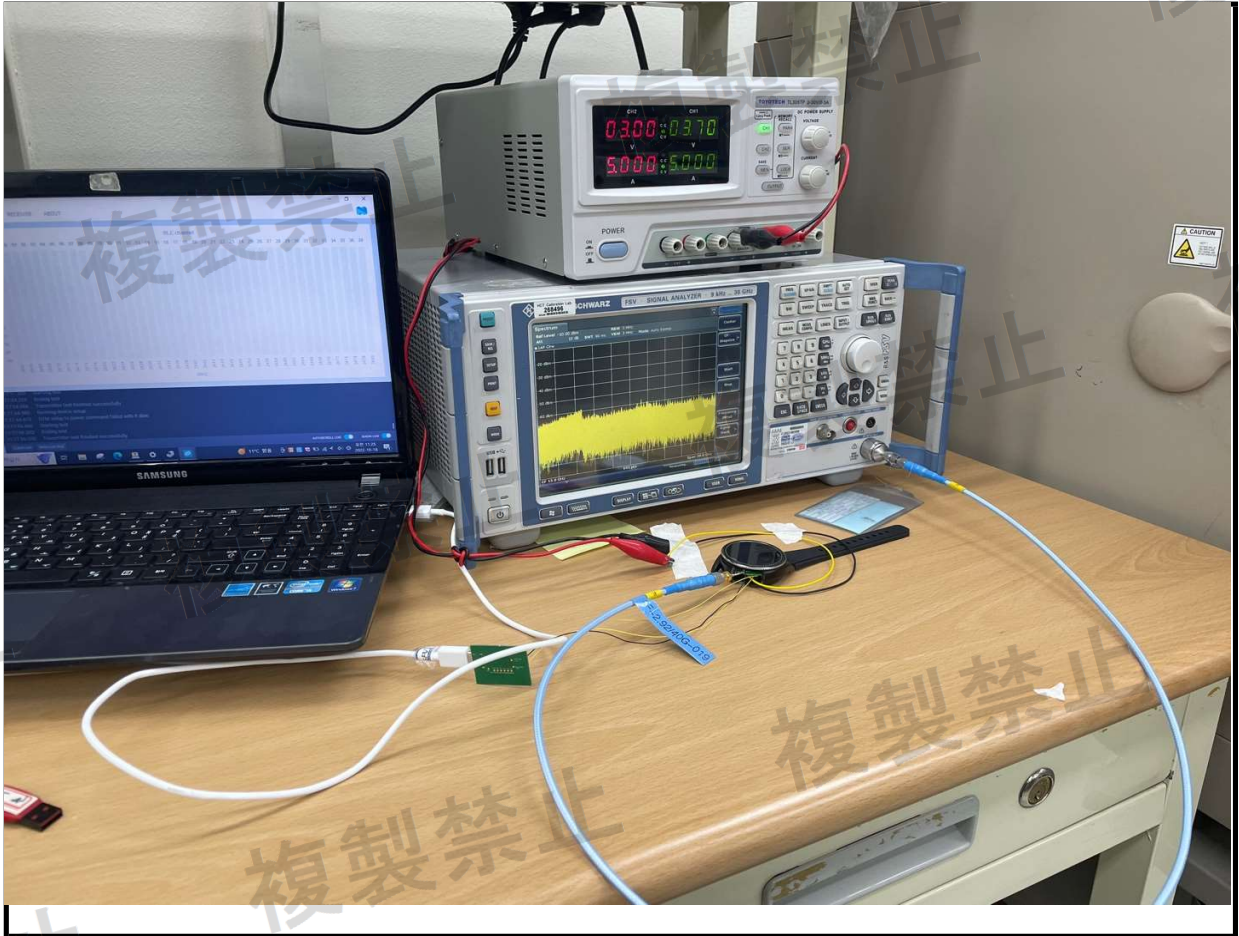
About uncertainty of measured value

Parameter	Uncertainty
Total RF power conducted	$\pm 0.9\text{dB}$
Spurious emissions conducted	$\pm 1.1\text{dB}$
Temperature	$\pm 0.9^{\circ}\text{C}$
Humidity	$\pm 4.6\%$

Judge	Measured value and standard limit value	
PASS	Standard limit value Case1 Even if it takes uncertainty into consideration, a standard limit value is fulfilled.	
	Case2 Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.	
FAIL	Case3 Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.	
	Case4 Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.	

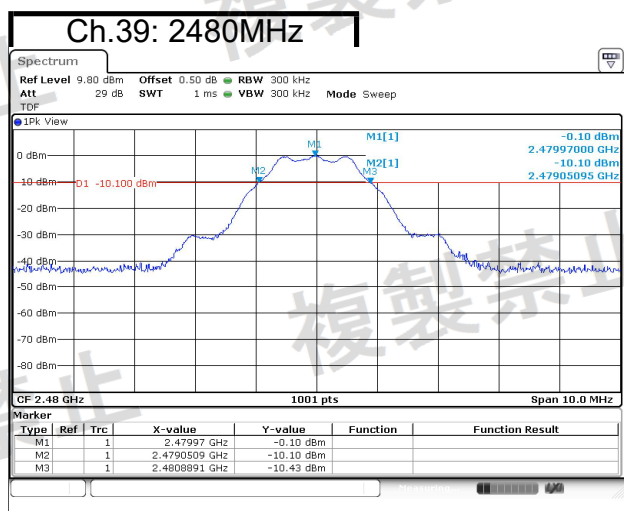
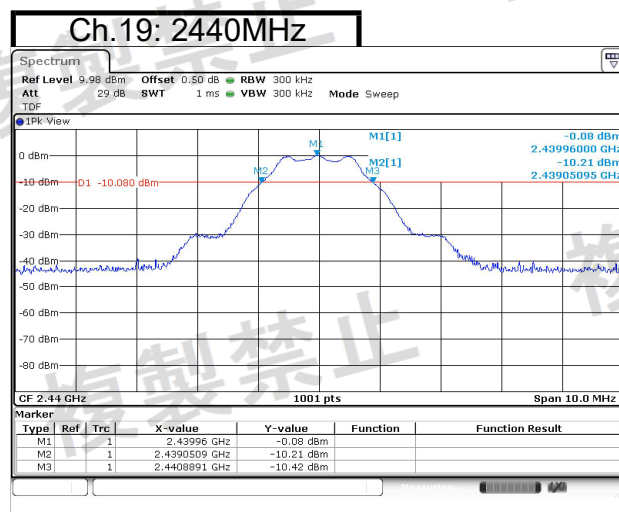
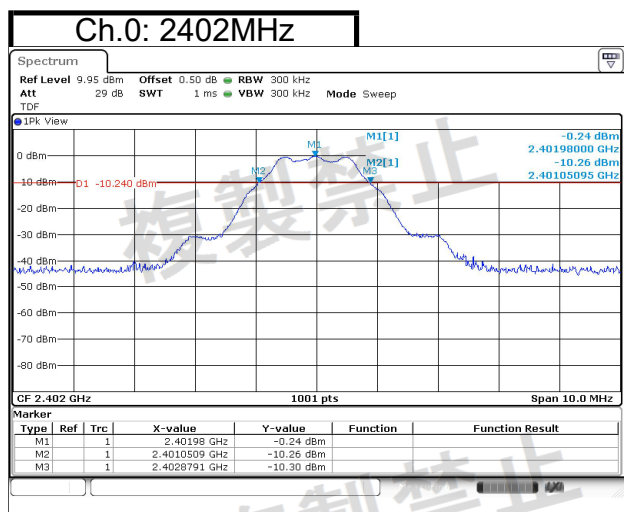
6. Photographs

Conducted Measurement Photo



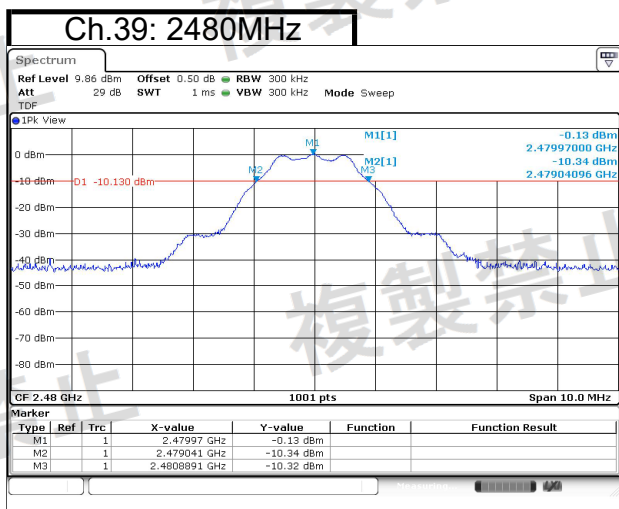
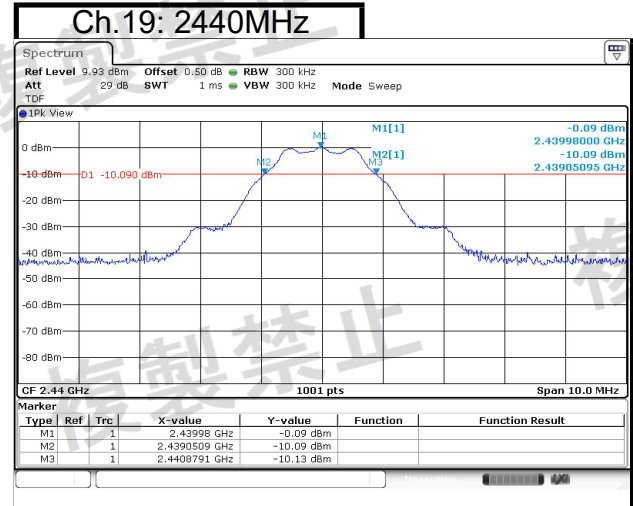
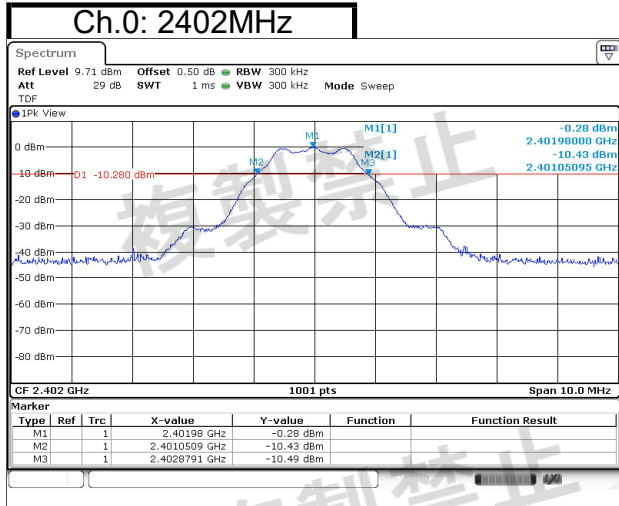
7. Test chart

7.1 Frequency tolerance (Rated voltage)



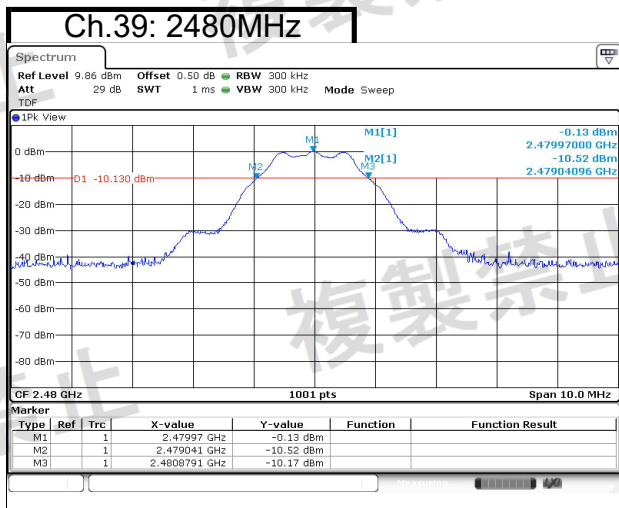
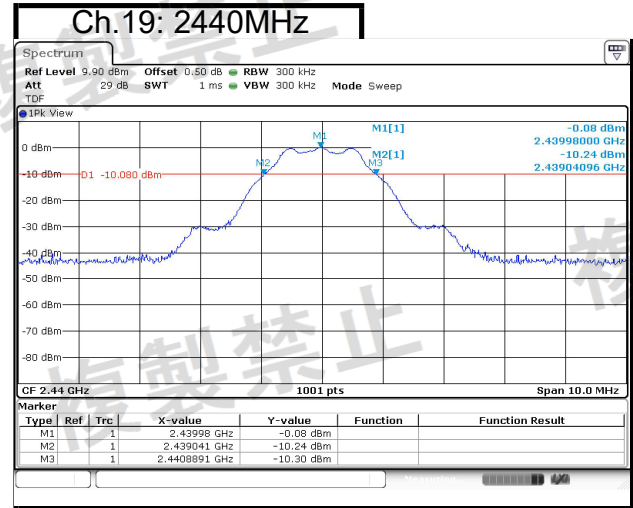
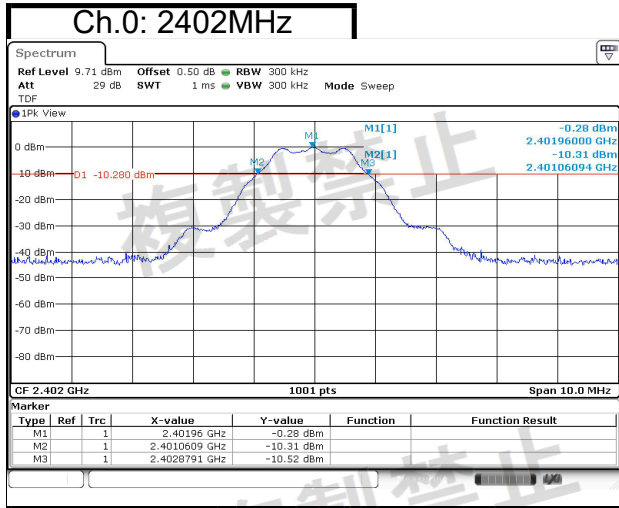
7. Test chart

7.1 Frequency tolerance (-10% voltage)



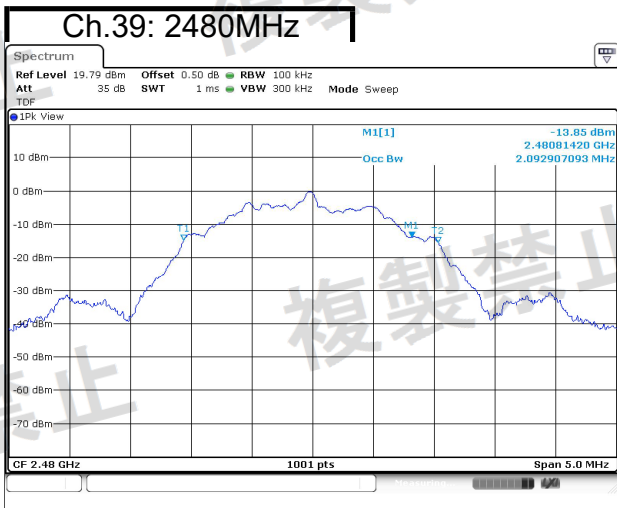
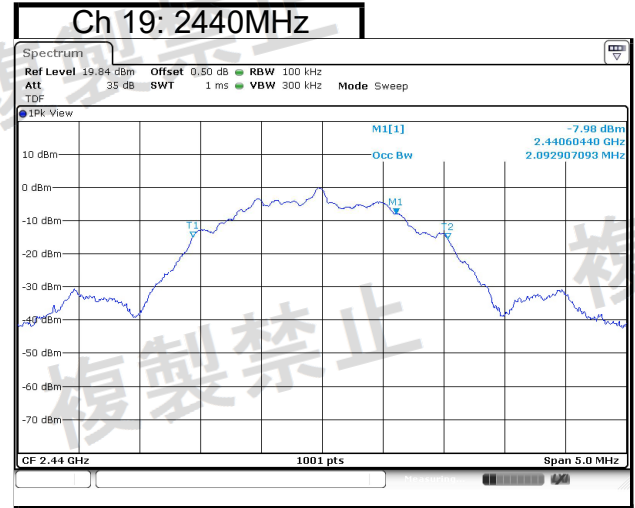
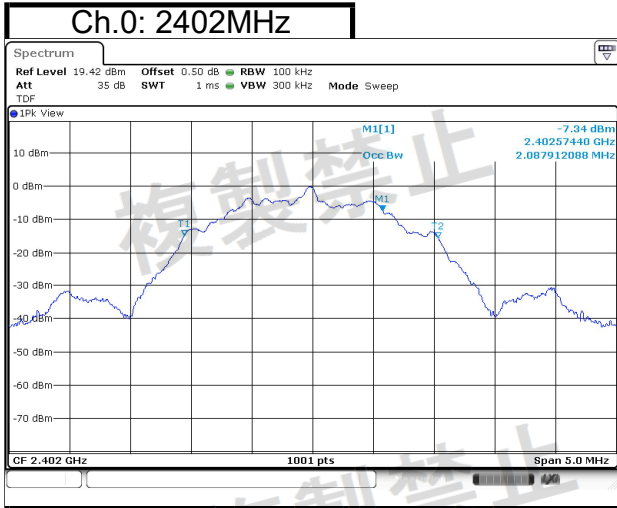
7. Test chart

7.1 Frequency tolerance (+10% voltage)



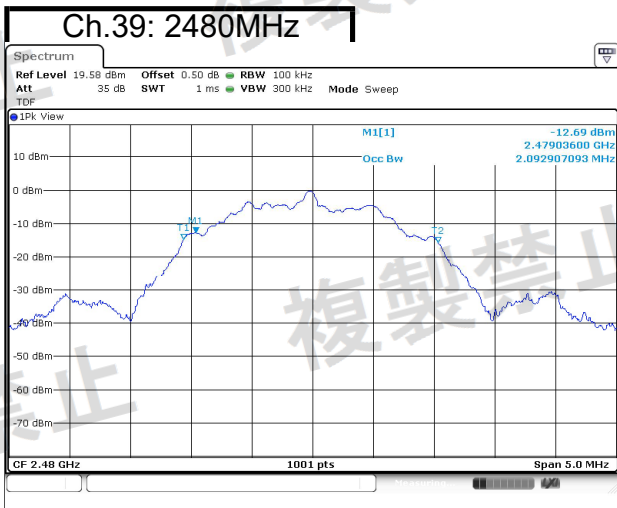
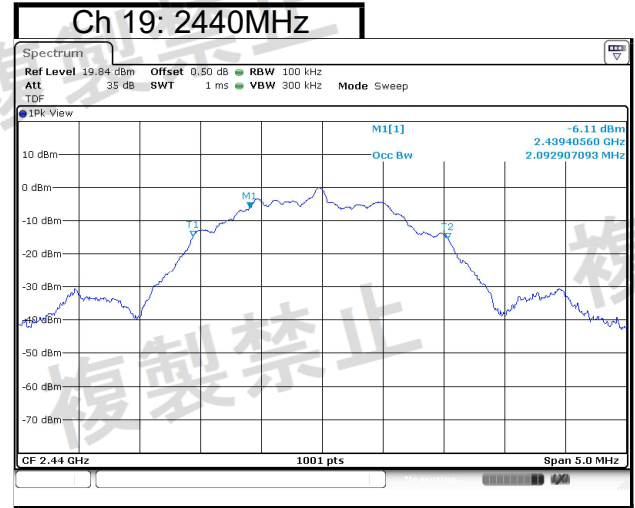
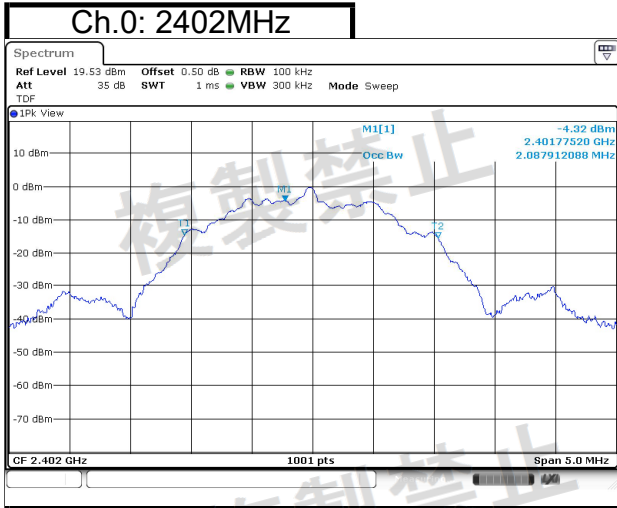
7. Test chart

7.2 Occupied bandwidth (Rated voltage)



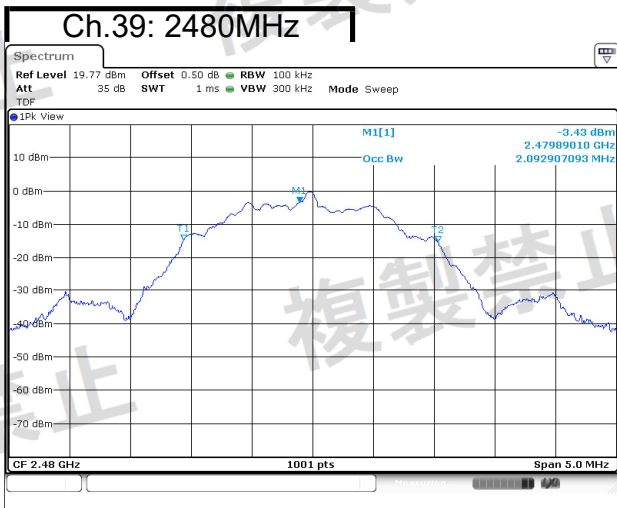
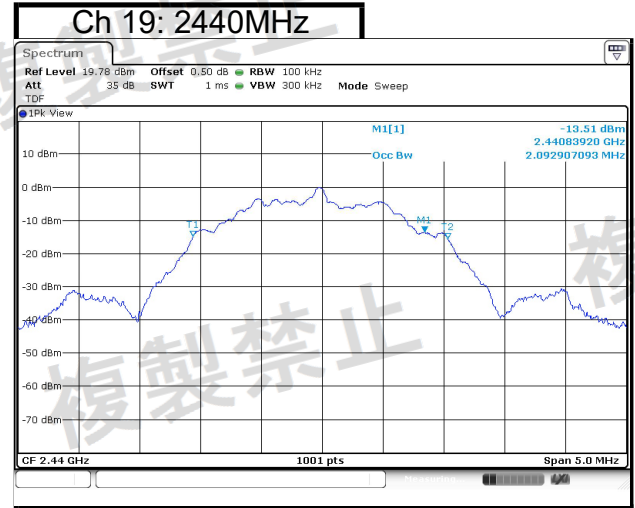
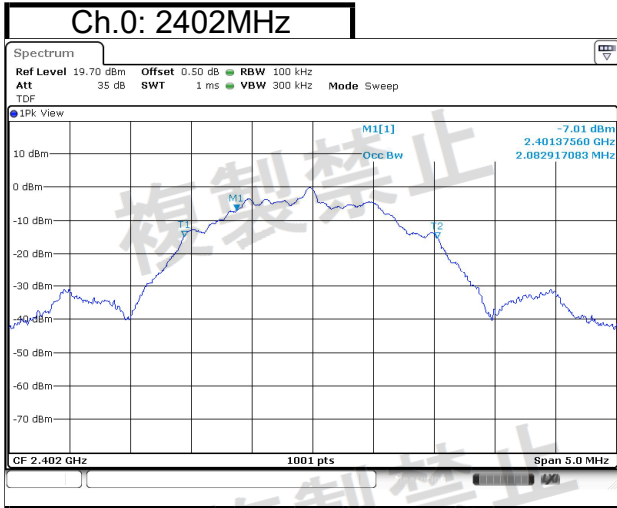
7. Test chart

7.2 Occupied bandwidth (-10% voltage)



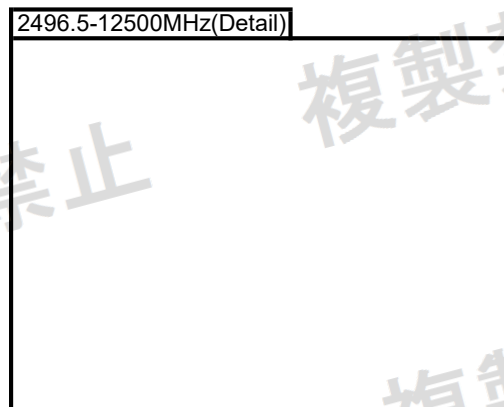
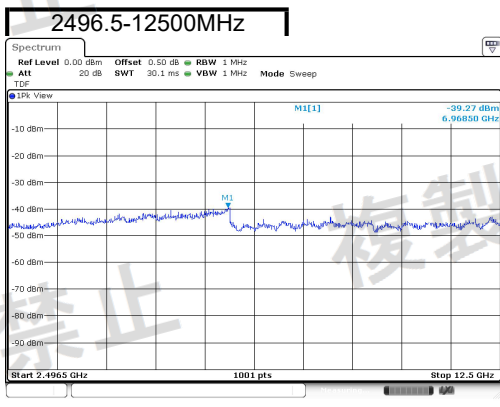
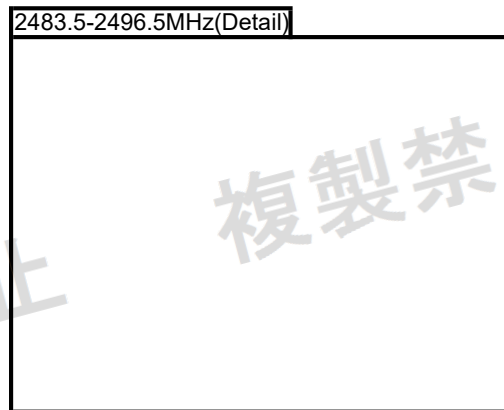
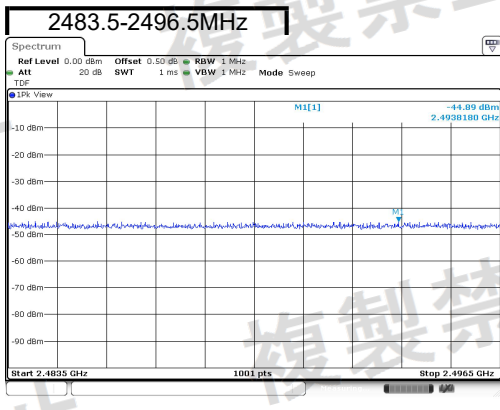
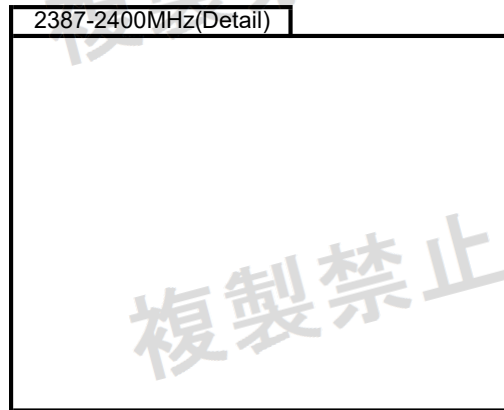
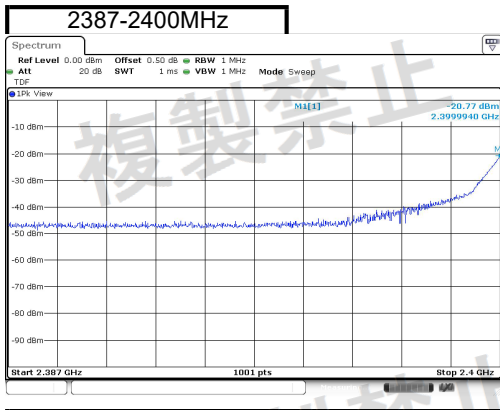
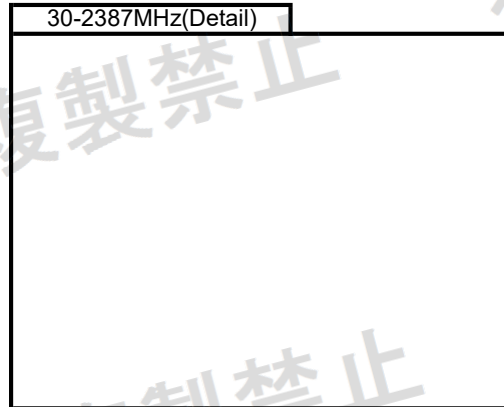
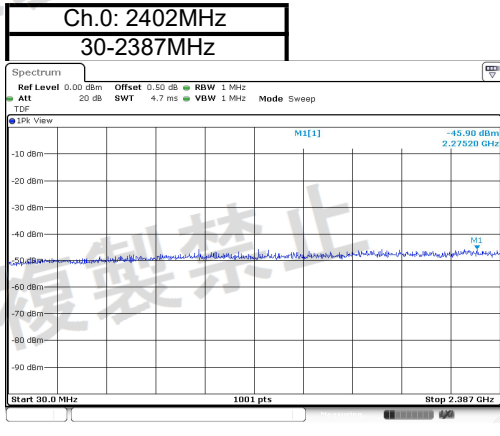
7. Test chart

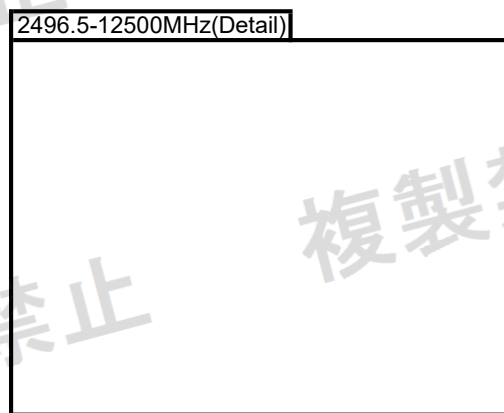
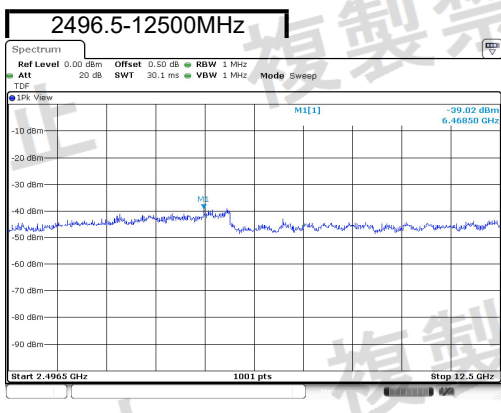
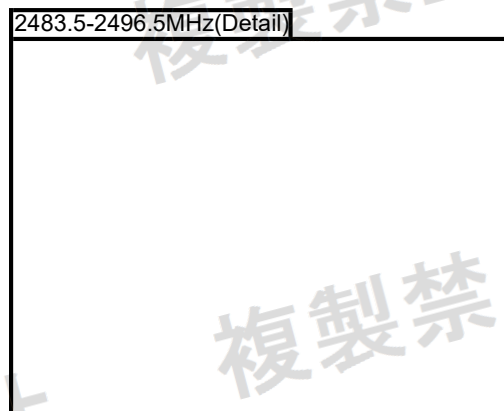
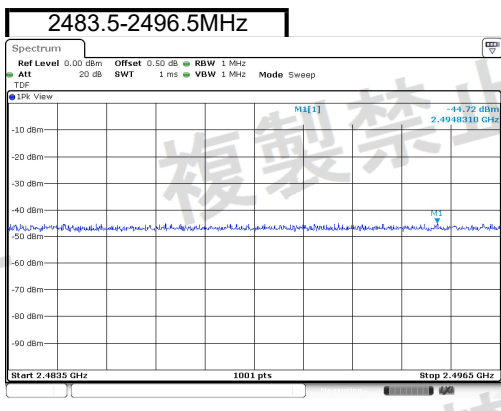
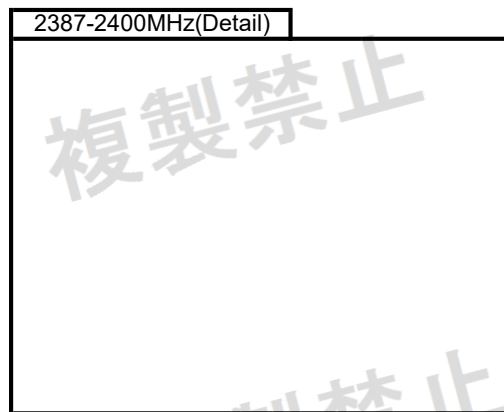
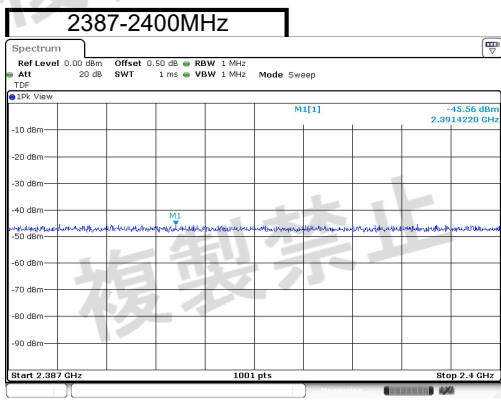
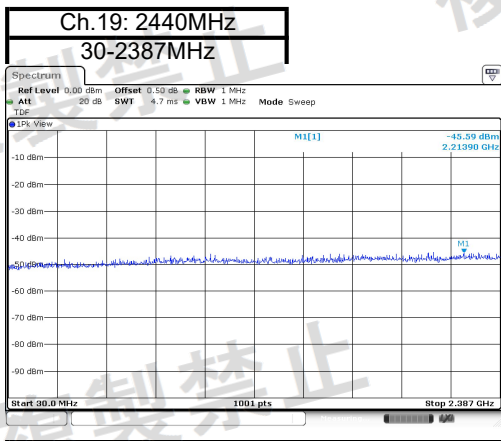
7.2 Occupied bandwidth (+10% voltage)

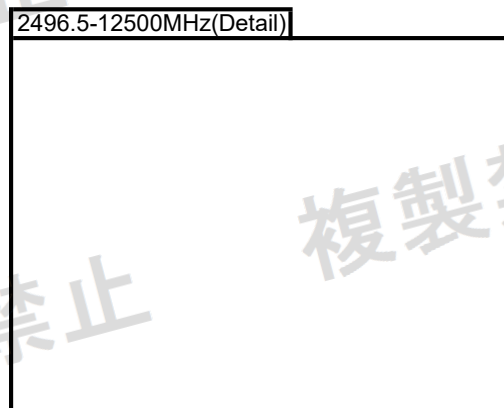
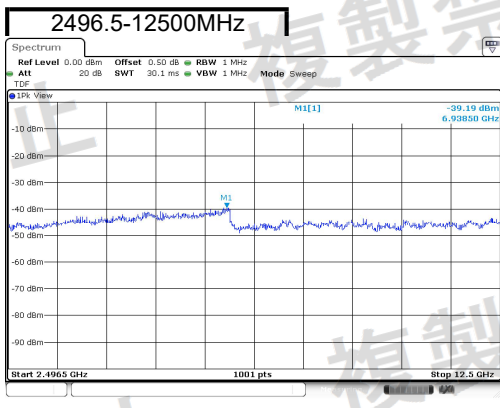
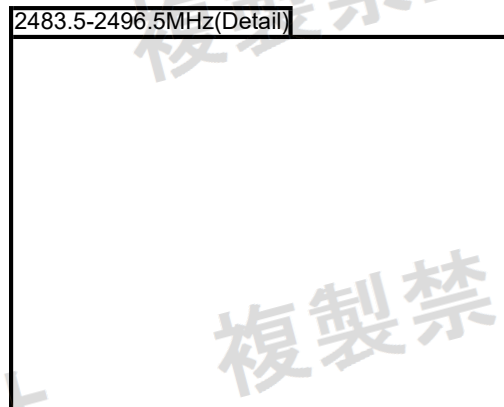
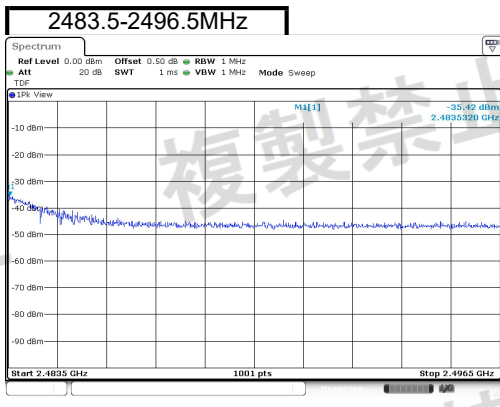
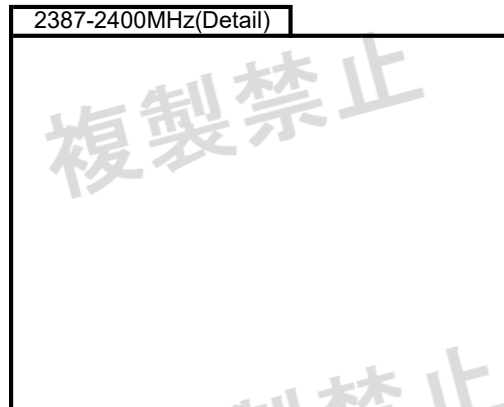
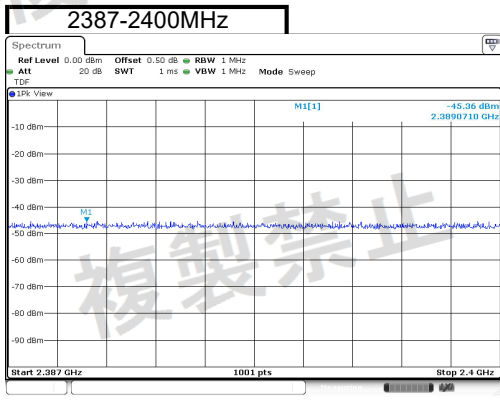
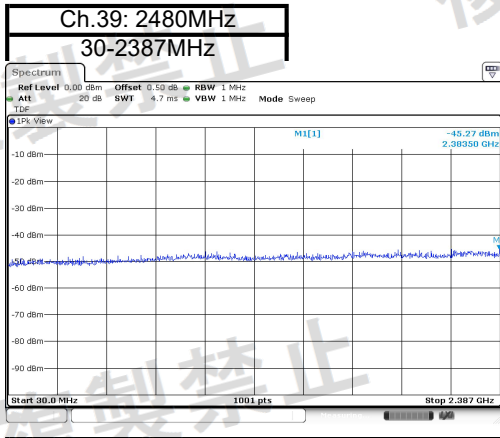


7. Test chart

7.3 Unwanted(Spurious) emission strength (Rated voltage)

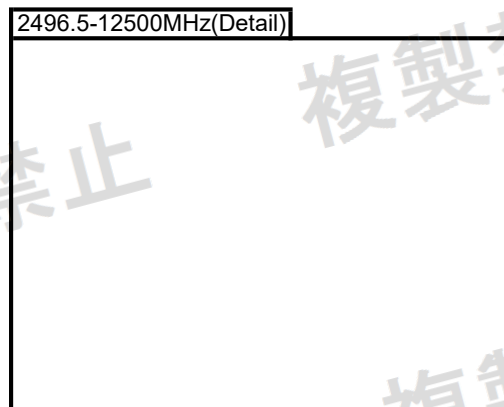
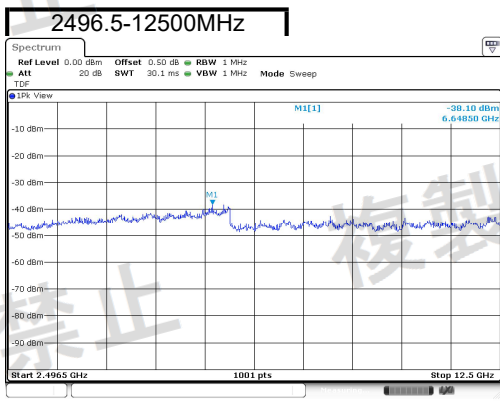
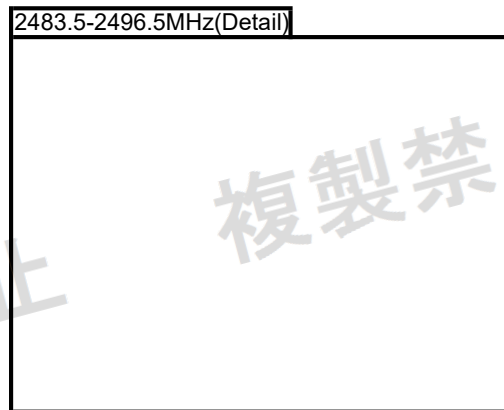
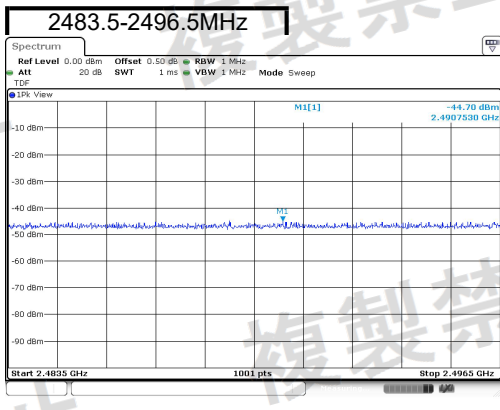
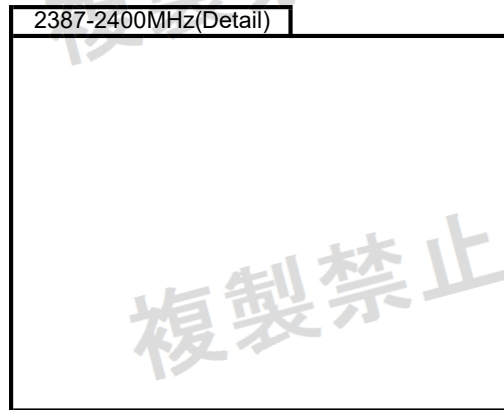
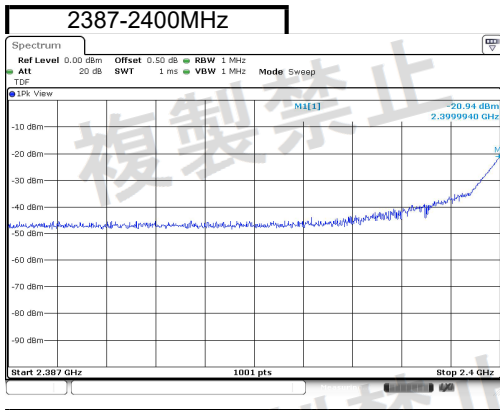
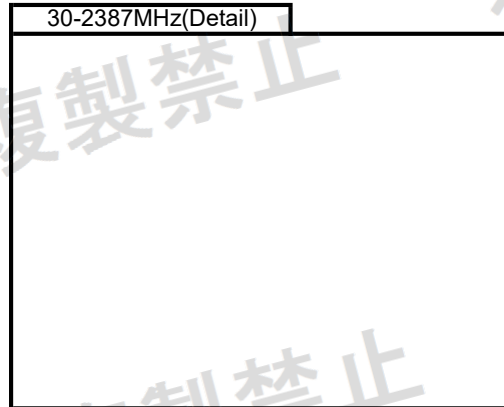
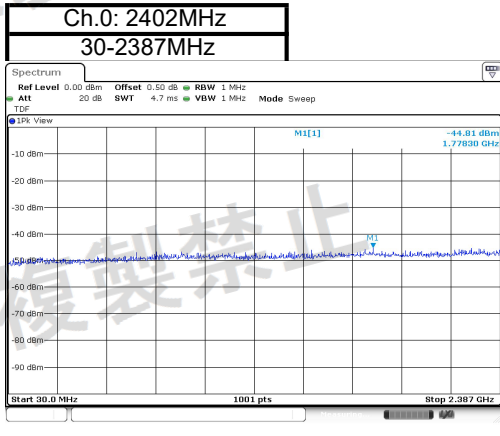


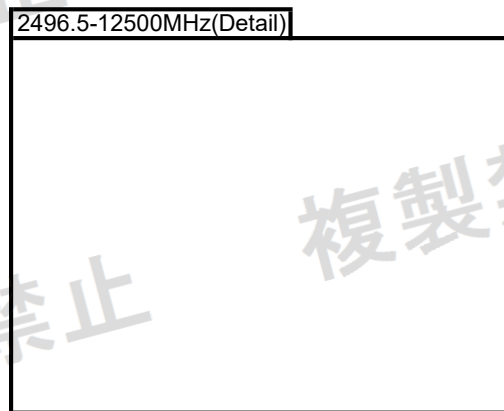
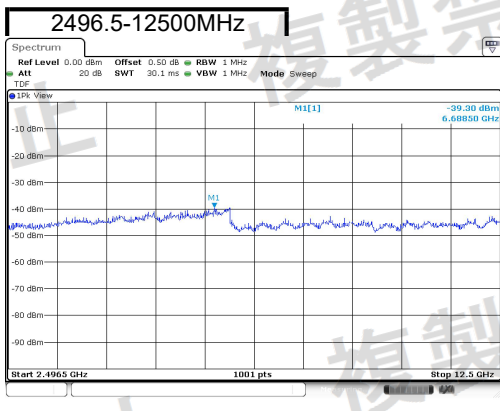
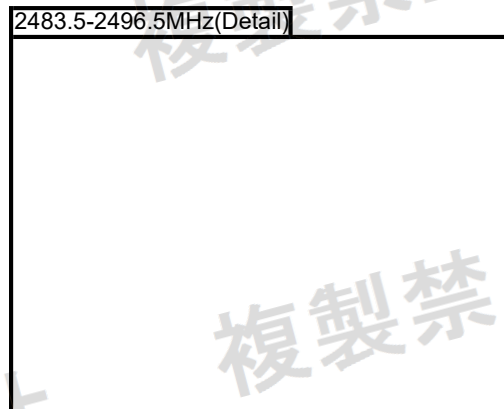
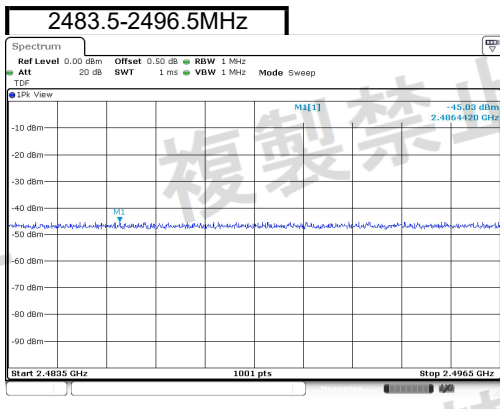
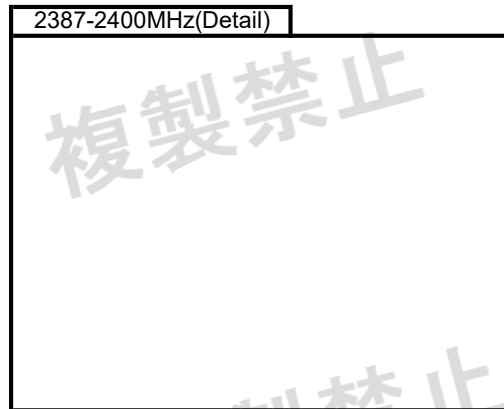
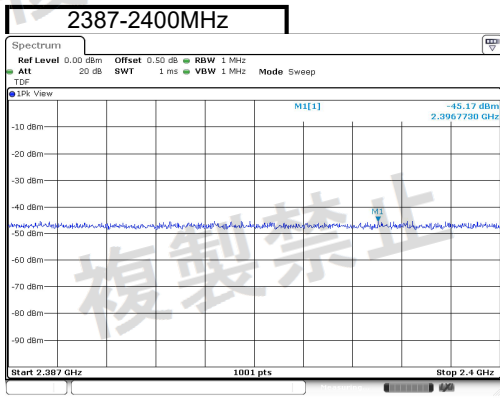
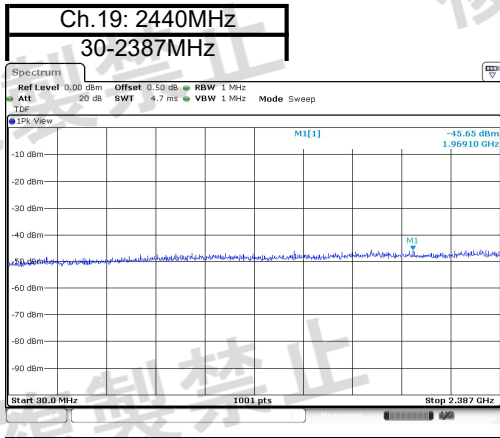


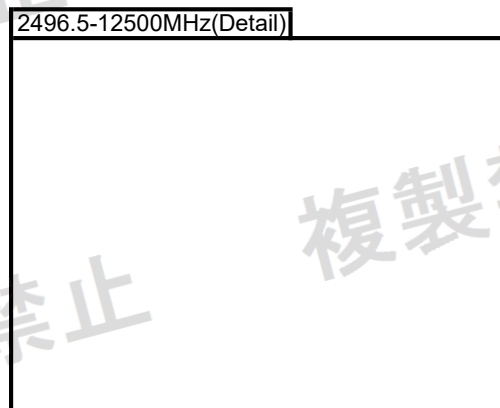
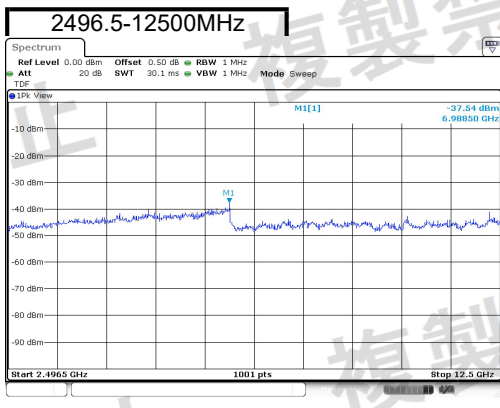
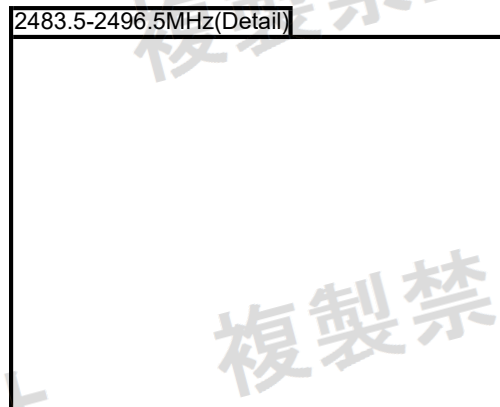
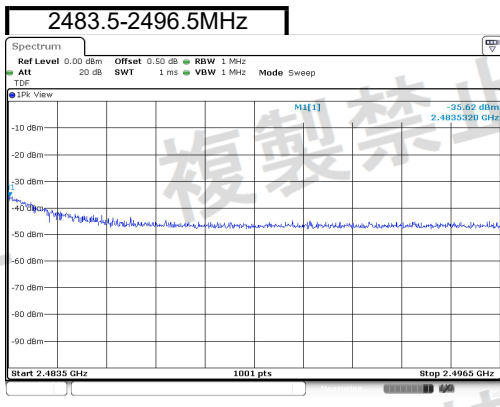
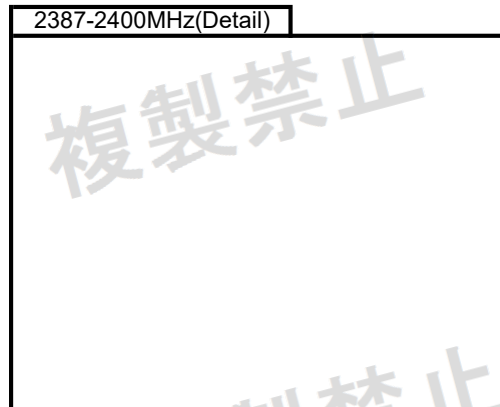
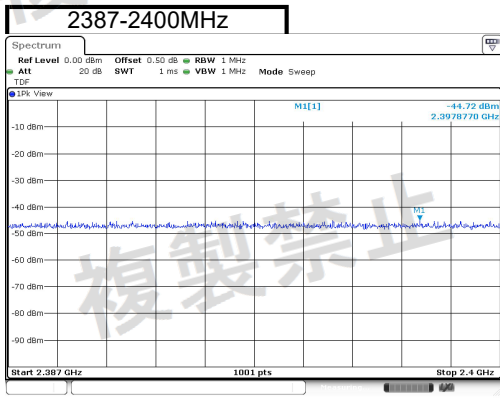
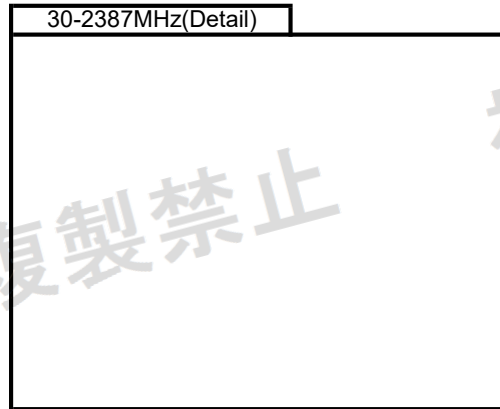
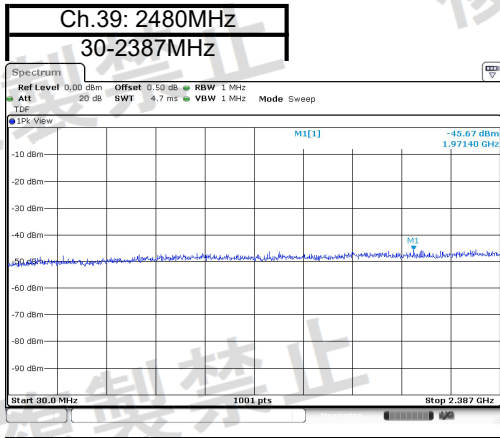


7. Test chart

7.3 Unwanted(Spurious) emission strength (-10% voltage)

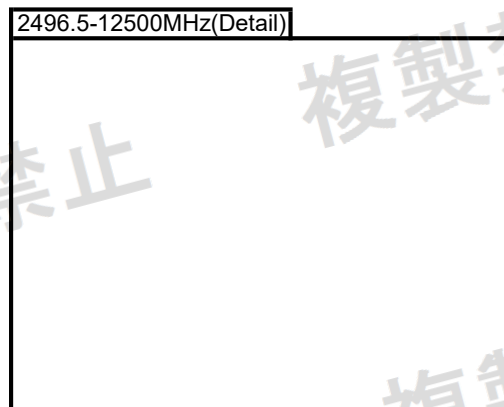
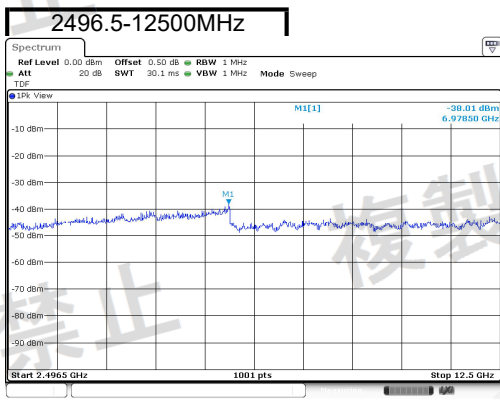
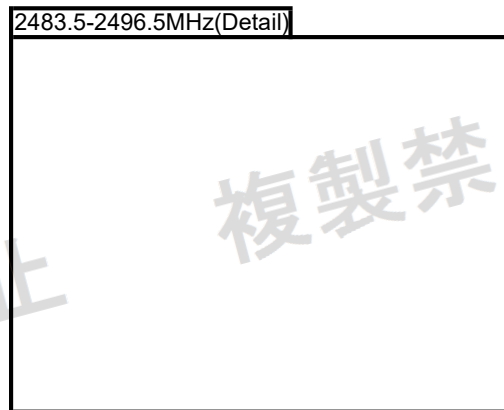
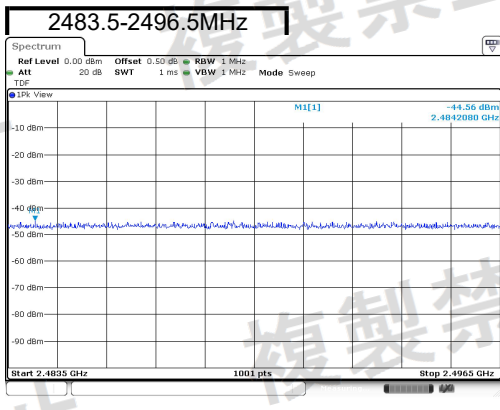
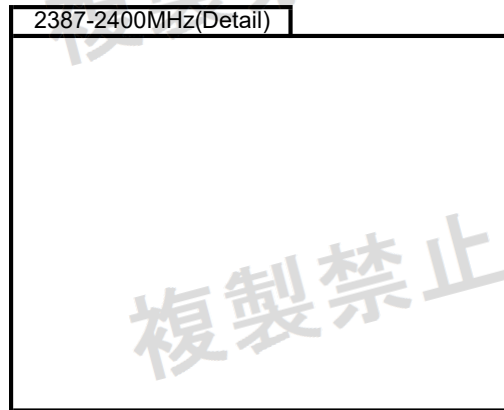
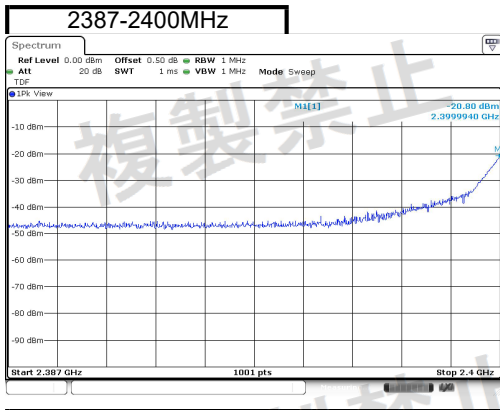
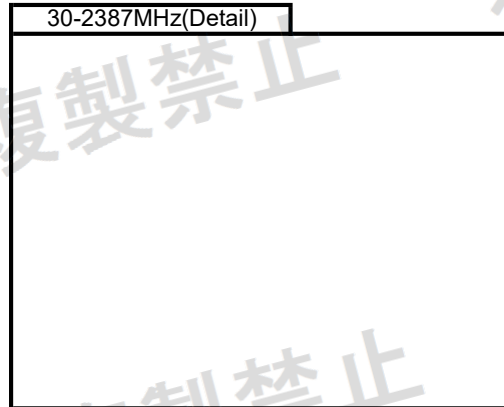
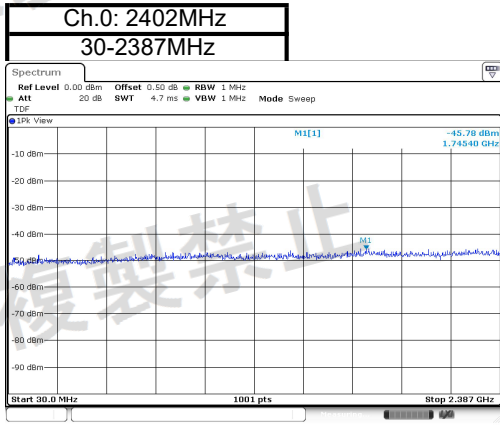


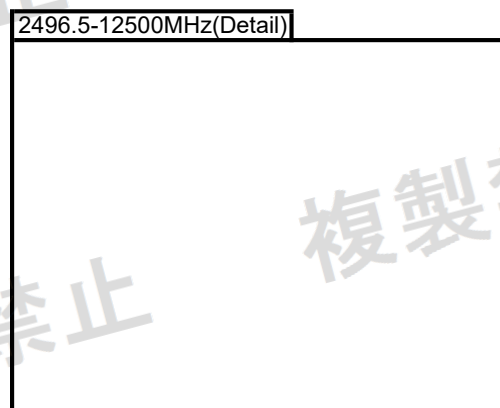
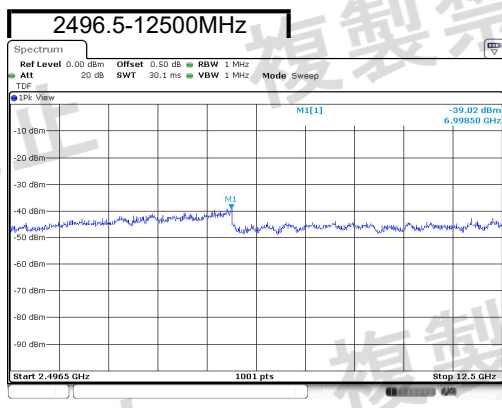
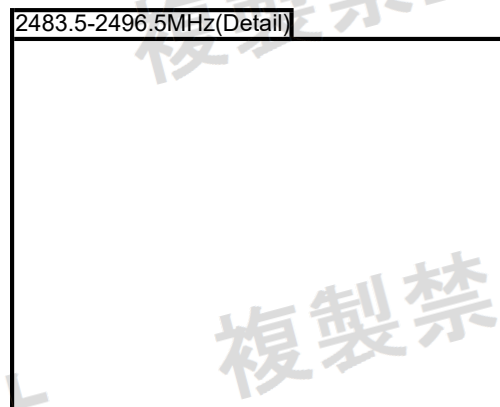
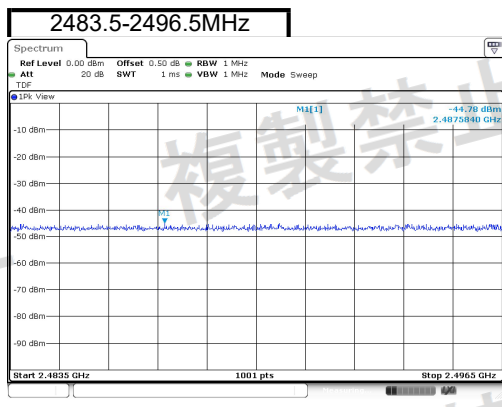
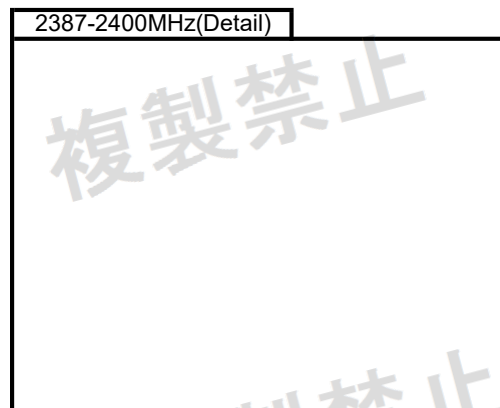
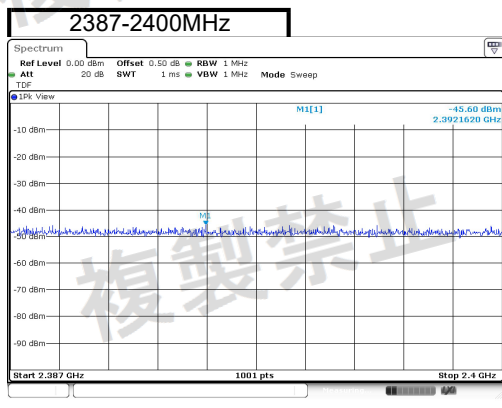
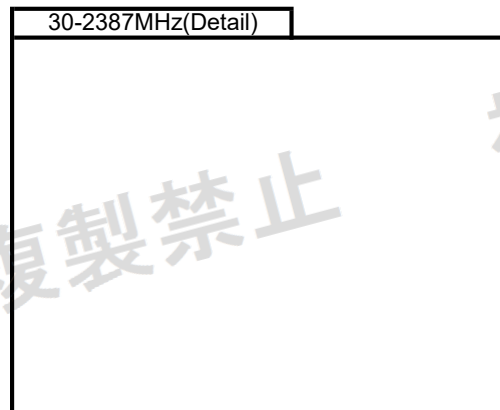
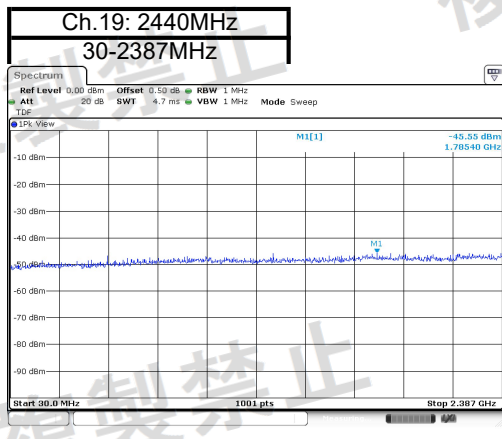


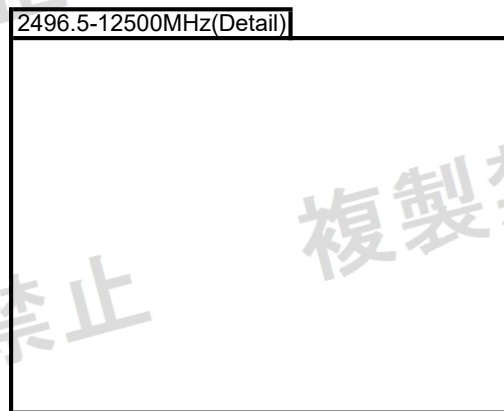
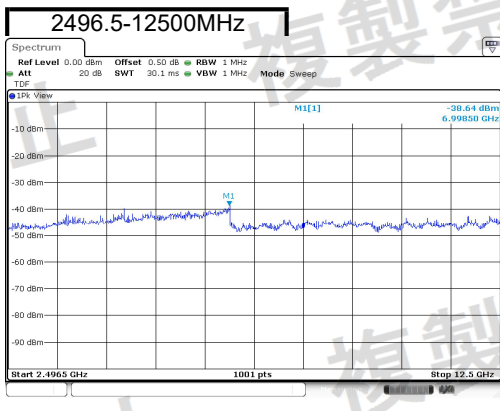
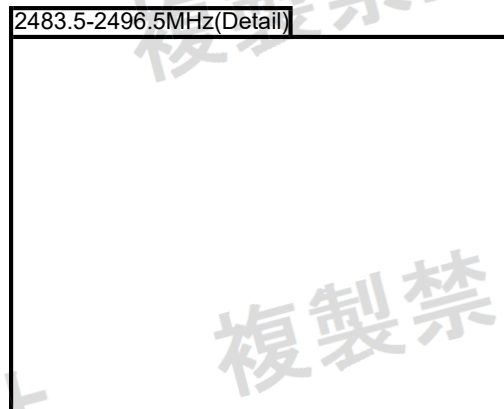
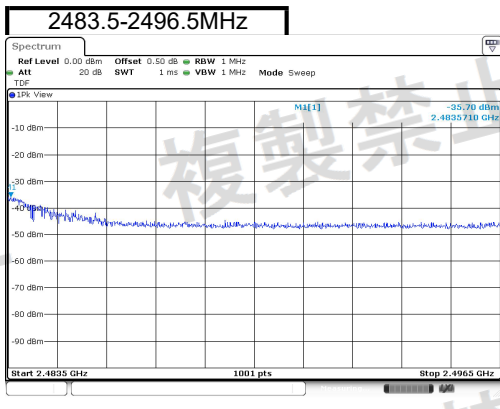
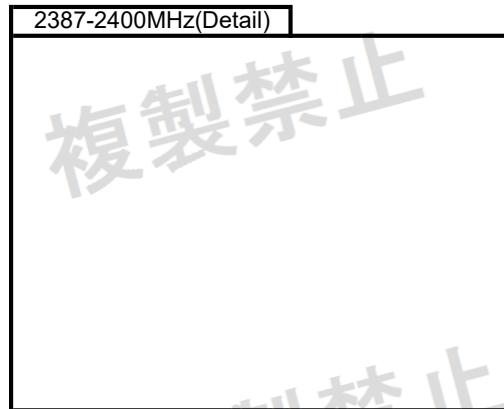
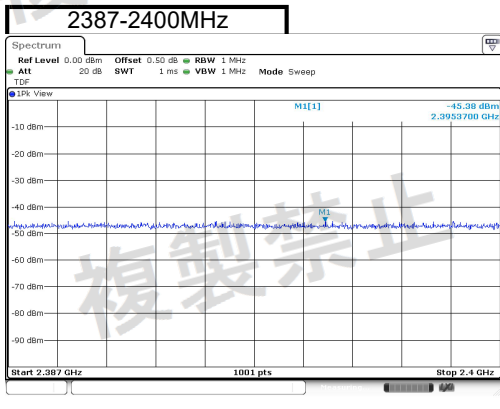
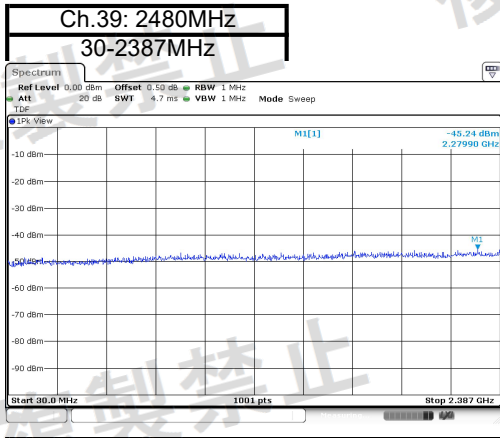


7. Test chart

7.3 Unwanted(Spurious) emission strength (+10% voltage)

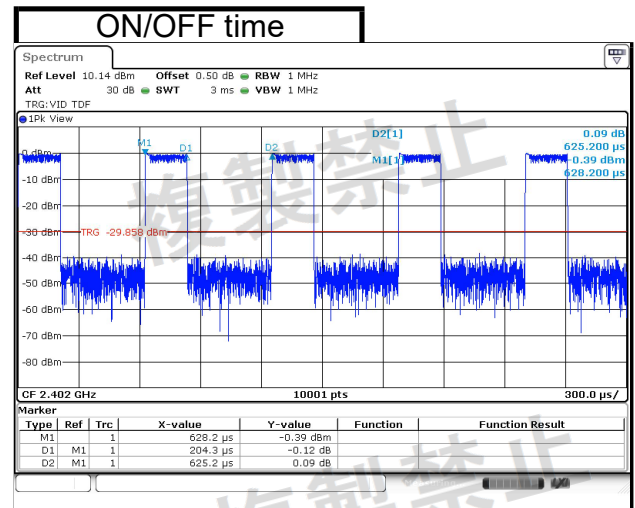
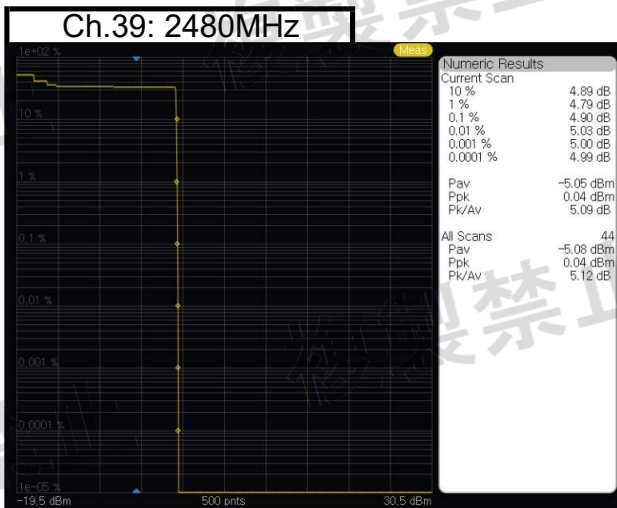
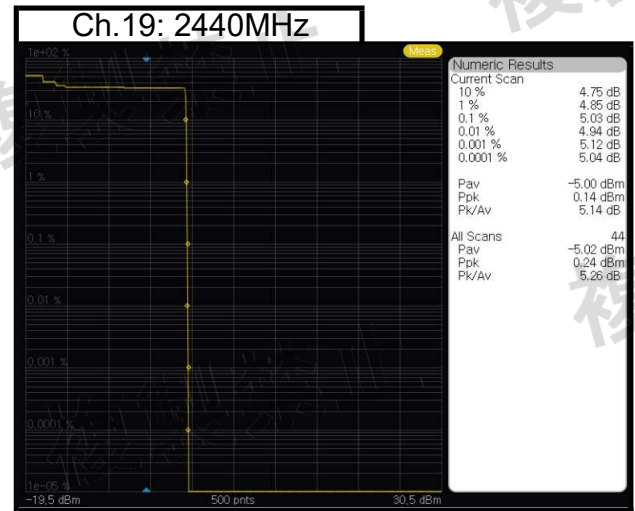
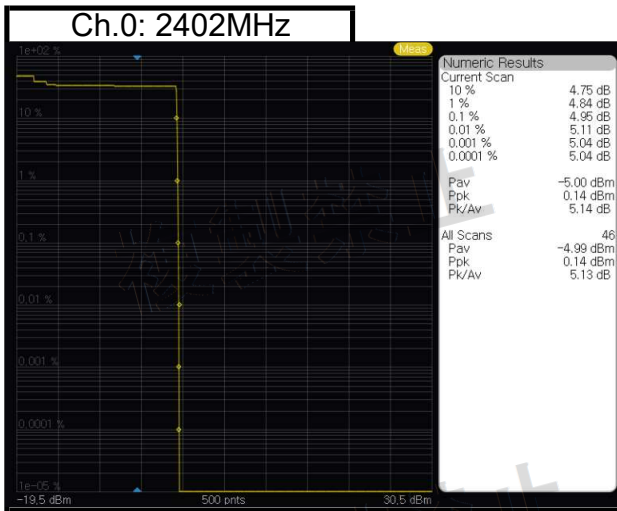






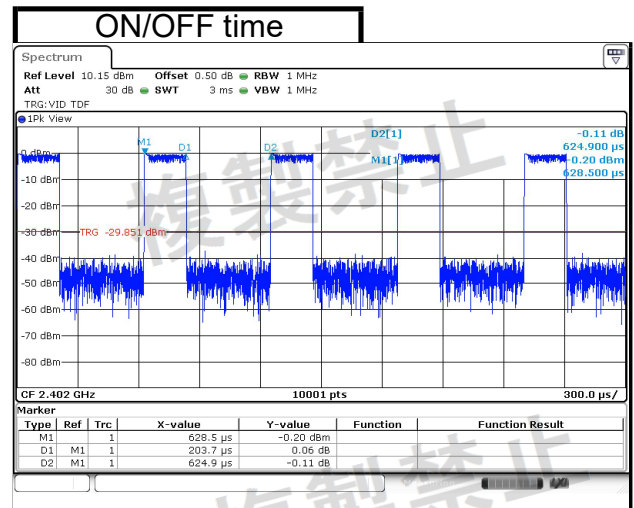
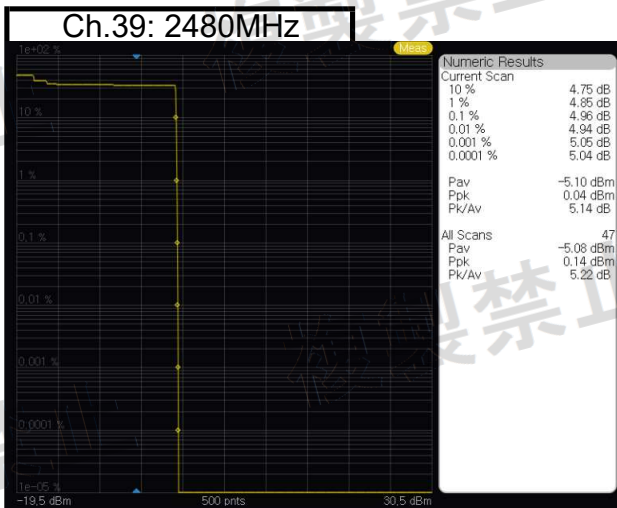
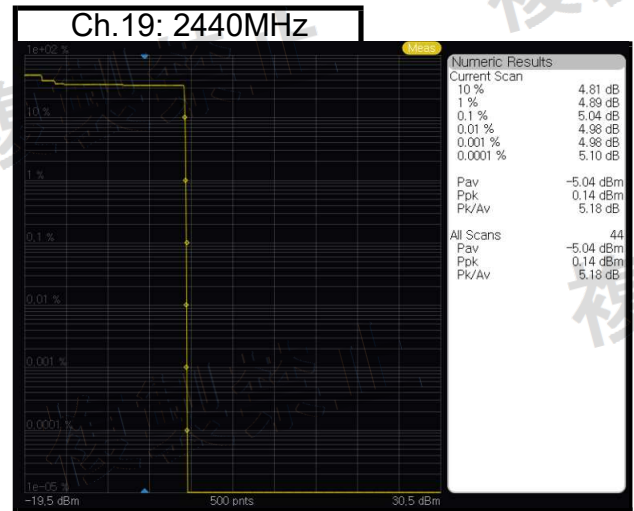
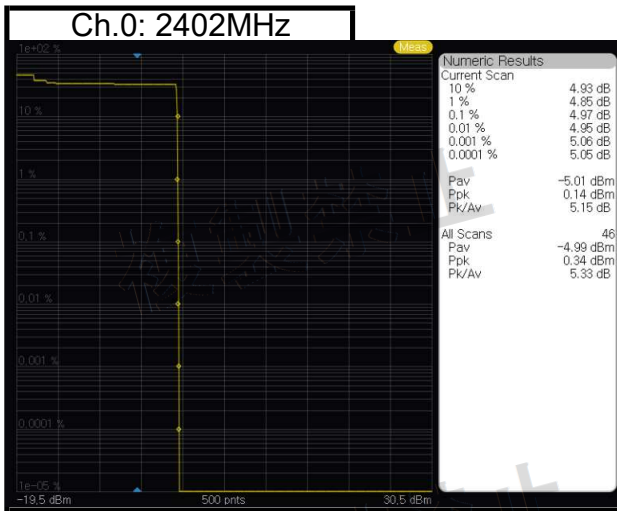
7. Test chart

7.4 RF output power tolerance (Rated voltage)



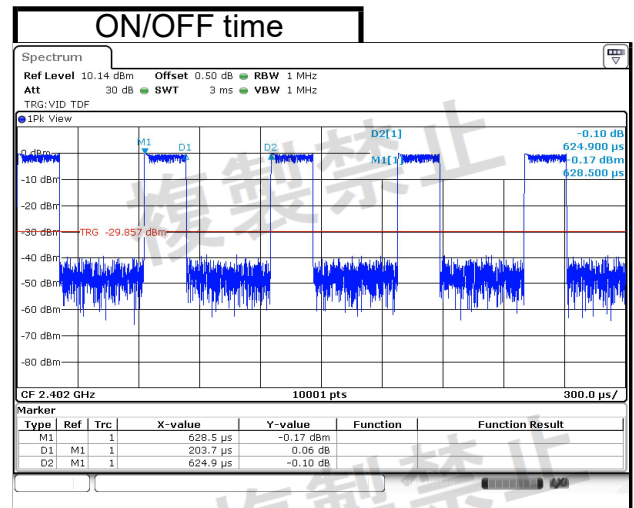
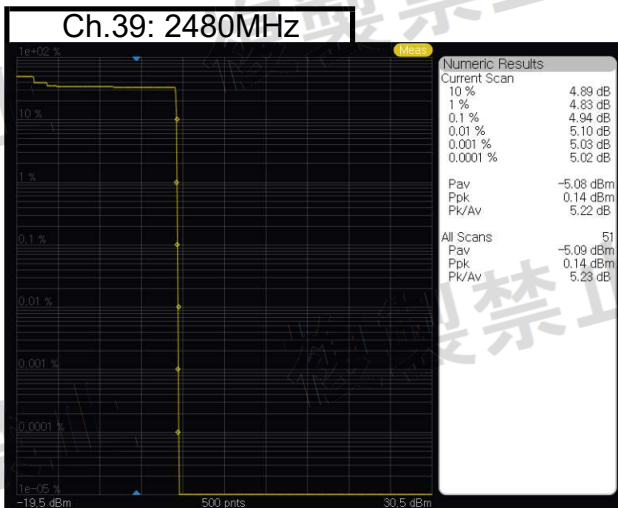
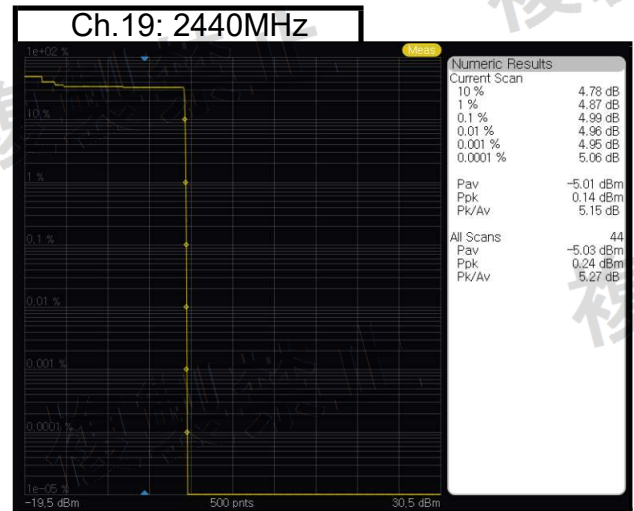
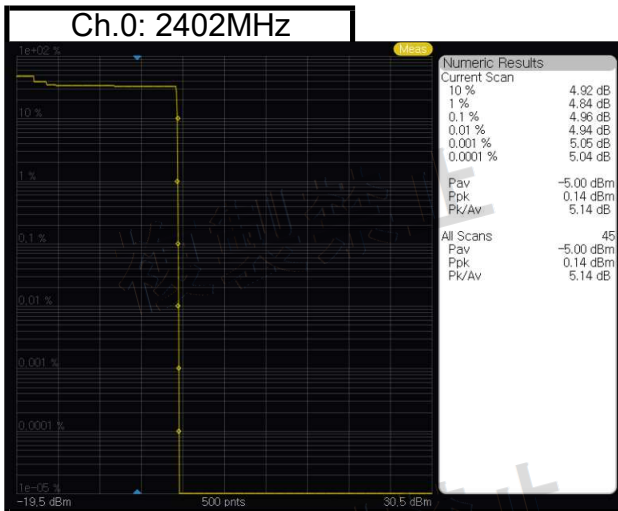
7. Test chart

7.4 RF output power tolerance (-10% voltage)



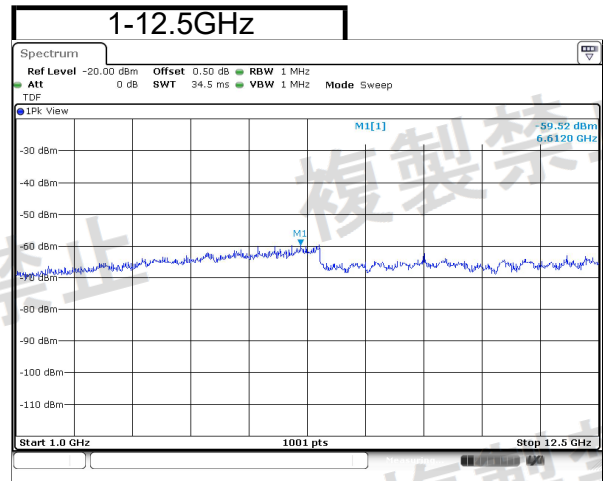
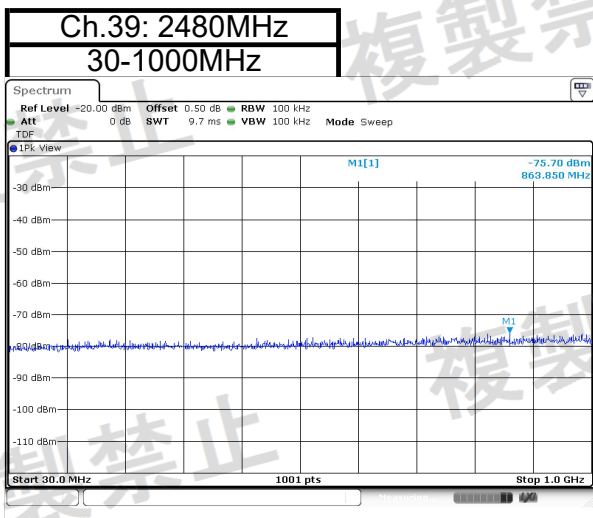
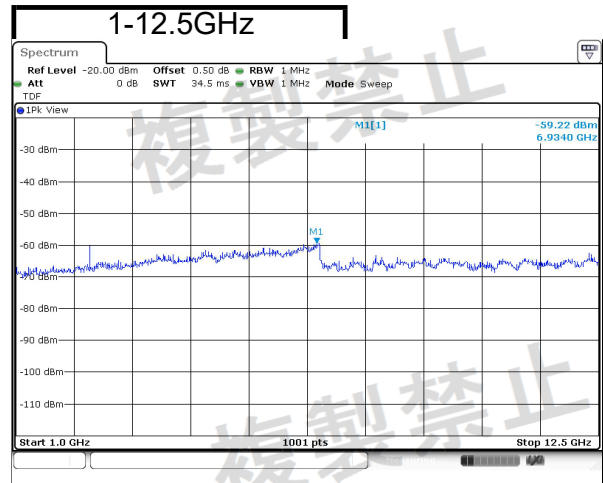
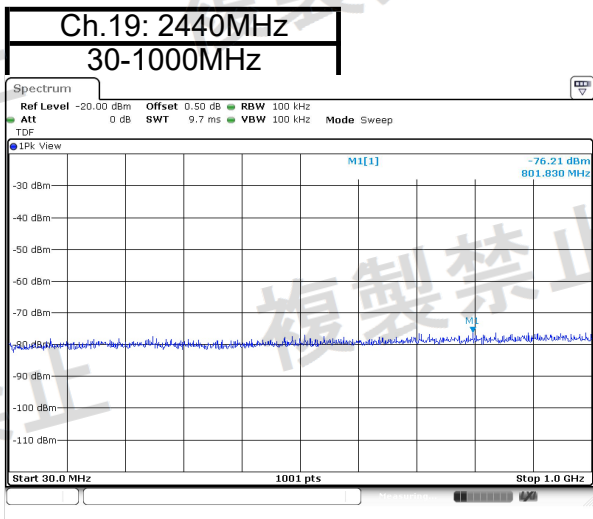
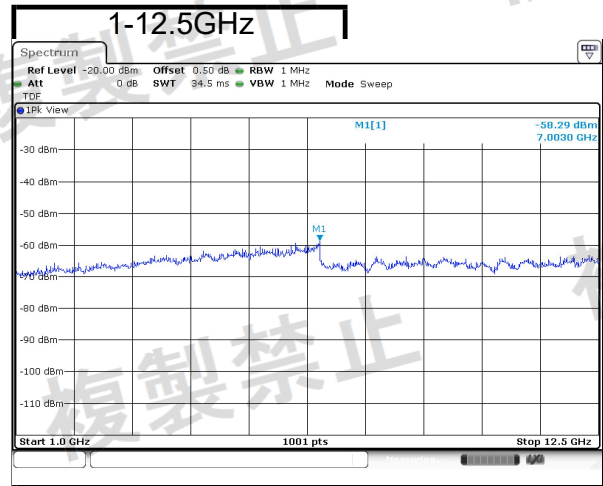
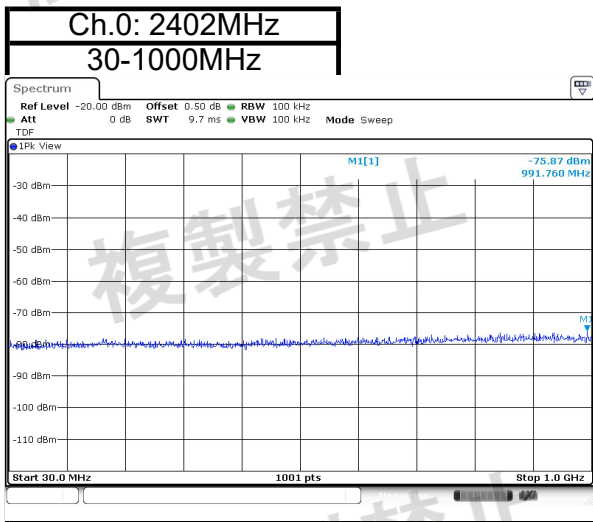
7. Test chart

7.4 RF output power tolerance (+10% voltage)



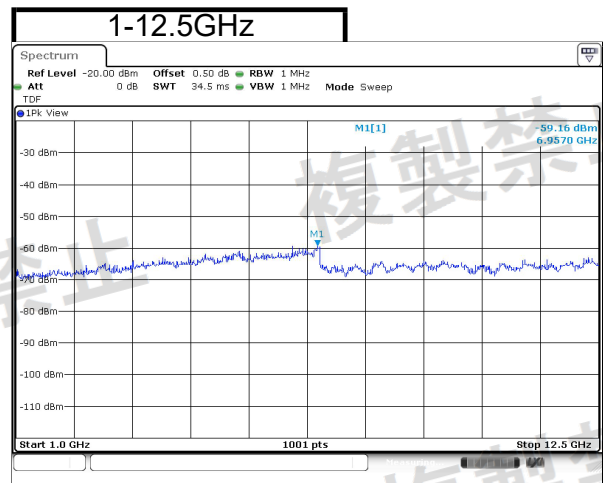
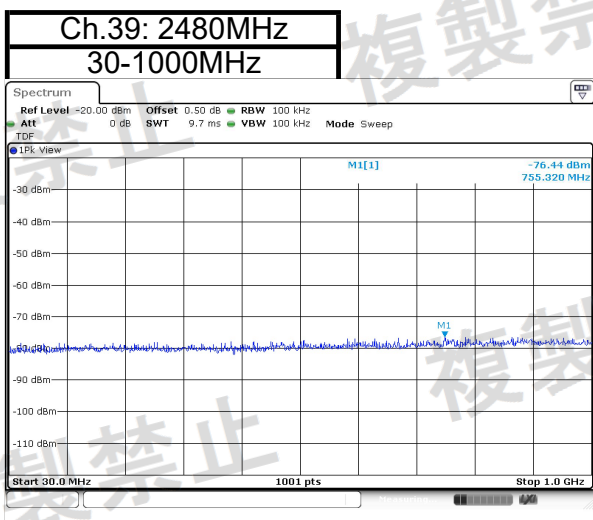
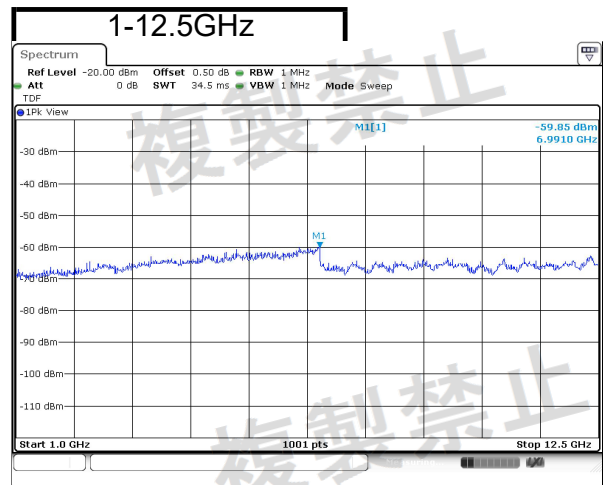
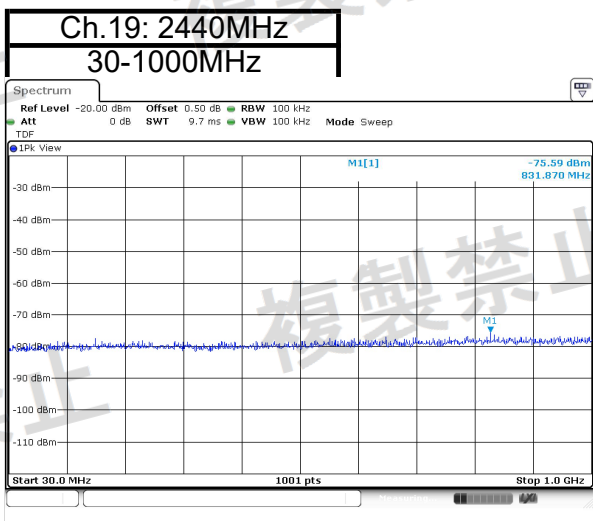
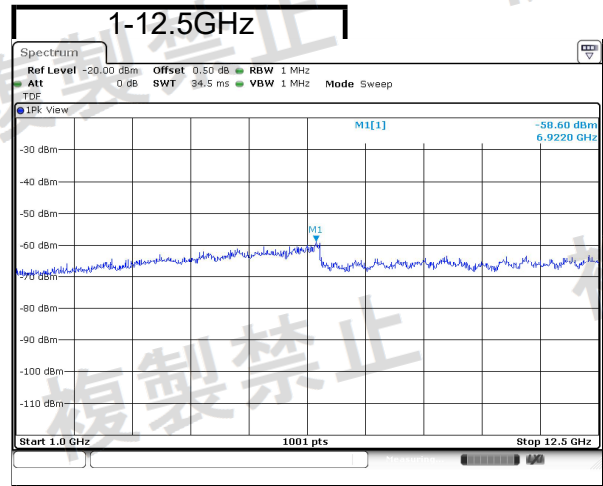
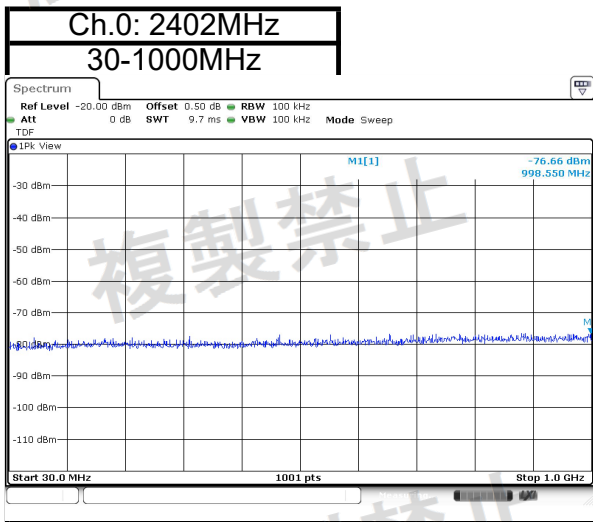
7. Test chart

7.5 Secondary emitted radio wave strength (Rated voltage)



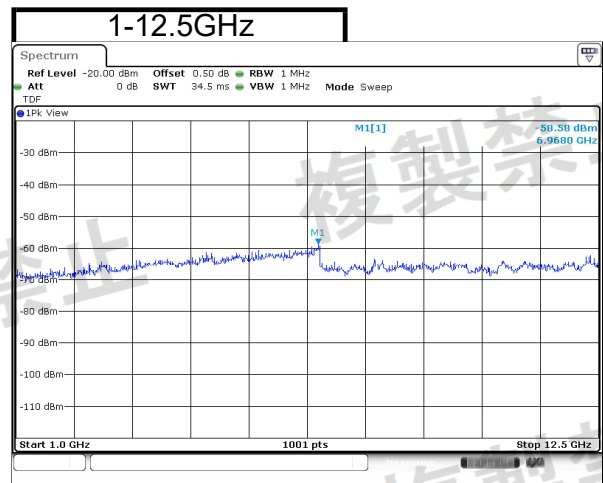
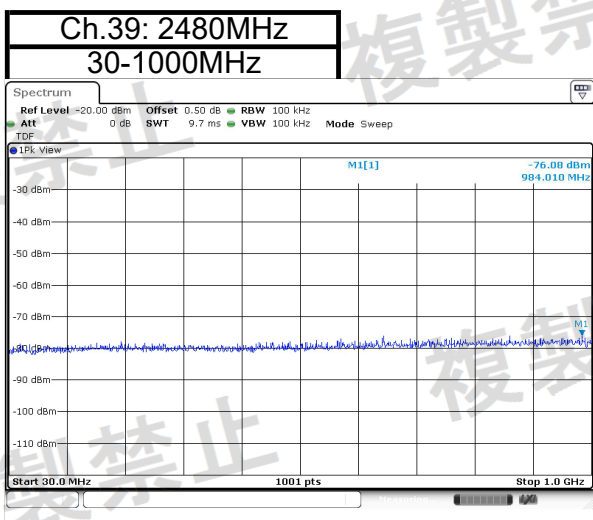
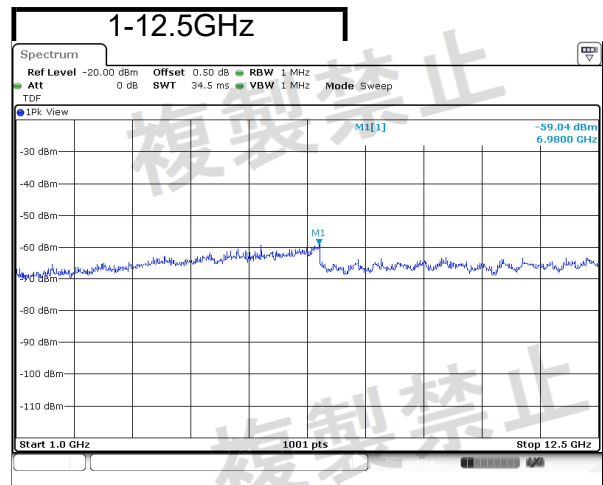
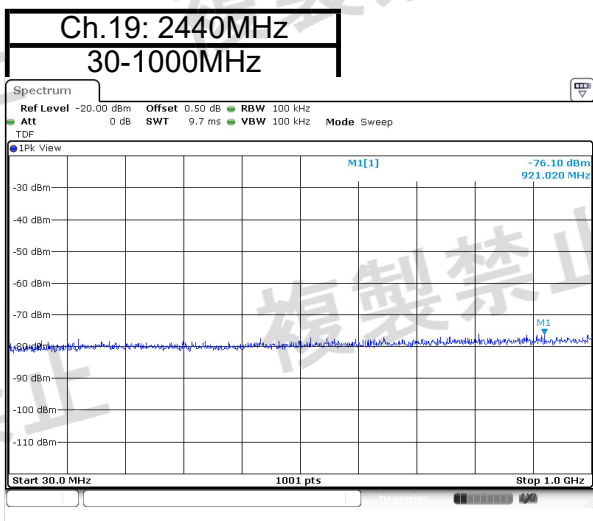
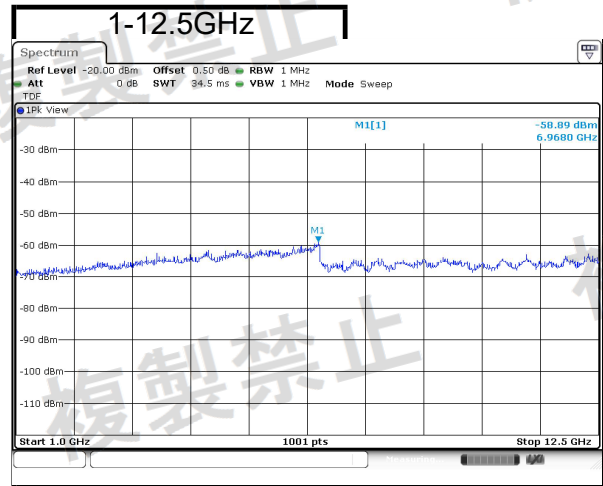
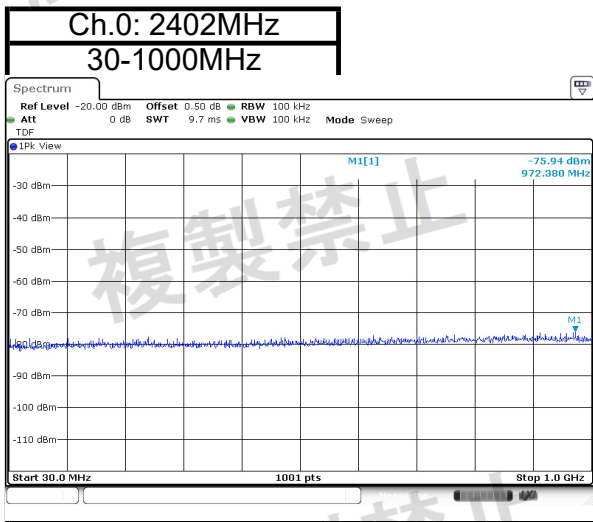
7. Test chart

7.5 Secondary emitted radio wave strength (-10% voltage)



7. Test chart

7.5 Secondary emitted radio wave strength (+10% voltage)



8. Laboratory description

1. Location

Name: Eurofins KCTL Co.,Ltd.

65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea

Telephone Number: +82 31 285 0894

Facsimile Number: +82 505 299 8311

2. Accreditation and Registration

1) FCC

Site Designation No.: KR0040

Site Registration No.: 687132

2) VCCI

Registration No.: R-3327, G-198, C-3706, T-1849

3) Industry Canada

Registration No.: 8035A

Test Site : 8035A-2

4) KOLAS

Registration number : KT231