



Radio Test Report

Report No.: RJ180605C12-3

Test Model: ZX1

Received Date: Jun. 05, 2018

Test Date: Jul. 03 ~ Jul. 04, 2018

Issued Date: Jul. 13, 2018

Applicant: Carl Zeiss AG

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Release Control Record

Issue No.	Description	Date Issued
RJ180605C12-3	Original release	Jul. 13, 2018



1 Certificate of Conformity

Product: Digital Camera

Brand: ZEISS

Test Model: ZX1

Sample Status: Engineering sample

Applicant: Carl Zeiss AG

Test Date: Jul. 03 ~ Jul. 04, 2018

Standards: ARIB STD-T66 (V3.7), MIC notice 88 Appendix 43
Article 2 Paragraph 1 of Item 19

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou, **Date:** Jul. 13, 2018
Celine Chou / Specialist

Approved by : Bruce Chen, **Date:** Jul. 13, 2018
Bruce Chen / Project Engineer



2 Summary of Test Results

The EUT has been tested according to the following specifications:

Notice 88 Appendix 43 Reference	ARIB STD-T66 Ref.	Report Reference	Parameter	Test Results (Note)
General Provisions				
C	3.2 (4)	4.1	Frequency tolerance	C
D	3.2 (7)	4.2	Occupied bandwidth	C
E	3.2 (6)	4.4	Spurious emissions	C
Transmitting Equipment				
F	--	4.5	Antenna power	C
--	--	--	SAR	NA
Transmitting Antenna				
--	--	3.4	Type, configuration, etc. of transmitting antenna	C
--	--	3.5	Direction pattern of transmitting antenna	C
Receiving Equipment				
G	3.3 (1)	4.6	Spurious emissions of receiver	C
--	--	3.5	Refer to all articles for transmitting antenna	C
Operating Frequency 2400 to 2483.5MHz				
--	3.7 (1)	3.4	High Frequency/modulation section cannot be opened easily	C
--	3.1 (1)	3.1	Communication method	C
--	3.2 (1)a	3.1	Modulation method	C
--	3.2 (1)a	3.1	Spread spectrum method	C
--	3.2 (2)	4.5	Antenna power	C
--	3.6 (2)	4.5	Absolute gain of transmitting antenna	C
--	3.6 (2)	--	Angular width of principal radiation (AWPR)	NA
--	3.2 (10)	--	Number of carriers within 1 MHz bandwidth in OFDM	NA
--	3.2 (8)	4.3	Spreading bandwidth	C
--	3.2 (9)	4.3	Spreading factor	C
--	3.2 (11)	4.7	Frequency retention time (FH employed)	NA
--	3.4.1(1)	4.8	Interference Prevention Function	C
--	3.4.1(3)	--	Carrier Sense Capability	NA
Note: C = Conform NC = Not Conform NT = Not Tested NA = Not Applicable				



2.1 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration	Calibration Authority
Spectrum Analyzer Rohde & Schwarz	FSV40	100980	Apr. 17, 2018	Apr. 16, 2019	ETC
Signal Generator / Anritsu	E4438C	MY49071692	Sep. 20, 2017	Sep. 19, 2018	ETC
Power Meter / Anritsu	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018	ETC
Power Sensor / Anritsu	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018	ETC
DC power supply / Keysight	U8002A	MY56330015	Sep. 22, 2017	Sep. 21, 2018	NA

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in TR 100 028-1.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Parameter	Uncertainty
Occupied Bandwidth	491.896Hz
Spurious emissions	3.508dB
Output power density	2.889dB
Out of band radiated power	3.93dB
Frequency Tolerance	6805.18Hz

2.3 Modification Record

There were no modifications required for compliance.



3 General Information

3.1 General Description of EUT

Product	Digital Camera
Brand	ZEISS
Test Model	ZX1
Status of EUT	Engineering sample
Nominal Voltage	5Vdc from adapter or host equipment 7.2Vdc from battery
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK
Modulation Technology	FHSS
Transfer Rate	1/2/3Mbps
Operating Frequency	2402 ~ 2480MHz
Number of Channel	79
Rated RF Output Power Density	Refer to note
Conducted RF Output Power Density	Refer to note
Radiated RF Output Power Density	Refer to note
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter, Battery
Data Cable Supplied	0.95m shielded USB type C cable without core

Note:

1. The EUT consumes power from the following Adapter & Battery.

Adapter	
Brand	ZEISS
Model	EA1045SJR
Input Power	100-240Vac, 50/60Hz, 1.5A
Output Power	5Vdc, 3A or 9Vdc, 3A or 15Vdc, 3A or 20Vdc, 2.25A

Battery	
Brand	ZEISS
Model	DD-PS1E
Rating	7.2Vdc, 3190mAh, 22.9Wh

2. The following antennas were provided to the EUT.

No.	Brand	Model	Type	Connector	Gain (dBi)	
					2.4G	5G
1	LYNwave	ALA160-221033-000000	PCB	IPEX4	-1.72	1.69
2	LYNwave	ALA160-222040-000000	PCB	IPEX4L	-2.40	3.09



3. The power table as below:

	Rated power (mW/MHz)	Total Conducted RF output power density (mW/MHz)	Radiated RF output power density (mW/MHz)
Modulation: GFSK			
Normal mode	0.020	0.022	0.015
AFH mode	0.080	0.087	0.059
Modulation: $\pi/4$ -DQPSK			
Normal mode	0.040	0.045	0.031
AFH mode	0.150	0.174	0.117
Modulation: 8DPSK			
Normal mode	0.040	0.046	0.031
AFH mode	0.150	0.176	0.119



3.2 Description of Test Modes

79 channels are provided for BT-EDR mode:

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

Note 1: By means of test software (QRCT) provided by manufacture, the power levels during the tests were set according to the following codes:

Note 2: Pre-Scan has been conducted to determine the worst-case mode from packet type; we found the DH5 was the worst case, and chosen for final test. Following test items were selected for the final test as listed below.

Test Items
Spurious emissions
Power density (Antenna power)
Occupied / spreading bandwidth

Bluetooth EDR

Modulation type: GFSK		Modulation type: $\pi/4$ -DQPSK		Modulation type: 8DPSK	
Channel	Power setting	Channel	Power setting	Channel	Power setting
0	7	0	8	0	8
39	7	39	8	39	8
78	7	78	8	78	8



3.3 Test Conditions

Test Conditions	Voltage (Vdc)
Vnormal	7.20
Vmax.	8.36
Vmin.	6.00

3.4 Assembly

The modulation section, preamplifier, RF component etc, are shielded in the inside of the black plastic housing, and used the tenon and the glue on the PCB. Therefore, it is not capable of being open easily.

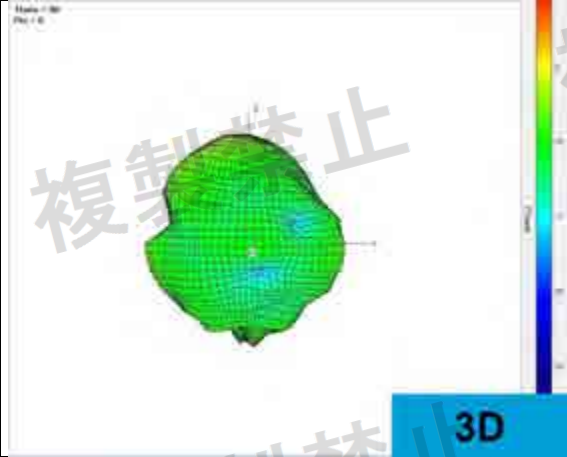
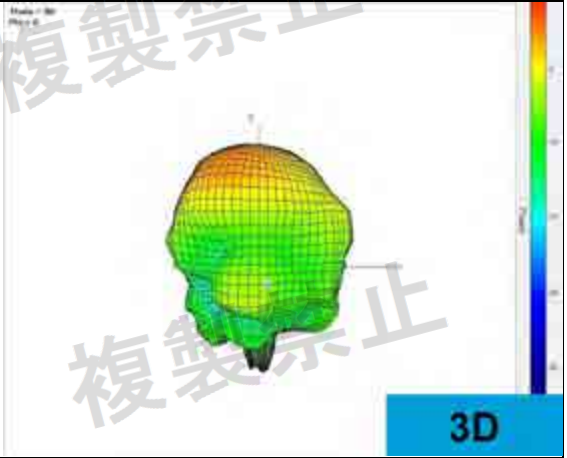
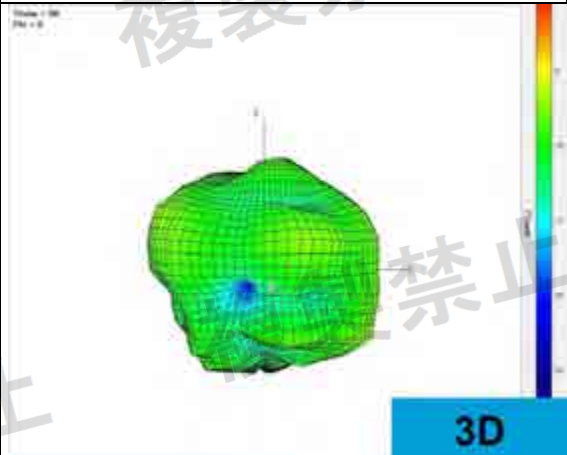
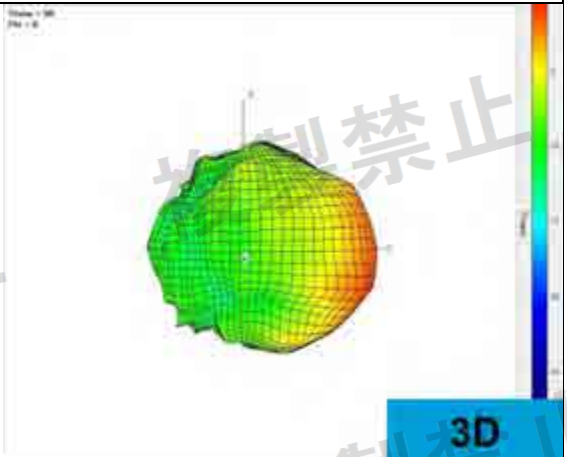


3.5 Antenna Specifications

3.5.1 Antenna Gain

No.	Brand	Model	Type	Connector	Gain (dBi)	
					2.4G	5G
1	LYNwave	ALA160-221033-000000	PCB	IPEX4	-1.72	1.69
2	LYNwave	ALA160-222040-000000	PCB	IPEX4L	-2.40	3.09

3.5.2 Antenna Pattern

Ant. No.	Antenna Pattern	
1	2.4G	5G
		
2	2.4G	5G
		



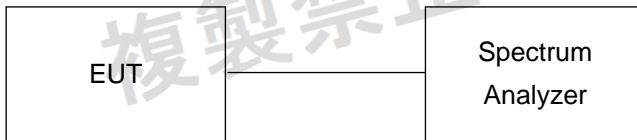
4 Test Results

4.1 Frequency Tolerance Measurement

4.1.1 Limits of Frequency Tolerance Measurement

Tolerance of frequency shall be +/- 50ppm

4.1.2 Test Setup



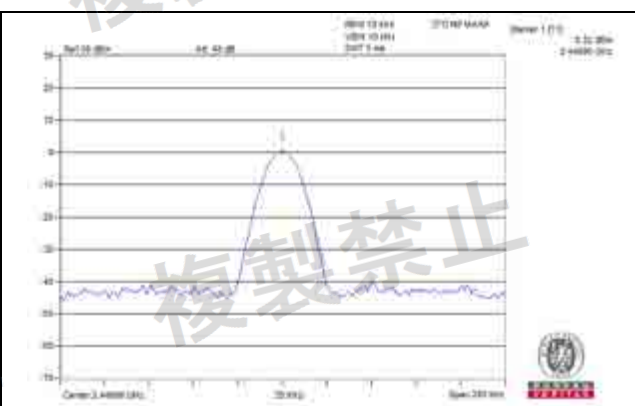
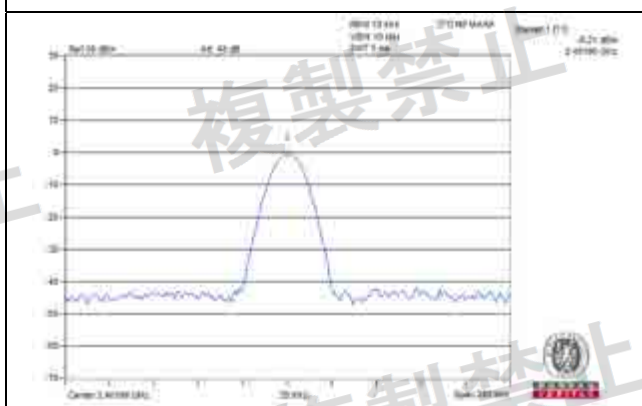


4.1.3 Test Results

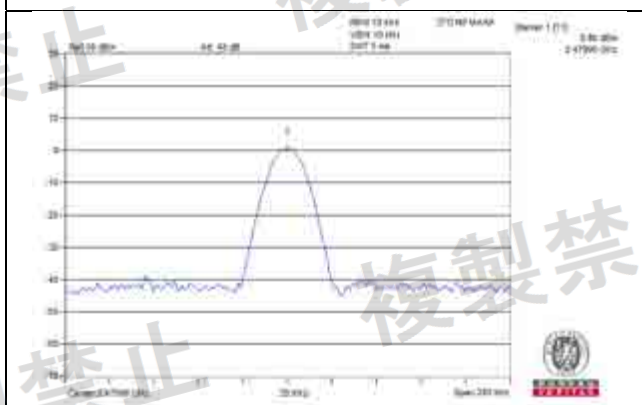
Modulation: GFSK

Environmental Conditions		25 deg.C, 68% RH					
Channel	Frequency (MHz)	Vnormal		Vmax.		Vmin.	
		Carrier frequency (MHz)	Frequency tolerance (ppm)	Carrier frequency (MHz)	Frequency tolerance (ppm)	Carrier frequency (MHz)	Frequency tolerance (ppm)
0	2402	2401.991600	-3.497	2401.992000	-3.330	2401.991600	-3.497
39	2441	2440.991600	-3.441	2440.991200	-3.605	2440.991600	-3.441
78	2480	2479.991600	-3.387	2479.991200	-3.548	2479.991600	-3.387

Vnormal



Channel 0



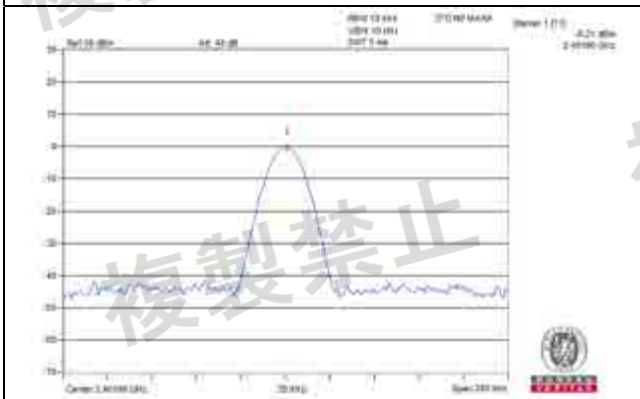
Channel 39

Channel 78

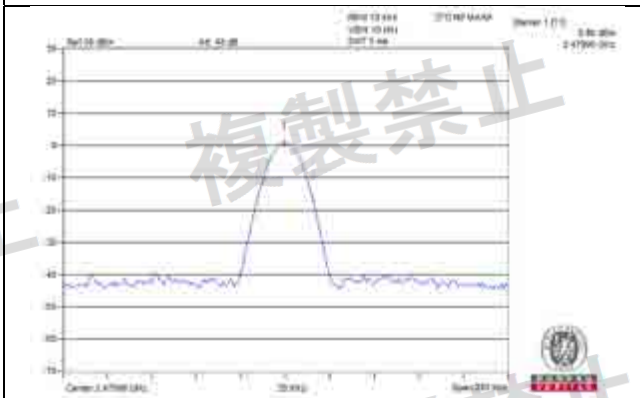
Measurement uncertainty: ± 206.50 Hz



Vmax.



Channel 0



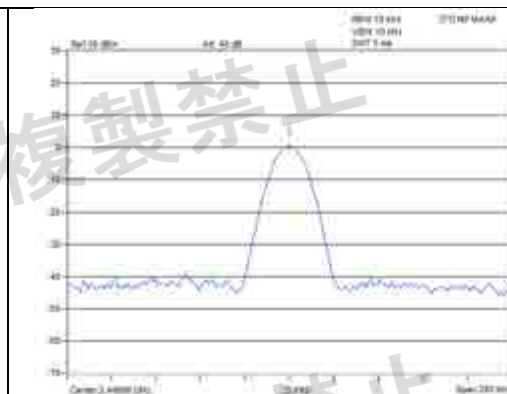
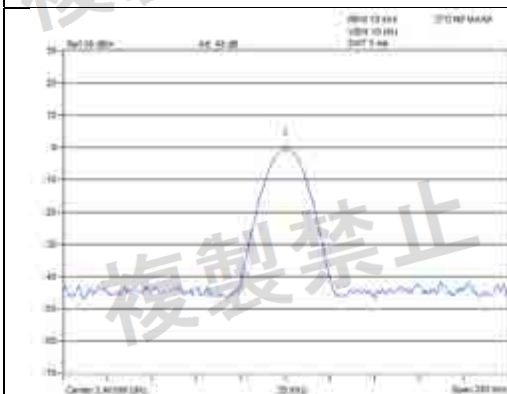
Channel 39

Channel 78

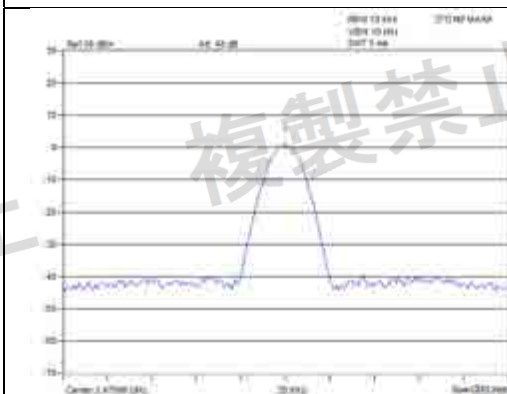
Measurement uncertainty: ± 206.50 Hz



Vmin.



Channel 0



Channel 39

Channel 78

Measurement uncertainty: ± 206.50 Hz

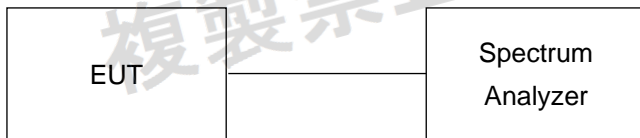


4.2 Occupied Bandwidth Measurement (99% power bandwidth)

4.2.1 Limits of Occupied Bandwidth Measurement

Item	Limit
Occupied bandwidth	<83.5 MHz

4.2.2 Test Setup





4.2.3 Test Results

Modulation: GFSK

Normal Mode:

Environmental Conditions	25 deg.C, 68% RH	
Vnormal	Vmax.	Vmin.
Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)
78.20	78.20	78.20

Note: For the test plots please refer to the below pages.

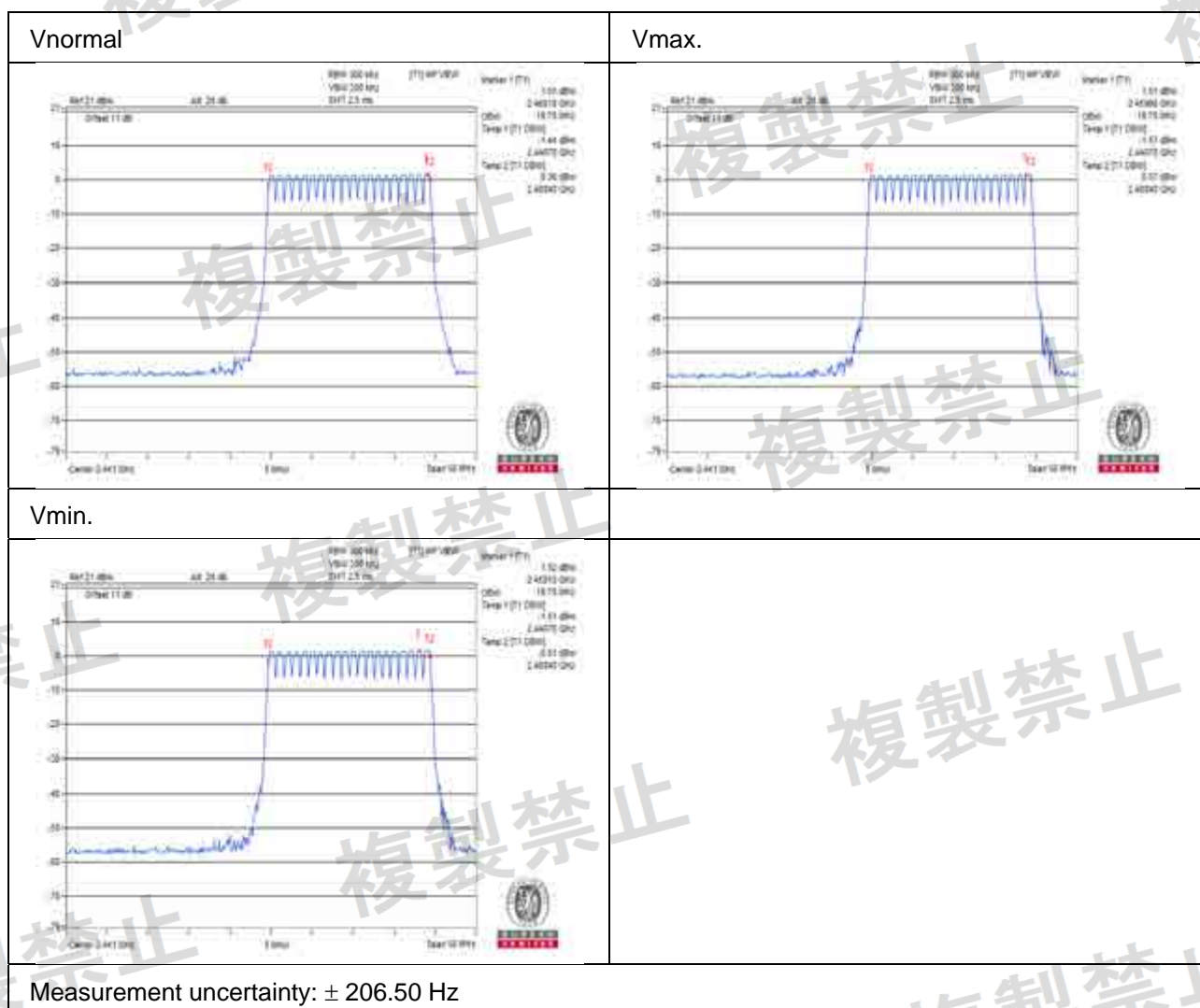
Vnormal	Vmax.
	
Vmin.	
	
Measurement uncertainty: ± 206.50 Hz	



AFH Mode:

Environmental Conditions	25 deg.C, 68% RH	
Vnormal	Vmax.	Vmin.
Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)
19.70	19.70	19.70

Note: For the test plots please refer to the below pages.





Modulation: $\pi/4$ -DQPSK

Normal Mode:

Environmental Conditions	25 deg.C, 68% RH	
Vnormal	Vmax.	Vmin.
Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)
78.40	78.40	78.40

Note: For the test plots please refer to the below pages.

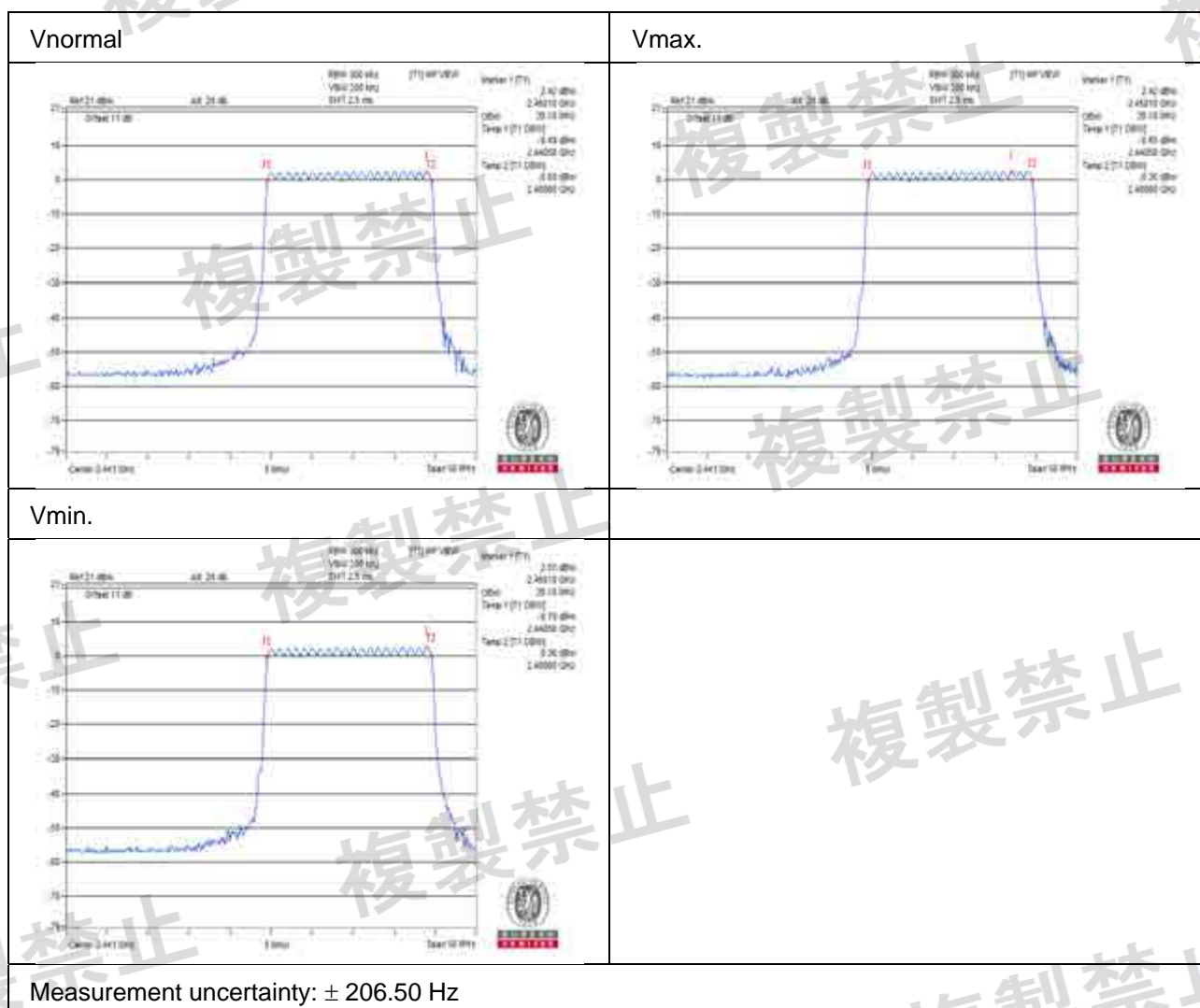
Vnormal	Vmax.
Vmin.	
Measurement uncertainty: ± 206.50 Hz	



AFH Mode:

Environmental Conditions	25 deg.C, 68% RH	
Vnormal	Vmax.	Vmin.
Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)
20.10	20.10	20.10

Note: For the test plots please refer to the below pages.





Modulation: 8DPSK

Normal Mode:

Environmental Conditions	25 deg.C, 68% RH		
Vnormal	Vmax.	Vmin.	
Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	
78.40	78.40	78.40	

Note: For the test plots please refer to the below pages.

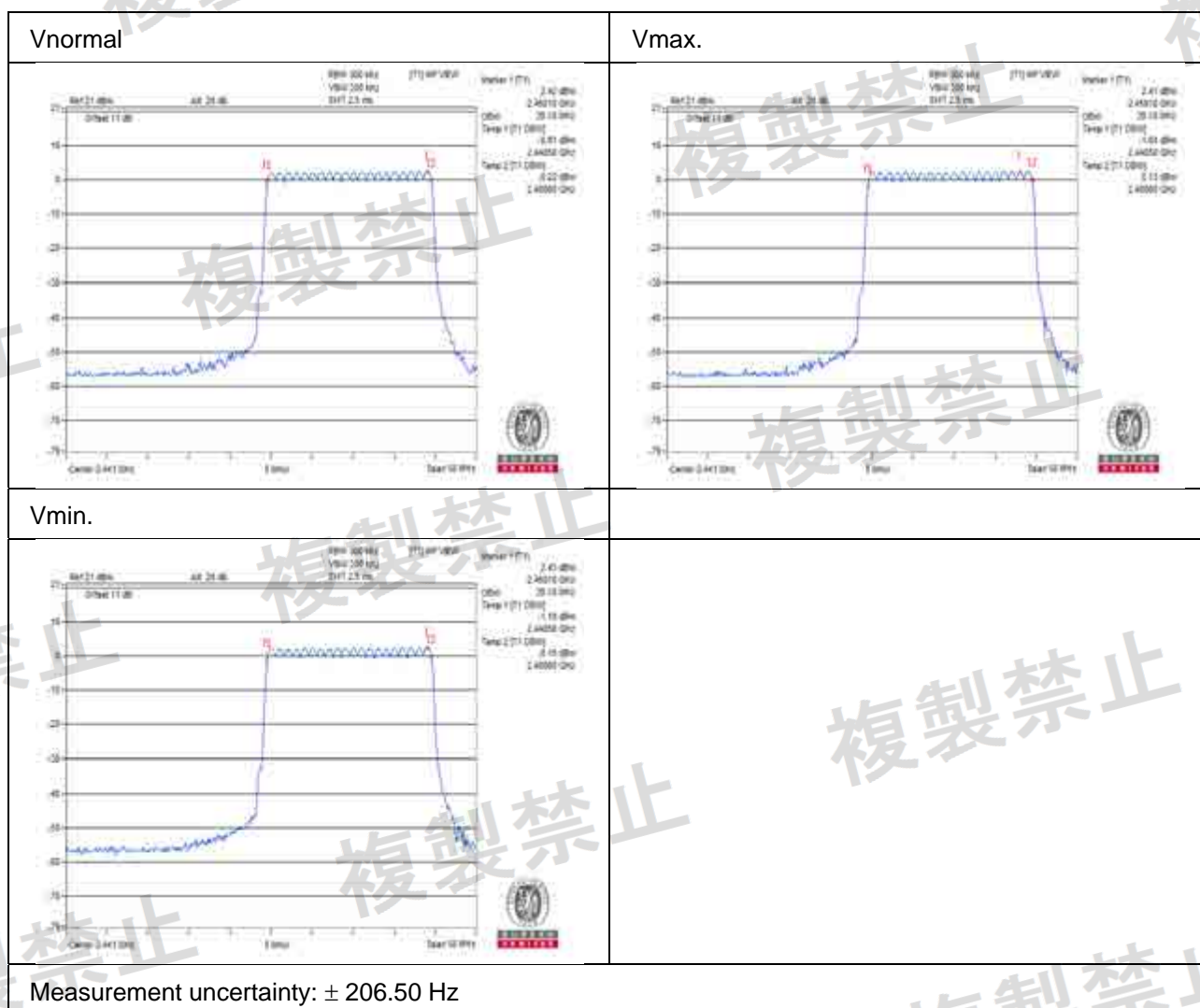
Vnormal	Vmax.
Vmin.	
Measurement uncertainty: ± 206.50 Hz	



AFH Mode:

Environmental Conditions	25 deg.C, 68% RH	
Vnormal	Vmax.	Vmin.
Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)	Occupied Bandwidth (MHz)
20.10	20.10	20.10

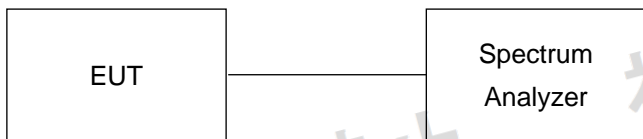
Note: For the test plots please refer to the below pages.





4.3 Spreading Bandwidth Measurement (90% power bandwidth)

4.3.1 Test Setup





4.3.2 Test Results

Modulation: GFSK

Normal Mode:

Environmental Conditions		25 deg.C, 68% RH			
Vnormal		Vmax.		Vmin.	
Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor
70.80	70.80	71.00	71.00	71.20	71.20

- Note: 1. Spreading Factor: 90% channel power bandwidth / 1.
2. For the test plots please refer to the below pages.

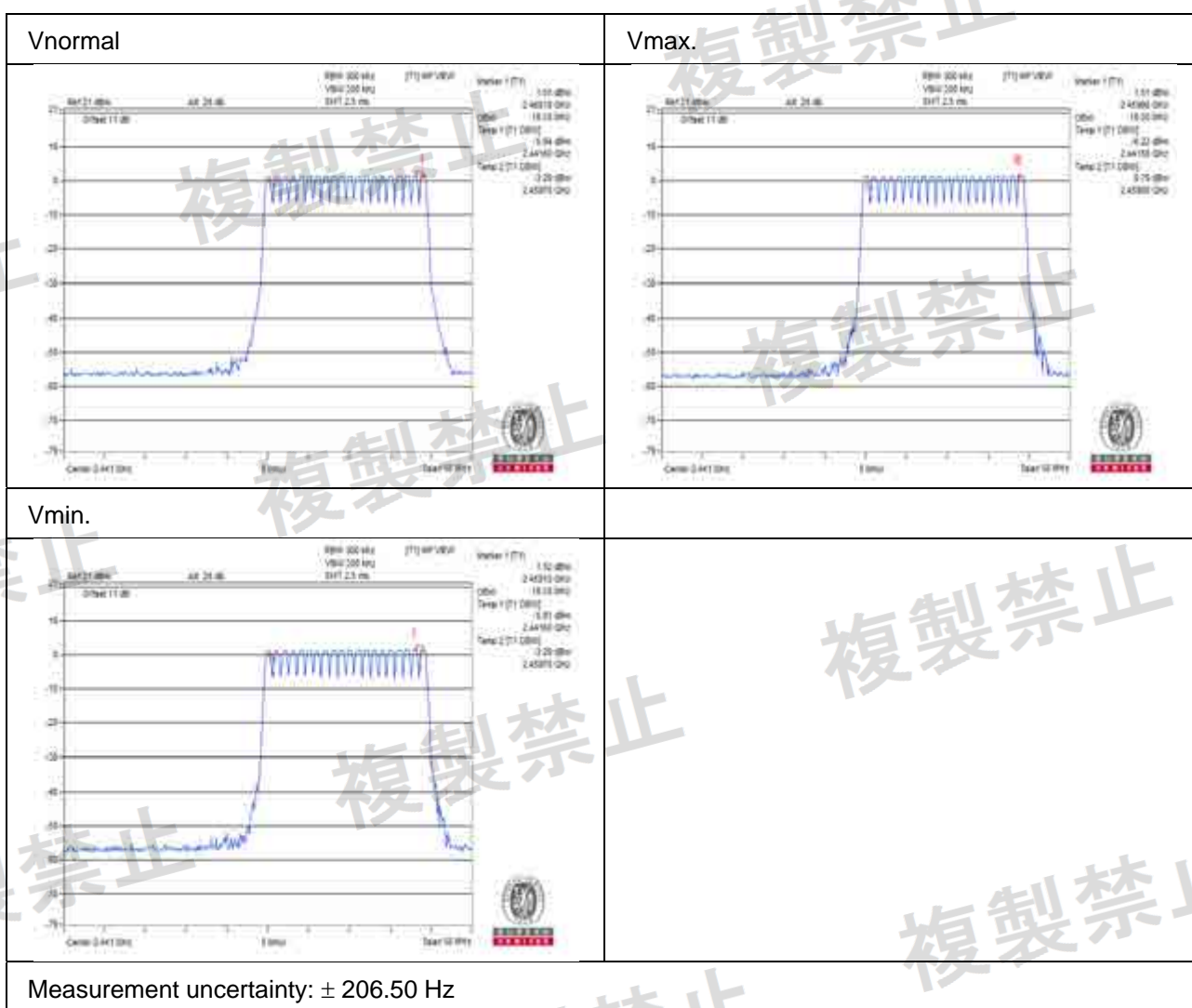




AFH Mode:

Environmental Conditions		25 deg.C, 68% RH			
Vnormal		Vmax.		Vmin.	
Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor
18.10	18.10	18.30	18.30	18.10	18.10

- Note: 1. Spreading Factor: 90% channel power bandwidth / 1.
2. For the test plots please refer to the below pages.





Modulation: $\pi/4$ -DQPSK

Normal Mode:

Environmental Conditions		25 deg.C, 68% RH			
Vnormal		Vmax.		Vmin.	
Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor
70.60	70.60	70.80	70.80	70.60	70.60

Note: 1. Spreading Factor: 90% channel power bandwidth / 1.

2. For the test plots please refer to the below pages.

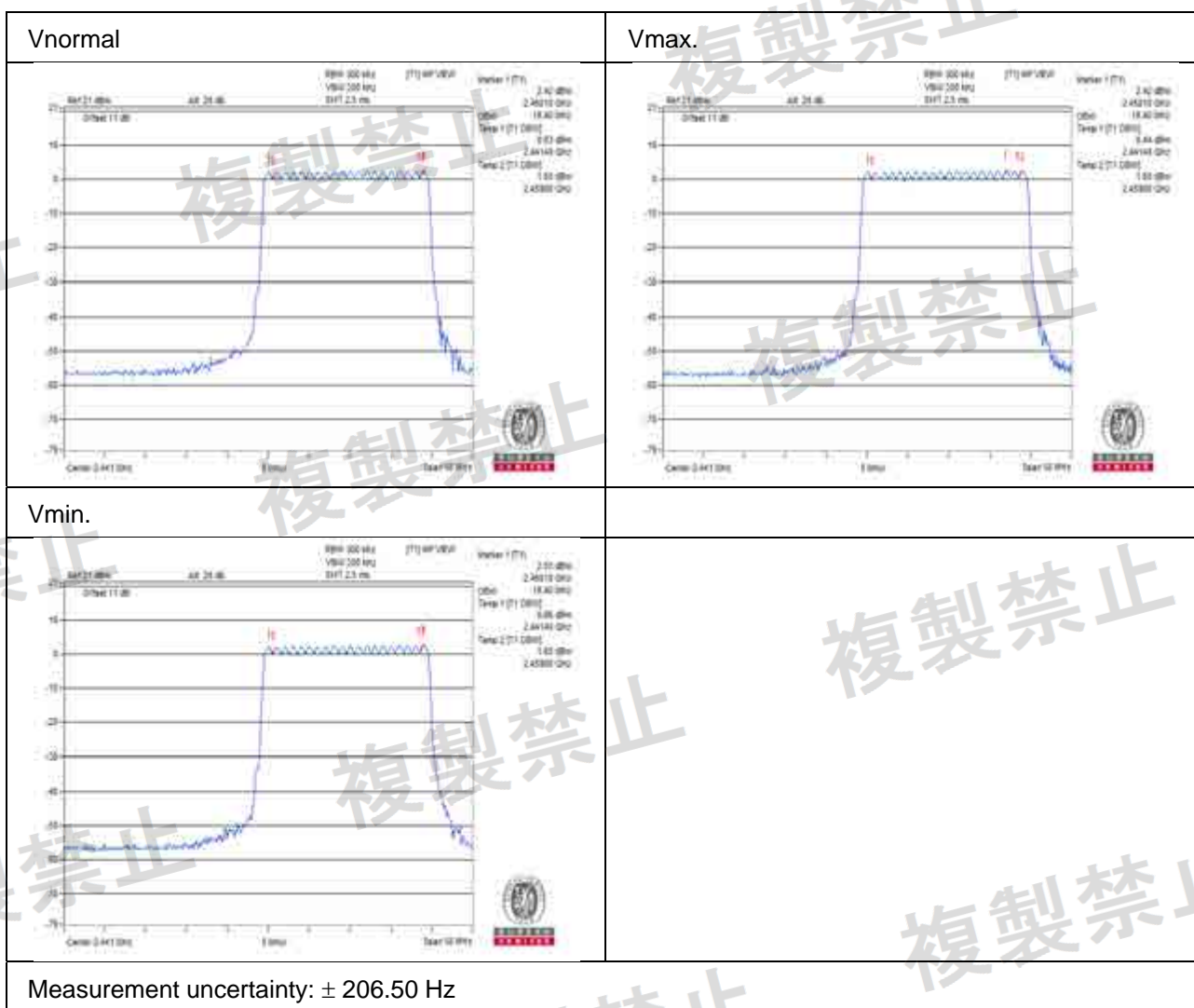
Vnormal	Vmax.
Vmin.	
Measurement uncertainty: ± 206.50 Hz	



AFH Mode:

Environmental Conditions		25 deg.C, 68% RH			
Vnormal		Vmax.		Vmin.	
Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor
18.40	18.40	18.40	18.40	18.40	18.40

- Note: 1. Spreading Factor: 90% channel power bandwidth / 1.
2. For the test plots please refer to the below pages.





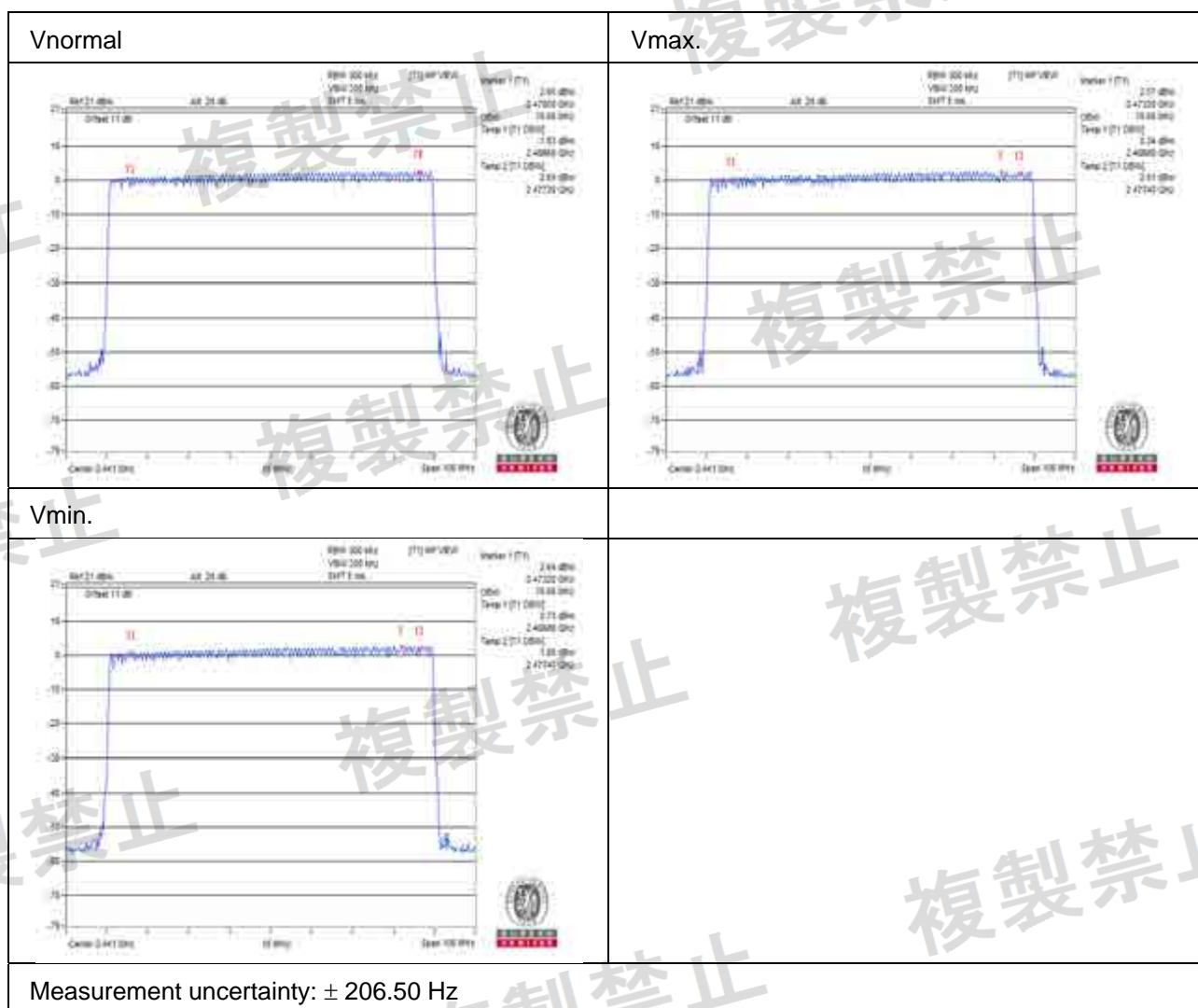
Modulation: 8DPSK

Normal Mode:

Environmental Conditions		25 deg.C, 68% RH			
Vnormal		Vmax.		Vmin.	
Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor
70.60	70.60	70.60	70.60	70.60	70.60

Note: 1. Spreading Factor: 90% channel power bandwidth / 1.

2. For the test plots please refer to the below pages.

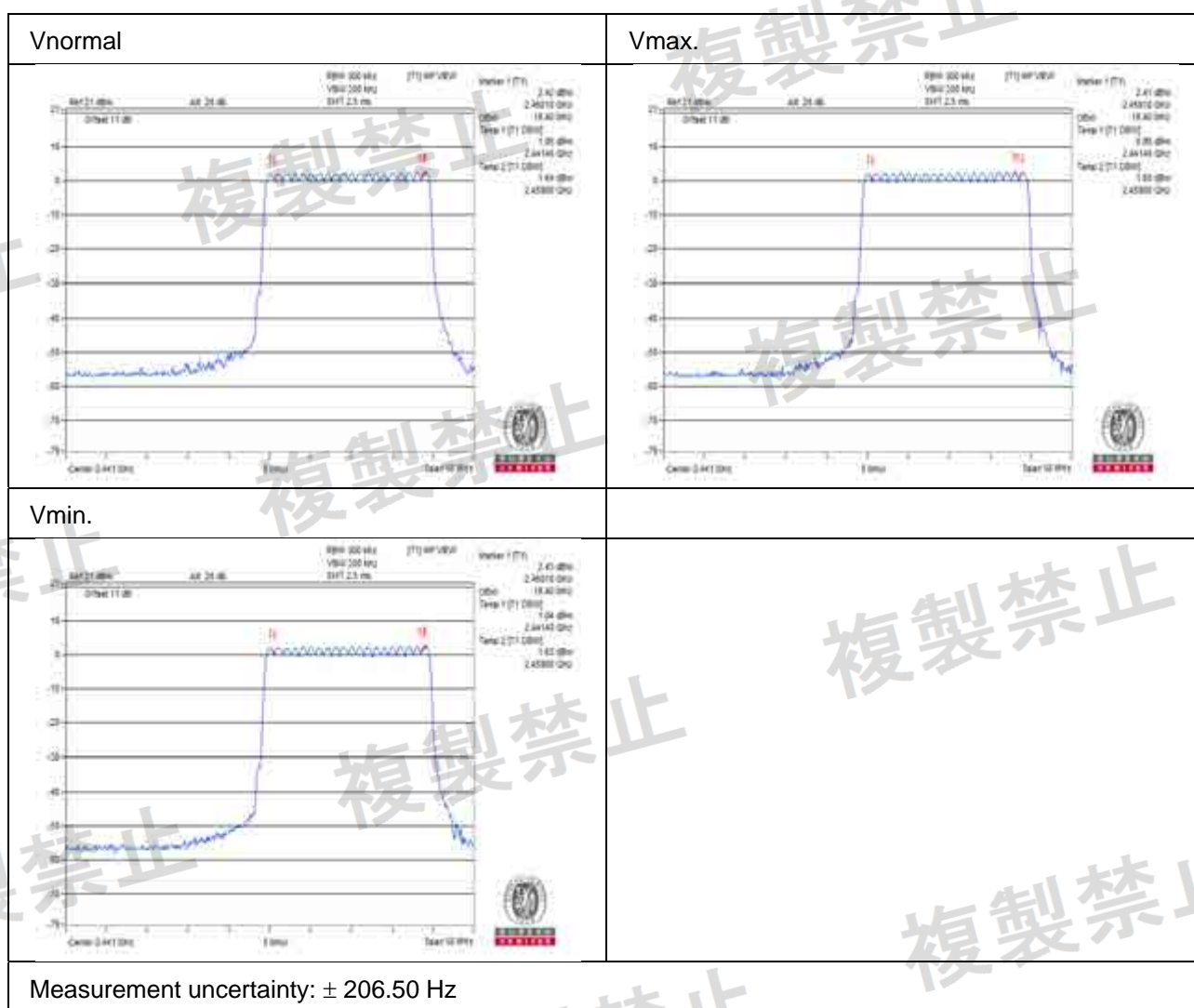




AFH Mode:

Environmental Conditions		25 deg.C, 68% RH			
Vnormal		Vmax.		Vmin.	
Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor	Occupied bandwidth (MHz)	Spreading factor
18.40	18.40	18.40	18.40	18.40	18.40

- Note: 1. Spreading Factor: 90% channel power bandwidth / 1.
2. For the test plots please refer to the below pages.





4.4 Spurious Emissions for Transmitter Measurement

4.4.1 Limits of Spurious Emissions

Frequencies (MHz)	Limit
Operating frequency 2400 to 2483.5MHz	
30.0MHz to 1000.0MHz	$\leq 0.25 \text{ uW/100kHz}$
1000.0MHz to 2387MHz	$\leq 2.5 \text{ uW/MHz}$
2387.0MHz to 2400.0MHz	$\leq 25 \text{ uW/MHz}$
2483.5MHz to 2496.5MHz	$\leq 25 \text{ uW/MHz}$
2496.5MHz to 12500.0MHz	$\leq 2.5 \text{ uW/MHz}$

4.4.2 Test Setup





4.4.3 Test Results

Modulation: GFSK

Environmental Conditions		25 deg.C, 68% RH					
Test Channel		CH0 (2402MHz)		CH39 (2441MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value	Frequency (MHz)	Measured Value		
Vnormal	30.0MHz to 1000.0MHz	191.020	0.01762uW	798.240	0.019143uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2278.810	0.007907uW	2289.910	0.007907uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2400.000	3.89942uW	2395.320	0.007362uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2489.610	0.006792uW	2486.460	0.006839uW	25uW	Pass
	2496.5MHz to 12500.0MHz	2996.670	0.040272uW	3636.890	0.04256uW	2.5uW	Pass
Vmax.	30.0MHz to 1000.0MHz	55.220	0.017783uW	522.760	0.019143uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2251.070	0.007656uW	2212.230	0.006138uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2400.000	3.908409uW	2397.550	0.007396uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2486.820	0.006998uW	2495.950	0.006776uW	25uW	Pass
	2496.5MHz to 12500.0MHz	10439.270	0.048865uW	9318.880	0.04102uW	2.5uW	Pass
Vmin.	30.0MHz to 1000.0MHz	569.320	0.020184uW	485.900	0.023281uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2298.230	0.008222uW	2181.720	0.006622uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2400.000	3.935501uW	2398.570	0.006622uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2488.200	0.007727uW	2491.920	0.006486uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3196.740	0.052uW	10439.270	0.04102uW	2.5uW	Pass

Note: The worst value in each frequency range v.s. each channel has been marked by boldface.

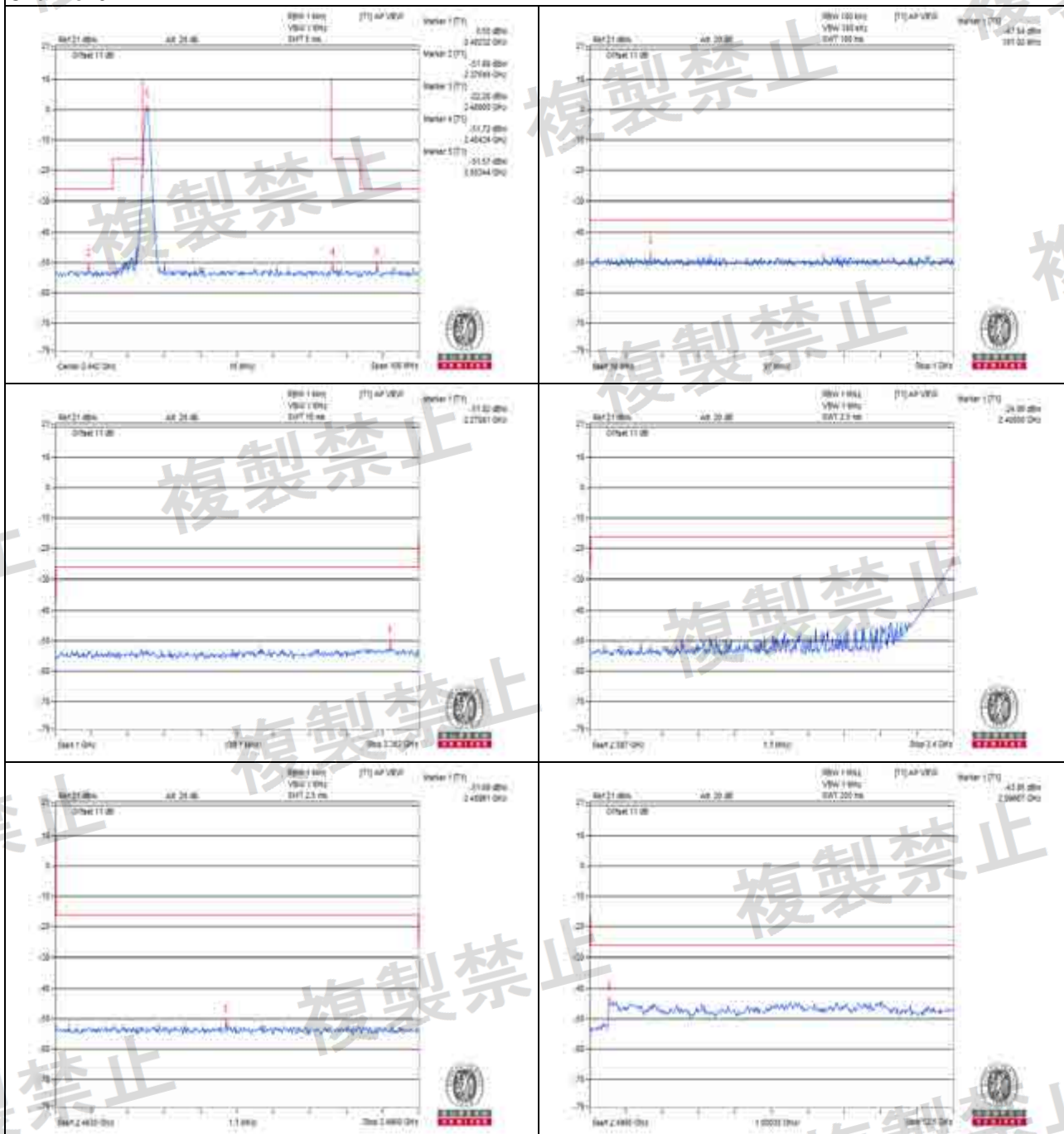


Environmental Conditions		25 deg.C, 68% RH			
Test Channel		CH78 (2480MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value		
Vnormal	30.0MHz to 1000.0MHz	210.420	0.019187uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2151.210	0.006339uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2388.500	0.007211uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.152757uW	25uW	Pass
	2496.5MHz to 12500.0MHz	10539.310	0.037931uW	2.5uW	Pass
Vmax.	30.0MHz to 1000.0MHz	350.100	0.021281uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2209.460	0.006531uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2387.330	0.006592uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.155955uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3016.680	0.044361uW	2.5uW	Pass
Vmin.	30.0MHz to 1000.0MHz	749.740	0.017298uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2192.820	0.007079uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2391.520	0.006982uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.152757uW	25uW	Pass
	2496.5MHz to 12500.0MHz	9318.880	0.046774uW	2.5uW	Pass

Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
2. The spectrum plots are attached on the following pages.



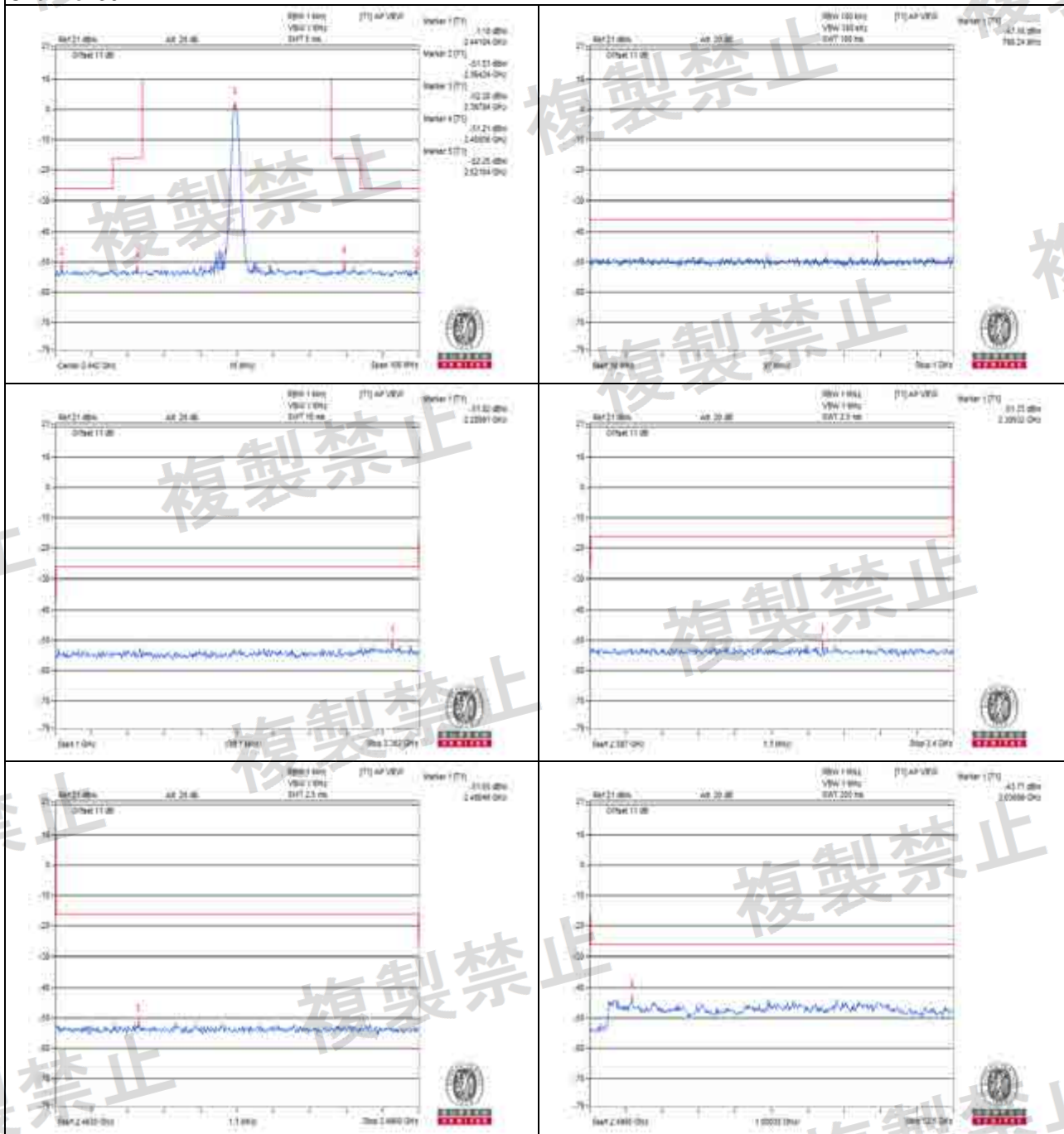
Vnormal
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



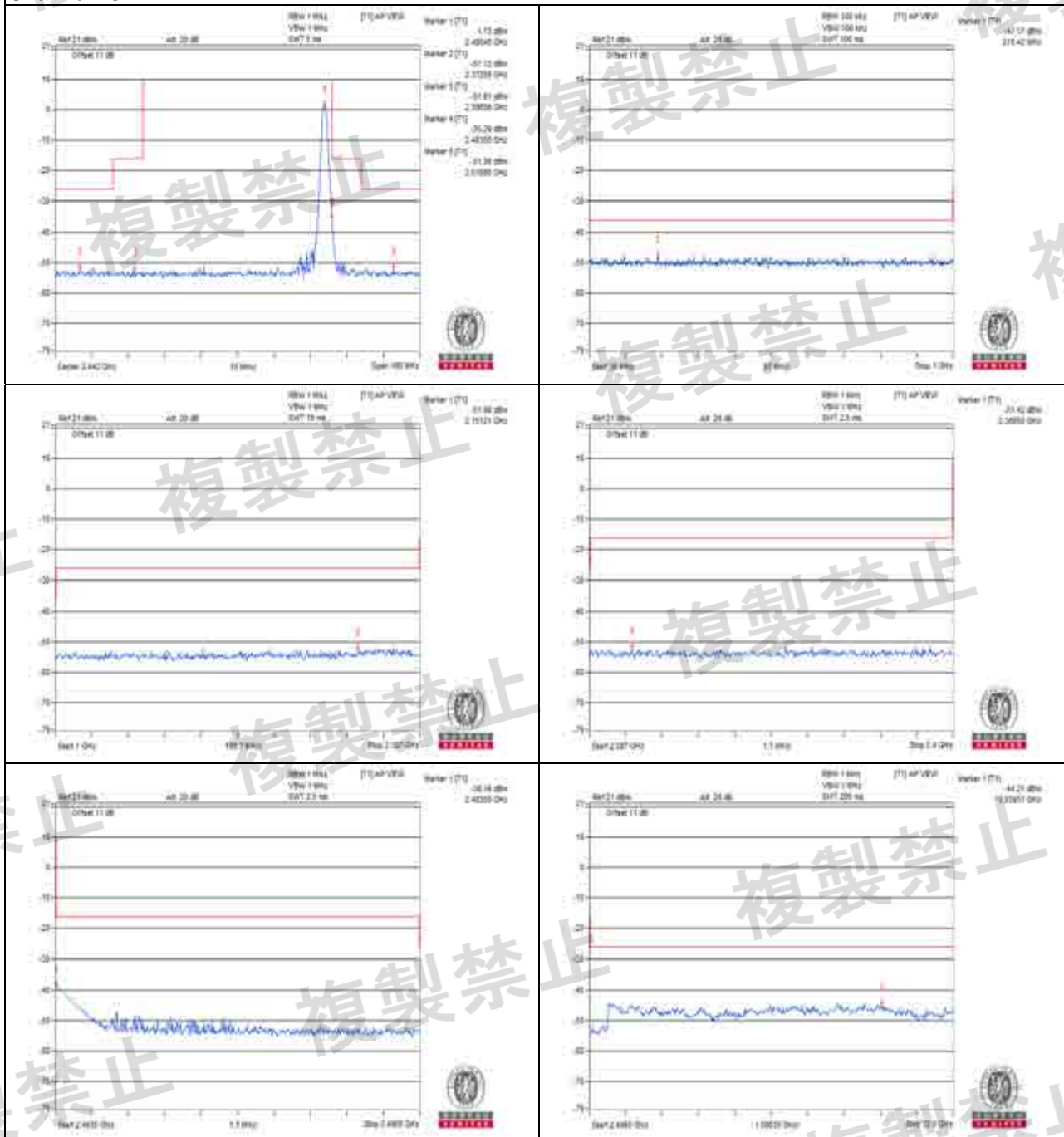
Vnormal
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



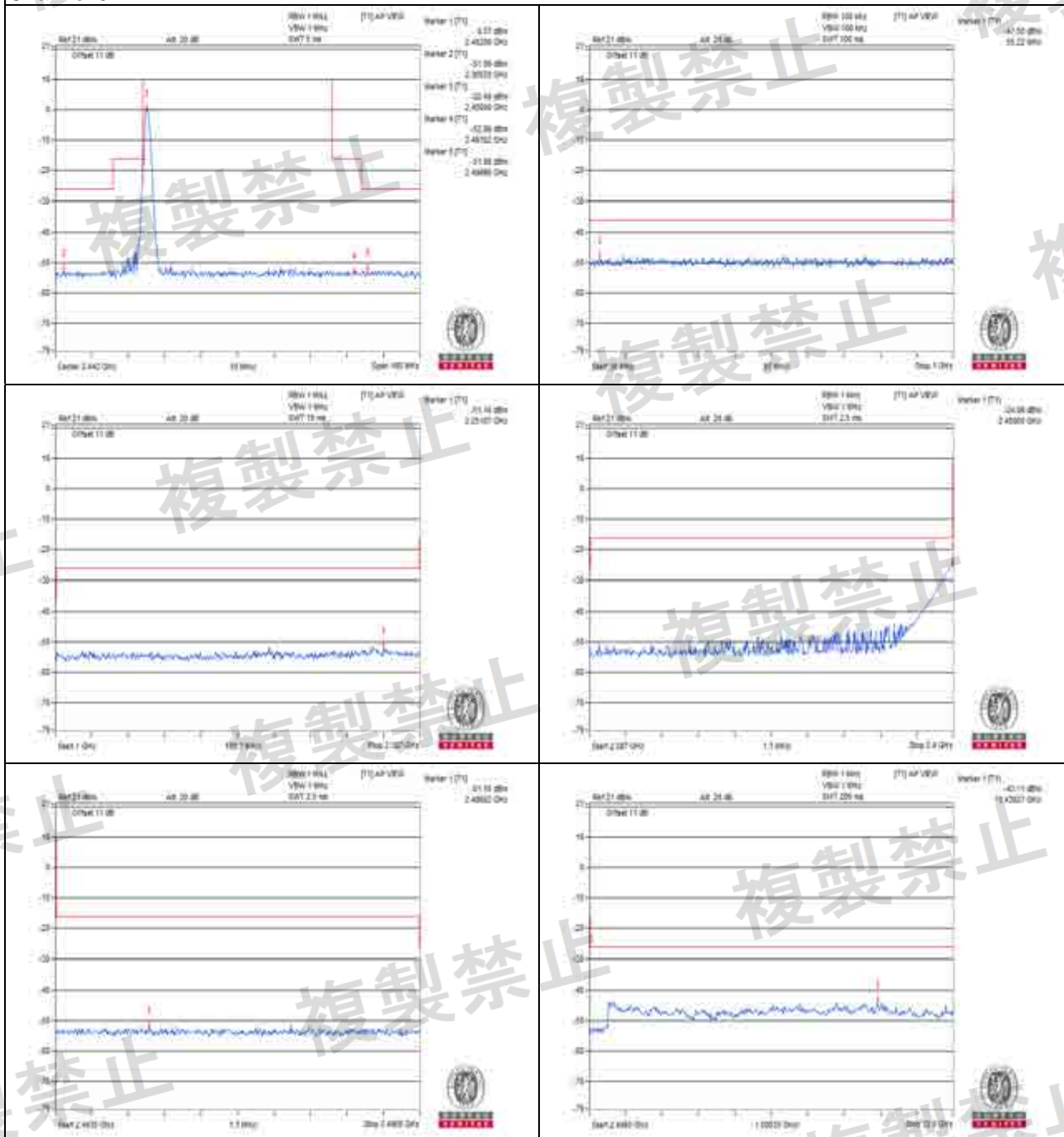
Vnormal
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



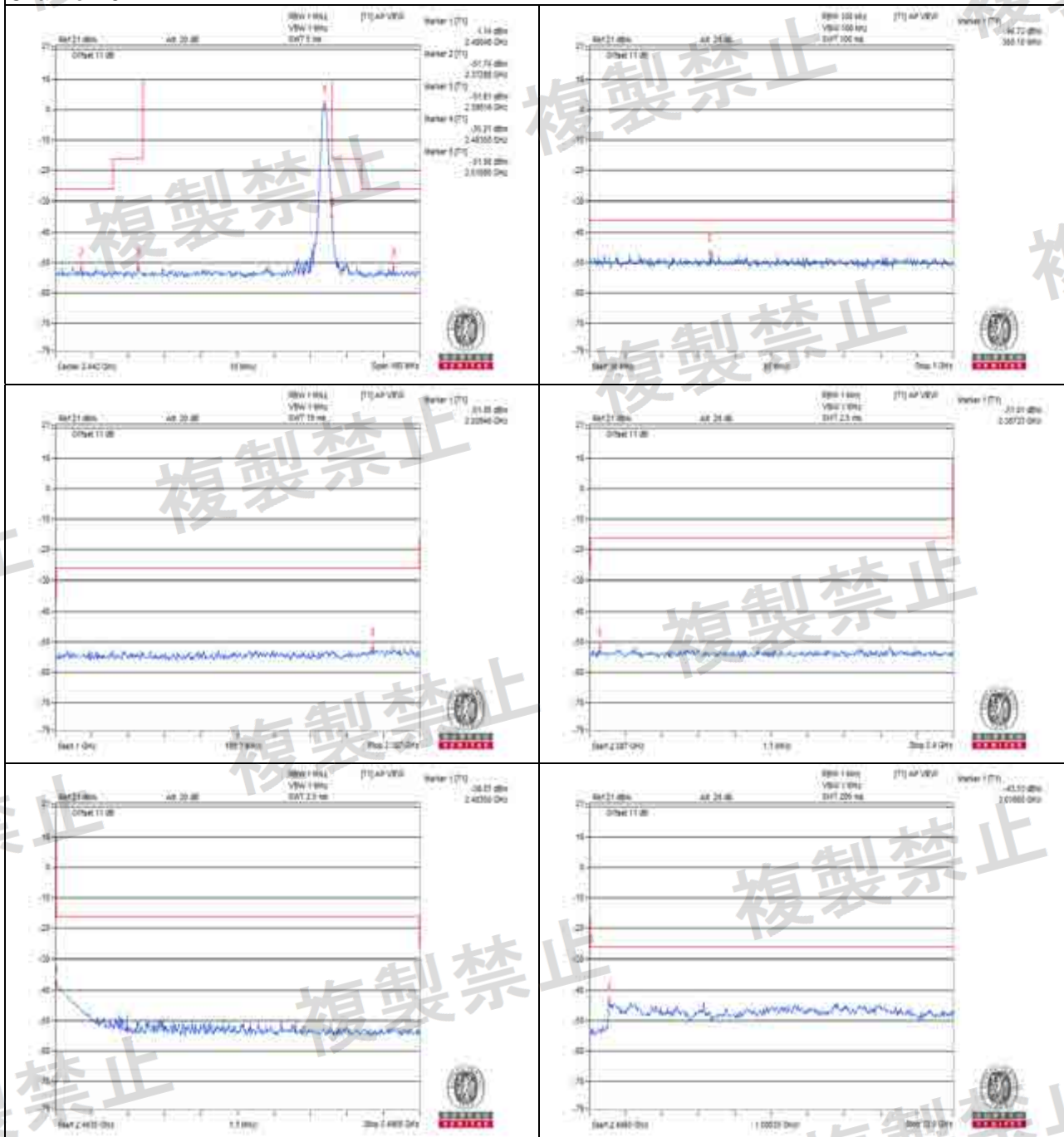
Vmax.
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



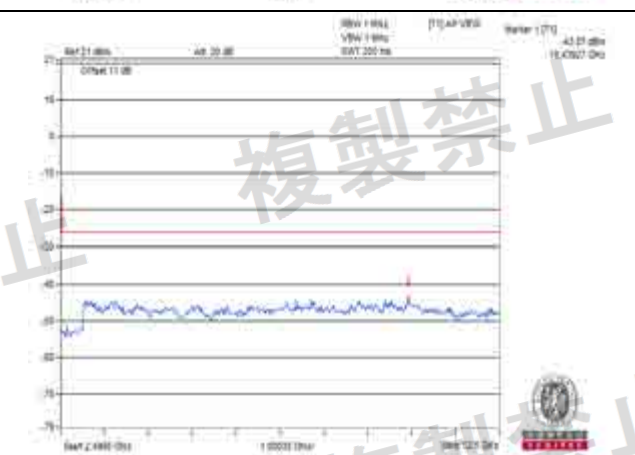
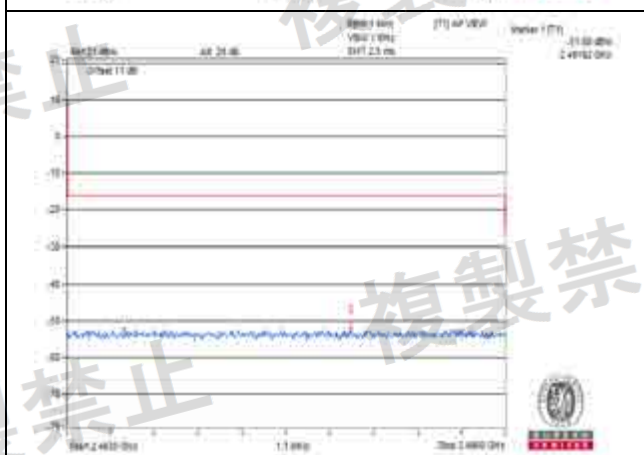
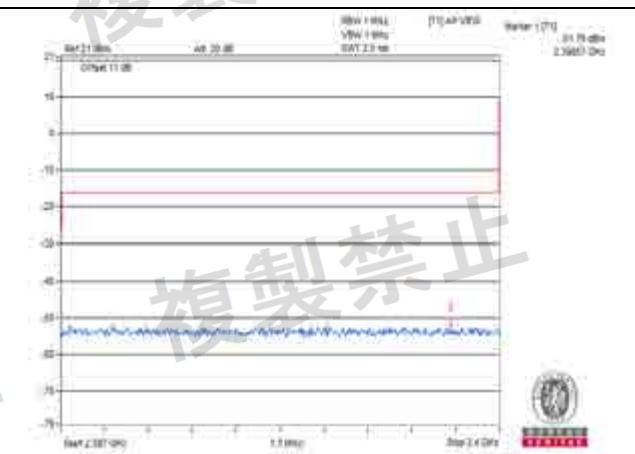
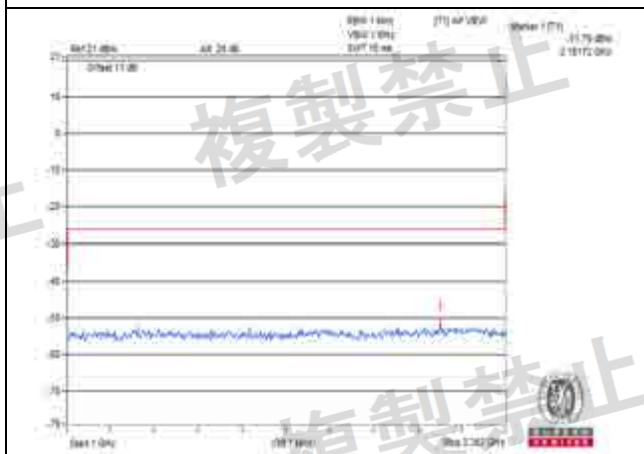
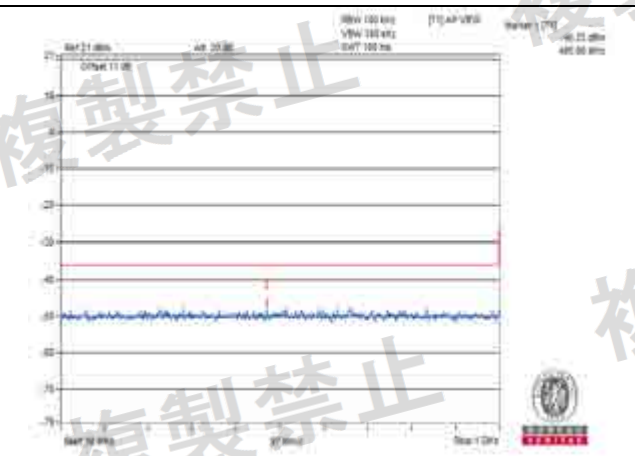
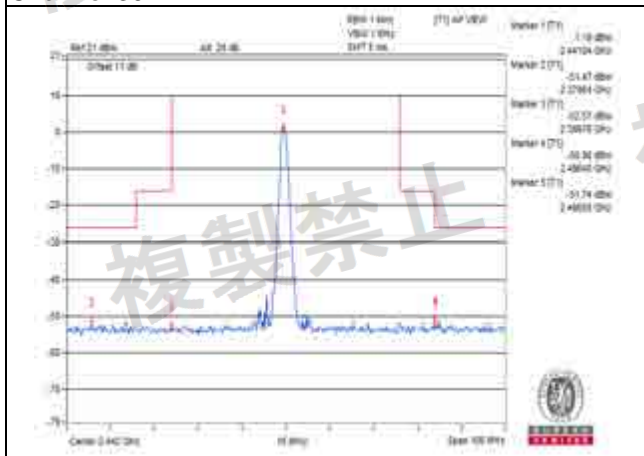
Vmax.
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



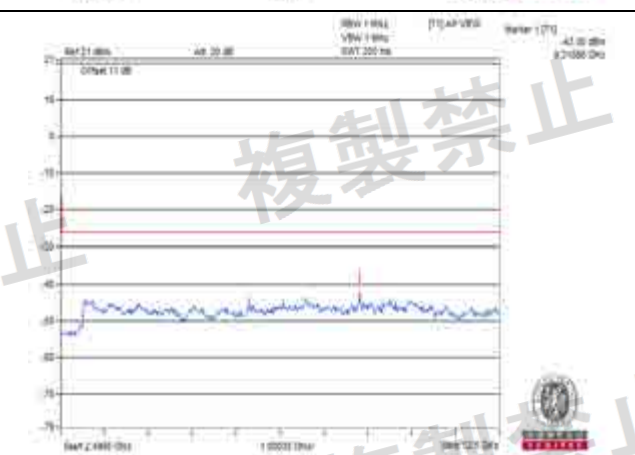
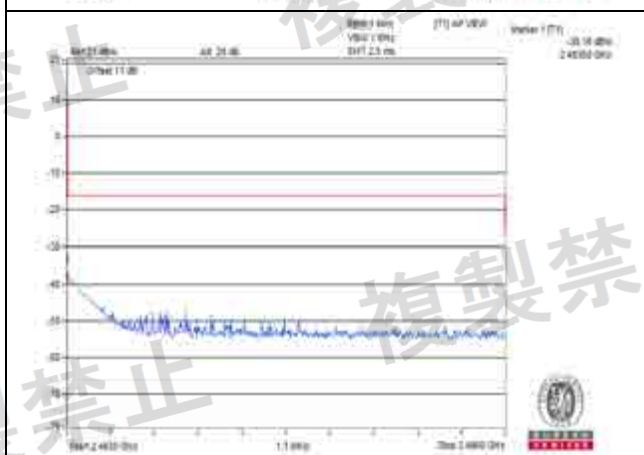
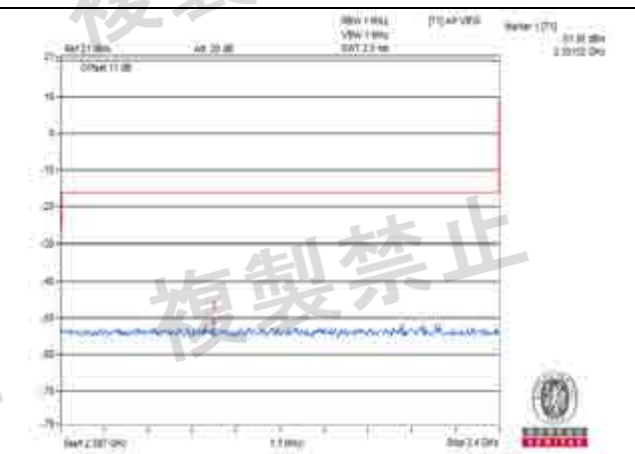
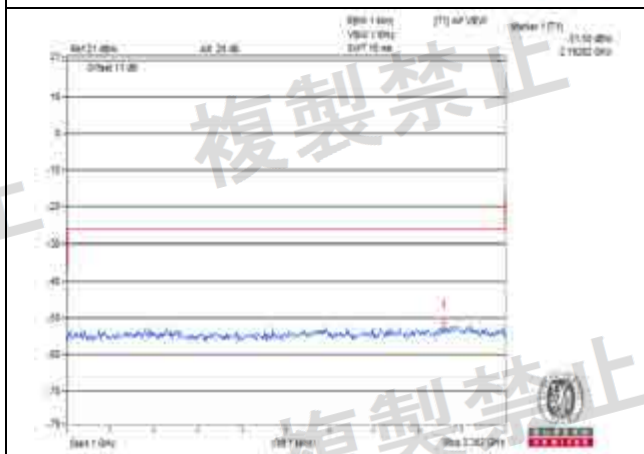
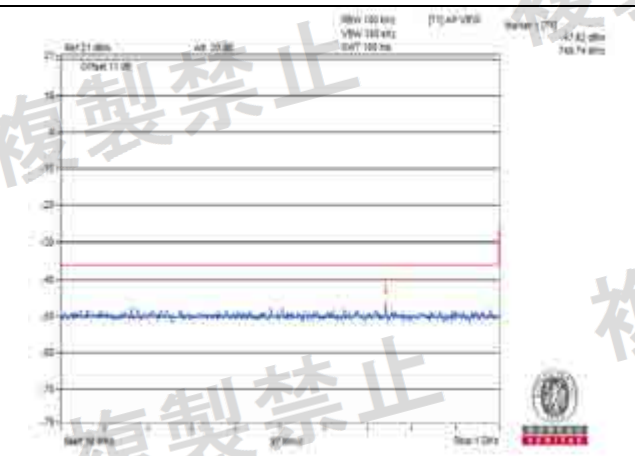
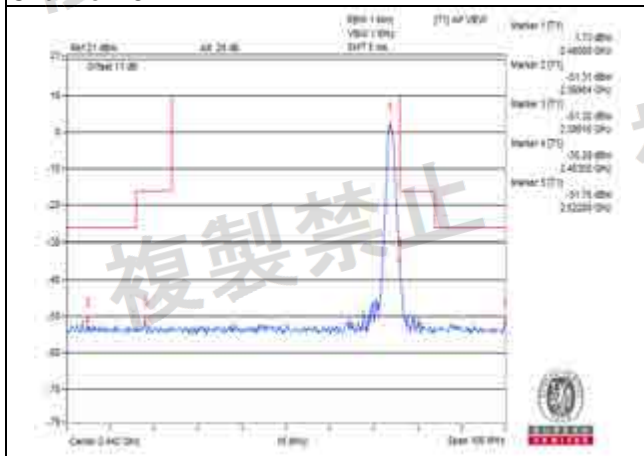
Vmin.
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



Modulation: $\pi/4$ -DQPSK

Environmental Conditions		25 deg.C, 68% RH					
Test Channel		CH0 (2402MHz)		CH39 (2441MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value	Frequency (MHz)	Measured Value		
Vnormal	30.0MHz to 1000.0MHz	718.700	0.020512uW	388.900	0.018621uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2223.330	0.007727uW	2173.400	0.008551uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2400.000	8.472274uW	2393.050	0.007551uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2491.010	0.007674uW	2490.150	0.00787uW	25uW	Pass
	2496.5MHz to 12500.0MHz	2996.670	0.039084uW	2996.670	0.055719uW	2.5uW	Pass
Vmax.	30.0MHz to 1000.0MHz	807.940	0.017338uW	385.020	0.019861uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2223.330	0.007228uW	2253.840	0.007709uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2400.000	8.689604uW	2397.630	0.007396uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2495.510	0.006966uW	2492.910	0.00857uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3156.730	0.044259uW	3196.740	0.050466uW	2.5uW	Pass
Vmin.	30.0MHz to 1000.0MHz	542.160	0.019861uW	142.520	0.022909uW	0.25uW	Pass
	1000.0MHz to 2387MHz	1754.520	0.009441uW	2129.010	0.006531uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2400.000	7.998343uW	2397.840	0.006281uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2484.720	0.008356uW	2485.420	0.007907uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3156.730	0.048529uW	9578.970	0.043053uW	2.5uW	Pass

Note: The worst value in each frequency range v.s. each channel has been marked by boldface.

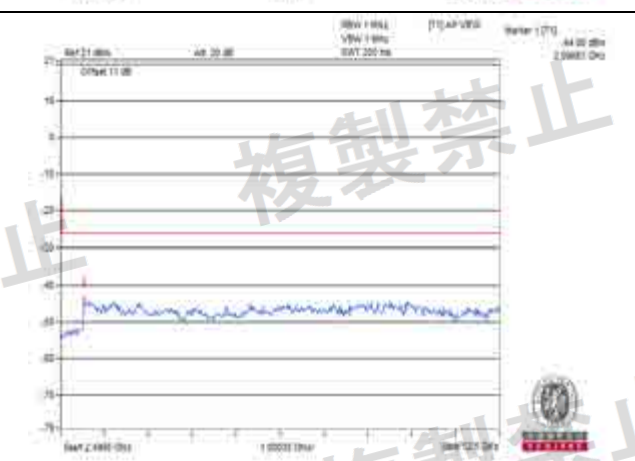
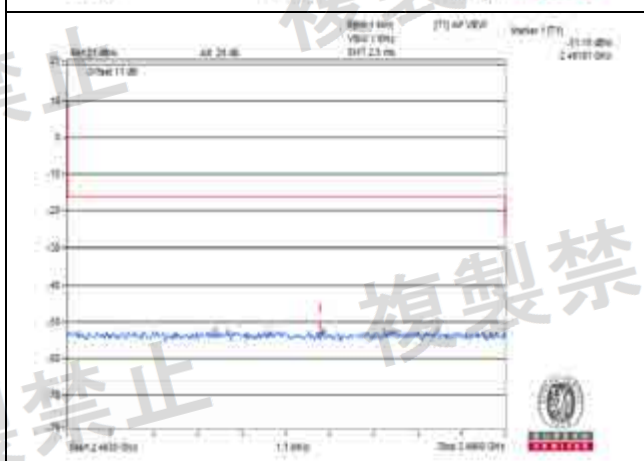
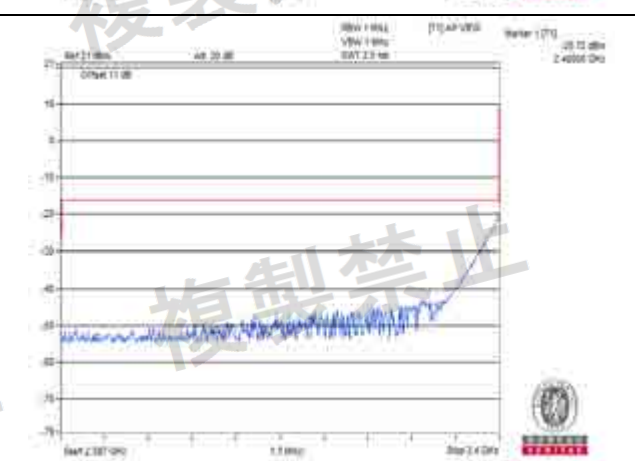
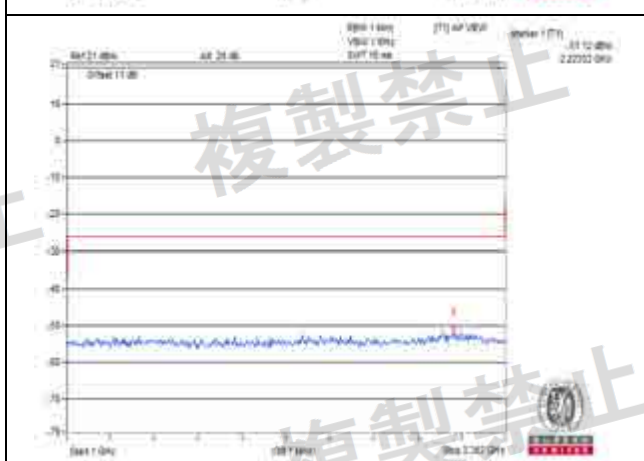
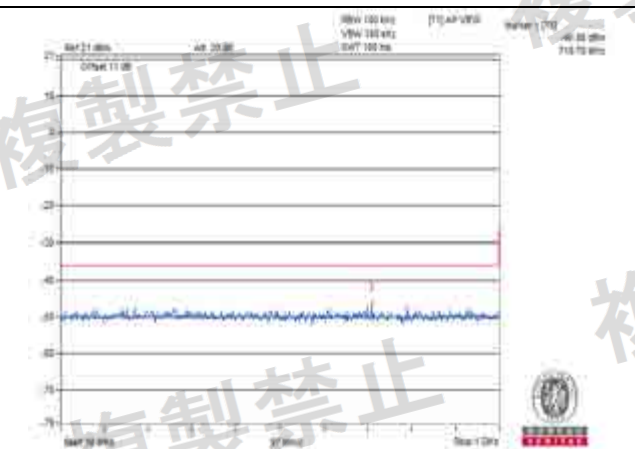
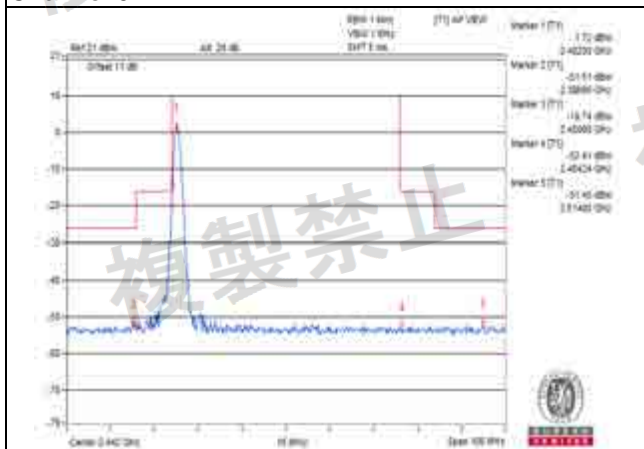


Environmental Conditions		25 deg.C, 68% RH			
Test Channel		CH78 (2480MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value		
Vnormal	30.0MHz to 1000.0MHz	707.060	0.018197uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2109.600	0.00798uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2394.220	0.007161uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.297167uW	25uW	Pass
	2496.5MHz to 12500.0MHz	2996.670	0.048753uW	2.5uW	Pass
Vmax.	30.0MHz to 1000.0MHz	86.260	0.017458uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2220.560	0.007499uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2387.050	0.008453uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.302691uW	25uW	Pass
	2496.5MHz to 12500.0MHz	9278.870	0.044463uW	2.5uW	Pass
Vmin.	30.0MHz to 1000.0MHz	639.160	0.018365uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2020.830	0.006683uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2388.690	0.006368uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.314775uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3036.680	0.045709uW	2.5uW	Pass

Note: 1. The worst value in each frequency range v.s. each channel has been marked by boldface.
2. The spectrum plots are attached on the following pages.



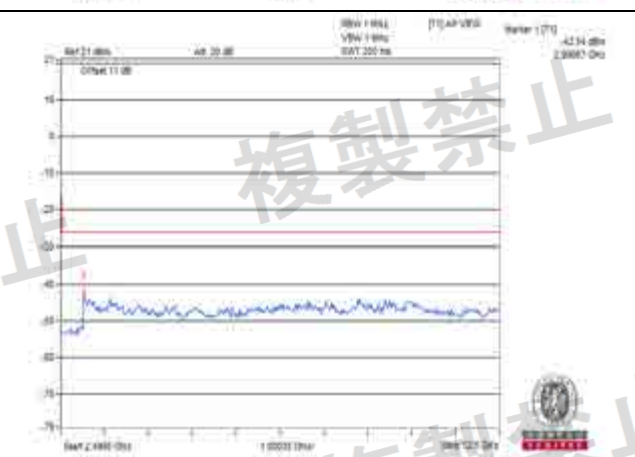
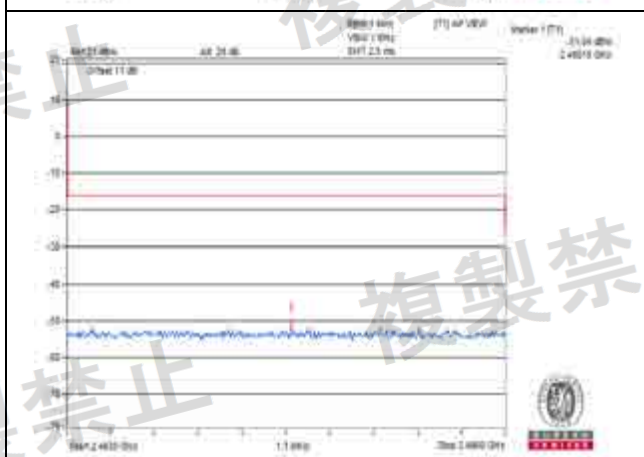
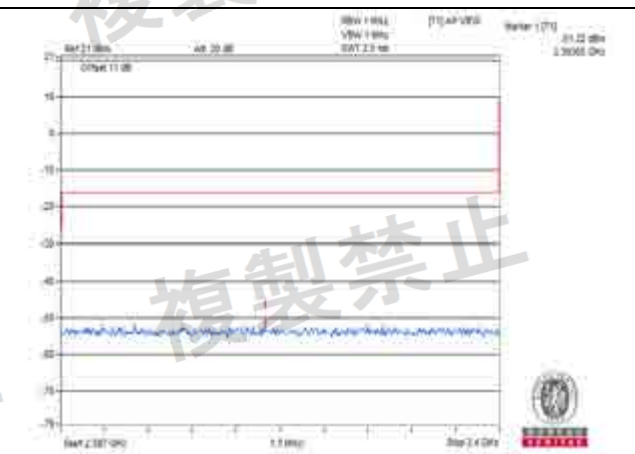
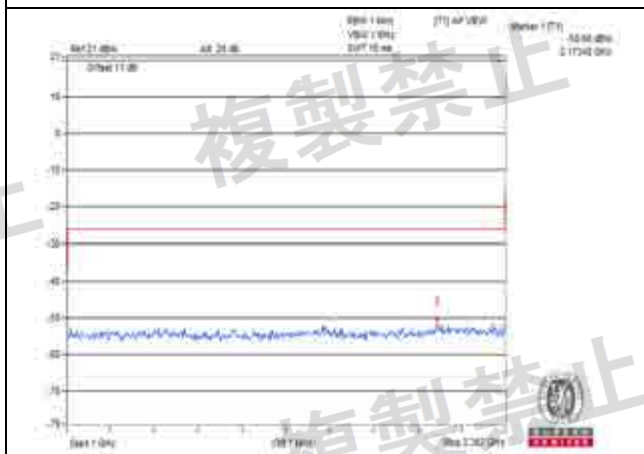
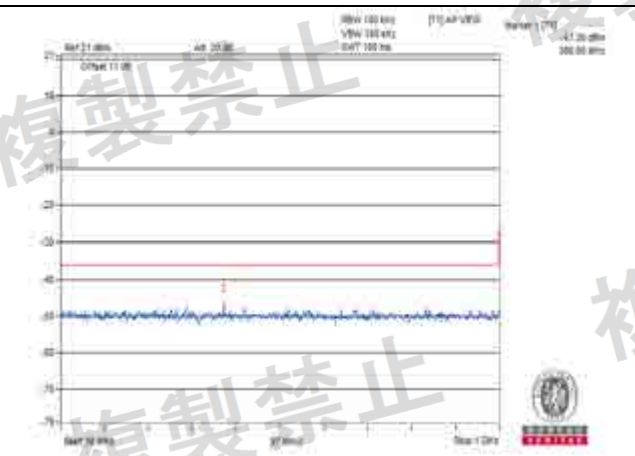
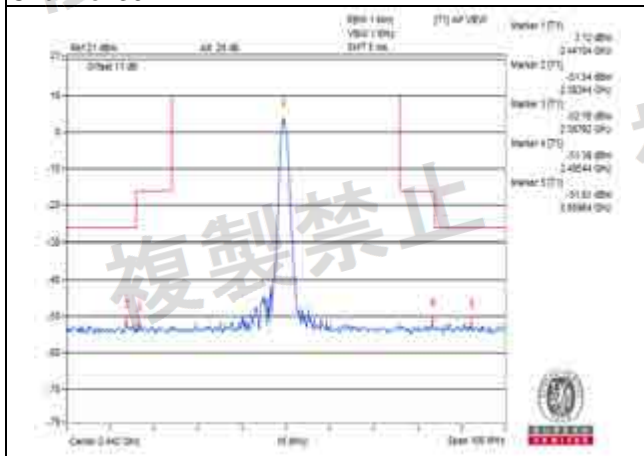
Vnormal
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



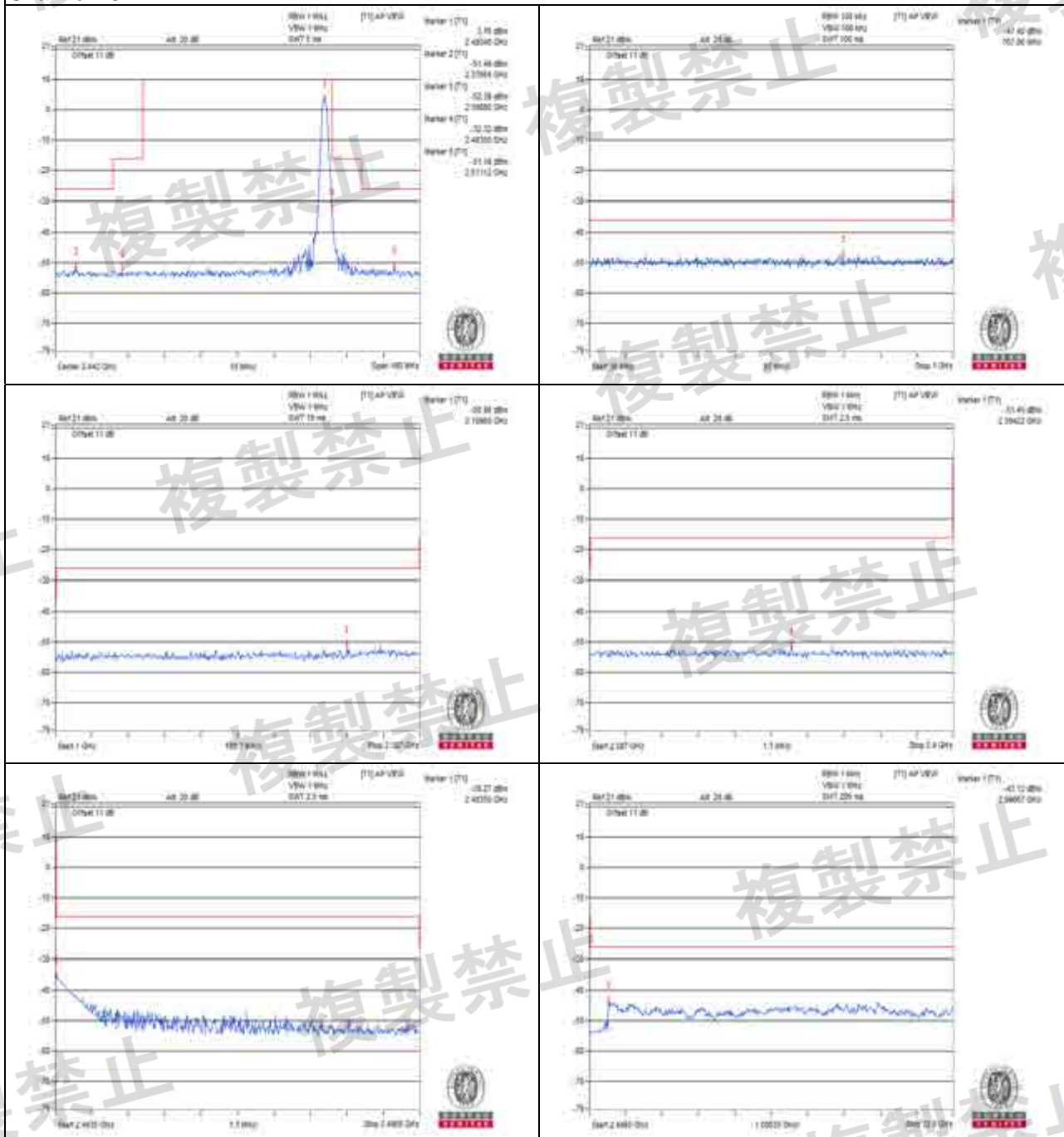
Vnormal
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



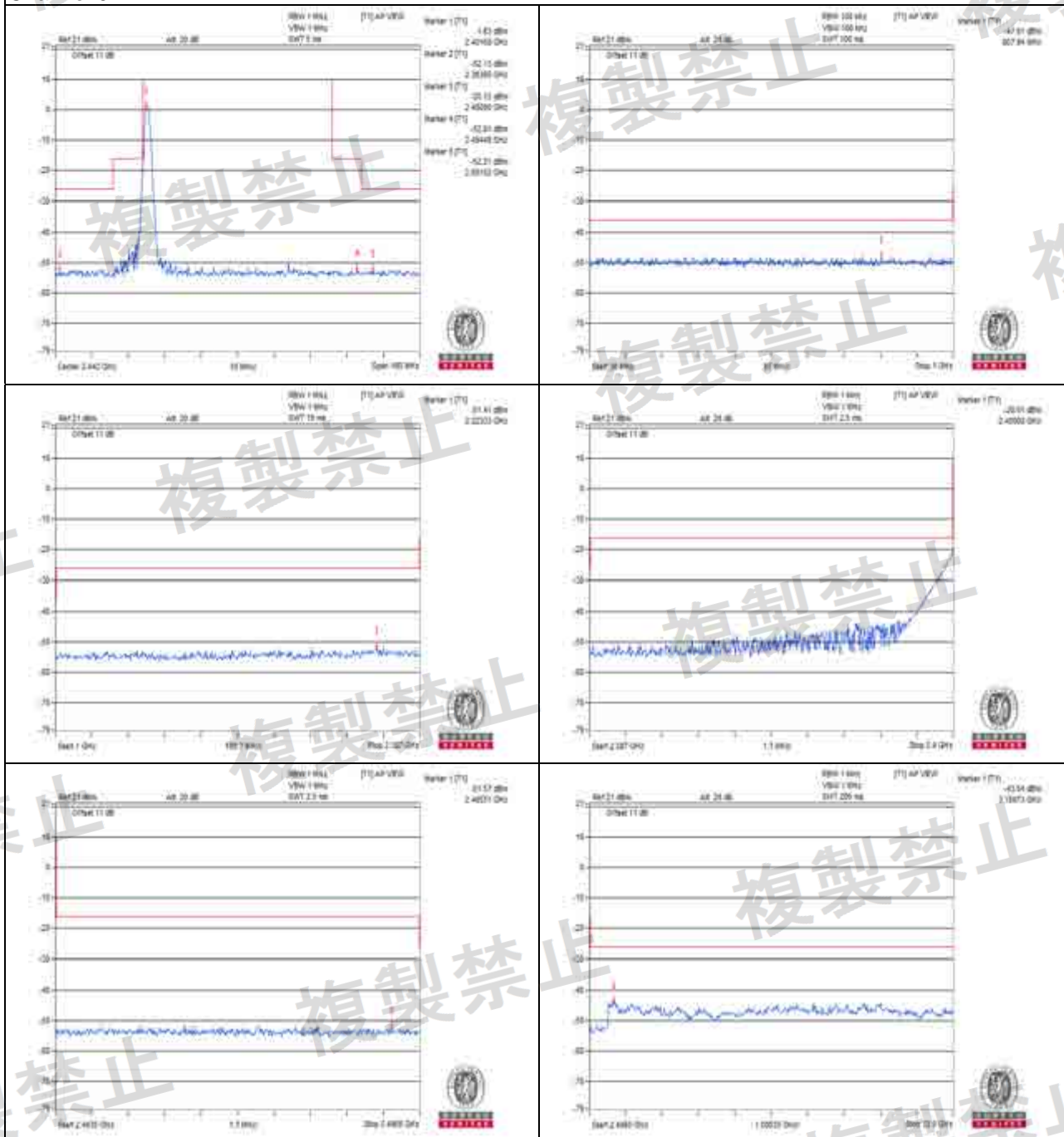
Vnormal
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



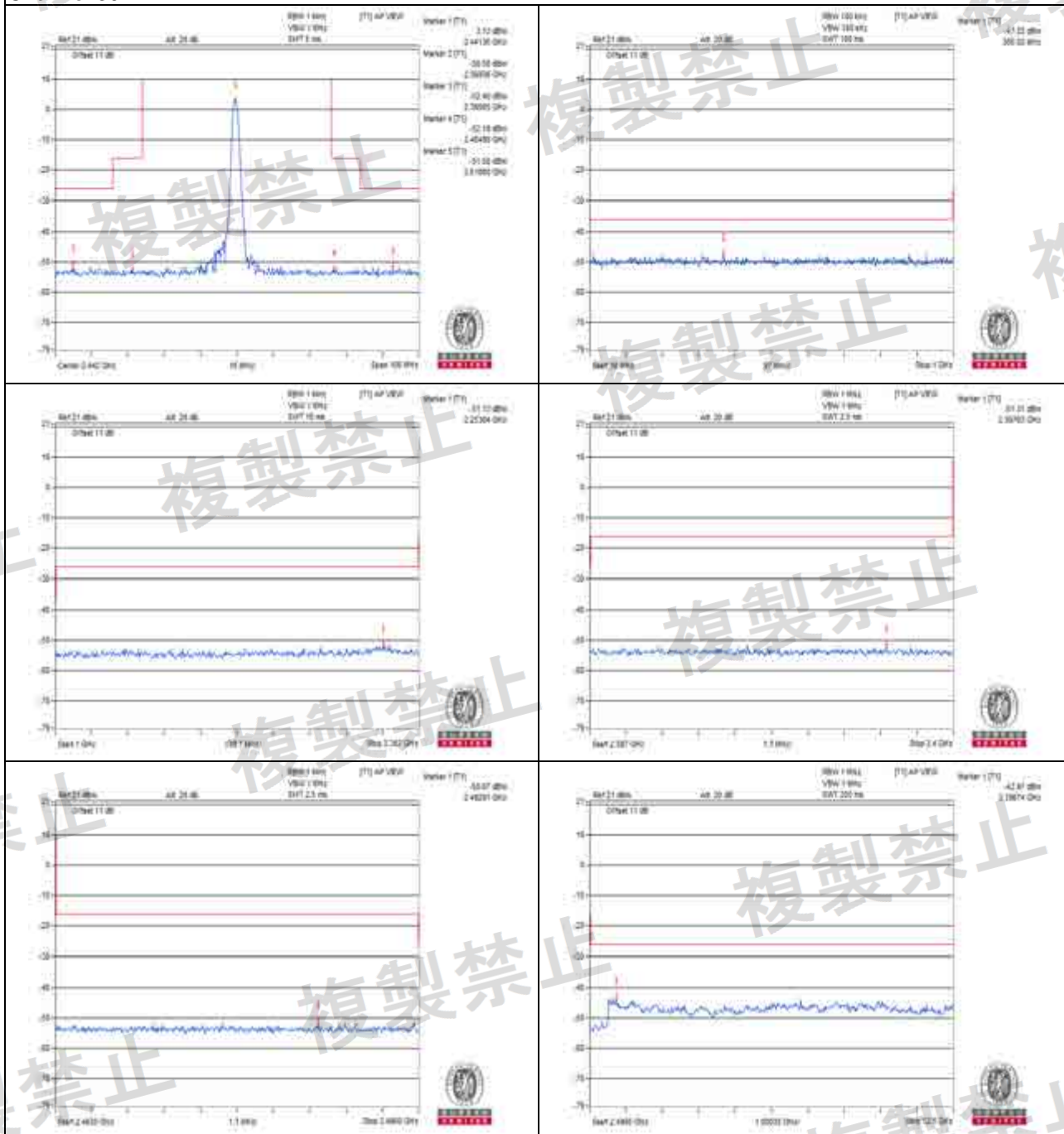
Vmax.
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



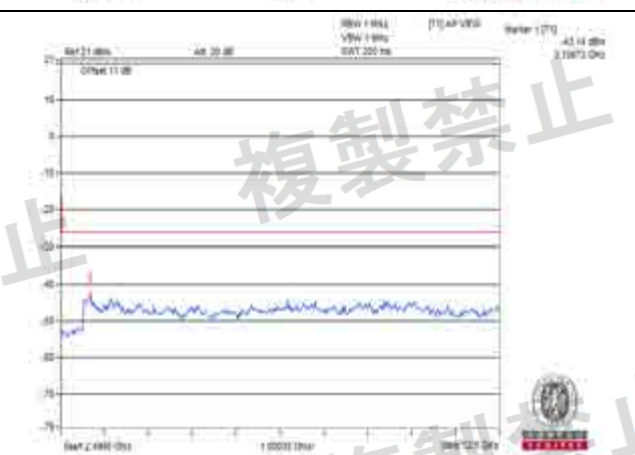
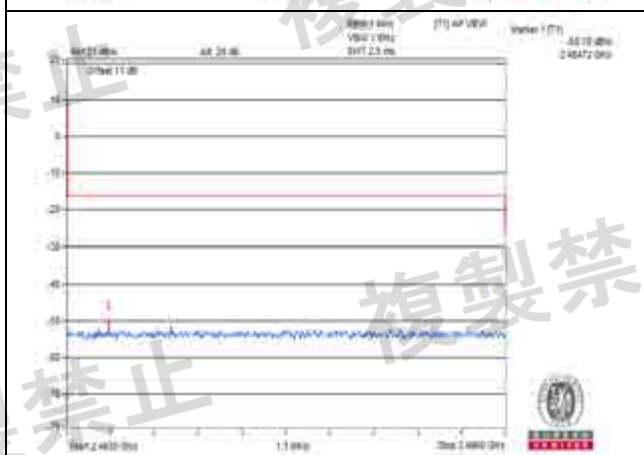
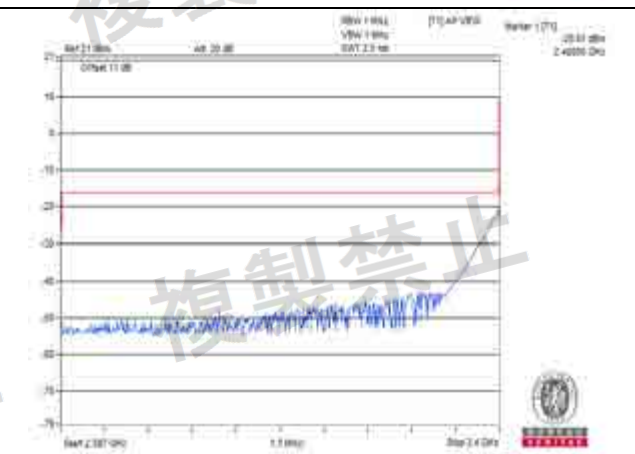
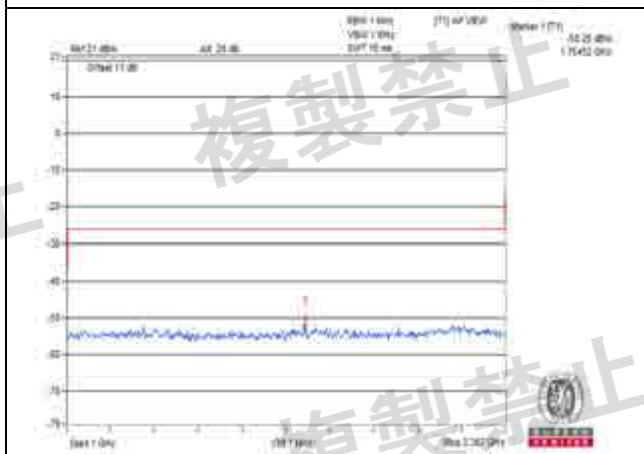
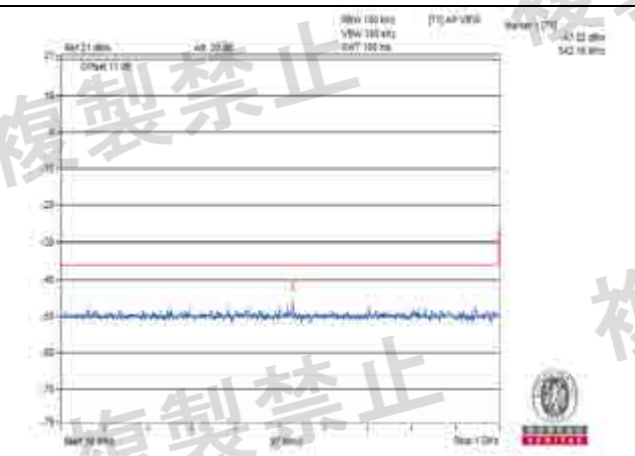
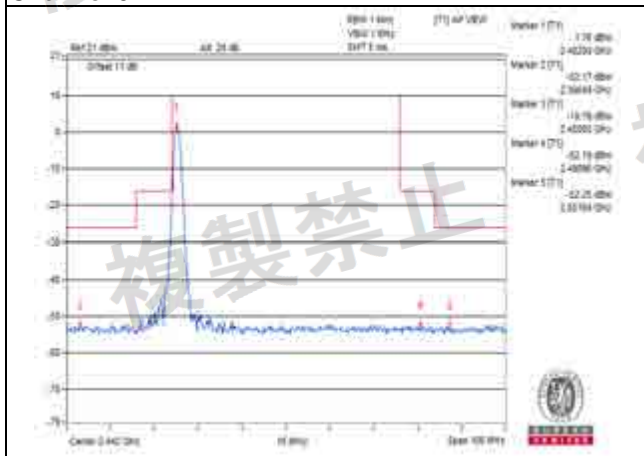
Vmax.
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



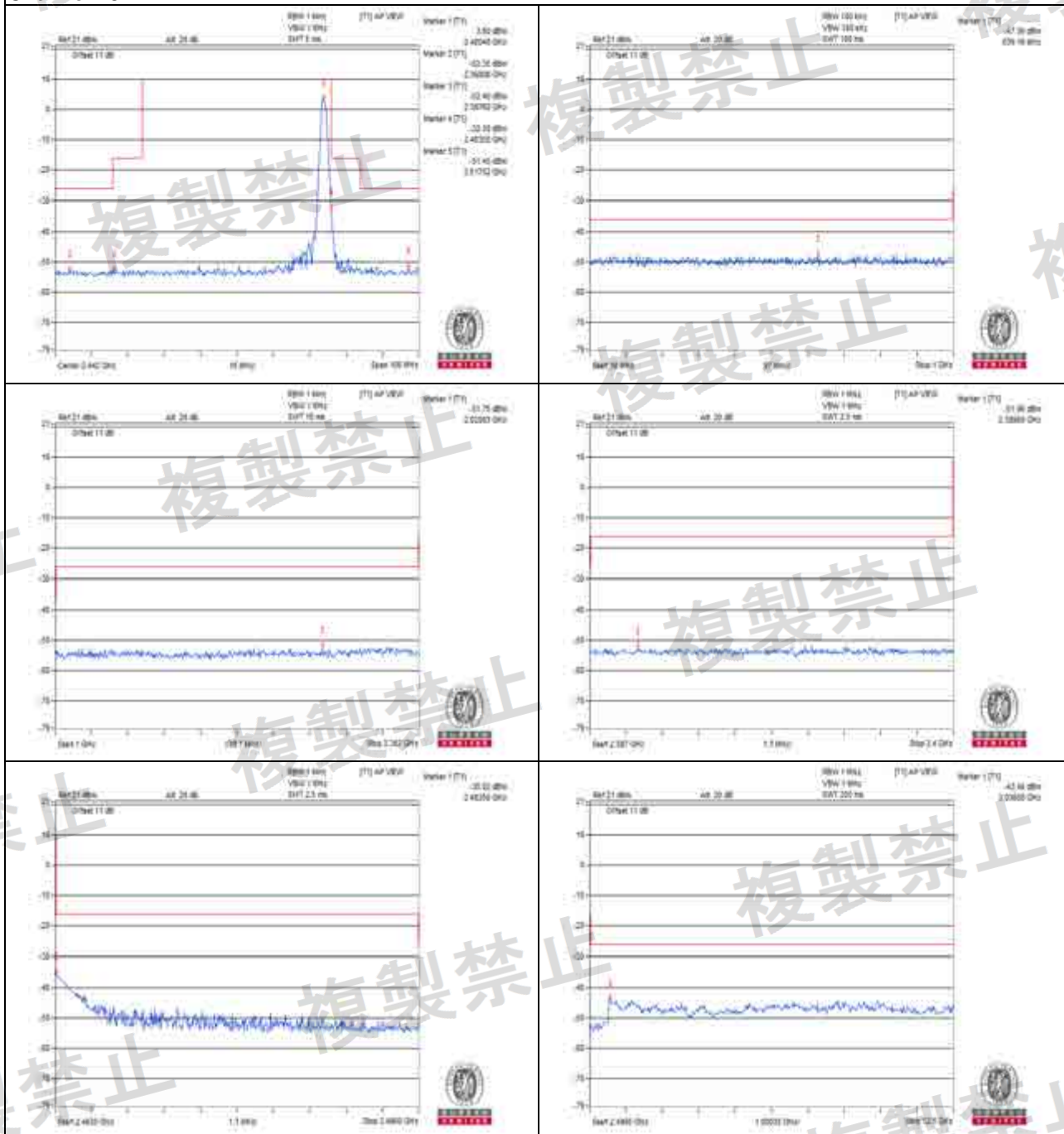
Vmin.
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



Modulation: 8DPSK

Environmental Conditions		25 deg.C, 68% RH					
Test Channel		CH0 (2402MHz)		CH39 (2441MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value	Frequency (MHz)	Measured Value		
Vnormal	30.0MHz to 1000.0MHz	503.360	0.019907uW	326.820	0.020277uW	0.25uW	PASS
	1000.0MHz to 2387MHz	2215.010	0.006887uW	2173.400	0.007889uW	2.5uW	PASS
	2387.0MHz to 2400.0MHz	2400.000	8.531001uW	2395.710	0.008185uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2493.450	0.00857uW	2490.230	0.006761uW	25uW	PASS
	2496.5MHz to 12500.0MHz	2996.670	0.047753uW	9899.090	0.045394uW	2.5uW	PASS
Vmax.	30.0MHz to 1000.0MHz	827.340	0.019143uW	497.540	0.020606uW	0.25uW	PASS
	1000.0MHz to 2387MHz	2231.650	0.006295uW	2273.260	0.00597uW	2.5uW	PASS
	2387.0MHz to 2400.0MHz	2400.000	8.090959uW	2393.030	0.006577uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2485.110	0.007161uW	2488.200	0.007261uW	25uW	PASS
	2496.5MHz to 12500.0MHz	3036.680	0.046345uW	2996.670	0.043351uW	2.5uW	PASS
Vmin.	30.0MHz to 1000.0MHz	751.680	0.018836uW	229.820	0.019588uW	0.25uW	PASS
	1000.0MHz to 2387MHz	2215.010	0.006839uW	1210.820	0.006223uW	2.5uW	PASS
	2387.0MHz to 2400.0MHz	2400.000	9.225714uW	2395.810	0.006152uW	25uW	PASS
	2483.5MHz to 2496.5MHz	2484.640	0.007656uW	2484.090	0.006982uW	25uW	PASS
	2496.5MHz to 12500.0MHz	9919.090	0.046132uW	9598.980	0.047643uW	2.5uW	PASS

Note: The worst value in each frequency range v.s. each channel has been marked by boldface.

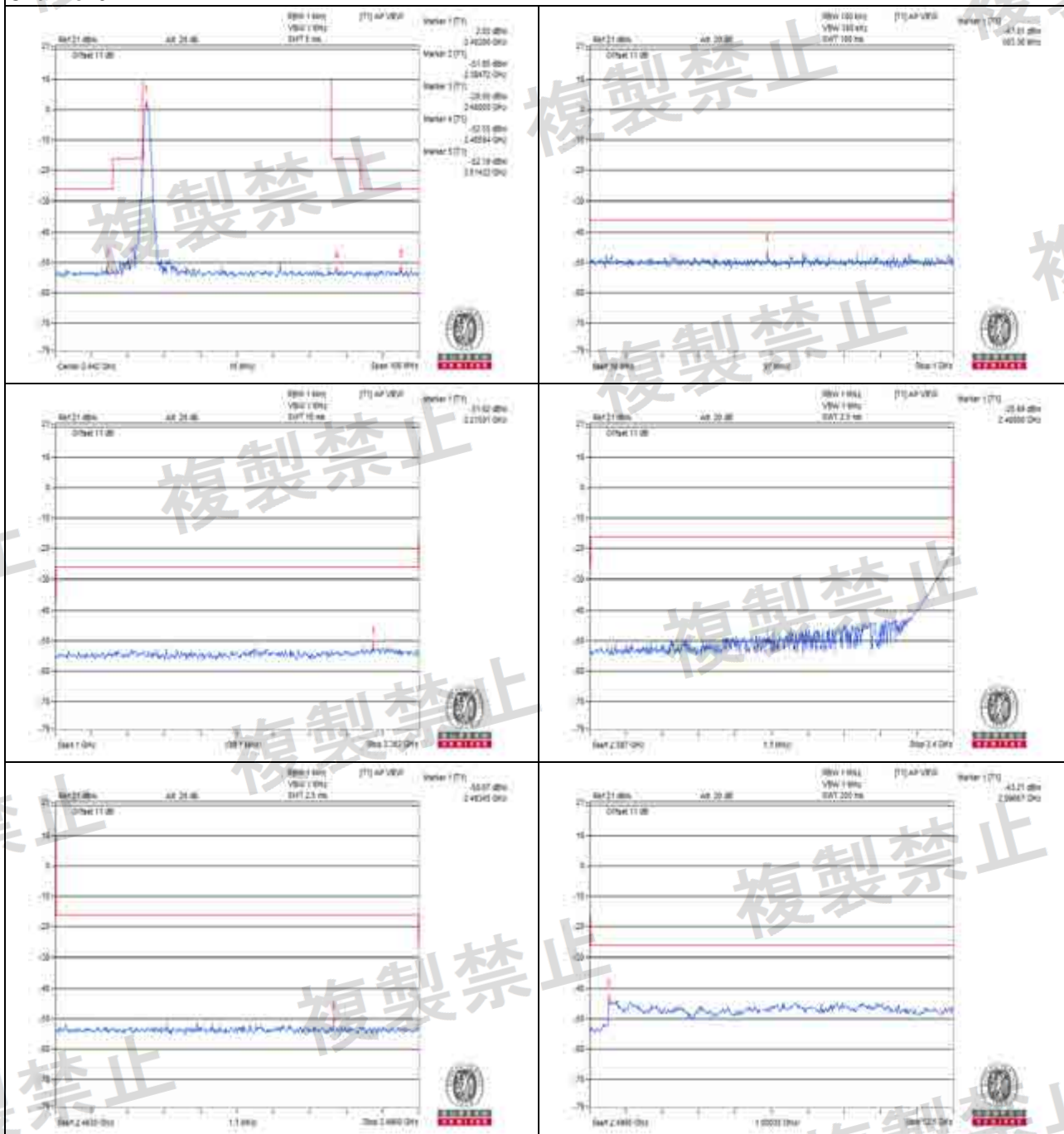


Environmental Conditions		25 deg.C, 68% RH			
Test Channel		CH78 (2480MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value		
Vnormal	30.0MHz to 1000.0MHz	516.940	0.017539uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2362.030	0.006442uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2397.710	0.007816uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.301995uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3016.680	0.041687uW	2.5uW	Pass
Vmax.	30.0MHz to 1000.0MHz	443.220	0.018113uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2253.840	0.007194uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2398.020	0.006776uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.297852uW	25uW	Pass
	2496.5MHz to 12500.0MHz	2996.670	0.036559uW	2.5uW	Pass
Vmin.	30.0MHz to 1000.0MHz	375.320	0.020512uW	0.25uW	Pass
	1000.0MHz to 2387MHz	2312.100	0.007161uW	2.5uW	Pass
	2387.0MHz to 2400.0MHz	2389.600	0.006427uW	25uW	Pass
	2483.5MHz to 2496.5MHz	2483.500	0.304089uW	25uW	Pass
	2496.5MHz to 12500.0MHz	3016.680	0.065464uW	2.5uW	Pass

- Note:
1. The worst value in each frequency range v.s. each channel has been marked by boldface.
 2. The spectrum plots are attached on the following pages.



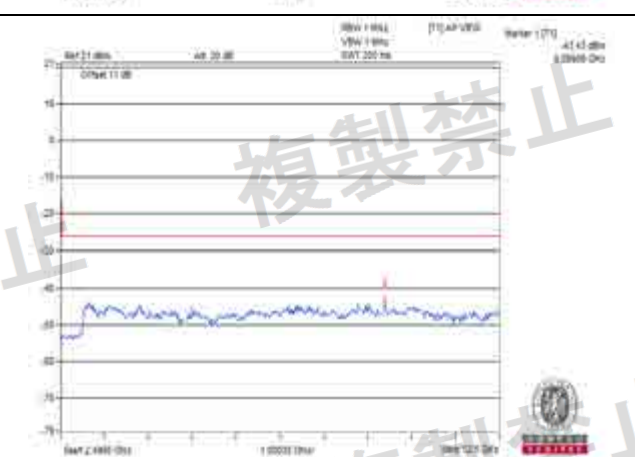
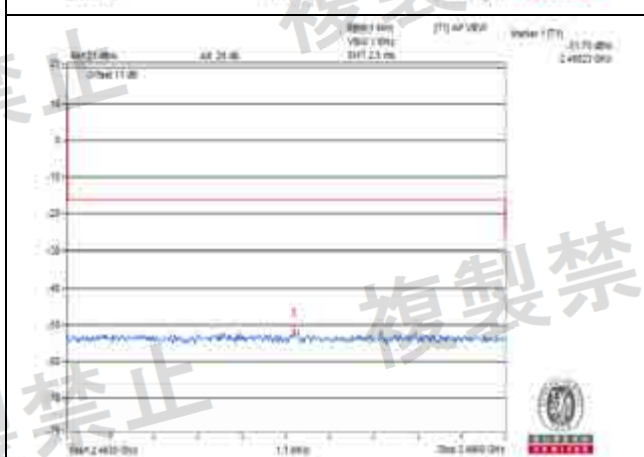
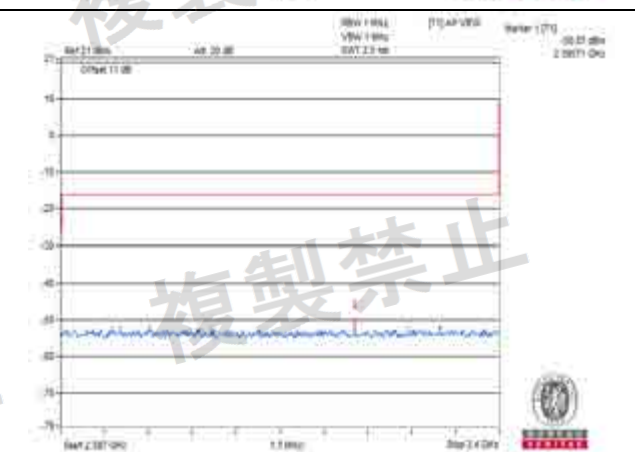
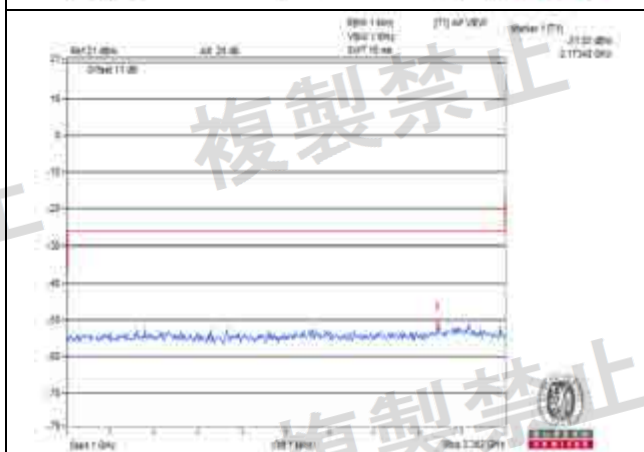
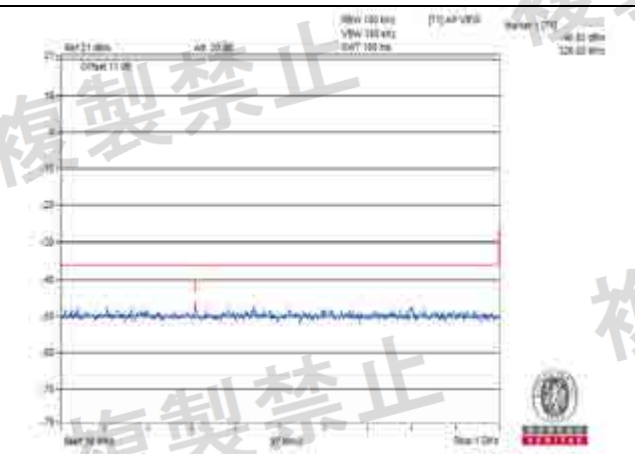
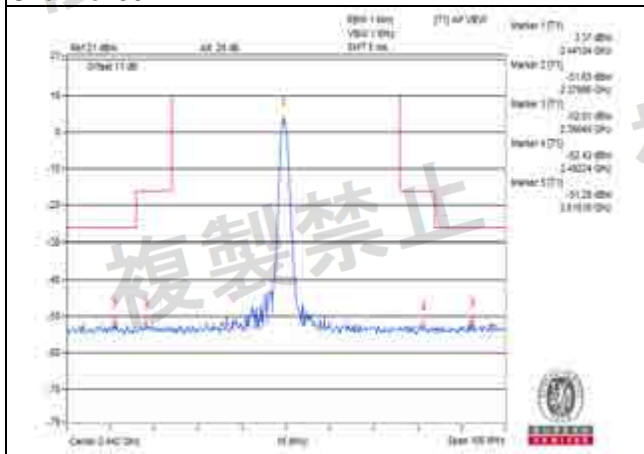
Vnormal
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



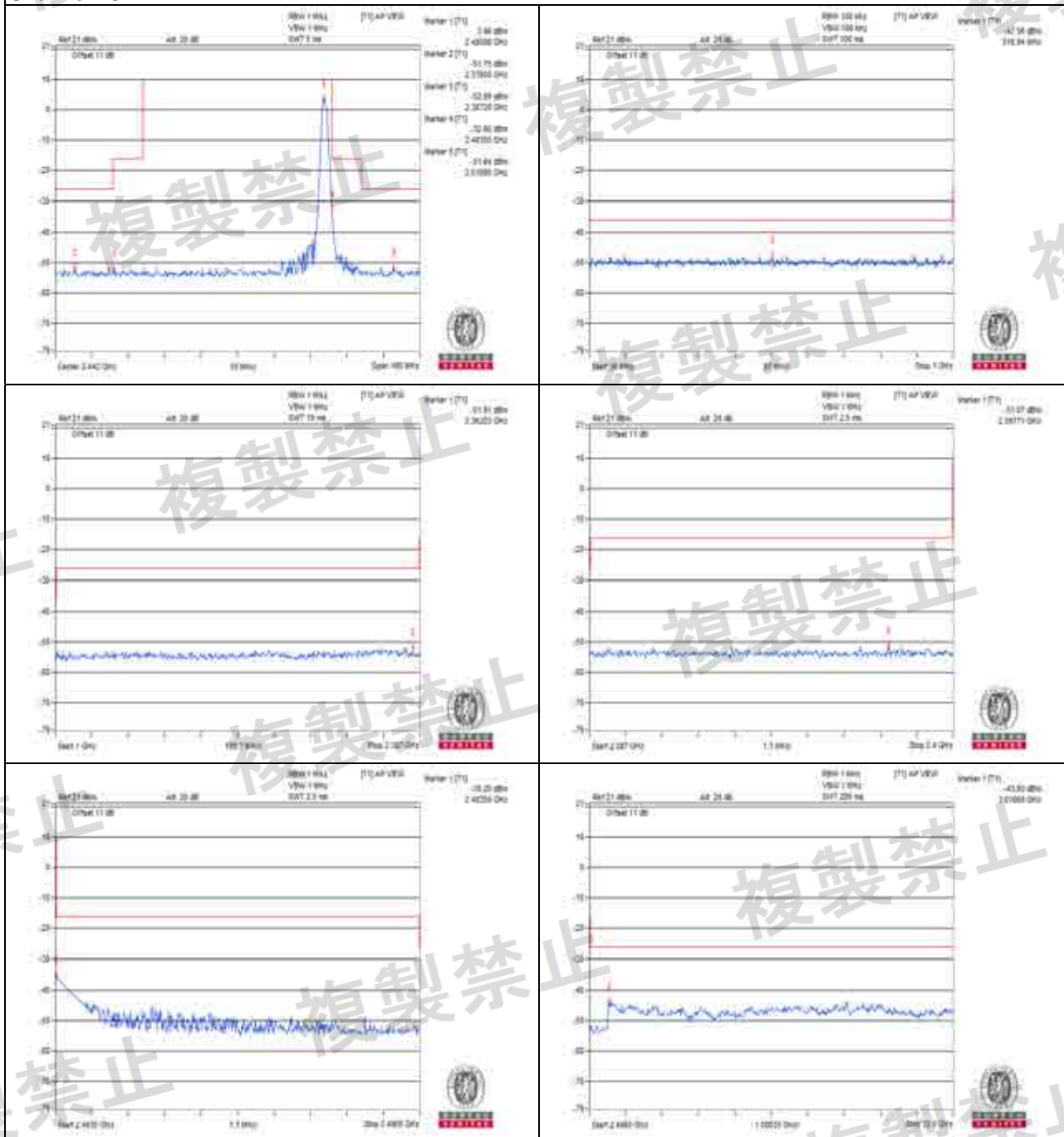
Vnormal
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



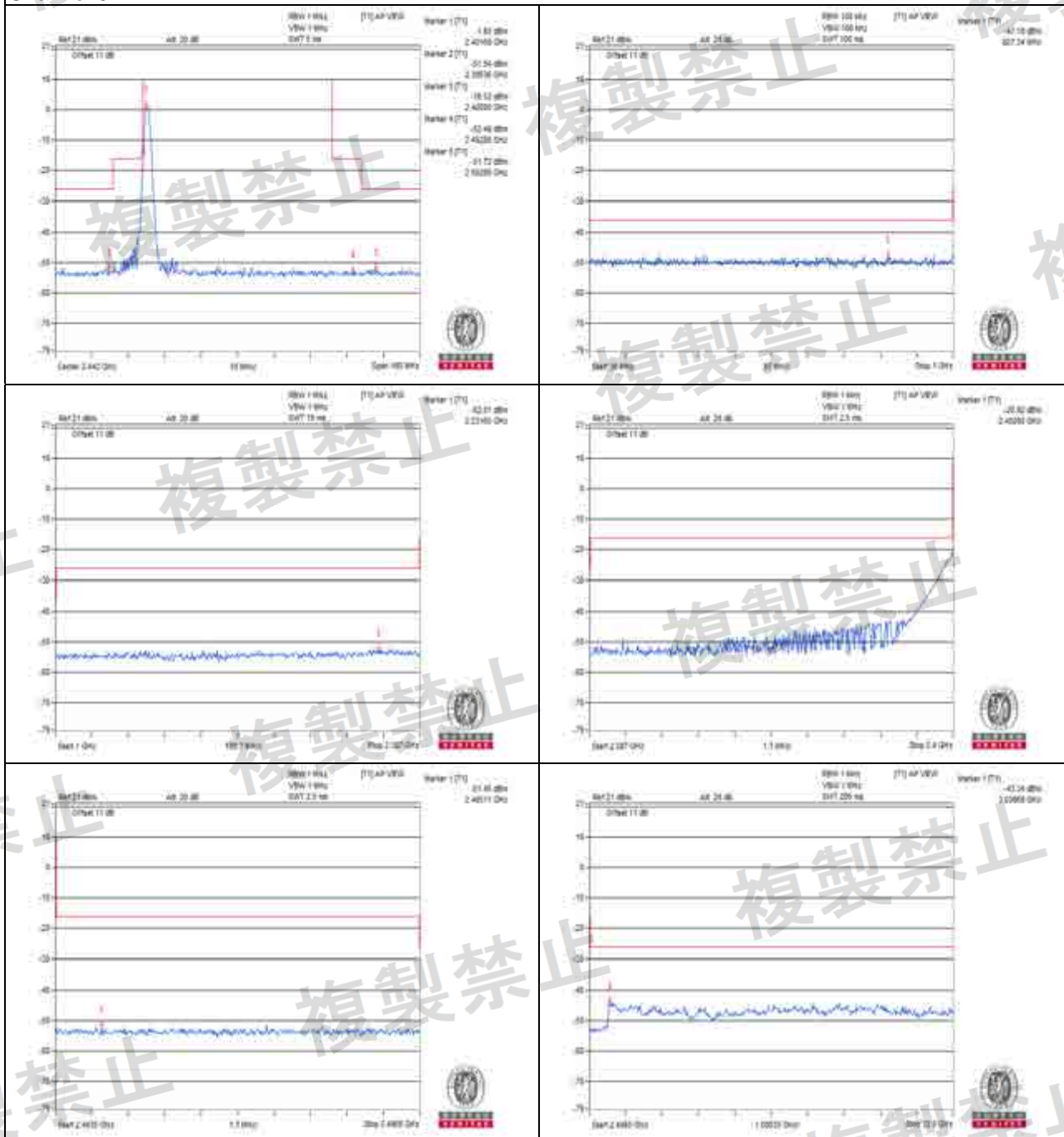
Vnormal
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



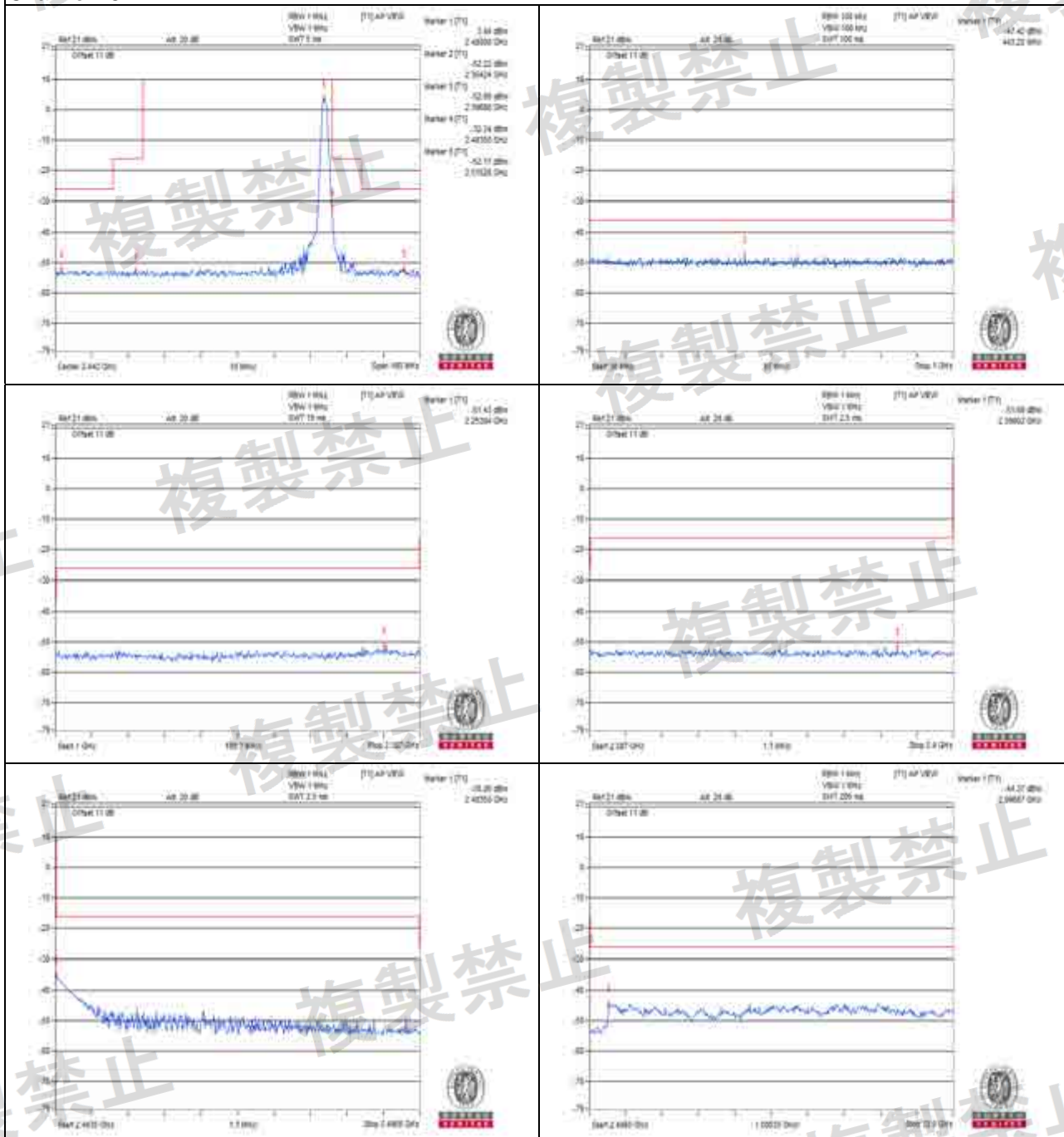
Vmax.
Channel 0



Measurement uncertainty: $\pm 3.93\text{dB}$



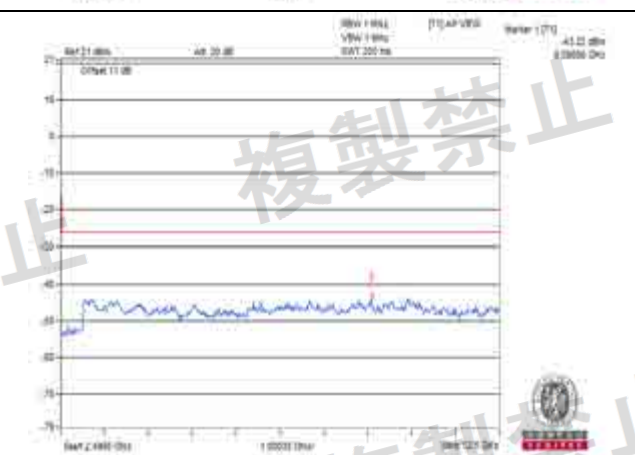
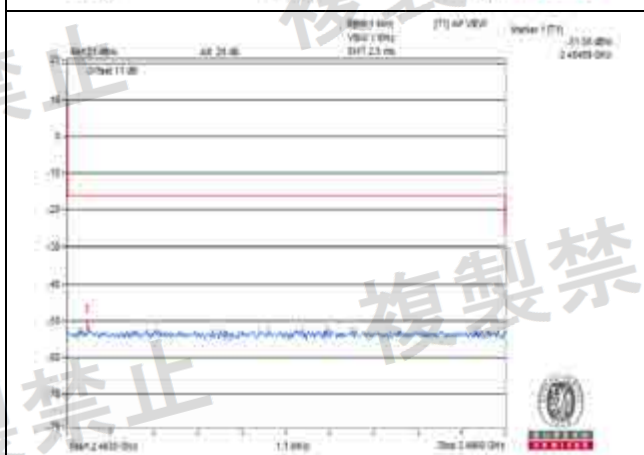
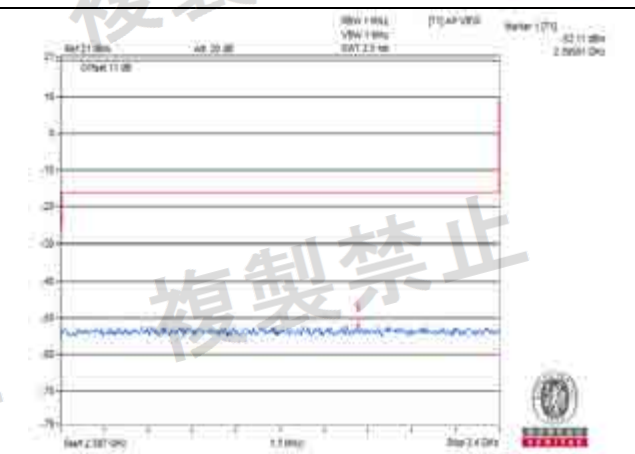
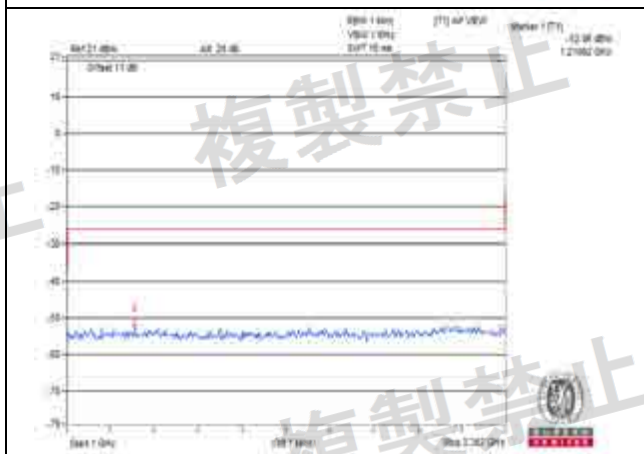
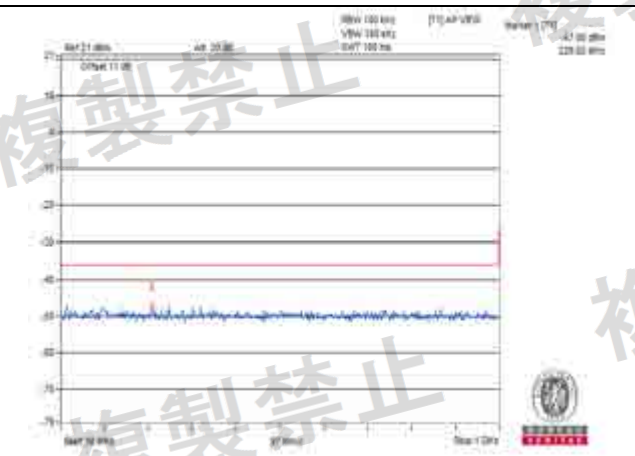
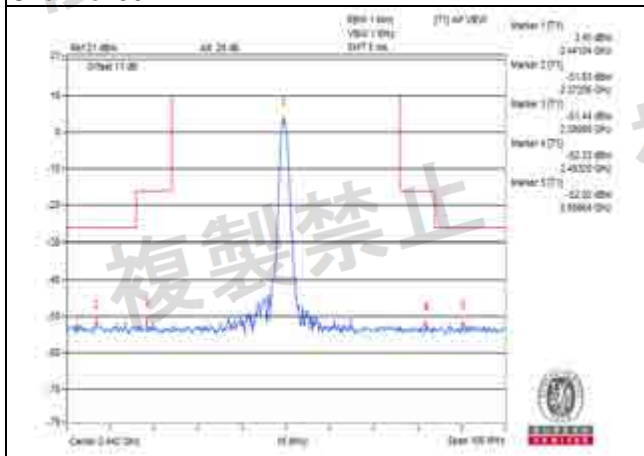
Vmax.
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



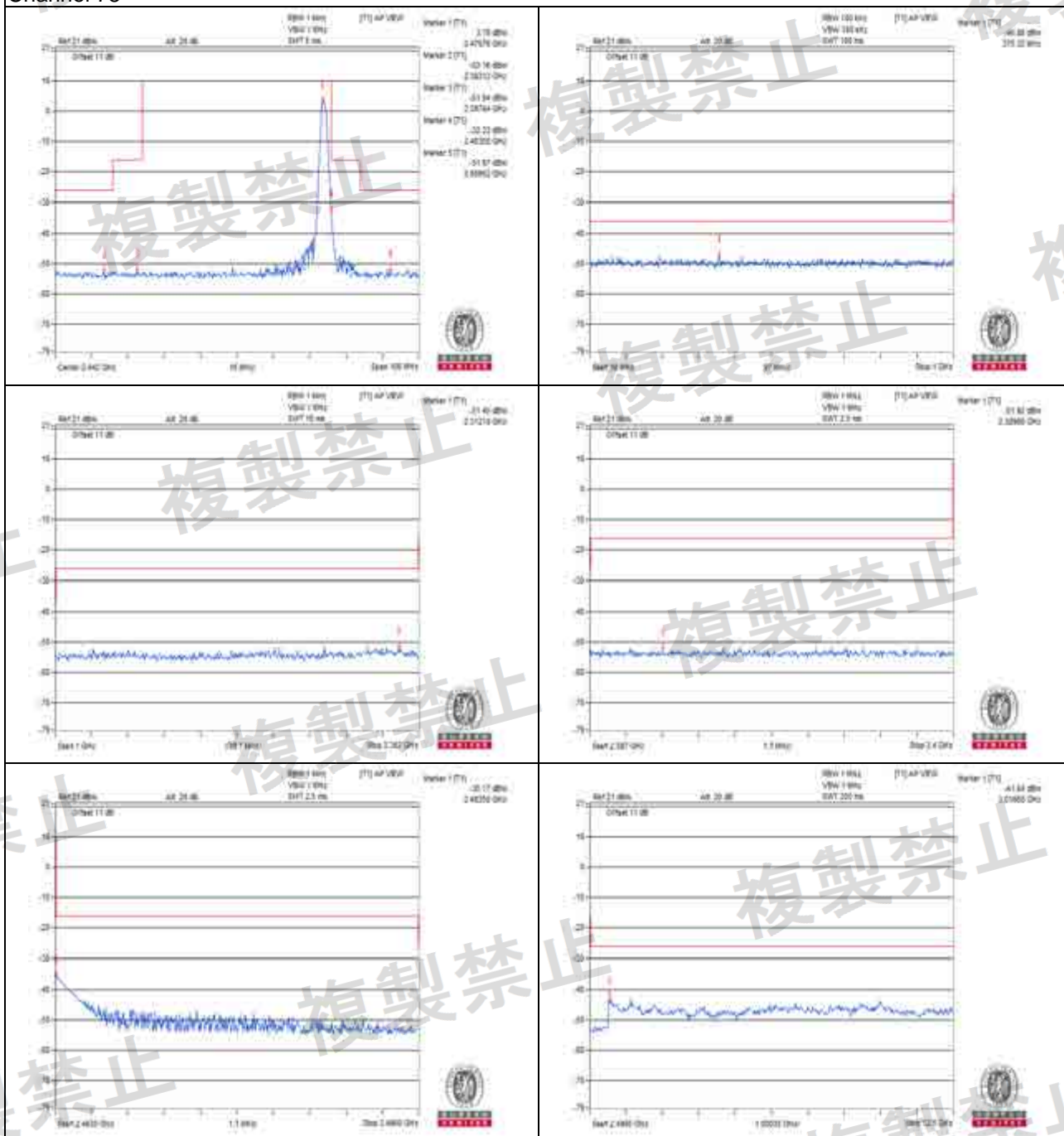
Vmin.
Channel 39



Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.
Channel 78



Measurement uncertainty: $\pm 3.93\text{dB}$



4.5 Antenna Power Measurement

4.5.1 Limits of Antenna Power

Modulation System	Frequency Band Used	Antenna Power (Max.)	EIRP (Max.)	
			Omni-Directional Case	Directional Case
DS	2400 – 2483.5 MHz	10 mW/MHz	12.14 dBm/MHz (16.37 mW/MHz)	22.14 dBm/MHz (163.68 mW/MHz)
OFDM (Note 1)	2400 – 2483.5 MHz	10 mW/MHz	12.14 dBm/MHz (16.37 mW/MHz)	22.14 dBm/MHz (163.68 mW/MHz)
OFDM (Note 2)	2400 – 2483.5 MHz	5 mW/MHz	9.14 dBm/MHz (8.20mW/MHz)	19.14 dBm/MHz (82.04 mW/MHz)
FH	2400 – 2483.5 MHz	3 mW/MHz	6.91 dBm/MHz (4.91 mW/MHz)	16.91 dBm/MHz (49.10 mW/MHz)

Note:

1. Occupied bandwidth is less than 26MHz
2. Occupied bandwidth is more than 26MHz and less than 38MHz
3. The half-power beam width for directional antenna shall be $360/A$ degrees or less, where A is a ratio which causes the EIRP concerned to exceed the omnidirectional EIRP upper limit.
4. Tolerance of antenna power shall be +20% (upper value) and -80% (lower value).

4.5.2 Test Setup





4.5.3 Test Results

Modulation: GFSK

Environmental Conditions	25 deg.C, 68 % RH		
Test Condition	Conducted RF output power (dBm)		
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz
Vnormal	0.780	1.390	1.970
Vmax.	0.733	1.307	1.852
Vmin.	0.741	1.320	1.870

Normal Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.017	0.019	0.022	3
Vmax.	0.017	0.019	0.022	3
Vmin.	0.017	0.019	0.022	3
Rated Power	0.020mW/MHz			
Tolerance of Antenna Power	0.004mW/MHz ~ 0.024mW/MHz			

Note: 1. Conducted of output power density = Conducted output power / Spread-Spectrum.

2. Set EUT to transmit continuously wave (duty-cycle = 1) to test.

3. Output Power Tolerance (%) = $\{(0.022-0.020)/0.020\} \times 100 = 10.00\%$.

AFH Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.066	0.076	0.087	3
Vmax.	0.065	0.074	0.084	3
Vmin.	0.066	0.075	0.085	3
Rated Power	0.080mW/MHz			
Tolerance of Antenna Power	0.016mW/MHz ~ 0.096mW/MHz			

Note: 1. Conducted of output power density = Conducted output power / Spread-Spectrum.

2. Set EUT to transmit continuously wave (duty-cycle = 1) to test.

3. Output Power Tolerance (%) = $\{(0.087-0.080)/0.080\} \times 100 = 8.75\%$.



PIFA antenna with -1.72dBi gain

Normal Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.011	0.013	0.015	4.910
Vmax.	0.011	0.013	0.015	4.910
Vmin.	0.011	0.013	0.015	4.910

- Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.

AFH Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.044	0.051	0.059	4.910
Vmax.	0.044	0.050	0.056	4.910
Vmin.	0.044	0.050	0.057	4.910

- Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.



Modulation: $\pi/4$ -DQPSK

Environmental Conditions	25 deg.C, 68 % RH		
Test Condition	Conducted RF output power (dBm)		
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz
Vnormal	3.120	4.230	5.060
Vmax.	2.933	3.976	4.756
Vmin.	2.962	4.016	4.804

Normal Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.029	0.038	0.045	3
Vmax.	0.028	0.035	0.042	3
Vmin.	0.028	0.036	0.043	3
Rated Power	0.040mW/MHz			
Tolerance of Antenna Power	0.008mW/MHz ~ 0.048mW/MHz			

Note: 1. Conducted of output power density = Conducted output power / Spread-Spectrum.

2. Set EUT to transmit continuously wave (duty-cycle = 1) to test.

3. Output Power Tolerance (%) = $\{(0.045-0.040)/0.040\} \times 100 = 12.50\%$.

AFH Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.111	0.144	0.174	3
Vmax.	0.107	0.136	0.162	3
Vmin.	0.107	0.137	0.164	3
Rated Power	0.150mW/MHz			
Tolerance of Antenna Power	0.030mW/MHz ~ 0.180mW/MHz			

Note: 1. Conducted of output power density = Conducted output power / Spread-Spectrum.

2. Set EUT to transmit continuously wave (duty-cycle = 1) to test.

3. Output Power Tolerance (%) = $\{(0.174-0.150)/0.150\} \times 100 = 16.00\%$.



PIFA antenna with -1.72dBi gain

Normal Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.020	0.025	0.031	4.910
Vmax.	0.019	0.024	0.028	4.910
Vmin.	0.019	0.024	0.029	4.910

- Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.

AFH Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.075	0.097	0.117	4.910
Vmax.	0.072	0.091	0.109	4.910
Vmin.	0.072	0.092	0.111	4.910

- Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.



Modulation: 8DPSK

Environmental Conditions	25 deg.C, 68 % RH		
Test Condition	Conducted RF output power (dBm)		
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz
Vnormal	3.220	4.440	5.110
Vmax.	3.027	4.174	4.803
Vmin.	3.057	4.215	4.851

Normal Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.030	0.039	0.046	3
Vmax.	0.028	0.037	0.043	3
Vmin.	0.029	0.037	0.043	3
Rated Power	0.040mW/MHz			
Tolerance of Antenna Power	0.008mW/MHz ~ 0.048mW/MHz			

Note: 1. Conducted of output power density = Conducted output power / Spread-Spectrum.

2. Set EUT to transmit continuously wave (duty-cycle = 1) to test.

3. Output Power Tolerance (%) = $\{(0.046-0.040)/0.040\} \times 100 = 15.00\%$.

AFH Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Conducted RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.114	0.151	0.176	3
Vmax.	0.109	0.142	0.164	3
Vmin.	0.110	0.143	0.166	3
Rated Power	0.150mW/MHz			
Tolerance of Antenna Power	0.030mW/MHz ~ 0.180mW/MHz			

Note: 1. Conducted of output power density = Conducted output power / Spread-Spectrum.

2. Set EUT to transmit continuously wave (duty-cycle = 1) to test.

3. Output Power Tolerance (%) = $\{(0.176-0.150)/0.150\} \times 100 = 17.33\%$.



PIFA antenna with -1.72dBi gain

Normal Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.020	0.026	0.031	4.910
Vmax.	0.019	0.025	0.029	4.910
Vmin.	0.019	0.025	0.029	4.910

- Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.

AFH Mode:

Environmental Conditions	25 deg.C, 68 % RH			
Test Condition	Radiated RF Output Power Density (mW/MHz)			
	Channel 0 2402MHz	Channel 39 2441MHz	Channel 78 2480MHz	Max. Limit (mW/MHz)
Vnormal	0.077	0.102	0.119	4.910
Vmax.	0.073	0.096	0.111	4.910
Vmin.	0.074	0.097	0.112	4.910

- Note: 1. The radiated RF output power density is a “calculated” value derived from the conducted value.
2. Formula: Radiated RF output power density = Conducted RF output power density + Antenna Gain.



4.6 Spurious Emissions for Receiver

4.6.1 Limits of Spurious Emissions for Receiver

Frequencies (MHz)	Limit
Below 1GHz	$\leq 4\text{nW}$ (-54dBm)
Above 1GHz	$\leq 20\text{nW}$ (-47dBm)

4.6.2 Test Setup





4.6.3 Test Result

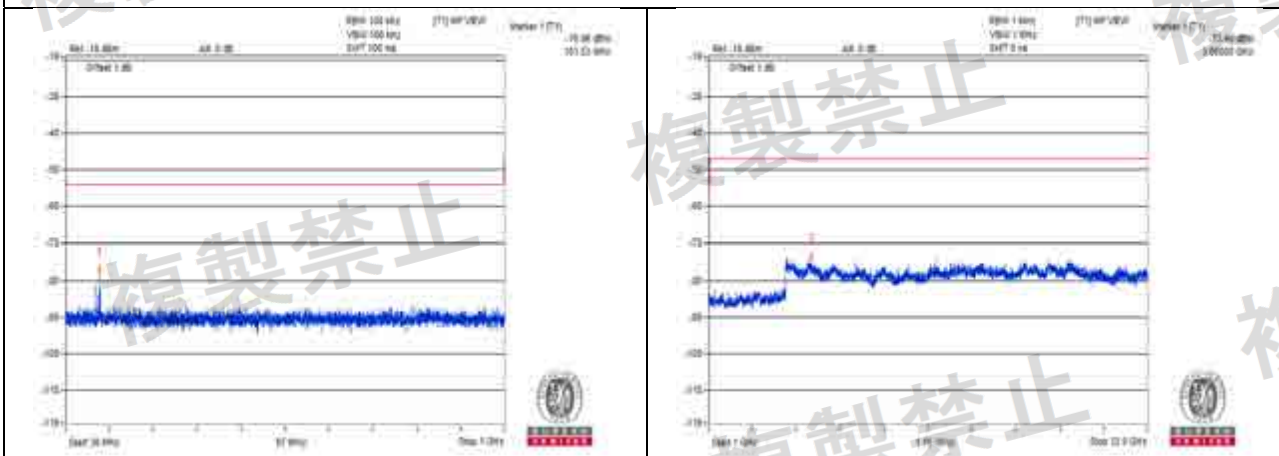
Modulation: GFSK

Environmental Conditions		25 deg.C, 68% RH					
Test Channel		Channel 0 (2402MHz)		Channel 39 (2441MHz)		Limit	Result
Test Condition	Frequency Range	Frequency (MHz)	Measured Value	Frequency (MHz)	Measured Value		
Vnormal	Below 1GHz	101.530	0.020137nW	101.530	0.019364nW	4nW	Pass
	Above 1GHz	3668.000	0.044875nW	10441.500	0.048978nW	20nW	Pass
Vmax.	Below 1GHz	101.530	0.015922nW	101.530	0.015311nW	4nW	Pass
	Above 1GHz	10441.500	0.057148nW	10441.500	0.05559nW	20nW	Pass
Vmin.	Below 1GHz	101.780	0.015959nW	101.530	0.017418nW	4nW	Pass
	Above 1GHz	10441.500	0.058345nW	10441.500	0.05236nW	20nW	Pass
Test Channel		Channel 78 (2480MHz)				Limit	Result
Test Condition	Frequency Range	Frequency (MHz)		Measured Value			
Vnormal	Below 1GHz	101.780		0.015776nW		4nW	Pass
	Above 1GHz	10441.500		0.050582nW		20nW	Pass
Vmax.	Below 1GHz	101.530		0.016069nW		4nW	Pass
	Above 1GHz	3647.870		0.047315nW		20nW	Pass
Vmin.	Below 1GHz	101.530		0.013183nW		4nW	Pass
	Above 1GHz	10441.500		0.053951nW		20nW	Pass

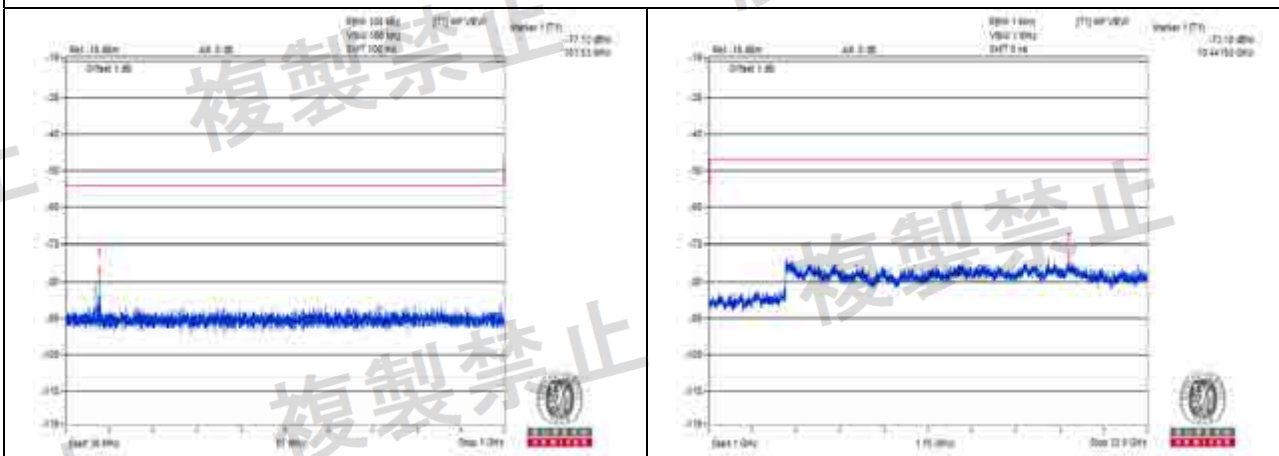
- Note:
1. The worst value in each frequency range v.s. each channel has been marked by boldface.
 2. The spectrum plots are attached on the following pages.



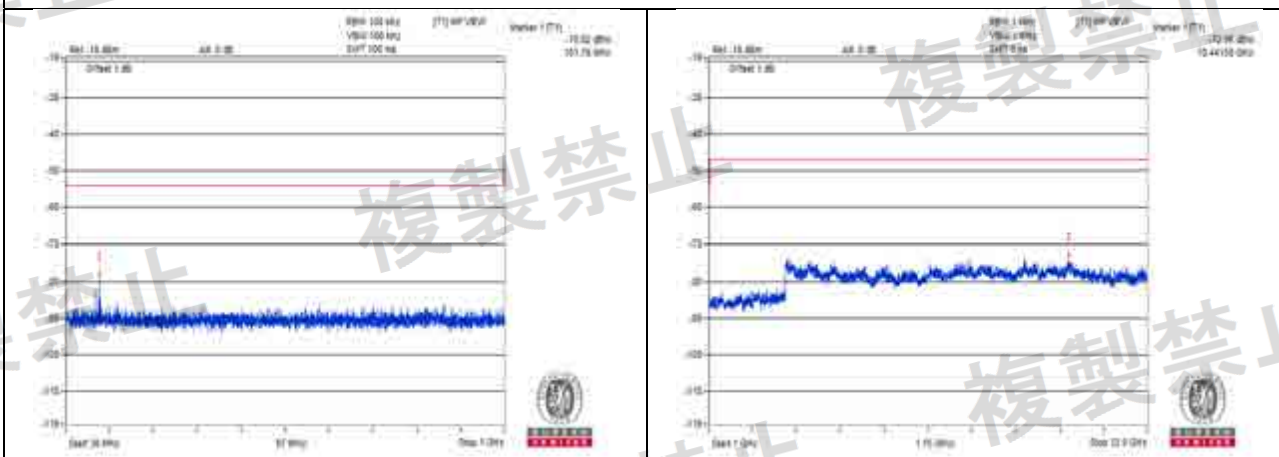
Vnormal



Channel 0



Channel 39

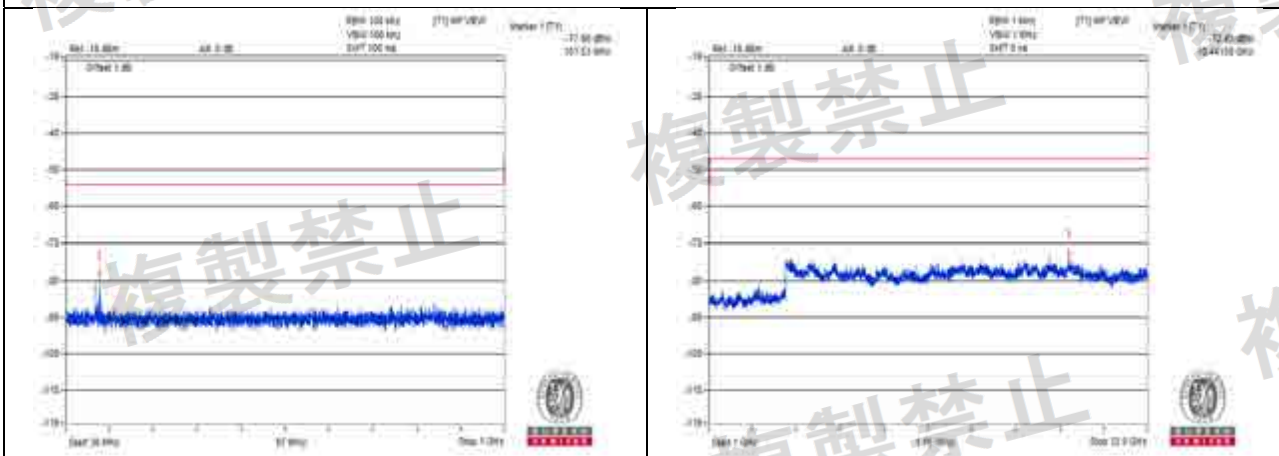


Channel 78

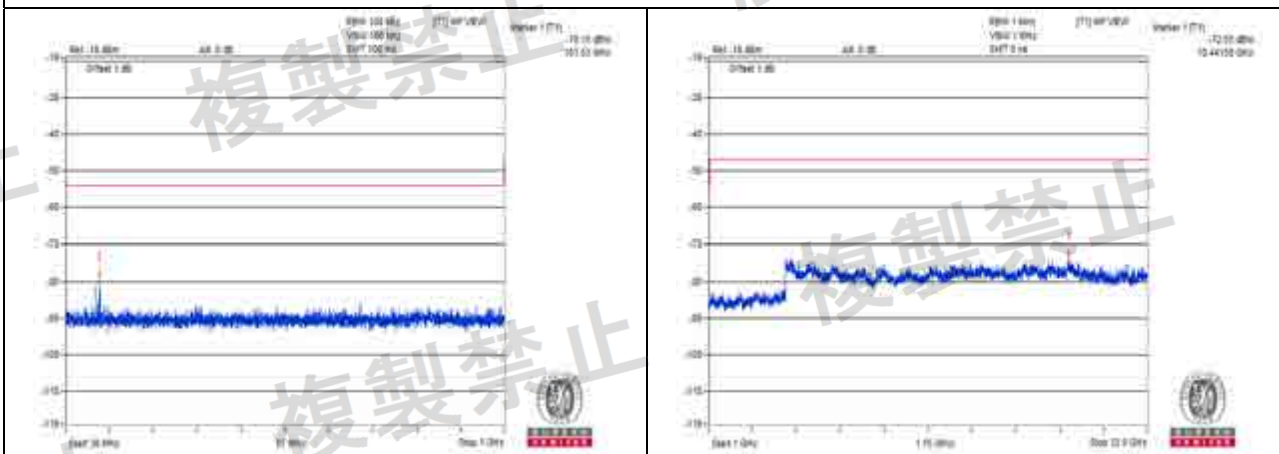
Measurement uncertainty: $\pm 3.93\text{dB}$



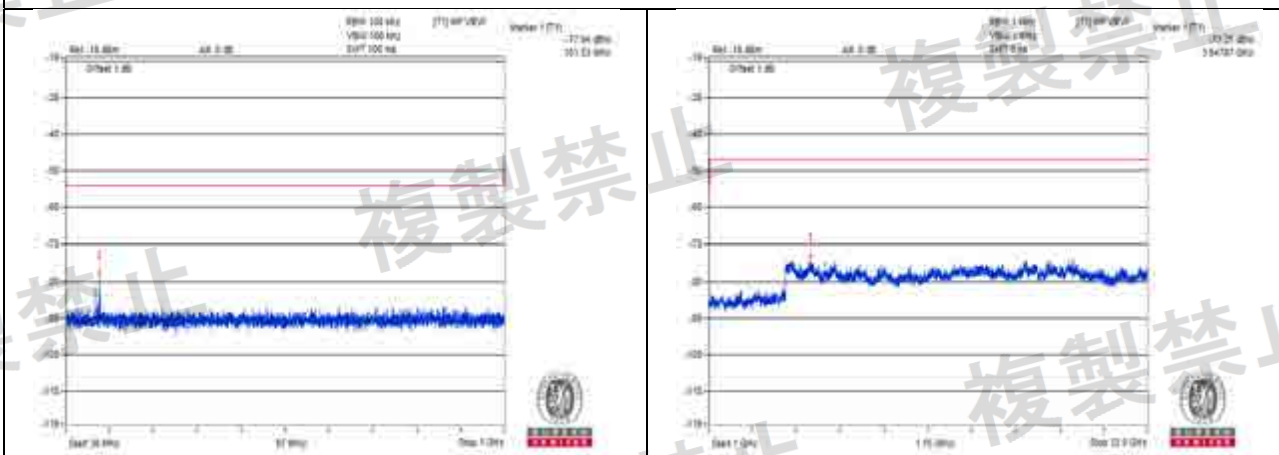
Vmax.



Channel 0



Channel 39

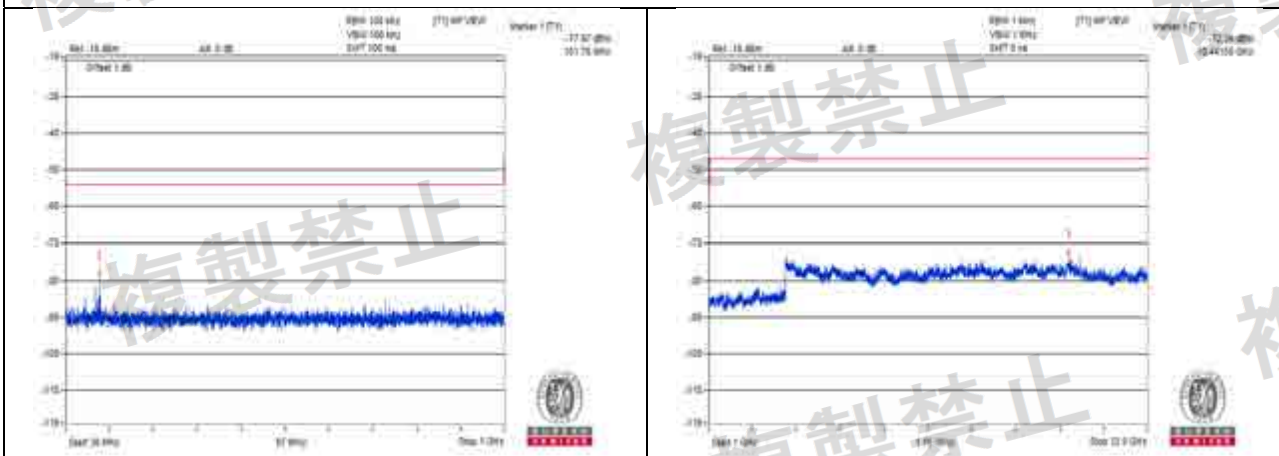


Channel 78

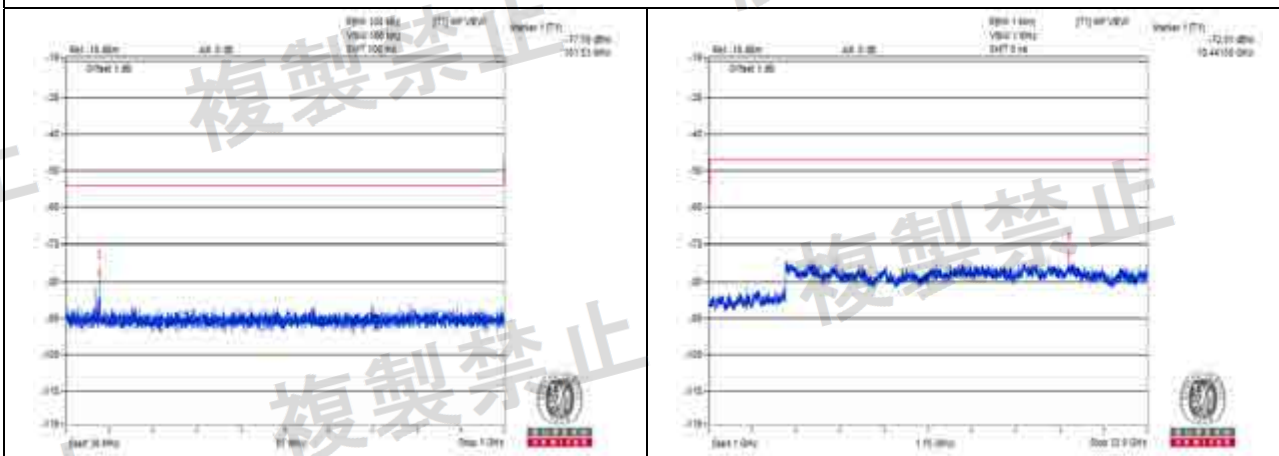
Measurement uncertainty: $\pm 3.93\text{dB}$



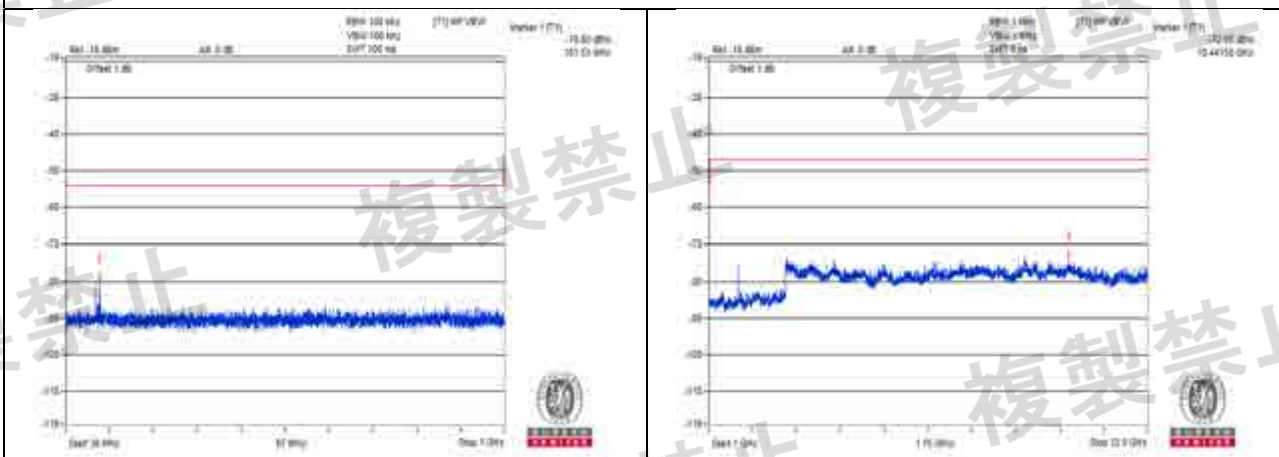
Vmin.



Channel 0



Channel 39



Channel 78

Measurement uncertainty: $\pm 3.93\text{dB}$



4.7 Dwell Time

4.7.1 Limits of Dwell Time

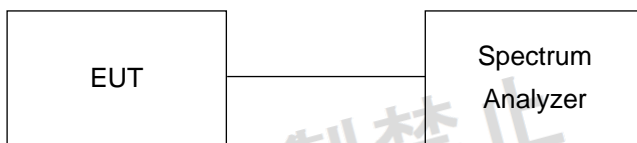
The frequency retention time in the frequency hopping method shall be 0.4 second or less. The total sum of the frequency retention time in any frequency within the time obtained by multiplying the diffusion rate by 0.4 second shall be 0.4 second or shorter.

Formula:

(Normal mode) dwell time = [diffusion rate/ 79] x duty-cycle x 0.4 seconds

(AFH mode) dwell time = [diffusion rate/20] x duty-cycle x 0.4 sec

4.7.2 Test Setup





4.7.3 Test Result

Modulation: GFSK

Normal Mode:

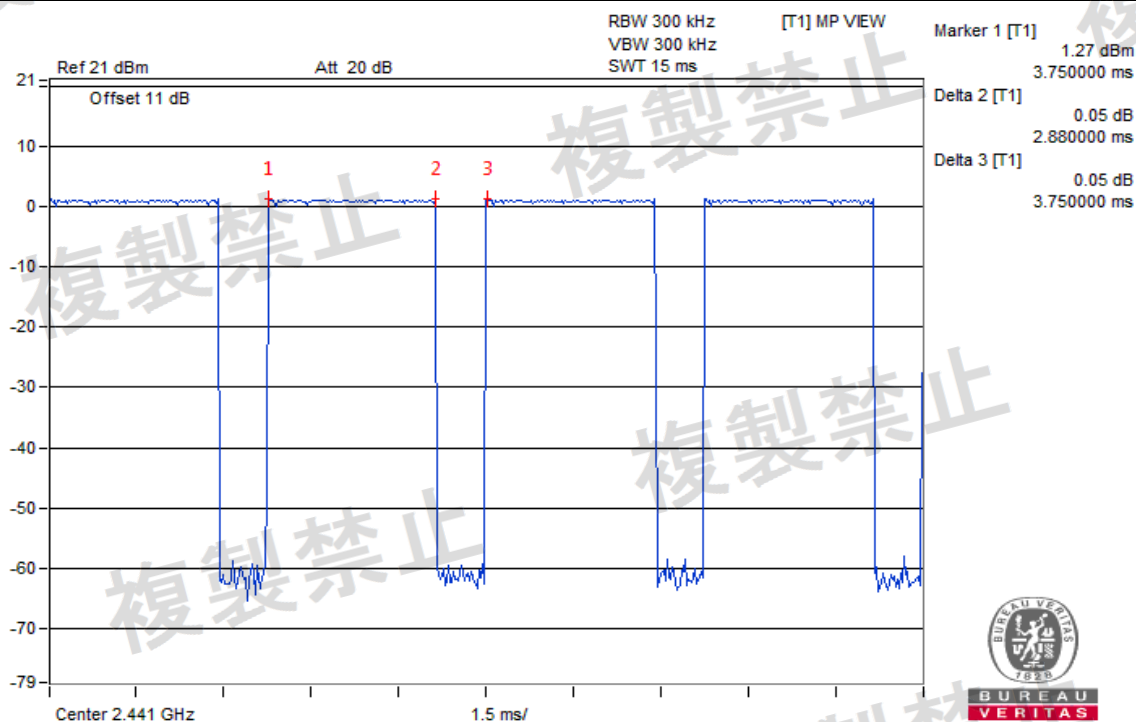
Test Condition	Mode	Spreading Rate	[Spreading Rate/79]*0.4	Duty Cycle	Result (msec)	Limit (msec)
Vnormal	DH1	70.80	0.358	0.293	104.894	400
	DH3	70.80	0.358	0.650	232.700	400
	DH5	70.80	0.358	0.768	274.944	400
Vmax.	DH1	71.00	0.359	0.293	105.187	400
	DH3	71.00	0.359	0.650	233.350	400
	DH5	71.00	0.359	0.768	275.712	400
Vmin.	DH1	71.20	0.360	0.293	105.480	400
	DH3	71.20	0.360	0.650	234.000	400
	DH5	71.20	0.360	0.768	276.480	400

AFH Mode:

Test Condition	Mode	Spreading Rate	[Spreading Rate/20]*0.4	Duty Cycle	Result (msec)	Limit (msec)
Vnormal	DH1	18.10	0.362	0.293	106.066	400
	DH3	18.10	0.362	0.650	235.300	400
	DH5	18.10	0.362	0.768	278.016	400
Vmax.	DH1	18.30	0.366	0.293	107.238	400
	DH3	18.30	0.366	0.650	237.900	400
	DH5	18.30	0.366	0.768	281.088	400
Vmin.	DH1	18.10	0.362	0.293	106.066	400
	DH3	18.10	0.362	0.650	235.300	400
	DH5	18.10	0.362	0.768	278.016	400



Vnormal

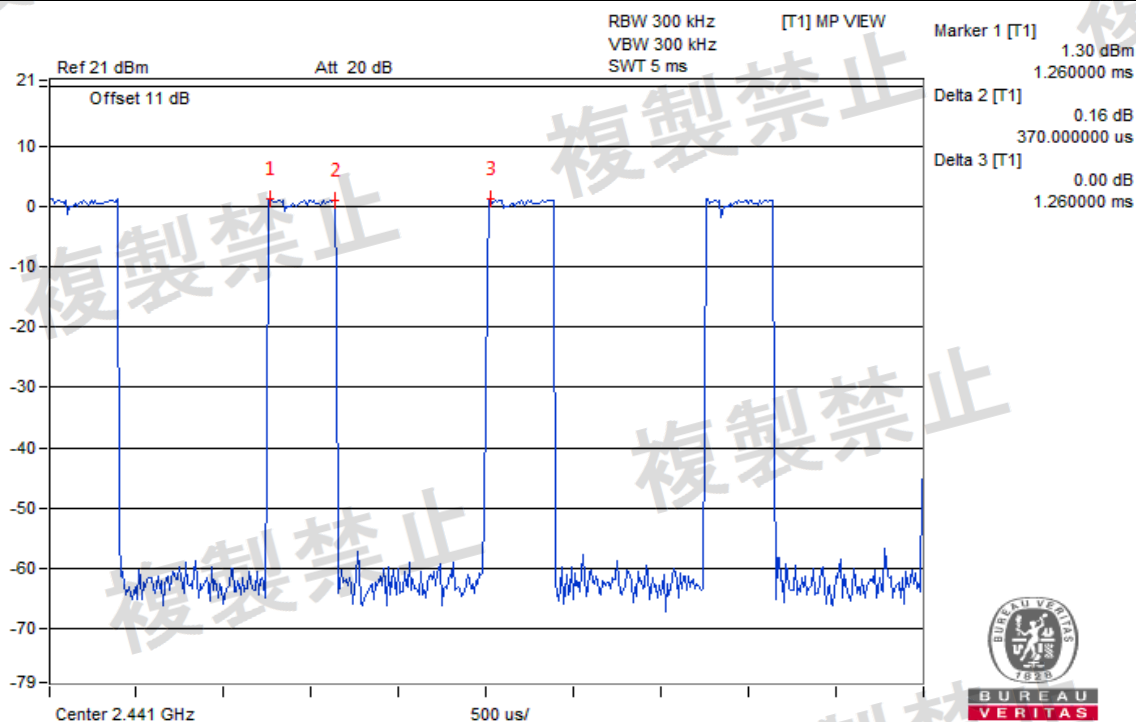


DH5

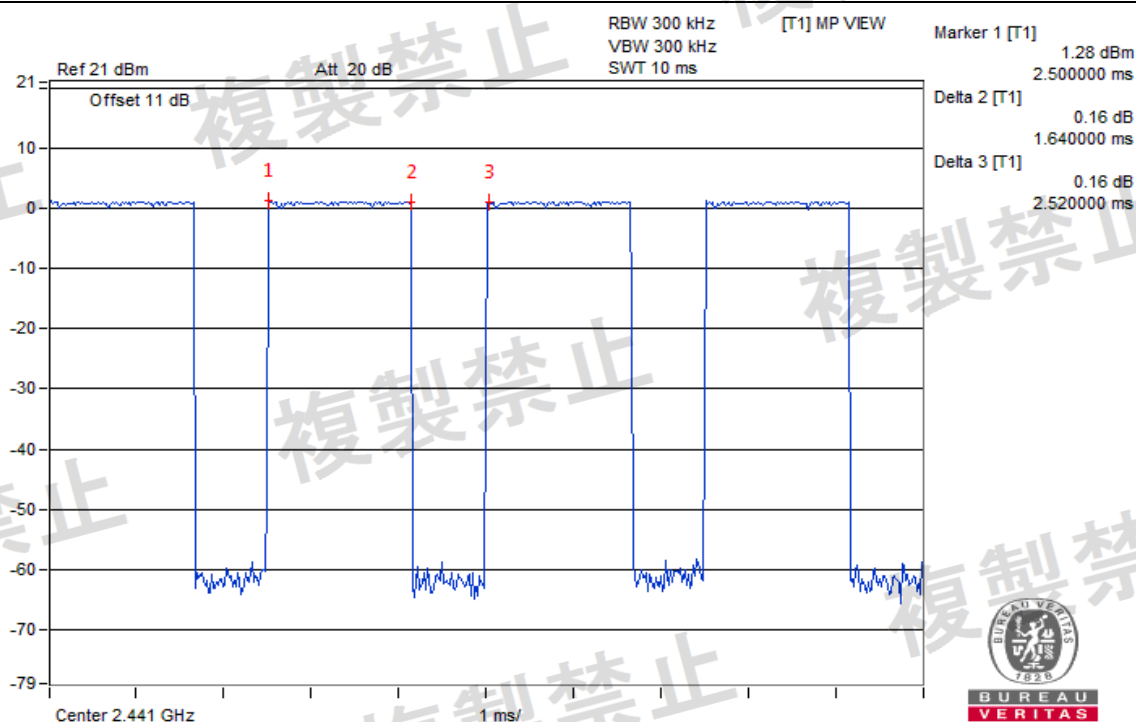
Measurement uncertainty: $\pm 3.93\text{dB}$



Vmax.



DH1

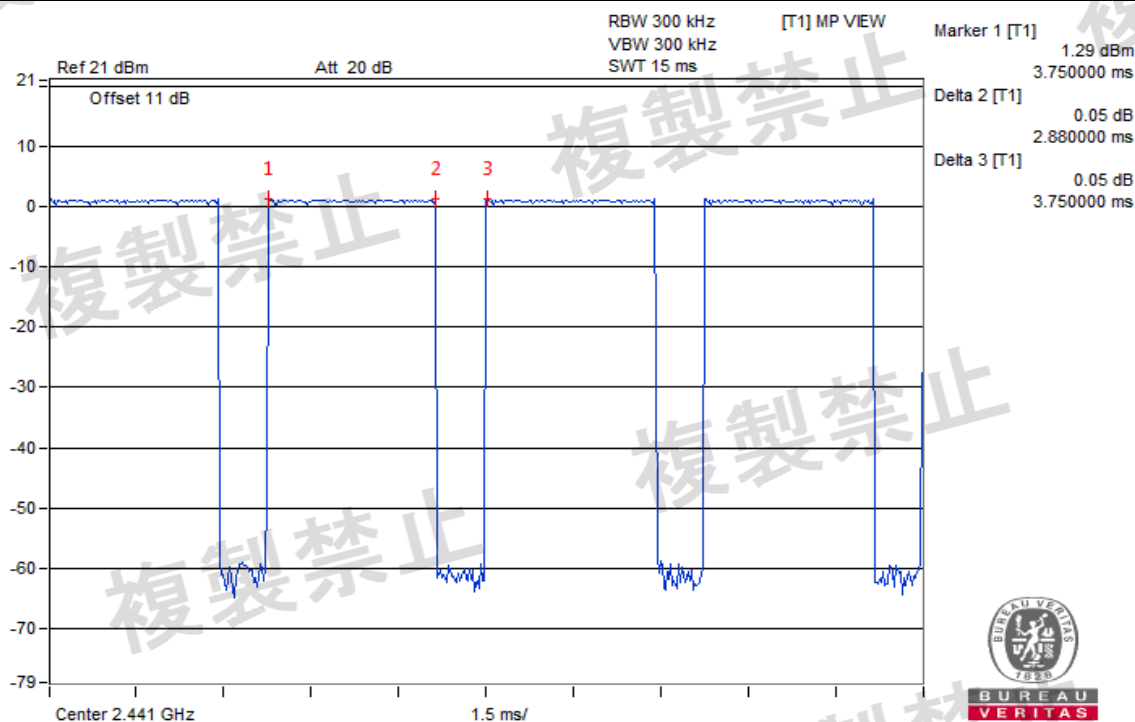


DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmax.

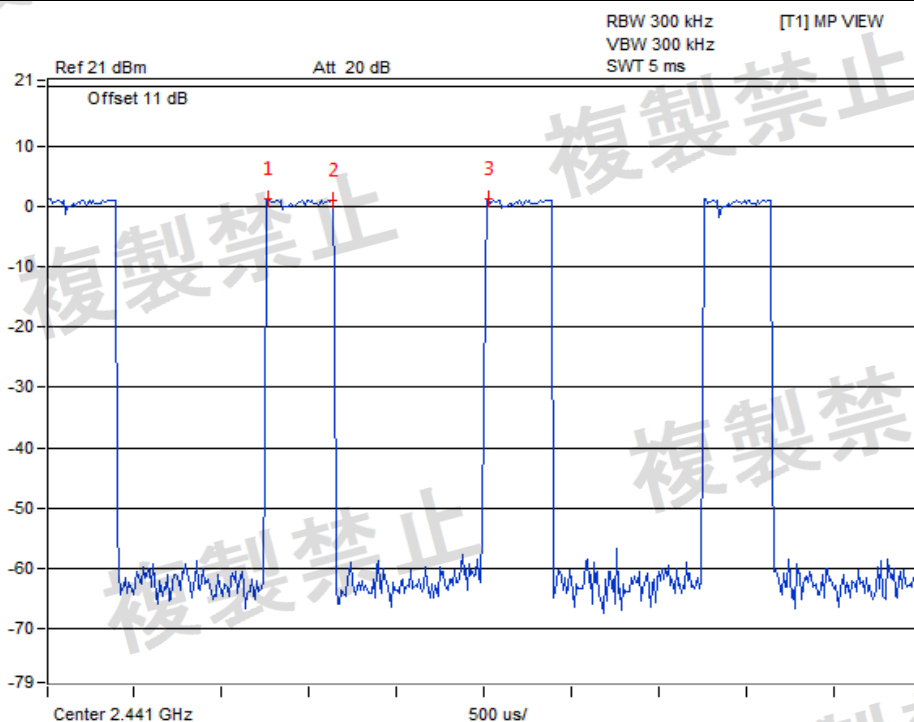


DH5

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.

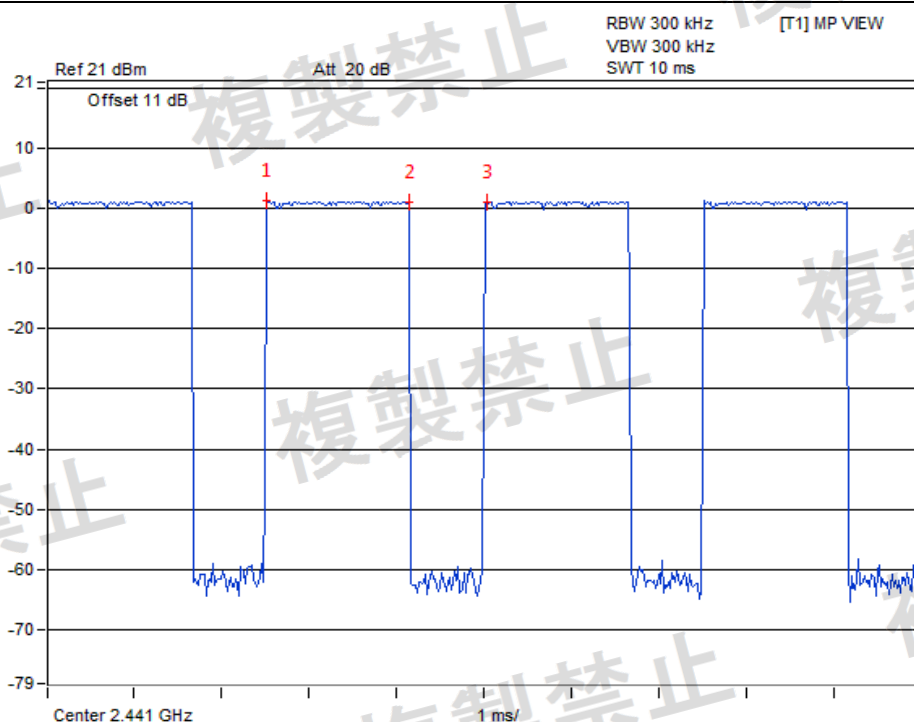


Marker 1 [T1] 1.31 dBm
1.260000 ms
Delta 2 [T1] 0.16 dB
370.000000 us
Delta 3 [T1] 0.02 dB
1.260000 ms



BUREAU
VERITAS

DH1



Marker 1 [T1] 1.29 dBm
2.500000 ms
Delta 2 [T1] 0.16 dB
1.640000 ms
Delta 3 [T1] 0.16 dB
2.520000 ms



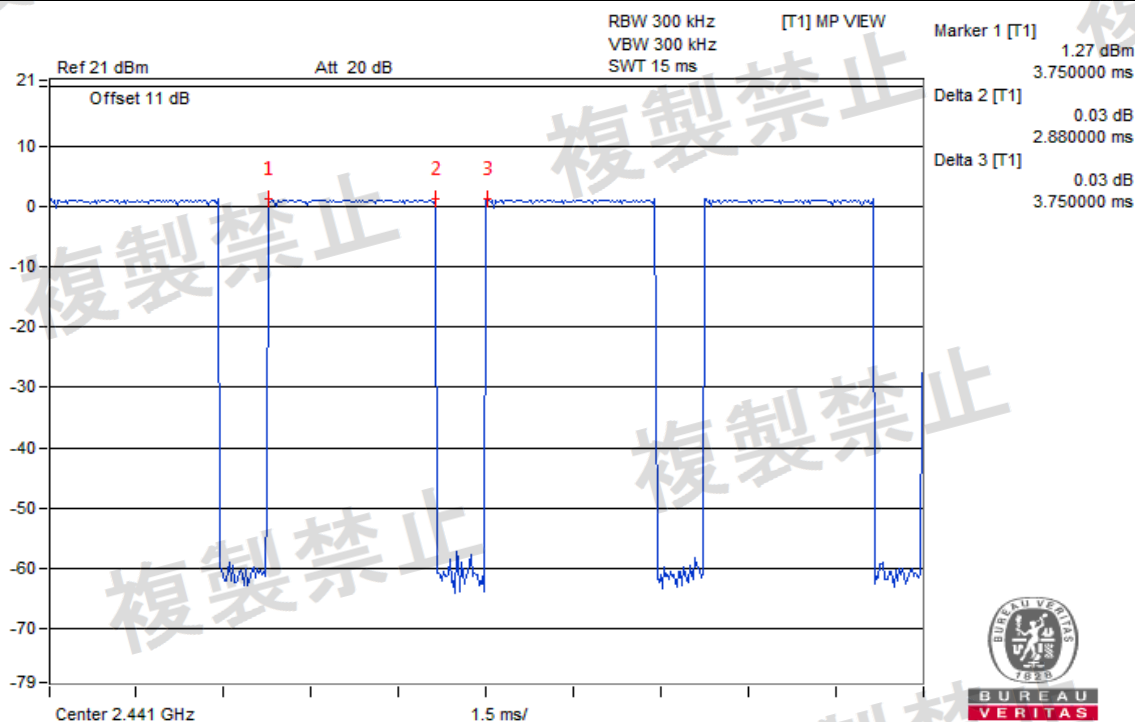
BUREAU
VERITAS

DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.



DH5

Measurement uncertainty: $\pm 3.93\text{dB}$



Modulation: $\pi/4$ -DQPSK

Normal Mode:

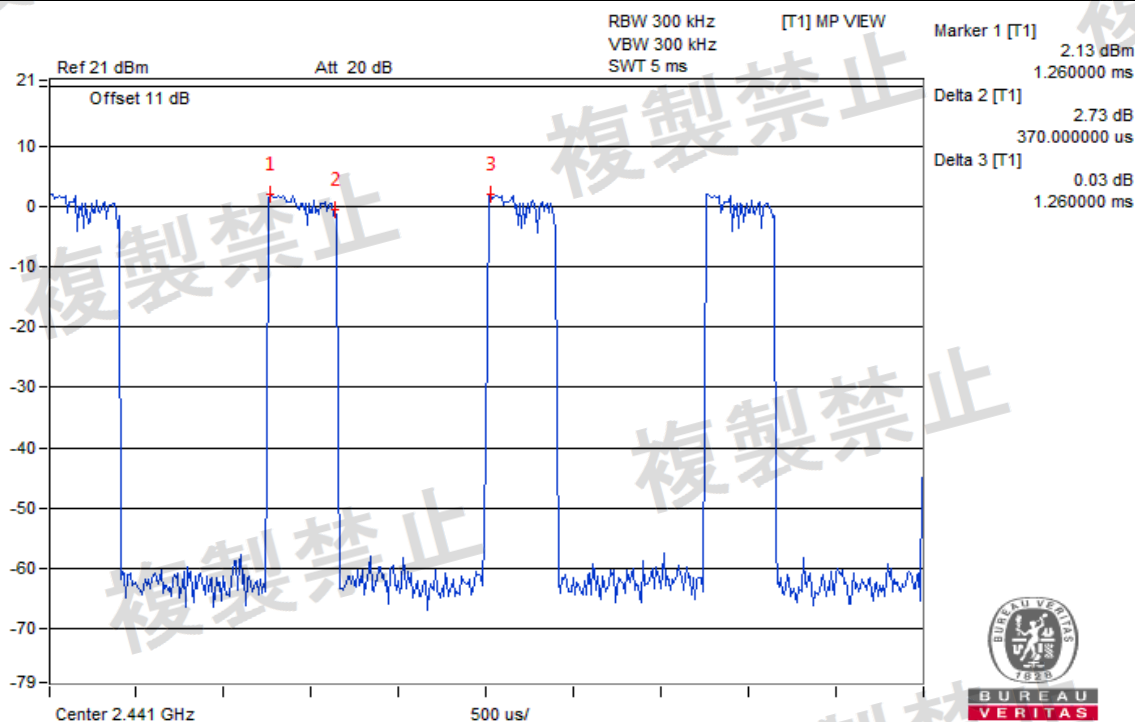
Test Condition	Mode	Spreading Rate	[Spreading Rate/79]*0.4	Duty Cycle	Result (msec)	Limit (msec)
Vnormal	DH1	70.60	0.357	0.293	104.601	400
	DH3	70.60	0.357	0.626	223.482	400
	DH5	70.60	0.357	0.761	271.677	400
Vmax.	DH1	70.80	0.358	0.293	104.894	400
	DH3	70.80	0.358	0.626	224.108	400
	DH5	70.80	0.358	0.761	272.438	400
Vmin.	DH1	70.60	0.357	0.293	104.601	400
	DH3	70.60	0.357	0.626	223.482	400
	DH5	70.60	0.357	0.761	271.677	400

AFH Mode:

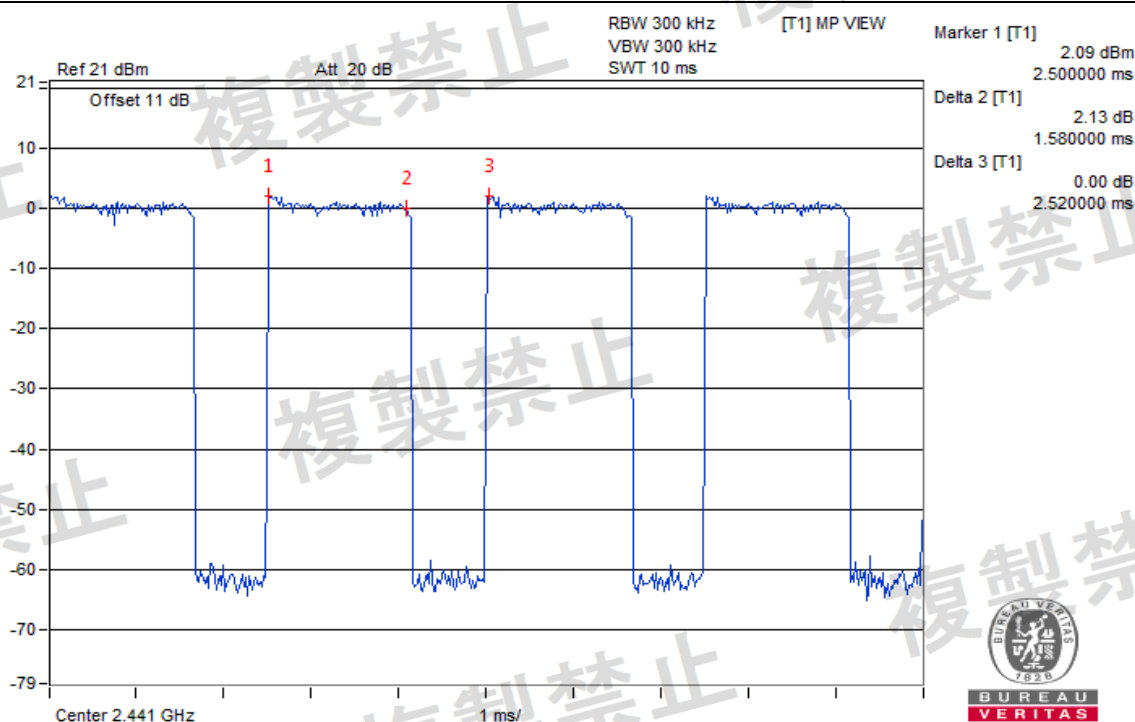
Test Condition	Mode	Spreading Rate	[Spreading Rate/20]*0.4	Duty Cycle	Result (msec)	Limit (msec)
Vnormal	DH1	18.40	0.368	0.293	107.824	400
	DH3	18.40	0.368	0.626	230.368	400
	DH5	18.40	0.368	0.761	280.048	400
Vmax.	DH1	18.40	0.368	0.293	107.824	400
	DH3	18.40	0.368	0.626	230.368	400
	DH5	18.40	0.368	0.761	280.048	400
Vmin.	DH1	18.40	0.368	0.293	107.824	400
	DH3	18.40	0.368	0.626	230.368	400
	DH5	18.40	0.368	0.761	280.048	400



Vnormal



DH1

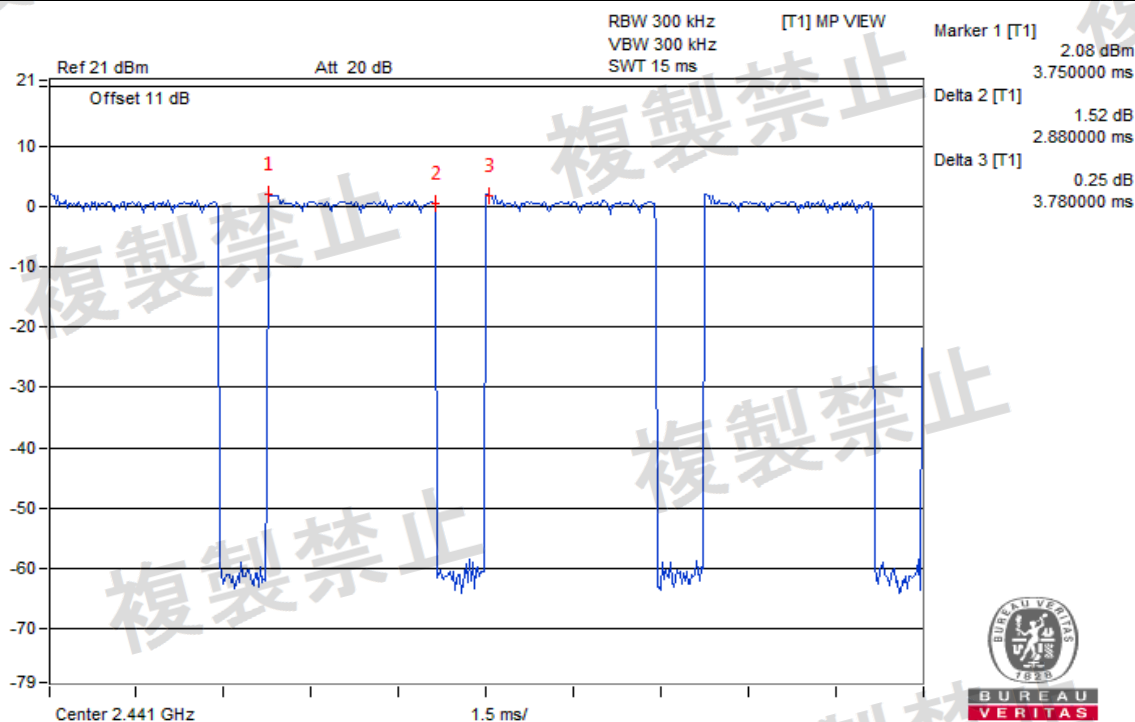


DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vnormal

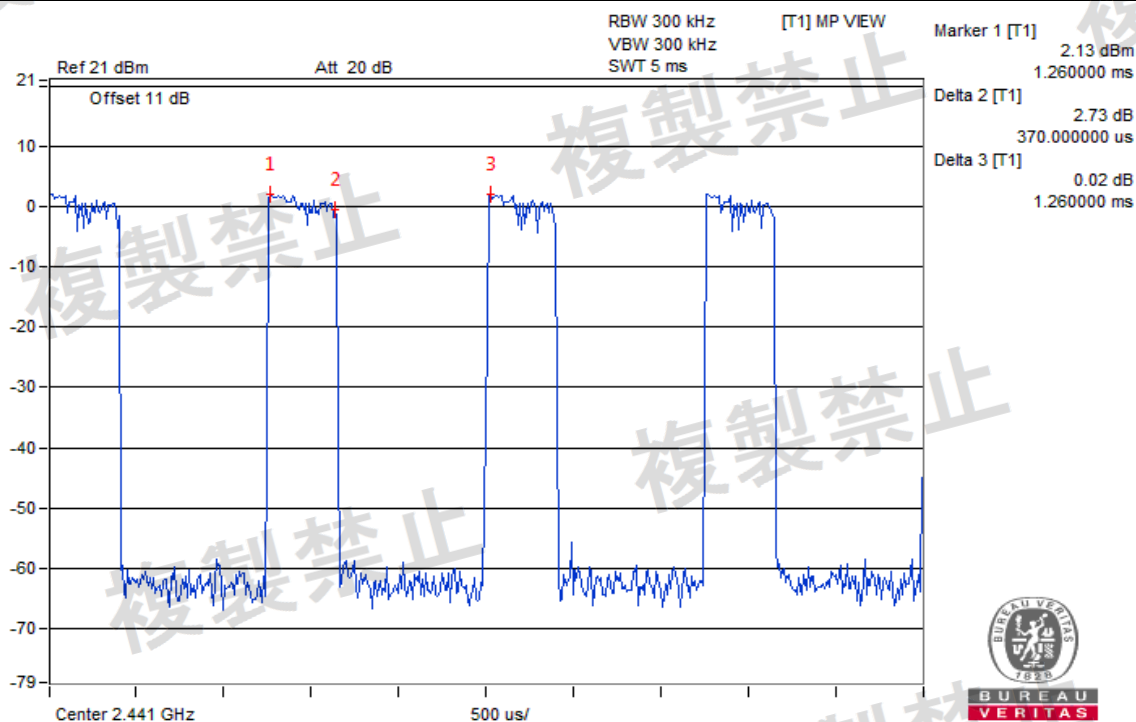


DH5

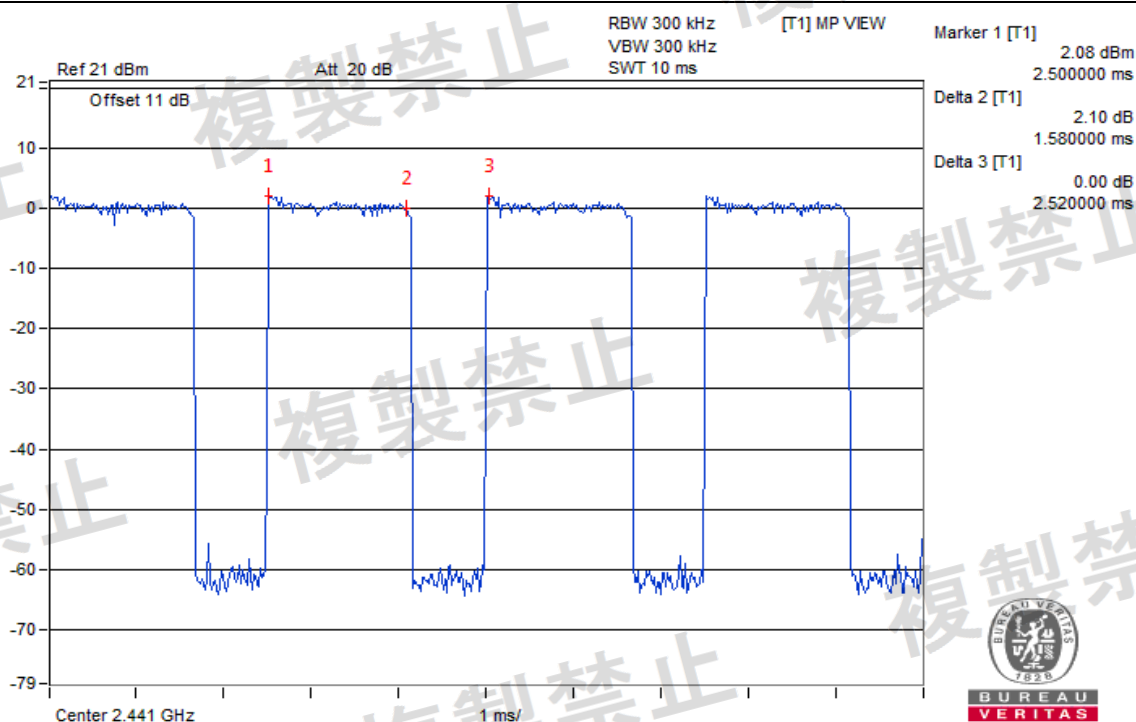
Measurement uncertainty: $\pm 3.93\text{dB}$



Vmax.



DH1

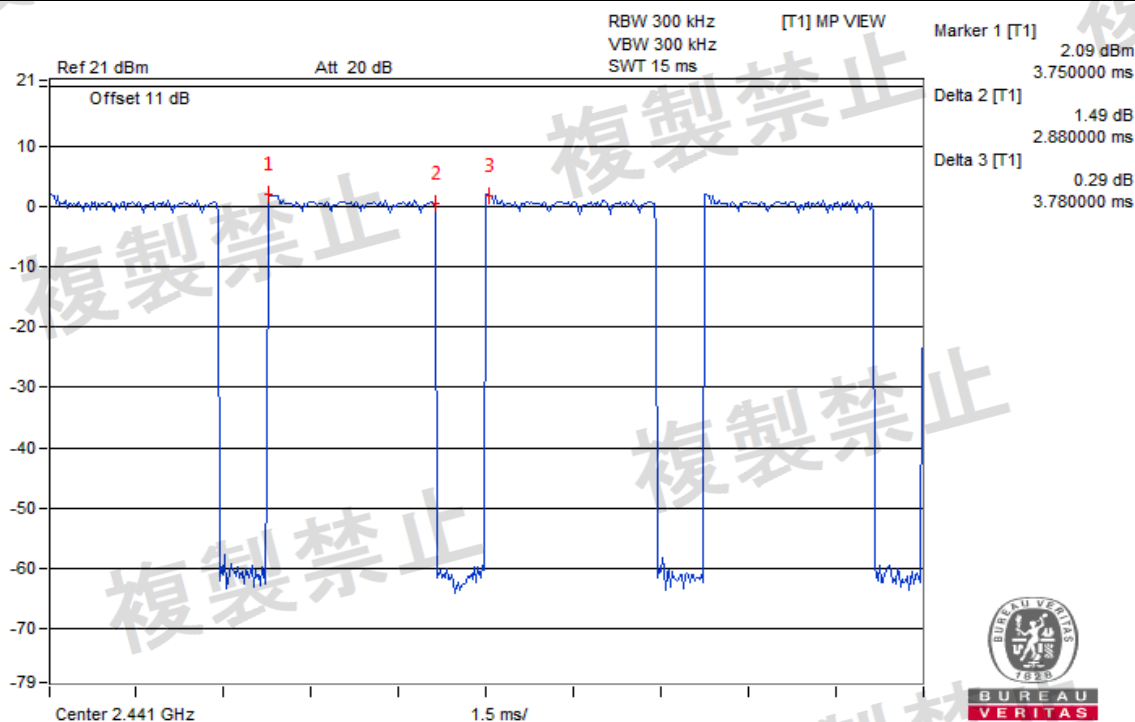


DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmax.

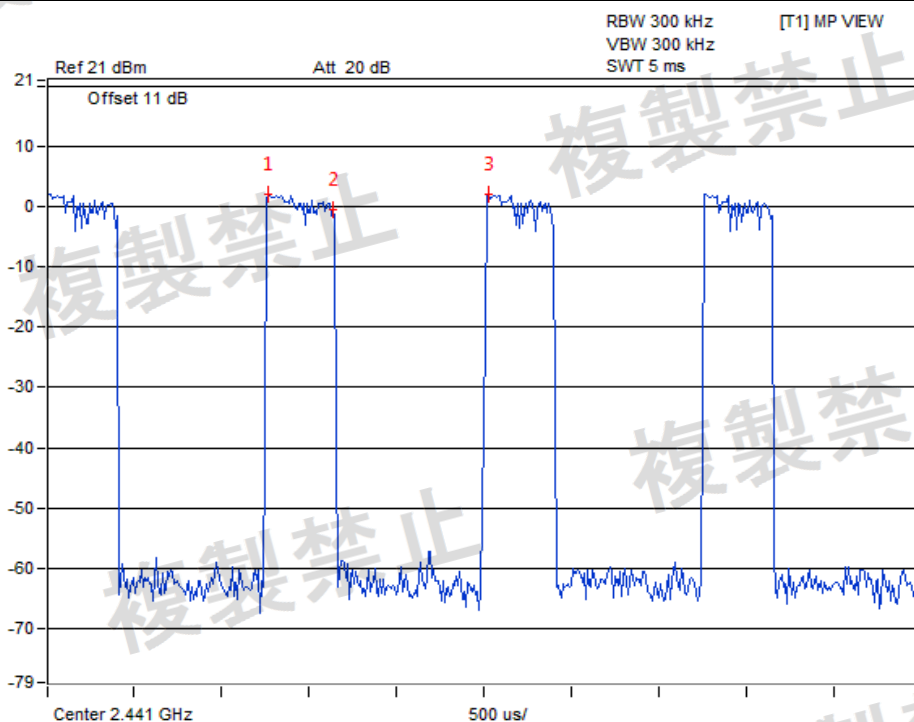


DH5

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.

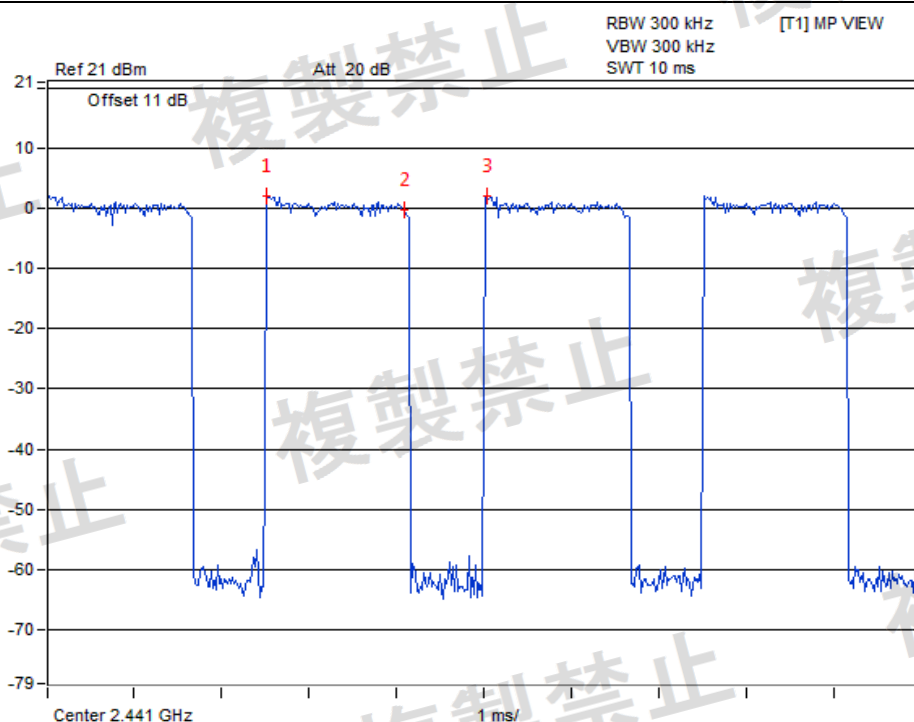


Marker 1 [T1] 2.10 dBm
1.260000 ms
Delta 2 [T1] 2.63 dB
370.000000 us
Delta 3 [T1] 0.02 dB
1.260000 ms



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DH1



Marker 1 [T1] 2.08 dBm
2.500000 ms
Delta 2 [T1] 2.20 dB
1.580000 ms
Delta 3 [T1] 0.04 dB
2.520000 ms



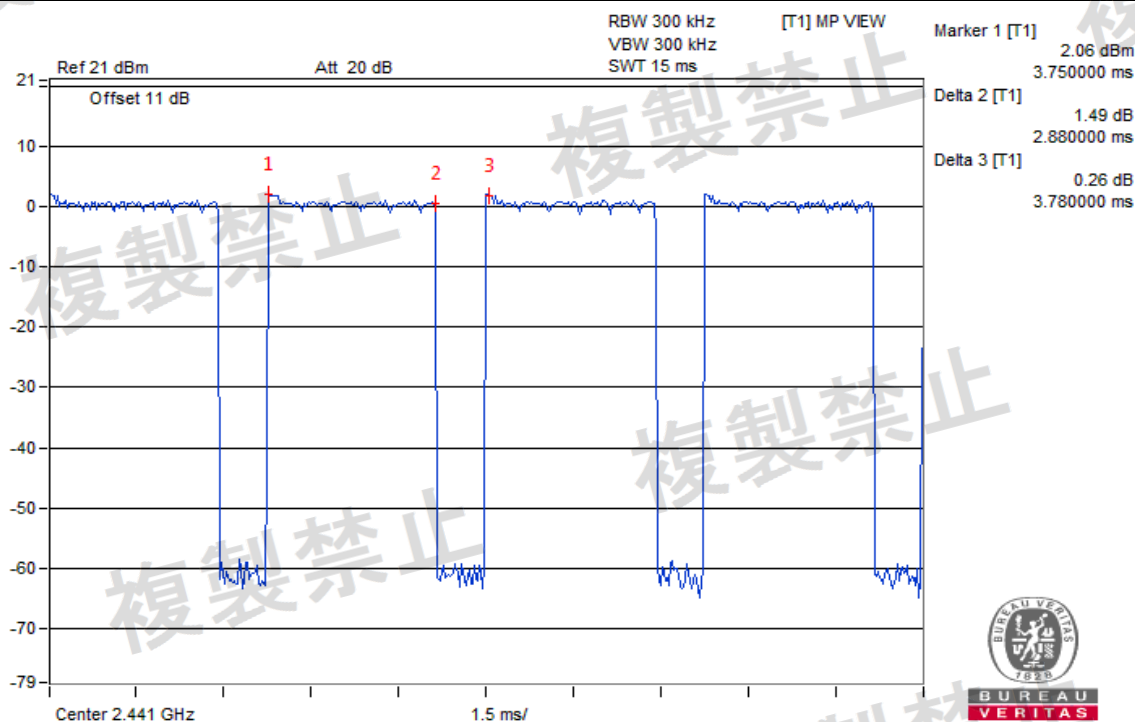
BUREAU
VERITAS

DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.



DH5

Measurement uncertainty: $\pm 3.93\text{dB}$



Modulation: 8DPSK

Normal Mode:

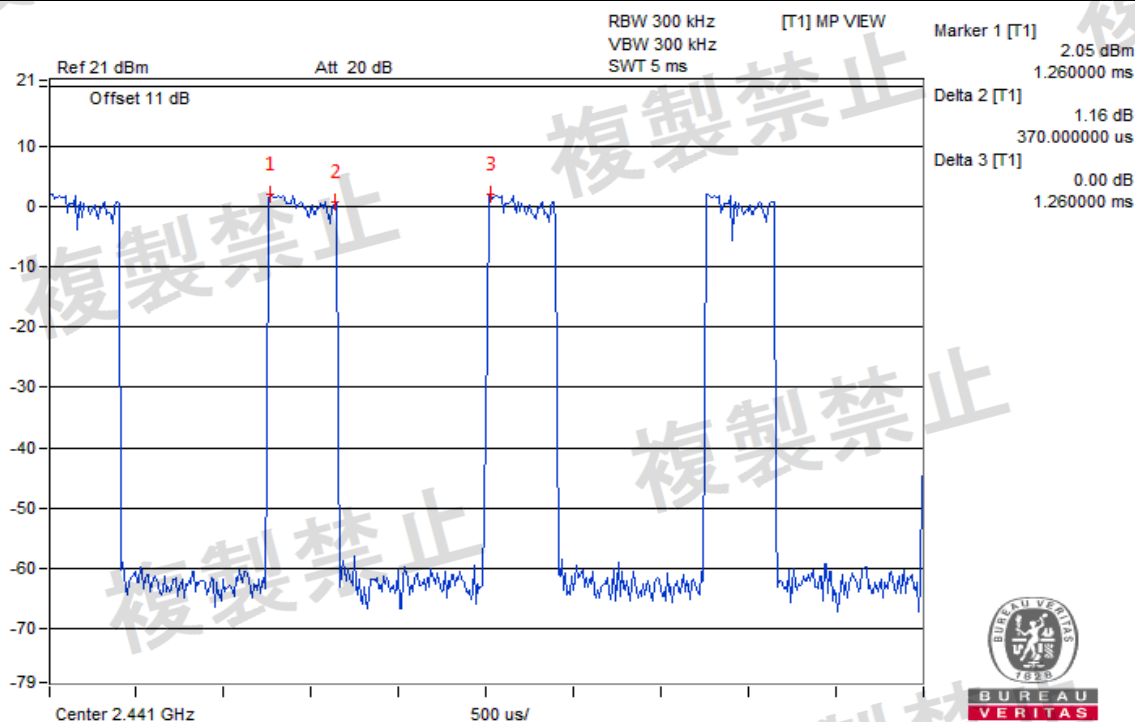
Test Condition	Mode	Spreading Rate	[Spreading Rate/79]*0.4	Duty Cycle	Result (msec)	Limit (msec)
Vnormal	DH1	70.60	0.357	0.293	104.601	400
	DH3	70.60	0.357	0.650	232.050	400
	DH5	70.60	0.357	0.761	271.677	400
Vmax.	DH1	70.60	0.357	0.293	104.601	400
	DH3	70.60	0.357	0.650	232.050	400
	DH5	70.60	0.357	0.761	271.677	400
Vmin.	DH1	70.60	0.357	0.293	104.601	400
	DH3	70.60	0.357	0.650	232.050	400
	DH5	70.60	0.357	0.761	271.677	400

AFH Mode:

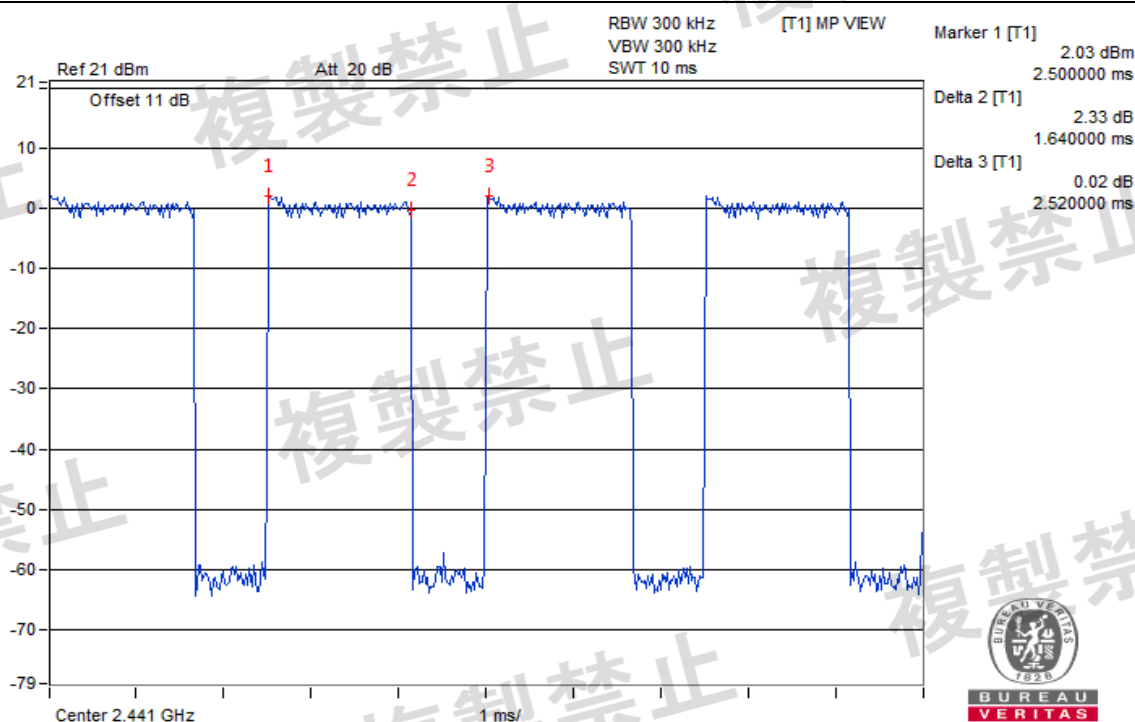
Test Condition	Mode	Spreading Rate	[Spreading Rate/20]*0.4	Duty Cycle	Result (msec)	Limit (msec)
Vnormal	DH1	18.40	0.368	0.293	107.824	400
	DH3	18.40	0.368	0.650	239.200	400
	DH5	18.40	0.368	0.761	280.048	400
Vmax.	DH1	18.40	0.368	0.293	107.824	400
	DH3	18.40	0.368	0.650	239.200	400
	DH5	18.40	0.368	0.761	280.048	400
Vmin.	DH1	18.40	0.368	0.293	107.824	400
	DH3	18.40	0.368	0.650	239.200	400
	DH5	18.40	0.368	0.761	280.048	400



Vnormal



DH1

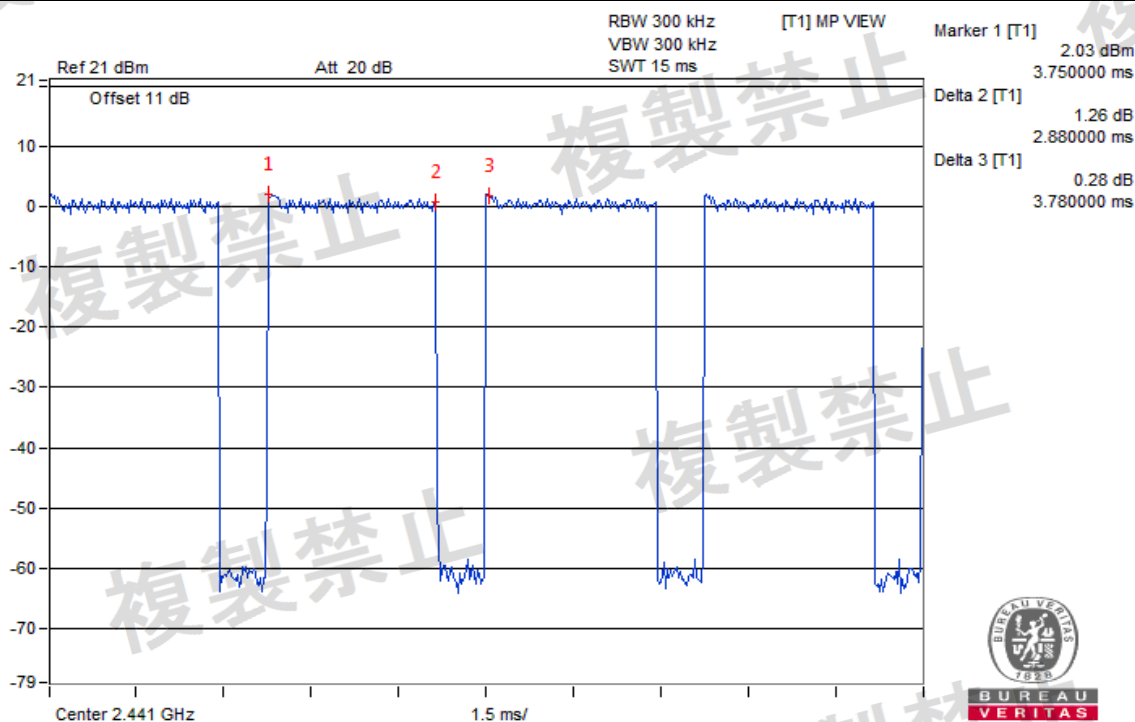


DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vnormal

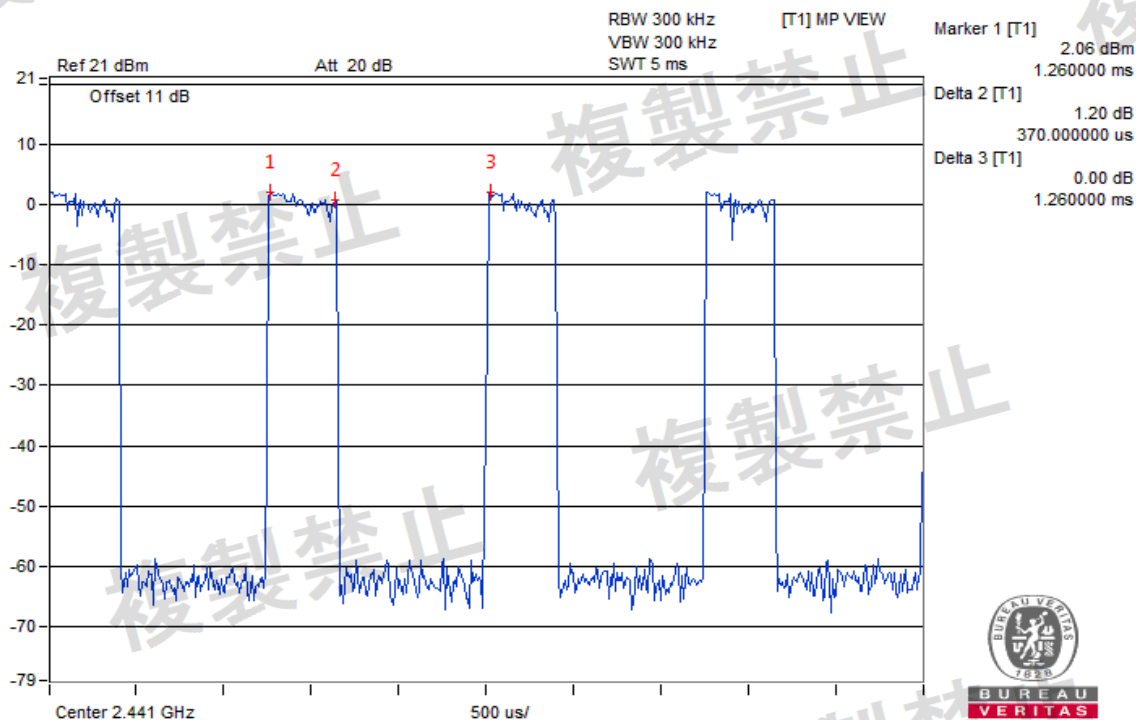


DH5

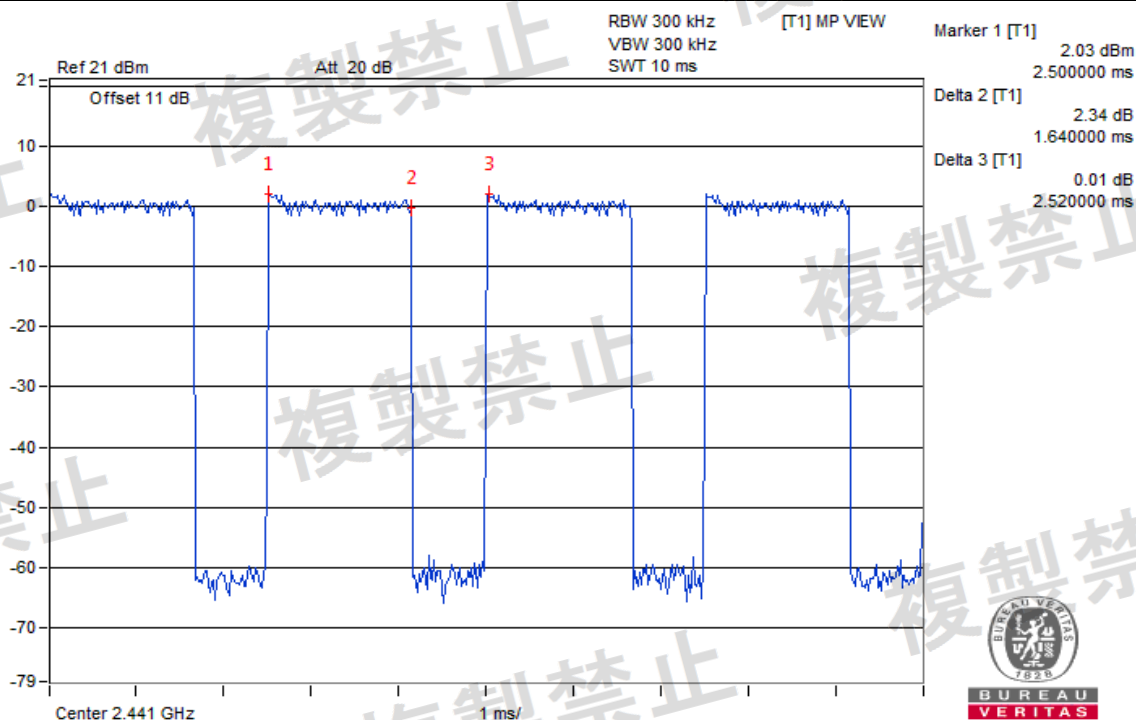
Measurement uncertainty: $\pm 3.93\text{dB}$



Vmax.



DH1

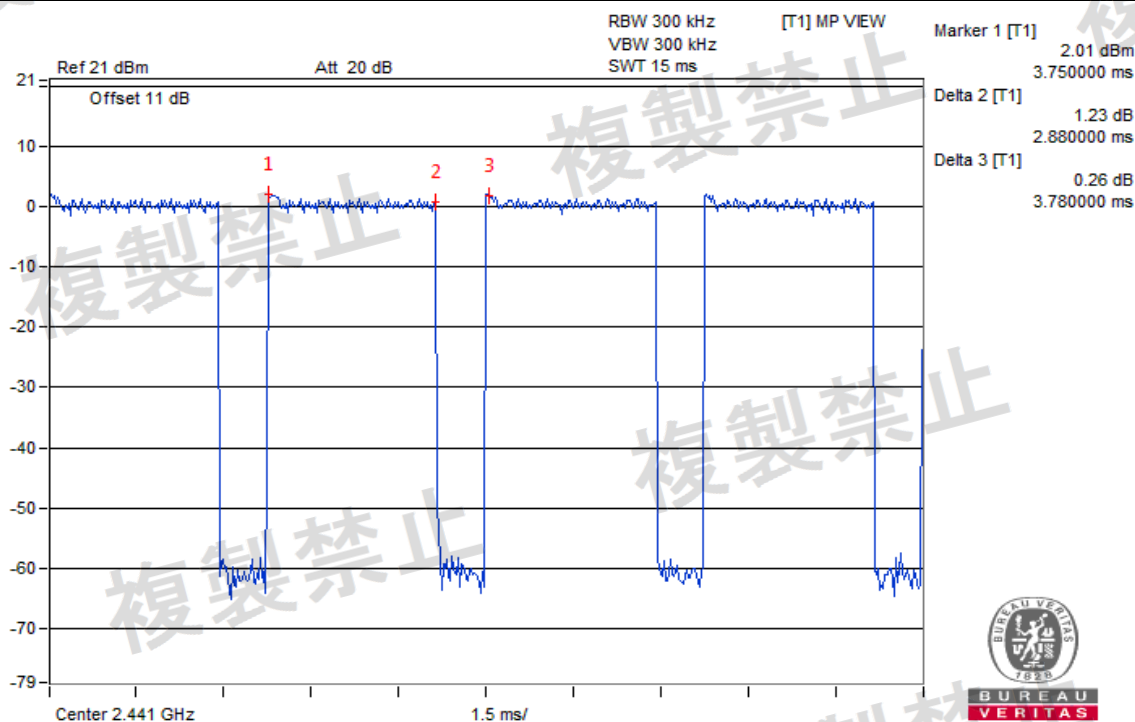


DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmax.

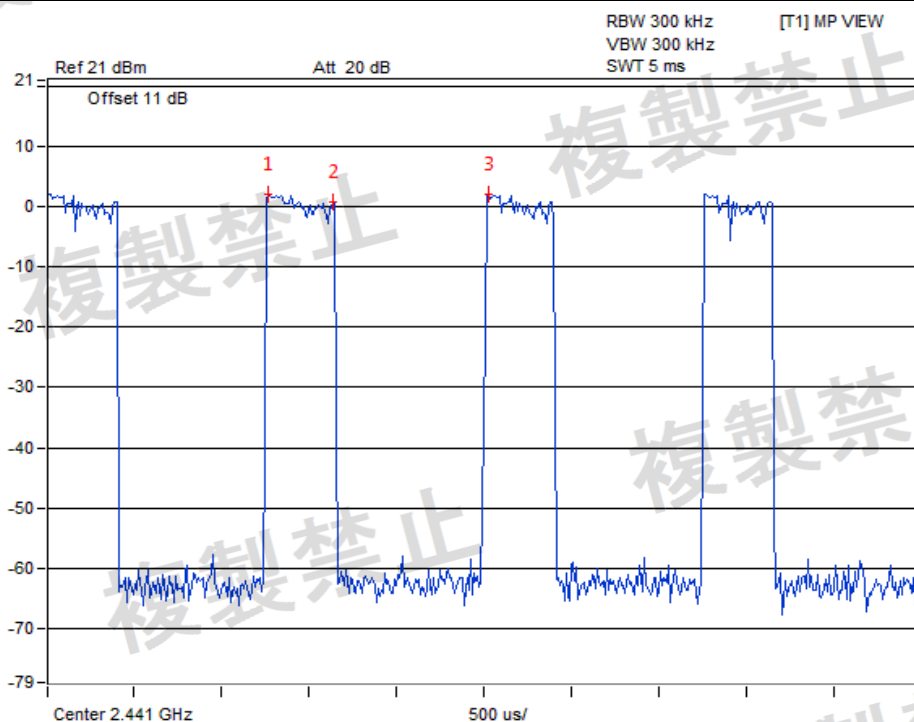


DH5

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.

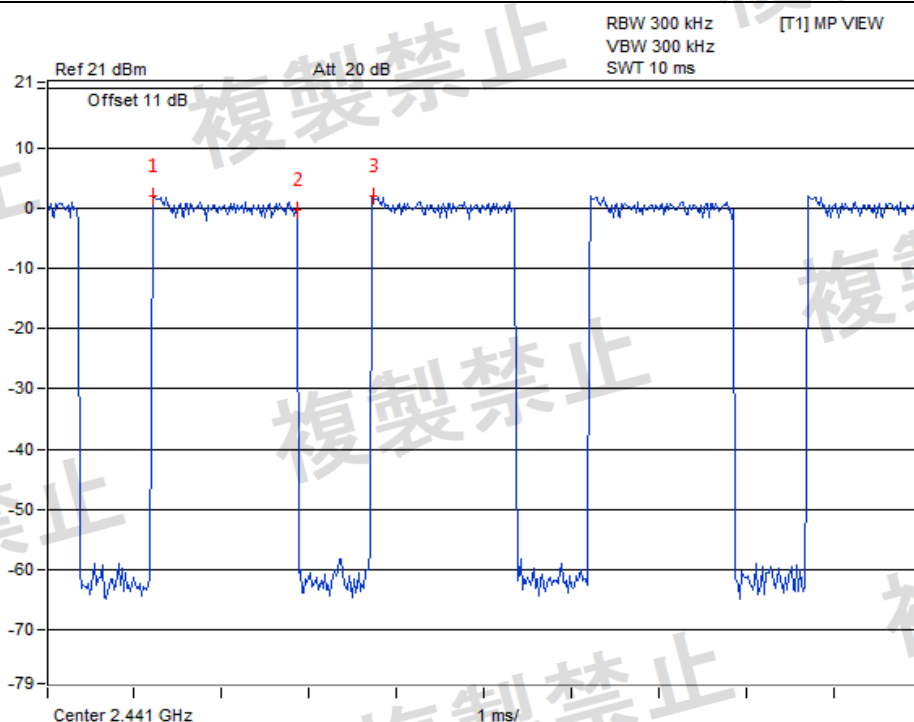


Marker 1 [T1] 2.07 dBm
1.260000 ms
Delta 2 [T1] 1.21 dB
370.000000 us
Delta 3 [T1] 0.02 dB
1.260000 ms



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DH1



Marker 1 [T1] 2.03 dBm
1.200000 ms
Delta 2 [T1] 2.35 dB
1.640000 ms
Delta 3 [T1] 0.01 dB
2.520000 ms



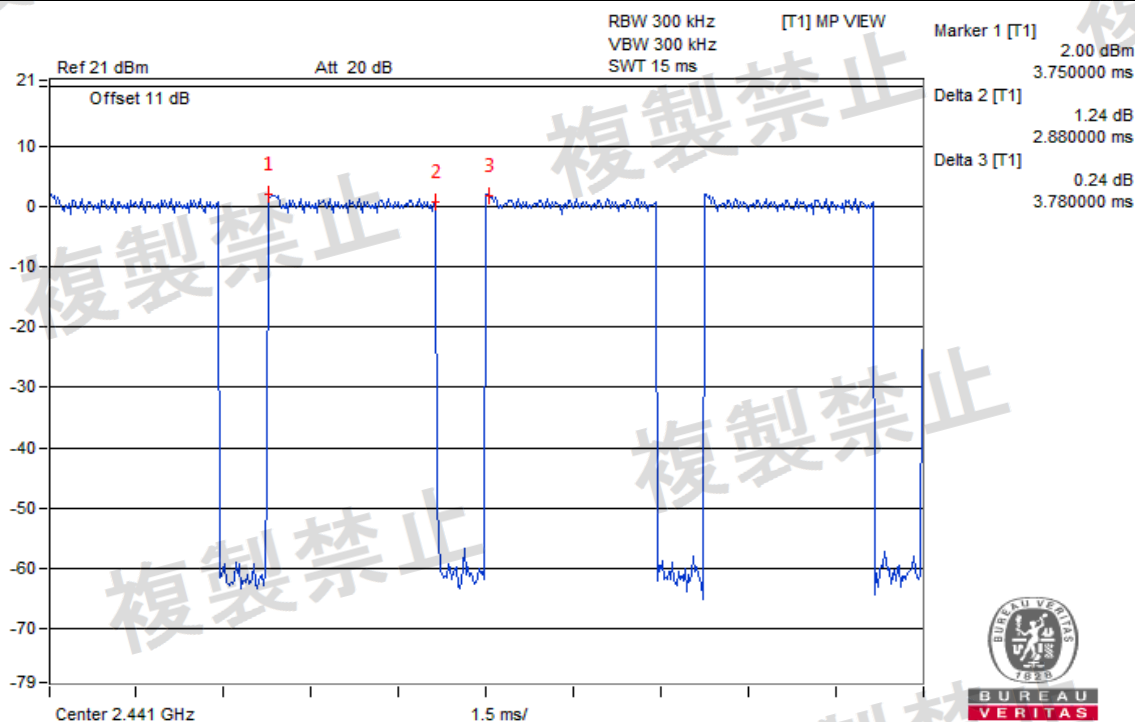
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DH3

Measurement uncertainty: $\pm 3.93\text{dB}$



Vmin.



DH5

Measurement uncertainty: $\pm 3.93\text{dB}$

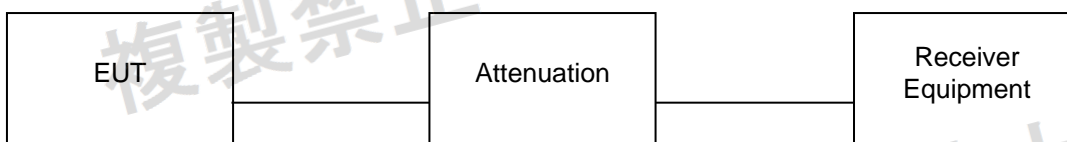


4.8 Interference Prevention Function

4.8.1 Limits of Interference Prevention Function

Radio equipment used mainly on the same premises and automatically transmits or receives identification code.

4.8.2 Test Setup



4.8.3 Test Results

Environmental Conditions	25 deg.C, 68% RH
Link Mode	Test Result
Bluetooth EDR	Pass

5 Photographs of the Test Configuration





Appendix - Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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