

TEST REPORT

Product : Portable PC
Trade mark : CHUWI
Model/Type reference : GemiBook XPro
Serial Number : N/A
Report Number : EED32P80338907
Date of Issue : May 16, 2023
Product Class : Item 19-3 of Article 2 Paragraph 1
Test result : PASS

Prepared for:

CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
F2, Building 3, Li jincheng Industrial Park, Industrial east Road, Longhua
Street, Longhua District, ShenZhen City, China

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by:

mark.chen

Mark Chen

Reviewed by:

Tom Chen

Tom Chen

Approved by:

Aaron Ma

Aaron Ma

Date:

May 16, 2023

Check No.: 6445140323



1 Version

Version No.	Date	Description
00	May 16, 2023	Original

2 Contents

1 VERSION	2
2 CONTENTS	3
3 GENERAL INFORMATION	4
3.1 Client Information	4
3.2 General Description of EUT	4
3.3 EUT test environment range	5
3.4 Description of Support Units	5
3.5 Test Location	5
4 EQUIPMENT LIST	6
5 TRANSMITTER REQUIREMENTS	7
6.1 EUT channels and frequencies list	7
6 DYNAMIC FREQUENCY SELECTION (DFS)	8
7.1 Technical Requirements for DFS	8
7.2 DFS test signals	9
7.3 DFS Test Setup	11
7.4 Communication Load	11
7 DFS TEST RESULT	12
7.1 DFS Detection Threshold levels	12
7.2 Monitoring of operating channel	19
7.3 Non-Occupancy Period	22
8 PHOTOGRAPHS	23
8.1 EUT Test photo	23
8.2 EUT Constructional Details	23

3 General Information

3.1 Client Information

Applicant:	CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
Address of Applicant:	F2, Building 3, Li jincheng Industrial Park, Industrial east Road, Longhua Street, Longhua District, ShenZhen City, China
Manufacturer:	CHUWI Innovation And Technology (ShenZhen)co.,Ltd.
Address of Manufacturer:	F2, Building 3, Li jincheng Industrial Park, Industrial east Road, Longhua Street, Longhua District, ShenZhen City, China
Factory:	SHENZHEN LUCKYSTAR TECHNOLOGY CO., LTD
Address of Factory:	BLDG1,YUJINGTAI INDUSTRIAL PARK,HUARONG ROAD,SHUIWEI VILLA GE,DALANG STREET, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE P.R. CHINA

3.2 General Description of EUT

Product Name:	Portable PC
Model No.(EUT):	GemiBook XPro
Trade mark:	CHUWI
EUT Supports Radios application:	2400MHz to 2483.5MHz, 5.150-5.250GHz, 5.250-5.350GHz, 5.470-5.730GHz
Operating Frequency:	2400MHz to 2483.5MHz, 5.150-5.250GHz, 5.250-5.350GHz, 5.470-5.730GHz
Type of Modulation:	IEEE for 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax(HE20/HE40/HE80): OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM,1024QAM)
Transmit Data Rate:	IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11b:1, 2, 5.5, 11M bps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54M bps IEEE 802.11n HT20: up to 288.9Mbps, HT40: up to 600 Mbps IEEE 802.11ac VHT20: up to 346.7 Mbps, VHT40: up to 800 Mbps, VHT80: up to 1733.3 Mbps IEEE 802.11ax-HE20: up to 346.7 Mbps, ax-HE40: up to 800 Mbps, ax-HE80: up to 1733.3 Mbps
Device type:	Client device.
Antenna Type:	FPC Antenna
Power Supply:	Model:1-CHUSB202-128 Input:100-240V~50/60Hz 0.6A Output:12.0V---2.0A Battery DC 7.6V
Test Voltage:	DC 7.6V

Sample Received Date:	Mar. 14, 2023
Sample tested Date:	Mar. 14, 2023 to May 11, 2023
Remark: Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

3.3 EUT test environment range

Temperature:	25°C
Humidity:	56% RH
Atmospheric Pressure:	1010mbar

3.4 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	model	S/N serial number	Supplied by	Certification
A	Netbook	ASUS	FL8700J	--	ASUS	MIC
	Router	ASUS	GT-AXE1 1000	--	ASUS	MIC

3.5 Test Location

The frequency of W56 tests were performed at:

Centre Testing International Group Co., Ltd.

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

The frequency of W53 tests were performed by subcontracted lab:

MRT Technology (Suzhou) Co., Ltd

D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China.

Telephone: +86-512-66308358 Web: www.mrt-cert.com

4 Equipment List

RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Spectrum Analyzer	Keysight	N9010A	MY54510339	12-23-2022	12-22-2023
Signal Generator	Keysight	N5182B	MY53051549	12-19-2022	12-18-2023
Signal Generator	Agilent	N5181A	MY46240094	12-19-2022	12-18-2023
DC Power	Keysight	E3642A	MY56376072	12-19-2022	12-18-2023
Wi-Fi 7GHz Band Extender	JS Tonscend	TS-WF7U2	2206200002	06-11-2022	06-10-2023
RF control unit	JS Tonscend	JS0806-2	158060006	12-23-2022	12-22-2023
Communication test set	R&S	CMW500	120765	12-23-2022	12-22-2023
high-low temperature test chamber	Dong Guang Qin Zhuo	LK-80GA	QZ20150611879	12-19-2022	12-18-2023
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	07-01-2022	06-15-2023
BT&WI-FI Automatic test software	JS Tonscend	JS1120-3	2.6.77.0518	---	---

Remark:

- (a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1) in JRL.
- (b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992).
- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (c).

From JRL Article 24-2, paragraph 4, Item 2

5 Transmitter Requirements

6.1 EUT channels and frequencies list

802.11a 20MHz 802.11n 20MHz 802.11ac 20MHz 802.11ax 20MHz		802.11n 40MHz 802.11ac 40MHz 802.11ax 40MHz		802.11ac 80MHz 802.11ax 80MHz	
W52		W52		W52	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	N/A	N/A
44	5220	N/A	N/A	N/A	N/A
48	5240	N/A	N/A	N/A	N/A
802.11a 20MHz 802.11n 20MHz 802.11ac 20MHz 802.11ax 20MHz		802.11n 40MHz 802.11ac 40MHz 802.11ax 40MHz		802.11ac 80MHz 802.11ax 80MHz	
W53		W53		W53	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	54	5270	58	5290
56	5280	62	5310	N/A	N/A
60	5300	N/A	N/A	N/A	N/A
64	5320	N/A	N/A	N/A	N/A
802.11a 20MHz 802.11n 20MHz 802.11ac 20MHz 802.11ax 20MHz		802.11n 40MHz 802.11ac 40MHz 802.11ax 40MHz		802.11ac 80MHz 802.11ax 80MHz	
W56		W56		W56	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	138	5690
112	5560	126	5630	N/A	N/A
116	5580	134	5670	N/A	N/A
120	5600	142	5710	N/A	N/A
124	5620	N/A	N/A	N/A	N/A
128	5640	N/A	N/A	N/A	N/A
132	5660	N/A	N/A	N/A	N/A
136	5680	N/A	N/A	N/A	N/A
140	5700	N/A	N/A	N/A	N/A
144	5720	N/A	N/A	N/A	N/A

6 Dynamic Frequency Selection (DFS)

7.1 Technical Requirements for DFS

7.1.1 Applicability of DFS Requirements

Requirement	Operational Mode
	Client
DFS Detection Threshold	Yes
Monitoring of operating channel	Yes
Non-Occupancy	Yes

7.1.2 DFS Interference Thresholds and Response Requirement

Interference threshold values

Maximum Transmit power (eirp)	Value (see notes)
≥ 200 mW	-64 dBm
< 200 mW	-62 dBm
NOTE : This is the level at the input of the receiver assuming a 0 dBi receive antenna.	

DFS requirement values

Parameter		Value
Monitoring of operating channel	Channel Move Time	10 s
	Channel Closing Transmission Time	260 ms
Non-Occupancy Period		30 minutes

7.2 DFS test signals

7.2.1 Parameters of the DFS test signal in the 5250-5350 MHz band

Classification	The radio wave which a radar transmits				Minimum number of consecutive pulses	Detection probability
	Pulse width		Repetition frequency			
	minimum value	maximum value	minimum value	maximum value		
1	0.5μS	5μS	200 Hz	1000 Hz	10	60% or more
2	0.5μS	15μS	200 Hz	1600 Hz	15	60% or more
3	0.5μS	5μS	200 Hz	1000 Hz	“Repetition frequency x 0.026” (Round up to less than 1), or “22”, whichever is larger, or “30”, whichever is smaller	60% or more
4	0.5μS	15μS	200 Hz	1600 Hz	“Repetition frequency x 0.026” (Round up to less than 1), or “22”, whichever is larger, or “30”, whichever is smaller	60% or more
5	0.5μS	1.5μS	1114 Hz	1118 Hz	30	60% or more
6	0.5μS	1.5μS	928 Hz	932 Hz	25	60% or more
7	0.5μS	1.5μS	886 Hz	890 Hz	24	60% or more
8	0.5μS	1.5μS	738 Hz	742 Hz	20	60% or more

7.2.2 Parameters of the DFS test signal in the 5470-5730 MHz band

A. Fixed pulse radar wave test signals

Test signal	Pulse width [μ s]	Pulse repetition frequency [Hz]	Number of continuous pulses	Repetition cycle [s]
Fixed Pulse 1	0.5	720	18	15.0
Fixed Pulse 2	1.0	700	18	15.0
Fixed Pulse 3	2.0	250	18	15.0

B. Variable pulse radar wave test signals

Test signal	Pulse width [μ s]	Pulse repetition frequency [Hz]	Number of continuous pulses	Repetition cycle [s]
Variable Pulse 4	Width in a range of 1 to 5 μ s in increments of 1 μ s	Any one frequency in a range of 4,347 to 6,667 Hz	Any one integer between 23 and 29	15.0
Variable Pulse 5	Width in a range of 6 to 10 μ s in increments of 1 μ s	Any one frequency in a range of 2,000 to 5,000 Hz	Any one integer between 16 and 18	15.0
Variable Pulse 6	Width in a range of 11 to 20 μ s in increments of 1 μ s	Any one frequency in a range of 2,000 to 5,000 Hz	Any one integer between 12 and 16	15.0

Note: Each item in the table shall consist of any combination of 1.

C. Chirp radar wave test signal

Test signal	Pulse width [μs]	Pulse repetition frequency [Hz]	Number of continuous pulses	Repetition cycle [s]
Chirp	Width in a range of 50 to 100 μs in increments of 1 μs	Any one frequency in a range of 500 to 1,000 Hz	Any one integer between 1 and 3	12.0

Note 1: Bursts shall be transmitted within 12 seconds.

Note 2: The Chirp width shall be a frequency width that ranges from 5 to 20 MHz in increments of 1 MHz.

An individual Chirp width can be any in each burst and Chirp widths within the same burst shall be equal.

Note 3: The number of bursts shall be any integer in a range of 8 to 20 and a burst interval shall be a time period derived from dividing 12 seconds with the number of bursts.

Note 4: If there are multiple pulses within a burst of 1s, the width of each pulse shall be equal and the pulse repetition frequency shall not have any relationships with that for the subsequent pulses of 1.

Note 5: Each item in the table shall consist of any combination of 1.

D. Frequency hopping radar wave test signal

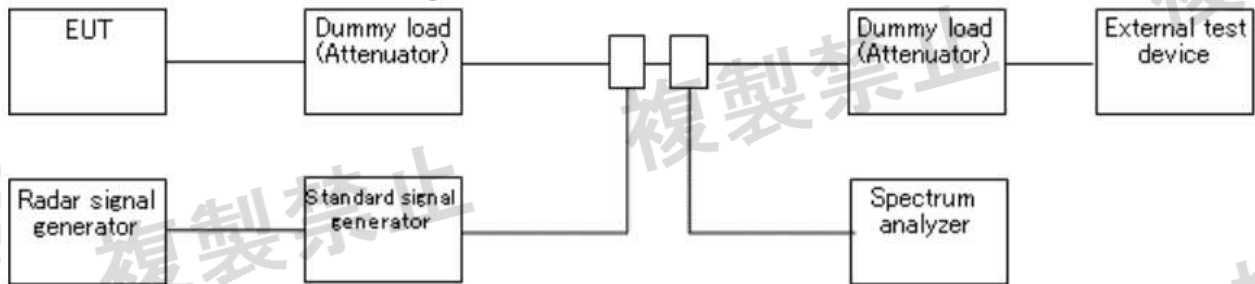
Test signal	Pulse width [μs]	Pulse repetition frequency [Hz]	Number of continuous pulses	Repetition cycle [s]
Hopping	1.0	3,000	9	10.0

Note 1: The hopping frequency shall be any frequency that ranges from 5,250 to 5,724 MHz in increments of 1 MHz.

Note 2: An individual hopping interval shall be 3 ms and a total of all hopping intervals shall be 300 ms.

Note 3: Burst intervals shall be 3ms.

7.3 DFS Test Setup



7.4 Communication Load

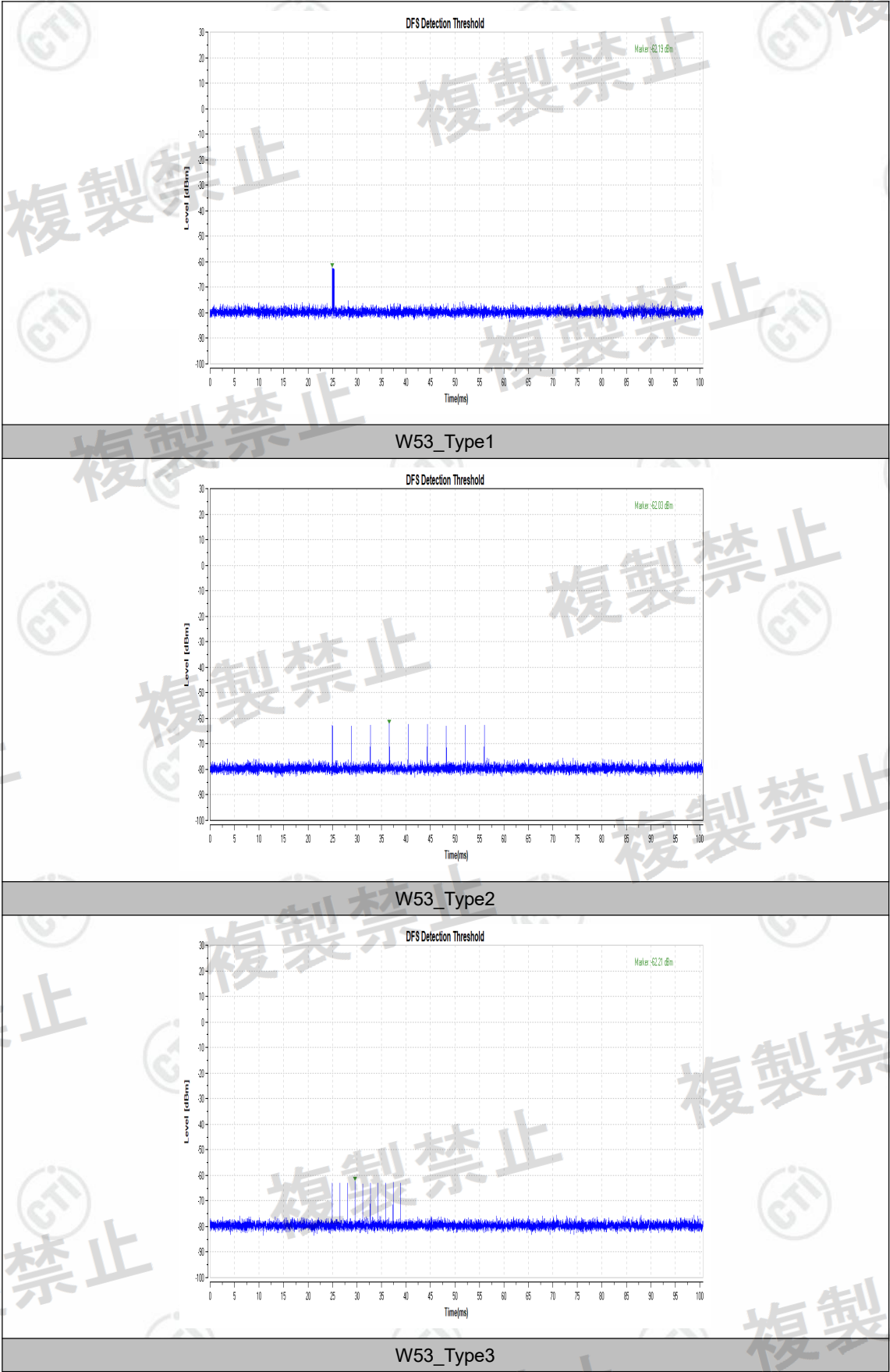
<input checked="" type="checkbox"/>	5250-5350 MHz band: 50% of the maximum signal transmission speed
<input checked="" type="checkbox"/>	5470-5730 MHz Band: 18% of the maximum signal transmission speed

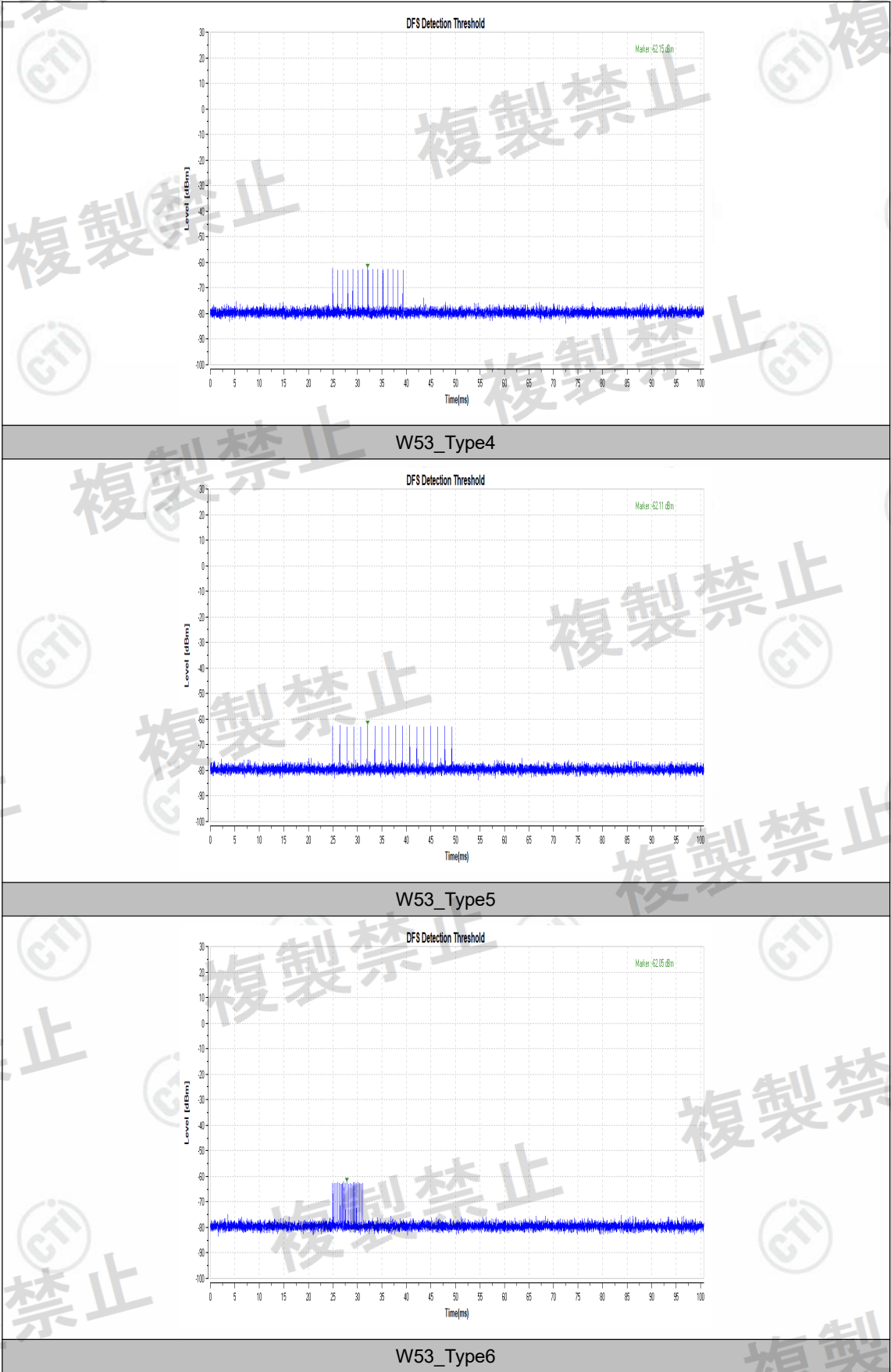
7 DFS test result

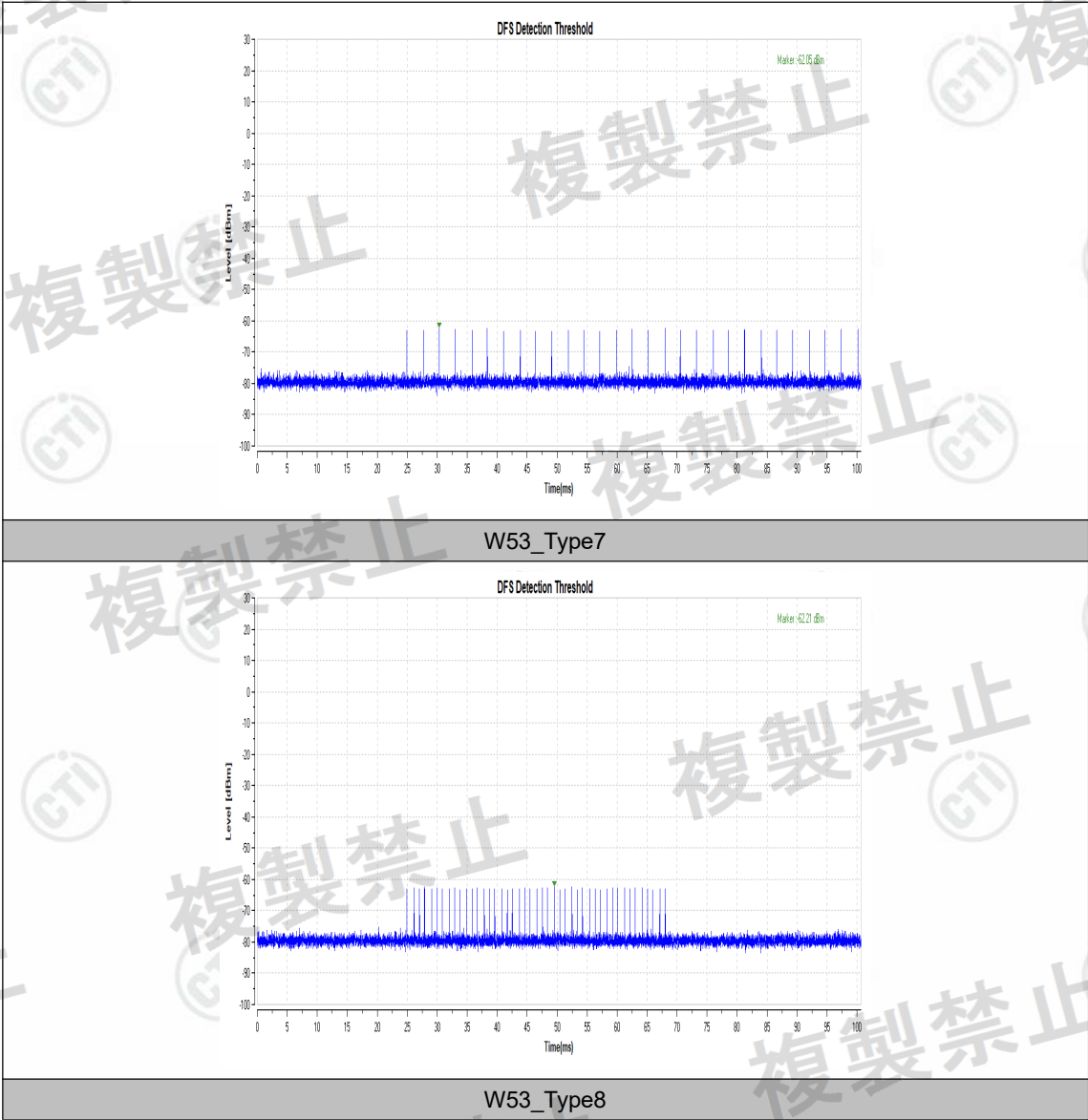
7.1 DFS Detection Threshold levels

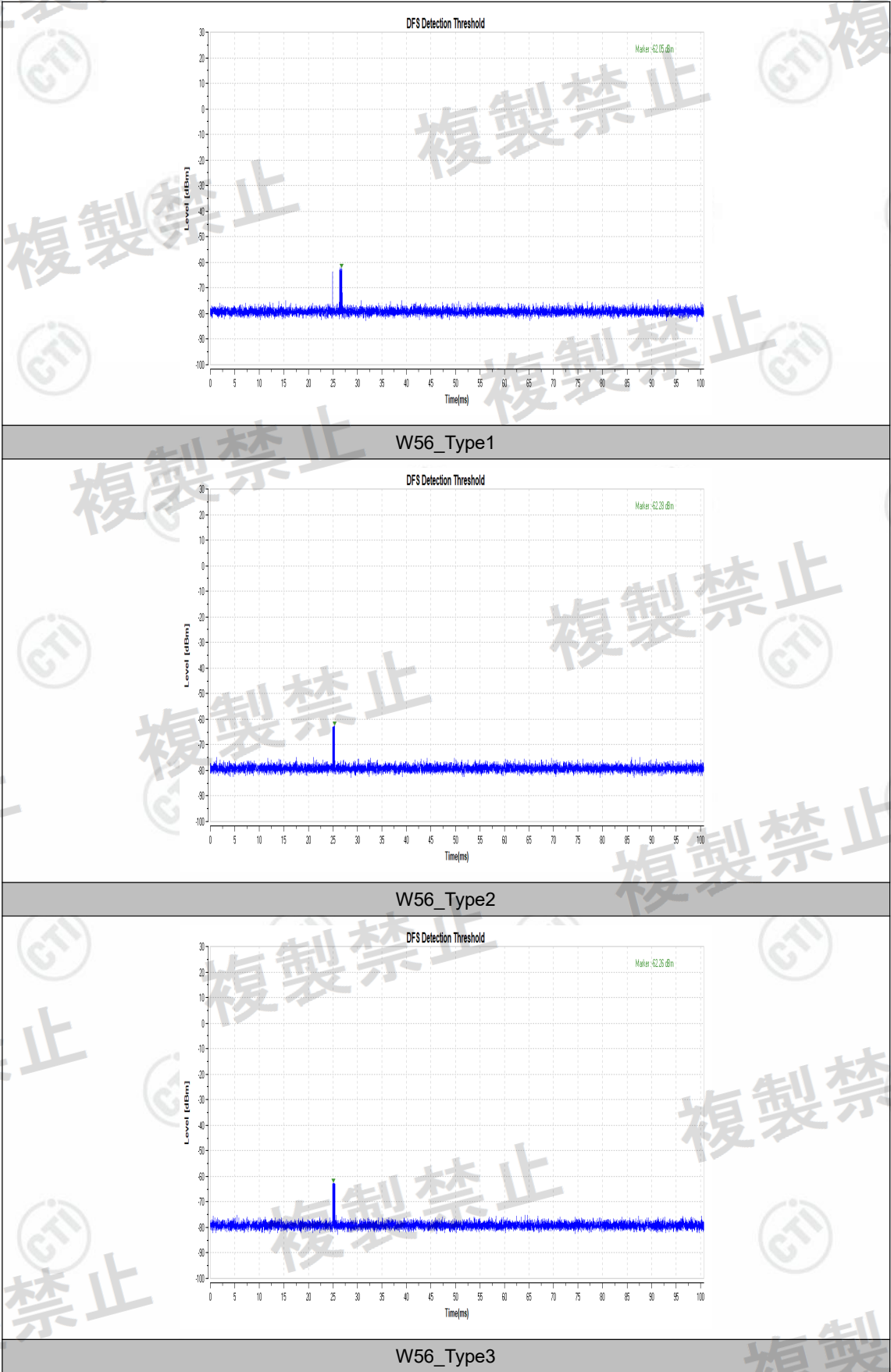
Radar Type	Result	Limit[dbm]	Verdict
W53_Type1	-62.19	-62.00	PASS
W53_Type2	-62.03	-62.00	PASS
W53_Type3	-62.21	-62.00	PASS
W53_Type4	-62.15	-62.00	PASS
W53_Type5	-62.16	-62.00	PASS
W53_Type6	-62.05	-62.00	PASS
W53_Type7	-62.05	-62.00	PASS
W53_Type8	-62.21	-62.00	PASS
W56_Type1	-62.05	-62.00	PASS
W56_Type2	-62.28	-62.00	PASS
W56_Type3	-62.26	-62.00	PASS
W56_Type4	-62.26	-62.00	PASS
W56_Type5	-62.23	-62.00	PASS
W56_Type6	-62.34	-62.00	PASS
W56_CR	-62.15	-62.00	PASS
W56_FH	-62.49	-62.00	PASS

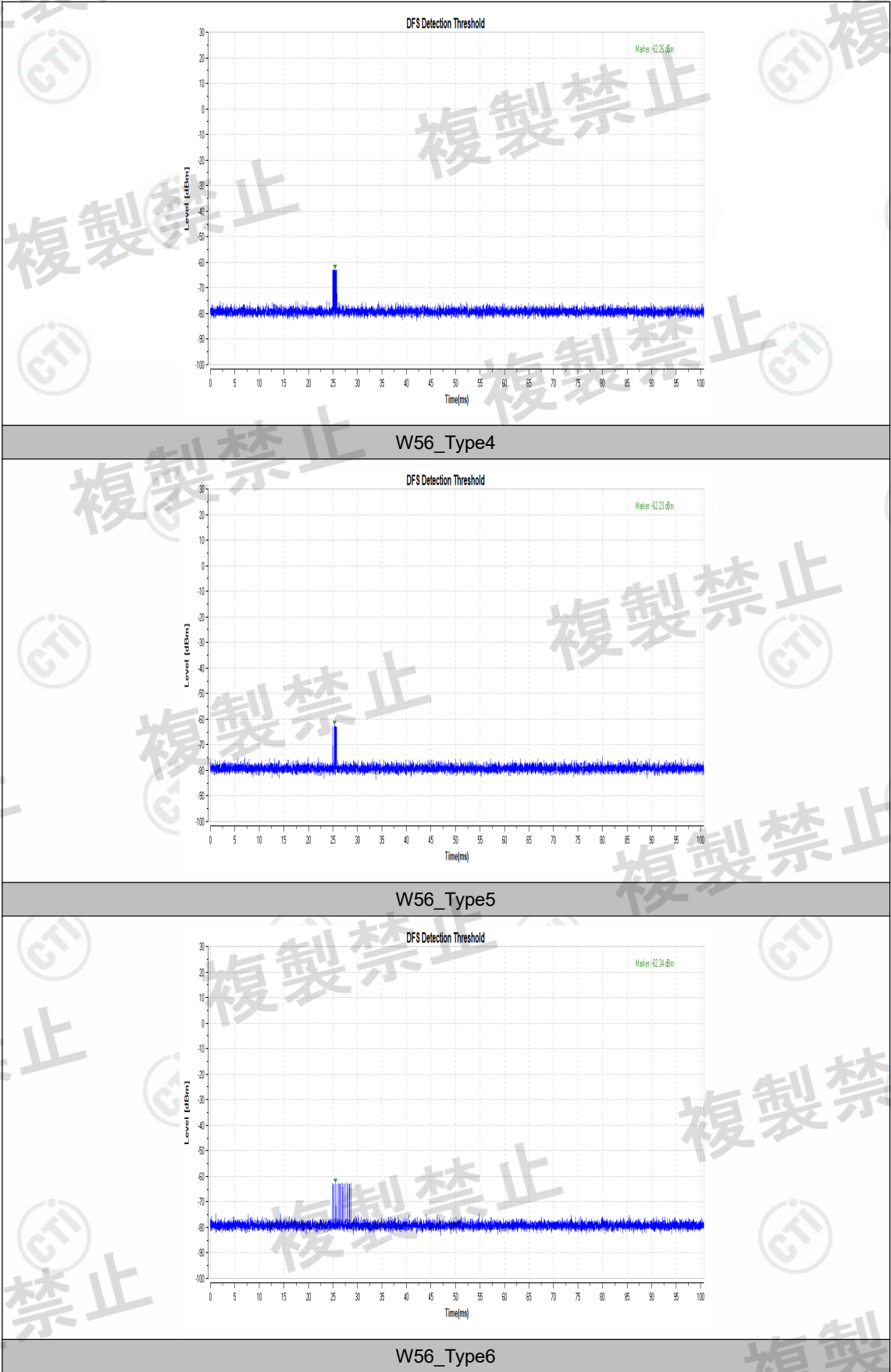
Test Graphs

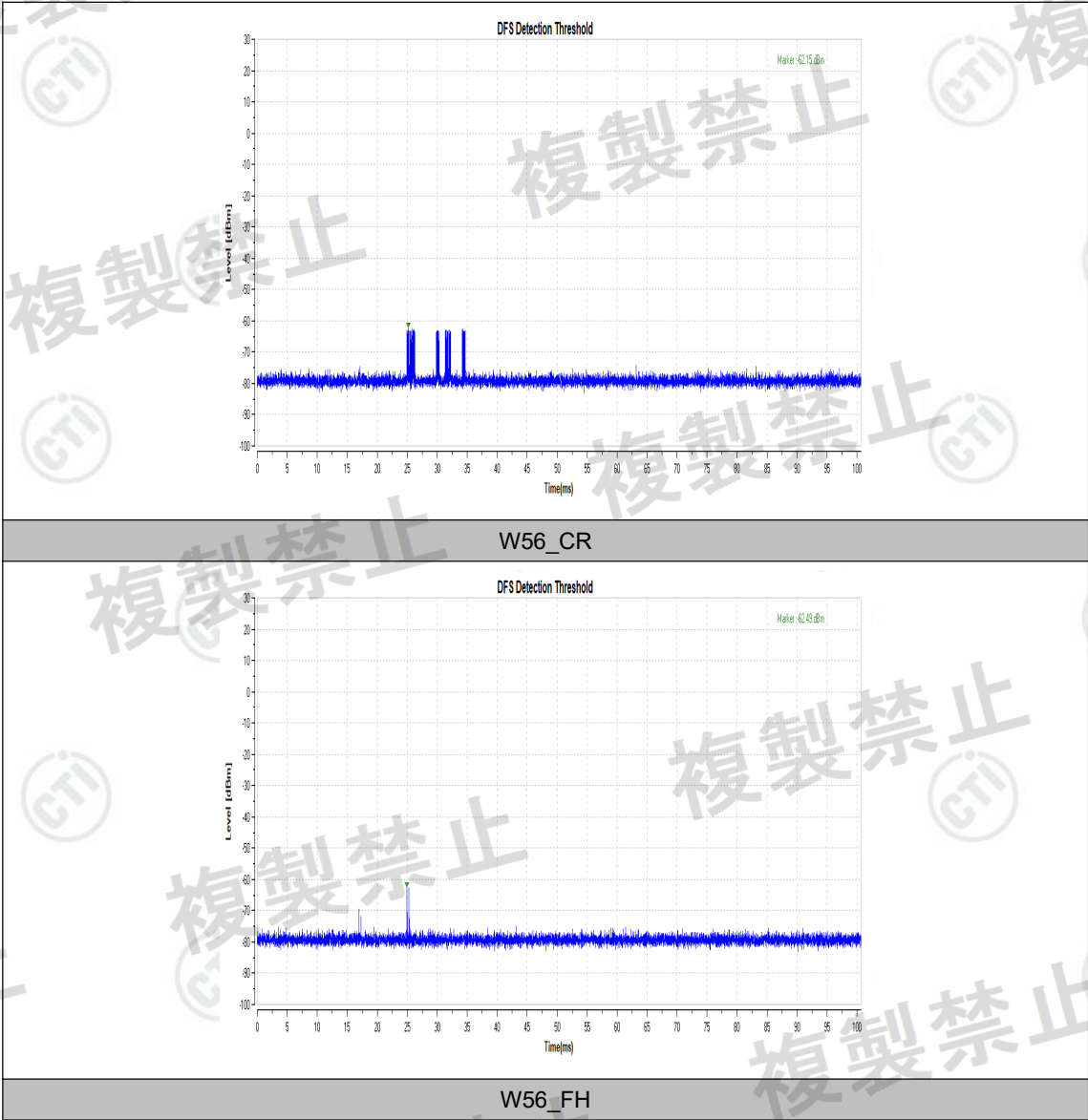












7.2 Monitoring of operating channel

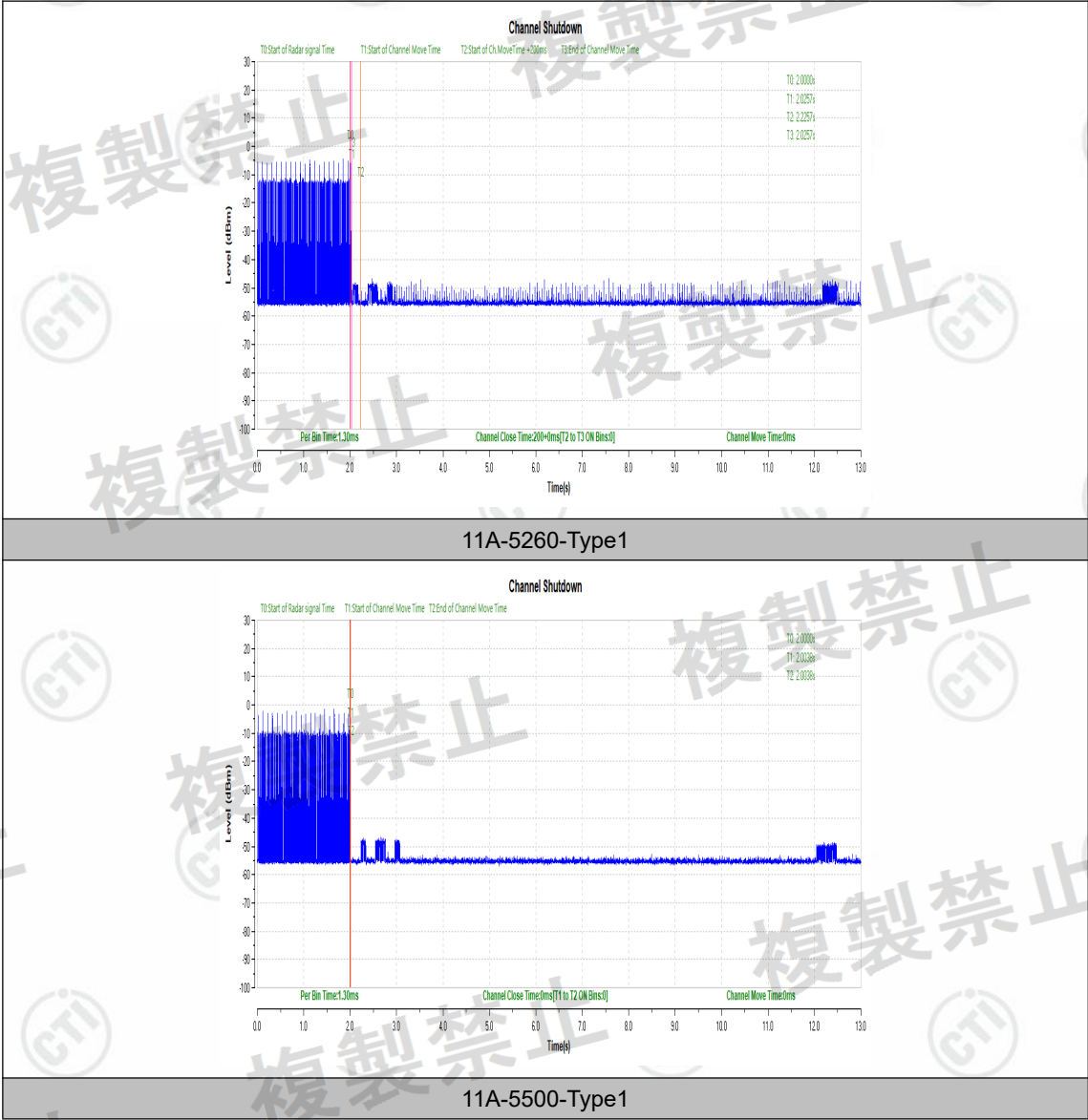
8.2.1 Monitoring of operating channel Limit

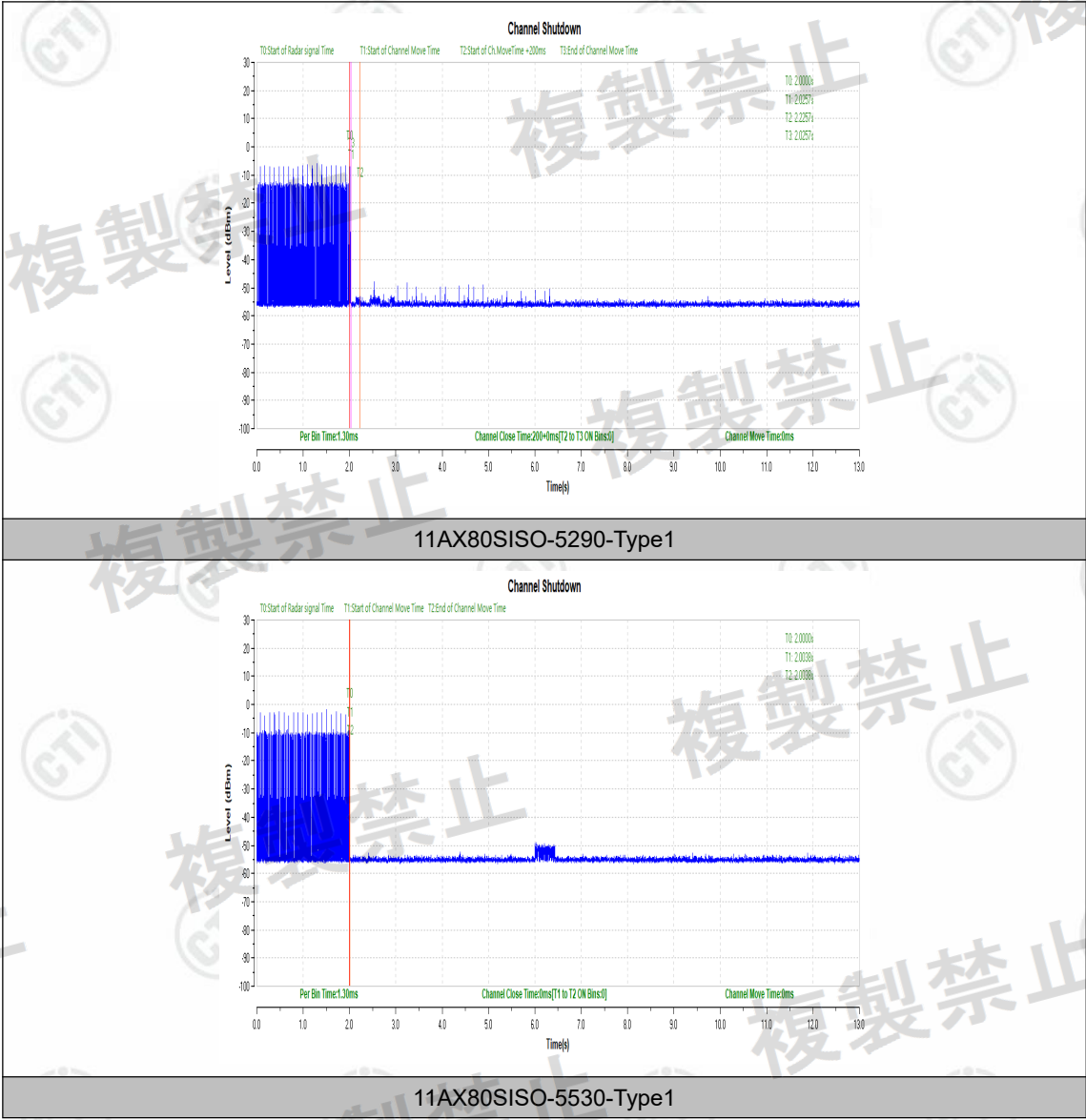
Monitoring of operating channel Limit	
Channel Move Time	10 sec
Channel Closing Transmission Time	260 ms

8.2.2 Test Result of Channel Closing Transmission and Channel Move Time

TestMode	Frequency [MHz]	Radar Type	CCT[ms]	Limit[ms]	CMT[ms]	Limit[ms]	Verdict
11A	5260	W53_Type1	0	260	0	10000	PASS
11A	5500	W56_Type1	0	260	0	10000	PASS
11AX80SISO	5290	W53_Type1	0	260	0	10000	PASS
11AX80SISO	5530	W56_Type1	0	260	0	10000	PASS

Test graphs:





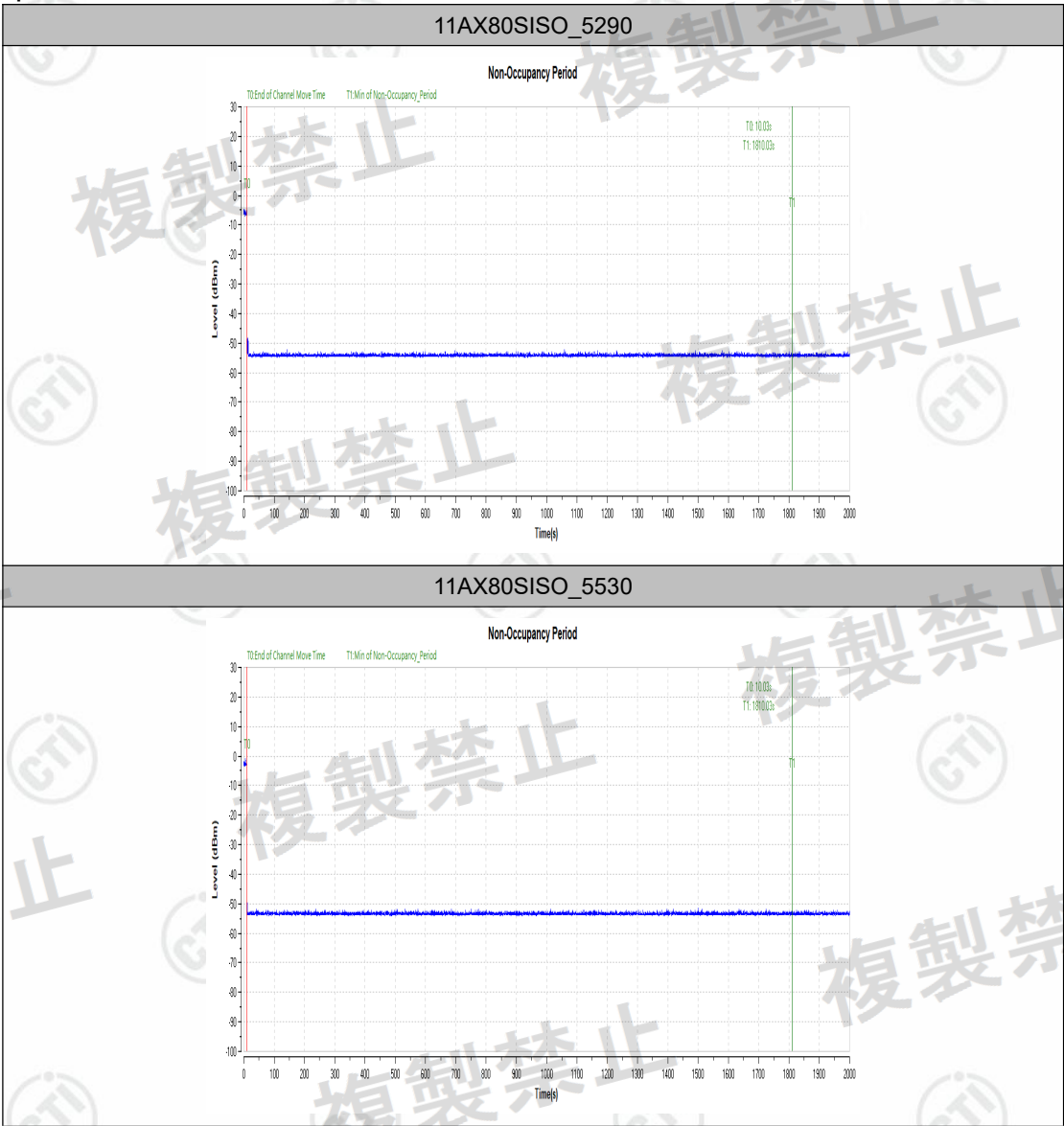
7.3 Non-Occupancy Period

8.2.1 Non-Occupancy Period Limit

Non-Occupancy Period Limit	
Non-Occupancy Period	30 minutes

8.2.2 Test Result of Non-Occupancy Period

Test Graphs



8 Photographs

8.1 EUT Test photo



DFS Test setup

8.2 EUT Constructional Details

Refer to Report No. EED32P80338901 for EUT external and internal photos.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***