Report No.: ET-25041154E01

MIC TEST REPORT

Applicant:	Shenzhen E-Ran Technology Co., Ltd.
Address of Applicant:	Room 201, Plant No.34, Zhangyi Residential Quarter, Junzibu Community, Guanlan Street, Longhua District, Shenzhen
Manufacturer:	Shenzhen E-Ran Technology Co., Ltd.
Address of Manufacturer:	Room 201, Plant No.34, Zhangyi Residential Quarter, Junzibu Community, Guanlan Street, Longhua District, Shenzhen
Factory:	Shenzhen Yinuo Digital Technology Co.,Ltd
Address of Factory:	Room 201, Plant No.34, Zhangyi Residential Quarter, Junzibu Community, Guanlan Street, Longhua District, Shenzhen
Product Name:	Smart Projector
Model No.:	HY300 PRO,HY300,HY300 PRO+,HY300 ULTRA,HY300 PLUS, HY260 PRO,F06
Trade Mark:	N/A
Applicable standards:	MIC notification No. 88 of 2004, annex 43 Article 2, Paragraph 1, Item 19
Date of Test:	Apri.23, 2025-Apri.29, 2025
Date of report issued:	Apri.30, 2025

Remark:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by:	Reviewed by:	Approved by:
Carr kong	Smith chen	Smith chen
Project Engineer	Project Manager	Authorized Signature

This test report is valid for the tested samples only. It cannot be reproduced except in full without prior written consent of Shenzhen ETR Standard Technology Co., Ltd.

Report Revision History		
Report No.	Description	Issue Date
ET-25041154E01	Original	Apri.30, 2025

複製禁止

Contents

Page

1 TEST SUMMARY 4

2 GENERAL INFORMATION 5

2.1 GENERAL DESCRIPTION OF EUT 5
2.2 OPERATION CHANNEL LIST 5
2.3 TEST FREQUENCY CHANNEL 5
2.4 TEST MODE 6
2.5 DESCRIPTION OF SUPPORT UNITS 6
2.6 ENVIRONMENTAL CONDITIONS 6
2.7 TEST VOLTAGE 6
2.8 TEST FACILITY 6
2.9 ADDITIONAL INSTRUCTIONS 6

3 TEST INSTRUMENTS LIST 7

4 TEST RESULTS AND MEASUREMENT DATA 8

4.1 FREQUENCY TOLERANCE 8
4.2 ANTENNA POWER 10
4.3 OCCUPIED FREQUENCY BANDWIDTH 12
4.4 UNWANTED EMISSION STRENGTH (CONDUCTED) 14
4.5 INTERFERENCE PREVENTION FUNCTION 19
4.6 SECONDARY RADIATED EMISSIONS 20
4.7 ANTENNA ABSOLUTE GAIN MEASUREMENT 22
4.8 HALF POWER BEAM ANGLE 24

5 TEST SETUP PHOTO 25

6 EUT CONSTRUCTIONAL DETAILS 25

1 Test Summary

Item	Description of Test	Result	Test by
1	Frequency Tolerance	Pass	Yvan Fan
2	Antenna Power	Pass	Yvan Fan
3	Tolerances for Antenna Power	Pass	Yvan Fan
4	Occupied Bandwidth	Pass	Yvan Fan
5	Unwanted Emission Strength	Pass	Yvan Fan
6	E.I.R.P	Pass	Yvan Fan
7	Secondary Radiated Emission Strength	Pass	Yvan Fan
8	Carrier sensing function(1)	N/A,note2	/
9	Carrier sensing function(2)	N/A,note3	/
10	Antenna Absolute Gain	Pass	Yvan Fan
11	Half power beam angle	N/A,note1	/
12	Interference Prevention Function	Pass	Yvan Fan
note1: Not Applicable. note2: Not apply to this device, since EIRP does not require compensation through Antenna power. note3: apply for the Occupied bandwidth within 26MHz-40MHz.			

Pass: The EUT complies with the essential requirements in the standard.

Note: Compliance determination rules

1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.

2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

Measurement Uncertainty

Test Item	Measurement Uncertainty	Notes
Bandwidth	±0.55%	(1)
Antenna Power	±0.57dB	(1)
Frequency Tolerance	±1x10-7	(1)
Conducted spurious emission	±0.64dB	(1)
Spurious emissions,radiated((>1G)	±4.26dB	(1)
Spurious emissions,radiated(<1G)	±4.24dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

2 General Information

2.1 General Description of EUT

Product Name:	Smart Projector
Model No.:	HY300 PRO,HY300,HY300 PRO+,HY300 ULTRA,HY300 PLUS,HY260 PRO,F06
Difference of Model:	All the model are the same circuit and RF module, except the model names
Test model No.:	HY300 PRO
Hardware version:	V1.8.1
Software version:	1.0
Sample(s) Status	Engineer sample
Frequency range:	2402MHz-2480MHz
Modulation technology:	GFSK
Antenna Type:	PCB Antenna
Antenna gain:	-4.60 dBi(Declare by applicant) Note: Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.
Battery:	N/A
Power supply:	AC 100-240V 50/60Hz

2.2 Operation Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz
1	2404MHz	11	2424MHz	21	2444MHz
---	---	---	---	---	---
---	---	---	---	---	---
8	2418MHz	18	2438MHz	38	2478MHz
9	2420MHz	19	2440MHz	39	2480MHz

2.3 Test Frequency Channel

Low	2402MHz
Middle	2440MHz
High	2480MHz

2.4 Test mode

Transmitting mode	Keep the EUT in continuously TX/RX mode
Remark: The test software was used to control EUT work in Continuous TX and RX mode, and select test channel, the test voltage was tuned from 90% to 110% of the nominal rated supply voltage.	

2.5 Description of Support Units

No.	Description	Manufacturer	Model	Serial Number	Certification or SDOC
/	/	/	/	/	/

2.6 Environmental conditions

Temperature range:	23.7℃
Humidity range:	45%
Pressure range:	101.6kPa

2.7 Test voltage

Voltage Fluctuation test	Normal Voltage	+10% of Normal Voltage	-10% of Normal Voltage
AC Power	100V	110V	90V
RF Chip	3.3V	3.3V	3.3V

Note:

Voltage Variation (%) = (Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100

During the input supply voltage to the EUT from the power source is varied by +/- 10%, fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/-1%, so only operated in normal voltage to test all regulations.

2.8 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration No.:	L11864
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392

2.9 Additional Instructions

Test Software	Manufacturer COM port command
Power level setup	Default

3 Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2025.3.06	2026.3.05
2	Power detector	MWRFtest	MW100-PSB	MW201020JYT	2025.3.06	2026.3.05
3	Cable	ZDECL	JCT108-SMAJ-SMAJ-2M	/	/	/
4	Signal generator	Agilent	N5182A	MY49060455	2025.3.06	2026.3.05
5	Oscilloscope	Tektronix	TDS3032B	B03245	2025.4.22	2026.4.21
6	DC Power Supply	LongWei	PS-305DF	170804961	2025.4.22	2026.4.21
7	Power meter	Rohde&Schwarz	NRP-Z11	1138.3004.02-117725-vh	2025.3.06	2026.3.05

Note:

1. The calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

2. Test Instruments Calibration Information

Used	Calibration Company: Abbrevation	Full Name of-calibration company
☒	CCIC	CCIC(Shenzhen)Metrology & Testing service Co. Ltds
☒	SHITONG	GUANGDONG SHITONG MEASURED INSTRUMENTS SERVICE CO.,LTD.
Calibration Information (Article 24-2, Paragraph 4 ofthe Radio Act)		
☐	(a) Calibration, conducted by the National institute of information and communication Technology (NICT)or a designated calibration agency under Article 102-18-1 of the Radio-Act	
☐	(b)Calibration conducted based on the regulations of Article 135 -or-144 of the Measurement Acte	
☒	(c) Calibration conducted in foreign countries, which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 -of-the Radio Acte	
☐	(d)Calibration, etc. conducted by using measuring instruments and other facilities listed at the bottom of appended table 3 of the Radio Act, which is to have been calibrated as described in (a)through (c) above.	

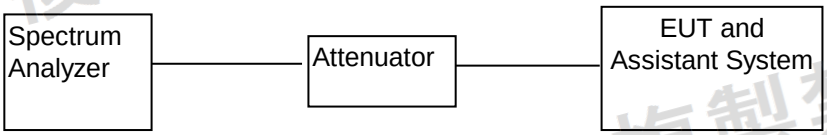
4 Test results and Measurement Data

4.1 Frequency Tolerance

4.1.1 Limit

+/- 50ppm.

4.1.2 Block diagram of test setup



4.1.3 Test Procedures

(1) Configure EUT and assistant system according clause 2.3 and 4.3

(2) Set EUT work in carrier Tx mode as described in clause 2.4

(3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 10 KHz.

Video BW: 10 KHz.

Span: 1MHz.

Detector: Peak.

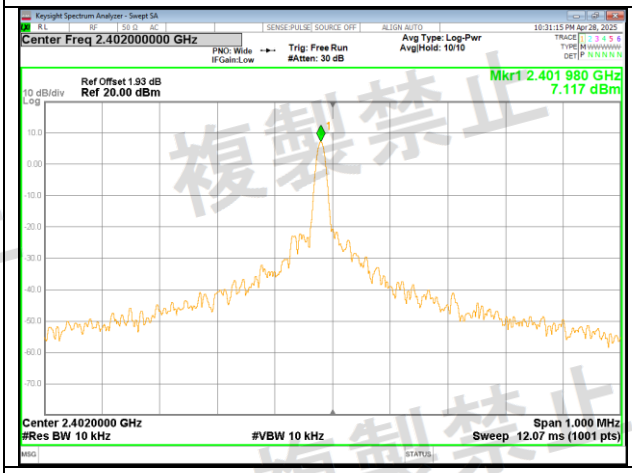
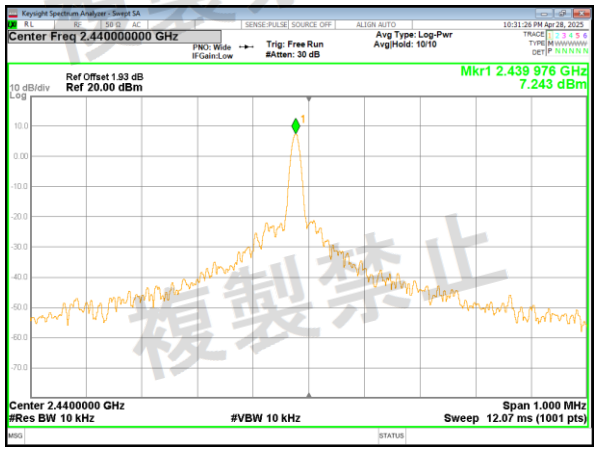
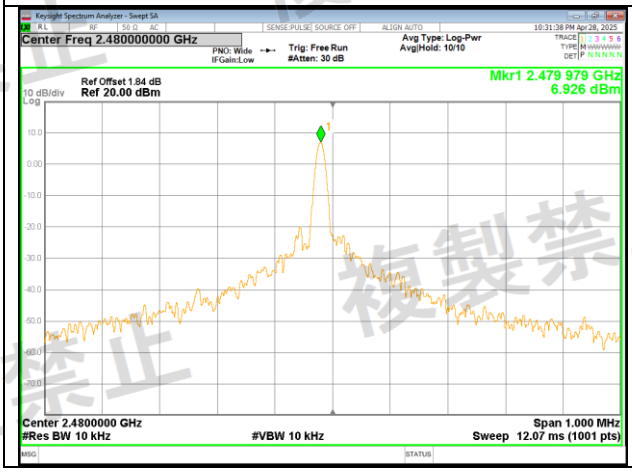
Trace Mode: Max Hold.

(4)When the trace is complete, find the peak value of the power envelope and record the frequency.

4.1.4 Test Result

Mode	CH	Measured	Tolerance	Result	Limit
		MHz	MHz	ppm	ppm (+/-)
Carrier Tx Mode	CH0: 2402MHz	2401.98	-0.020	-8.33	50
	CH19:2440MHz	2439.976	-0.024	-9.84	50
	CH39:2480MHz	2479.979	-0.021	-8.47	50
Conclusion：PASS					

Test plots:

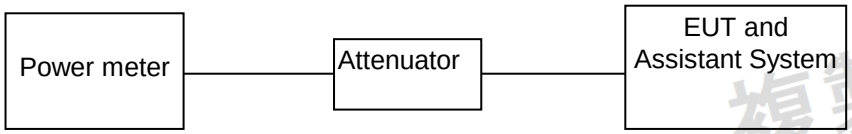
<table>
<tr><td>CH0-2402(MHz)</td><td>CH19-2440(MHz)</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>CH39-2480(MHz)</td><td>/</td></tr>
<tr><td>
</td><td>/</td></tr>
</table>

4.2 Antenna power

4.2.1 Limit

Item	Limits
Antenna Power Density	(1)FHSS 2427-2470.75MHz: 3mW/MHz or less 2400-2483.5MHz: 10mW/MHz or less (2) DSSS ,OFDM Occupied Bandwidth Within 26MHz: 10mW/MHz or less Occupied Bandwidth 26- 40MHz: 5mW/MHz or less (3) Other : 10mW
Antenna Power Tolerance	+20%
E.I.R.P	12.14dBm

4.2.2 Block diagram of test setup



4.2.3 Test Procedure

(1) Configure EUT and assistant system according clause 2.3 and 4.3

(2) Set EUT work in carrier Tx mode as described in clause 2.4

(3) Connected the EUT's antenna port to the power meter by suitable attenuator.

(4) Reading power meter value and recorded.

4.2.4 Test Result

Mode	Frequency (MHz)	Output power (dBm)	Output power (mW)	Power Limit (mW)	Antenna power tolerance (%)	Limit of antenna power tolerance (%)
GFSK	2402	1.68	1.47	10	-26.50	20%
	2440	1.43	1.39	10	-30.50	
	2480	0.99	1.26	10	-37.00	
Result	Pass The declared output power is 2mW					

E.I.R.P

Mode	Frequency (MHz)	Output power (dBm)	Antenna Gain (dBi)	E.I.R.P (dBm)	Limit (dBm)
GFSK	2402	1.68	-4.60	-2.92	12.14
	2440	1.43	-4.60	-3.17	12.14
	2480	0.99	-4.60	-3.61	12.14
Result	Pass				

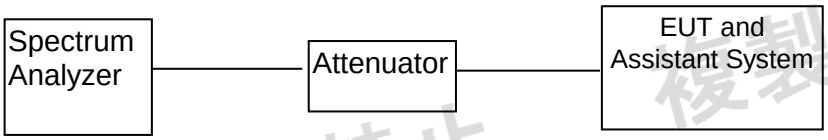
4.3 Occupied Frequency Bandwidth

4.3.1 Limits

Item	Limits
Occupied Band Width:	FH : Within 83.5MHz OFDM1,DSSS ：Within 26MHz OFDM2(802.11n40):26-40MHz Other: Within 26MHz;

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a system other than any of the above shall be 26 MHz or less.

4.3.2 Block diagram of test setup



4.3.3 Test Procedures

(1) Configure EUT and assistant system according clause 2.3 and 5.3

(2) Set EUT work in test mode as described in clause 2.4

(3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 300 KHz

Video BW: 300 KHz

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Detector: Peak.

Trace Mode: Max Hold.

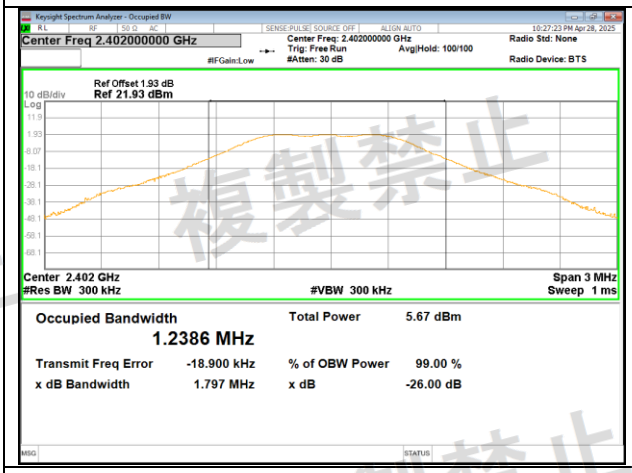
(4) When the trace is complete, measure the occupied bandwidth (99% bandwidth) with spectrum analyzer's bandwidth measure function.

4.3.4 Test Result

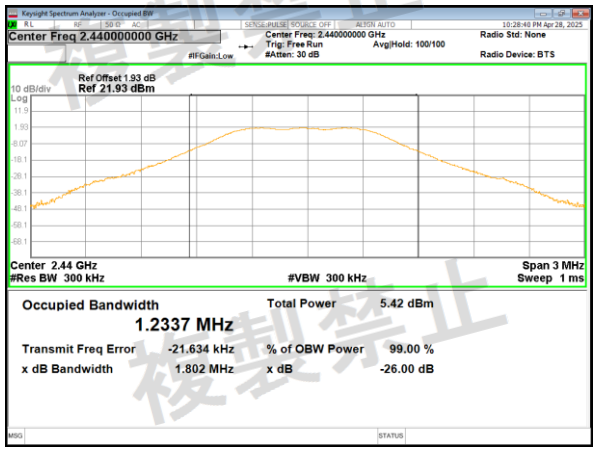
Mode	Condition	CH	Result (MHz)	Limit (MHz)
GFSK	Normal	CH0	1.2386	≦26
		CH19	1.2337	≦26
		CH39	1.2299	≦26
Conclusion：PASS				

Test plots:

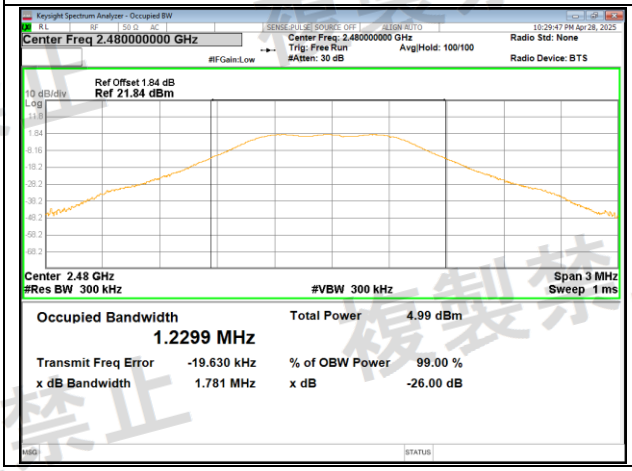
CH0-2402(MHz)



CH19-2440(MHz)



CH39-2480(MHz)



/

/

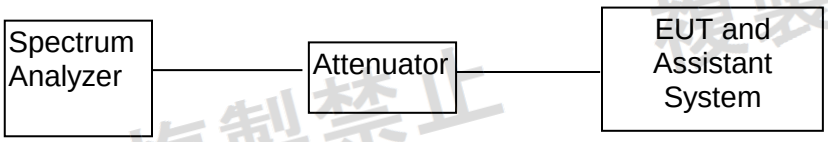
4.4 Unwanted Emission Strength (conducted)

4.4.1 Limits

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows:

Unwanted Emission Strength	≦2.5 μW/MHz (30MHz≦f≦1000MHz)
	≦2.5 μW/MHz (1000MHz<f≦2387MHz)
	≦25 μW/MHz (2387MHz<f≦2400MHz)
	≦25 μW/MHz (2483.5MHz≦f<2496.5MHz)
	≦2.5 μW/MHz (2496.5MHz≦f<12500MHz)
Note: 30MHz-2387 MHz: 2.5 μW (-26 dBm)/MHz or less. When 30M~1GHz, RBW is set to 100kHz, The limit should be reduced by 10log(1M/100k) accordingly. Then limit=-26dBm-10log(1M/100k)=-36dBm/MHz=0.25μW/MHz	

4.4.2 Block Diagram of Test Setup



4.4.3 Test Procedures

(1) Configure EUT and assistant system according clause 2.3 and 7.3

(2) Set EUT work in test mode as described in clause 2.4

(3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Resolution BW: Below 1GHz RB:100KHz

Above 1GHz RB:1MHz

Video BW: Below 1GHz RB:100KHz

Above 1GHz RB:1MHz

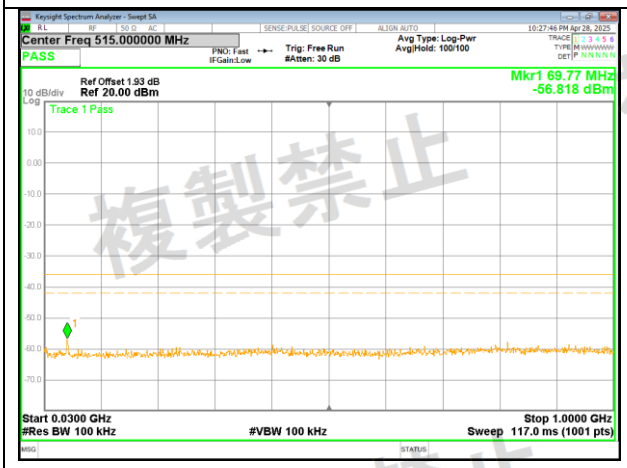
Detector: Peak.

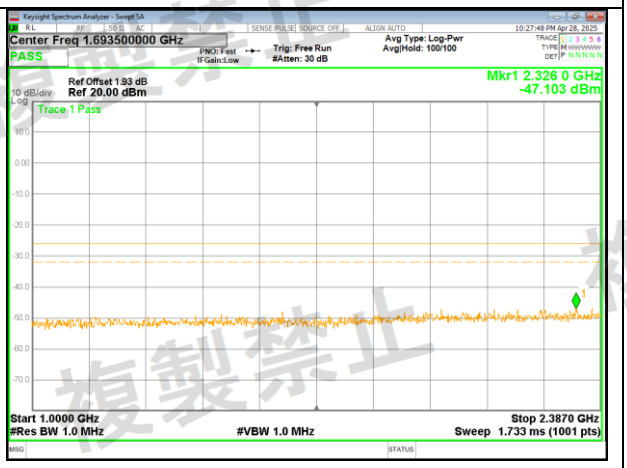
Trace Mode: Max Hold.

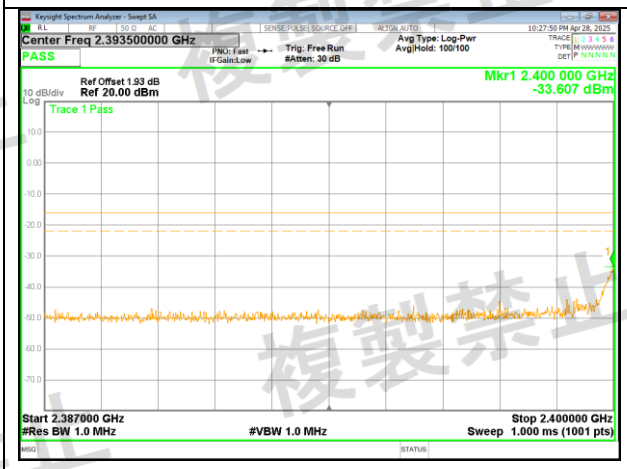
(4)All the emissions from 30MHz to 13GHz were measured and record.

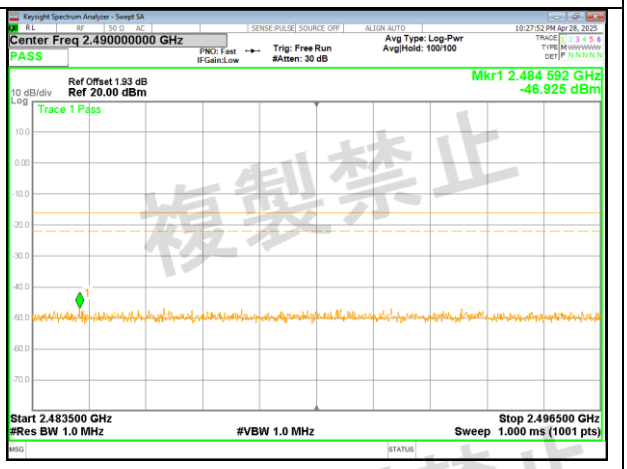
Condition	Mode	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Value (dBm)	Max Value (μW/MHz)	Limit (μW /MHz)	Verdict
NVNT	BLE	2402	30-1000	69.77	-56.818	0.002	0.25	Pass
NVNT	BLE	2402	1000-2387	2325.972	-47.103	0.019	2.5	Pass
NVNT	BLE	2402	2387-2400	2400.00	-33.607	0.436	25	Pass
NVNT	BLE	2402	2483.5-2496.5	2484.592	-46.925	0.020	25	Pass
NVNT	BLE	2402	2496.5-13000	2664.556	-45.876	0.026	2.5	Pass
NVNT	BLE	2440	30-1000	70.74	-57.789	0.002	0.25	Pass
NVNT	BLE	2440	1000-2387	2363.421	-46.175	0.024	2.5	Pass
NVNT	BLE	2440	2387-2400	2388.443	-46.59	0.022	25	Pass
NVNT	BLE	2440	2483.5-2496.5	2491.56	-46.803	0.021	25	Pass
NVNT	BLE	2440	2496.5-13000	2538.514	-44.575	0.035	2.5	Pass
NVNT	BLE	2480	30-1000	783.69	-58.737	0.001	0.25	Pass
NVNT	BLE	2480	1000-2387	2227.495	-47.734	0.017	2.5	Pass
NVNT	BLE	2480	2387-2400	2394.319	-47.306	0.019	25	Pass
NVNT	BLE	2480	2483.5-2496.5	2489.493	-41.341	0.073	25	Pass
NVNT	BLE	2480	2496.5-13000	2664.556	-44.348	0.037	2.5	Pass

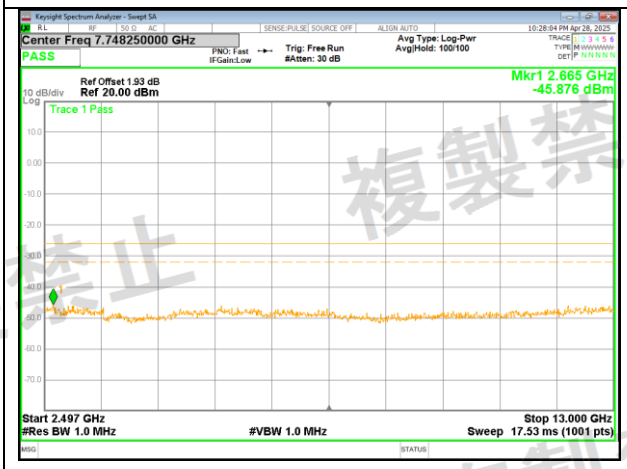
CH0 (2402MHz)


Center Freq 515.000000 MHz
PASS
Ref Offset 1.93 dB
10 dB/div Ref 20.00 dBm
Mkr1 69.77 MHz
-56.818 dBm
Trace 1 Pass
Start 0.0300 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 1.0000 GHz
Sweep 117.0 ms (1001 pts)


Center Freq 1.693500000 GHz
PASS
Ref Offset 1.93 dB
10 dB/div Ref 20.00 dBm
Mkr1 2.326 0 GHz
-47.103 dBm
Trace 1 Pass
Start 1.0000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 2.3870 GHz
Sweep 1.733 ms (1001 pts)

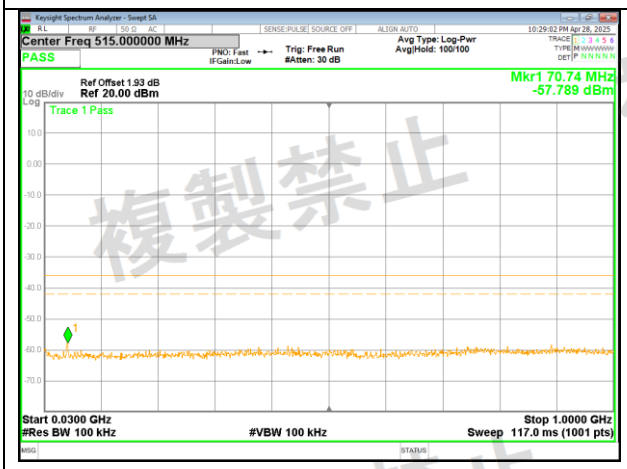

Center Freq 2.393500000 GHz
PASS
Ref Offset 1.93 dB
10 dB/div Ref 20.00 dBm
Mkr1 2.400 000 GHz
-33.607 dBm
Trace 1 Pass
Start 2.387000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 2.400000 GHz
Sweep 1.000 ms (1001 pts)

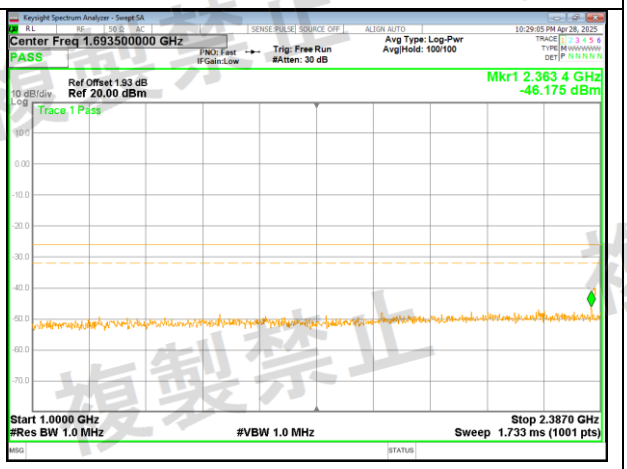

Center Freq 2.490000000 GHz
PASS
Ref Offset 1.93 dB
10 dB/div Ref 20.00 dBm
Mkr1 2.484 592 GHz
-46.925 dBm
Trace 1 Pass
Start 2.483500 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 2.496500 GHz
Sweep 1.000 ms (1001 pts)

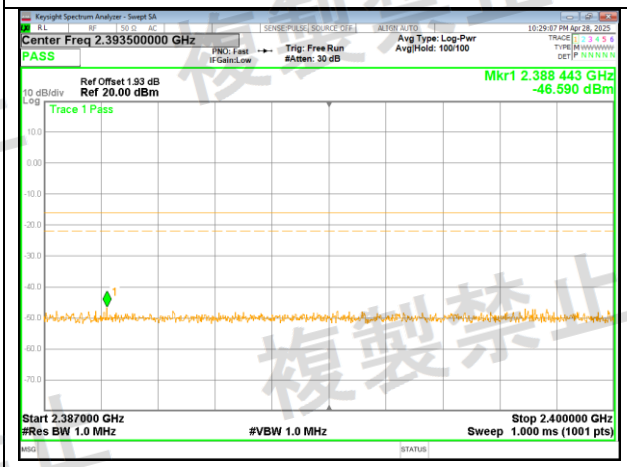

Center Freq 7.748250000 GHz
PASS
Ref Offset 1.93 dB
10 dB/div Ref 20.00 dBm
Mkr1 2.665 GHz
-45.876 dBm
Trace 1 Pass
Start 2.497 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 13.000 GHz
Sweep 17.53 ms (1001 pts)

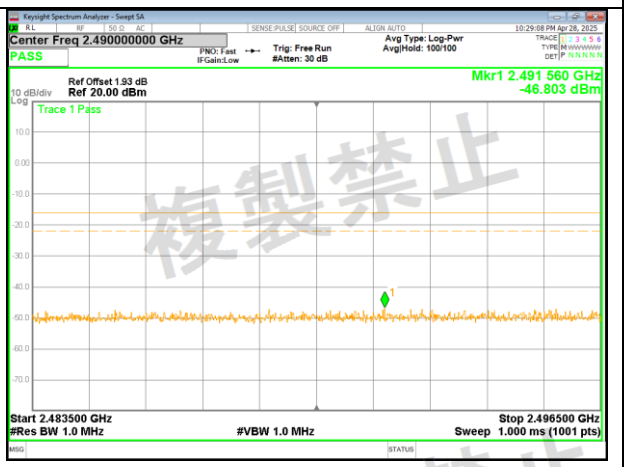
/

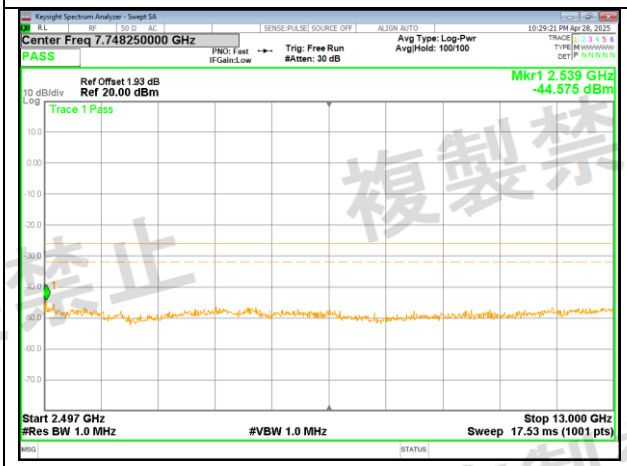
CH19 （2440MHz）





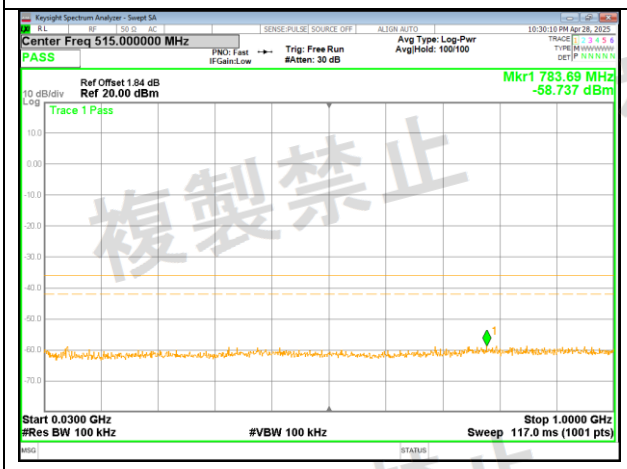


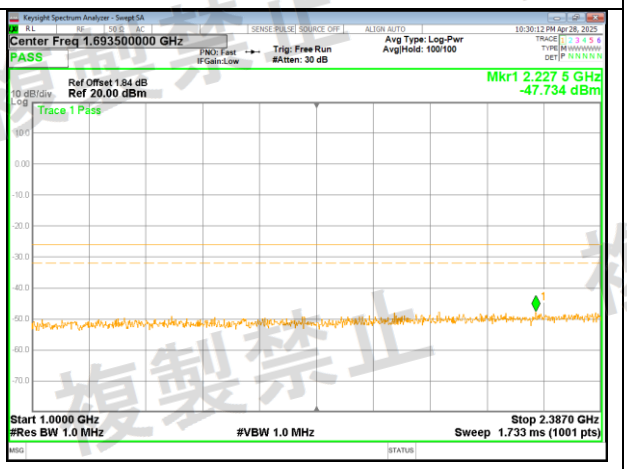


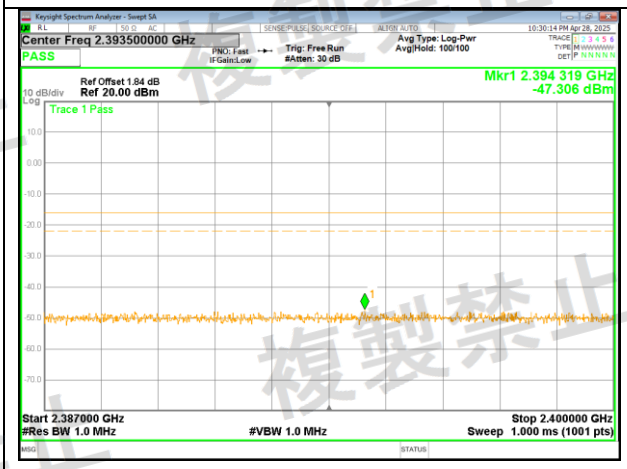


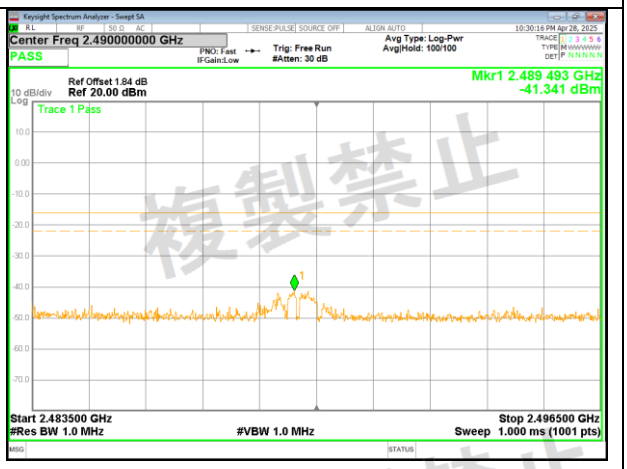
/

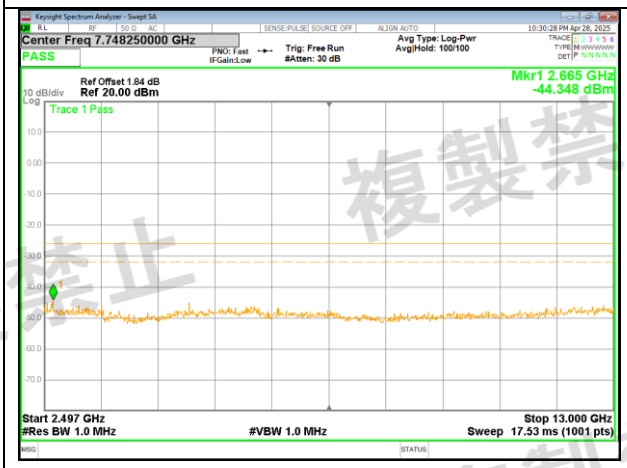
CH39 (2480MHz)











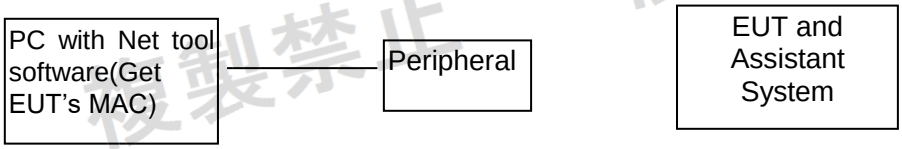
/

4.5 Interference prevention function

4.5.1 Limits

When conducting wireless communications that transmit data or other information" : A function that automatically sends or receives an identification codeWhen pertorming radiolocaton work: A functon that alows you to distinguish between reflected waves of radio waves transmited by your own station and radioyaves tansmited by other adio statons y detfvna the moduaton method and other characterstics ot receve radio waves. (However, f t aso nas the functon otransmitting signals for data transmission, both functions shall be included)

4.5.2 Block Diagram of Test Setup



4.5.3 Test Procedures

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

4.5.4 Test Result

EUT:	Smart Projector	Pressure:	1012 hPa
Temperature:	22.5°C	Humidity:	37%RH
MAC	00:28:13:0E:86:E4		
Test result:	PASS		

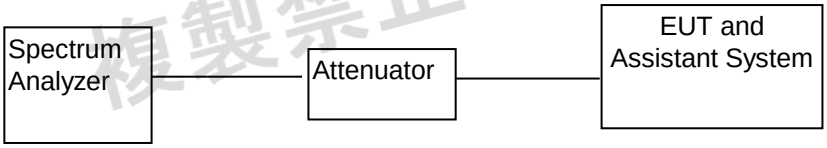
4.6 Secondary Radiated Emissions

4.6.1 Limits

Item	Limits
RX Spurious Emission:	≦4nW (f<1GHz)
	≦20nW (1GHz≦f)

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit.

4.6.2 Block diagram of test setup



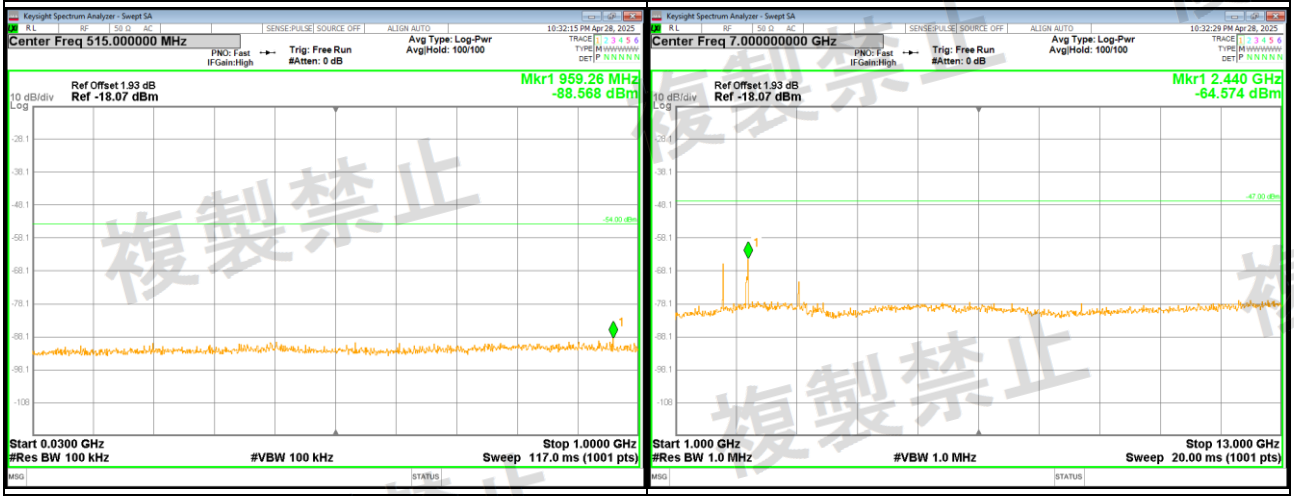
4.6.3 Test Procedure

1. EUT have the continuous reception mode and fixed only one channelize.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) /
   AT: Auto / Ref: Auto / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
3. SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
4. SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
5. If power level of lower emissions are more than 1/10 of limit (.0.4nW for f < 1GHz, 2nW for f >= 1GHz), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

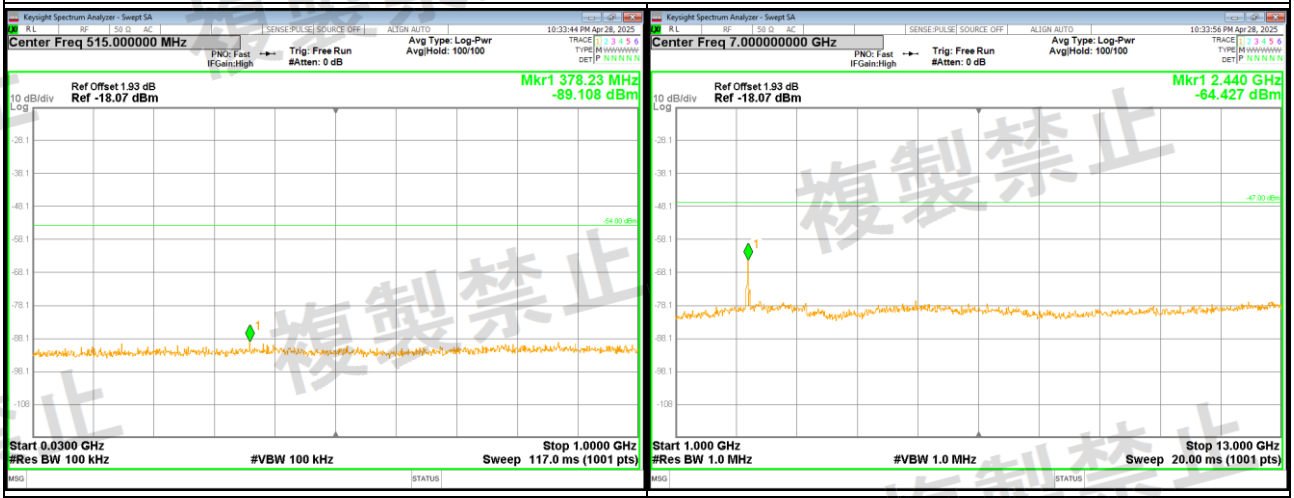
4.6.4 Test result

Condition	Mode	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Value (dBm)	Max Value (nW)	Limit (nW)	Verdict
NVNT	BLE	2402	30-1000	959.26	-88.568	0.001	4	Pass
NVNT	BLE	2402	1000-13000	2440	-64.574	0.349	20	Pass
NVNT	BLE	2440	30-1000	378.23	-89.108	0.001	4	Pass
NVNT	BLE	2440	1000-13000	2440	-64.427	0.361	20	Pass
NVNT	BLE	2480	30-1000	812.79	-88.368	0.001	4	Pass
NVNT	BLE	2480	1000-13000	2440	-62.903	0.513	20	Pass

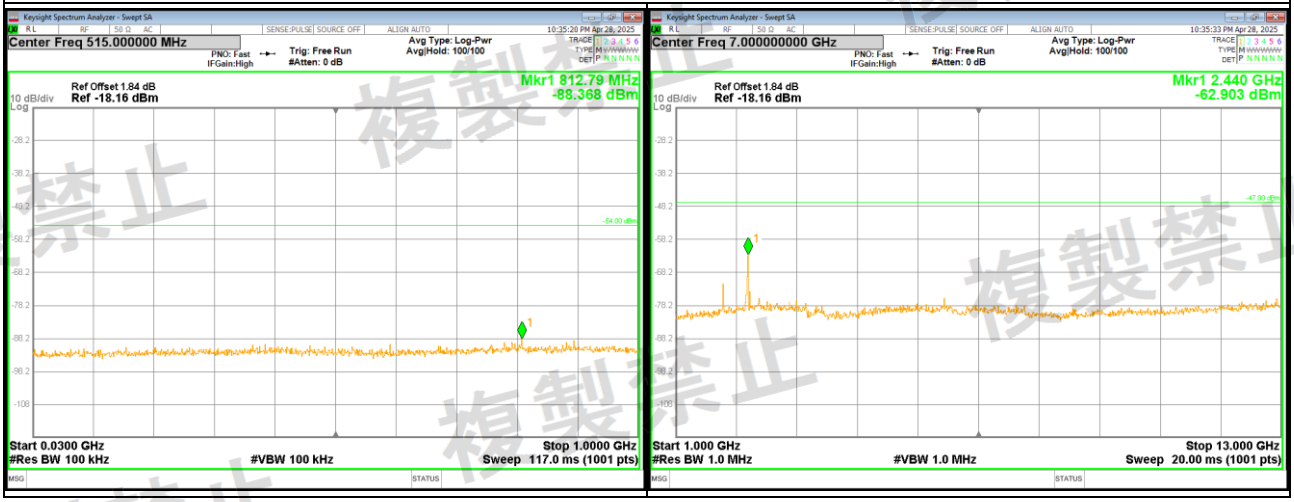
CH0 (2402MHz)



CH19 (2440MHz)



CH39 (2480MHz)

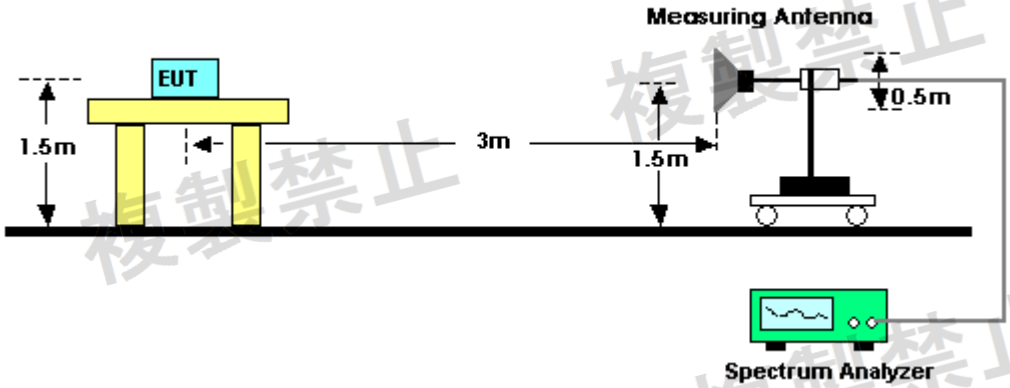


4.7 Antenna Absolute Gain Measurement

4.7.1 Limit

12.14dBi or less (when an EIRP is less than a limit, the shortage shall be compensated for By the gain of the transmitting antenna)

4.7.2 Block diagram of test setup



4.7.3 Test Procedure

Step 1

Set the test equipment at test frequency, and in continuous transmitting mode or intermittent burst mode (constant frequency and constant burst time). Stop the spread.

Step 2

Set the height and direction of test equipment and measurement antenna approximately facing each other.

Step 3

In the frequency derived in D), change the height of the measurement antenna from the ground by ±50cm with a central focus on the antenna of test equipment. Search the location that the power is maximum by adjusting the direction of measurement antenna. Set the indicator of spectrum analyzer at this point as “E”.

Step 4

Remove the test equipment from the turntable, set the opening of substitution antenna at the same location as the opening of the test equipment, and receive by outputting radio wave of the same frequency from the standard signal generator for substitution.

Step 5

Adjust at the maximum power point, turning the substitution antenna.

Step 6

Change the height of the measurement antenna from the ground by ±50cm with a central focus on the substitution antenna, and adjust the direction of measurement antenna to the location that the received power is maximum.

Step 7

Adjust output of standard signal generator and record the power Ps that is equal to “E”. Or record Ps by counting backward from the difference with “E” as the close value to “E” (within ±1dB).

Step 8

EIRP is derived from the following calculating formula:

$EIRP = G_S – L_F + P_S$

G_S; Absolute gain of substitution antenna (dBi).

L_F; Loss of electric supply line between standard signal generator and substitution antenna (dB).

P_S; Output of standard signal generator (dBm).

Step 9

Spectrum Analyzer as below:

Centre Frequency: centre frequency of the channel Under test.

Frequency Span: 0Hz

Resolution BW: 1MHz

Video BW: 3MHz

Detector: Peak.

Sweep mode: Continuous sweep

4.7.4 Test Result

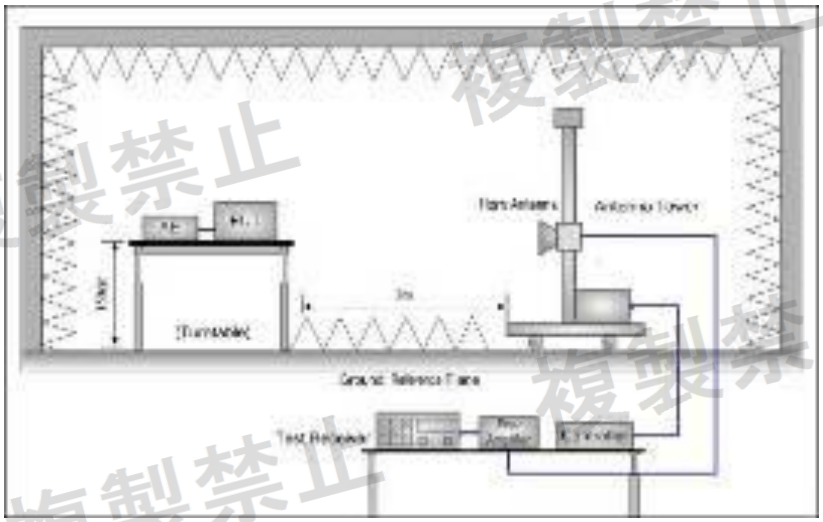
N/A. The EIRP less than 12.14dBm.

4.8 Half Power Beam Angle

4.8.1 Limit

Item	Limits
3dB antenna beam width	360/A (If A<1; then A=1) A = {EIRP Power [mW] / 16.36 for DS, OFDM} or A = {EIRP Power [mW] / 4.9 for FH}

4.8.2 Block diagram of test setup



4.8.3 Test Procedure

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with RBW=1 MHz, VBW=1 KHz, Y scale=5 dB, Detector=Peak, Trace mode=Max Hold, and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and erotically to find the maximum receiving power.
4. Move the measuring antenna height up and down within ± 50cm of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E"
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below 360/A (If A<1; then A=1). A = {EIRP Power [mW] / 16.36 for DS, OFDM} or A = {EIRP Power [mW] / 4.9 for FH}

4.8.4 Test Result

N/A. The EIRP less than 12.14dBm.

5 Test Setup Photo

Reference to the **appendix I** for details.

6 EUT Constructional Details

Reference to the **appendix II** for details.

------End------