

JAPAN SPECIFIED RADIO TEST REPORT

Client Name : ACCO Brands, Inc.
Address : 1500 Fashion Island Blvd., 3rd Floor, San Mateo,
CA94404, United States
Product Name : Pro Fit Ergo Wireless Keyboard
Date : Jun. 17, 2019

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant : ACCO Brands, Inc.
Manufacturer : ACCO Brands, Inc.
Product Name : Pro Fit Ergo Wireless Keyboard
Model No. : M01440-K
Trade Mark : Kensington
Rating(s) : Input: DC 3V, 5mA by“AAA”*2 battery inside

Test Standard(s) : **MIC Notice No.88 Annex43**
Certificate regulation article 2, paragraph 1, item 19

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the MIC Notice No.88 Annex43 and Certificate regulation article 2, paragraph 1, item 19 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt

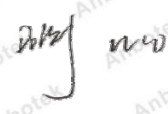
May 10, 2019

Date of Test

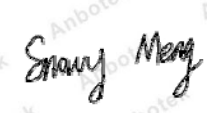
May 10~22, 2019

Prepared By





(Engineer / Dolly Mo)

Reviewer


(Supervisor / Snowy Meng)

Approved & Authorized Signer


(Manager / Sally Zhang)

1. General Information

1.1. Client Information

Applicant	:	ACCO Brands, Inc.
Address	:	1500 Fashion Island Blvd., 3rd Floor, San Mateo, CA94404, United States
Manufacturer	:	ACCO Brands, Inc.
Address	:	1500 Fashion Island Blvd., 3rd Floor, San Mateo, CA94404, United States

1.2. Description of Device (EUT)

Product Name	:	Pro Fit Ergo Wireless Keyboard	
Model No.	:	M01440-K	
Trade Mark	:	Kensington	
Test Power Supply	:	DC 3V battery inside	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	2.4GHz: 2403~2480MHz BT 4.2 BLE: 2402~2480MHz
	:	Number of Channel:	2.4GHz: 16 Channels BT 4.2 BLE: 40 Channels
	:	Modulation Type:	2.4GHz: GFSK BT 4.0 BLE: GFSK
	:	Antenna Type:	PCB Antenna
	:	Antenna Gain(Peak):	BT 4.2 BLE&2.4GHz: -2.81 dBi
		Rated output Power	0.08 mW
		Hardware version	A1
		Software version	A2
Remark: 1) For a more detailed features description, please refer to the manufacturer’s specifications or the User’s Manual. 2) This report is for 2.4GHz module.			

1.3. Auxiliary Equipment Used During Test

N/A	
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1.4. Description of Test Modes

The EUT has been tested under operating condition.

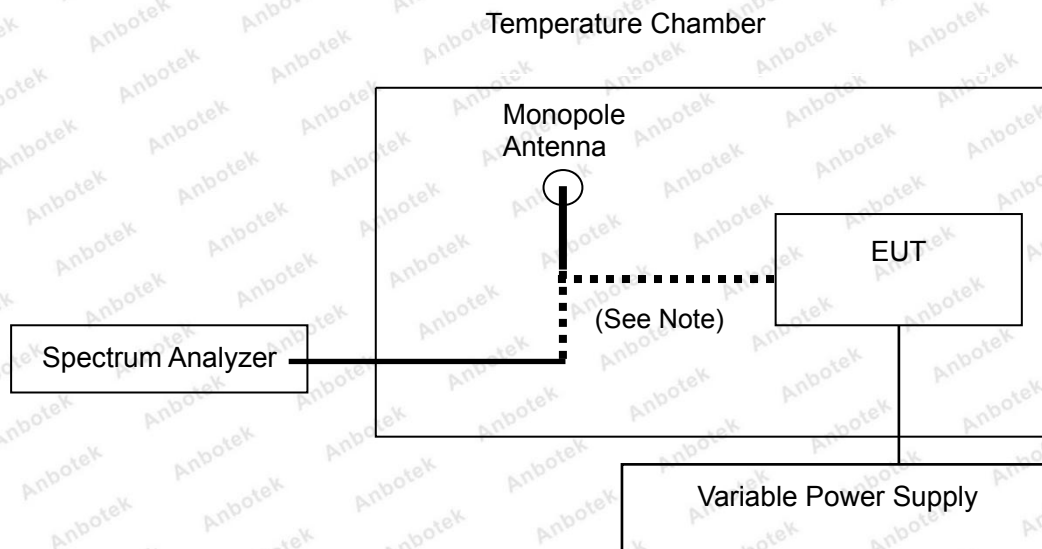
Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel Low(2403MHz), Channel Middle(2441MHz) and Channel High(2480MHz) are chosen for the final testing.

1.5. Test Conditions

	Normal Test Conditions	Extreme Test Conditions
Temperature	15°C - 35°C	-10°C - 45°C
Relative Humidity	20% - 75%	N/A
Supply Voltage	DC 3V	DC 2.7V~DC 3.3V

1.6. Test Configuration



1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Nov. 26, 2018	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Nov. 05, 2018	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 05, 2018	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 05, 2018	1 Year
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 05, 2018	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 19, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 20, 2018	1 Year
10.	Horn Antenna	A-INFO	LB-180400-K F	J211060628	Nov. 20, 2018	1 Year
11.	Pre-amplifier	SONOMA	310N	186860	Nov. 05, 2018	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Nov. 05, 2018	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 05, 2018	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 05, 2018	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 05, 2018	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 05, 2018	1 Year
19.	DC Power Supply	LW	TPR-6420D	374470	Oct. 31, 2018	1 Year
20.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Nov. 01, 2018	1 Year

1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

Test Items	Subclause	Required	Results
General Provisions			
Frequency Tolerance	5	Yes	Complies
Occupied Bandwidth	6	Yes	Complies
Spurious Emissions	7	Yes	Complies
Transmitting equipment			
Antenna power	14	Yes	Complies
SAR	14.2	N/A	N/A
Frequency stabilization	15	Yes	Complies
Transmitter antenna			
Type, configuration, etc. of transmitting antenna	20	Yes	Complies
Directional pattern of transmitting antenna	22	Yes	Complies
Receiving equipment			
Spurious emission of receiver	24	Yes	Complies
Refer to all articles for transmitter antenna	26	Yes	Complies
Operating frequency 2400-2483.5MHz			
High Frequency/modulation section cannot be opened easily	49.20(1); a	Yes	Complies
Communication method	49.20(1); b	N/A	N/A
Modulation method	49.20(1); c	Yes	Complies
Spread spectrum method	49.20(1); d	Yes	Complies
Antenna power	49.20(1); e	Yes	Complies
Absolute gain of transmitting antenna	49.20(1); f(1)	N/A	N/A
Angular width of principal radiation (AWPR)	49.20(1); f(2)	N/A	N/A
Number of carriers within 1 MHz bandwidth in OFDM	49.20(1); g	N/A	N/A
Diffusion bandwidth	49.20(1); h	N/A	N/A
Spreading factor	49.20(1); i	N/A	N/A
Frequency retention time (FH employed)	49.20(1); j	N/A	N/A
Carrier sensing function	--	N/A	N/A

3. Test Results

Low Voltage: DC 2.7V

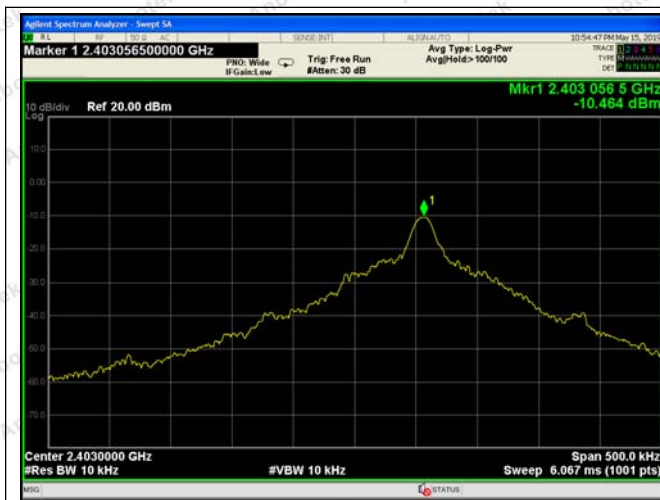
Frequency(MHz)	Reading(MHz)	Tolerance(ppm)	Limit(ppm)
2403.0000	2403.0561	23.346	±50
2441.0000	2441.0572	23.433	±50
2480.0000	2480.0595	23.992	±50

High Voltage: DC 3.3V

Frequency(MHz)	Reading(MHz)	Tolerance(ppm)	Limit(ppm)
2403.0000	2403.0607	25.260	±50
2441.0000	2441.0626	25.645	±50
2480.0000	2480.0568	22.903	±50

Normal Voltage: DC 3.0V

Frequency(MHz)	Reading(MHz)	Tolerance(ppm)	Limit(ppm)
2403.0000	2403.0565	23.512	±50
2441.0000	2441.0570	23.351	±50
2480.0000	2480.0570	22.984	±50



Frequency Error--2403MHz



Frequency Error--2441MHz



Frequency Error--2480MHz

4. OCCUPIED BANDWIDTH (99%) TEST

4.1. Test Limit

Under all test conditions	FH: 83.5 MHz
	FH + DS: 83.5 MHz
	FH + OFDM: 83.5MHz
	OFDM, DS: 26MHz
	Others: 26MHz
	OFDM equipment with 40MHz channel separation: 38MHz

4.2. Test Equipment

Same as 1.7 Frequency tolerance measurement.

4.3. Test Configuration

Same as 1.6 Frequency tolerance measurement.

4.4. Test Data

PASS

Please refer to the following data.

Low Voltage: DC 2.7V

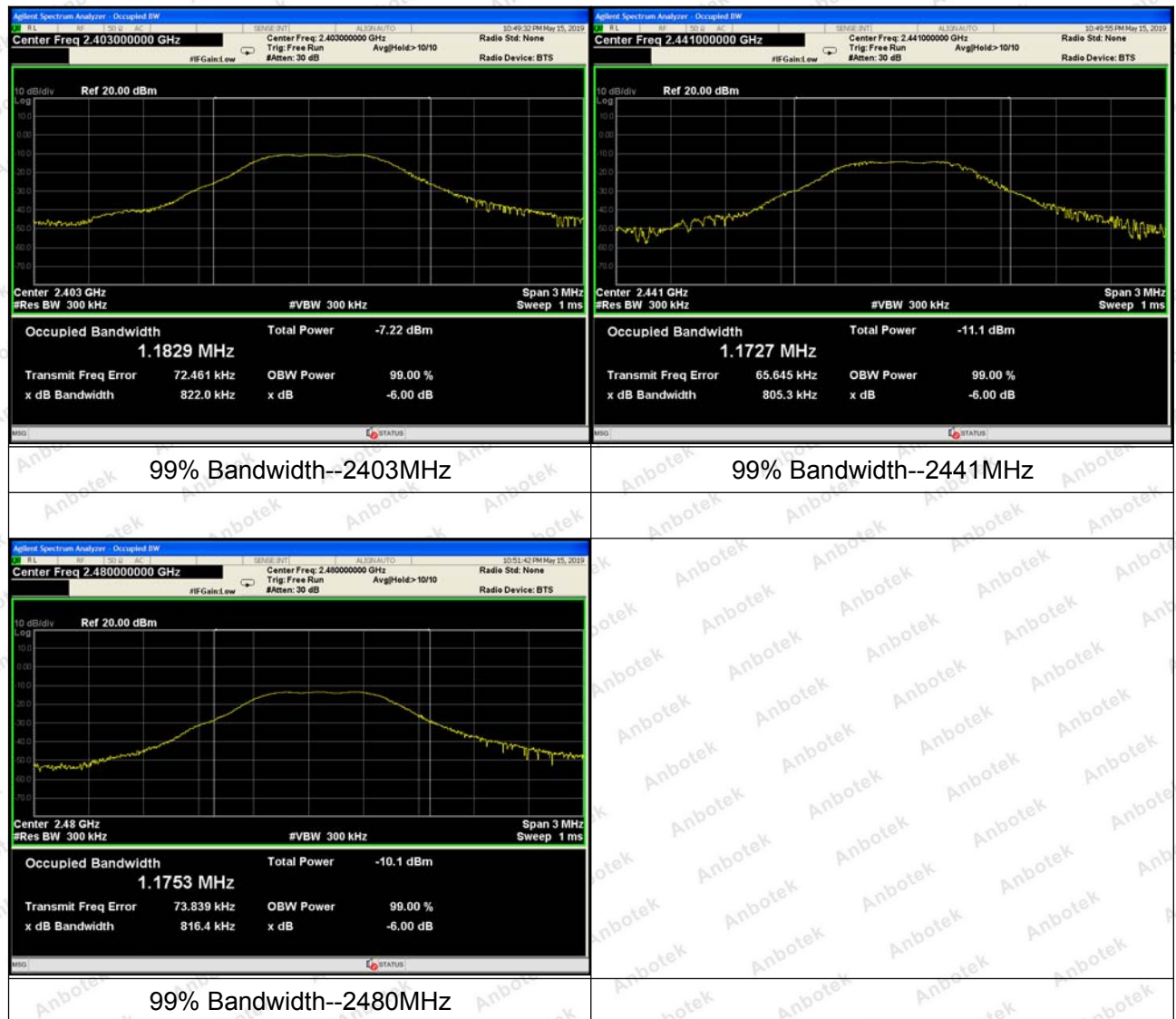
Frequency(MHz)	99% Bandwidth(MHz)	Remark
2403.000	1.1799	Low Voltage: DC 2.7V
2441.000	1.1694	Low Voltage: DC 2.7V
2480.000	1.1714	Low Voltage: DC 2.7V

High Voltage: DC 3.3V

Frequency(MHz)	99% Bandwidth(MHz)	Remark
2403.000	1.1833	High Voltage: DC 3.3V
2441.000	1.1735	High Voltage: DC 3.3V
2480.000	1.1748	High Voltage: DC 3.3V

Normal Voltage: DC 3.0V

Frequency(MHz)	99% Bandwidth(MHz)	Remark
2403.000	1.1829	Normal Voltage: DC 3.0V
2441.000	1.1727	Normal Voltage: DC 3.0V
2480.000	1.1753	Normal Voltage: DC 3.0V



5. SPREAD-SPECTRUM BANDWIDTH (90%) TEST

5.1. Test Limit

Test Limit	Spreading factor limit ≥ 5
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5.2. Test Equipment

Same as 1.7 Frequency tolerance measurement.

5.3. Test Configuration

Same as 1.6 Frequency tolerance measurement.

5.4. Test Data

Pass

Please refer to the following data.

Low Voltage: DC 2.7V

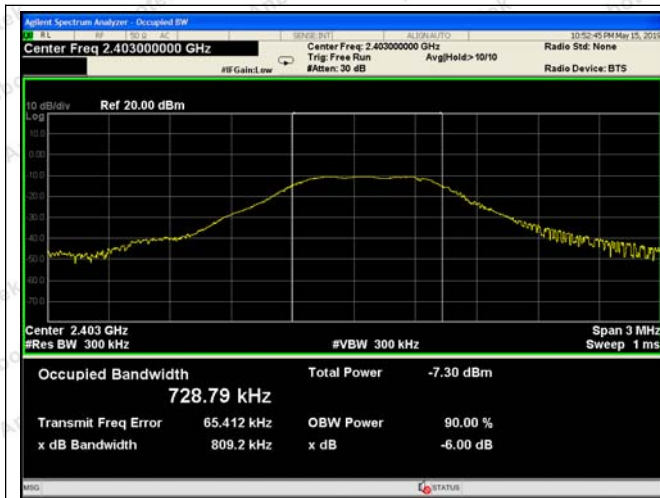
Frequency(MHz)	90% Bandwidth(kHz)	Limit (MHz)	Remark
2403.000	729.03	≥ 0.5	Low Voltage: DC 2.7V
2441.000	734.11	≥ 0.5	Low Voltage: DC 2.7V
2480.000	733.48	≥ 0.5	Low Voltage: DC 2.7V

High Voltage: DC 3.3V

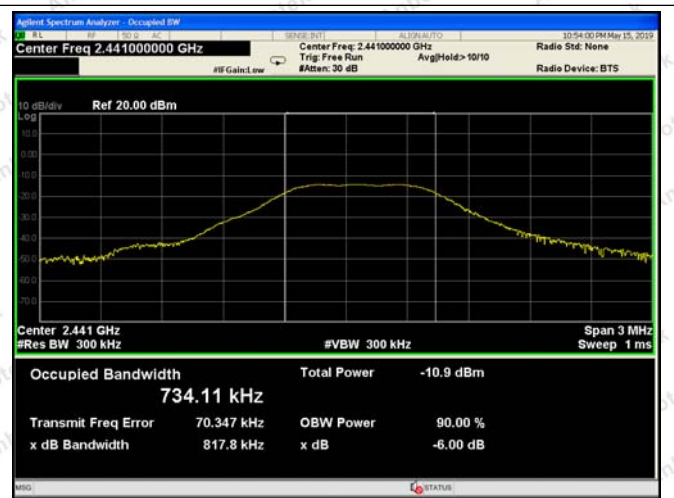
Frequency(MHz)	90% Bandwidth(kHz)	Limit (MHz)	Remark
2403.000	728.85	≥ 0.5	High Voltage: DC 3.3V
2441.000	734.11	≥ 0.5	High Voltage: DC 3.3V
2480.000	732.85	≥ 0.5	High Voltage: DC 3.3V

Normal Voltage: DC 3.0V

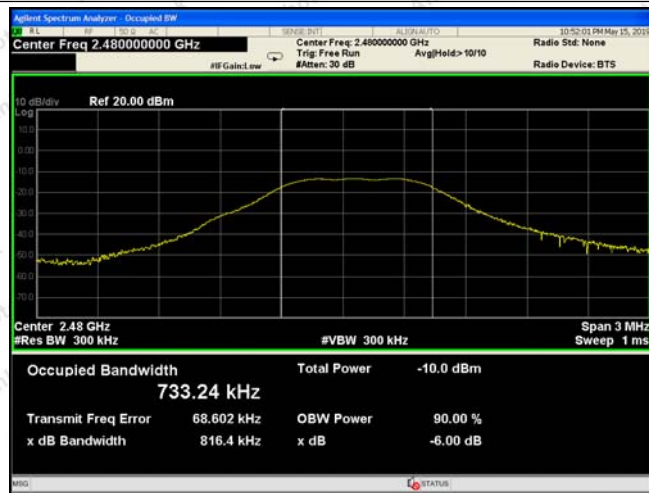
Frequency(MHz)	90% Bandwidth(kHz)	Limit (MHz)	Remark
2403.000	728.79	≥ 0.5	Normal Voltage: DC 3.0V
2441.000	734.11	≥ 0.5	Normal Voltage: DC 3.0V
2480.000	733.24	≥ 0.5	Normal Voltage: DC 3.0V



90% Bandwidth--2403MHz



90% Bandwidth--2441MHz



90% Bandwidth--2480MHz

6. SPURIOUS EMISSIONS INTENSITY TEST

6.1. Test Equipment

Same as 1.7 Frequency tolerance measurement.

6.2. Test Configuration

Same as 1.6 Frequency tolerance measurement.

6.3. Test Data

Scanning Bandwidth	:	30~ 1000MHz
		1000~ 2387MHz
		2387~ 2400MHz
		2483.5~ 2496.5MHz
		2496.5~ 12500MHz

Pass

Please refer to the following data.

Low Voltage: DC 2.7V

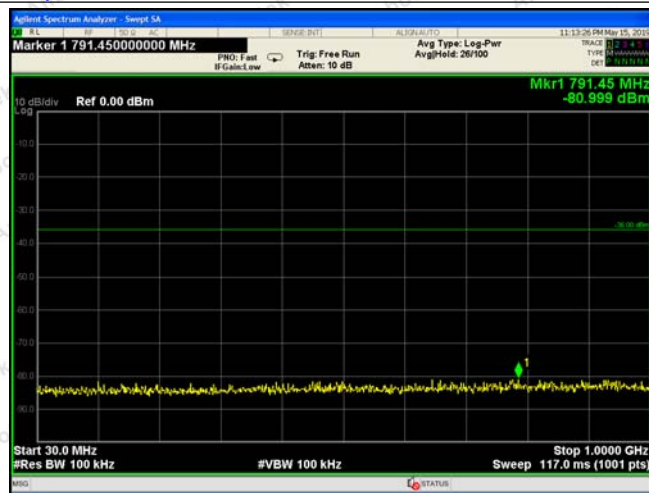
Frequency(MHz)	Reading(dBm)	Scanning Bandwidth	Limit
2403.000	-80.984	30~ 1000MHz	≤ -36dBm
	-69.443	1000~ 2387MHz	≤ -26dBm
	-69.469	2387~ 2400MHz	≤ -16dBm
	-68.882	2483.5~ 2496.5MHz	≤ -16dBm
	-67.995	2496.5~ 12500MHz	≤ -26dBm
2441.000	-81.041	30~ 1000MHz	≤ -36dBm
	-69.716	1000~ 2387MHz	≤ -26dBm
	-69.307	2387~ 2400MHz	≤ -16dBm
	-68.766	2483.5~ 2496.5MHz	≤ -16dBm
	-67.753	2496.5~ 12500MHz	≤ -26dBm
2480.000	-81.141	30~ 1000MHz	≤ -36dBm
	-68.208	1000~ 2387MHz	≤ -26dBm
	-69.790	2387~ 2400MHz	≤ -16dBm
	-69.147	2483.5~ 2496.5MHz	≤ -16dBm
	-67.393	2496.5~ 12500MHz	≤ -26dBm

High Voltage: DC 3.3V

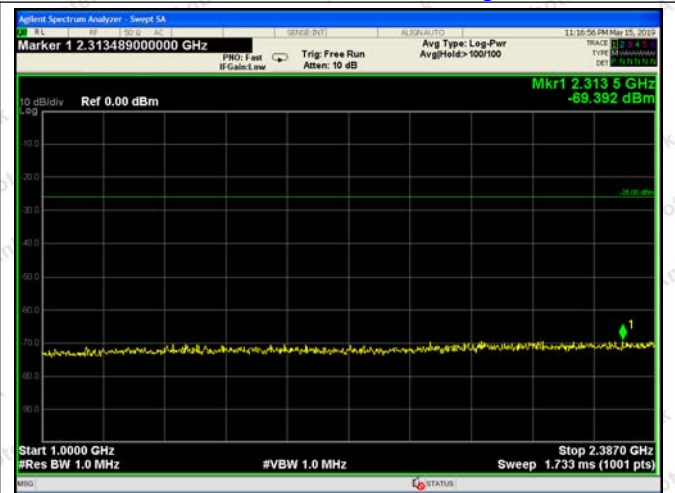
Frequency(MHz)	Reading(dBm)	Scanning Bandwidth	Limit
2403.000	-80.998	30~ 1000MHz	≤ -36dBm
	-69.432	1000~ 2387MHz	≤ -26dBm
	-69.429	2387~ 2400MHz	≤ -16dBm
	-68.874	2483.5~ 2496.5MHz	≤ -16dBm
	-67.992	2496.5~ 12500MHz	≤ -26dBm
2441.000	-81.036	30~ 1000MHz	≤ -36dBm
	-69.710	1000~ 2387MHz	≤ -26dBm
	-69.305	2387~ 2400MHz	≤ -16dBm
	-68.764	2483.5~ 2496.5MHz	≤ -16dBm
	-67.753	2496.5~ 12500MHz	≤ -26dBm
2480.000	-81.141	30~ 1000MHz	≤ -36dBm
	-68.208	1000~ 2387MHz	≤ -26dBm
	-69.790	2387~ 2400MHz	≤ -16dBm
	-69.147	2483.5~ 2496.5MHz	≤ -16dBm
	-67.393	2496.5~ 12500MHz	≤ -26dBm

Normal Voltage: DC 3.0V

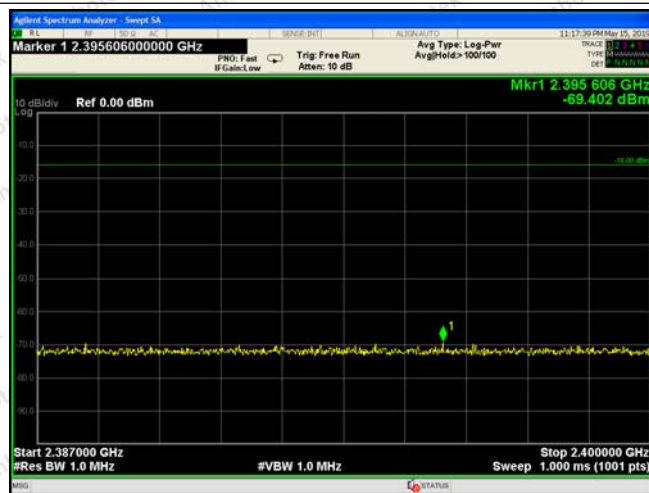
Frequency(MHz)	Reading(dBm)	Scanning Bandwidth	Limit
2403.000	-80.999	30~ 1000MHz	≤ -36dBm
	-69.392	1000~ 2387MHz	≤ -26dBm
	-69.402	2387~ 2400MHz	≤ -16dBm
	-68.877	2483.5~ 2496.5MHz	≤ -16dBm
	-67.985	2496.5~ 12500MHz	≤ -26dBm
2441.000	-81.033	30~ 1000MHz	≤ -36dBm
	-69.698	1000~ 2387MHz	≤ -26dBm
	-69.299	2387~ 2400MHz	≤ -16dBm
	-68.759	2483.5~ 2496.5MHz	≤ -16dBm
	-67.746	2496.5~ 12500MHz	≤ -26dBm
2480.000	-81.139	30~ 1000MHz	≤ -36dBm
	-68.204	1000~ 2387MHz	≤ -26dBm
	-69.710	2387~ 2400MHz	≤ -16dBm
	-69.106	2483.5~ 2496.5MHz	≤ -16dBm
	-67.385	2496.5~ 12500MHz	≤ -26dBm



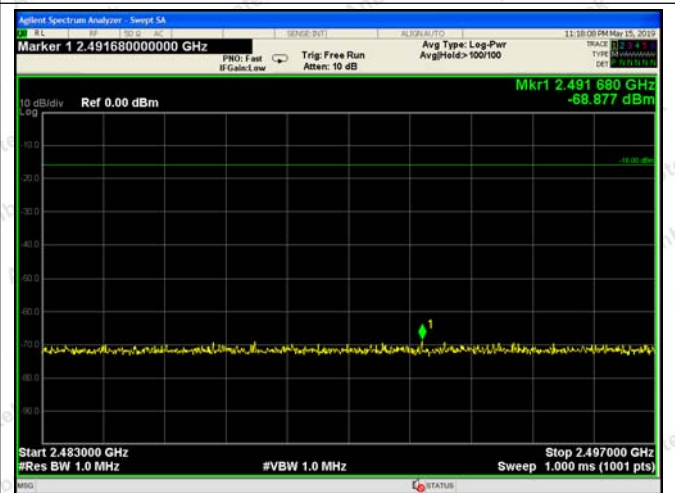
Low---30~ 1000MHz



Low---1000~ 2387MHz



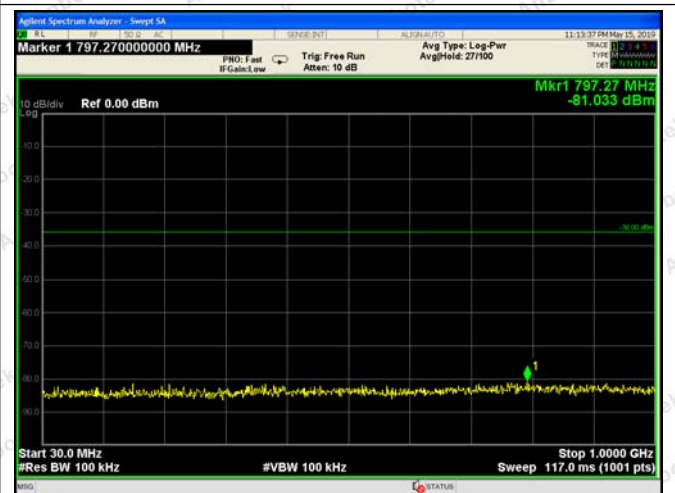
Low---2387~ 2400MHz



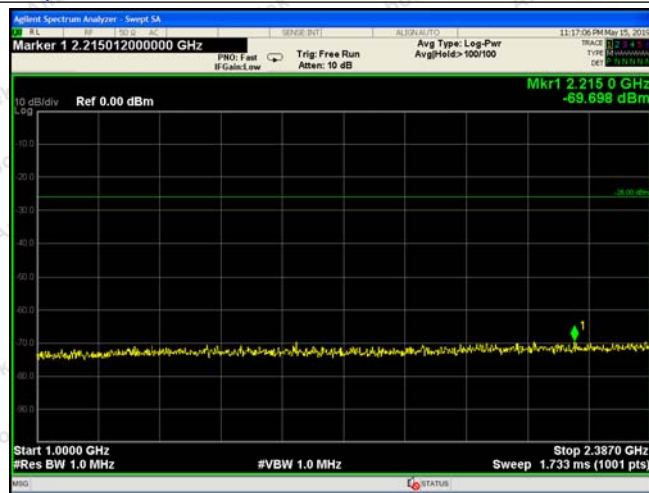
Low---2483.5~ 2496.5MHz



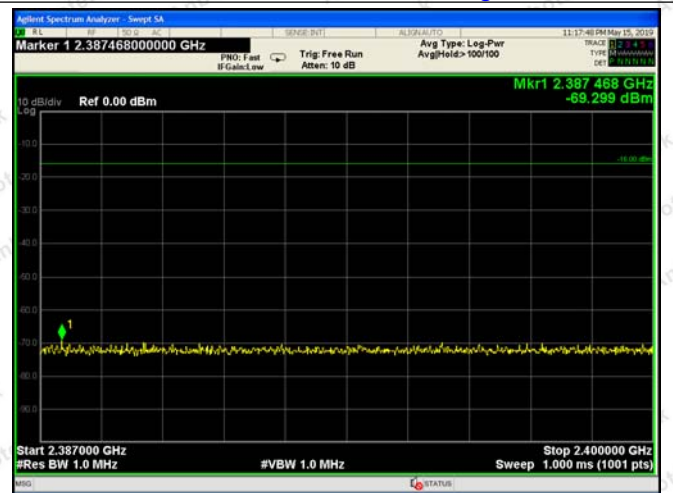
Low---2496.5~ 12500MHz



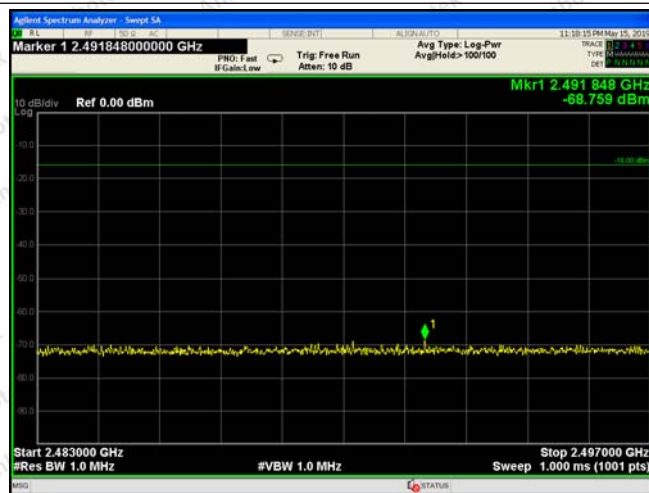
Mid---30~ 1000MHz



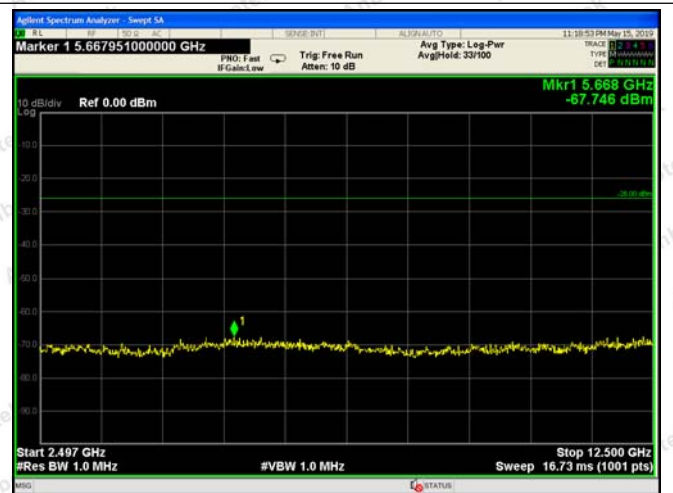
Mid---1000~ 2387MHz



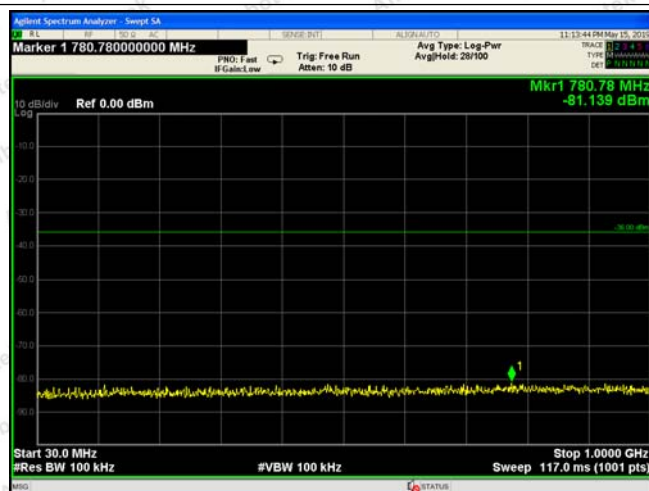
Mid---2387~ 2400MHz



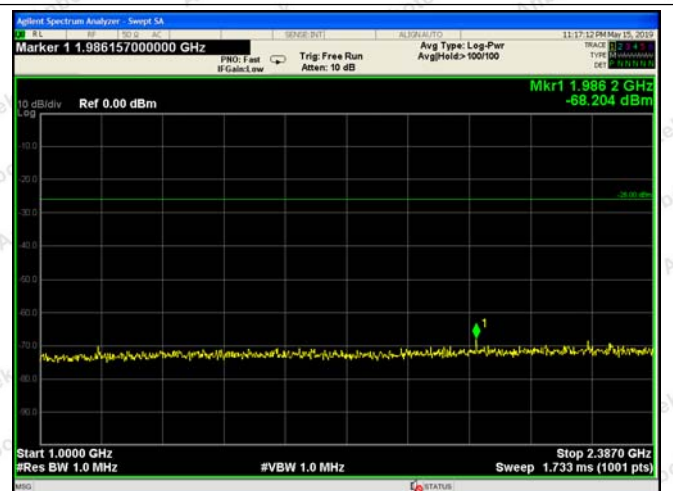
Mid---2483.5~ 2496.5MHz



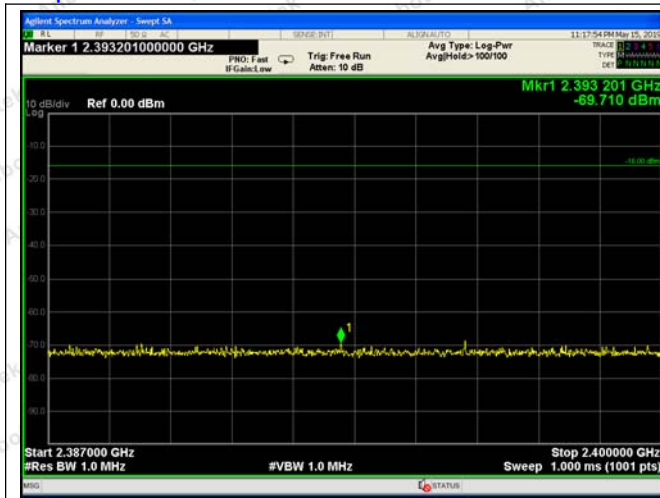
Mid---2496.5~ 12500MHz



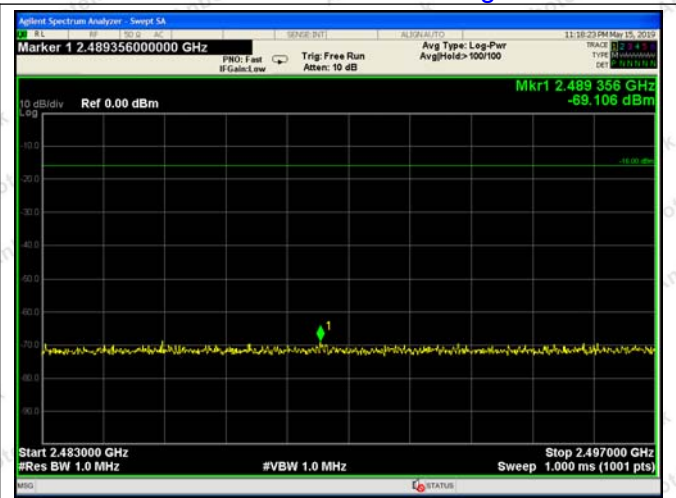
High---30~ 1000MHz



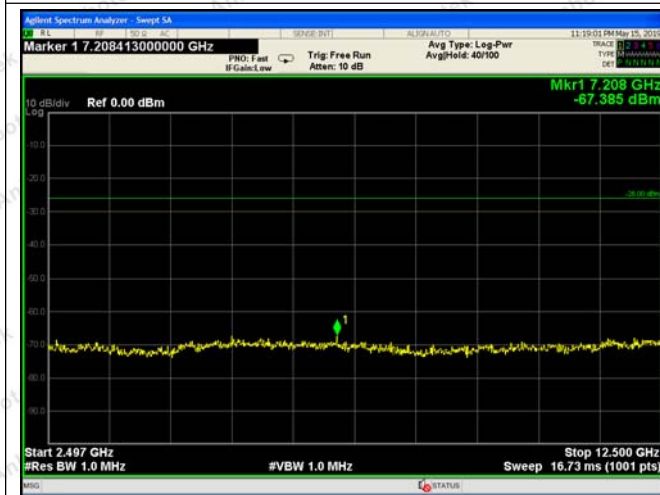
High---1000~ 2387MHz



High---2387~ 2400MHz



High---2483.5~ 2496.5MHz



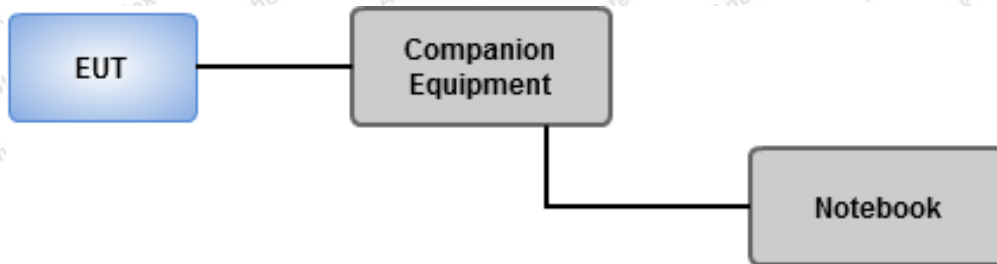
High---2496.5~ 12500MHz

7. Interference prevention function

7.1. Test Limit

Test Limit	The identification code shall be 48 bits long
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7.2. Test Setup



7.3. Test Configuration

1. Set EUT under operating mode and link up with companion equipment
2. Check communication status between EUT and companion equipment is normal
3. Record the max. reading.
4. Confirm the MAC address of EUT

7.4. Test Data

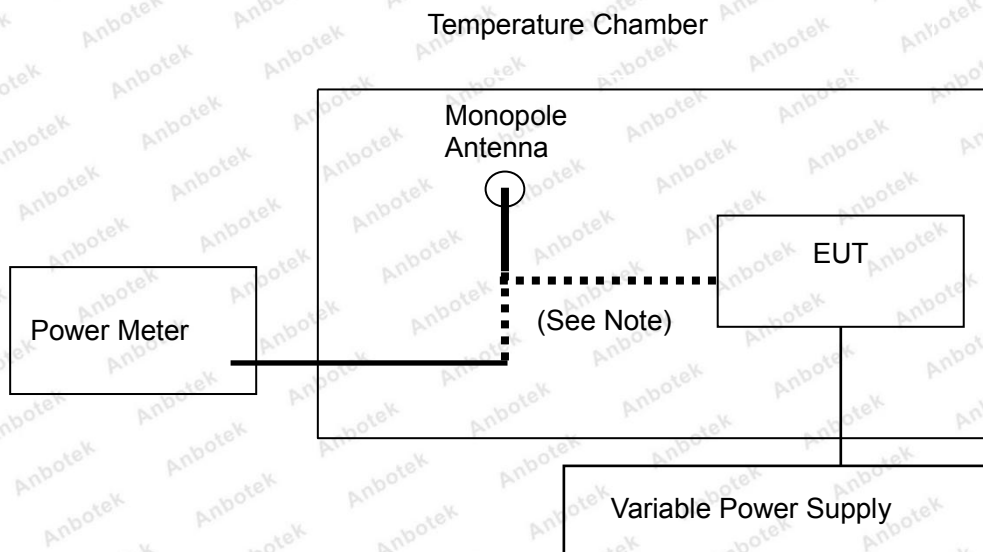
Test Mode	ID Code	Test Results
SRD	00-03-5A-06-A7-A7	Pass

8. ANTENNA POWER TEST

8.1. Test Equipment

Same as 1.7 Frequency tolerance measurement.

8.2. Test Setup



8.3. Test Data

Pass

Please refer to the following data.

Low Voltage: DC 2.7V

Frequency (MHz)	conducted antenna power density (mW)		Rated Conducted power density (mW)	Antenna Power Error (-80%, +20%)
	dBm	mW		
2403	-10.719	0.085	0.08	6.25%
2441	-14.310	0.037	0.08	-53.75%
2480	-13.485	0.045	0.08	-43.75%

High Voltage: DC DC 3.3V

Frequency (MHz)	conducted antenna power density (mW)		Rated Conducted power density (mW)	Antenna Power Error (-80%, +20%)
	dBm	mW		
2403	-10.724	0.085	0.08	6.25%
2441	-14.316	0.037	0.08	-53.75%
2480	-13.489	0.045	0.08	-43.75%

Normal Voltage: DC 3.0V

Frequency (MHz)	conducted antenna power density (mW)		Rated Conducted power density (mW)	Antenna Power Error (-80%, +20%)
	dBm	mW		
2403	-10.725	0.085	0.08	6.25%
2441	-14.316	0.037	0.08	-53.75%
2480	-13.485	0.045	0.08	-43.75%

9. LIMITATION OF COLLATERAL EMISSIONS OF RECEIVER TEST

9.1. Test Equipment

Same as 1.7 Frequency tolerance measurement.

9.2. Test Configuration

Same as 1.6 Frequency tolerance measurement.

9.3. Test Data

Scanning Bandwidth	:	30~ 1000MHz
		1000~ 12500MHz

Pass

Please refer to the following data.

Low Voltage: DC 2.7V

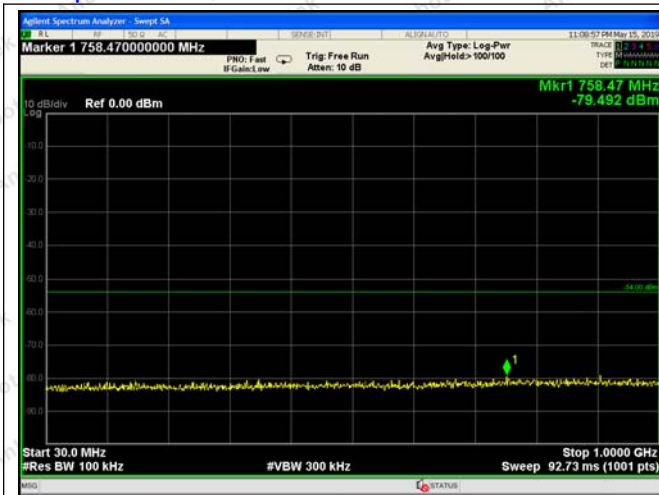
Frequency(MHz)	Reading(dBm)	Scanning Bandwidth	Limit
2403.000	-79.113	30~ 1000MHz	≤ -54dBm
	-67.324	1000~ 12500MHz	≤ -47dBm
2441.000	-79.827	30~ 1000MHz	≤ -54dBm
	-66.363	1000~ 12500MHz	≤ -47dBm
2480.000	-79.090	30~ 1000MHz	≤ -54dBm
	-67.773	1000~ 12500MHz	≤ -47dBm

High Voltage: DC 3.3V

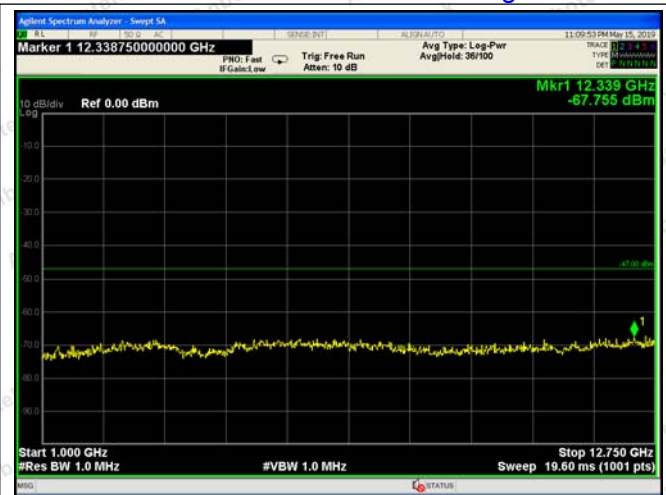
Frequency(MHz)	Reading(dBm)	Scanning Bandwidth	Limit
2403.000	-79.617	30~ 1000MHz	≤ -54dBm
	-68.032	1000~ 12500MHz	≤ -47dBm
2441.000	-79.793	30~ 1000MHz	≤ -54dBm
	-66.330	1000~ 12500MHz	≤ -47dBm
2480.000	-78.949	30~ 1000MHz	≤ -54dBm
	-67.641	1000~ 12500MHz	≤ -47dBm

Normal Voltage: DC 3.0V

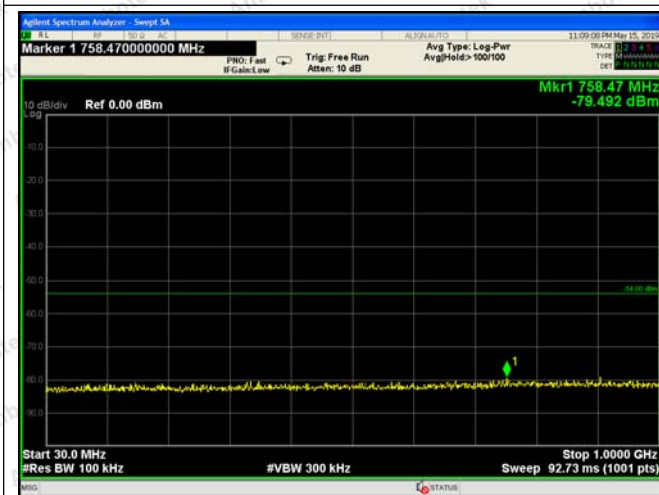
Frequency(MHz)	Reading(dBm)	Scanning Bandwidth	Limit
2403.000	-79.492	30~ 1000MHz	≤ -54dBm
	-67.755	1000~ 12500MHz	≤ -47dBm
2441.000	-79.492	30~ 1000MHz	≤ -54dBm
	-66.443	1000~ 12500MHz	≤ -47dBm
2480.000	-79.595	30~ 1000MHz	≤ -54dBm
	-67.419	1000~ 12500MHz	≤ -47dBm



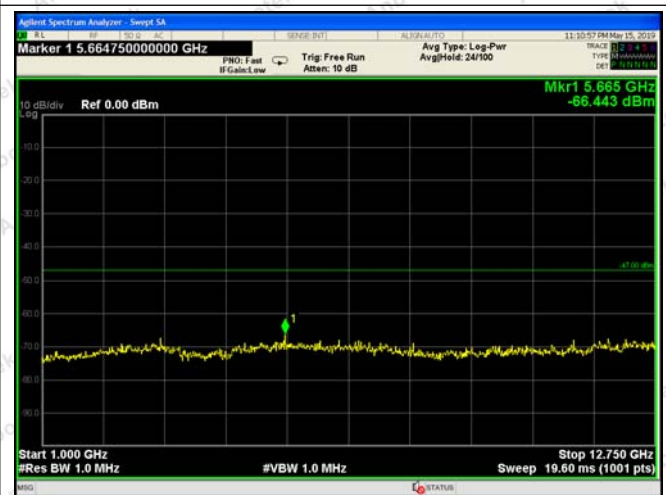
Low---30~ 1000MHz



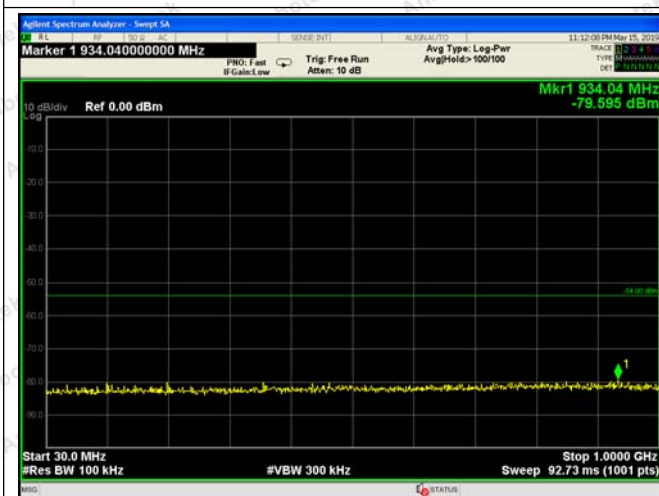
Low---1000~ 12500MHz



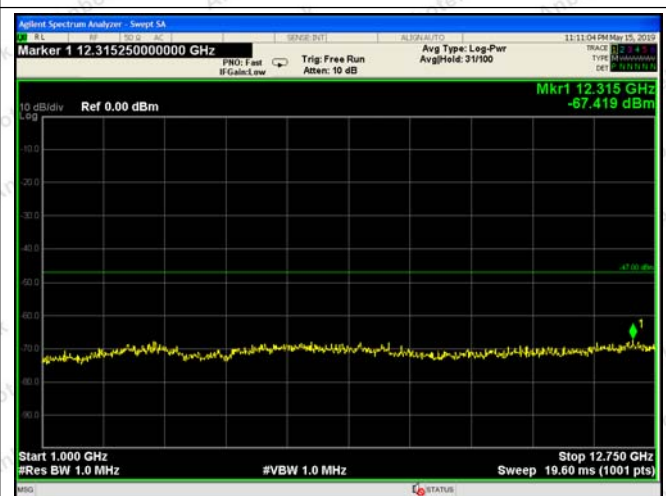
Mid---30~ 1000MHz



Mid---1000~ 12500MHz

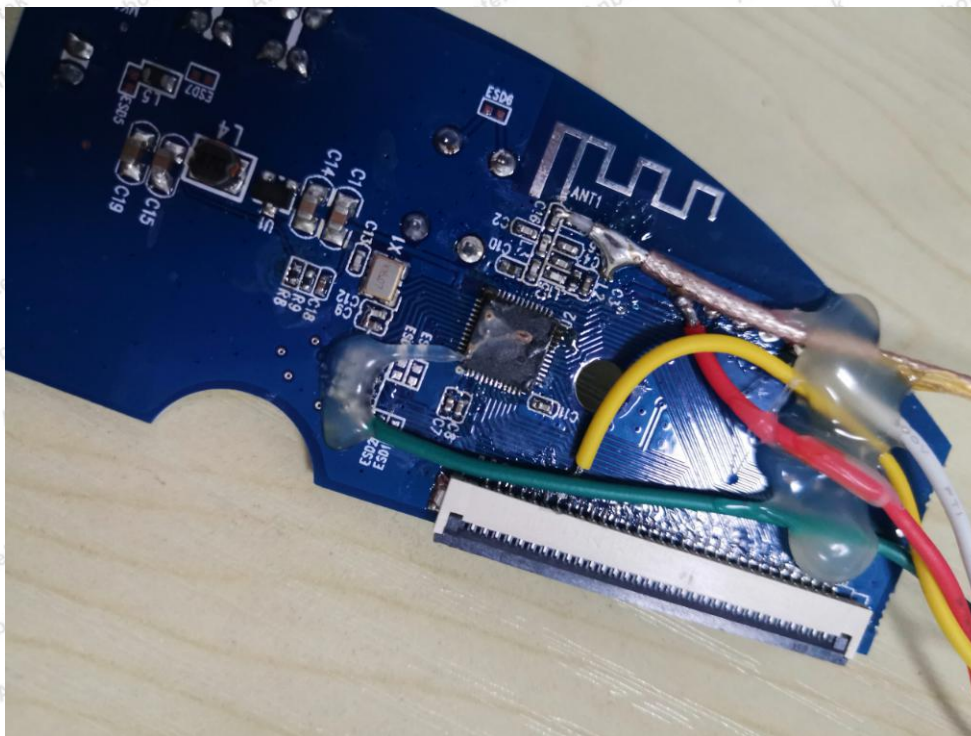
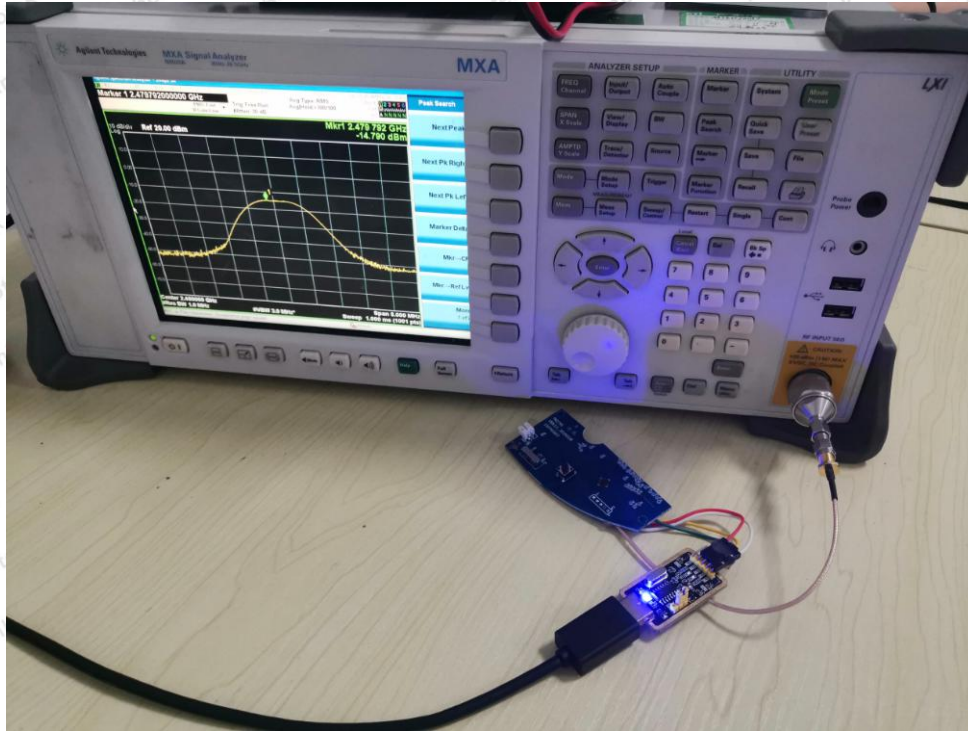


High---30~ 1000MHz



High---1000~ 12500MHz

APPENDIX I -- TEST SETUP PHOTOGRAPH



APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to the test report SZAWW190510016-01.

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to the test report SZAWW190510016-01.

----- End of Report -----

