

# FCC Test Report

**Applicant** : ACCO Brands, Inc.

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**Address** : 4 Corporate Drive, Lake Zurich, Illinois 60047,  
USA

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**Product Name** : Wireless Dongle

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**Report Date** : Mar. 15, 2024

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**Shenzhen Anbotek Compliance Laboratory Limited**



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# TEST REPORT

Applicant : ACCO Brands, Inc.  
Manufacturer : ACCO Brands, Inc.  
Product Name : Wireless Dongle  
Test Model No. : M01678-D  
Reference Model No. : N/A  
Trade Mark : Kensington  
Rating(s) : Input: DC 5V

**Test Standard(s) : FCC Part15 Subpart C, Section 15.247**

**Test Method(s) : ANSI C63.10: 2020**

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 FCC Part 15 Subpart C 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

Jan. 27, 2024

Date of Test

Jan. 27 ~ Feb. 21, 2024

Prepared by

*Nian Xiu Chen*

(Nianxiu Chen)

Approved & Authorized Signer

*Edward Pan*

(Edward Pan)





## Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Mar. 15, 2024

**Note 1:**

This is a Class II application which was based on the original report 18220WC30011301. The difference between the original device and current one described as following:

1. Change internal accessories of the product:
  - a. original-L1: 1.5NH; new-L1: 3.9NH.
  - b. original-C5: 2.2NH; new-C5: 0.8PF.
  - c. original-C4: 1.8PF; new-C4: 2.7PF.
2. Update the EUT photograph.

The changes are not related with the other RF parameters, only radiation spurious emission were retested.



## 1. General Information

### 1.1. Client Information

Applicant	:	ACCO Brands, Inc.
Address	:	4 Corporate Drive, Lake Zurich, Illinois 60047, USA
Manufacturer	:	ACCO Brands, Inc.
Address	:	4 Corporate Drive, Lake Zurich, Illinois 60047, USA
Factory	:	ACCO Brands, Inc.
Address	:	4 Corporate Drive, Lake Zurich, Illinois 60047, USA

### 1.2. Description of Device (EUT)

Product Name	:	Wireless Dongle
Test Model No.	:	M01678-D
Reference Model No.	:	N/A
Trade Mark	:	Kensington
Test Power Supply	:	DC 5V via PC
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A

#### RF Specification

Operation Mode	:	<input type="checkbox"/> DSSS <input checked="" type="checkbox"/> FHSS
Operation Frequency	:	2403~2480 MHz
Number of Channel	:	16 Channels
Modulation Type	:	GFSK
Antenna Type	:	PCB antenna
Antenna Gain(Peak)	:	-3.76dBi

**Remark:** 1) All of the RF specification are provided by customer. 2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



### 1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
acer	Model: N19W3 Input: 19V/3.42A;20V/3.25A CMIIT ID:2020AJ3862

### 1.4. Description of Test Configuration

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
<b>01</b>	<b>2403</b>	05	2422	<b>09</b>	<b>2441</b>	13	2463
02	2407	06	2426	10	2445	14	2466
03	2414	07	2436	11	2453	15	2473
04	2419	08	2439	12	2459	<b>16</b>	<b>2480</b>

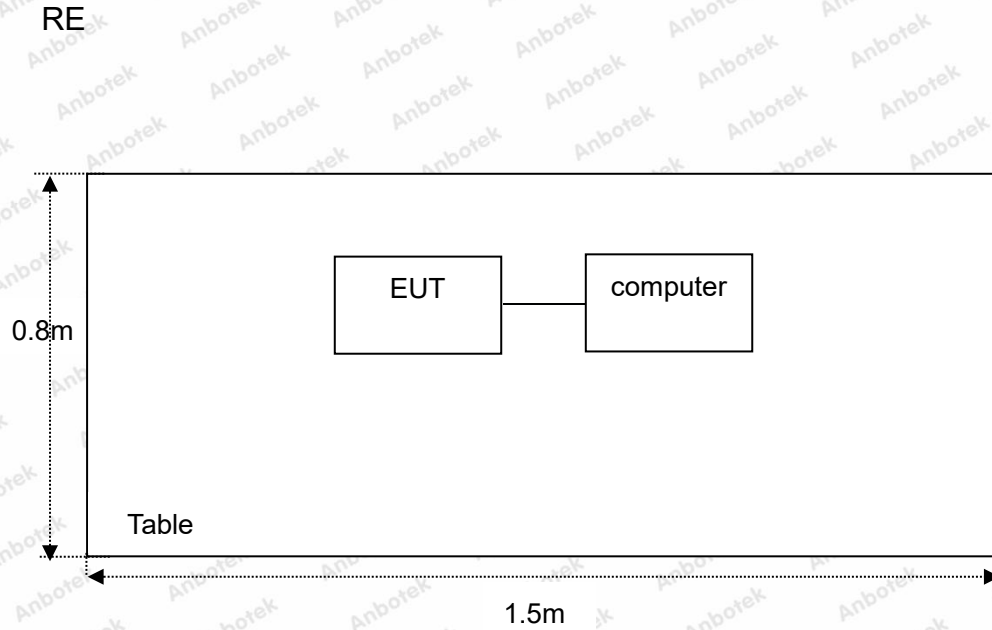
Note:

1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
2. EUT was tested with channel 01, 09 and 16.





### 1.5. Description Of Test Setup



## 1.6. 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	Oct. 12, 2023	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	Jul. 05, 2023	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 12, 2023	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 12, 2023	1 Year
5.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 12, 2023	1 Year
6.	EMI Preamplifier	SKET Electronic	LNPA-0118G- 45	SKET-PA-002	Oct. 12, 2023	1 Year
7.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	Oct. 16, 2022	3 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	Oct. 23, 2022	3 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Oct. 12, 2023	1 Year
10.	Horn Antenna	A-INFO	LB-180400-K F	J211060628	Oct. 12, 2023	1 Year
11.	Pre-amplifier	SONOMA	310N	186860	Oct. 12, 2023	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY53280032	Oct. 12, 2023	1 Year
14.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 12, 2023	1 Year
15.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 12, 2023	1 Year
16.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 20, 2023	1 Year
17.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 16, 2023	1 Year
18.	Power Meter	Agilent	N1914A	MY50001102	Oct. 20, 2023	1 Year
19.	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	May. 26, 2023	1 Year





### 1.7. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.8dB
Occupied Bandwidth	925Hz
Conducted Output Power	0.76dB
Conducted Spurious Emission	1.24dB
Radiated spurious emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.92dB; Vertical: 4.52dB
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

### 1.8. Description of Test Facility

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

#### FCC-Registration No.: 434132

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. 434132.

#### ISED-Registration No.: 8058A

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.

#### 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.



**1.9. Disclaimer**

1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
2. The test report is invalid if there is any evidence and/or falsification.
3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.



## 2. Summary of Test Results

Standard Section	Test Item	Result
15.203/15.247(c)	Antenna Requirement	PASS
15.205/15.209	Spurious Emission	PASS
15.247(b)(1)	Conducted Peak Output Power	PASS

**Remark:** "N/A" is an abbreviation for Not Applicable.





## 3. Radiation Spurious Emission and Band Edge

### 3.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz~1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz~30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz		500	54.0	Average
		-	74.0	Peak	3

**Remark:**

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

### 3.2. Test Setup

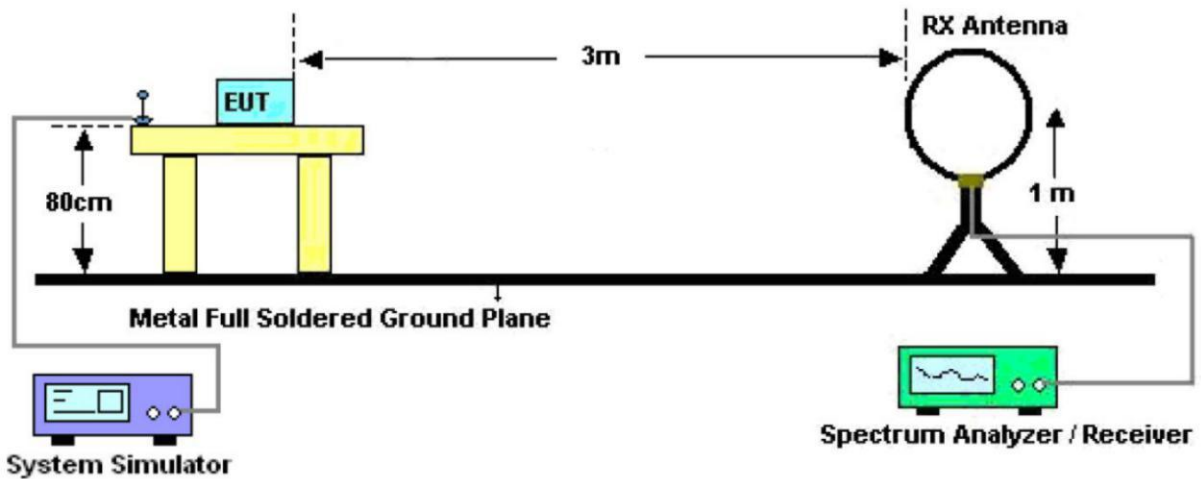


Figure 1. Below 30MHz



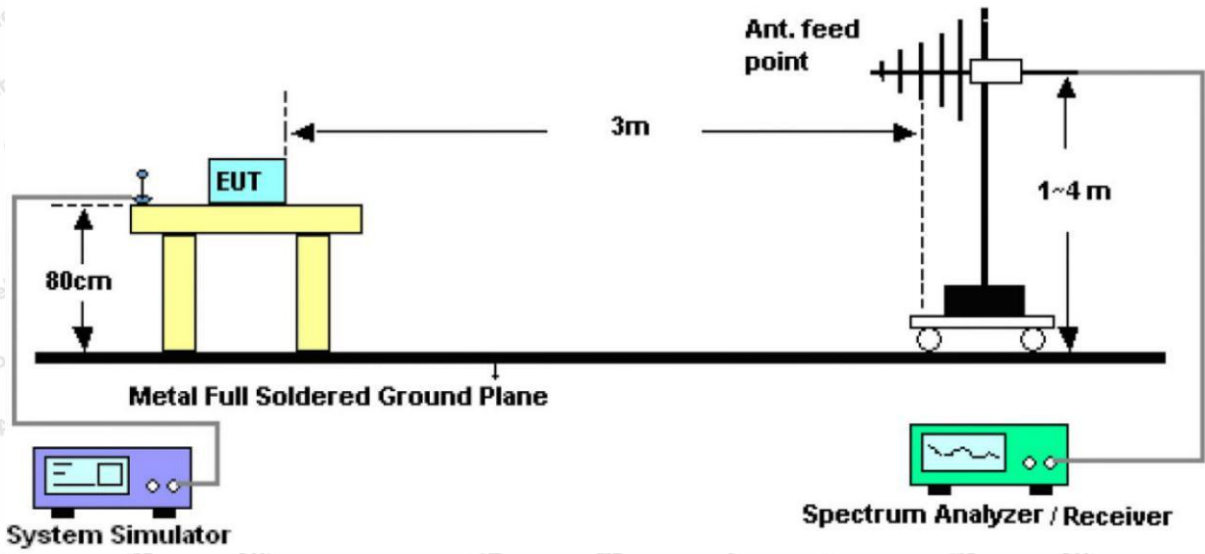


Figure 2. 30MHz to 1GHz

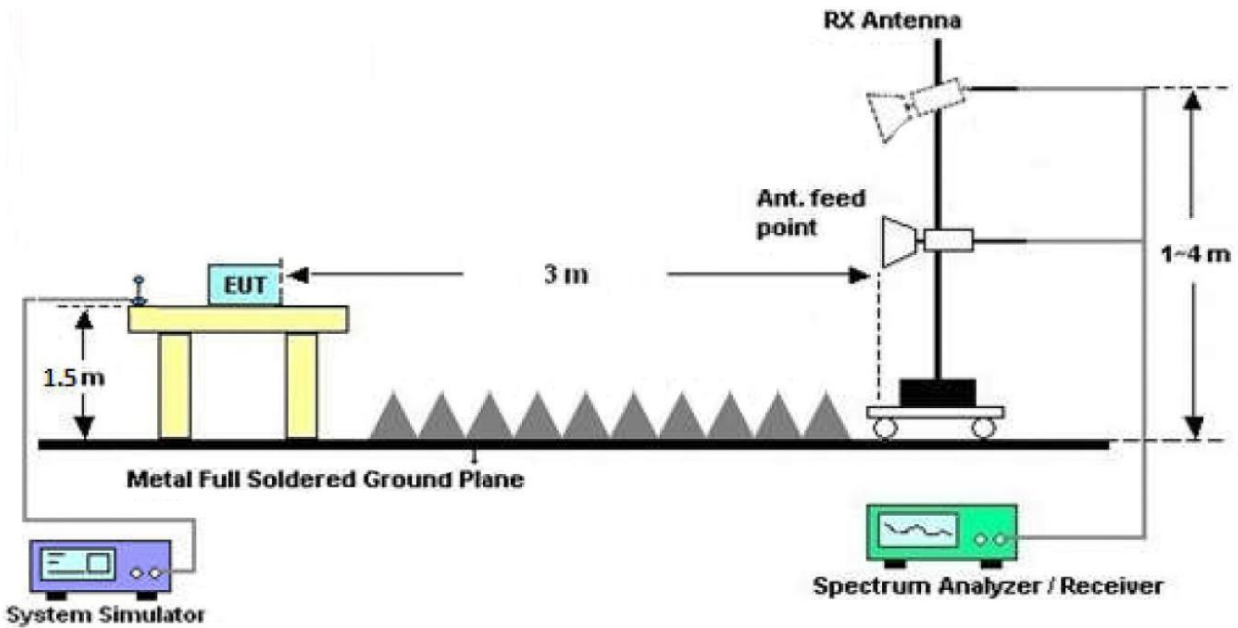


Figure 3. Above 1 GHz

### 3.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9\*6\*6 Chamber. The device is evaluated in xyz orientation.



For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW = 1kHz, Detector = Quasi-Peak, Trace mode = Max hold, Sweep - auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9kHz, VBW = 30kHz, Detector = Quasi-Peak, Trace mode = Max hold, Sweep - auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 120kHz, VBW = 300kHz, Detector = Quasi-Peak, Trace mode = Max hold, Sweep - auto couple.

For above 1GHz, Set the spectrum analyzer as:

RBW = 1MHz, VBW = 1MHz, Detector = Peak, Trace mode = Max hold, Sweep - auto couple.

For average measurement: use duty cycle correction factor method (DCCF)

Average level = Peak level + DCCF

### 3.4. Test Data

#### PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

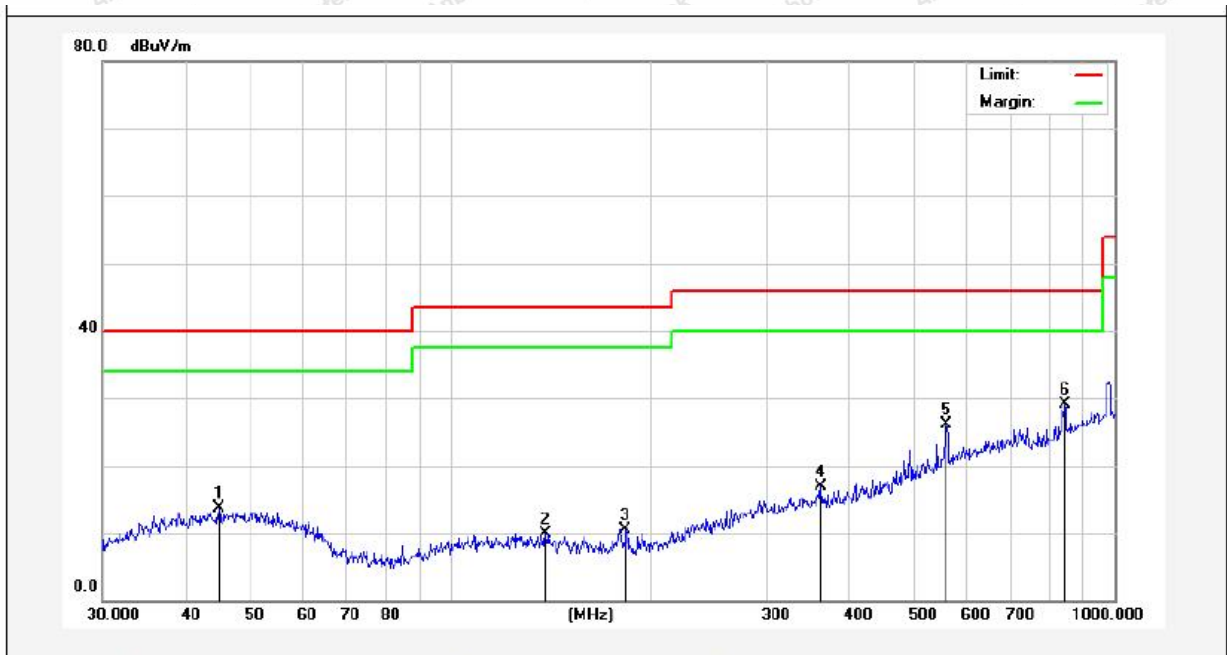
During the test, pre-scan all modes, only the worst case is recorded in the report.





### Test Results (30~1000MHz)

Test Mode: Mid CH (2441MHz)  
 Power Source: DC 5V via PC  
 Polarization: Vertical  
 Temp.(°C)/Hum.(%RH): 23.5°C/49%RH

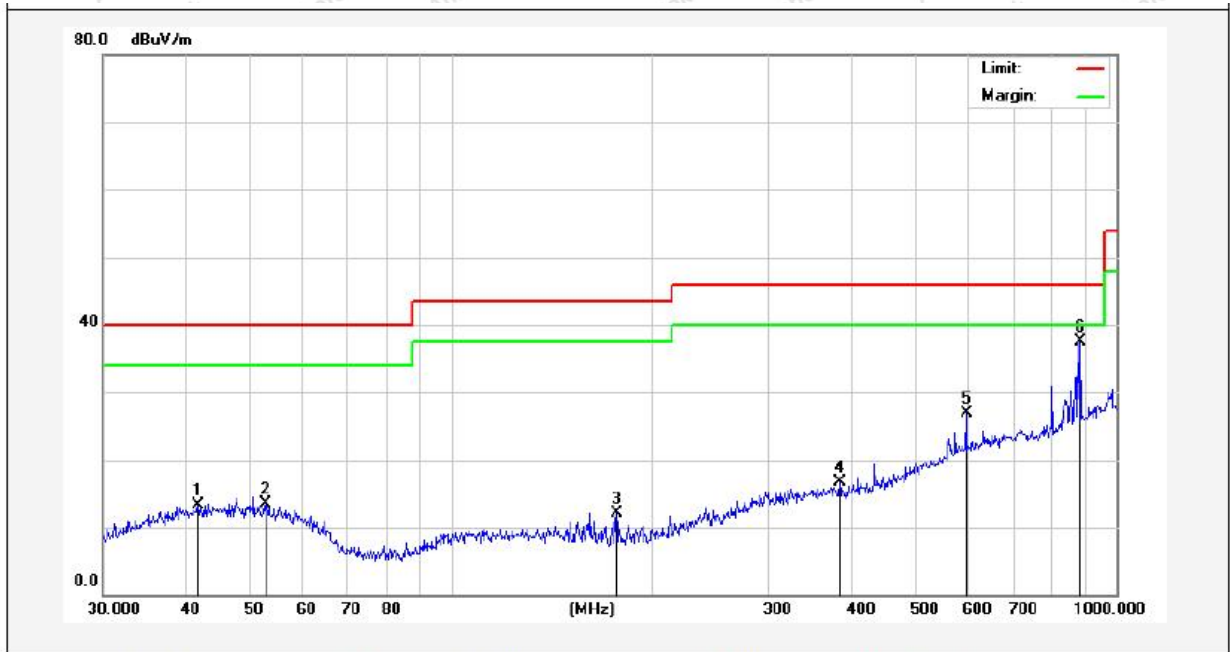


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	44.9006	28.76	-15.04	13.72	40.00	-26.28	QP			
2	139.3613	32.09	-22.13	9.96	43.50	-33.54	QP			
3	183.8440	30.92	-20.42	10.50	43.50	-33.00	QP			
4	361.7139	31.78	-14.87	16.91	46.00	-29.09	QP			
5	558.7302	37.68	-11.56	26.12	46.00	-19.88	QP			
6	842.1296	36.67	-7.61	29.06	46.00	-16.94	QP			



**Test Results (30~1000MHz)**

Test Mode: Mid CH (2441MHz)  
 Power Source: DC 5V via PC  
 Polarization: Horizontal  
 Temp.(°C)/Hum.(%RH): 23.5°C/49%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.7129	28.97	-15.74	13.23	40.00	-26.77	QP			
2	52.7600	30.24	-16.80	13.44	40.00	-26.56	QP			
3	177.5092	35.35	-23.29	12.06	43.50	-31.44	QP			
4	383.9318	32.90	-16.10	16.80	46.00	-29.20	QP			
5	595.1329	37.47	-10.64	26.83	46.00	-19.17	QP			
6	884.5029	44.13	-6.62	37.51	46.00	-8.49	QP			



**Test Results (1GHz-25GHz)**

Test channel: Lowest						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4806.00	28.35	15.27	43.62	74.00	-30.38	Vertical
7209.00	29.54	18.09	47.63	74.00	-26.37	Vertical
9612.00	30.58	23.76	54.34	74.00	-19.67	Vertical
12015.00	*			74.00		Vertical
14418.00	*			74.00		Vertical
4806.00	28.74	15.27	44.01	74.00	-29.99	Horizontal
7209.00	29.43	18.09	47.52	74.00	-26.48	Horizontal
9612.00	28.91	23.76	52.67	74.00	-21.33	Horizontal
12015.00	*			74.00		Horizontal
14418.00	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4806.00	17.73	15.27	33.00	54.00	-21.00	Vertical
7209.00	18.57	18.09	36.66	54.00	-17.34	Vertical
9612.00	19.60	23.76	43.36	54.00	-10.65	Vertical
12015.00	*			54.00		Vertical
14418.00	*			54.00		Vertical
4806.00	17.09	15.27	32.36	54.00	-21.64	Horizontal
7209.00	18.49	18.09	36.58	54.00	-17.42	Horizontal
9612.00	18.22	23.76	41.98	54.00	-12.02	Horizontal
12015.00	*			54.00		Horizontal
14418.00	*			54.00		Horizontal





## Test Results (1GHz-25GHz)

Test channel: Middle						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4882.00	28.37	15.42	43.79	74.00	-30.21	Vertical
7323.00	29.39	18.02	47.41	74.00	-26.59	Vertical
9764.00	29.59	23.80	53.39	74.00	-20.62	Vertical
12205.00	*			74.00		Vertical
14646.00	*			74.00		Vertical
4882.00	28.44	15.42	43.86	74.00	-30.14	Horizontal
7323.00	29.42	18.02	47.44	74.00	-26.56	Horizontal
9764.00	28.61	23.80	52.41	74.00	-21.59	Horizontal
12205.00	*			74.00		Horizontal
14646.00	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4882.00	17.46	15.42	32.88	54.00	-21.12	Vertical
7323.00	18.67	18.02	36.69	54.00	-17.31	Vertical
9764.00	19.46	23.80	43.26	54.00	-10.75	Vertical
12205.00	*			54.00		Vertical
14646.00	*			54.00		Vertical
4882.00	17.00	15.42	32.42	54.00	-21.58	Horizontal
7323.00	18.05	18.02	36.07	54.00	-17.93	Horizontal
9764.00	18.73	23.80	42.53	54.00	-11.47	Horizontal
12205.00	*			54.00		Horizontal
14646.00	*			54.00		Horizontal



## Test Results (1GHz-25GHz)

Test channel: Highest						
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4960.00	28.64	15.58	44.22	74.00	-29.78	Vertical
7440.00	29.40	17.93	47.33	74.00	-26.67	Vertical
9920.00	30.14	23.83	53.97	74.00	-20.04	Vertical
12400.00	*			74.00		Vertical
14880.00	*			74.00		Vertical
4960.00	28.51	15.58	44.09	74.00	-29.91	Horizontal
7440.00	29.45	17.93	47.38	74.00	-26.62	Horizontal
9920.00	29.29	23.83	53.12	74.00	-20.88	Horizontal
12400.00	*			74.00		Horizontal
14880.00	*			74.00		Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4960.00	18.58	15.58	34.16	54.00	-19.84	Vertical
7440.00	19.68	17.93	37.61	54.00	-16.39	Vertical
9920.00	20.01	23.83	43.84	54.00	-10.17	Vertical
12400.00	*			54.00		Vertical
14880.00	*			54.00		Vertical
4960.00	18.44	15.58	34.02	54.00	-19.98	Horizontal
7440.00	19.42	17.93	37.35	54.00	-16.65	Horizontal
9920.00	18.63	23.83	42.46	54.00	-11.54	Horizontal
12400.00	*			54.00		Horizontal
14880.00	*			54.00		Horizontal

## Remark:

1. Result = Reading + Factor
2. "\*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

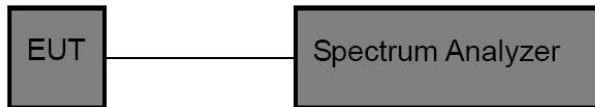


## 4. Maximum Peak Output Power Test

### 4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (b)(1)
Test Limit	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

### 4.2. Test Setup



### 4.3. Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above,
2. Spectrum Setting:
  - RBW > the 20 dB bandwidth of the emission being measured
  - Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
  - VBW ≥ RBW
  - Sweep = auto
  - Detector function = peak
  - Trace = max hold

### 4.4. Test Data

Pass

Note: For pre-scan, the result is equal to original, so the original data is referenced.

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
2.4G	Ant1	2403	-0.30	≤30	PASS
		2441	-0.28	≤30	PASS
		2480	-0.33	≤30	PASS





## 5. Antenna Requirement

### 5.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /247(c)
Requirement	<p>1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>2) 15.247(c) (1)(i) requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.</p>

### 5.2. Antenna Connected Construction

The antenna is PCB Antenna which permanently attached, and the best case gain of the antenna is -3.76dBi. It complies with the standard requirement.



## **APPENDIX I -- TEST SETUP PHOTOGRAPH**

Please refer to separated files Appendix I -- Test Setup Photograph

## **APPENDIX II -- EXTERNAL PHOTOGRAPH**

Please refer to separated files Appendix II -- External Photograph

## **APPENDIX III -- INTERNAL PHOTOGRAPH**

Please refer to separated files Appendix III -- Internal Photograph

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

