

FCC REPORT

Applicant: SHENZHENSHI XINZHONGXIN TECHNOLOGY CO., LTD.

Address of Applicant: Block 1, Dong Huan Industrial Park, NanPu Road, ShangLiao Community, XinQiao Street, Bao'an District, Shenzhen City, Guangdong Province, China

Equipment Under Test (EUT)

Product Name: 2.4G Wifi & Bluetooth Module

Model No.: C-CB2L

Trade mark: C-Chip

FCC ID: 2AG94C-CB2L

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 24 Dec., 2021

Date of Test: 25 Dec., 2021 to 24 Jan., 2022

Date of report issued: 25 Jan., 2022

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	25 Jan., 2022	Original

Tested by:



Test Engineer

Date:

25 Jan., 2022

Reviewed by:



Project Engineer

Date:

25 Jan., 2022

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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part 15.107	Pass
Radiated Emission	Part 15.109	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: The EUT not applicable of the test item.		
Test Method:	ANSI C63.4:2014	

5 General Information

5.1 Client Information

Applicant:	SHENZHENSHI XINZHONGXIN TECHNOLOGY CO., LTD.
Address:	Block 1, Dong Huan Industrial Park, NanPu Road, ShangLiao Community, XinQiao Street, Bao'an District, Shenzhen City, Guangdong Province, China
Manufacturer:	SHENZHENSHI XINZHONGXIN TECHNOLOGY CO., LTD.
Address:	Block 1, Dong Huan Industrial Park, NanPu Road, ShangLiao Community, XinQiao Street, Bao'an District, Shenzhen City, Guangdong Province, China

5.2 General Description of E.U.T.

Product Name:	2.4G Wifi & Bluetooth Module
Model No.:	C-CB2L
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

5.3 Test Mode and test samples plans

Operating mode	Detail description
Working mode	Keep the EUT in Working mode
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

5.4 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 150KHz) for V-AMN	3.11 dB
Conducted Emission (150kHz ~ 30MHz) for V-AMN	2.62 dB
Conducted Emission (150kHz ~ 30MHz) for AAN	3.54 dB
Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC	3.13 dB
Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC	3.13 dB
Radiated Emission (30MHz ~ 1GHz) for 3m SAC	4.45 dB
Radiated Emission (1GHz ~ 18GHz) for 3m SAC	5.34 dB
Radiated Emission (18GHz ~ 40GHz) for 3m SAC	5.34 dB

5.5 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Lenovo	Laptop	ThinkPad T14 Gen 1	SL10Z47277	DoC
HP	Printer	HP LaserJet P1007	VNFP409729	DoC

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.
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5.7 Description of Cable Used

No

5.8 Additions to, deviations, or exclusions from the method

No

5.9 Laboratory Facility

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

● **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

● **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

● **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

5.10 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://jyt.lets.com>

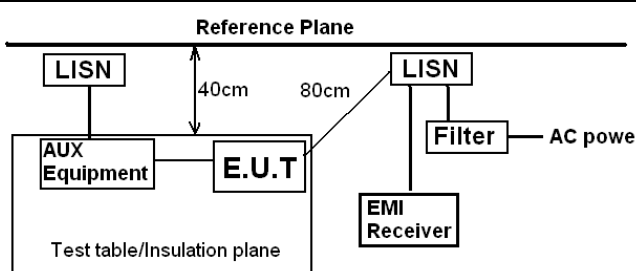
5.11 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
3m SAC	ETS	RFD-100	Q1984	04-14-2021	04-13-2024
BiConiLog Antenna	SCHWARZBECK	VULB9163	9163-1246	03-07-2021	03-06-2022
Biconical Antenna	SCHWARZBECK	VUBA 9117	9117#359	06-17-2021	06-17-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	912D-916	03-07-2021	03-06-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1067	04-02-2021	04-01-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1068	04-02-2021	04-01-2022
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Low Pre-amplifier	SCHWARZBECK	BBV9743B	00305	03-07-2021	03-06-2022
High Pre-amplifier	SKET	LNPA_0118G-50	MF280208233	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-NN-8M	JYT3M-1	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-18G-NN-8M	JYT3M-2	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-BB-5M	JYT3M-3	03-07-2021	03-06-2022
Cable	Bost	JYT3M-40G-SS-8M	JYT3M-4	04-02-2021	04-01-2022
EMI Test Software	Tonscend	TS+	Version:3.0.0.1		

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI 3	101189	03-03-2021	03-02-2022
LISN	Schwarzbeck	NSLK 8127	QCJ001-13	03-18-2021	03-17-2022
LISN	Rohde & Schwarz	ESH3-Z5	843862/010	06-18-2020	06-17-2022
RF Switch	TOP PRECISION	RSU0301	N/A	03-03-2021	03-02-2022
Cable	Bost	JYTCE-1G-NN-2M	JYTCE-1	03-03-2021	03-02-2022
Cable	Bost	JYTCE-1G-BN-3M	JYTCE-2	03-03-2021	03-02-2022
EMI Test Software	AUDIX	E3	Version: 6.110919b		

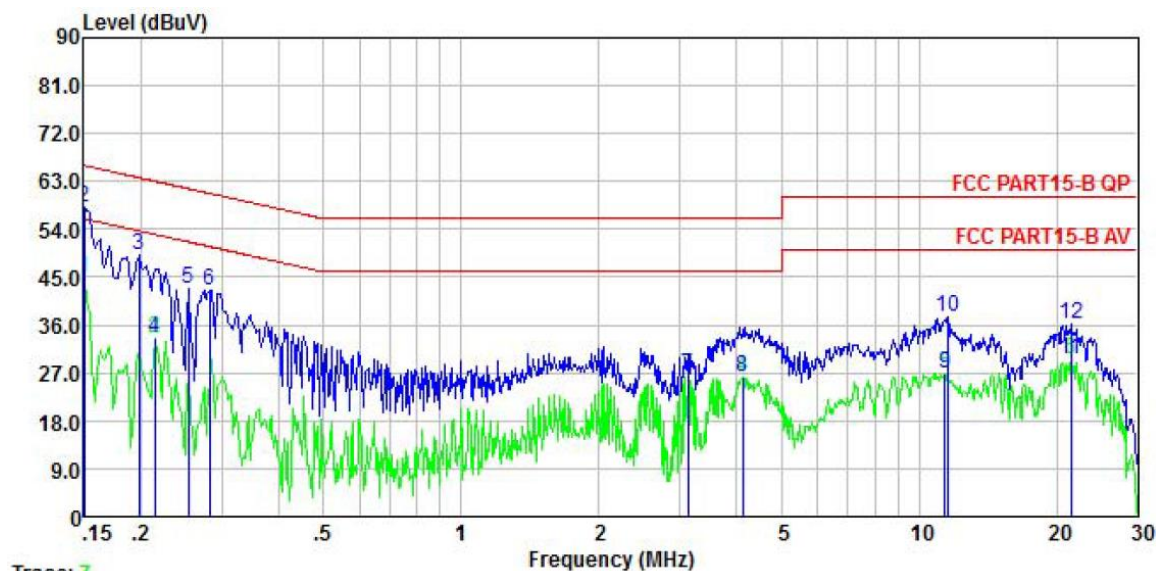
6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107		
Test Frequency Range:	150kHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9kHz, VBW=30kHz		
Limit:	Frequency range (MHz)	Limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	0.5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	 Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4(latest version) on conducted measurement.		
Test Instruments:	Refer to section 5.11 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement data:

Product name:	2.4G Wifi & Bluetooth Module	Product model:	C-CB2L
Test by:	Mike	Test mode:	Working mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	DC 3.3V	Environment:	Temp: 22.7℃ Humi: 51%



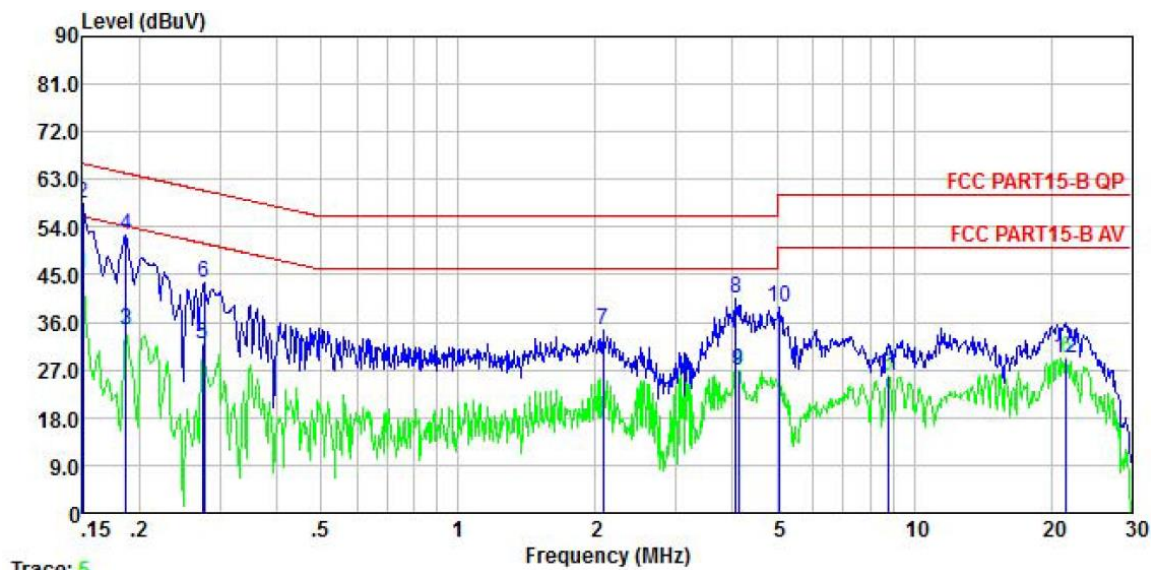
Trace: 7

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	44.70	0.04	0.01	44.75	56.00	-11.25	Average
2	0.150	57.97	0.04	0.01	58.02	66.00	-7.98	QP
3	0.198	49.08	0.04	0.04	49.16	63.71	-14.55	QP
4	0.214	33.37	0.04	0.03	33.44	53.05	-19.61	Average
5	0.253	42.77	0.04	0.01	42.82	61.64	-18.82	QP
6	0.282	42.60	0.04	0.02	42.66	60.76	-18.10	QP
7	3.123	26.39	0.09	0.07	26.55	46.00	-19.45	Average
8	4.114	26.15	0.11	0.08	26.34	46.00	-19.66	Average
9	11.377	26.70	0.23	0.11	27.04	50.00	-22.96	Average
10	11.559	37.29	0.23	0.11	37.63	60.00	-22.37	QP
11	21.486	28.96	0.33	0.17	29.46	50.00	-20.54	Average
12	21.486	35.85	0.33	0.17	36.35	60.00	-23.65	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Product name:	2.4G Wifi & Bluetooth Module	Product model:	C-CB2L
Test by:	Mike	Test mode:	Working mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	DC 3.3V	Environment:	Temp: 22.7°C Humi: 51%

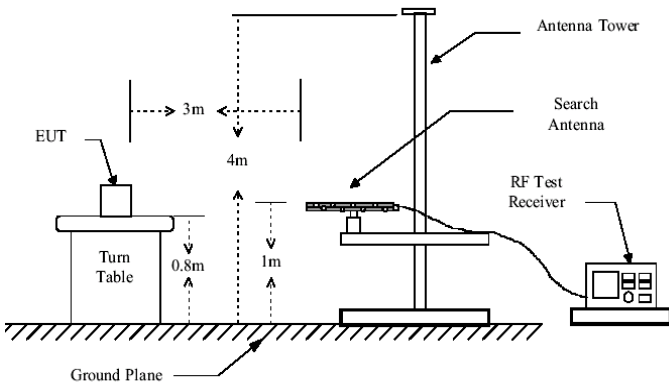
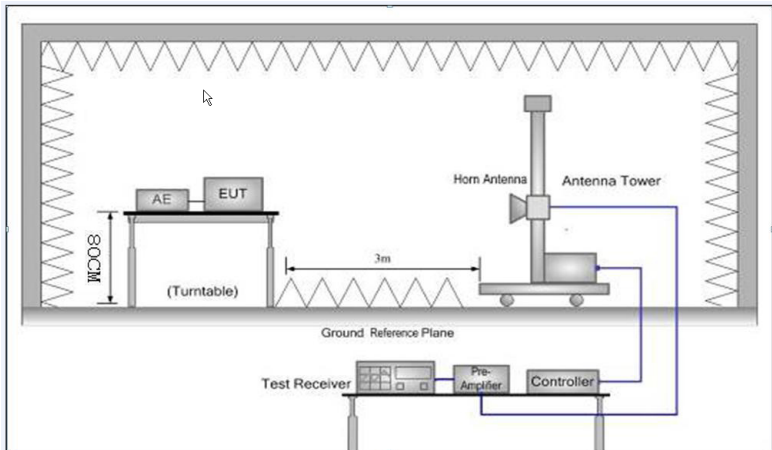


	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	dBuV	Factor	Loss	dBuV	dBuV	dB	Remark
1	0.150	45.27	0.05	0.01	45.33	56.00	-10.67	Average
2	0.150	58.45	0.05	0.01	58.51	66.00	-7.49	QP
3	0.186	34.47	0.04	0.02	34.53	54.20	-19.67	Average
4	0.186	52.57	0.04	0.02	52.63	64.20	-11.57	QP
5	0.274	31.88	0.04	0.02	31.94	50.98	-19.04	Average
6	0.277	43.28	0.04	0.02	43.34	60.90	-17.56	QP
7	2.077	34.23	0.06	0.20	34.49	56.00	-21.51	QP
8	4.070	40.36	0.09	0.08	40.53	56.00	-15.47	QP
9	4.114	26.72	0.09	0.08	26.89	46.00	-19.11	Average
10	5.085	38.53	0.10	0.09	38.72	60.00	-21.28	QP
11	8.776	25.48	0.17	0.11	25.76	50.00	-24.24	Average
12	21.600	28.70	0.32	0.16	29.18	50.00	-20.82	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

6.2 Radiated Emission

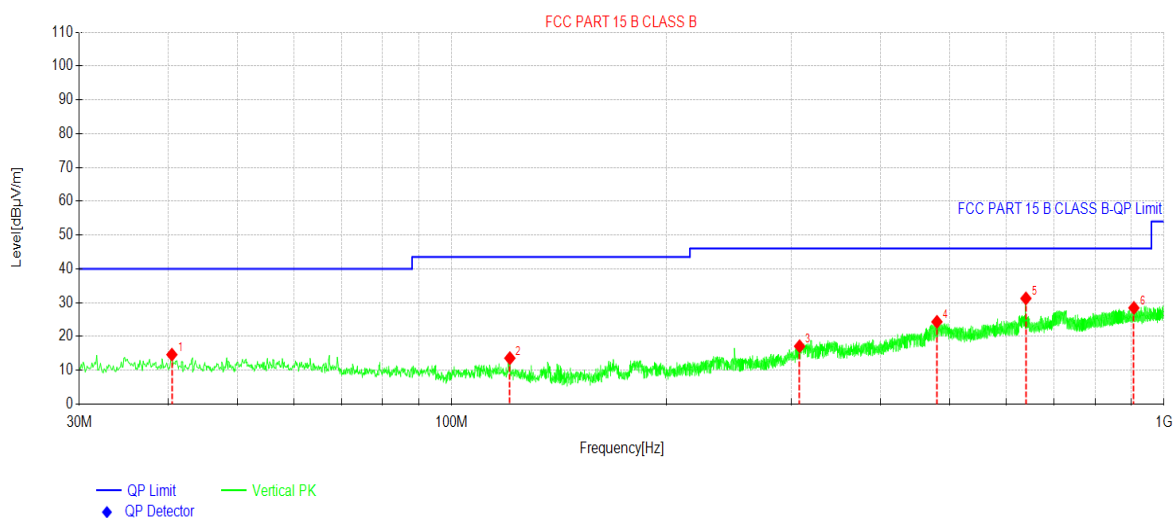
Test Requirement:	FCC Part 15 B Section 15.109				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
RMS		1MHz	3MHz	Average Value	
Limit:	Frequency	Limit (dBuV/m @3m)			Remark
	30MHz-88MHz	40.0			Quasi-peak Value
	88MHz-216MHz	43.5			Quasi-peak Value
	216MHz-960MHz	46.0			Quasi-peak Value
	960MHz-1GHz	54.0			Quasi-peak Value
	Above 1GHz	54.0			Average Value
74.0			Peak Value		
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.				

	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.11 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	All of the observed value above 6GHz ware the niose floor , which were no recorded

Measurement Data:

Below 1GHz:

Product name:	2.4G Wifi & Bluetooth Module	Product model:	C-CB2L
Test By:	Mike	Test mode:	Working mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	DC 3.3V	Environment:	Temp:22.3℃ Humi: 50%

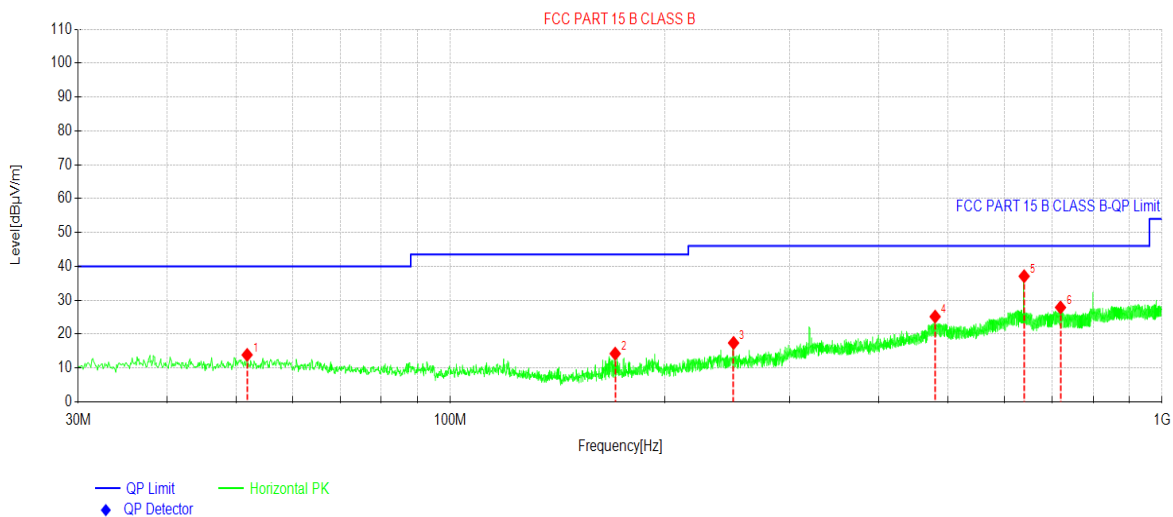


NO.	Freq. [MHz]	Reading[d BμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	40.4770	29.15	14.64	-14.51	40.00	25.36	PK	Vertical
2	120.704	29.71	13.59	-16.12	43.50	29.91	PK	Vertical
3	307.932	29.59	17.10	-12.49	46.00	28.90	PK	Vertical
4	480.028	31.95	24.34	-7.61	46.00	21.66	PK	Vertical
5	639.997	36.54	31.26	-5.28	46.00	14.74	PK	Vertical
6	907.355	29.82	28.45	-1.37	46.00	17.55	PK	Vertical

Remark:

- Final Level = Receiver Read level + Factor.(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product name:	2.4G Wifi & Bluetooth Module	Product model:	C-CB2L
Test By:	Mike	Test mode:	Working mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.3V	Environment:	Temp:22.3℃ Humi: 50%



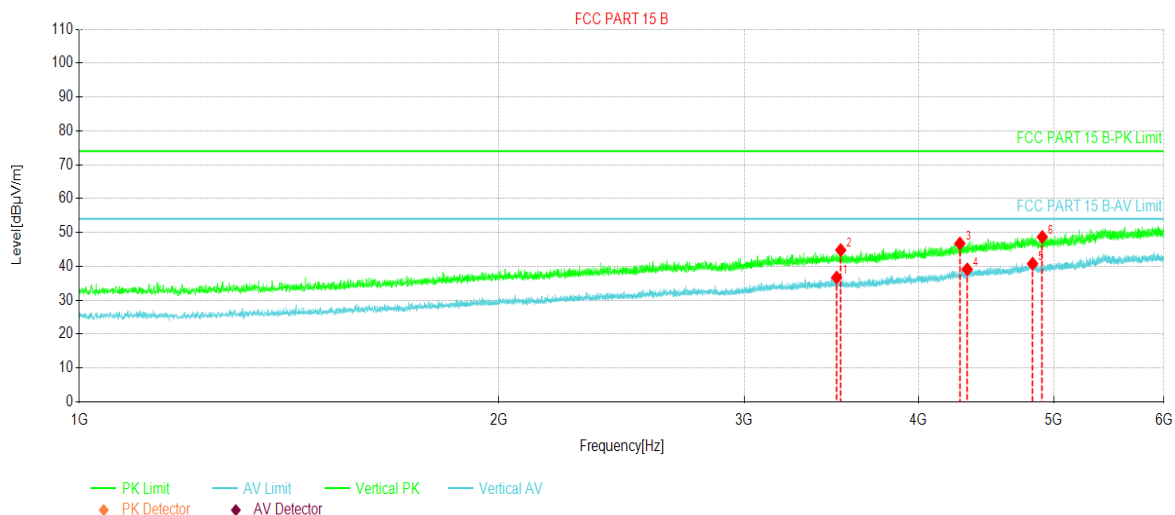
NO.	Freq. [MHz]	Reading[dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	51.8272	28.55	13.87	-14.68	40.00	26.13	PK	Horizontal
2	170.470	31.24	14.24	-17.00	43.50	29.26	PK	Horizontal
3	250.018	31.20	17.41	-13.79	46.00	28.59	PK	Horizontal
4	480.028	32.78	25.17	-7.61	46.00	20.83	PK	Horizontal
5	640.094	42.37	37.09	-5.28	46.00	8.91	PK	Horizontal
6	720.030	31.95	27.87	-4.08	46.00	18.13	PK	Horizontal

Remark:

1. Final Level = Receiver Read level + Factor.(Antenna Factor + Cable Loss – Preamplifier Factor).
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Above 1GHz:

Product name:	2.4G Wifi & Bluetooth Module	Product model:	C-CB2L
Test By:	Mike	Test mode:	Working mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Vertical
Test Voltage:	DC 3.3V	Environment:	Temp: 22.2℃ Huni: 55%

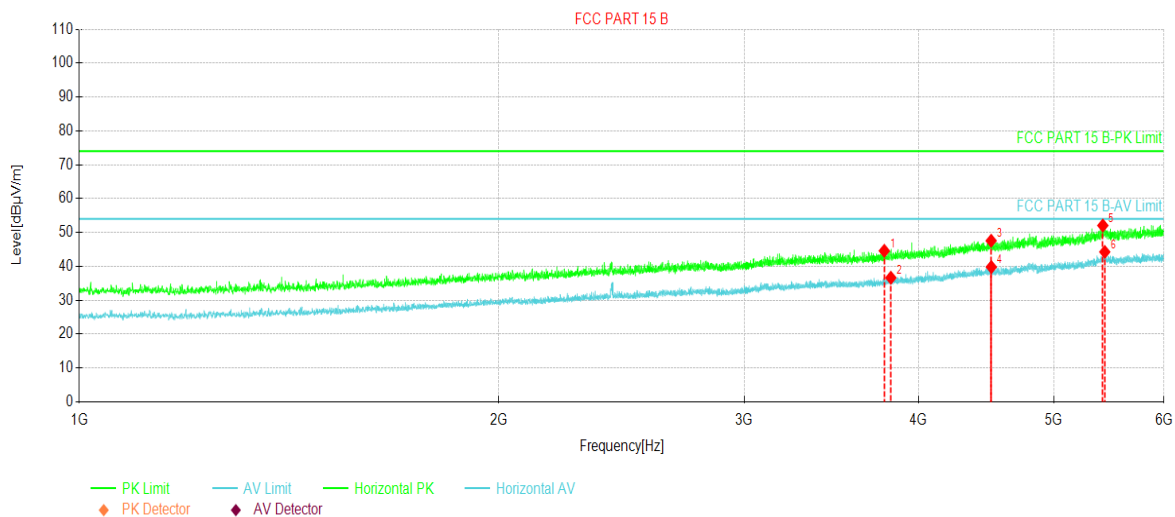


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	3493.74	52.10	36.69	-15.41	54.00	17.31	AV	Vertical
2	3517.75	60.20	44.81	-15.39	74.00	29.19	PK	Vertical
3	4282.82	59.15	46.76	-12.39	74.00	27.24	PK	Vertical
4	4334.83	51.18	39.10	-12.08	54.00	14.90	AV	Vertical
5	4829.38	50.70	40.78	-9.92	54.00	13.22	AV	Vertical
6	4907.39	58.08	48.68	-9.40	74.00	25.32	PK	Vertical

Remark:

- Final Level = Receiver Read level + Factor.(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.

Product name:	2.4G Wifi & Bluetooth Module	Product model:	C-CB2L
Test By:	Mike	Test mode:	Working mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Horizontal
Test Voltage:	DC 3.3V	Environment:	Temp: 22.2°C Humi: 55%



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	3780.27	59.20	44.59	-14.61	74.00	29.41	PK	Horizontal
2	3821.28	51.06	36.65	-14.41	54.00	17.35	AV	Horizontal
3	4509.85	58.76	47.57	-11.19	74.00	26.43	PK	Horizontal
4	4511.35	51.00	39.81	-11.19	54.00	14.19	AV	Horizontal
5	5423.44	58.67	52.07	-6.60	74.00	21.93	PK	Horizontal
6	5440.94	50.86	44.26	-6.60	54.00	9.74	AV	Horizontal

Remark:

- Final Level = Receiver Read level + Factor.(Antenna Factor + Cable Loss – Preamplifier Factor).
- The emission levels of other frequencies are lower than the limit 20dB and not show in test report.