Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

TEST REPORT

FCC PART 15 SUBPART C 15.249

Report Reference No. ..... : **CTL2307182021-WF**

Compiled by: (position+printed name+signature)	Happy Guo (File administrators)
Tested by: (position+printed name+signature)	Jack Wang (Test Engineer)
Approved by: (position+printed name+signature)	Ivan Xie (Manager)

Product Name ..... :	Warehouse Label Controller V1.2
Model/Type reference ..... :	PICK_Controller_V1.2
List Model(s)..... :	PICK_Controller_V1.2,PICK_Controller_V1.4,PICK_Router_V1.4, PICK_Router_V1.2
Trade Mark..... :	N/A
FCC ID..... :	2BCKG- WLCV12
Applicant's name ..... :	**Picksmart Technology Co., Limited.**
Address of applicant ..... :	Room 406, Deguanting Business Center, Xin'an 3rd Road, Bao'an 28th District, Shenzhen City, China. 518109
Test Firm..... :	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm ..... :	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification..... :	
Standard ..... :	**FCC Part 15.249:**Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0 - 24.25 GHz.
TRF Originator ..... :	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF..... :	Dated 2011-01
Date of receipt of test item ..... :	Jul 25, 2023
Date of Test Date..... :	Jul 25, 2023 –Sep 14, 2023
Date of Issue ..... :	Sep 14, 2023
Result..... :	**Pass**

TEST REPORT

Test Report No. :	CTL2307182021-WF	Sep 14, 2023 Date of issue

Equipment under Test	:	Warehouse Label Controller V1.2
Sample No.		CTL2307182021
Model /Type	:	PICK_Controller_V1.2
Listed Models	:	PICK_Controller_V1.2,PICK_Controller_V1.4,PICK_Router_V1.4, PICK_Router_V1.2
Applicant	:	**Picksmart Technology Co., Limited.**
Address	:	Room 406, Deguanting Business Center, Xin'an 3rd Road, Bao'an 28th District, Shenzhen City, China. 518109
Manufacturer	:	**Picksmart Technology Co., Limited.**
Address	:	Room 406, Deguanting Business Center, Xin'an 3rd Road, Bao'an 28th District, Shenzhen City, China. 518109

Test result	Pass *

* In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

** Modified History **

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2023-09-14	CTL2307182021-WF	Tracy Qi

Table of Contents Page

1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:
FCC Rules Part 15.249: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 -24.25 GHz.

ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Test Description

FCC PART 15.249		
FCC Part 15.249(a)	Field Strength of Fundamental	PASS
FCC Part 15.209	Spurious Emission	PASS
FCC Part 15.215(c)	20dB bandwidth	PASS
FCC Part 15.207	Conducted Emission	PASS
FCC Part 15.203	Antenna Requirement	PASS

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.10 and CISPR 32/EN 55032 requirements.

1.3.2 Laboratory accreditation

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

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC Registration No.: 9618B

CAB identifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B on Jan. 22, 2019.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. 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 399832, December 08, 2017.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)

Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	Warehouse Label Controller V1.2
Model/Type reference:	PICK_Controller_V1.2
Power supply:	DC 12V from Adapter
Hardware version:	V1.0
Software version:	V1.0
SRD:	
Operation frequency:	915MHz
Modulation:	FM
Channel number:	1
Channel separation:	250KHz
Antenna type:	Antenna 1:External Antenna Antenna 2:External Antenna
Antenna gain:	Antenna 1:2.01dBi Antenna 2:2.01dBi

Note1: For more details, please refer to the user's manual of the EUT.

Note2: Antenna1&Antenna 2 does not support MIMO

2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing.

2.4. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ESH2-Z5	860014/010	2023/05/04	2024/05/03
Double cone logarithmic antenna	Schwarzbeck	VULB 9168	824	2023/02/13	2026/02/12
Horn Antenna	Ocean Microwave	OBH100400	26999002	2021/12/22	2024/12/21
EMI Test Receiver	R&S	ESCI	1166.5950.03	2023/05/04	2024/05/03
Spectrum Analyzer	Agilent	E4407B	MY41440676	2023/05/05	2024/05/04
Spectrum Analyzer	Agilent	N9020A	US46220290	2023/05/05	2024/05/04
Spectrum Analyzer	Keysight	N9020A	MY53420874	2023/05/05	2024/05/04
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2021/12/23	2024/12/22

Active Loop Antenna	Da Ze	ZN30900A	/	2021/05/13	2024/05/12
Amplifier	Agilent	8449B	3008A02306	2023/05/04	2024/05/03
Amplifier	MRT Technology(Suzhou)Co., Ltd	MRT-AP01M06	S-001	2023/05/04	2024/05/03
Amplifier	Brief&Smart	LNA-4018	2104197	2023/05/05	2024/05/04
Temperature/Humidity Meter	Ji Yu	MC501	/	2023/05/09	2024/05/08
Power Sensor	Agilent	U2021XA	MY53340004	2023/05/05	2024/05/04
Power Sensor	Agilent	U2021XA	MY54080012	2023/05/05	2024/05/04
Power Sensor	Agilent	U2021XA	MY54510008	2023/05/05	2024/05/04
Power Sensor	Agilent	U2021XA	MY55060003	2023/05/05	2024/05/04
Spectrum Analyzer	RS	FSP	1164.4391.38	2023/05/05	2024/05/04

Test Software

Name of Software	Version
TST-PASS	V1.1.0
EZ_EMC(Below 1GHz)	V1.1.4.2
EZ_EMC((Above 1GHz)	V1.1.4.2

The calibration interval was one year

2.5. Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
AC-DC Adapter	Shenzhen Jingquanhua intelligent electric Co., LTD	CD263	Input:AC100-240V-50/60Hz, 350mA Max Output:DC 12V,1A	CCC	Prototype
Laptop	Huawei Technologies Co. LTD	KPL-W00	Input:20V⎓3.25A	CCC	laboratory
/	/	/	/	/	/
/	/	/	/	/	/

2.6. Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

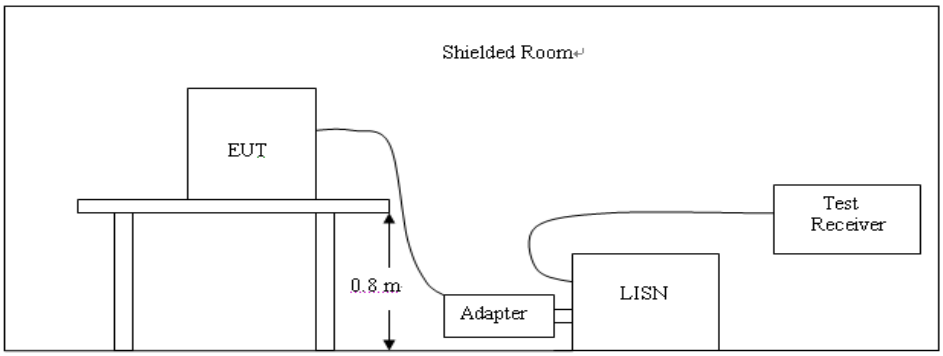
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

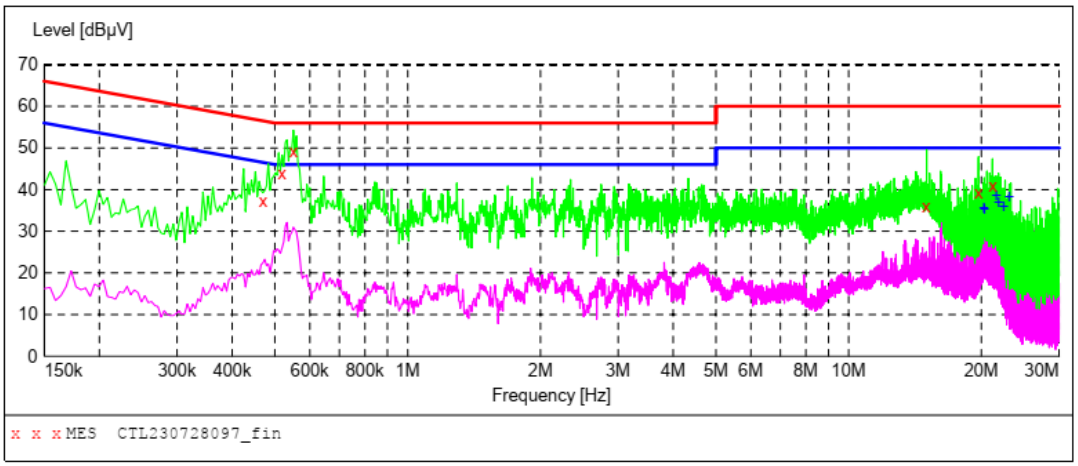
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

Remark: Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply(charge from adapter)have been tested, only the worst result of 120 VAC, 60 Hz with middle channel was reported as below:

Line:	L

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL230728097_fin"

8/1/2023 9:07AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.469500	37.10	10.0	57	19.4	QP	L1	GND
0.519000	43.80	10.0	56	12.2	QP	L1	GND
0.550500	49.30	10.0	56	6.7	QP	L1	GND
15.004500	36.10	10.2	60	23.9	QP	L1	GND
19.707000	39.20	10.3	60	20.8	QP	L1	GND
21.196500	40.80	10.4	60	19.2	QP	L1	GND

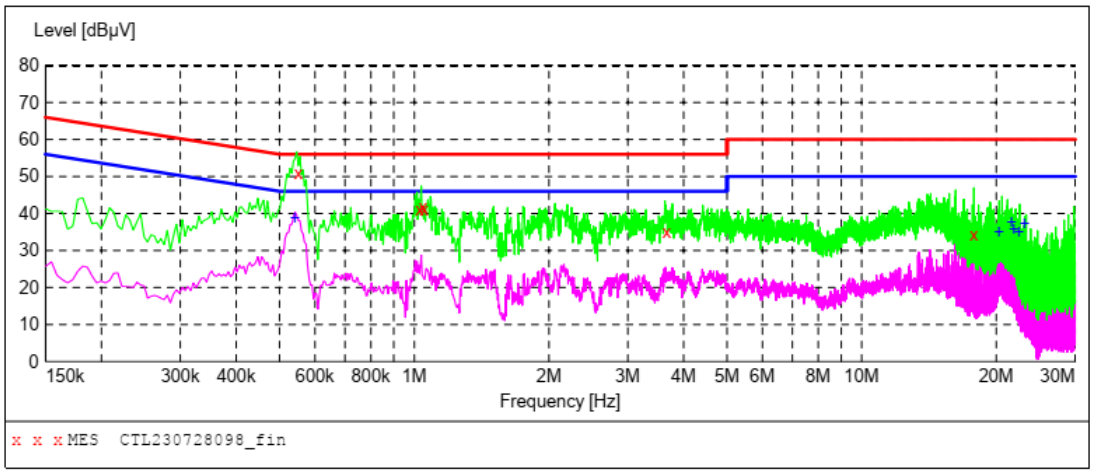
MEASUREMENT RESULT: "CTL230728097_fin2"

8/1/2023 9:07AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
20.260500	35.70	10.3	50	14.3	AV	L1	GND
20.319000	35.20	10.3	50	14.8	AV	L1	GND
21.664500	38.50	10.4	50	11.5	AV	L1	GND
21.907500	36.80	10.4	50	13.2	AV	L1	GND
22.456500	36.10	10.4	50	13.9	AV	L1	GND
23.127000	38.30	10.4	50	11.7	AV	L1	GND

Line:	N

SCAN TABLE: "Voltage (9K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL230728098_fin"

8/1/2023 9:10AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.550500	51.00	10.0	56	5.0	QP	N	GND
1.027500	41.00	10.1	56	15.0	QP	N	GND
1.045500	41.70	10.1	56	14.3	QP	N	GND
1.050000	41.20	10.1	56	14.8	QP	N	GND
3.669000	35.00	10.1	56	21.0	QP	N	GND
17.830500	34.40	10.3	60	25.6	QP	N	GND

MEASUREMENT RESULT: "CTL230728098_fin2"

8/1/2023 9:10AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.541500	38.70	10.0	46	7.3	AV	N	GND
20.260500	35.00	10.3	50	15.0	AV	N	GND
21.664500	37.50	10.4	50	12.5	AV	N	GND
21.907500	35.80	10.4	50	14.2	AV	N	GND
22.456500	35.10	10.4	50	14.9	AV	N	GND
23.127000	37.40	10.4	50	12.6	AV	N	GND

Remark: Level(dBuV)=Reading(dBuV) + Factor(dB)
Margin=Limit(dBuV/m)-Level(dBuV/m)

3.2. Radiated Emissions

Limit

According 15.249, the field strength of emissions from intentional radiators operated within 915 MHz shall not exceed 94dBμV/m (50mV/m):

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

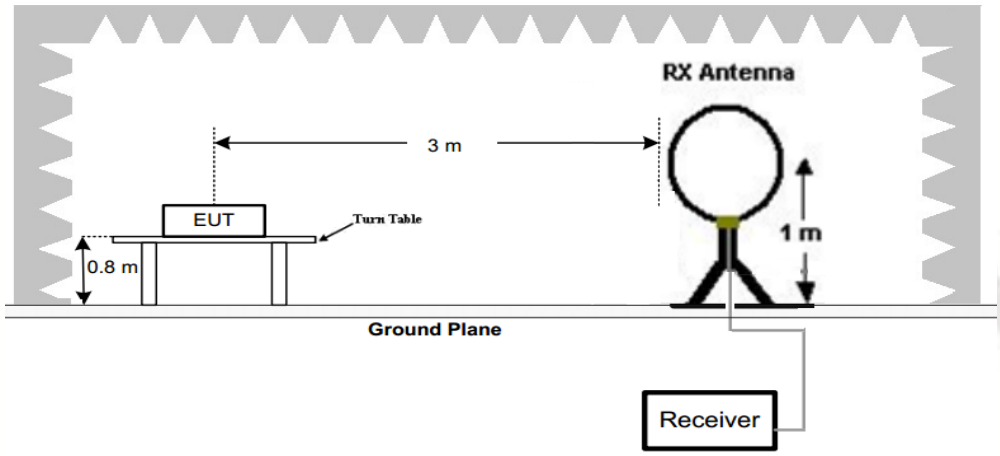
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

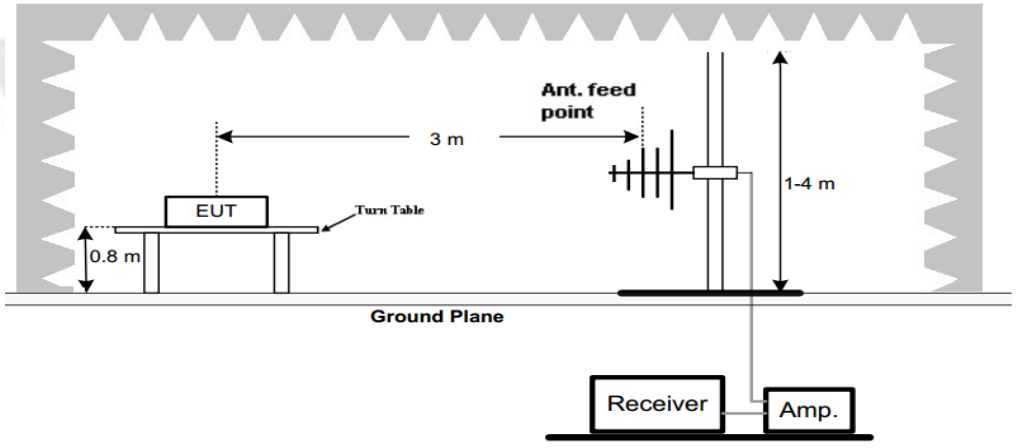
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

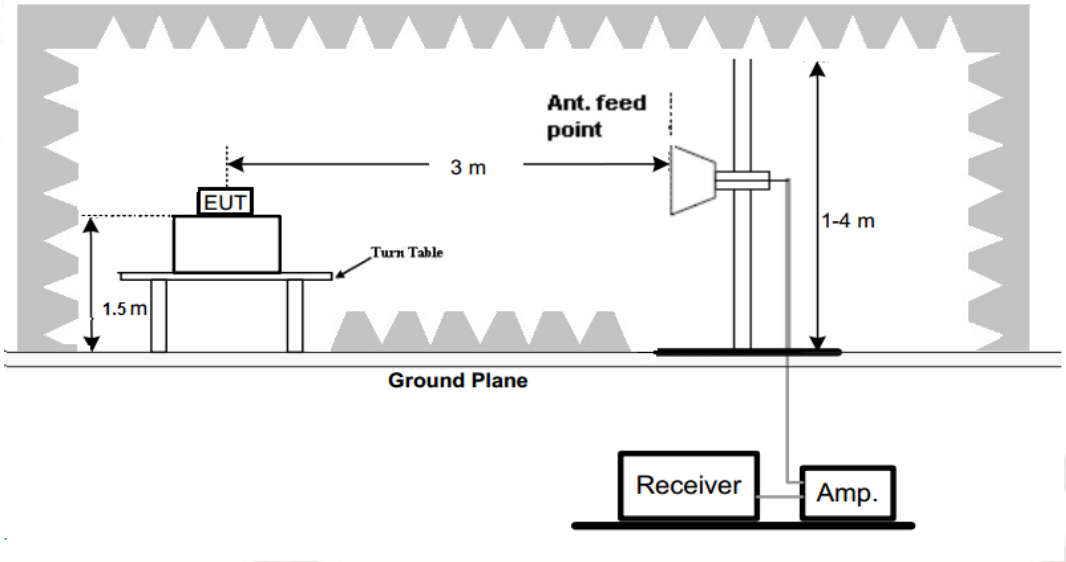
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 10GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-40GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

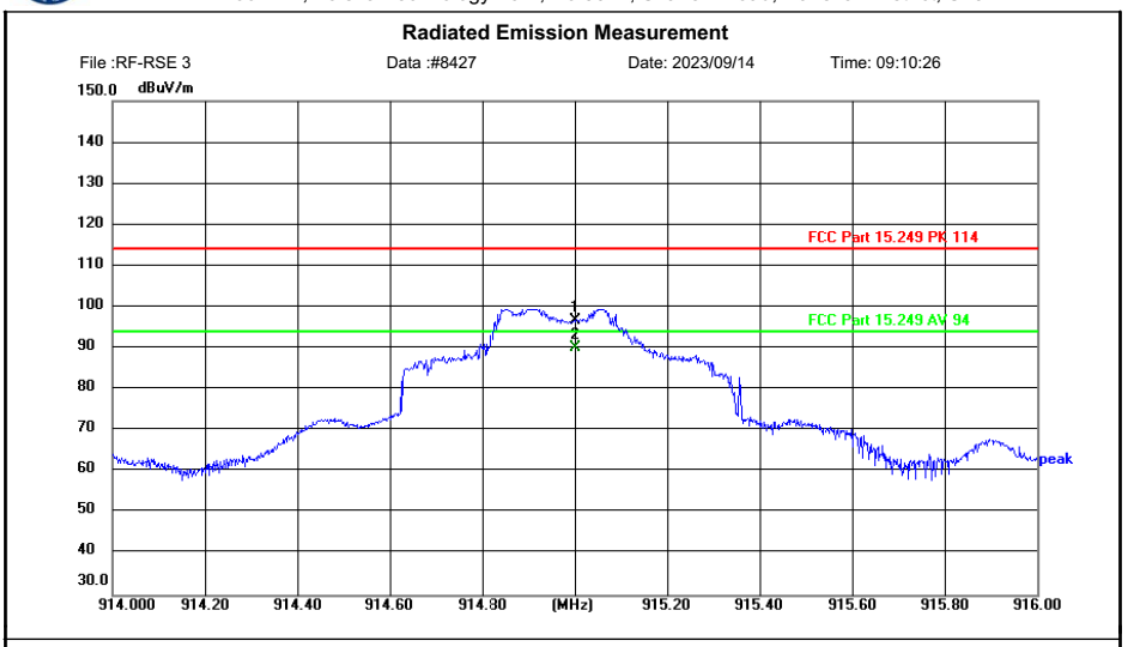
TEST RESULTS

Field Strength of Fundamental:

Remark: The test was carried out at X, Y and Z positions, with X position being the worst

Antenna 1 Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: FCC Part 15.249 PK 114
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

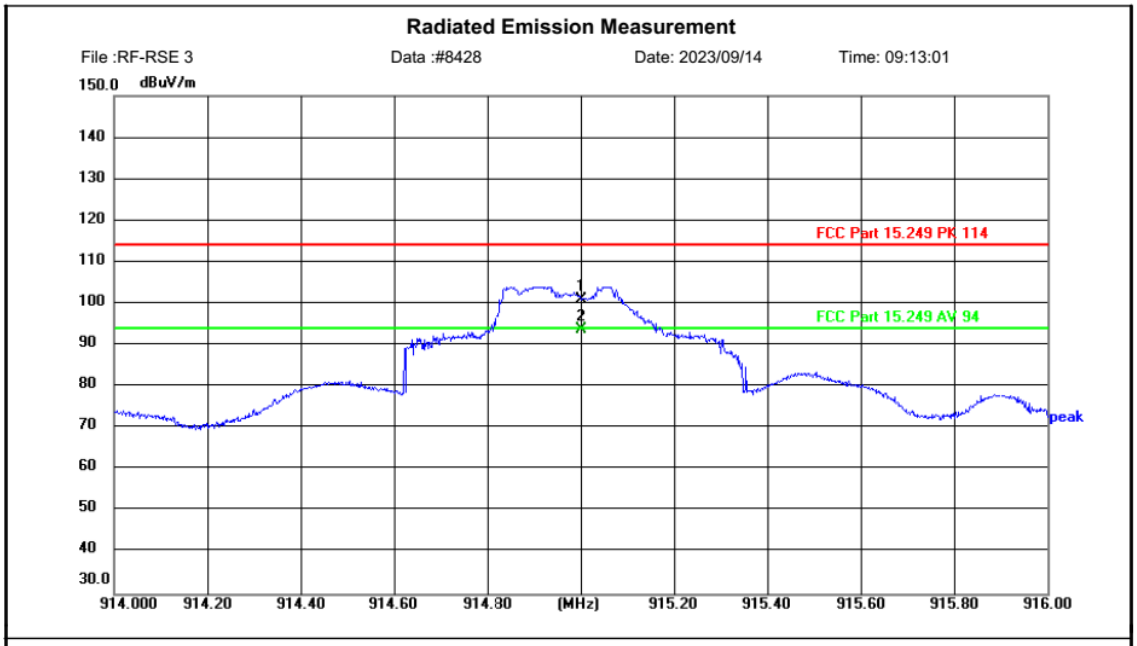
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	915.0010	71.12	25.67	96.79	114.00	17.21	peak	150	360	P	
2	915.0010	64.35	25.67	90.02	94.00	3.98	AVG	150	0	P	

Antenna 1 Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: FCC Part 15.249 PK 114
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

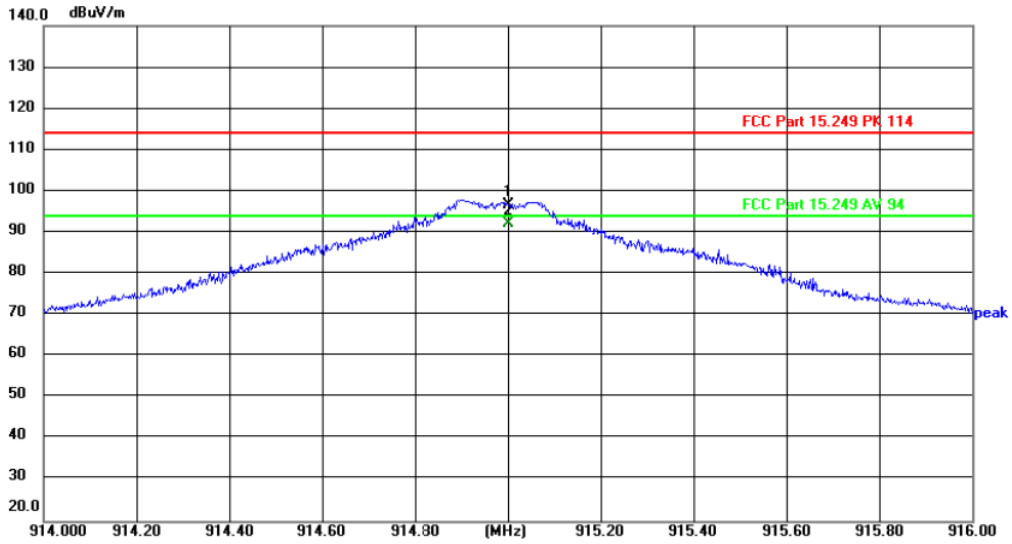
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	915.0015	75.23	25.67	100.90	114.00	13.10	peak	150	360	P	
2	915.0015	68.17	25.67	93.43	94.00	0.57	AVG	150	0	P	

Antenna 2 Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She

Radiated Emission Measurement

File :RF-RSE 3 Data :#8426 Date: 2023/09/14 Time: 09:06:51



Site LA FCC Part 15.249
Limit: FCC Part 15.249 PK 114
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

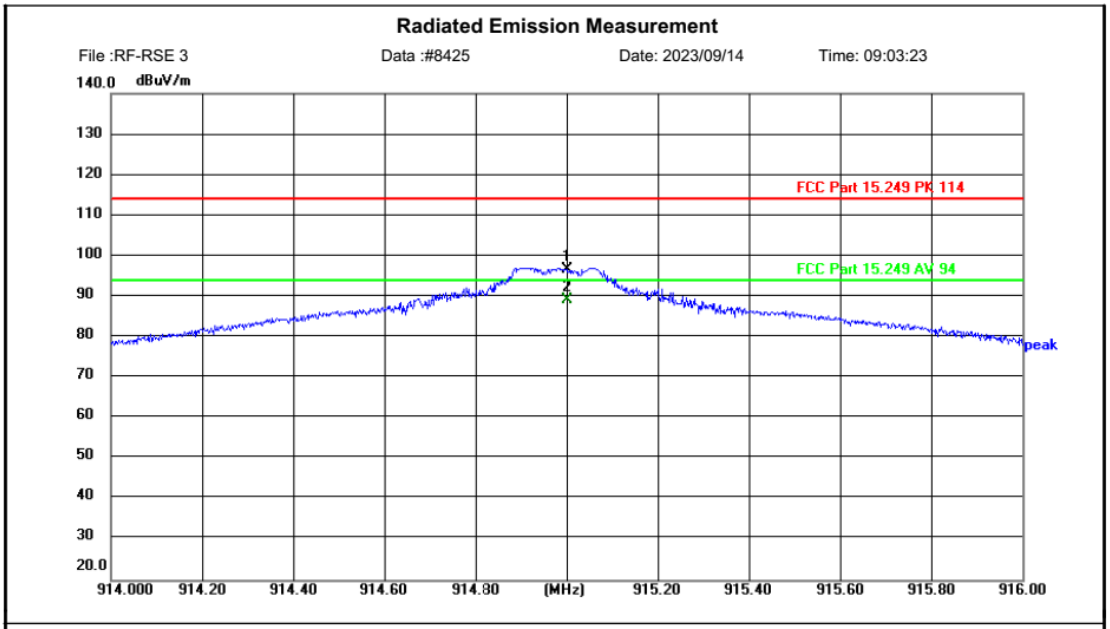
Polarization: ***Horizontal***
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	915.0003	70.92	25.67	96.59	114.00	17.41	peak	150	0	P	
2	915.0003	66.44	25.67	92.11	94.00	1.89	AVG	150	0	P	

Antenna 2 Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit FCC Part 15.249 PK 114
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	915.0018	70.96	25.67	96.63	114.00	17.37	peak	150	360	P	
2	915.0018	63.47	25.67	89.14	94.00	4.86	AVG	150	0	P	

REMARKS:

1. Emission level (dBuV/m) = Reading (dBuV)+ Factor (dB/m)
2. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.

Emissions radiated outside of the specified frequency bands:

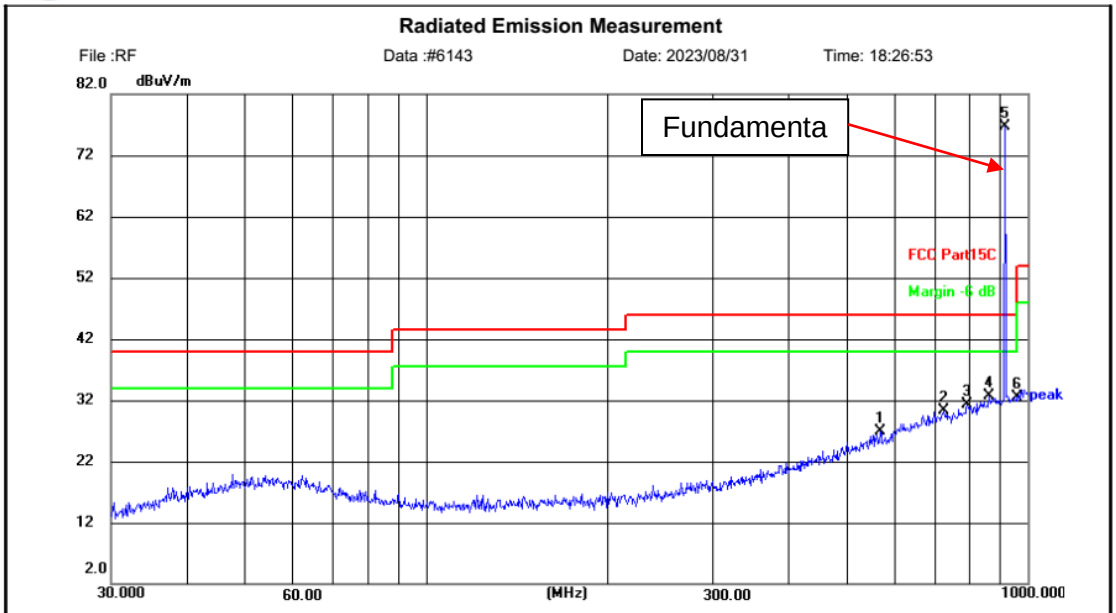
Remark:

1. The test was carried out at X, Y and Z positions, with X position antenna 1 being the worst.
2. For below 1GHz testing recorded worst at low channel.
3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and the emission levels from 9kHz to 30MHz are attenuated 20dB below the limit and not recorded in report.

For 30MHz-1GHz

Antenna1 Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: FCC Part15C
EUT: /
M/N: PICK_Controller_V1.2
Mode: 915MHz
Note: Picksmart Technology Co., Limited

Polarization: *Horizontal*
Power:
Distance: 3m

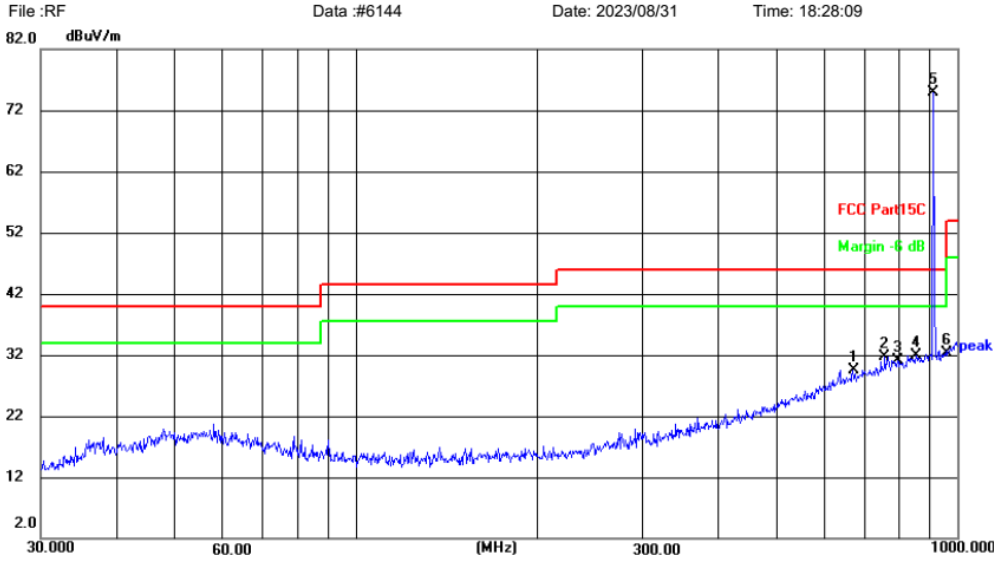
Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	568.6126	6.73	20.10	26.83	46.00	19.17	peak	100	62	P	
2	726.8052	7.73	22.54	30.27	46.00	15.73	peak	100	45	P	
3	793.3958	7.02	24.28	31.30	46.00	14.70	peak	100	24	P	
4	863.0561	7.52	25.11	32.63	46.00	13.37	peak	100	58	P	
5	915.0683	51.00	25.68	76.68	46.00	-30.68	peak	100	358	F	
6	958.7943	6.29	26.20	32.49	46.00	13.51	peak	100	284	P	

Antenna1 Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She

Radiated Emission Measurement



Site LAB Chamber 2
Limit: FCC Part15C
EUT: /
M/N: PICK_Controller_V1.2
Mode: 915MHz
Note: Picksmart Technology Co., Limited

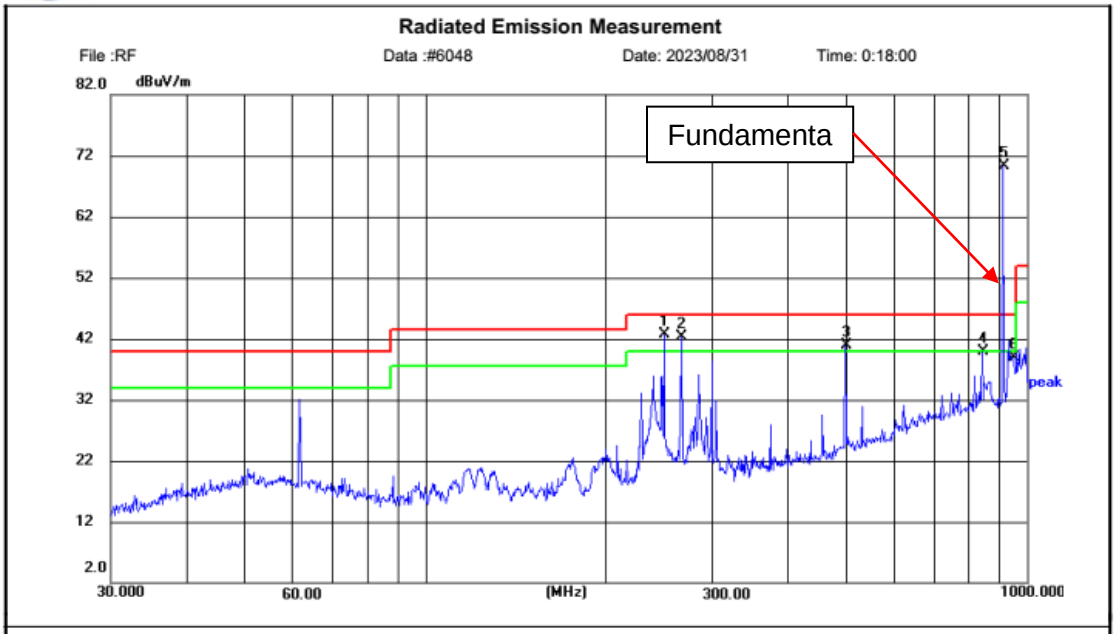
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	670.4892	7.93	21.56	29.49	46.00	16.51	peak	100	7	P	
2	758.0407	8.37	23.36	31.73	46.00	14.27	peak	100	5	P	
3	796.1829	6.83	24.36	31.19	46.00	14.81	peak	100	89	P	
4	854.0247	6.86	25.01	31.87	46.00	14.13	peak	100	36	P	
5	915.8418	49.25	25.64	74.89	46.00	-28.89	peak	100	254	F	
6	955.4381	6.17	26.16	32.33	46.00	13.67	peak	100	147	P	

Antenna 2 Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: FCC Part15C
EUT: /
M/N: PICK_Controller_V1.2
Mode: 915MHz
Note: Picksmart Technology Co., Limited

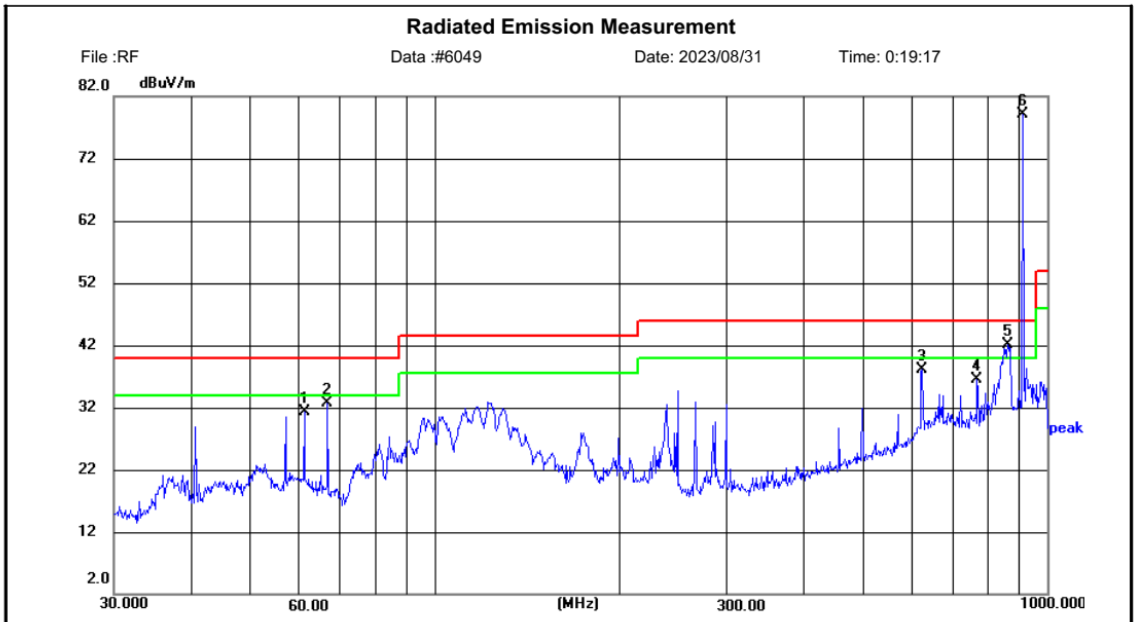
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	249.4250	30.17	12.61	42.78	46.00	3.22	peak	100	37	P	
2	266.6089	29.56	12.83	42.39	46.00	3.61	peak	100	346	P	
3	499.4246	22.56	18.29	40.85	46.00	5.15	peak	100	327	P	
4	842.1296	15.04	24.89	39.93	46.00	6.07	peak	100	37	P	
5	915.8620	44.62	25.64	70.26	46.00	-24.26	peak	100	261	F	
6	948.7609	12.92	26.08	39.00	46.00	7.00	peak	100	261	P	

Antenna 2 Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: FCC Part15C
EUT: /
M/N: PICK_Controller_V1.2
Mode: 915MHz
Note: Picksmart Technology Co., Limited

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

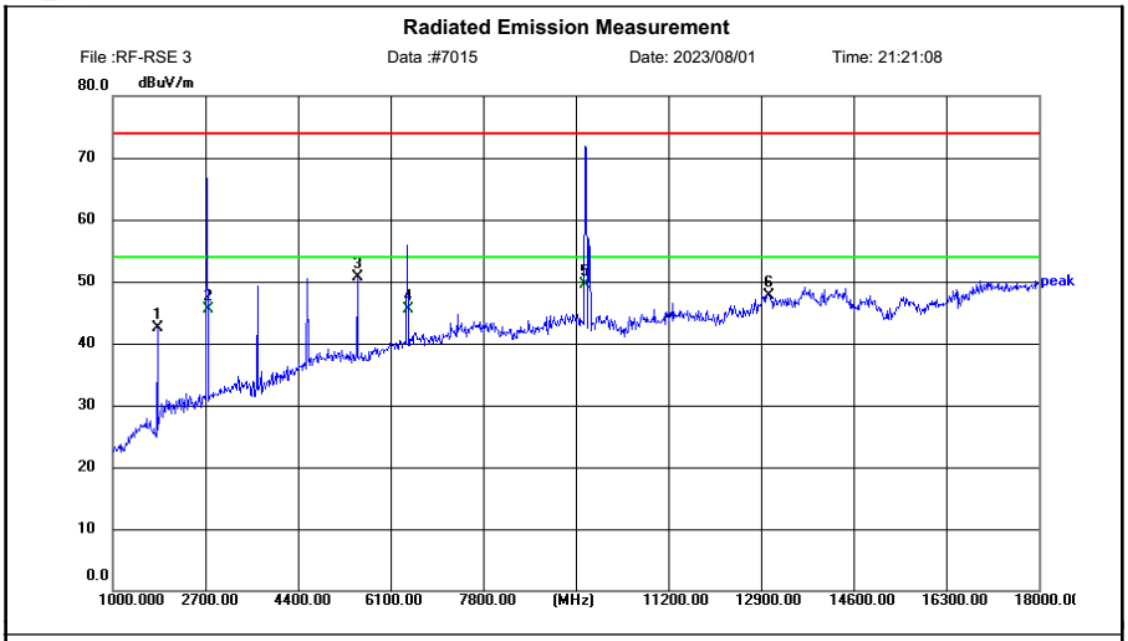
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	61.3463	18.24	13.14	31.38	40.00	8.62	peak	100	46	P	
2	66.9669	20.93	11.87	32.80	40.00	7.20	peak	100	46	P	
3	625.0780	17.01	21.15	38.16	46.00	7.84	peak	100	86	P	
4	768.7481	12.95	23.64	36.59	46.00	9.41	peak	100	14	P	
5	863.0562	16.96	25.11	42.07	46.00	3.93	peak	100	356	P	
6	915.8620	53.47	25.64	79.11	46.00	-33.11	peak	100	323	F	

Remark: Level(dBuV/m)=Reading(dBuV)+Factor(dB/m)
Margin= Level(dBuV/m)-Limit(dBuV/m)

For 1GHz to 10GHz

Antenna1 Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: 74db
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

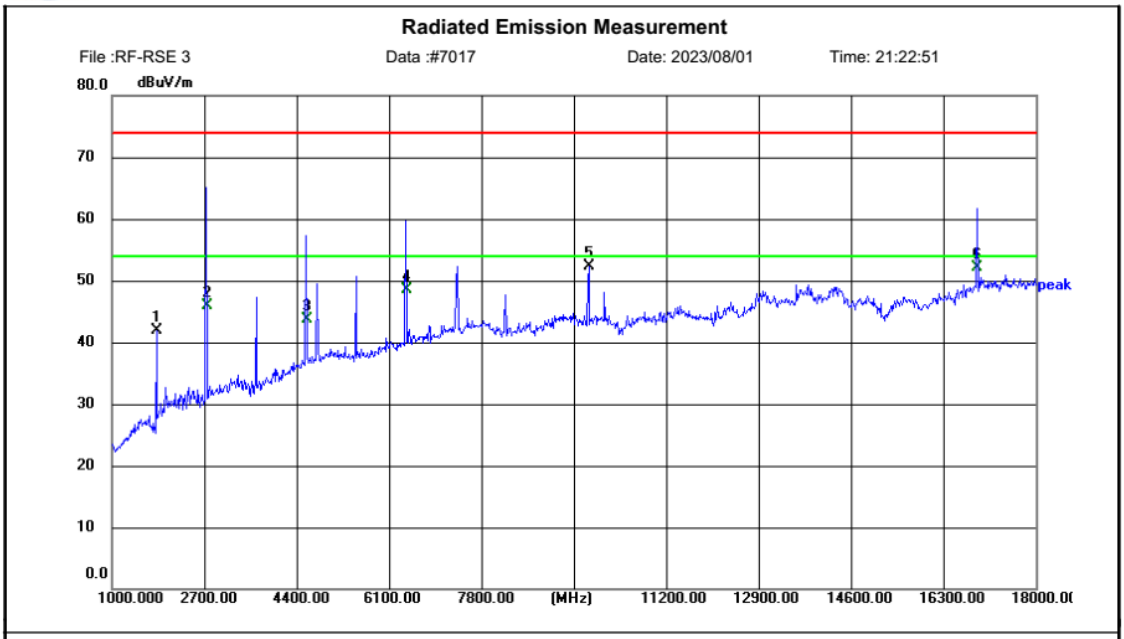
Polarization: ***Horizontal***
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1816.000	66.95	-24.38	42.57	74.00	31.43	peak	150	360	P	
2	2735.254	65.71	-20.30	45.41	54.00	8.59	AVG	150	0	P	
3	5488.000	62.56	-11.77	50.79	74.00	23.21	peak	150	360	P	
4	6407.520	54.08	-8.67	45.41	54.00	8.59	AVG	150	0	P	
5	9669.220	53.52	-4.00	49.52	54.00	4.48	AVG	150	0	P	
6	13053.000	48.72	-0.98	47.74	74.00	26.26	peak	150	360	P	

Antenna1 Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: 74db
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

Polarization: *Vertical*
Power:
Distance: 3m

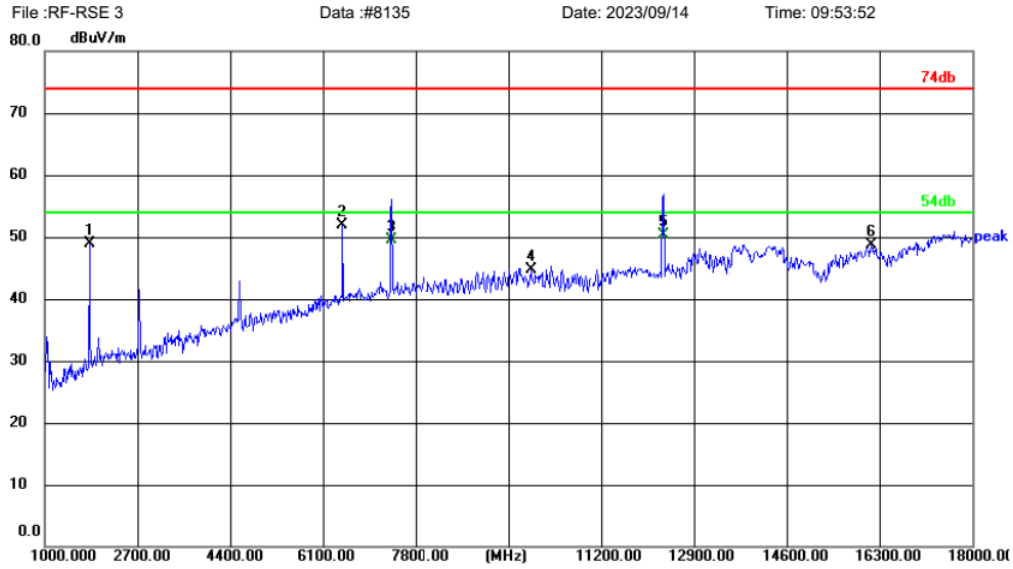
Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1816.000	66.30	-24.38	41.92	74.00	32.08	peak	150	0	P	
2	2735.453	66.15	-20.30	45.85	54.00	8.15	AVG	150	0	P	
3	4574.720	56.77	-13.14	43.63	54.00	10.37	AVG	150	360	P	
4	6407.541	57.18	-8.67	48.51	54.00	5.49	AVG	150	360	P	
5	9772.000	56.39	-4.18	52.21	74.00	21.79	peak	150	0	P	
6	16915.790	50.72	1.48	52.20	54.00	1.80	AVG	150	360	P	

Antenna 2 Horizontal

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She

Radiated Emission Measurement



Site LAB Chamber 2
Limit: 74db
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

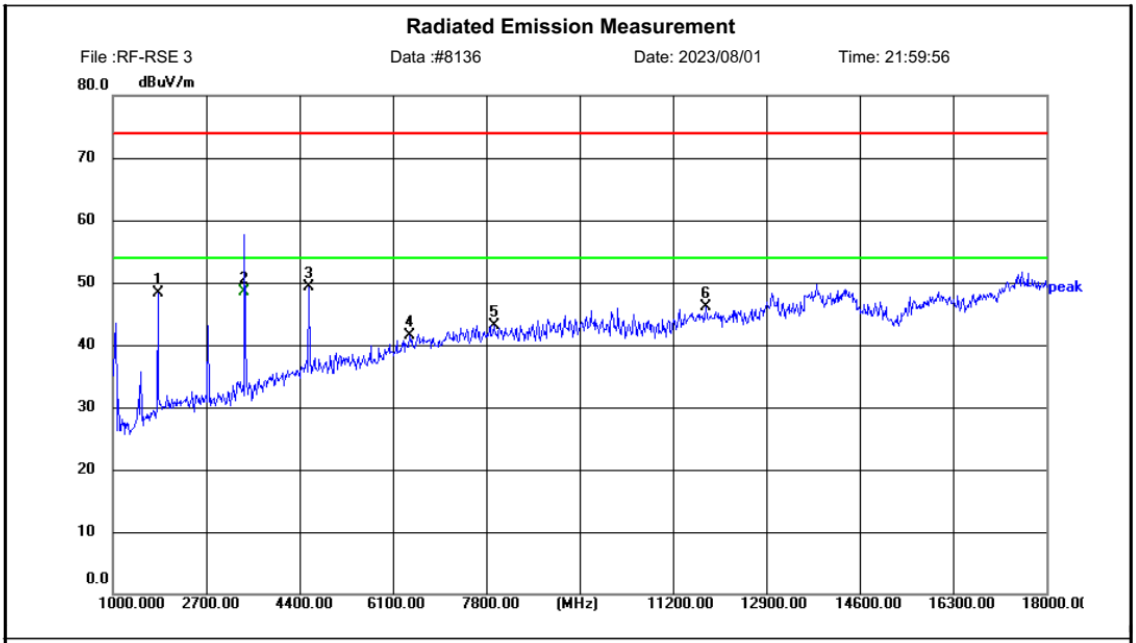
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1816.000	73.31	-24.38	48.93	74.00	25.07	peak	150	360	P	
2	6457.000	60.47	-8.47	52.00	74.00	22.00	peak	150	360	P	
3	7356.640	56.23	-6.65	49.58	54.00	4.42	AVG	150	360	P	
4	9908.000	49.05	-4.39	44.66	74.00	29.34	peak	150	360	P	
5	12325.247	53.85	-3.49	50.36	54.00	3.64	AVG	150	0	P	
6	16147.000	49.75	-1.08	48.67	74.00	25.33	peak	150	360	P	

Antenna 2 Vertical

Shenzhen CTL Testing Technology Co., Ltd
Tel: +86-755-89486194
Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, She



Site LAB Chamber 2
Limit: 74db
EUT:
M/N: PICK_Controller_V1.2
Mode: 915MHz TX
Note: Picksmart Technology Co., Limited

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	1816.000	72.73	-24.38	48.35	74.00	25.65	peak	150	0	P	
2	3394.010	66.11	-17.53	48.58	54.00	5.42	AVG	150	360	P	
3	4570.000	62.46	-13.17	49.29	74.00	24.71	peak	150	0	P	
4	6406.000	50.11	-8.68	41.43	74.00	32.57	peak	150	0	P	
5	7936.000	49.18	-6.10	43.08	74.00	30.92	peak	150	0	P	
6	11795.000	49.92	-3.82	46.10	74.00	27.90	peak	150	0	P	

REMARKS:

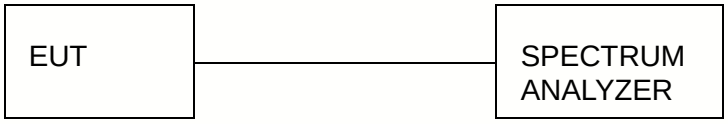
1. Emission level (dBuV/m) = Reading (dBuV)+ Factor (dB/m)
2. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels lower -6dB than the limit was not reported.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

3.3. Occupied Bandwidth Measurement

Limit

N/A

Test Configuration



Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3KHz RBW and 10KHz VBW.

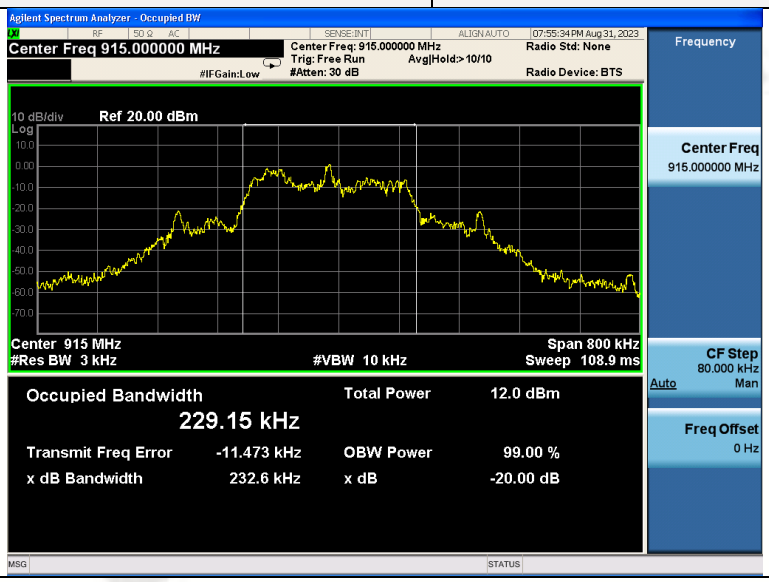
The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

Test Results

Modulation	Test Frequency (MHz)	99% OBW (MHz)	20dB bandwidth (MHz)	Antenna	Result
FM	915.00	229.15	232.6	1	Pass
	915.00	231.53	234.2	2	

Test plot as follows:

FM Modulation	Antenna 1



915.00MHz

FM Modulation	Antenna 2

915.00MHz

3.4. Antenna Requirement

Standard Applicable

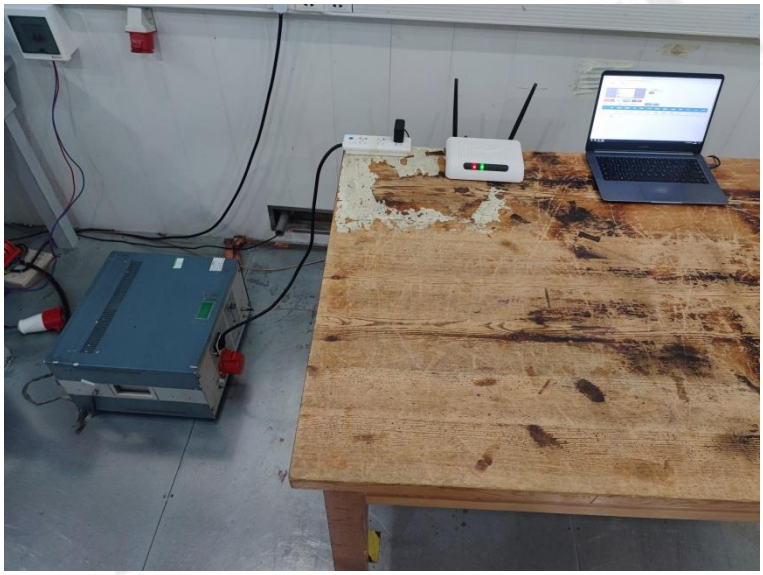
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

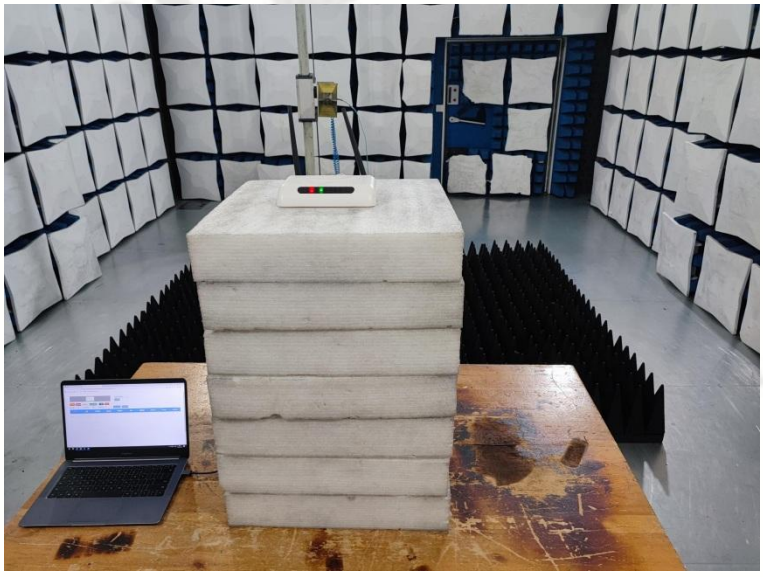
Refer to statement below for compliance.
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an integral antenna, The directional gains of antenna used for transmitting is 2.01dBi.

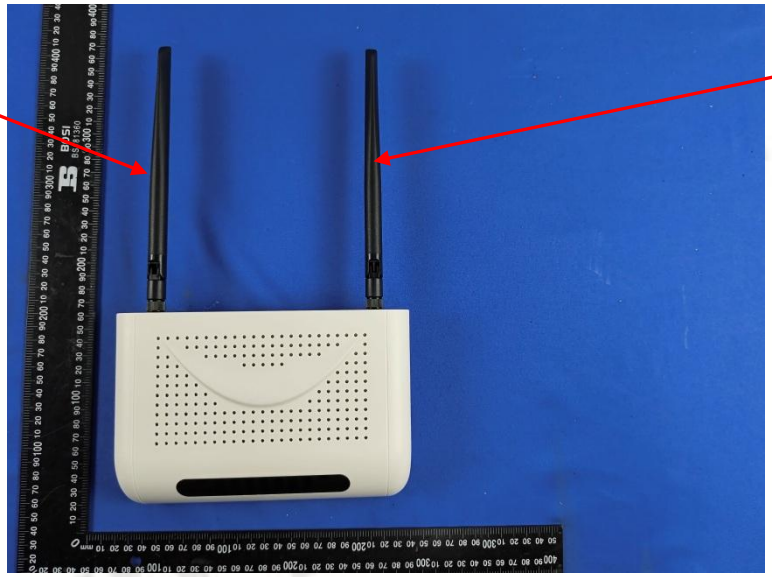
4. Test Setup Photos of the EUT

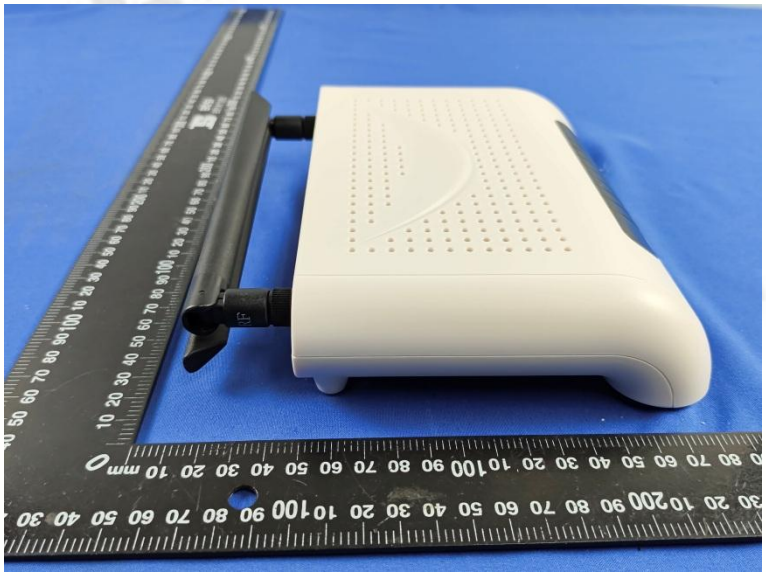


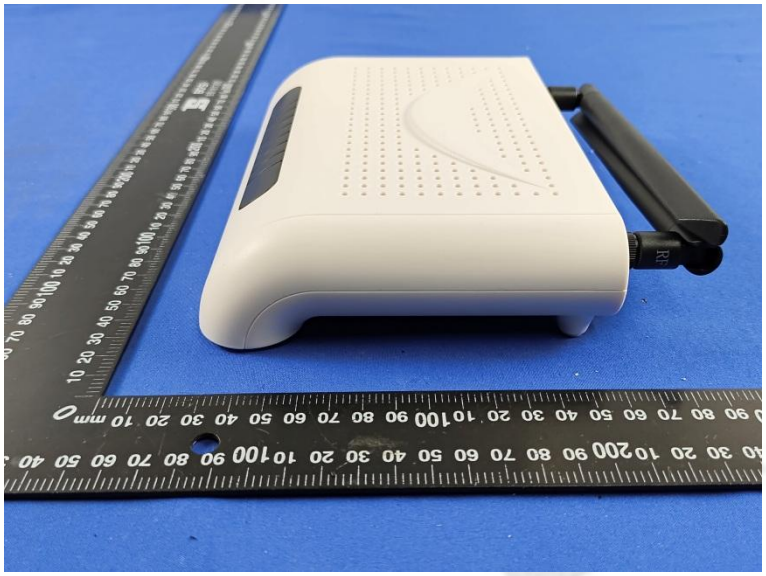


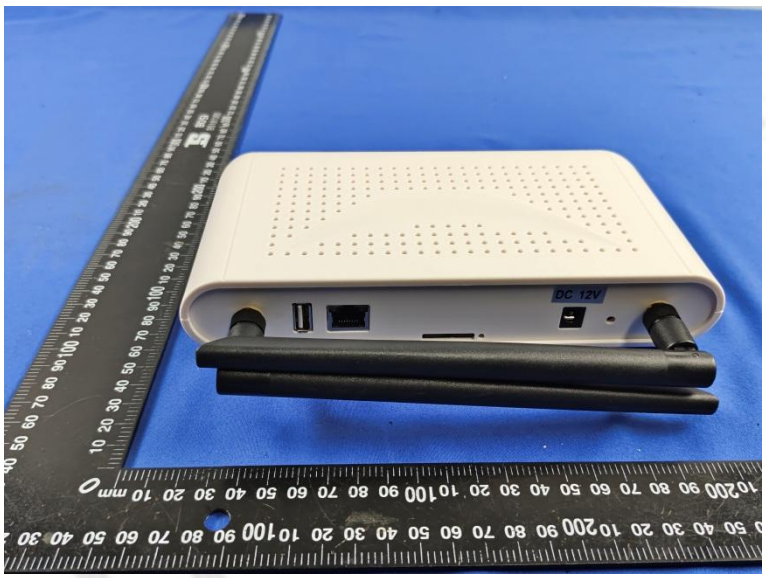
5. External and Internal Photos of the EUT

External Photos of EUT

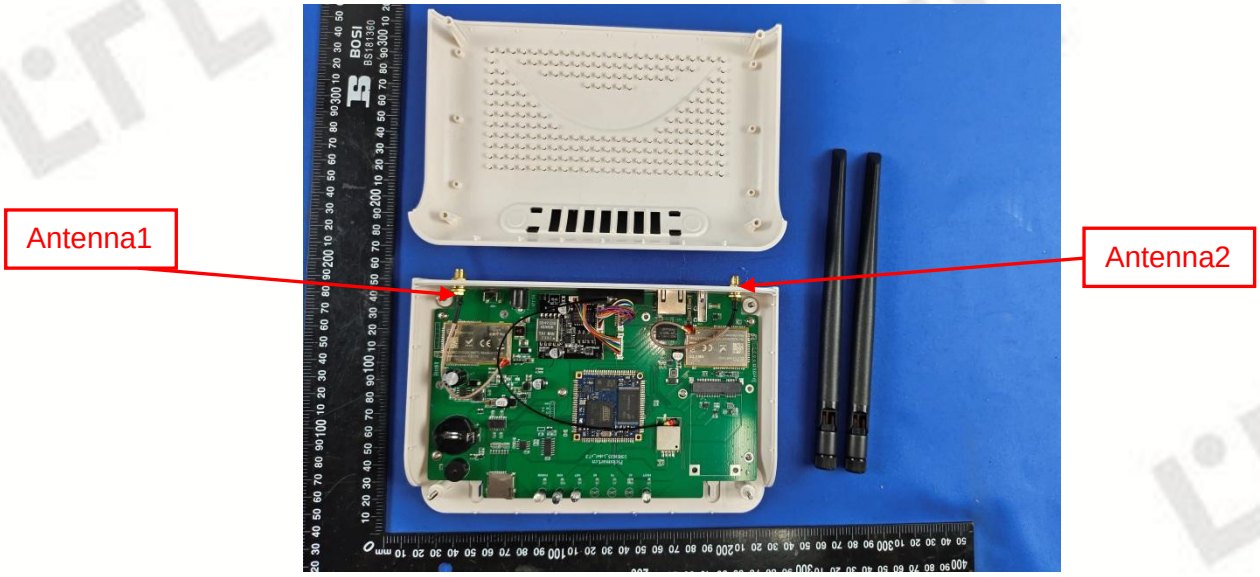


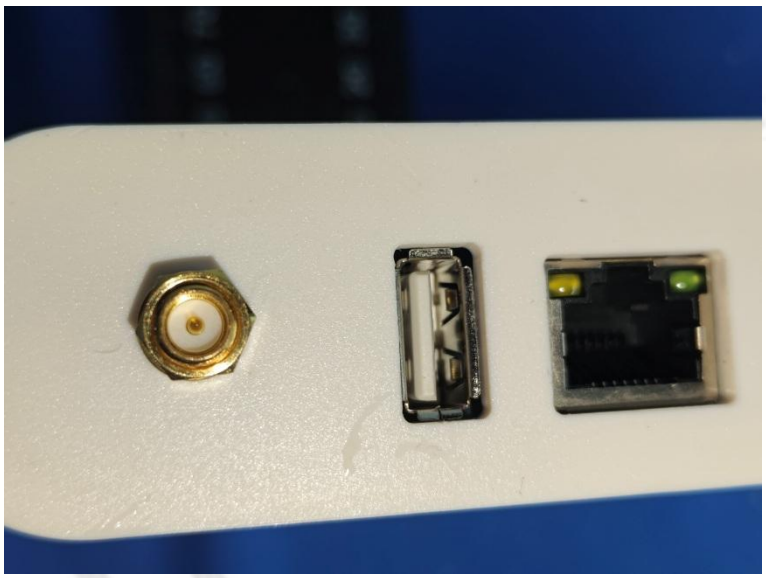


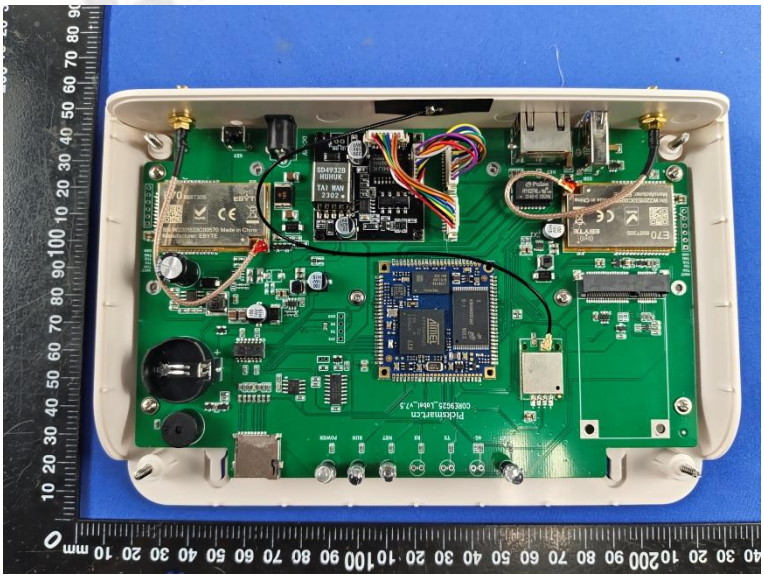


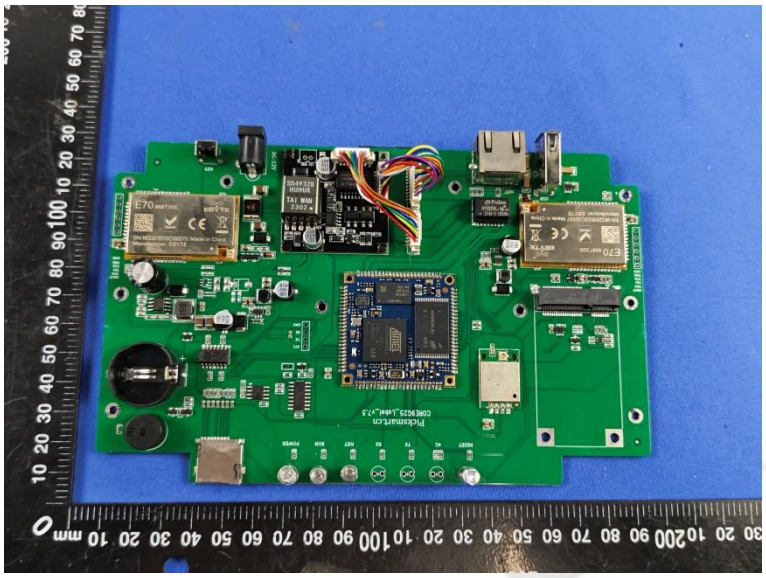

DC 12V

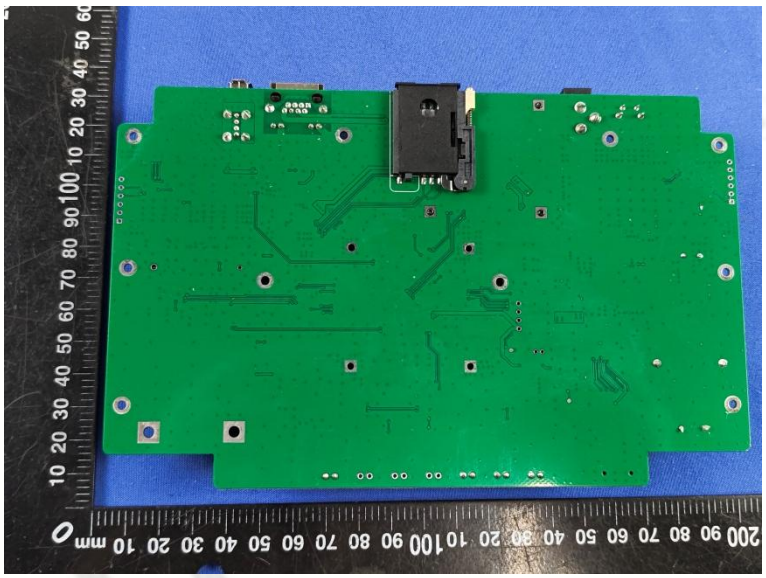
Internal Photos of EUT





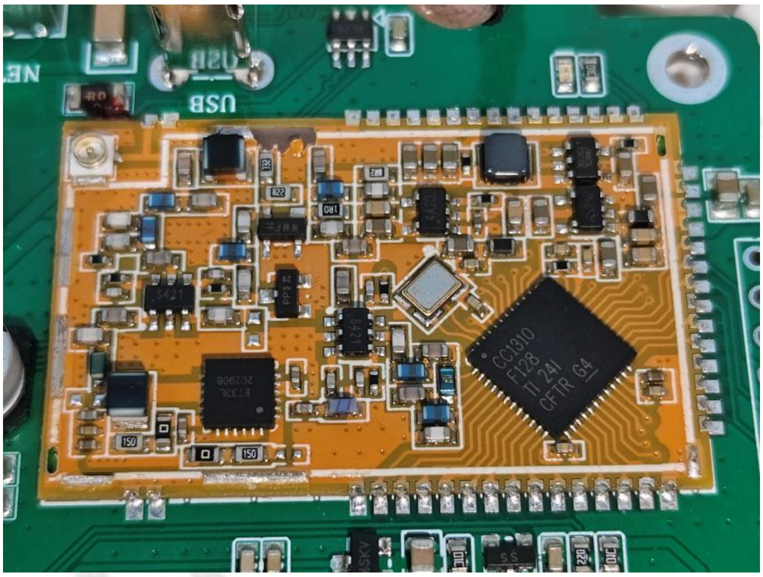


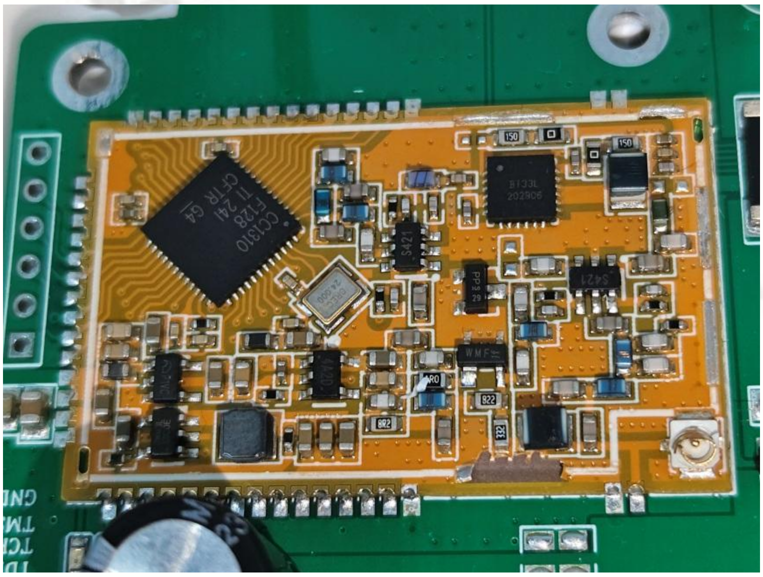


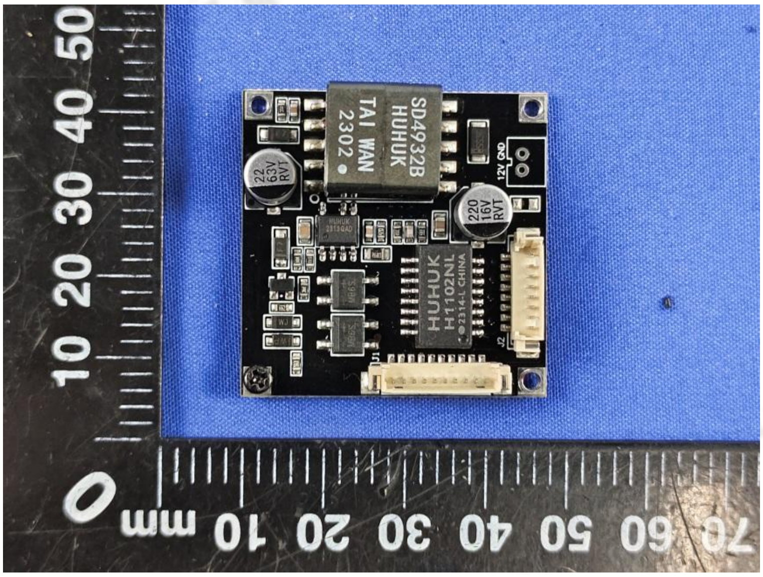


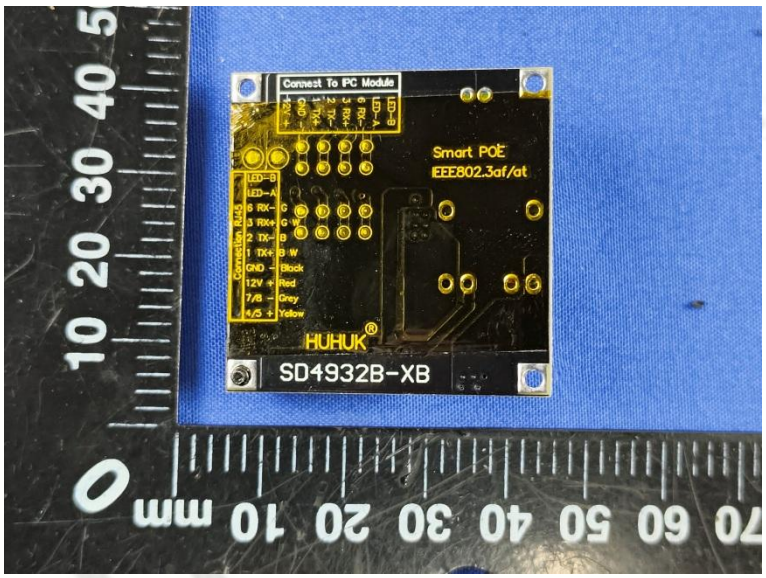

TDO
TDI
TCK
TMS
GND
E70 868T30S
EBYTE
RoHS
SN:W2201533C00587 Made in China
Manufacturer: EBYTE
NET

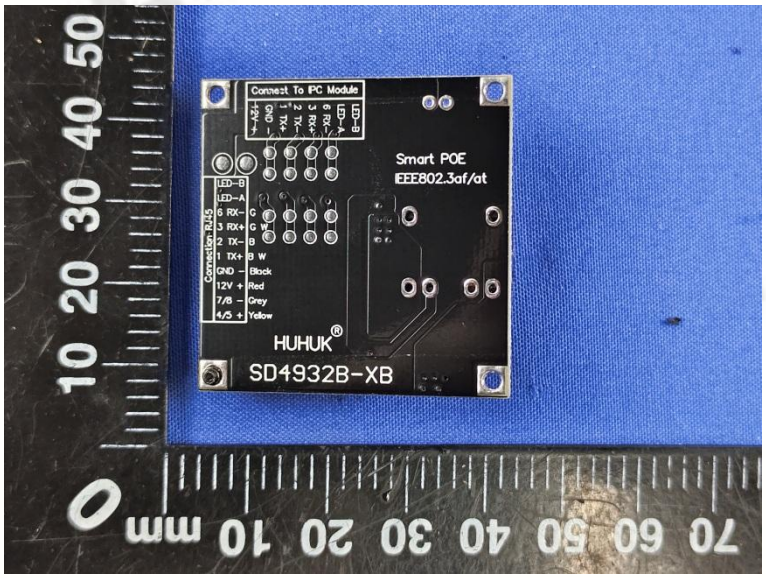

E70 868T30S
EBYTE
RoHS
SN:W2201533C00570 Made in China
Manufacturer: EBYTE

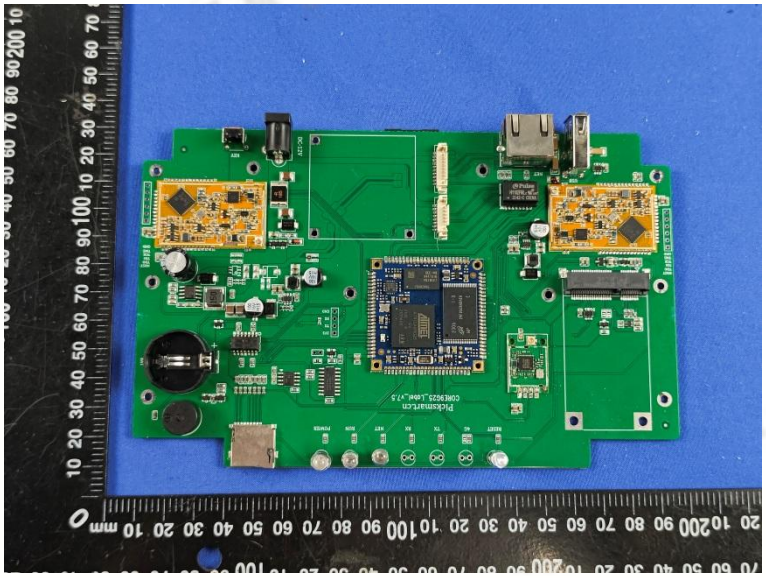

USB
CC1310
F128
TI 24I
CFTR G4


CC1310
F128
TI 24I
CFTR G4


SD4932B
HUHUK
TAI WAN
2302
HUHUK
H1102NL
22
63V
RVT
220
16V
RVT
12V GND
10 20 30 40 50
0 mm 10 20 30 40 50 60 70


Connect To IPC Module
Smart POE
IEEE802.3af/at
HUHUK®
SD4932B-XB


Connect To IPC Module
Smart POE
IEEE802.3af/at
HUHUK®
SD4932B-XB



********** End of Report **********