



Report No.:

TW2202146E

File reference No.:

2022-03-15

Applicant:

Kamoer Fluid Tech (Shanghai) Co., Ltd.

Product:

X2SR Water Change System

Model No.:

X2SR

Trademark:



Test Standards:

FCC Part 15.247

Test result:

It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By

Terry Tang

Manager

Dated:

March 15, 2022

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

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

CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The 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.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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1.0 General Details


1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996
Site Listed with Federal Communications commission (FCC)
Registration Number: 744189
For 3m Anechoic Chamber
Site Listed with Industry Canada of Ottawa, Canada
Registration Number: IC: 5205A
For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Kamoer Fluid Tech (Shanghai) Co., Ltd.
Address: 4th building, No79 Xiangjing Road, Songjiang District, Shanghai, China
Telephone: +86-21-67742578
Fax: --

1.3 Description of EUT

Product: X2SR Water Change System
Manufacturer: Kamoer Fluid Tech (Shanghai) Co., Ltd.
Address: 4th building, No79 Xiangjing Road, Songjiang District, Shanghai, China
Trademark: 
Model Number: X2SR
Additional Model Number: N/A
Hardware Version: V1.7
Software Version: 1.1.10
Serial No.: 5152101541
Rating: DC24V, 1.9A
Power Supply: Model: TDX-2401900; Input: 100-240V~, 50/60Hz, 0.6A; Output: DC24V, 1.9A
Type of Modulation: IEEE 802.11b: DSSS (CCK, QPSK, DBPSK)
IEEE 802.11g/n (HT20): OFDM (64QAM, 16QAM, QPSK, BPSK)
Frequency range: IEEE 802.11b/g/n (HT20): 2412-2462MHz
Channel Spacing: 5MHz for IEEE 802.11b/g/n (HT20)
Air Data Rate: IEEE 802.11b: 11, 5.5, 2, 1 Mbps
IEEE 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps

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	IEEE 802.11n HT20: mcs0-mcs7
Frequency Selection	By software
Channel Number	IEEE 802.11b/g/n (HT20): 11 Channels;
Antenna:	Integral antenna with 2.00mm IPEX MHF Micro-Coaxial RF connector. The gain of the antennas is 5.0dBi maximum. (Get from the antenna specification provided the applicant)

1.4 Submitted Sample: 2 Samples

1.5 Test Duration
2022-02-24 to 2022-03-03

1.6 Test Uncertainty
Conducted Emissions Uncertainty =3.6dB
Radiated Emissions below 1GHz Uncertainty =4.7dB
Radiated Emissions above 1GHz Uncertainty =6.0dB
Conducted Power Uncertainty =6.0dB
Occupied Channel Bandwidth Uncertainty =5%
Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by

Andy Xing

Print Name: Andy Xing

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2021-06-18	2022-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2021-06-18	2022-06-17
Loop Antenna	EMCO	6507	00078608	2021-06-18	2024-06-17
Spectrum	R&S	FSIQ26	100292	2021-06-18	2022-06-17
Horn Antenna	A-INFO	LB-180400-KF	ANT01060660	2021-07-02	2024-07-02
Horn Antenna	R&S	BBHA 9120D	9120D-631	2021-07-02	2024-07-02
Power meter	Anritsu	ML2487A	6K00003613	2021-06-18	2022-06-17
Power sensor	Anritsu	MA2491A	32263	2021-06-18	2022-06-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2021-07-02	2024-07-01
9*6*6 Anechoic	--	--	N/A	2021-07-02	2022-07-01
EMI Test Receiver	RS	ESVB	826156/011	2021-06-18	2022-06-17
EMI Test Receiver	RS	ESH3	860904/006	2021-06-18	2022-06-17
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2021-06-18	2022-06-17
Spectrum	HP/Agilent	E4407B	MY50441392	2021-06-18	2022-06-17
Spectrum	RS	FSP	1164.4391.38	2022-01-14	2023-01-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2021-06-18	2022-06-17
RF Cable	Zhengdi	7m	--	2021-06-18	2022-06-17
RF Switch	EM	EMSW18	060391	2021-06-18	2022-06-17
Pre-Amplifier	Schwarebeck	BBV9743	#218	2021-06-18	2022-06-17
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2021-06-18	2022-06-17
LISN	SCHAFFNER	NNB42	00012	2022-01-05	2023-01-04

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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3. DESCRIPTION OF TEST MODES

IEEE 802.11b, 802.11g, 802.11n (HT20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: mcs0 (worst case) were chosen for full testing;

Note: During the test, the duty cycle was set up to >98%

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.203	Antenna Requirement	Pass	Complies
FCC Part 15, Paragraph 15.207	Conducted Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System	Pass	See page 39-45 of test report: RSHA171116008-00A
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power	Pass	See page 46-47 of test report: RSHA171116008-00A
FCC Part 15, Paragraph 15.109, 15.205 & 15.209	Transmitter Radiated Emission	Pass	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density	Pass	See page 52-58 of test report: RSHA171116008-00A
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation	Pass	For Band Edge, see page 48-51 of test report: RSHA171116008-00A

Note: 1. For 6dB occupied band, Maximum output power, PSD, and Band Edge tests, please see test report: RSHA171116008-00A with FCC ID: 2AC7Z-ESPWROOM02U

2. The test report RSHA171116008-00A is for Wi-Fi Internet of Things Module with model name: ESP-WROOM-02U. During this module approval, an internal antenna used.

3. X2SR Water Change System also employs Wi-Fi Module: ESP-WROOM-02U. But the antenna is changed and an integral one used. The other parts of Wi-Fi module remain the same.

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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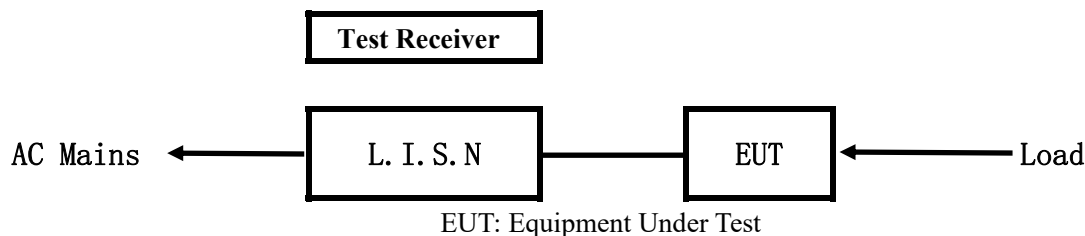
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5.0 Power Line Conducted Emission Test

5.1 Schematics of the test

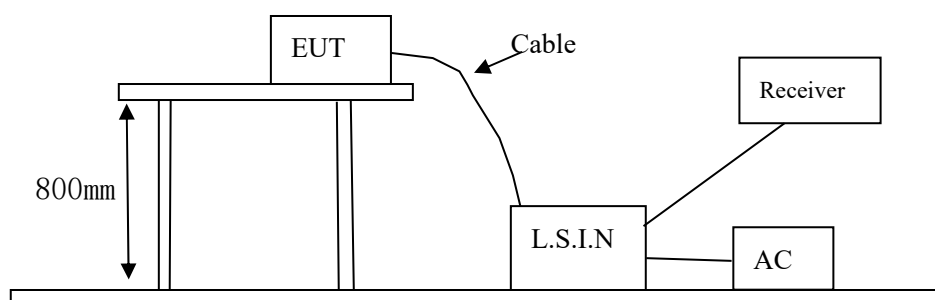


5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
X2SR Water Change System	Kamoer Fluid Tech (Shanghai) Co., Ltd.	X2SR	2A5EG-X2SR

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
--	--	--	--	--

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5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

- Notes:
- 1. *Decreasing linearly with logarithm of frequency.
 - 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: Only the worst case was recorded in the test report.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

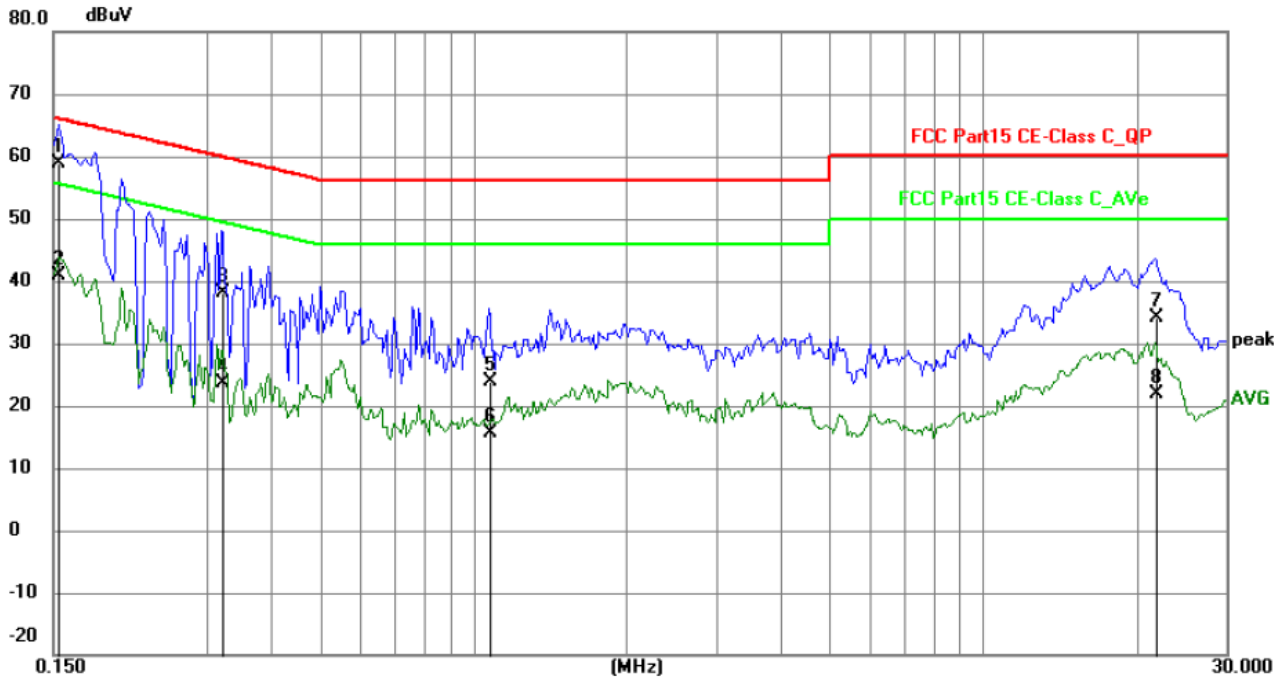
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	49.22	9.78	59.00	65.79	-6.79	QP	P
2	0.1539	31.01	9.78	40.79	55.79	-15.00	AVG	P
3	0.3215	28.30	9.76	38.06	59.67	-21.61	QP	P
4	0.3215	13.77	9.76	23.53	49.67	-26.14	AVG	P
5	1.0743	14.00	9.79	23.79	56.00	-32.21	QP	P
6	1.0743	5.94	9.79	15.73	46.00	-30.27	AVG	P
7	21.7512	23.44	10.79	34.23	60.00	-25.77	QP	P
8	21.7512	11.19	10.79	21.98	50.00	-28.02	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

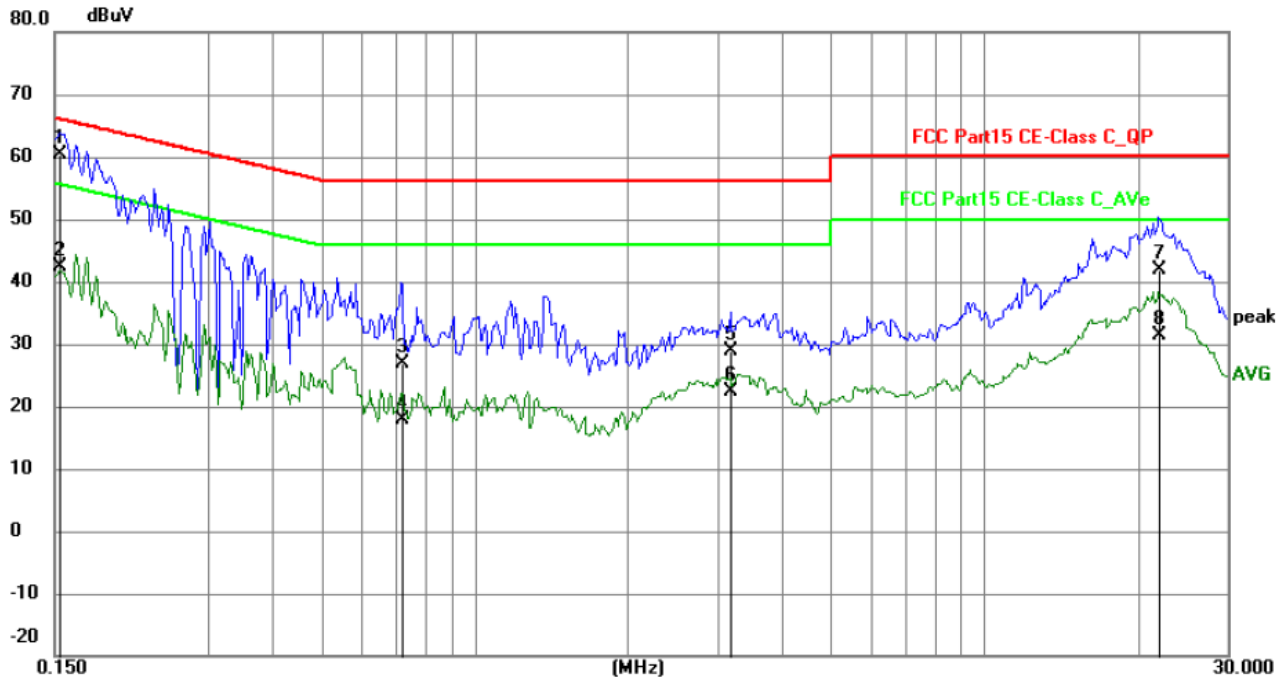
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	50.71	9.78	60.49	65.79	-5.30	QP	P
2	0.1539	32.51	9.78	42.29	55.79	-13.50	AVG	P
3	0.7194	17.19	9.78	26.97	56.00	-29.03	QP	P
4	0.7194	8.06	9.78	17.84	46.00	-28.16	AVG	P
5	3.1833	19.03	9.85	28.88	56.00	-27.12	QP	P
6	3.1833	12.57	9.85	22.42	46.00	-23.58	AVG	P
7	22.0086	31.02	10.80	41.82	60.00	-18.18	QP	P
8	22.0086	20.69	10.80	31.49	50.00	-18.51	AVG	P

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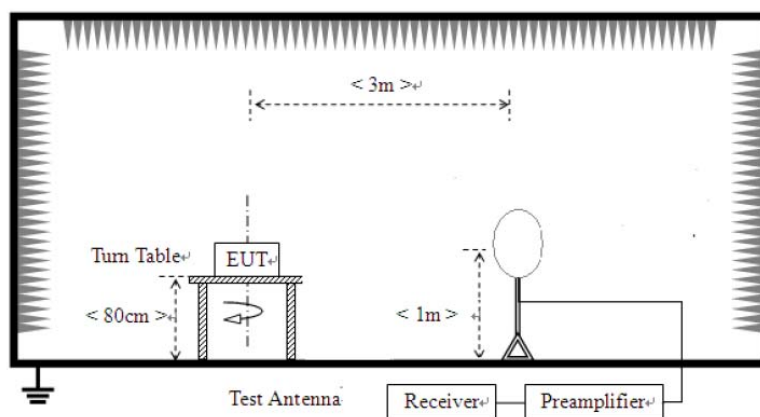
6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



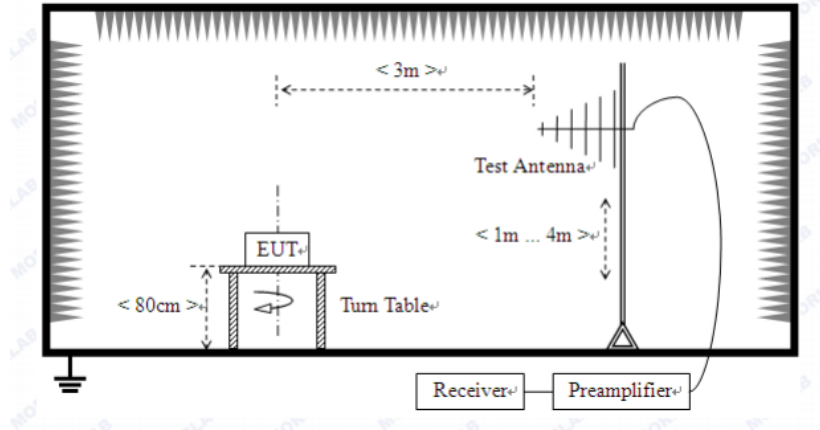
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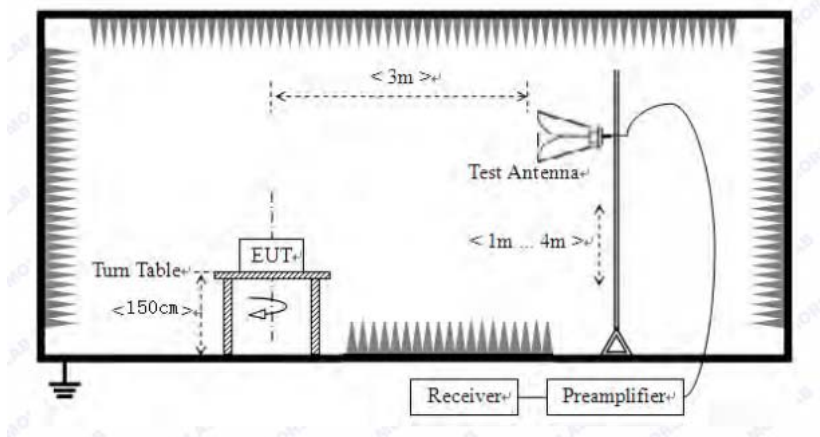
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For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.490	3	$20\log(2400/F(\text{kHz})) + 40\log(300/3)$
0.490-1.705	3	$20\log(24000/F(\text{kHz})) + 40\log(30/3)$
1.705-30	3	69.5
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
 4. **All modulation all have been tested, only Worse case is reported. 802.11b is the worst case.**

Note: Only the worst case was recorded in the test report.

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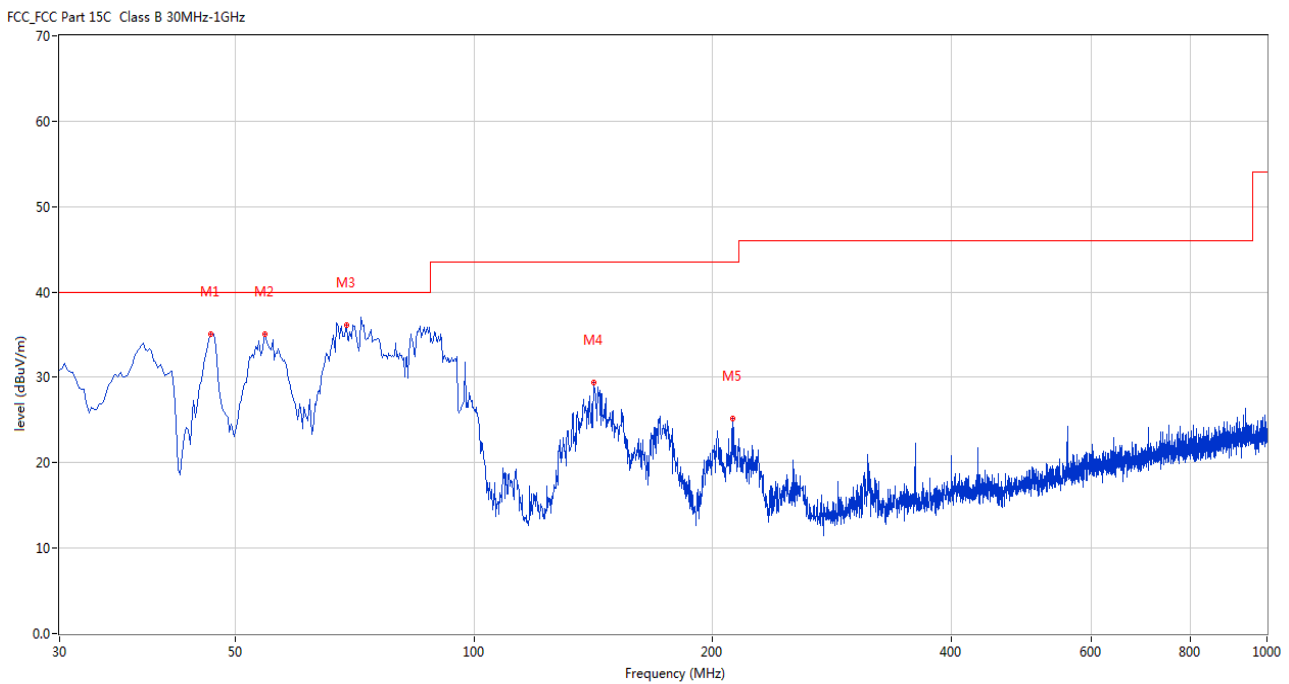
Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: Pass



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	46.486	35.05	-11.43	40.0	-4.95	Peak	141.00	150	Vertical	Pass
2	54.486	35.12	-11.66	40.0	-4.88	Peak	106.00	150	Vertical	Pass
3	69.033	36.07	-15.24	40.0	-3.93	Peak	0.00	150	Vertical	Pass
4	141.765	29.36	-17.29	43.5	-14.14	Peak	36.00	150	Vertical	Pass
5	212.072	25.16	-13.68	43.5	-18.34	Peak	36.00	150	Vertical	Pass

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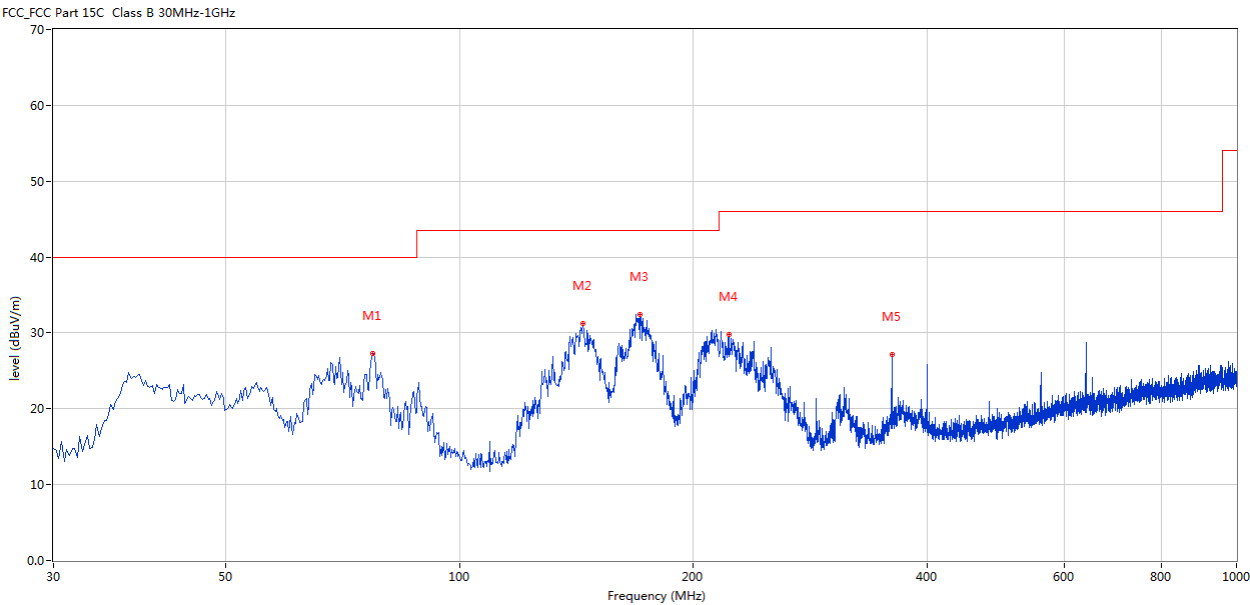


Test result
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: **Pass**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	77.276	27.32	-17.58	40.0	-12.68	Peak	242.00	120	Horizontal	Pass
2	143.947	31.24	-17.10	43.5	-12.26	Peak	149.00	120	Horizontal	Pass
3	170.857	31.21	-15.88	43.5	-12.29	Peak	177.00	120	Horizontal	Pass
4	222.012	29.79	-13.22	46.0	-16.21	Peak	317.00	120	Horizontal	Pass
5	359.960	27.17	-9.46	46.0	-18.83	Peak	306.00	120	Horizontal	Pass

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Operation Mode: Transmitting under CH01 for 802.11b mode

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
4824.00	49.51 (PK)	H	74(Peak)/ 54(AV)
4824.00	60.32 (PK) / 50.82 (AV)	V	74(Peak)/ 54(AV)
7236.00	--	H/V	74(Peak)/ 54(AV)
9648.00	--	H/V	74(Peak)/ 54(AV)
12060	--	H/V	74(Peak)/ 54(AV)
14472	--	H/V	74(Peak)/ 54(AV)
16884	--	H/V	74(Peak)/ 54(AV)
19296	--	H/V	74(Peak)/ 54(AV)
21708	--	H/V	74(Peak)/ 54(AV)
24120	--	H/V	74(Peak)/ 54(AV)

Operation Mode: Transmitting under CH06 for 802.11b mode

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
4874.00	49.43 (PK)	H	74(Peak)/ 54(AV)
4874.00	59.56 (PK) / 50.08 (AV)	V	74(Peak)/ 54(AV)
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

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Operation Mode: Transmitting under CH11 for 802.11b mode

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
4924	49.33 (PK)	H	74(Peak)/ 54(AV)
4924	59.80 (PK) / 49.64 (AV)	V	74(Peak)/ 54(AV)
7368	--	H/V	74(Peak)/ 54(AV)
9848	--	H/V	74(Peak)/ 54(AV)
12310	--	H/V	74(Peak)/ 54(AV)
14772	--	H/V	74(Peak)/ 54(AV)
17234	--	H/V	74(Peak)/ 54(AV)
19696	--	H/V	74(Peak)/ 54(AV)
22158	--	H/V	74(Peak)/ 54(AV)
24620	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11b mode at 1Mbps

4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise and less than the limit for more than 20dB. No necessary to take down.

5. Note: the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result

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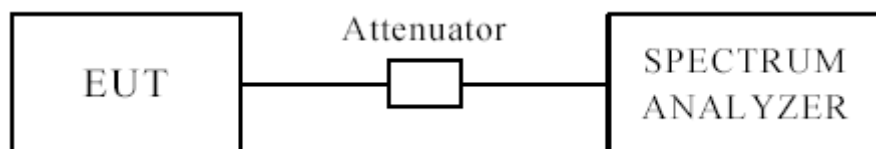
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7.0 Out of Band Measurement

7.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

7.2 Limits of Out of Band Emissions Measurement

1. Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

7.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. (Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

7.4 Test Result

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7.5 Restricted band Measurement

EUT	X2SR Water Change System		Model	X2SR
Mode	Keeping Transmitting		Test Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11b mode, Low Channel, Horizontal				
2390MHZ	PK (dBμV/m)	42.66	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
802.11b mode, Low Channel, Vertical				
2390MHZ	PK (dBμV/m)	49.41	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

7.5 Restricted band Measurement

EUT	X2SR Water Change System		Model	X2SR
Mode	Keeping Transmitting		Test Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11b mode, High Channel, Horizontal				
2483.5MHZ	PK (dBμV/m)	49.68	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
802.11b mode, High Channel, Vertical				
2483.5MHZ	PK (dBμV/m)	54.08	Limit	74(dBμV/m)
	AV (dBμV/m)	44.56		54(dBμV/m)

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7.5 Restricted band Measurement

EUT	X2SR Water Change System		Model	X2SR
Mode	Keeping Transmitting		Test Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11g mode, Low Channel, Horizontal				
2390MHZ	PK (dBμV/m)	49.38	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
802.11g mode, Low Channel, Vertical				
2390MHZ	PK (dBμV/m)	53.81	Limit	74(dBμV/m)
	AV (dBμV/m)	44.62		54(dBμV/m)

7.5 Restricted band Measurement

EUT	X2SR Water Change System		Model	X2SR
Mode	Keeping Transmitting		Test Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11g mode, High Channel, Horizontal				
2483.5MHZ	PK (dBμV/m)	54.78	Limit	74(dBμV/m)
	AV (dBμV/m)	45.63		54(dBμV/m)
802.11g mode, High Channel, Vertical				
2483.5MHZ	PK (dBμV/m)	59.89	Limit	74(dBμV/m)
	AV (dBμV/m)	49.78		54(dBμV/m)

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7.5 Restricted band Measurement

EUT	X2SR Water Change System		Model	X2SR
Mode	Keeping Transmitting		Test Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11n HT20 mode, Low Channel, Horizontal				
2390MHZ	PK (dBμV/m)	48.86	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
802.11n HT20 mode, Low Channel, Vertical				
2390MHZ	PK (dBμV/m)	49.96	Limit	74(dBμV/m)
	AV (dBμV/m)	46.22		54(dBμV/m)

7.5 Restricted band Measurement

EUT	X2SR Water Change System		Model	X2SR
Mode	Keeping Transmitting		Test Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11n HT20 mode, High Channel, Horizontal				
2483.5MHZ	PK (dBμV/m)	56.33	Limit	74(dBμV/m)
	AV (dBμV/m)	47.26		54(dBμV/m)
802.11n HT20 mode, High Channel, Vertical				
2483.5MHZ	PK (dBμV/m)	60.71	Limit	74(dBμV/m)
	AV (dBμV/m)	51.41		54(dBμV/m)

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8.0 Antenna Requirement

8.1 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Antenna Connected construction

Integral antenna with 2.00mm IPEX MHF Micro-Coaxial RF connector. The gain of the antennas is 5.0dBi maximum. (Get from the antenna specification provided the applicant)

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9.0 FCC ID Label

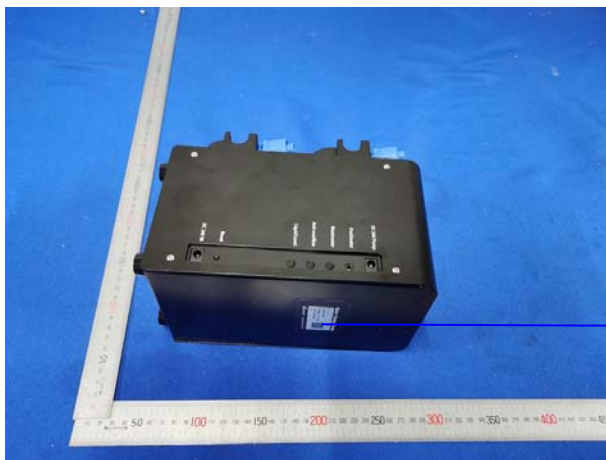
FCC ID: 2A5EG-X2SR

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



Label Location

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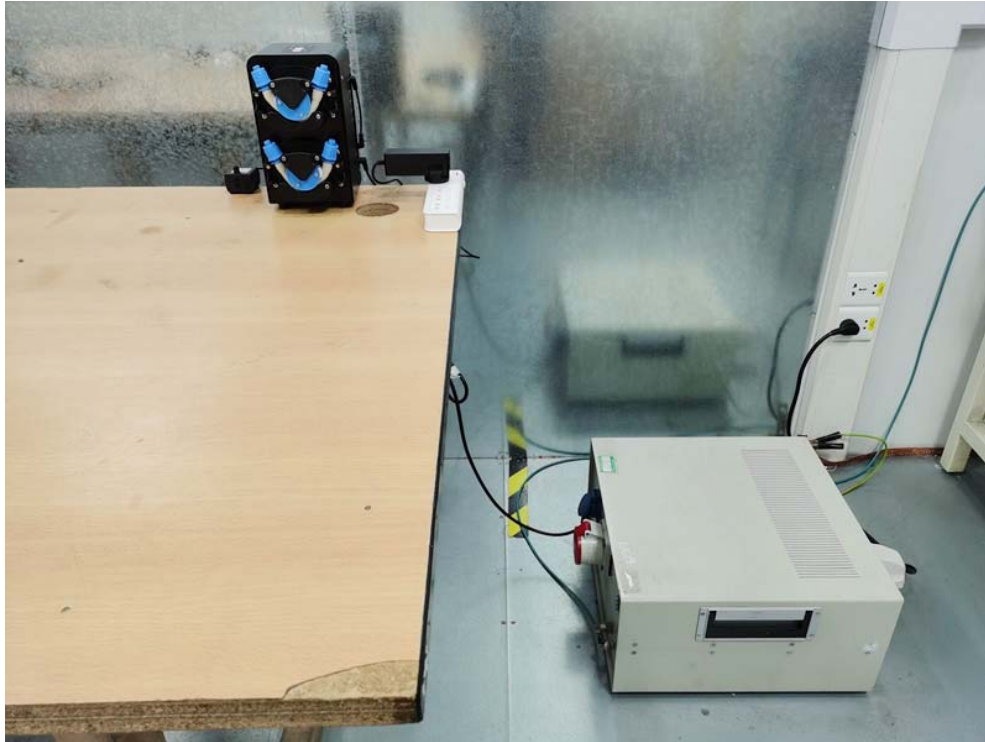
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10.0 Photo of testing

Conducted Emission Test Setup:



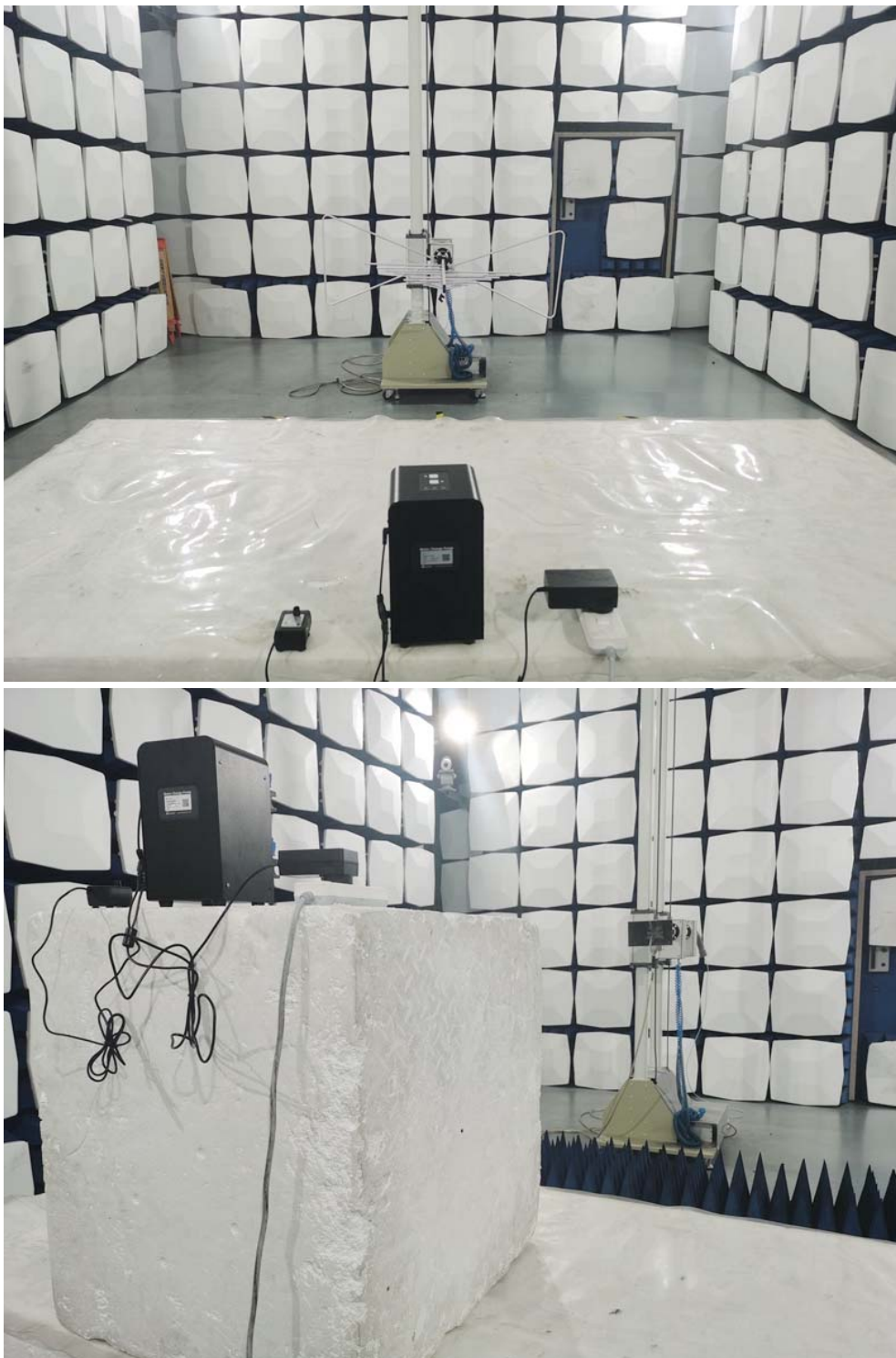
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Radiated Emission Test Setup:



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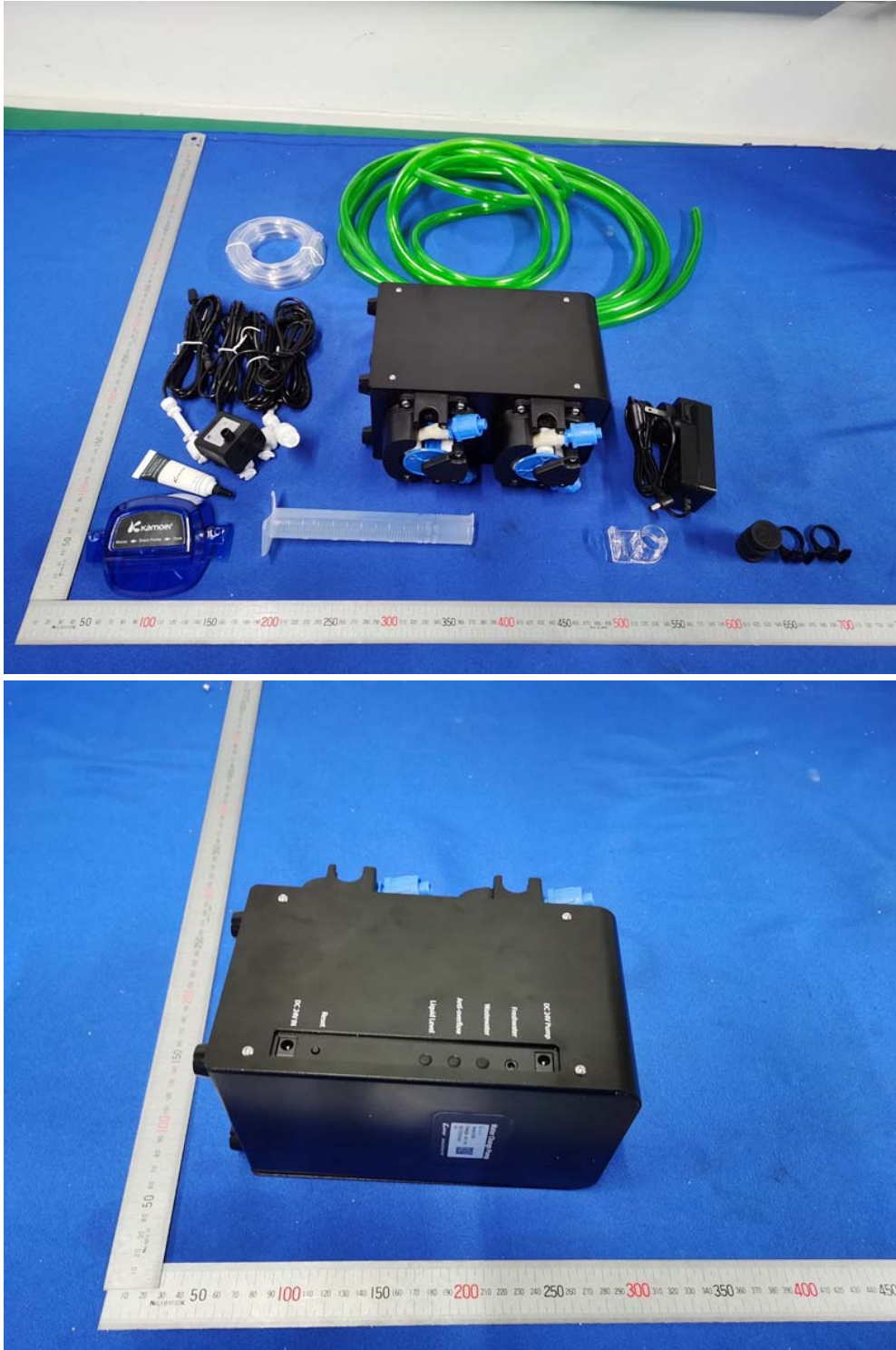
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Photographs – EUT

Outside View



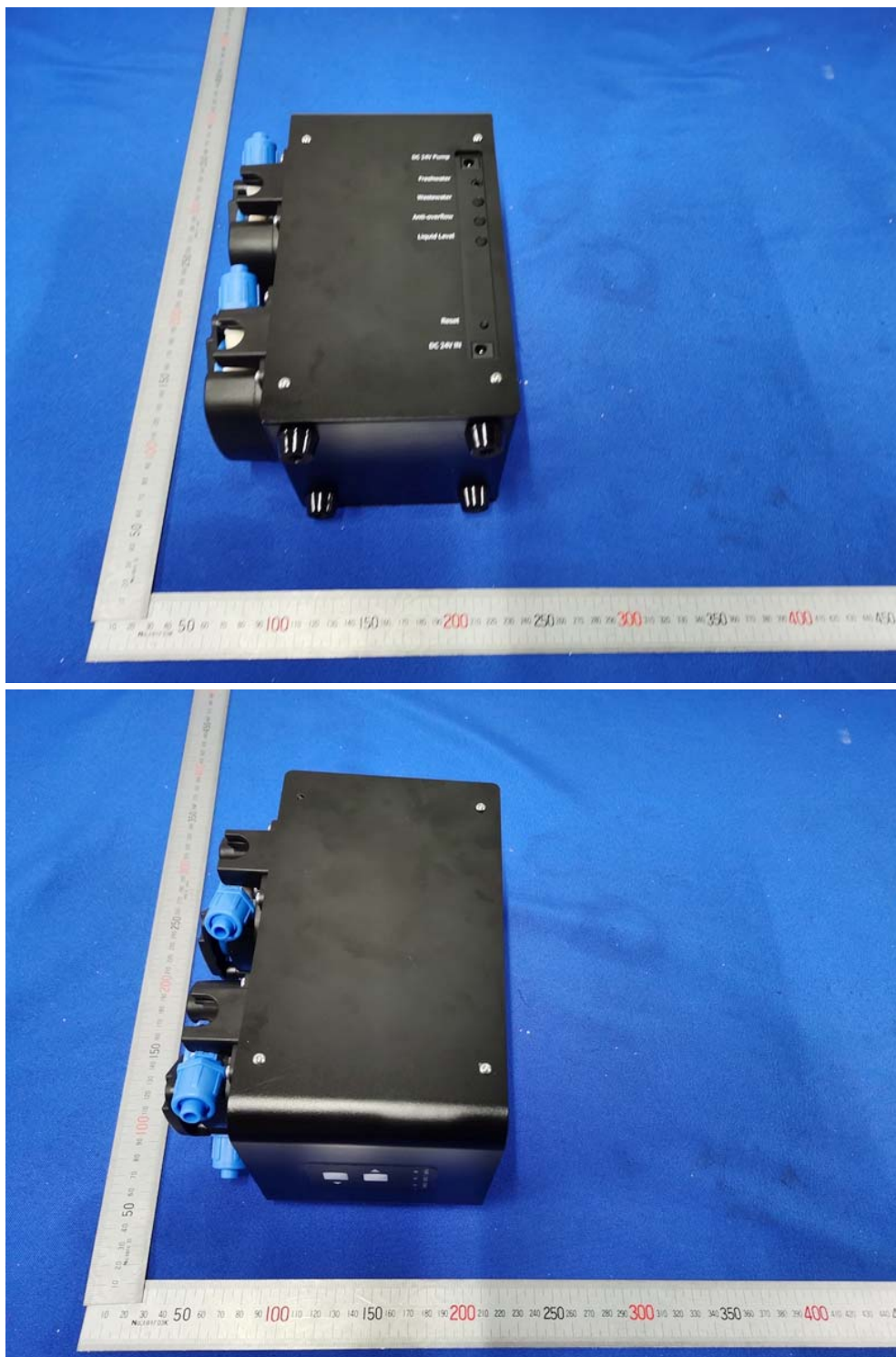
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Outside View



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Outside View



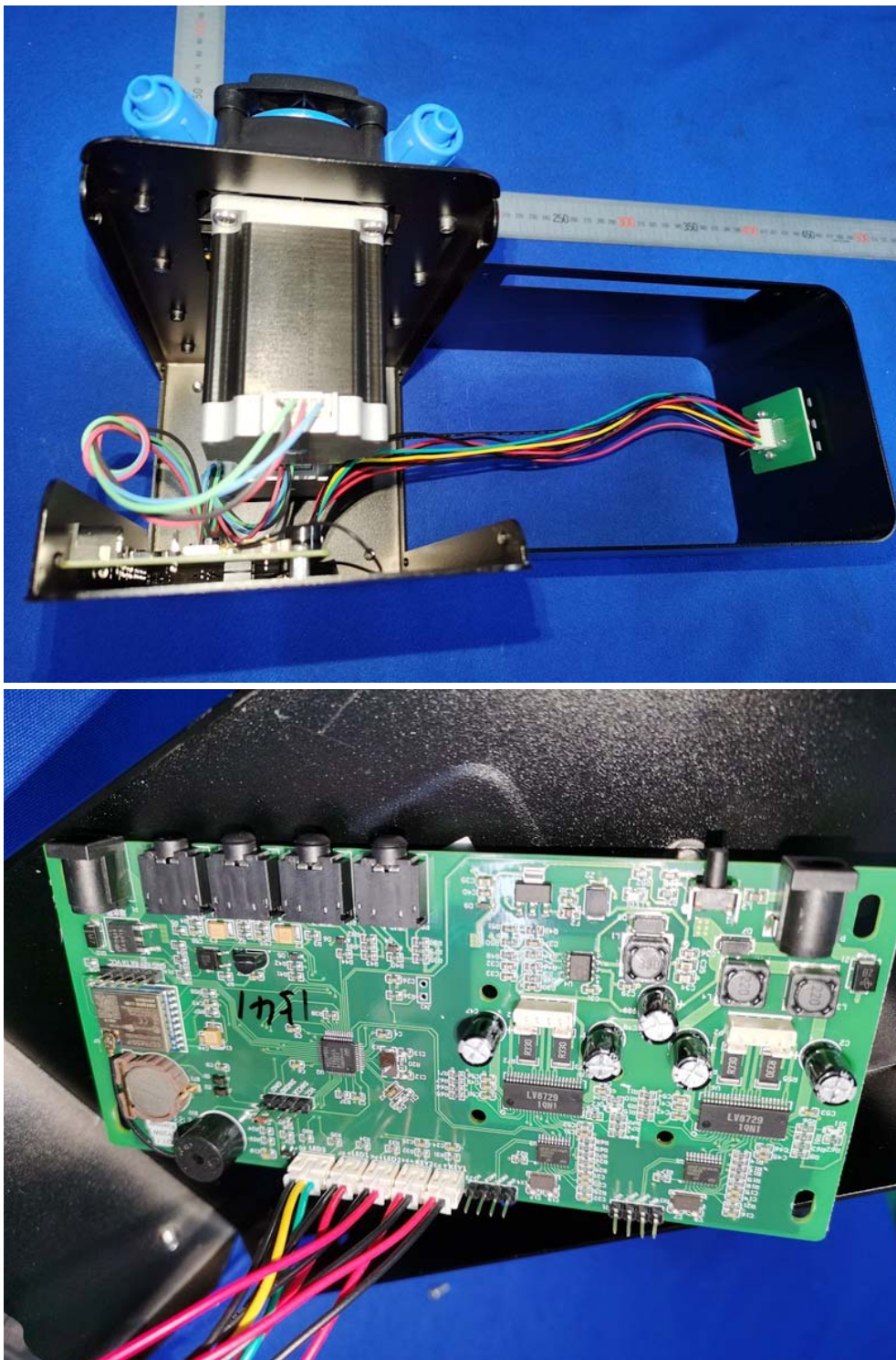
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Inside view



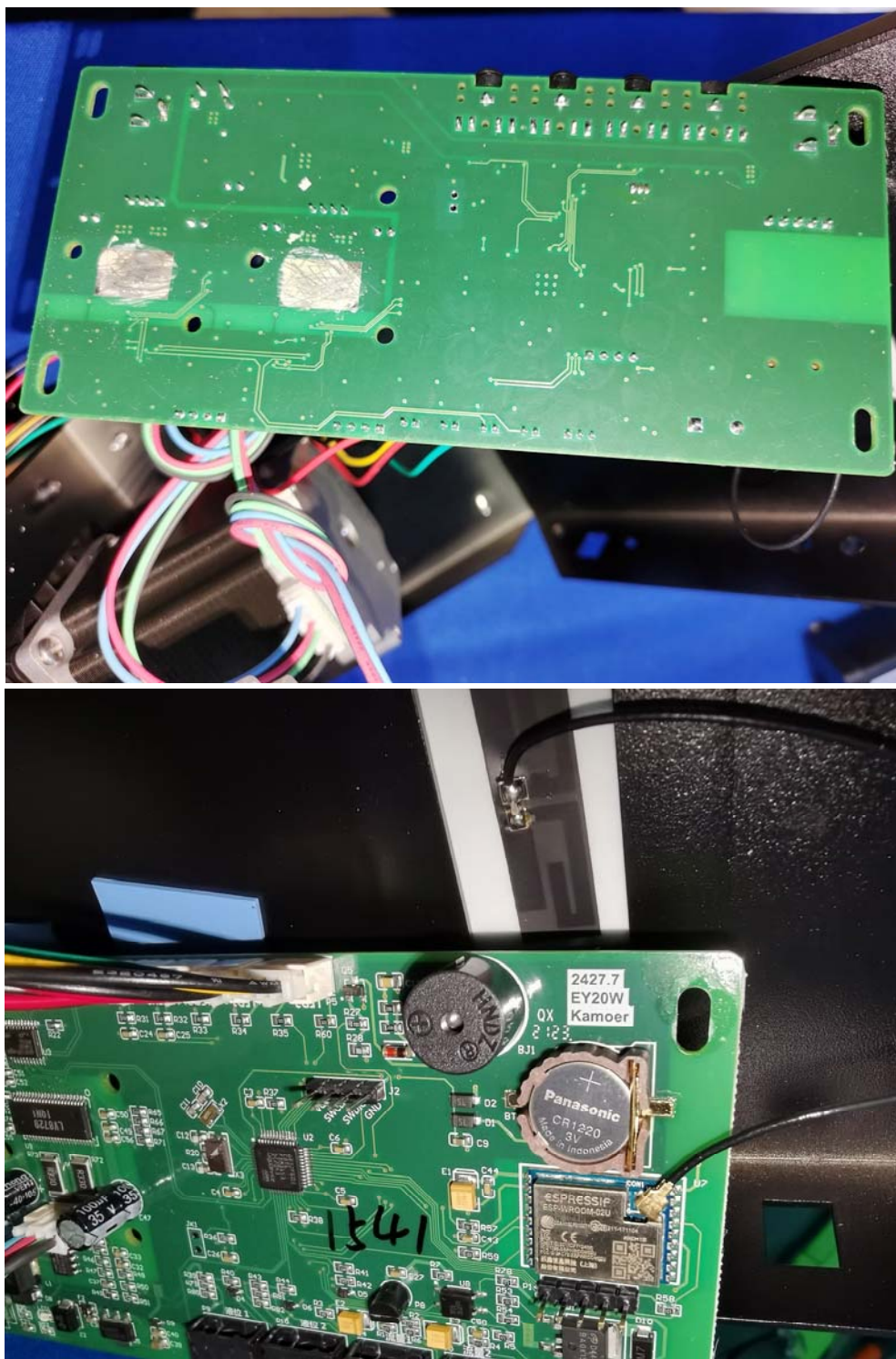
The report refers only to the sample tested and does not apply to the bulk.

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Inside view



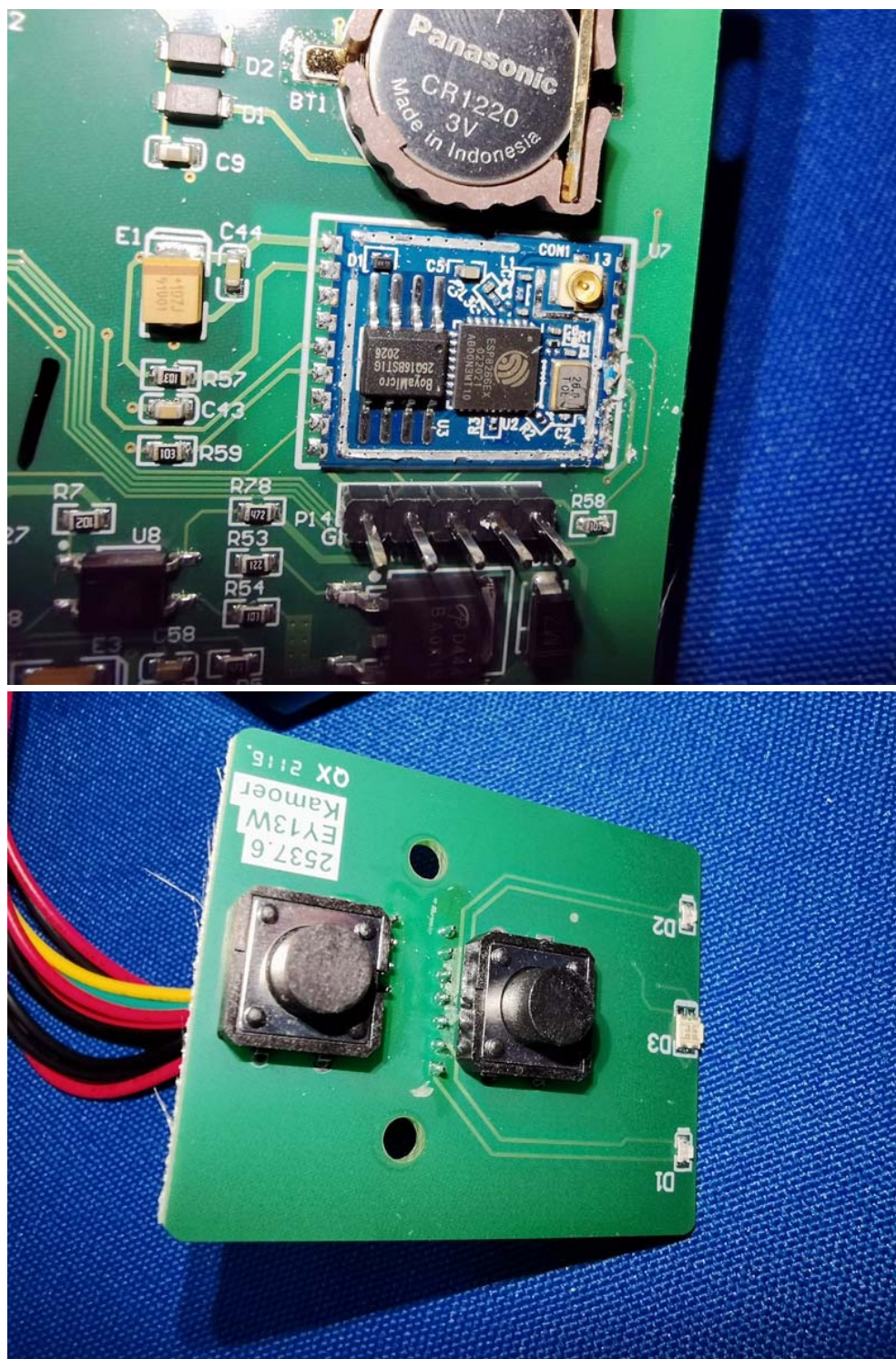
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Inside view



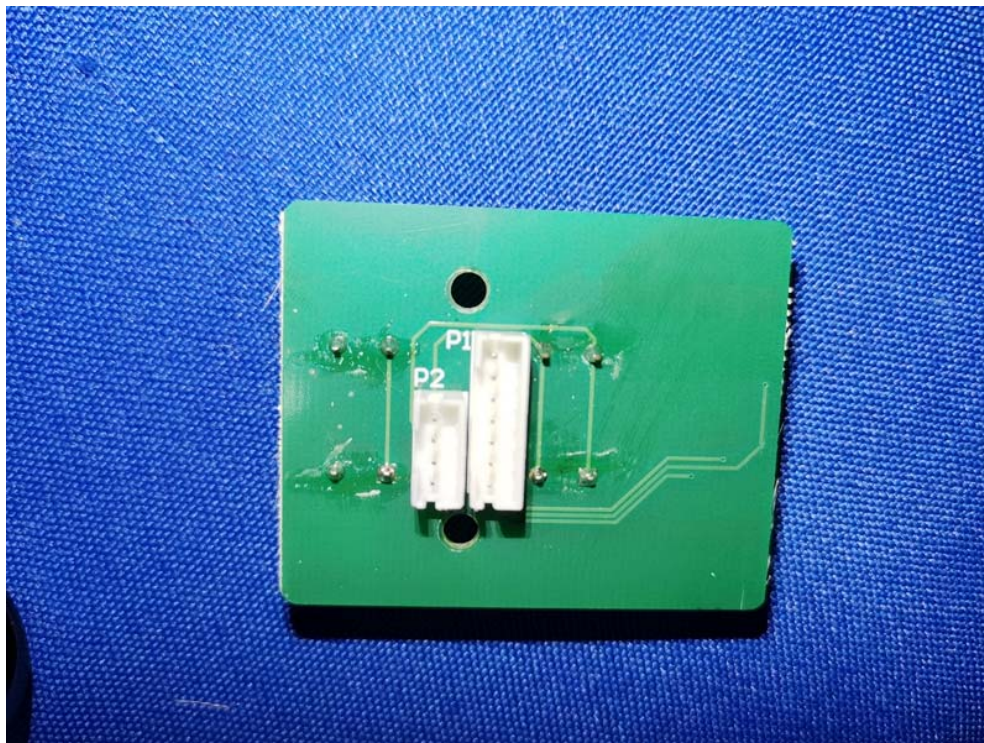
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Inside view



-End of the report-

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