

Applicant: Eastern Times Technology Co.,Ltd

Product: 3 MODES MECHANICAL KEYBOARD HOT-SWAPPABL

Model No.: K596RGB-PRO, ET-8977

Trademark: **REDRAGON** 

Test Standards: FCC Part 15.249

It is herewith confirmed and found to comply with the Test result:

requirements set up by ANSI C63.10 & FCC Part 15 Subpart C, 15.249 regulations for the evaluation

electromagnetic compatibility

Approved By

Terry Tang

Manager

Dated: August 28, 2024

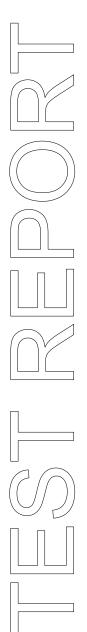
Results appearing herein relate only to the sample tested

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



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Date: 2024-08-28



## **Special Statement:**

## 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

CAB identifier: CN0033

Date: 2024-08-28



# **Test Report Conclusion**

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Photo of Test Setup and EUT View....

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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 on File with the Federal Communications Commission – United Sates

Registration Number: 744189 For 3m Anechoic Chamber

#### 1.2 Applicant Details

Applicant: Eastern Times Technology Co.,Ltd

Address: Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town, Dongguan City,

Guangdong, China.

Telephone: -Fax: --

## 1.3 Description of EUT

Product: 3 MODES MECHANICAL KEYBOARD HOT-SWAPPABL

Manufacturer: Eastern Times Technology Co.,Ltd

Address: Building D, Nan An Industrial Area, Youganpu Village, Fenggang Town,

Dongguan City, Guangdong, China.

Trademark: REDRAGON
Model Number: K596RGB-PRO

Additional Model Name ET-8977

Rating: Input: DC5V, 780mA or DC3.7V, 280mA

Battery: DC3.7V, 2500mAh Li-ion battery

Hardware Version: 8977-A TX V1

Software Version: 02EC

Serial No.: RDK596RGB-PRO23103000929

Operation Frequency: 2405-2475MHz

Channel Number: 16

Channel List (Unit: MHz): 2405, 2463, 2441, 2426, 2408, 2466, 2445, 2422, 2414, 2471, 2459, 2433,

2419, 2475, 2453, 2447

Antenna Designation PCB antenna with gain 2.34dB maximum (Get from the antenna specification)

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1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2023-12-27 to 2024-01-06

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%

Conducted Emissions Uncertainty = 3.6dB

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

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	2023-07-14	2024-07-13
LISN	R&S	EZH3-Z5	100294	2023-07-14	2024-07-13
LISN	R&S	EZH3-Z5	100253	2023-07-14	2024-07-13
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2023-07-14	2024-07-13
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2023-07-14	2024-07-13
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2023-07-14	2024-07-13
Power sensor	Anritsu	MA2491A	32263	2023-07-14	2024-07-13
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic			N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2023-07-14	2024-07-13
EMI Test Receiver	RS	ESCS 30	834115/006	2023-07-14	2024-07-13
Spectrum	HP/Agilent	E4407B	MY50441392	2023-07-14	2024-07-13
Spectrum	RS	FSP	1164.4391.38	2023-07-14	2024-07-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	-	2023-07-14	2024-07-13
RF Cable	Zhengdi	7m		2023-07-14	2024-07-13
Pre-Amplifier	Schwarebeck	BBV9743	#218	2023-07-14	2024-07-13
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2023-07-14	2024-07-13
LISN	SCHAFFNER	NNB42	00012	2023-07-14	2024-07-13
ESPI Test Receiver	R&S	ESPI 3	100379	2023-07-14	2024-07-13
LISN	R&S	EZH3-Z5	100294	2023-07-14	2024-07-13

## 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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#### 3.0 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 15.249(a) & 15.249(b) Limit	Field Strength of Fundamental	Pass	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Band Edge Test	Pass	Complies
FCC Part 15.215(c)	20dB bandwidth	Pass	Complies

#### 3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.249, ANSI C63.4:2014 and ANSI C63.10:2013

#### 4.0 EUT Modification

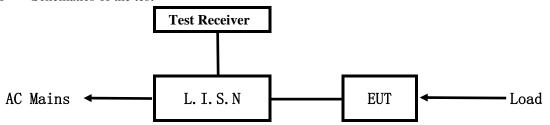
No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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#### 5.0 Power Line Conducted Emission Test

#### 5.1 Schematics of the test

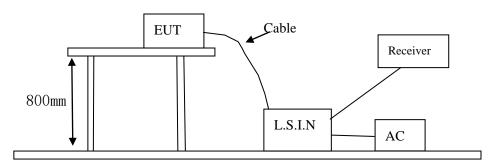


**EUT: Equipment Under Test** 

#### 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 500hm/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.

16 channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
3 MODES MECHANICAL	Eastern Times Technology		
KEYBOARD	CoLtd	K596RGB-PRO, ET-8977	TUVET-8977A
HOT-SWAPPABL	Co.,Liu		

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#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

## C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	KEYU	KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A;
			Output: DC5V, 2A

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	Limits (d	lB μ V)
(MHz)	Quasi-peak Level	Average Level
$0.15 \sim 0.50$	66.0~56.0*	56.0~46.0*
$0.50 \sim 5.00$	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:

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

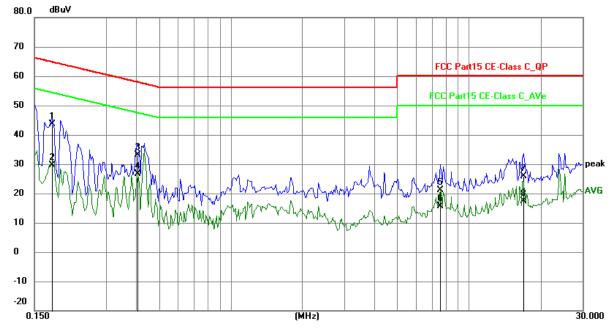
## **EUT Operating Environment**

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging and Keep 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	0.1773	33.93	9.77	43.70	64.61	-20.91	QP	Р
2	0.1773	19.88	9.77	29.65	54.61	-24.96	AVG	Р
3	0.4074	23.25	9.76	33.01	57.70	-24.69	QP	Р
4	0.4074	16.96	9.76	26.72	47.70	-20.98	AVG	Р
5	7.5942	11.09	10.04	21.13	60.00	-38.87	QP	Р
6	7.5942	5.61	10.04	15.65	50.00	-34.35	AVG	Р
7	16.9854	15.38	10.50	25.88	60.00	-34.12	QP	Р
8	16.9854	6.98	10.50	17.48	50.00	-32.52	AVG	Р

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

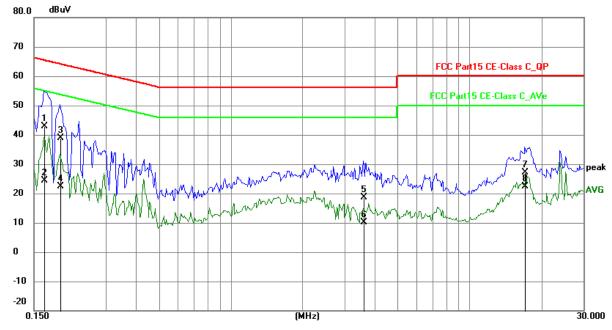
**EUT Operating Environment** 

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging and Keep 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	0.1655	33.09	9.77	42.86	65.18	-22.32	QP	Р
2	0.1655	14.62	9.77	24.39	55.18	-30.79	AVG	Р
3	0.1929	29.03	9.75	38.78	63.91	-25.13	QP	Р
4	0.1929	12.74	9.75	22.49	53.91	-31.42	AVG	Р
5	3.5928	8.70	9.87	18.57	56.00	-37.43	QP	Р
6	3.5928	0.38	9.87	10.25	46.00	-35.75	AVG	Р
7	17.0712	16.53	10.50	27.03	60.00	-32.97	QP	Р
8	17.0712	11.87	10.50	22.37	50.00	-27.63	AVG	Р

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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 9kHz to 25 GHz was investigated. The frequency spectrum is set as follows:

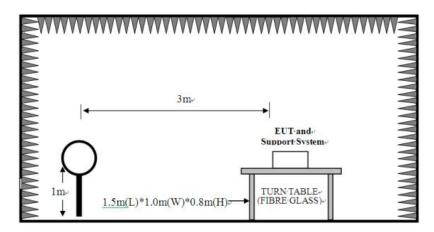
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
ADOVE IGHZ	Peak	1MHz	10Hz	Average

(Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz). 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) The antenna polarization: Vertical polarization and Horizontal polarization.

#### **Block diagram of Test setup**

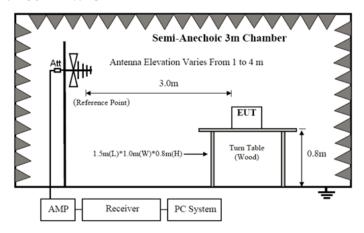
For radiated emissions from 9kHz to 30MHz



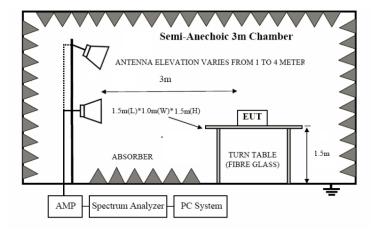
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For radiated emissions from 30MHz to1GHz



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:

## A FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Fundamental Frequency	Field Stre	ength of Fundamental (3m)	Field Strength of Harmonics (3m)		
(MHz)	mV/m	dBuV/m	uV/m	dBuV/m	

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	1			1	· ·	· · · · · · · · · · · · · · · · · · ·
2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)
2400-2403.3	30	74 (Average)	114 (Peak)	300	54 (Average)	/4 (1 Cak)

Note:

- 1. RF Field Strength  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

## B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
0.009-0.490	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-80	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage  $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
- 5. Battery fully charged was used during the test.

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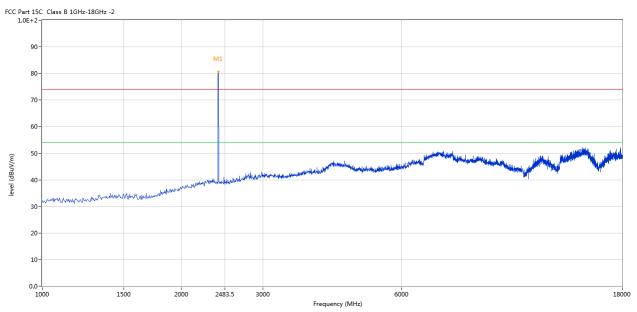


#### 6.5 Test result

## **A** Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2405MHz

#### **Horizontal**



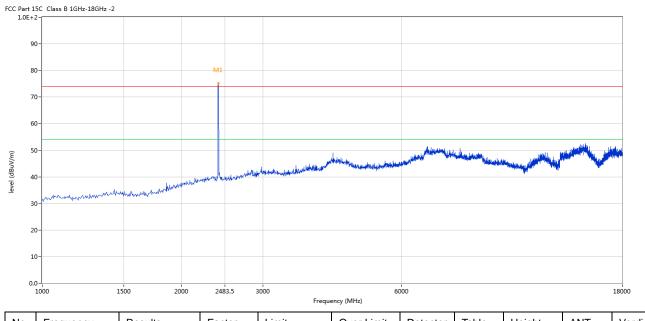
	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
Ī	1	2405	80.59	-3.57	114.0	-33.41	Peak	73.00	100	Horizontal	Pass

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## Vertical



	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
Ī	1	2405	75.16	-3.57	114.0	-38.84	Peak	5.00	100	Vertical	Pass

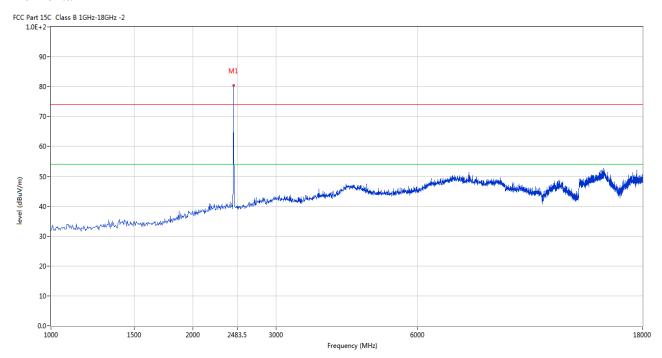
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Please refer to the following test plots for details: Middle Channel-2441MHz

#### **Horizontal**



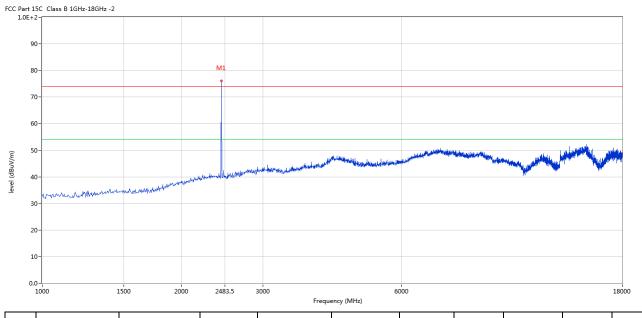
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	80.37	-3.57	114.0	-33.63	Peak	297.00	100	Horizontal	Pass

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## Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	76.02	-3.57	114.0	-37.98	Peak	69.00	100	Vertical	Pass

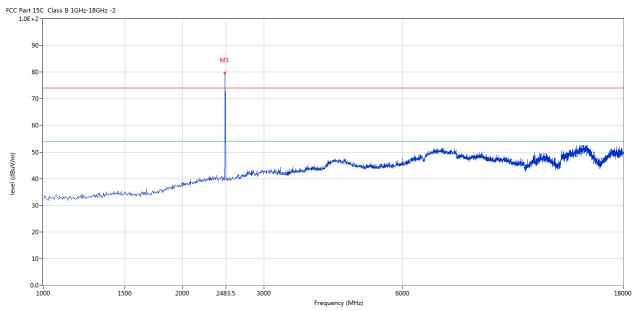
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Please refer to the following test plots for details: High Channel-2475MHz

#### **Horizontal**



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2475	79.65	-3.57	114.0	-34.35	Peak	218.00	100	Horizontal	Pass

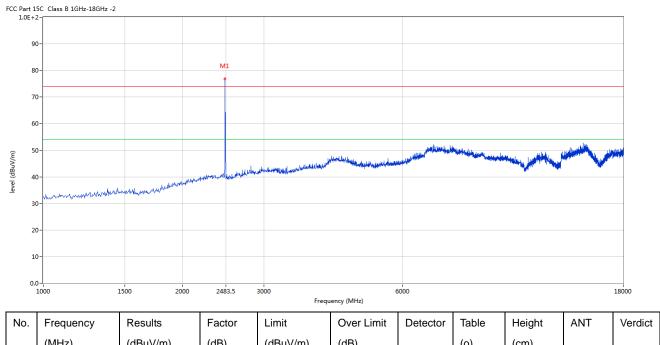
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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2475	76.80	-3.57	114.0	-37.20	Peak	327.00	100	Vertical	Pass

Note: (1) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

- (2) Margin=Emission-Limits
- (3) According to section 15.35(b), the peak limit is 20dB higher than the average limit
- (4) For test purpose, keep EUT continuous transmitting
- (5) For emission above 18GHz and Below 30MHz, It is only the floor noise and less than the limit for more than 20dB. No necessary to take down.
- (6) the measured PK value less than the AV limit.

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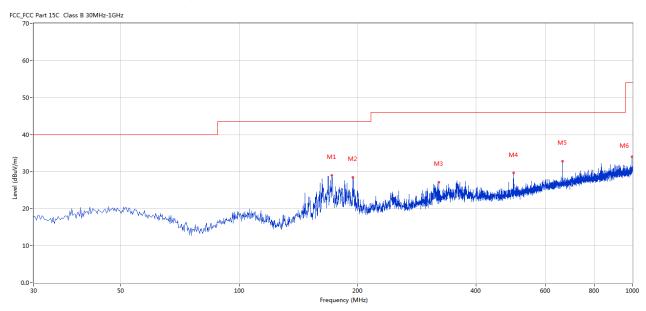


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results:** Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	172.069	28.98	-15.92	43.5	14.52	Peak	274.00	100	Horizontal	Pass
2	194.616	28.50	-13.82	43.5	15.00	Peak	279.00	100	Horizontal	Pass
3	321.897	27.12	-10.52	46.0	18.88	Peak	1.00	100	Horizontal	Pass
4	499.120	29.60	-7.01	46.0	16.40	Peak	251.00	100	Horizontal	Pass
5	664.706	32.86	-4.40	46.0	13.14	Peak	283.00	100	Horizontal	Pass
6	997.576	33.99	-1.24	54.0	20.01	Peak	285.00	100	Horizontal	Pass

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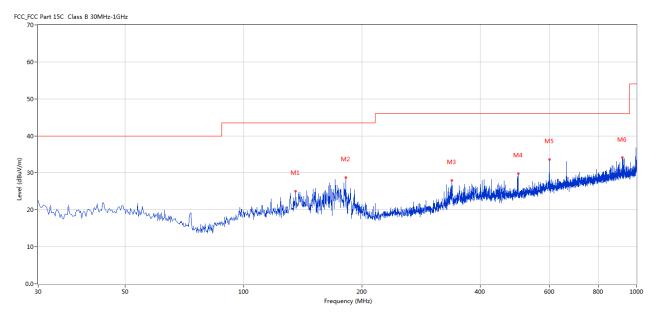


## Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Margin	Detector	Table	Height	Antenna	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(Degree)	(cm)		
1	135.461	25.00	-17.16	43.5	18.50	Peak	230.00	100	Vertical	Pass
2	182.009	28.77	-15.03	43.5	14.73	Peak	230.00	100	Vertical	Pass
3	338.625	27.90	-9.76	46.0	18.10	Peak	295.00	100	Vertical	Pass
4	499.605	29.83	-6.94	46.0	16.17	Peak	193.00	100	Vertical	Pass
5	599.975	33.59	-4.95	46.0	12.41	Peak	115.00	100	Vertical	Pass
6	921.450	34.08	-1.70	46.0	11.92	Peak	324.00	100	Vertical	Pass

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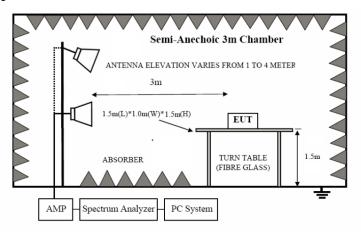


#### 7. Band Edge

#### 7.1 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) Set Spectrum as RBW=1MHz, VBW=3MHz and Peak detector used for PK value. RBW=1MHz, VBW=10Hz and Peak detector used for AV value.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) The antenna polarization: Vertical polarization and Horizontal polarization.

## 7. 2 Radiated Test Setup



For the actual test configuration, please refer to the related items – Photos of Testing

## 7.3 Configuration of the EUT

Same as section 5.3 of this report

## 7.4 EUT Operating Condition

Same as section 5.4 of this report.

## 7.5 Band Edge Limit

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 Section 15.209, whichever is the lesser attenuation.

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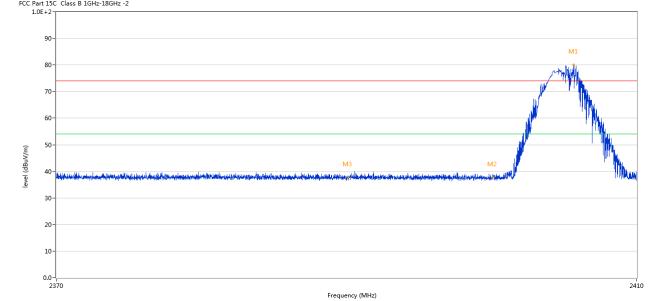
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#### 7.6 Test Result

Duoduoti	3 MODES MECHANICAL KEYBOARD	Dolometry	Horizontal
Product:	HOT-SWAPPABL	Polarity	ноптоппан
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	-	
FCC Part 15C Class B 1GHz-18(			
10212			



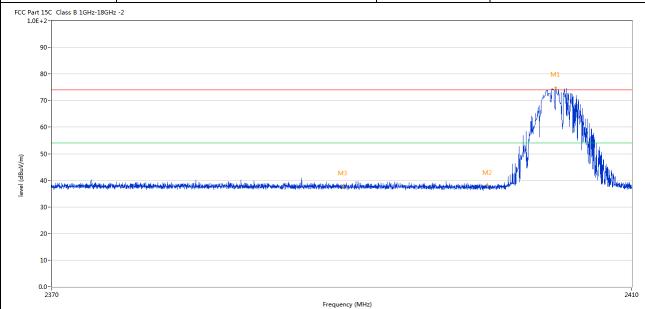
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2405.631	80.05	-3.57	74.0	6.05	Peak	156.00	100	Horizontal	N/A
2	2400.000	37.69	-3.57	74.0	-36.31	Peak	98.56	100	Horizontal	Pass
3	2390.000	37.73	-3.53	74.0	-36.27	Peak	182.00	100	Horizontal	Pass

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Product:	3 MODES MECHANICAL KEYBOARD HOT-SWAPPABL	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



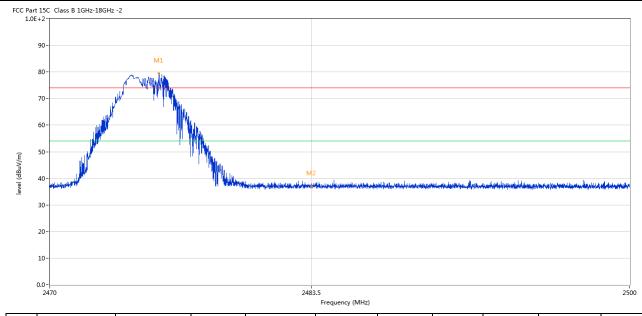
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2404.711	74.83	-3.57	74.0	0.83	Peak	51.00	100	Vertical	N/A
2	2400.000	37.96	-3.57	74.0	-36.04	Peak	190.44	100	Vertical	Pass
3	2390.000	37.69	-3.53	74.0	-36.31	Peak	173.50	100	Vertical	Pass

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Product:	3 MODES MECHANICAL KEYBOARD HOT-SWAPPABL	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	2475.624	79.39	-3.57	74.0	5.39	Peak	108.00	100	Horizontal	N/A
2	2483.500	36.94	-3.57	74.0	-37.06	Peak	24.43	100	Horizontal	Pass

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Product:		3 MODES		VICAL KEYI	BOARD	Detec	tor		Vertical	
	10000		HOT-SWA	APPABL		Bettee			VOITICUI	
	Mode	ŀ	ansmitting		Test Vo	ltage		DC3.7V		
Te	mperature	g. C,		Humidity			56% RH			
Te	est Result:		Pas	SS						
	rt 15C Class B 1GHz-18GHz E+2-	z -2								
1.0	90-									
	80-	M1								
		Company Military								
	70-	A MINING								
	60-	V 1.11UW	dat.							
			· · · · · · · · · · · · · · · · · · ·							
0	50-									
dBuV/m)	l W			M2						
level (dBuV/m)	50- 40-		Marian Control	M2	dlicornation for the business and complete about	- Sangarina bing weign win willyway i	الإرخان مشارف والمراوات	وختاب المستمارة عالم	هزد، دفريته دارفها ليسال أوسيد	and the property of the second
level (dBuV/m)	l W		Manua	M2	والعرب والمرابعة المساوان والعرب والموارد والمؤرسان	dan karanta da karanta	المرائد والمرائد والم	hidan marka kali ya dikula ili ya	هزه، دفيوه ماره المادن المادن المادنية المديدة	arty Marky Long ser, 194
level (dBuV/m)	40-		Madrica	M2	الأيدية والمرافقة المرافقة المرافقة والمرافقة	december with the second s	المرابعة والمرابعة والمراب	hippones and problems of the	هزه، طريبهمارلهاهالنستان المأحمدية	والمعالمة المعالمة ا
level (dBuV/m)	30- 20-		Market Control of the	M2	digeren freik hiljadikai eser uziden uziden uzide	rkanensan birar weken istanlihandi y	iq diaaddaadayaalqkd	kdarantan kadi pudak dari pu	هزه رهاري عداراتها والمتعادلة المتعادلة	ما در
level (dBuV/m)	30- 10-		A Annual Control of the Control of t	M2	المارية والمراوية وا	Augustudio este interior e	لىلومىنىنى شائلىدىن جۇ	king sing a disputation of	inne <mark>k je disk</mark> olone <u>n</u> ia naja	wiekliebykapir, pkl
level (dBuV/m)	30- 20-			M2	eginte e e e e e e e e e e e e e e e e e e	rhagainethrouse aigend <sub>e</sub>	de ciencido de ciencido de la constancida del constancida de la constancida del constancida de la cons	kidan pina kundhulanin.	innerfelired Alakana, de Ana	2500
level (dBuV/m)	30- 10-	Results	Factor		.5	Detector	Table	Height	ANT	ı
	30 - 20 - 10 - 2470	Results (dBuV/m)	Factor (dB)	2483.	.5 Frequency (MHz)	reserved to the second	N desirence respectively to the high	and the second s		250
	30- 20- 10- 2470			2483.	.5 Frequency (MHz)	reserved to the second	Table	Height		ı

Note: The PK emission level less than the AV limit. No necessary to record the AV emission level.

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## 8.0 Antenna Requirement

## **Applicable Standard**

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 shall be considered sufficient to comply with the provisions of this section.

This product has a PCB antenna with gain 2.34dBi maximum. It fulfills the requirement of this section.

Test Result: Pass

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#### 9.0 20dB Bandwidth Measurement

## **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 100kHz RBW and 300kHz VBW.

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

#### Limit

N/A

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#### **Test Result**

Product:	3 MODES MECHANICA KEYBOARD HOT-SWAPP	L Test Mo	de: Keep transmitting
Mode	Keeping Transmitting	Test Volt	age DC3.7V
Temperature	24 deg. C,	Humidi	ty 56% RH
Test Result:	Pass	Detecto	or PK
0dB Bandwidth	2.500MHz		
Ref 10 dB	m *Att 20 dB	*RBW 100 kHz 1 *VBW 300 kHz *SWT 5 ms	Marker 1 [T1 ] -3.37 dBm 2.404380000 GHz
-0	1 X	I	ndB [T1] 20 00 dB BW 2.500000000 MHz Temp 1 [T1 ndB] -23 41 dBm
10		M	2.403640000 GHz  Temp 2 [T1 ndb]  -23.64 dBm  2.406140000 GHz
30			
<u>-</u> 50			3DB
60			
70			
-90	05 GHz 500	kHz/	Span 5 MHz

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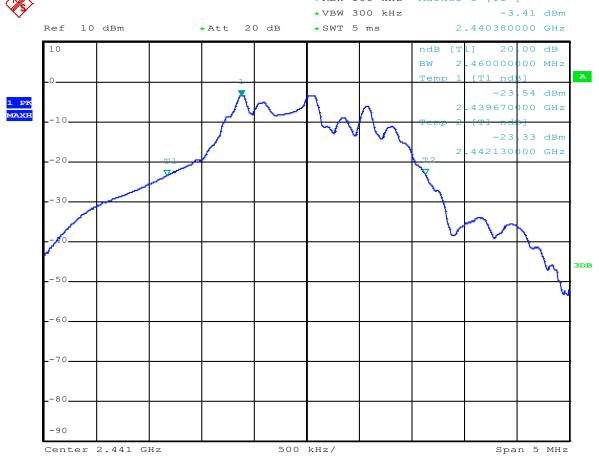
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Product:	Product: 3 MODES MECHANICAL KEYBOARD HOT-SWAPPABL		Keep transmitting			
Mode	Keeping Transmitting	Test Voltage	DC3.7V			
Temperature	emperature 24 deg. C,		56% RH			
Test Result:	Test Result: Pass		PK			
20dB Bandwidth	2.460MHz					
*RBW 100 kHz Marker 1 [T1 ]						



Date: 5.JAN.2024 11:17:07

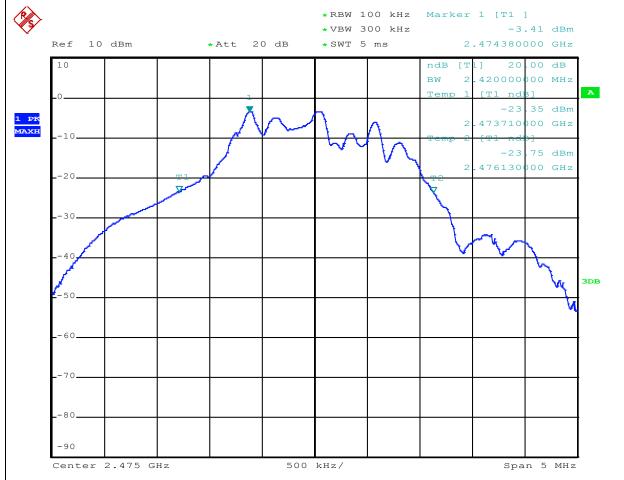
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Product:	3 MODES MECHANICAL KEYBOARD HOT-SWAPPABL	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	2.420MHz		-



Date: 5.JAN.2024 11:18:58

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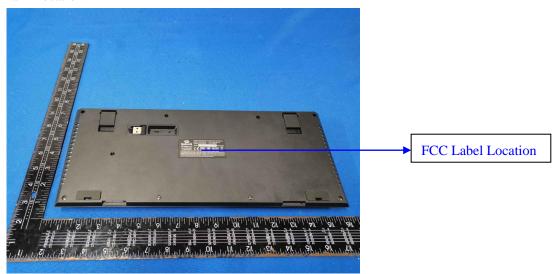
#### 10.0 FCC ID Label

#### FCC ID: TUVET-8977A

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:



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## 11.0 Photo of testing

## 11.1 Conducted test View



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#### Radiated emission test view



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#### 11.2 Photographs-EUT

#### Outside View



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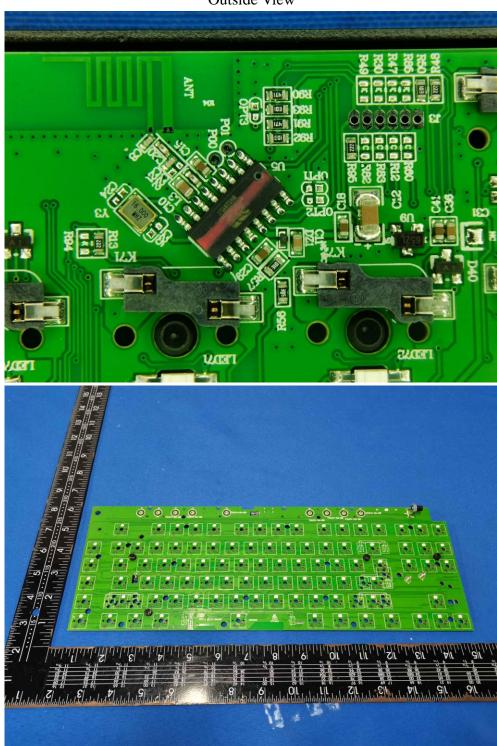
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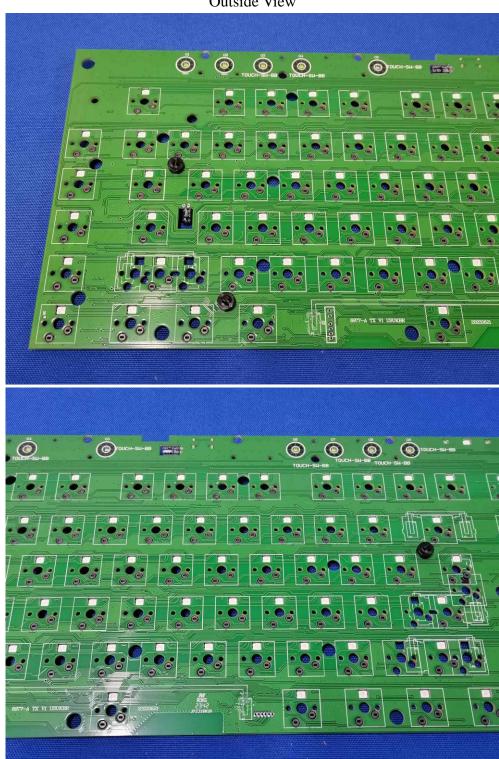
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## Outside View



-- End of the report--