

Applicant: Eastern Times Technology Co.,Ltd

Product: MECHANICAL KEYBOARD

Model No.: PC409A, ET-8531

Trademark: N/A

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: December 05, 2023

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: 2023-12-05



# **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

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# **Test Report Conclusion**

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FCC ID Label 10.0 33 Photo of Test Setup and EUT View.... 11.0

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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: MECHANICAL KEYBOARD

Manufacturer: Eastern Times Technology Co.,Ltd

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

Dongguan City, Guangdong, China.

Trademark: N/A
Model Number: PC409A
Additional Model Name ET-8531

Rating: Input: DC5V, 2A or DC3.7V

Battery: DC3.7V, 1600mAh Li-ion battery

Hardware Version: 8531-A TX V1

Software Version: 1E8E Serial No.: 23H11

Operation Frequency: 2403-2480MHz

Channel Number: 16

Channel List (Unit: MHz): 2403, 2424, 2441, 2461, 2414, 2435, 2450, 2470, 2409, 2429, 2455, 2475,

2419, 2445, 2465, 2480

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

2023-11-10 to 2023-12-05

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

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

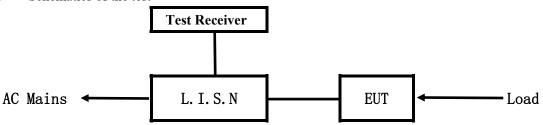
No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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#### 5.0 Power Line Conducted Emission Test

#### 5.1 Schematics of the test

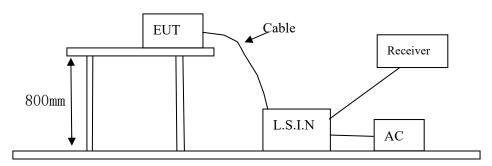


EUT: Equipment Under Test

#### 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 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.

16 channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
MECHANICAL	Eastern Times Technology	DC400 A ET 0521	TIMET 0521A
KEYBOARD	Co.,Ltd	PC409A, ET-8531	TUVET-8531A

#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
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NT/A		
IN/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 (dB 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:

Date: 2023-12-05



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

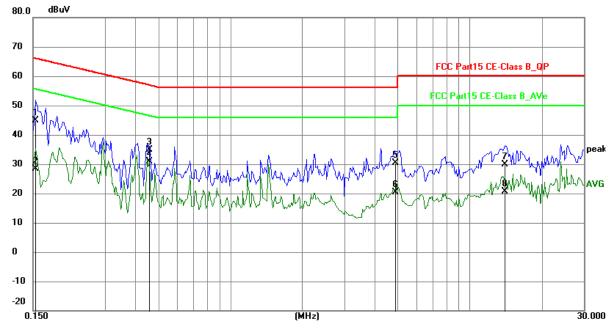
**EUT Operating Environment** 

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	0.1539	35.10	9.78	44.88	65.79	-20.91	QP	Р
2	0.1539	18.71	9.78	28.49	55.79	-27.30	AVG	Р
3	0.4581	25.04	9.77	34.81	56.73	-21.92	QP	Ч
4	0.4581	21.12	9.77	30.89	46.73	-15.84	AVG	Р
5	4.8759	20.34	9.92	30.26	56.00	-25.74	QP	Ч
6	4.8759	10.55	9.92	20.47	46.00	-25.53	AVG	Р
7	14.0370	19.50	10.34	29.84	60.00	-30.16	QP	Р
8	14.0370	10.26	10.34	20.60	50.00	-29.40	AVG	Р

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

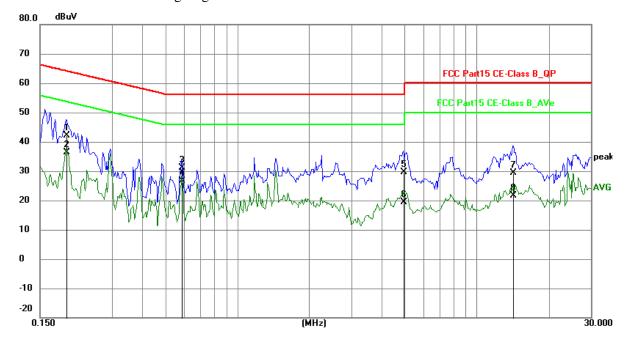
**EUT Operating Environment** 

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	0.1929	32.30	9.75	42.05	63.91	-21.86	QP	Р
2	0.1929	26.57	9.75	36.32	53.91	-17.59	AVG	Р
3	0.5868	21.31	9.77	31.08	56.00	-24.92	QP	Р
4	0.5868	16.88	9.77	26.65	46.00	-19.35	AVG	Р
5	4.9344	19.60	9.93	29.53	56.00	-26.47	QP	Р
6	4.9344	9.37	9.93	19.30	46.00	-26.70	AVG	Р
7	14.2086	19.05	10.35	29.40	60.00	-30.60	QP	Р
8	14.2086	11.27	10.35	21.62	50.00	-28.38	AVG	Р

Date: 2023-12-05



#### **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:

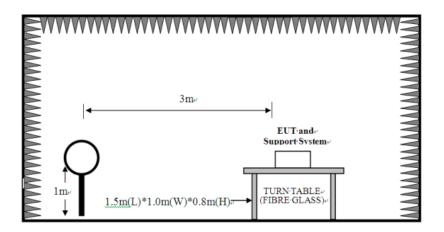
Frequency	Detector	Detector RBW		Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
ADOVE IGHZ	Peak	1MHz	10Hz	Average

(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**

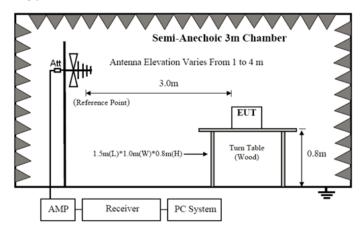
For radiated emissions from 9kHz to 30MHz



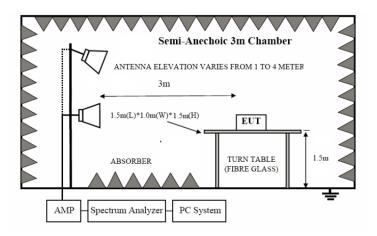
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For radiated emissions from 30MHz to1GHz



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

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2400-2483.5	0 94 (Avera	age) 114 (Peak)	500	54 (Average)	74 (Peak)
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Note:

- 1. RF Field Strength (dBuV) = 20 log RF 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.

	<u>.</u>	9 1
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 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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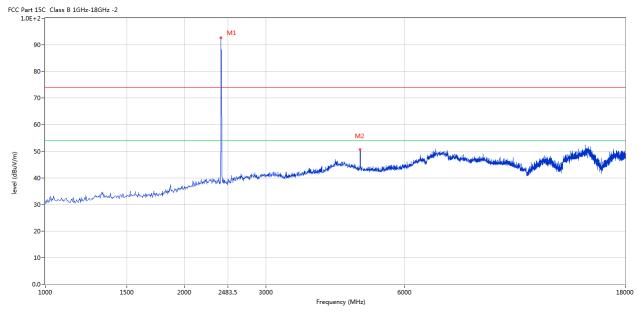


# 6.5 Test result

# A Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2403MHz

#### Horizontal



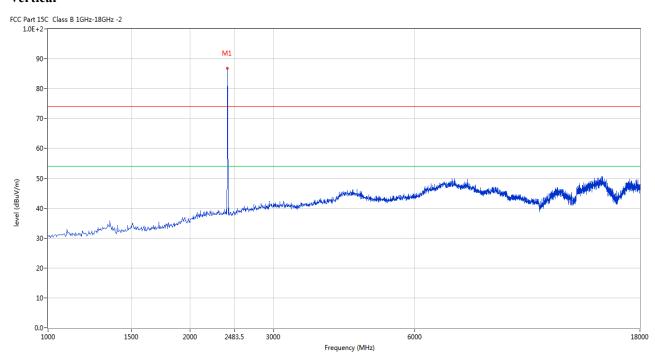
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2403	92.69	-3.57	114.0	-21.31	Peak	218.00	100	Horizontal	Pass
2	4802.799	50.72	3.12	74.0	-23.28	Peak	227.00	100	Horizontal	Pass

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## Vertical



Ī	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
ĺ	1	2403	86.87	-3.57	114.0	-27.13	Peak	138.00	100	Vertical	Pass

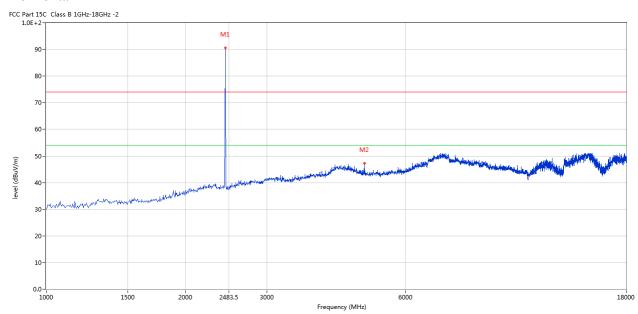
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Please refer to the following test plots for details: Middle Channel-2441MHz

#### Horizontal



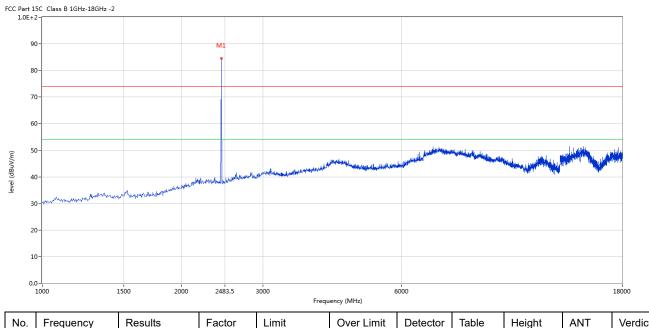
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	90.67	-3.57	114.0	-23.33	Peak	185.00	100	Horizontal	Pass
2	4879.280	47.28	3.20	74.0	-26.72	Peak	211.00	100	Horizontal	Pass

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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	84.54	-3.57	114.0	-29.46	Peak	148.00	100	Vertical	Pass

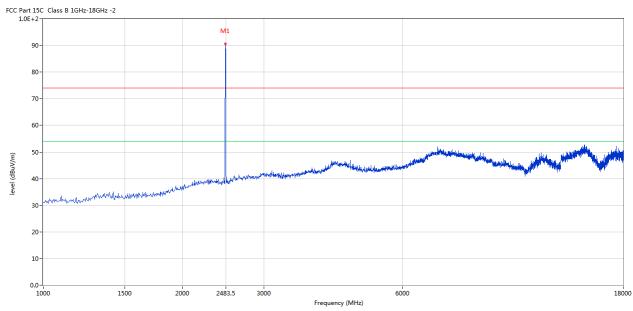
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Please refer to the following test plots for details: High Channel-2480MHz

#### Horizontal



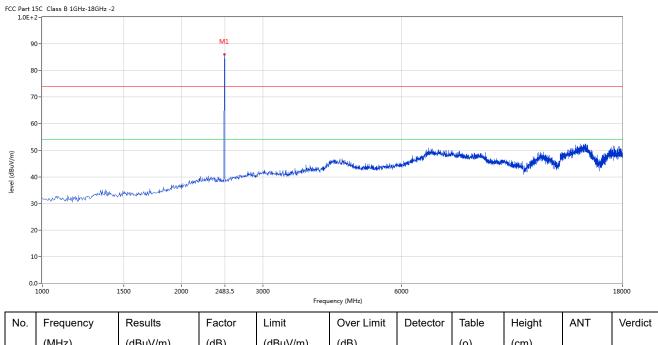
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	90.52	-3.57	114.0	-23.48	Peak	217.00	100	Horizontal	Pass

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#### Vertical



Ν	0.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1		2480	86.00	-3.57	114.0	-28.00	Peak	133.00	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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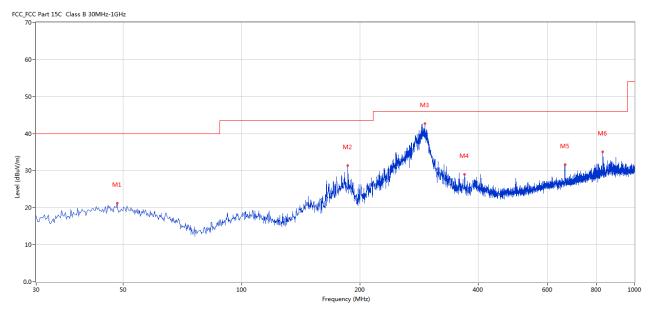


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

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	48.183	21.29	-11.26	40.0	18.71	Peak	56.00	100	Horizontal	Pass
2	186.373	31.39	-14.73	43.5	12.11	Peak	255.00	100	Horizontal	Pass
3	293.047	42.69	-11.27	46.0	3.31	Peak	342.00	100	Horizontal	Pass
4	369.658	29.02	-9.56	46.0	16.98	Peak	359.00	100	Horizontal	Pass
5	666.403	31.60	-4.50	46.0	14.40	Peak	295.00	100	Horizontal	Pass
6	830.050	35.11	-2.81	46.0	10.89	Peak	292.00	100	Horizontal	Pass

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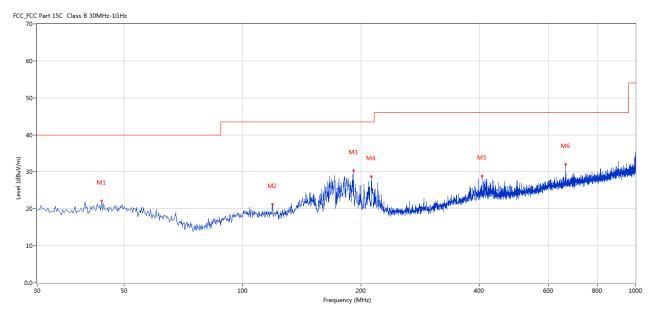


# Radiated Emission In Vertical (30MHz----1000MHz)

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	43.819	22.10	-11.48	40.0	17.90	Peak	56.00	100	Vertical	Pass
2	119.218	21.28	-15.13	43.5	22.22	Peak	47.00	100	Vertical	Pass
3	191.707	30.38	-14.11	43.5	13.12	Peak	212.00	100	Vertical	Pass
4	212.557	28.71	-13.67	43.5	14.79	Peak	192.00	100	Vertical	Pass
5	406.508	28.89	-8.66	46.0	17.11	Peak	306.00	100	Vertical	Pass
6	663.737	32.08	-4.42	46.0	13.92	Peak	344.00	100	Vertical	Pass

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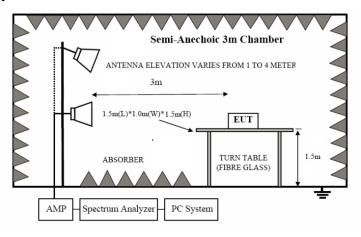


# 7. Band Edge

#### 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.

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

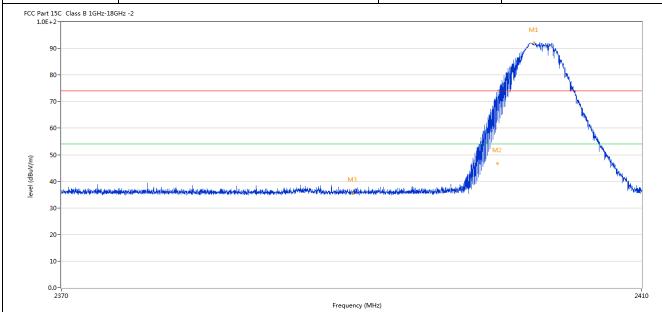
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#### 7.6 Test Result

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



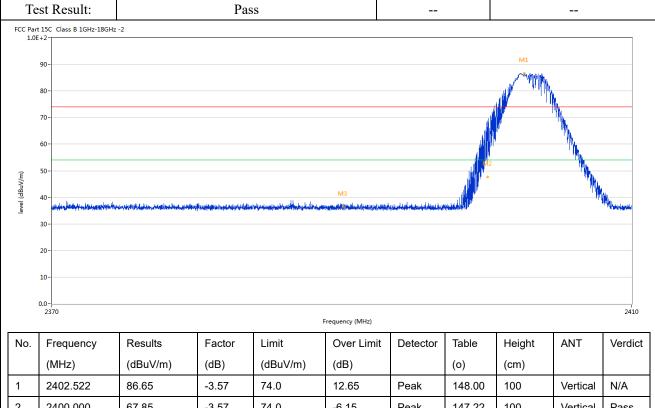
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(0)	(cm)		
1	2402.512	92.18	-3.57	74.0	18.18	Peak	206.00	100	Horizontal	N/A
2	2400.000	66.50	-3.57	74.0	-7.50	Peak	86.00	100	Horizontal	Pass
2**	2400.000	46.67	-3.57	54.0	-7.33	AV	86.00	100	Horizontal	Pass
3	2390.000	35.70	-3.53	74.0	-38.30	Peak	180.50	100	Horizontal	Pass

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Product:	MECHANICAL KEYBOARD	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)		
ſ	1	2402.522	86.65	-3.57	74.0	12.65	Peak	148.00	100	Vertical	N/A
ſ	2	2400.000	67.85	-3.57	74.0	-6.15	Peak	147.22	100	Vertical	Pass
ſ	2**	2400.000	47.74	-3.57	54.0	-6.26	AV	147.22	100	Vertical	Pass
	3	2390.000	36.34	-3.53	74.0	-37.66	Peak	252.00	100	Vertical	Pass

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2\*\*

2483.500

42.30

-3.57

54.0



Pro	oduct:	ME	CHANICA	AL KEYBOA	RD	P	olarity		Horizont	al
Mode Keeping Transmit					Transmitting Tes		Test Voltage		DC3.7V	
Temp	perature	24 deg. C,			Humidity		56% RH		I	
Test	Result:		P	Pass						
Part 15C (	Class B 1GHz-18GHz	-2						•		
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70-				***************************************						
60-	50-			<u> </u>						
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				M	2					
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	produktingskyriaen karvaktelleringskyriaen			M.	2 Mary Mary Mary Mary Mary Mary Mary Mary	h kara dina jahan dan karaban da	المتعام أوالتهم فيدري ومعالم	<del>ar ing adalah pananang panah</del>	provide trade to the second	المراجع <del>أخط</del> ا والمراجع المراجع
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30- 20- 10- 2470	O		Factor (dB)	248.	3.5 Frequency (MHz)	Detector	Table (o)	Height (cm)	ANT	Verd
30- 20- 10- 0.0- 2470	o Frequency	Results		248.	3.5 Frequency (MHz)	Detector		_	ANT Horizontal	1

-11.70

AV

208.29

100

Horizontal

Pass

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1	Product: MECHANICAL K			L KEYBOAR					Vertical	
	Mode	Keeping Transmitting			Test Voltage			DC3.7V		
Te	mperature		24 deg. C,			Humidity	56% RH			
Te	est Result:									
C Part	15C Class B 1GHz-18GHz	z -2						1		
			M1							
,	90-		العاملات	Milha						
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(Angr)	40 - Maria Alian Andrewski de A			M2	1 To Marine State and a second	المراجع	digent ekk <b>a</b> likan kaden	ndanikeli abaliken frakada	Makanagka ahiji nikalah ambah	hhitaine na haifh annsa.
II/Angn) Isasi	40 - Andread production with district and a second	Pik Aranjan a saisa di Aranjan a		M2	5	diginal lighter and the second and the second	ndigwal a ta in Millian da	nderdicija abaskop dalebida	Maryan di indicale ancidi	
II/Angan) Isaasi	40- 30- 20- 10- 2470	ga gg - Tytora di waratara 107	Factor	2483.	5 Frequency (MHz)					250
II/Angn) Isasi	40- 30- 20- 10- 2470 Frequency	Results	Factor	2483.	5 Frequency (MHz)	Detector	Table	Height	ANT	250
No.	40- 30- 20- 10- 2470 Frequency (MHz)	Results (dBuV/m)	(dB)	Limit (dBuV/m)	Frequency (MHz)  Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	250 Verdic
No.	20- 10- 2470 Frequency (MHz) 2479.493	Results (dBuV/m) 85.85	(dB) -3.57	2483.  Limit (dBuV/m) 74.0	Frequency (MHz)  Over Limit (dB)  11.85	Detector Peak	Table (o) 134.00	Height (cm)	ANT Vertical	verdic
No.	40- 30- 20- 10- 2470 Frequency (MHz)	Results (dBuV/m)	(dB)	Limit (dBuV/m)	Frequency (MHz)  Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	250 Verdic

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 30kHz RBW and 100kHz 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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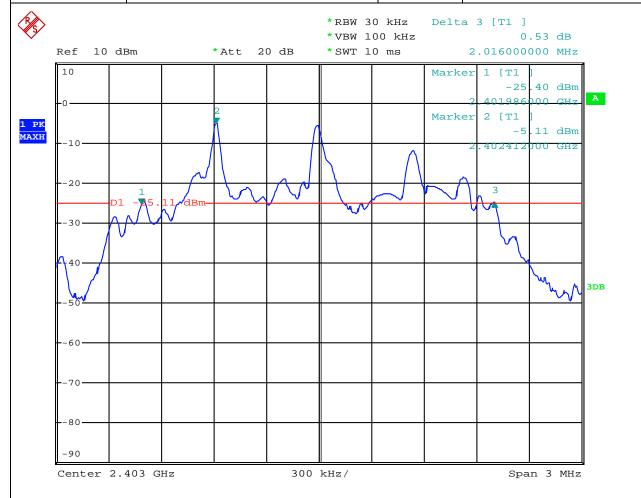
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#### **Test Result**

Product:	MECHANICAL KEYBOARD	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	2.016MHz		



Date: 2.DEC.2023 13:57:12

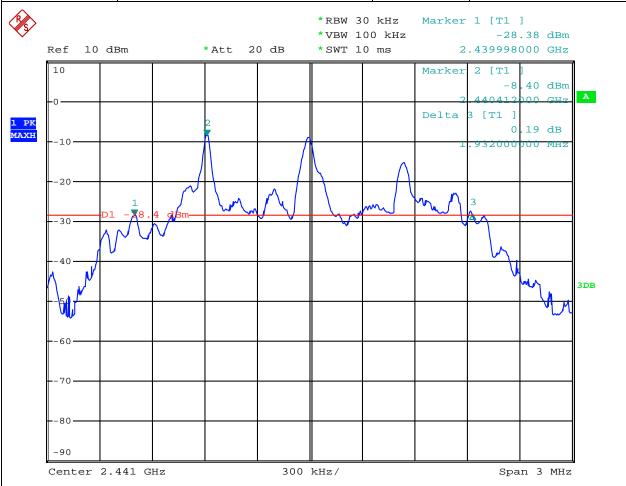
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Product:	MECHANICAL KEYBOARD	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.932MHz		



Date: 2.DEC.2023 14:00:50

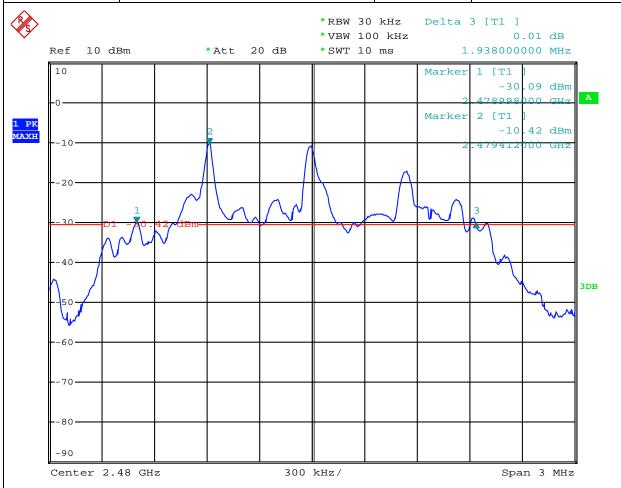
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Product:	MECHANICAL KEYBOARD	Test Mode:	Keep transmitting
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK
20dB Bandwidth	1.938MHz		



Date: 2.DEC.2023 14:03:37

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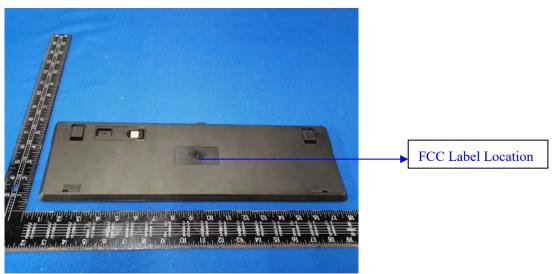
#### 10.0 FCC ID Label

#### FCC ID: TUVET-8531A

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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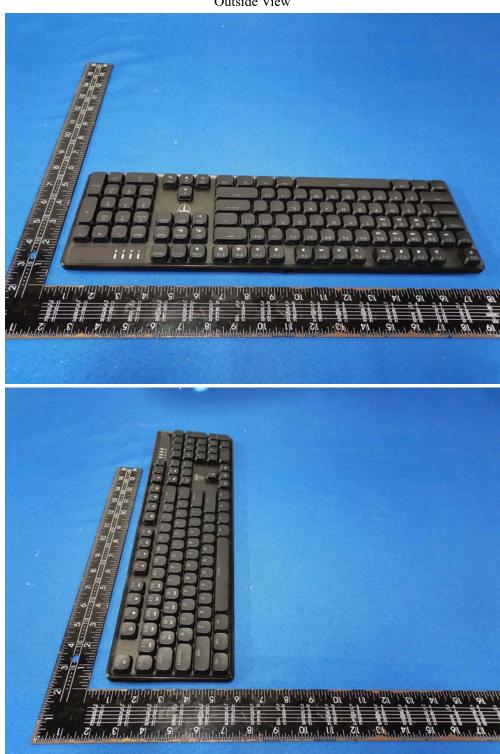
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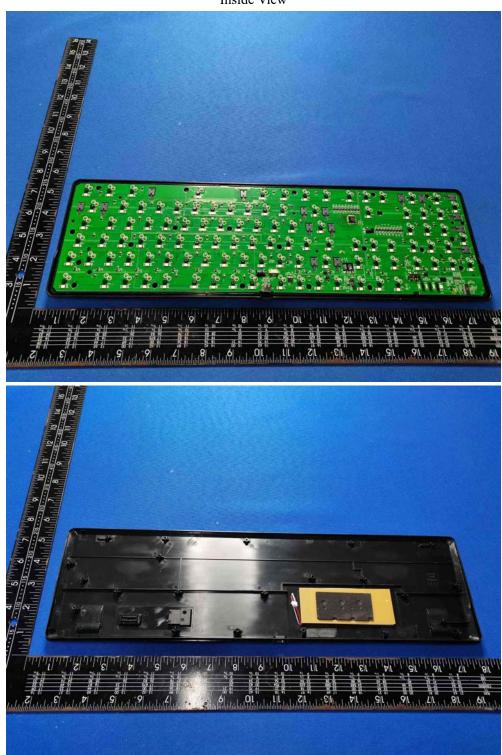
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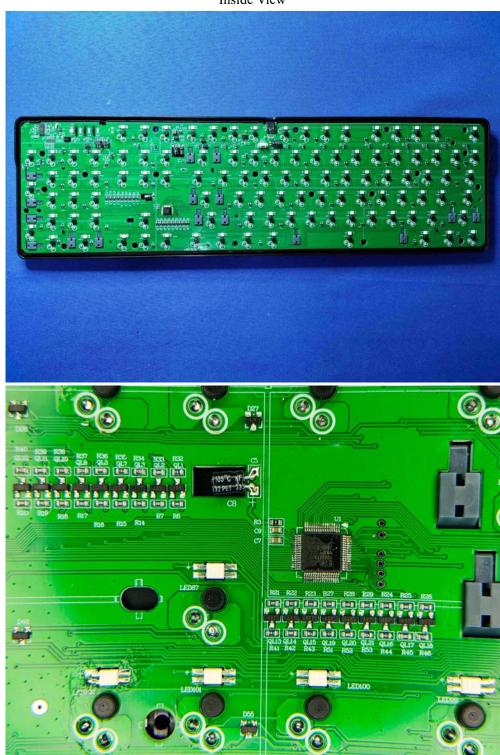
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Inside View



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# Inside View



-- End of the report--