

Applicant: Eastern Times Technology Co.,Ltd

Product: Mechanical Keyboard

Model No.: Z-94, ET-8941, ET-8927, ET-8907, TR94, TR95, ZA94, K940

Trademark: E-YOOSO

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: October 26, 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

Report No.: TW2307030-01E Page 2 of 42

Date: 2023-10-26



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: 2023-10-26



Test Report Conclusion

Content 1.0 General Details..... 1.1 Test Lab Details.... 1.2 Applicant Details. 4 1.3 Description of EUT 1.4 Submitted Sample.... 4 Test Duration. 1.5 5 1.6 5 Test Uncertainty. 1.7 Test By..... 5 List of Measurement Equipment..... 2.0 3.0 7 Technical Details..... 3.1 Summary of Test Results.... 7 3.2 7 Test Standards.... 4.0 EUT Modification. 7 Power Line Conducted Emission Test.... 5.0 8 Schematics of the Test..... 5.1 8 5.2 Test Method and Test Procedure. Configuration of the EUT..... 5.3 5.4 EUT Operating Condition. Conducted Emission Limit. 9 5.5 5.6 Test Result. 6.0 Radiated Emission test.... 12 Test Method and Test Procedure. 6.1 12 6.2 Configuration of the EUT..... 13 6.3 EUT Operation Condition. 13 Radiated Emission Limit. 6.4 13 6.5 Test Result. 15 7.0 Band Edge 23 7.1 Test Method and Test Procedure. 23 7.2 Radiated Test Setup. 23 7.3 Configuration of the EUT.... 23 7.4 EUT Operating Condition. 23 7.5 Band Edge Limit..... 23 7.6 Band Edge Test Result. 24 8.0 Antenna Requirement 28 20dB bandwidth measurement.... 9.0 29 FCC ID Label..... 10.0 33

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

11.0

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

Photo of Test Setup and EUT View....

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Date: 2023-10-26



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: E-YOOSO

Model Number: Z-94

Additional Model Name ET-8941, ET-8927, ET-8907, TR94, TR95, ZA94, K940

Rating: Input: DC5V, 700mA

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

Hardware Version: 8907-A TX V1

Software Version: 3699

Serial No.: 8941B230600731 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 -7.30dBi maximum (Get from the antenna

specification)

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2307030-01E Page 5 of 42

Date: 2023-10-26



1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2023-07-04 to 2023-10-26

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

Page 6 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



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

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Page 7 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



3.0 Technical Details

3.1 Summary of test results

The EUT has been	ı tested accordin	g to the following	specifications:
		A	, 50000

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

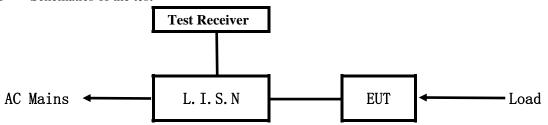
No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

Date: 2023-10-26



5.0 Power Line Conducted Emission Test

5.1 Schematics of the test

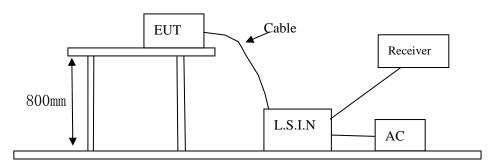


EUT: Equipment Under Test

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 Keyboard	Eastern Times Technology Co.,Ltd	Z-94, ET-8941, ET-8927, ET-8907, TR94, TR95, ZA94, K940	TUVET-8907A

B. Internal Device

Device	Manufacturar	Model	ECC ID/DOC
Device	Manufacturer	Model	FCC ID/DOC

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

Page 9 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



NT/A		
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 (dB μ V)			
(MHz)	Quasi-peak Level	Average Level		
0.15 ~ 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: 2023-10-26



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

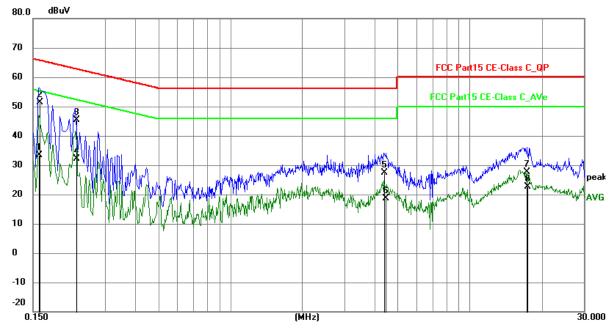
EUT Operating Environment

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	0.1590	23.60	9.78	33.38	55.52	-22.14	AVG	Р
2	0.1600	41.54	9.78	51.32	65.46	-14.14	QP	Р
3	0.2270	35.68	9.75	45.43	62.56	-17.13	QP	Р
4	0.2270	22.32	9.75	32.07	52.56	-20.49	AVG	Р
5	4.3960	17.42	9.90	27.32	56.00	-28.68	QP	Р
6	4.4380	8.61	9.91	18.52	46.00	-27.48	AVG	Л
7	17.3730	17.11	10.52	27.63	60.00	-32.37	QP	Р
8	17.4360	11.98	10.53	22.51	50.00	-27.49	AVG	Р

Date: 2023-10-26



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

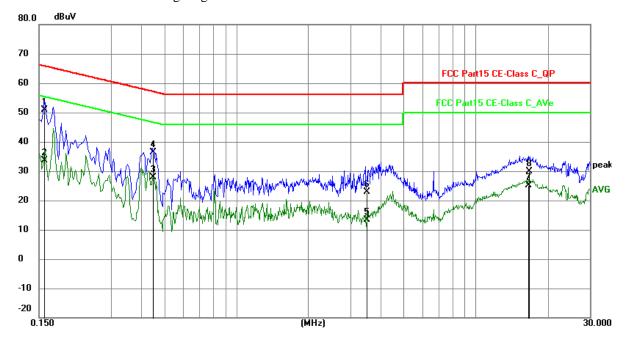
EUT Operating Environment

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	0.1580	41.15	9.78	50.93	65.57	-14.64	QP	Р
2	0.1580	23.85	9.78	33.63	55.57	-21.94	AVG	Р
3	0.4470	18.22	9.77	27.99	46.93	-18.94	AVG	Р
4	0.4480	26.56	9.77	36.33	56.91	-20.58	QP	Р
5	3.4960	3.60	9.86	13.46	46.00	-32.54	AVG	Р
6	3.5090	12.94	9.87	22.81	56.00	-33.19	QP	Р
7	16.6240	14.58	10.48	25.06	50.00	-24.94	AVG	Р
8	16.6930	19.48	10.48	29.96	60.00	-30.04	QP	Р

Date: 2023-10-26



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:

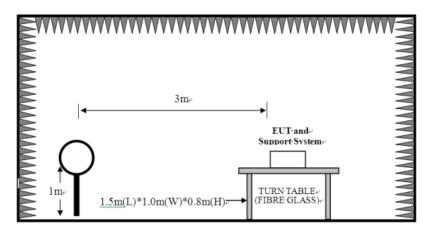
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
ADOVE IGHZ	Peak	1MHz	10Hz	Average

(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

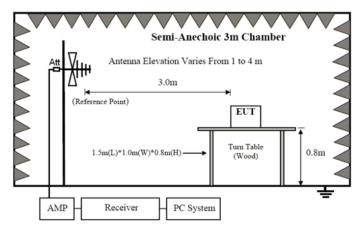
For radiated emissions from 9kHz to 30MHz



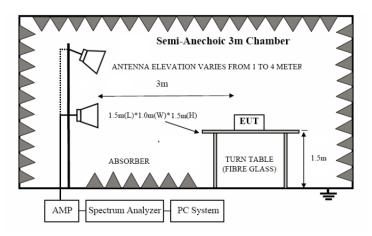
Date: 2023-10-26



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		

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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Report No.: TW2307030-01E Page 14 of 42

Date: 2023-10-26



2400-2483.5 50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)
----------------	--------------	------------	-----	--------------	-----------

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 μ 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		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.

Report No.: TW2307030-01E Page 15 of 42

Date: 2023-10-26

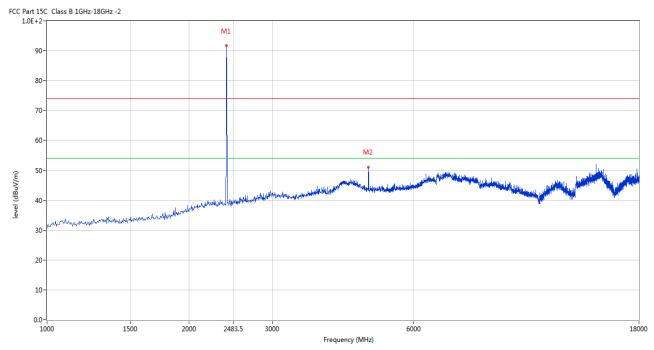


6.5 Test result

A Fundamental & Harmonics Radiated Emission Data

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

Horizontal



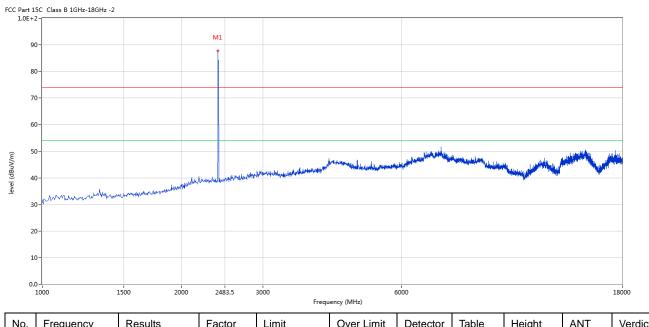
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2403	91.63	-3.57	114.0	-22.37	Peak	164.00	100	Horizontal	Pass
2	4802.799	51.08	3.12	74.0	-22.92	Peak	164.00	100	Horizontal	Pass

Report No.: TW2307030-01E Page 16 of 42

Date: 2023-10-26



Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2403	87.79	-3.57	114.0	-26.21	Peak	290.00	100	Vertical	Pass

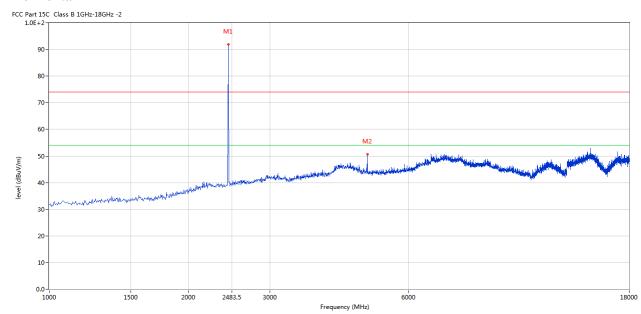
Report No.: TW2307030-01E Page 17 of 42

Date: 2023-10-26



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

Horizontal



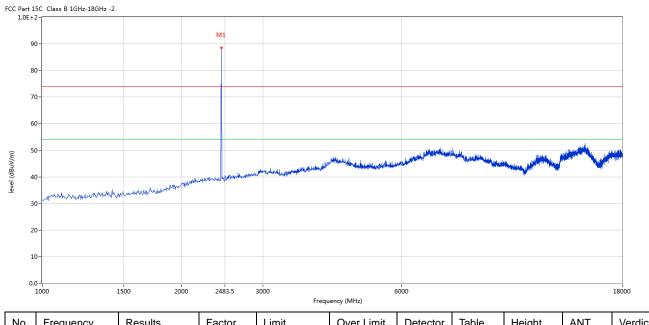
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2441	91.83	-3.57	114.0	-22.17	Peak	175.00	100	Horizontal	Pass
2	4879.280	50.62	3.20	74.0	-23.38	Peak	169.00	100	Horizontal	Pass

Report No.: TW2307030-01E Page 18 of 42

Date: 2023-10-26



Vertical



N	о.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1		2441	88.43	-3.57	114.0	-25.57	Peak	285.00	100	Vertical	Pass

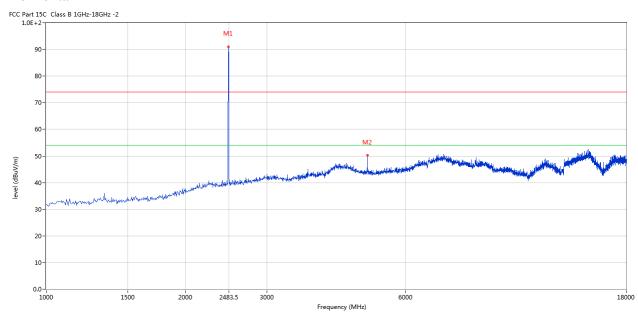
Report No.: TW2307030-01E Page 19 of 42

Date: 2023-10-26



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	91.65	-3.57	114.0	-22.35	Peak	212.00	100	Horizontal	Pass
2	4960.010	50.22	3.36	74.0	-23.78	Peak	217.00	100	Horizontal	Pass

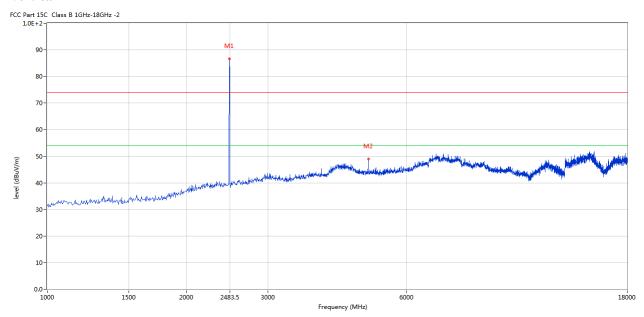
Page 20 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2480	87.59	-3.57	114.0	-26.41	Peak	288.00	100	Vertical	Pass
2	4960.010	48.88	3.36	74.0	-25.12	Peak	299.00	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.

Report No.: TW2307030-01E Page 21 of 42

Date: 2023-10-26

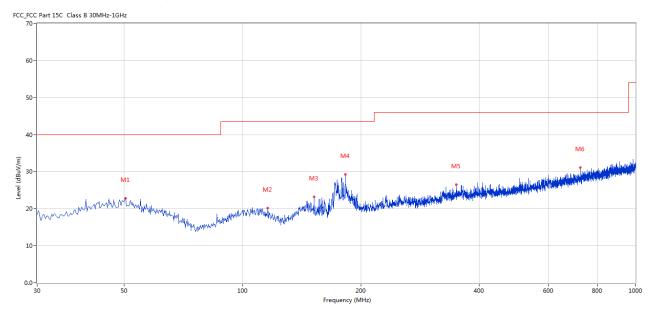


B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

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	50.365	22.76	-11.39	40.0	17.24	Peak	181.00	100	Horizontal	Pass
2	115.824	20.16	-14.57	43.5	23.34	Peak	288.00	100	Horizontal	Pass
3	151.947	23.16	-16.93	43.5	20.34	Peak	92.00	100	Horizontal	Pass
4	182.737	29.32	-14.96	43.5	14.18	Peak	250.00	100	Horizontal	Pass
5	350.020	26.52	-9.32	46.0	19.48	Peak	0.00	100	Horizontal	Pass
6	724.104	31.07	-3.78	46.0	14.93	Peak	276.00	100	Horizontal	Pass

Report No.: TW2307030-01E Page 22 of 42

Date: 2023-10-26

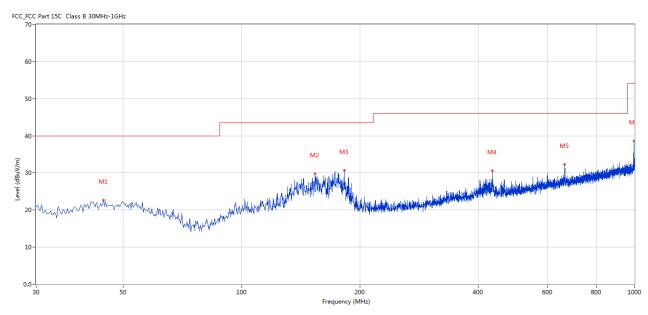


Radiated Emission In Vertical (30MHz----1000MHz)

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	44.546	22.74	-11.44	40.0	17.26	Peak	234.00	100	Vertical	Pass
2	153.887	29.81	-16.84	43.5	13.69	Peak	162.00	100	Vertical	Pass
3	182.494	30.76	-14.98	43.5	12.74	Peak	298.00	100	Vertical	Pass
4	434.874	30.62	-8.01	46.0	15.38	Peak	360.00	100	Vertical	Pass
5	663.737	32.35	-4.42	46.0	13.65	Peak	346.00	100	Vertical	Pass
6	995.879	38.68	-1.26	54.0	15.32	Peak	360.00	100	Vertical	Pass

Date: 2023-10-26

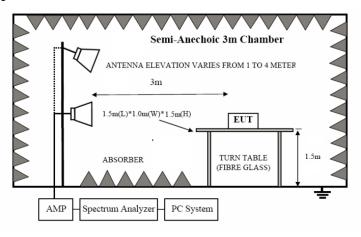


7. Band Edge

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.

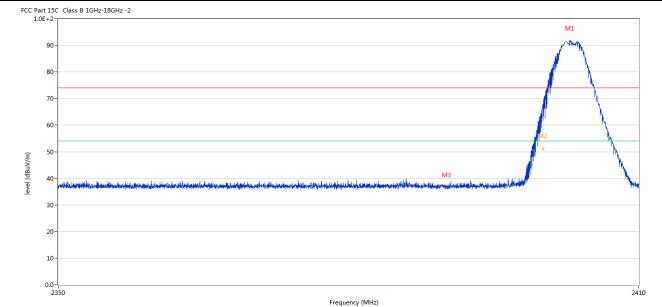
Report No.: TW2307030-01E Page 24 of 42

Date: 2023-10-26



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)		(o)	(cm)		
1	2402.847	91.48	-3.57	74.0	17.48	Peak	166.00	100	Horizontal	N/A
2	2400.000	66.41	-3.57	74.0	-7.59	Peak	206.57	100	Horizontal	Pass
2**	2400.000	51.10	-3.57	54.0	-2.90	AV	206.57	100	Horizontal	Pass
3	2390.000	36.33	-3.53	74.0	-37.67	Peak	161.67	100	Horizontal	Pass

Report No.: TW2307030-01E Page 25 of 42

Date: 2023-10-26



	Product: Mechanical Keyboard				Detect	or	Vertical			
	Mode	F	Keeping Tr	ansmitting		Test Vol	oltage DC3.7V			
Te	emperature	nperature 24 deg. C,				Humid	idity 56% RH			
Те	est Result:	Pass								
	rt 15C Class B 1GHz-18GF E+2-r	lz -2			•		•			
1.01	212								M1	
	90-								JAMES AND	
	80-								/ 'TI	
	70-							/		
								d"	"\	
	60-							, I	1	
								142		k l
(m/ _/	50-							, ,		N
(dBuV/m)	40-	in a sum of the second	e de la constitución	m. k. atmost die nak begree	All and the	M3	w. lada			M.
level (dBuV/m)	40-	المستعمد والمستعمد والمستعم والمستعمد والمستعمد والمستعمد والمستعمد والمستعم	ساسيد المراجعة والمراجعة و	Heekondbissioni krisionkoksplosed	وأكارة والإنتان المكارية والمراجعة و		a Nama a a h a ka ka ka maya, ka a ka	Water and the same of the same		Manual
level (dBuV/m)	40-	l Roinnestein dell best grephort met in bellevelein bel	wherenteristensistensistensistensist	Heekarahilesimon kusuninaka kasahira d	okhhidegasagyan awadiswiiykyiyd		adhaan aharabaan ay 19 padh	Median states and		Marine Marine
level (dBuV/m)	40-	فالمراجع والمراجع والمراجع المراجع والمراجع والم	ساميرورني والمعين فهرديها بالمطا	Market Million Leaves Landon de la Constitución de la Constitución de la Constitución de la Constitución de la	ghishean hoyata a mpalliratinghishek		addinancych raebau mogres praeba	Marine Marine Company		Manage Control of the
level (dBuV/m)	40-	t Paringgellen delt best geginn namen, siehn eine gebail	urd utu versi der vi julius avsi julius sie viet alle jake	Herber Hillschmer het wirde herbere d	g high degrades of the section of th		a filoso e de la composição parente	Marie Care Care Care Care Care Care Care Car		Manuel
_	40- 30- 20-	i Rovin yapeten dati kuru ye ya a -a nasa i, sidhaden sa ingili k	wang ng kanagang kapang dalah kal	itinakan iliterimini da asintaka kandina d	shiridaya kanada da ayadii da da ka		ndipaga nadirishi ku musu pagee	A Company of the Comp		N
_	40- whylman distribute production of the standard of the stan	! Rainyappeen dell hasse gerg han na <u>est</u> h, siden ett est haj	urd utu utu, da ja ja kana asi jela ja ja kah adhadi		Frequency (MHz)		adhan-adhanhan uis kall	do aphirectal distribution of the control of the co		2410
level (dBuV/m)	30 - 20 - 10 - 2350	Results	Factor				Table	Height	ANT	ı
	40 - an internation production of the control of th				Frequency (MHz) Over Limit	den Africa (an Aire de Laire d	Table	Height (cm)	ANT	I
No.	30- 20- 10- 2350	Results	Factor	Limit	Frequency (MHz)	den Africa (an Aire de Laire d	and the second s		ANT Vertical	ı
No.	30- 20- 10- 2350 Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Frequency (MHz) Over Limit (dB)	Detector	Table (o)	(cm)		Verdic
	40- 30- 20- 10- 2350 Frequency (MHz) 2402.367	Results (dBuV/m) 87.56	Factor (dB) -3.57	Limit (dBuV/m) 74.0	Frequency (MHz) Over Limit (dB) 13.56	Detector Peak	Table (o) 282.00	(cm)	Vertical	

Page 26 of 42 Report No.: TW2307030-01E

Date: 2023-10-26



I	Product:	Product: Mechanical Keyboard				Polarity			Horizont	al
	Mode			Fransmitting		Test Voltage			DC3.7V	
Te	mperature		24 0	leg. C,		Humidity 56% RH			I	
Te	est Result:		F	Pass						
FCC Part	t 15C Class B 1GHz-18GF E+2-	lz -2								
	90-		N	II						
	60-			1						
level (dBuV/m)	30-	and an amount of the state of t		IV.	The state of the s	ينون فياسم الهراه المعامل المع	مدروا المراجعة المراج	والمراجع والم والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع والمراج	galandlark varjift safterja folgen, keepal _{to} nteeken	المراجة فتناجع أبخة
	20-									
	0.0- 2470			248	3.5 Frequency (MHz)					250
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdi
1	2479.920	91.53	-3.57	74.0	17.53	Peak	170.00	100	Horizontal	N/A
2	2483.500	60.55	-3.57	74.0	-13.45	Peak	192.57	100	Horizontal	Pass
2**	2483.500	45.70	+	 	+	-	-	-	!	

Page 27 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



]	Product: Mechanical Keyboard			, , , , , , , , , , , , , , , , , , ,		Detec	tor		Vertical	
	Mode	Keeping Transmitting				Test Vol	ltage	ge DC3.7V		
Te	mperature	ature 24 deg. C,				Humic	idity 56% RH			
Te	est Result:	Pass								
	rt 15C Class B 1GHz-18GHz	z -2			,					
	90 - 80 - 70 - 60 -		MI	Lalabethering						
level (dBuV/m)	50- 40- 80-20-20-20-20-20-20-20-20-20-20-20-20-20	and the second s		M2	PROPERTURAL MINISTER CO.	saafilmytunnelelistemisensississississississississississississis	hayeyyik warish erinden je yi ili je yi ili je yi	ويتراجع والمعارض والمتراجع والمعارض والمتراجع والمتراج والمتراجع والمتراج والمتراجع والمتراج والمتراجع والمتراجع والمتراجع والمتراجع والمتراجع والمتراجع والمتراجع والمتراجع وال	elakon penkerkalan perugan dak nada	i the state of the
level (dBuV/m)	40-full-shall was weeked a particular	and the second of the second o		2483.5	1 Proposition	conflorence de interneuron con	negyi les anti antiga yen <u>k</u> a	والمراواة	loberpekkide erverikken	
(m/\ngp) level (dBu/\n)	30 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	Results	Factor	2483.5	Thromatical and the second	Detector	Table	Height	ANT	2500
	30 - 20 - 2470		Factor (dB)	2483.5	Frequency (MHz)					2500 Verdic
No.	30- 20- 10- 2470 Frequency	Results		2483.5 Limit	Frequency (MHz) Over Limit		Table	Height		2500
	30- 20- 10- 2470 Frequency (MHz)	Results (dBuV/m)	(dB)	Limit (dBuV/m)	Frequency (MHz) Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	2500 Verdic

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

Date: 2023-10-26



Page 28 of 42

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 -7.30 dBi maximum. It fulfills the requirement of this section.

Test Result: Pass

Date: 2023-10-26



Page 29 of 42

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

Page 30 of 42

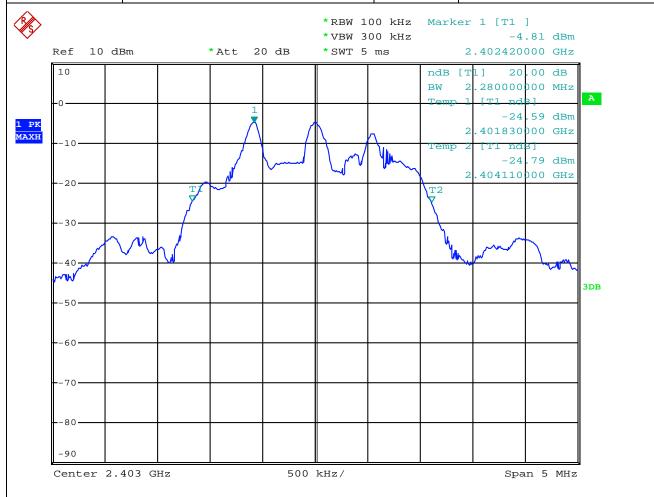
Report No.: TW2307030-01E

Date: 2023-10-26



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	2.280MHz		



Date: 11.0CT.2023 17:04:25

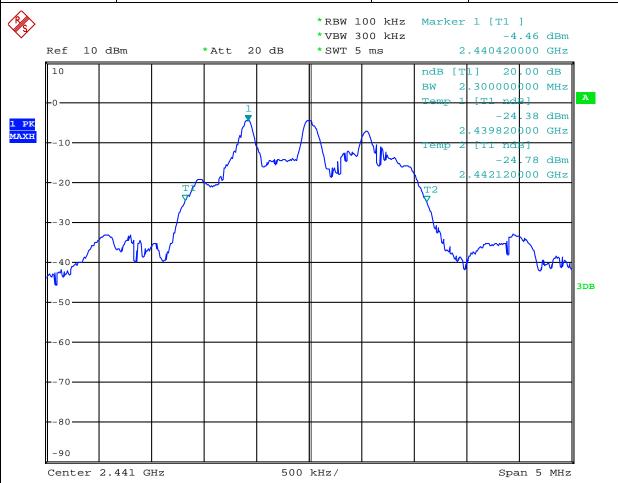
Page 31 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



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	2.300MHz		



Date: 11.0CT.2023 17:05:49

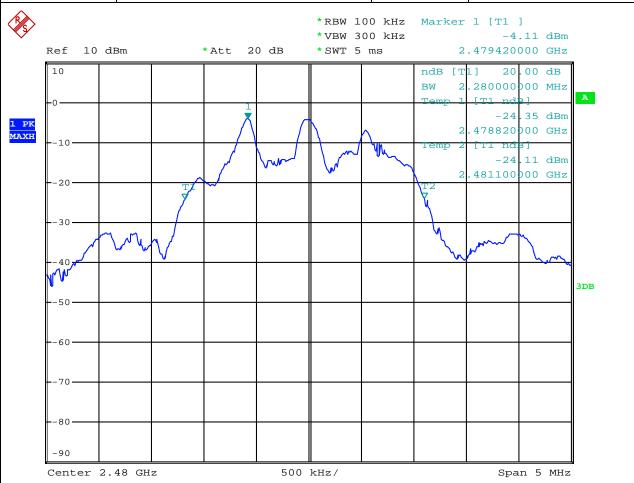
Page 32 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



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	2.280MHz		



Date: 11.0CT.2023 16:43:31

Report No.: TW2307030-01E Page 33 of 42

Date: 2023-10-26



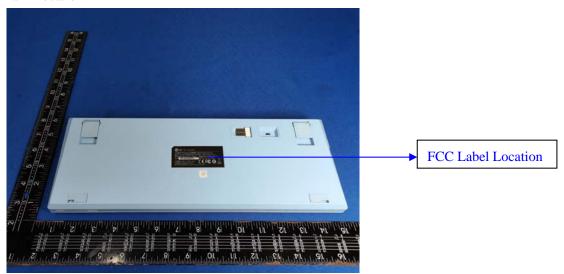
10.0 FCC ID Label

FCC ID: TUVET-8907A

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:



Page 34 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



11.0 Photo of testing

11.1 Conducted test View



Page 35 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



Radiated emission test view



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Date: 2023-10-26



11.2 Photographs – EUT



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES.

will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

Page 37 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



Outside View



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES.

will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

Page 38 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



Outside View



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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

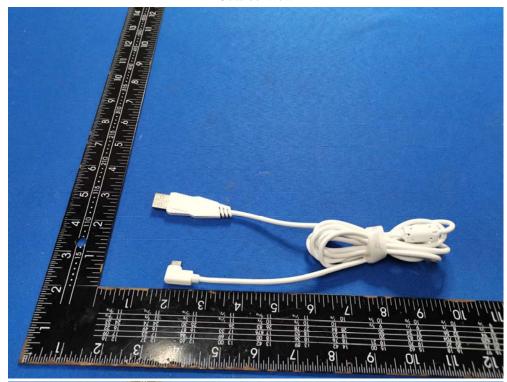
Page 39 of 42

Report No.: TW2307030-01E

Date: 2023-10-26



Outside View





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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES.

will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

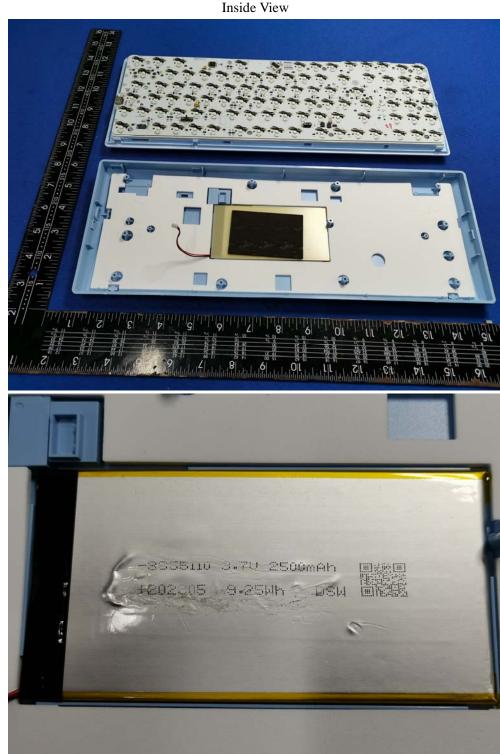
In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

Page 40 of 42

Report No.: TW2307030-01E

Date: 2023-10-26





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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

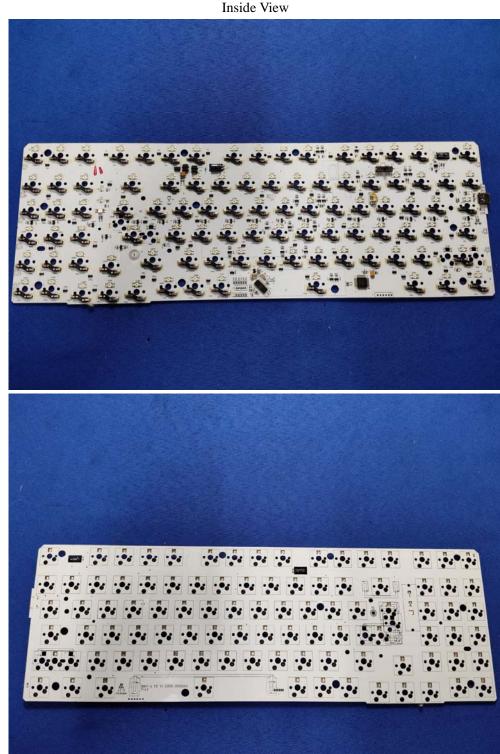
In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

Page 41 of 42

Report No.: TW2307030-01E

Date: 2023-10-26





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

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES. to his customer. Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES. will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

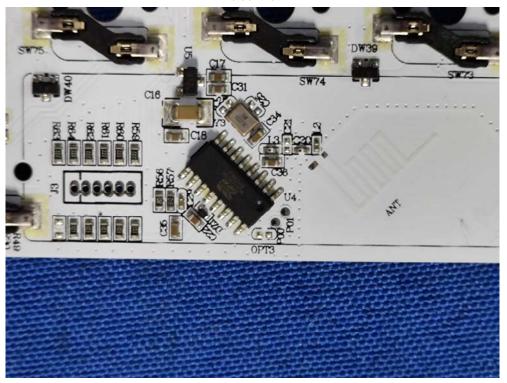
In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to

Report No.: TW2307030-01E Page 42 of 42

Date: 2023-10-26



Inside View



-- End of the report--