



Report No.: TW2306389E

Applicant: Mid Ocean Brands B.V.

Product: 3 port USB hub with dual input

Trademark: N/A

Model No.: MO6848

Test Standards: EN 55032:2015+A11:2020+A1:2020
EN IEC 61000-3-2:2019 +A1:2021
EN 55035:2017+A11:2020
EN 61000-3-3:2013+A2:2021+AC:2022-01

Test Result: The EMC testing has been performed on the submitted samples and found in compliance with council EMC Directive 2014/30/EU.

Approved By

A handwritten signature in black ink that reads 'Terry Tang'.

Terry Tang

Manager

Dated: July 07, 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



Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

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

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

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

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

A2LA (Certification Number:5013.01)

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

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.



TABLE OF CONTENT

Test Report Conclusion	
Special Statement	
Content	
1.0 General Details	5
1.1 Test Lab Details	5
1.2 Applicant Details	5
1.3 Description of EUT	5
1.4 Submitted Sample	5
1.5 Test Duration	6
1.6 Additional Information of EUT	6
1.7 Test Engineer & Verify Engineer	6
2.0 List of Measurement Equipment	7
2.1 Conducted Emission Test	7
2.2 Radiated Disturbance Test	7
2.3 Harmonic& Flicker Test	7
2.4 ESD Test	7
2.5 RF Field Strength Susceptibility	7
2.6 Electrical Fast Transient/Burst (EFT/B) Immunity Test	8
2.7 Surge Test	8
2.8 Conducted Immunity Test	8
2.9 Power-Frequency Magnetic Field	8
2.10 Voltage Dips/Interruption Immunity Test	9
3.0 Technical Details	10
3.1 Investigations Requested	10
3.2 Test Standards	10
3.3 Performance Criteria	10
3.4 Test Standards and Results Summary Tables	11
4.0 Electromagnetic Interference Test Results	12
4.1 Power line Conducted Emission Test	12
4.2 Telecommunication Ports Conducted Emission Test	15
4.3 Radiated Disturbance Test	18
4.4 Harmonic Current Emission Test	21
4.5 Voltage Fluctuations & Flicker Test	23

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



5.0	<u>Immunity Test</u>	24
5.1	Electrostatic Discharge	24
5.2	RF Field transients / Burst Immunity Test	26
5.3	Electrical Fast Transient/Burst (EFT/B) immunity test	28
5.4	Surge Test	30
5.5	Conducted Immunity Test	32
5.6	Power-Frequency Magnetic Field	34
5.7	Voltage Dips / Interruptions Immunity Test	36
6.0	<u>Product Labeling</u>	38
6.1	CE Mark label specification	38
	Appendix	39

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



1.0 General Details

1.1 Test Lab Details

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: +86 755 83448688 Fax :+86 755 83442996

Test Location

All tests were performed 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: +86 755 83448688 Fax: +86 755 83442996

1.2 Applicant Details

Applicant: Mid Ocean Brands B.V.

Address: 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

Telephone: --

Fax: ---

Manufacturer: Mid Ocean Brands B.V.

Address: 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

Telephone: --

Fax: --

1.3 Description of EUT

Product: 3 port USB hub with dual input

Trademark: N/A

Model Number: MO6848

Adding Trademark: N/A

Adding Model Number: N/A

Rating: 5V 0.5A

1.4 Submitted Sample(s)

1 Samples

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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 of Test: June 30, 2023 ~ July 07, 2023

1.6 Additional information of EUT

	Submitted	Not Available
User Manual	☒	☐
Part List	☐	☐
Circuit Diagram	☒	☐
Printed circuit board [PCB] Layout	☒	☐
Block Diagram	☐	☐

1.7 Test Engineer

The sample(s) tested by

les. Les

Print Name: Leo Lau/ Engineer

This test report is not valid without personnel's signatures of SHENZHEN TIMEWAY TESTING LABORATORIES.

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 advertizing. 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.



2.0 List of Measurement Equipment

2.1 Conducted Emission Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS 30	834115/006	RS	2022.07.15	1 Year
LISN	NNB42	00012	SCHAFFNER	2022.08.18	1 Year

2.2 Radiated Disturbance Test

Name	Model No	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESPI 3	100379	RS	2022.07.15	1 Year
Spectrum Analyzer	E4407B	MY50441392	HP/Agilent	2022.07.15	1 Year
Amplifier	BBV9743	#218	HP/Agilent	2022.07.15	1 Year
Bilog Antenna	VULB9163	9163/340	Schwarebeck	2022.07.18	3 Year
Horn Antenna	BBHA 9120D	9120D-631	RS	2022.07.18	3 Year
Amplifier	8449B	3008A00160	HP/Agilent	2022.07.15	1 Year

2.3 Harmonic & Flicker Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Harmonics Flicker Test System	PACS-1	72305	CI	2022.07.15	1 Year
5K VA AC Power Source	5001iX	56060	CI	2022.07.15	N/A

2.4 ESD Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
ESD Simulator	DITO	0404-24	EM TEST	2022.07.18	1 Year

2.5 RF field Strength Susceptibility

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Signal Generator	SMT03	100059	RS	2022.07.15	1 Year
Power Meter	NRVS	---	RS	2022.07.15	1 Year
Voltage Probe	URV5-Z2	100012	RS	2022.07.15	1 Year

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



Voltage Probe	URV5-Z2	100013	RS	2022.07.15	1 Year
Power Amplifier	150W1000	300999	AR	2022.07.15	1 Year
Power Amplifier	25S1G4AM1	305993	AR	2022.07.15	1 Year
Field Probe	CBL6111C	2576	Holaday	2022.07.15	1 Year
Bilog Antenna	MCDC	---	Chase	2022.07.15	1 Year

2.6 Electrical Fast Transient/Burst (EFT/B) Immunity test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EFT Generator	UCS 500 M4	0304-42	EM TEST	2022.07.15	1 Year
Power Source	MV2616	0104-14	EM TEST	2022.07.15	1 Year

2.7 Surge Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Ultra Compact Simulator	UCS 500 M4	0304-42	EM TEST	2022.07.15	1 Year
Power Source	MV2616	0104-14	EM TEST	2022.07.15	1 Year

2.8 Conducted Immunity Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Continuous Wave Simulator	CWS 500C	0407-05	EM TEST	2022.07.15	1 Year

2.9 Power-frequency Magnetic Field

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Continuous Wave Simulator	UCS 500 M4	0304-42	EM TEST	2022.07.15	1 Year
Power Source Network	MV 2616	0104-14	EM TEST	2022.07.15	1 Year
Current Transformer	MC2630	--	EM TEST	2022.07.15	1 Year
Magnetic Coil	MS100	0304-42	EM TEST	2022.07.15	1 Year

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



2.10 Voltage Dips/Interruption Immunity Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Ultra Compact Simulator	UCS 500 M4	0304-42	EM TEST	2022.07.15	1Year
Power Source	MV2616	0104-14	EM TEST	2022.07.15	1Year

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 advertising. 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.



3.0 Technical Details

3.1 Investigations Requested

Perform Electromagnetic Interference [EMI] & Electromagnetic Susceptibility [EMS] tests for CE Marking

3.2 Test Standards

Test Standards		
EN 55032:2015+A11:2020+A1:2020	Electromagnetic compatibility of multimedia equipment - Emission Requirements	
EN IEC 61000-3-2:2019+ A1:2021	Electromagnetic compatibility(EMC)- Part 3-2:Limits-Limits for harmonic current emissions(equipment input current $\leq 16A$ per phase)	
EN 61000-3-3:2013 +A2:2021+AC:2022-01	Electromagnetic compatibility (EMC)- Part 3-3:Limits-Limitation of voltage changes, Voltage fluctuations and flicker in public low-voltage supply systems. For equipment with rated current $\leq 16A$ per phase and not subject to conditional connection	
EN 55035:2017+A11:2020	Electromagnetic compatibility of multimedia equipment - Immunity requirements	
	EN 61000-4-2:2009	Electrostatic discharge
	EN IEC 61000-4-3:2020	RF electromagnetic field disturbances
	EN 61000-4-4:2012	Electrical Fast transients
	EN 61000-4-5:2014	Surge
	EN 61000-4-6:2014	Conducted susceptibility
	EN 61000-4-8:2010	Power-frequency Magnetic Field
	EN IEC 61000-4-11: 2020	Dips/Voltage Interruption Variation

3.3 Performance Criteria

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

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 advertising. 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.



3.4 Test standards and Results Summary Tables

Test Condition	Test Requirement	Test Method	Test Result
EMISSION Results Summary			
Conducted Emission on AC Mains, 150kHz to 30MHz	EN 55032:2015 +A11:2020+A1:2020	EN 55032:2015 +A11:2020+A1:2020	Pass
Conducted Emission on at telecommunication ports, 150kHz to 30MHz	EN 55032:2015 +A11:2020+A1:2020	EN 55032:2015 +A11:2020+A1:2020	N/A
Radiated Emissions, 30MHz to 6GHz	EN 55032:2015 +A11:2020+A1:2020	EN 55032:2015 +A11:2020+A1:2020	Pass
Harmonic Emissions on AC supply	EN IEC 61000-3-2:2019 +A1:2021	EN IEC 61000-3-2:2019 +A1:2021	N/A
Voltage fluctuations on AC supply	EN 61000-3-3:2013 +A2:2021+AC:2022-01	EN 61000-3-3:2013 +A2:2021+AC:2022-01	N/A
IMMUNITY Results Summary			
Electrostatic Discharge	EN 55035:2017+A11:2020	EN 61000-4-2: 2009	Pass
Continuous RF electromagnetic field disturbances	EN 55035:2017+A11:2020	EN IEC 61000-4-3:2020	Pass
Continuous induced RF disturbances	EN 55035:2017+A11:2020	EN 61000-4-6:2014	Pass
Power frequency magnetic field	EN 55035:2017+A11:2020	EN 61000-4-8: 2010	N/A
Electrical fast transients/burst (EFT/B)	EN 55035:2017+A11:2020	EN 61000-4-4: 2012	Pass
Surges	EN 55035:2017+A11:2020	EN 61000-4-5: 2014	Pass
Voltage dips and interruptions	EN 55035:2017+A11:2020	EN IEC 61000-4-11: 2020	Pass
Broadband impulsive conducted disturbances	EN 55035:2017+A11:2020	EN 61000-4-6:2014	N/A

Note: N/A-Not applicable

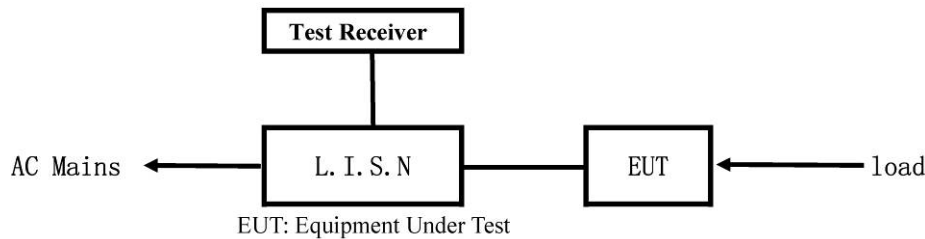
The report refers only to the sample tested and does not apply to the bulk.
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. 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.



4.0 Electromagnetic Interference Test results

4.1 Power line Conducted Emission Test

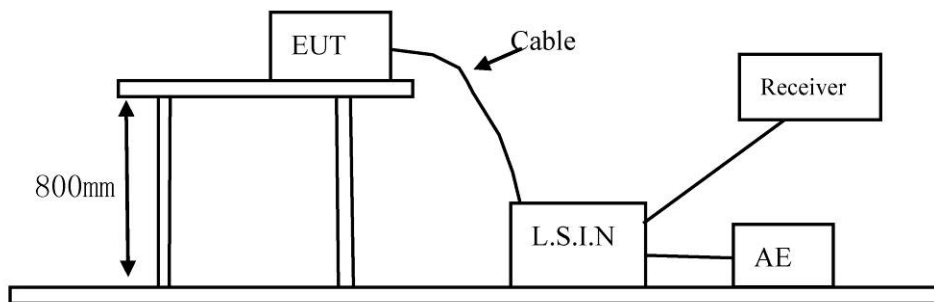
4.1.1 Schematics of the test



4.1.2 Test Method:

The test was performed in accordance with EN 55032:2015+A11:2020+A1:2020

Block diagram of Test setup



4.1.3 Power line conducted Emission Limit

Frequency(MHz)	Limits dB(μ V)			
	Class A Equipment		Class B Equipment	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

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

4.1.4 Test Results

Limits for Conducted Emission test, please refer to limit line (Quasi-peak) and Average in the following diagram labelled as (QP)&AV

Remark: Calculated measurement uncertainty=3.6dB

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



A: Disturbance Voltage Limits at mains on Live terminals (150kHz to 30MHz)

EUT Operating Environment

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

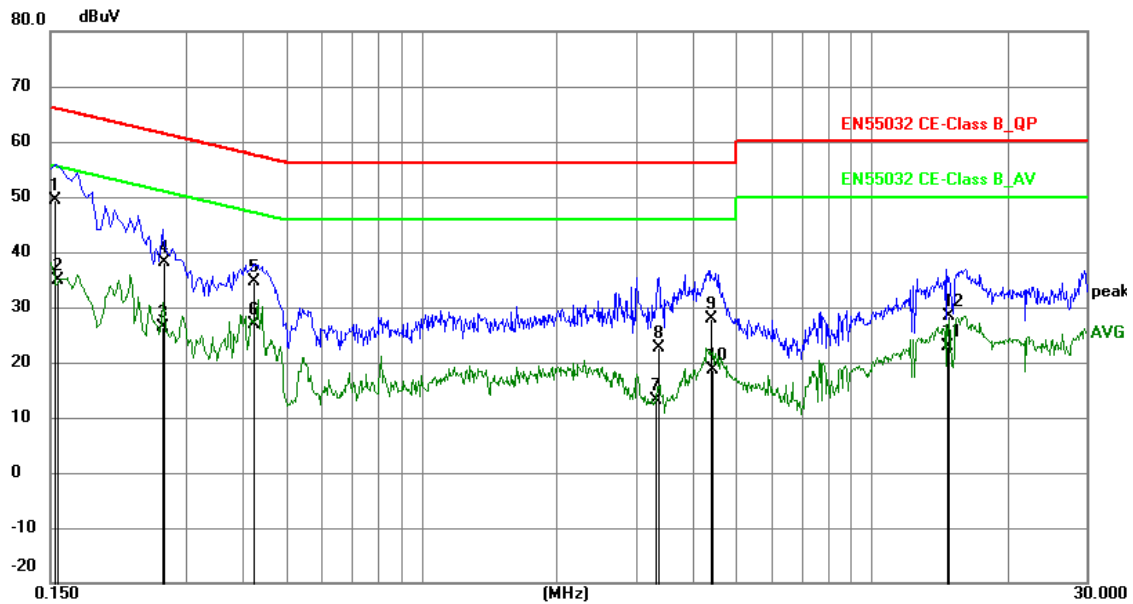
EUT set Condition: USB

Power: AC230V/50Hz

Equipment Level: Class B

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	39.56	9.78	49.34	65.79	-16.45	QP	P
2	0.1550	24.98	9.78	34.76	55.73	-20.97	AVG	P
3	0.2660	16.64	9.75	26.39	51.24	-24.85	AVG	P
4	0.2680	28.42	9.75	38.17	61.18	-23.01	QP	P
5	0.4250	24.98	9.76	34.74	57.35	-22.61	QP	P
6	0.4250	17.15	9.76	26.91	47.35	-20.44	AVG	P
7	3.3240	3.17	9.86	13.03	46.00	-32.97	AVG	P
8	3.3560	12.76	9.86	22.62	56.00	-33.38	QP	P
9	4.4020	17.87	9.90	27.77	56.00	-28.23	QP	P
10	4.4090	8.67	9.90	18.57	46.00	-27.43	AVG	P
11	14.7470	12.50	10.37	22.87	50.00	-27.13	AVG	P
12	14.7800	18.08	10.37	28.45	60.00	-31.55	QP	P

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 advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof 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.



B: Disturbance Voltage Limits at mains on Neutral terminals (150kHz to 30MHz)

EUT Operating Environment

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

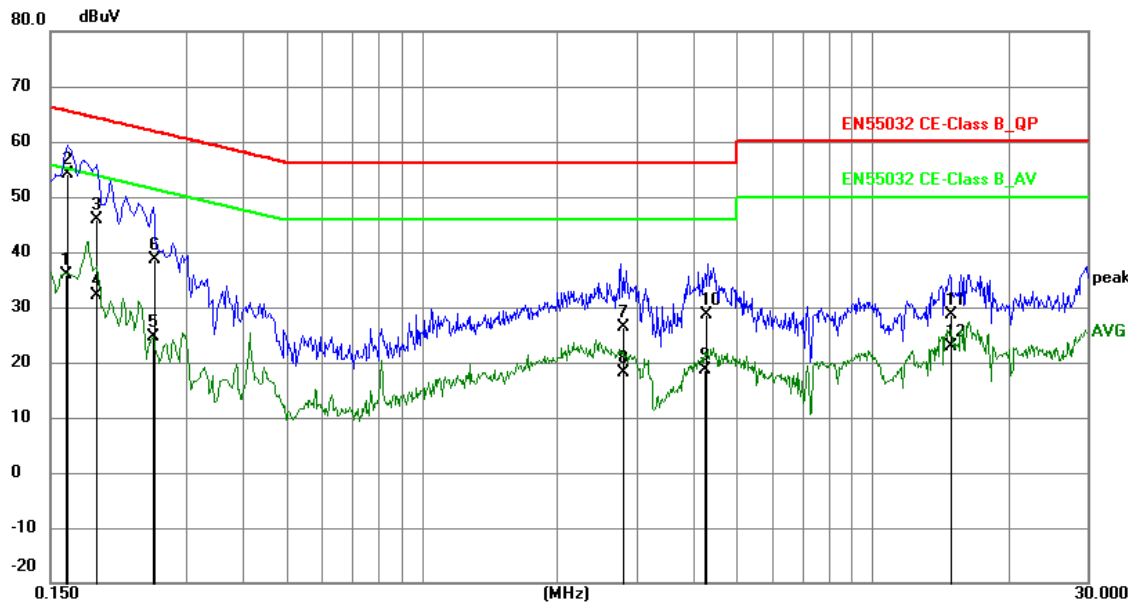
EUT set Condition: USB

Power: AC230V/50Hz

Equipment Level: Class B

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	0.1620	26.22	9.78	36.00	55.36	-19.36	AVG	P
2	0.1630	44.24	9.78	54.02	65.31	-11.29	QP	P
3	0.1900	36.15	9.76	45.91	64.04	-18.13	QP	P
4	0.1900	22.31	9.76	32.07	54.04	-21.97	AVG	P
5	0.2530	14.76	9.75	24.51	51.66	-27.15	AVG	P
6	0.2540	28.88	9.75	38.63	61.63	-23.00	QP	P
7	2.7920	16.56	9.83	26.39	56.00	-29.61	QP	P
8	2.7969	8.36	9.83	18.19	46.00	-27.81	AVG	P
9	4.2399	8.79	9.90	18.69	46.00	-27.31	AVG	P
10	4.2840	18.61	9.90	28.51	56.00	-27.49	QP	P
11	14.8480	18.16	10.37	28.53	60.00	-31.47	QP	P
12	14.8570	12.61	10.37	22.98	50.00	-27.02	AVG	P

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

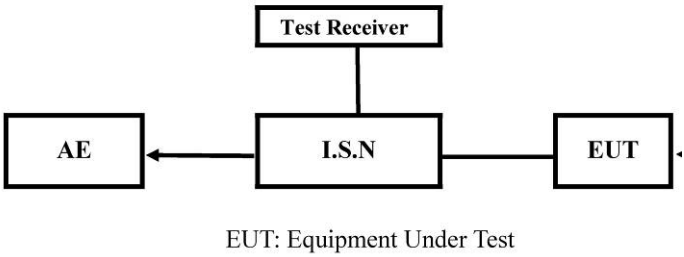
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send 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.



4.2 Telecommunication ports Conducted Emission Test

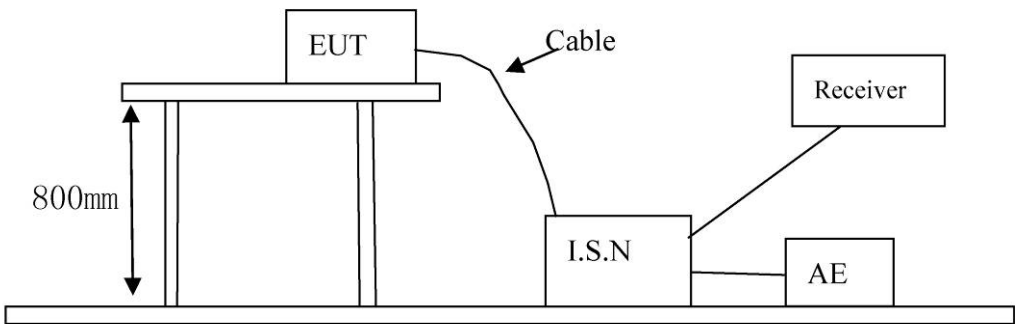
4.2.1 Schematics of the test



4.2.2 Test Method:

The test was performed in accordance with EN 55032:2015+A11:2020+A1:2020

Block diagram of Test setup



4.2.3 Telecommunication ports conducted Emission Limit

Frequency (MHz)	Class A Limits				Class B Limits			
	Quasi-peak Level		Average Level		Quasi-peak Level		Average Level	
	Voltage dB(uV)	Current dB(uA)	Voltage dB(uV)	Current dB(uA)	Voltage dB(uV)	Current dB(uA)	Voltage dB(uV)	Current dB(uA)
0.15 ~ 0.50	97 to 87	53 to 43	87 to 74	40 to 30	84 to 74	40 to 30	74 to 64	30 to 20
0.50 ~ 30.00	87	43	74	30	74	30	64	20

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

4.2.4 Test Results: N/A

Limits for Conducted Emission test, please refer to limit line (Quasi-peak) and Average in the following diagram labelled as (QP)&AV

Remark:

Calculated measurement uncertainty=1.9dB

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 advertising. 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.



A: Conducted Emission on Telecommunication port (150kHz to 30MHz)

EUT Operating Environment

Temperature: 25℃ Humidity: 75 %RH Atmospheric Pressure: 101 kPa

EUT set Condition: Normal operation mode

Equipment Level: Class B

Results: N/A

Please refer to following diagram for individual

Frequency (MHz)	Port	Reading(dBμV)		Limit(dBμV)	
		Quasi-peak	Average	Quasi-peak	Average

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 advertizing. 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.



B: Conducted Emission on Telecommunication port (150kHz to 30MHz)

EUT Operating Environment

Temperature: 25℃ Humidity: 75 %RH Atmospheric Pressure: 101 kPa

EUT set Condition: Normal operation mode

Equipment Level: Class B

Results: N/A

Please refer to following diagram for individual

Frequency (MHz)	Port	Reading(dBμA)		Limit(dBμA)	
		Quasi-peak	Average	Quasi-peak	Average

Note: This test item is not applicable because there is no telecommunication port

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 advertizing. 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.



4.3 Radiated Disturbance Test

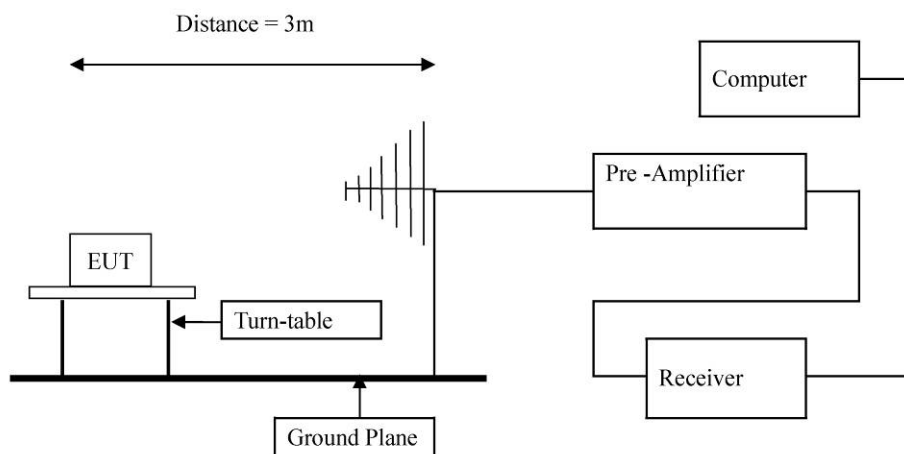
4.3.1 Schematics of the test



4.3.2 Test Method:

The test was performed in accordance with EN 55032:2015+A11:2020+A1:2020

Block diagram of Test setup



4.3.3 Radiated Disturbance Test Limit

Frequency Range (MHz)	Quasi-Peak limits (dB μ V/m)	
	Class A Limits	Class B Limits
0-230	50.00	40.00
230-1000	57.00	47.00
1000-3000	56(AV)/76(PK)	50(AV)/70(PK)
3000-6000	60(AV)/80(PK)	54(AV)/74(PK)

Note: The lower limit shall apply at the transition frequencies

4.3.4 Test result

Limits for Radiated Disturbance test, please refer to limit line (Quasi-peak) in the following diagram labelled as (QP)

Remark:

Calculated measurement uncertainty=4.7dB

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

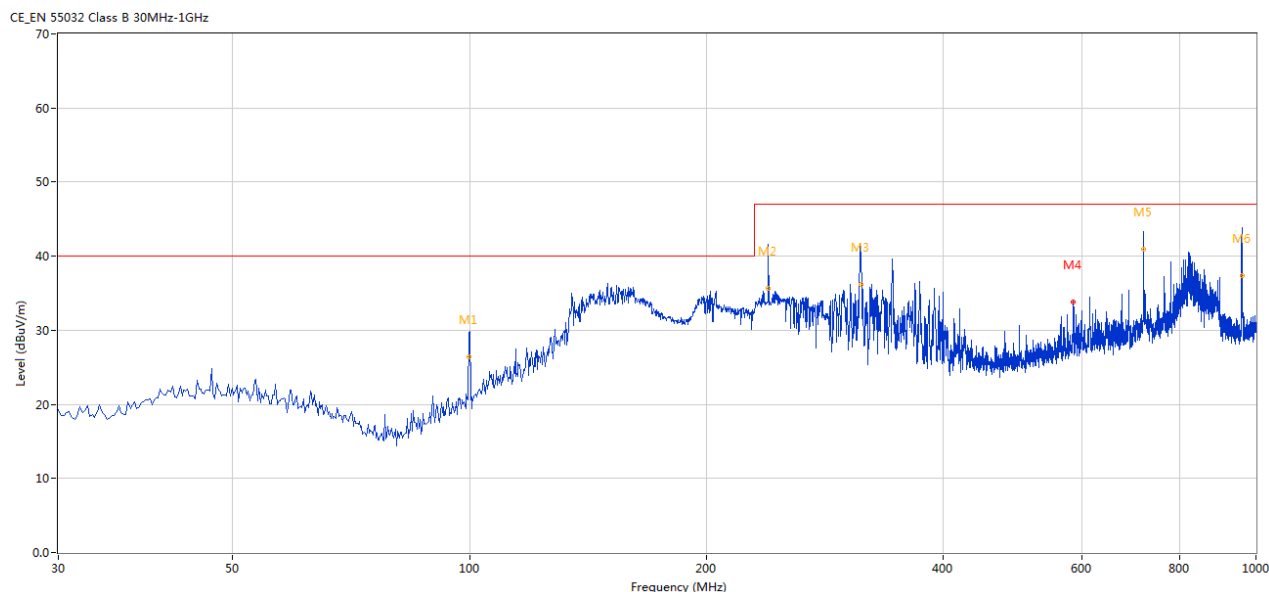
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send 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.



A: Radiated Disturbance (30MHz----1000MHz)

Project Number:	CASE3	Test Time:	2023-07-07_18.37.33
EUT Name:	3 port USB hub with dual input	Test Engineer:	STEPHEN
Manufacturer:	Mid Ocean Brands B.V.	Test Standard:	EN55032
Model:	MO6848	Work Addition:	USB
Temp.(oC):	25	Load:	
Hum.:	65%	Charger:	



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	99.823	29.57	-13.56	40.0	10.43	Peak	267.00	100	Horizontal	Pass
1*	99.823	26.44	-13.56	40.0	13.56	QP	267.00	100	Horizontal	Pass
2	239.953	42.56	-12.33	47.0	4.44	Peak	267.00	100	Horizontal	Pass
2*	239.953	35.67	-12.33	47.0	11.33	QP	267.00	100	Horizontal	Pass
3	314.381	42.48	-10.85	47.0	4.52	Peak	273.00	100	Horizontal	Pass
3*	314.381	36.15	-10.85	47.0	10.85	QP	273.00	100	Horizontal	Pass
4	586.156	33.78	-5.50	47.0	13.22	Peak	307.00	100	Horizontal	Pass
5	719.983	43.26	-4.06	47.0	3.74	Peak	298.00	100	Horizontal	Pass
5*	719.983	40.94	-4.06	47.0	6.06	QP	298.00	100	Horizontal	Pass
6	959.755	44.26	-1.63	47.0	2.74	Peak	249.00	100	Horizontal	Pass
6*	959.755	37.37	-1.63	47.0	9.63	QP	249.00	100	Horizontal	Pass

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

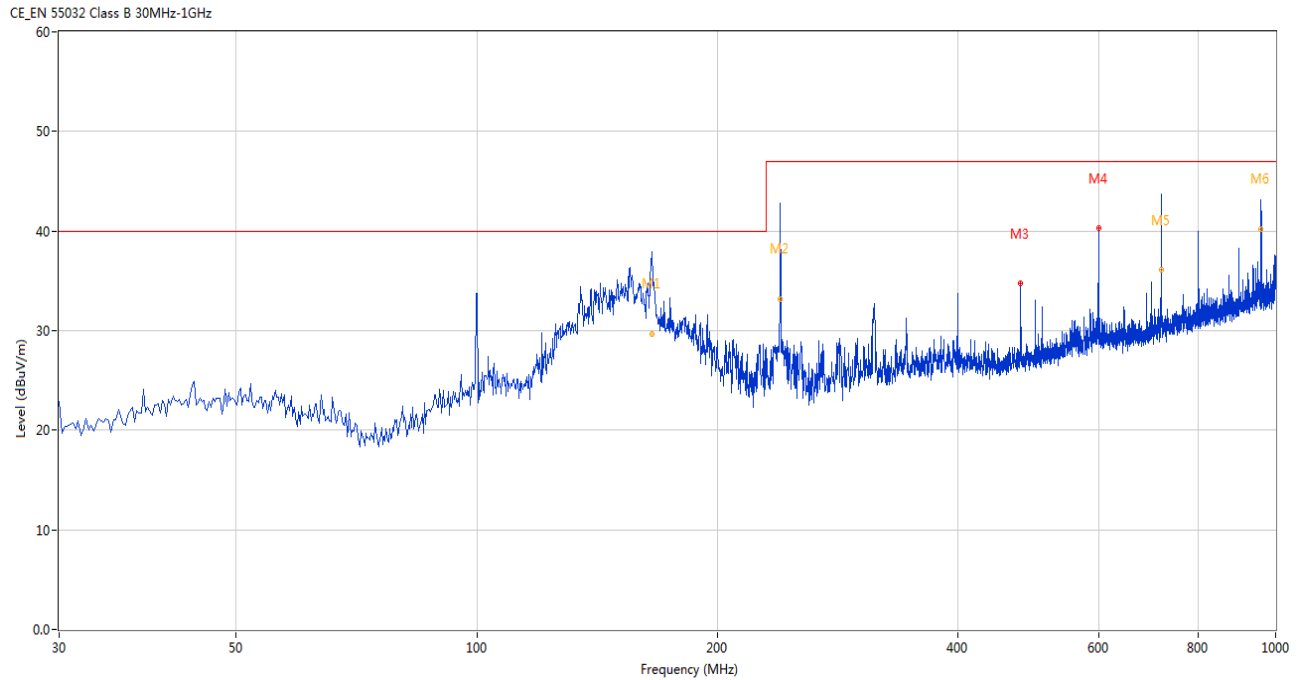
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send 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.



B: Radiated Disturbance (30MHz----1000MHz)

Project Number:	CASE3	Test Time:	2023-07-07_18.37.33
EUT Name:	3 port USB hub with dual input	Test Engineer:	STEPHEN
Manufacturer:	Mid Ocean Brands B.V.	Test Standard:	EN55032
Model:	MO6848	Work Addition:	USB
Temp.(oC):	25	Load:	
Hum.:	65%	Charger:	



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	165.705	38.44	-16.16	40.0	1.56	Peak	324.00	107	Vertical	Pass
1*	165.705	29.61	-16.16	40.0	10.39	QP	324.00	107	Vertical	Pass
2	240.001	43.88	-12.33	47.0	3.12	Peak	222.00	193	Vertical	Pass
2*	240.001	33.21	-12.33	47.0	13.79	QP	222.00	193	Vertical	Pass
3	479.240	34.72	-7.45	47.0	12.28	Peak	265.00	100	Vertical	Pass
4	599.975	40.28	-4.95	47.0	6.72	Peak	334.00	100	Vertical	Pass
5	719.997	44.54	-4.06	47.0	2.46	Peak	268.00	200	Vertical	Pass
5*	719.997	36.10	-4.06	47.0	10.90	QP	268.00	200	Vertical	Pass
6	959.140	43.32	-1.64	47.0	3.68	Peak	277.00	134	Vertical	Pass
6*	959.140	40.14	-1.64	47.0	6.86	QP	277.00	134	Vertical	Pass

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

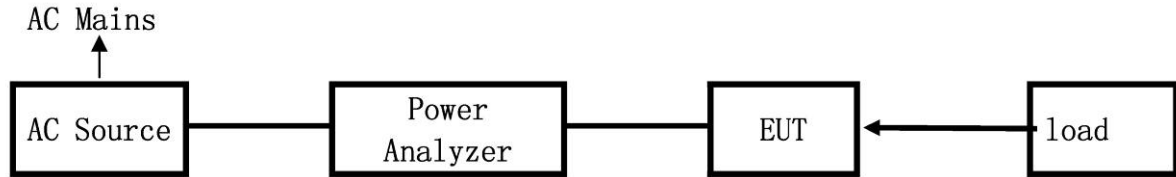
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



4.4 Harmonic Current Emission Test

4.4.1 Schematic of the test

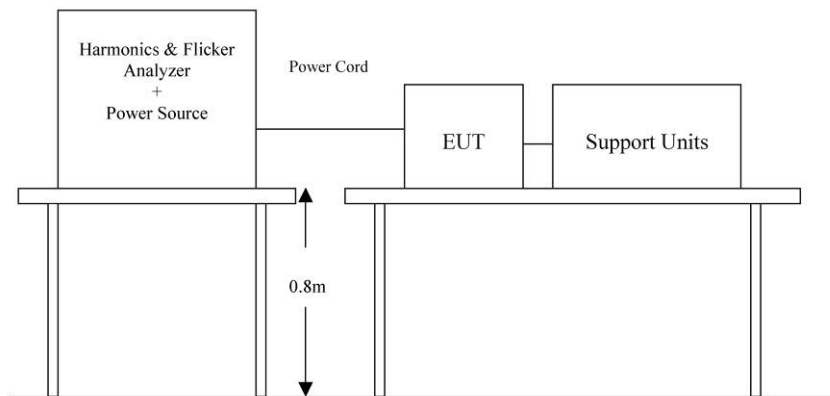


EUT: Equipment Under Test

4.4.2 Test Method:

The test was performed in accordance with EN IEC 61000-3-2:2019+A1:2021

Block diagram of Test setup



4.4.3 Limits of Harmonic Current Emission For Class A

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 advertising. 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.



Harmonic order n	Maximum permissible harmonic current A
Odd harmonics	
3	2,30
5	1,14
7	0,77
9	0,40
11	0,33
13	0,21
$15 \leq n \leq 39$	$0,15 \frac{15}{n}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \leq n \leq 40$	$0,23 \frac{8}{n}$

4.4.4 Test Results

Please refer to the following pages

Harmonic Current Emission Test

EUT Operating Environment

Temperature: 25°C Humidity: 53%RH Atmospheric Pressure: 101 kPa

EUT set Condition:

Results: N/A

N/A ---EUT powered by AA battery, this test item not applicable

Please refer to following diagram for individual

Harmonic results as a% of the limits

No	(Test result/Limit)%	No	(Test result/Limit)%	No	(Test result/Limit)%	No	(Test result/Limit)%
1		11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

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

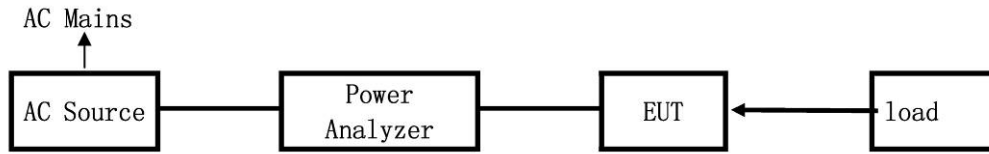
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof 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.



4.5 Voltage Fluctuations & Flicker Test

4.5.1 Schematic of the test

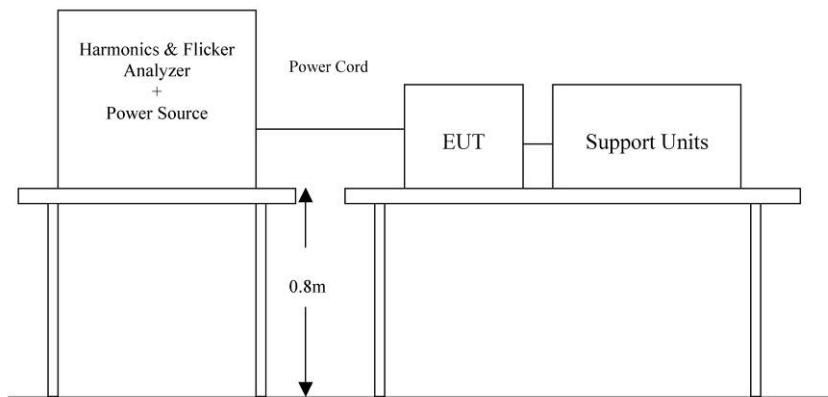


EUT: Equipment Under Test

4.5.2 Test Method:

The test was performed in accordance with EN 61000-3-3:2013+A2:2021+AC:2022-01

Block diagram of Test setup



4.5.3 Test Results

Result: N/A

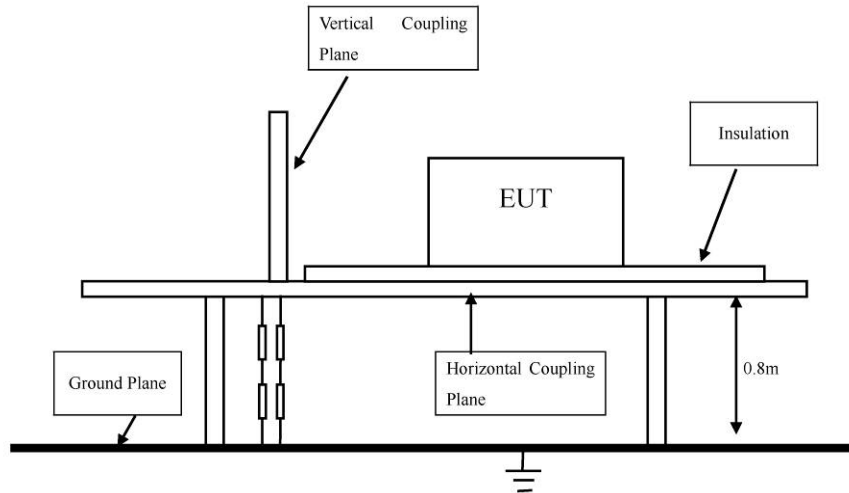
Note: EUT powered by AA battery, this test item not applicable



5.0 Immunity Test

5.1 Electrostatic Discharge

5.1.1 Schematic of the test



5.1.2 Test method

The test was performed in accordance with EN 61000-4-2: 2009

5.1.3 Test severity

$\pm 4\text{kV}$ for direct & in-direct Contact Discharge

$\pm 8\text{kV}$ for air Discharge

Performance Criterion Require: **B** (Please see following table)

5.1.4 Susceptibility performance Criteria and Severity level

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

Severity Level

Level	Test Voltage Direct & in-direct contact Discharge (kV)	Test Voltage Air discharge(kV)
1	$\pm 2\text{kV}$	$\pm 2\text{kV}$
2	$\pm 4\text{kV}$	$\pm 4\text{kV}$
3	$\pm 6\text{kV}$	$\pm 8\text{kV}$
4	$\pm 8\text{kV}$	$\pm 15\text{kV}$

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 advertising. 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.



5.1.5 Test Result

EUT Operating Environment

Temperature: 25℃ Humidity: 53%RH Atmospheric Pressure: 101 kPa
Please refer to the following table for individual results.

Location	Discharge Method	Test Voltage	Results
HCP (Horizontal coupling plane)	In-Direct	± 2kV, ± 4kV	Pass
VCP (Vertical Coupling plane)	In-Direct	± 2kV, ± 4kV	Pass
USB Port	Contact Discharge	± 2kV, ± 4kV	Pass
Enclosure	Air Discharge	± 2kV, ± 4kV, ± 8kV	Pass
Panel	Air Discharge	± 2kV, ± 4kV, ± 8kV	Pass
CABLE	Air Discharge	± 2kV, ± 4kV, ± 8kV	Pass

Remark: Calculated measurement uncertainty= 0.2kV

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 advertizing. 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.



5.2 RF field strength susceptibility (80MHz-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz)

5.2.1 Schematics of the test



5.2.2 Test Method:

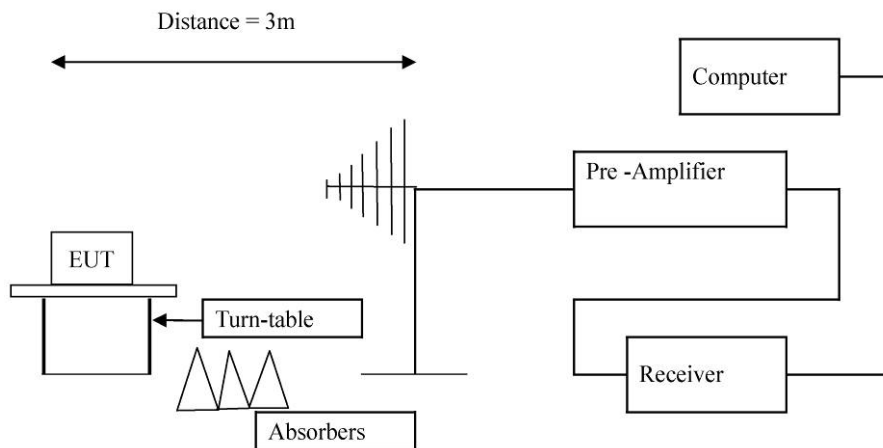
The test was performed in accordance with EN IEC 61000-4-3:2020

Severity: Level 2 (3V/m)

Modulation: 80% AM

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



5.2.3 Susceptibility performance Criteria and severity Level

Susceptibility performance Criteria

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

Severity Level

Level	Field Strength (V/m)
1	1
2	3
3	10

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



5.2.4 Test Result:

EUT Operating Environment

Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa

Please refer to the following table for individual results.

Frequency (MHz)	Face	Polarity	Level (V/m)	Dwell Time(s)	Sweep Rate (%)	Results
80-1000	0°	Horizontal	3	1	1	Pass
80-1000	90°	Horizontal	3	1	1	Pass
80-1000	180°	Horizontal	3	1	1	Pass
80-1000	270°	Horizontal	3	1	1	Pass
80-1000	0°	Vertical	3	1	1	Pass
80-1000	90°	Vertical	3	1	1	Pass
80-1000	180°	Vertical	3	1	1	Pass
80-1000	270°	Vertical	3	1	1	Pass
1800, 2600, 3500, 5000	0°	Horizontal	3	1	1	Pass
	90°	Horizontal	3	1	1	Pass
	180°	Horizontal	3	1	1	Pass
	270°	Horizontal	3	1	1	Pass
1800, 2600, 3500, 5000	0°	Vertical	3	1	1	Pass
	90°	Vertical	3	1	1	Pass
	180°	Vertical	3	1	1	Pass
	270°	Vertical	3	1	1	Pass

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



5.3 Electrical Fast Transient/Burst (EFT/B) immunity test

5.3.1 Schematics of the test



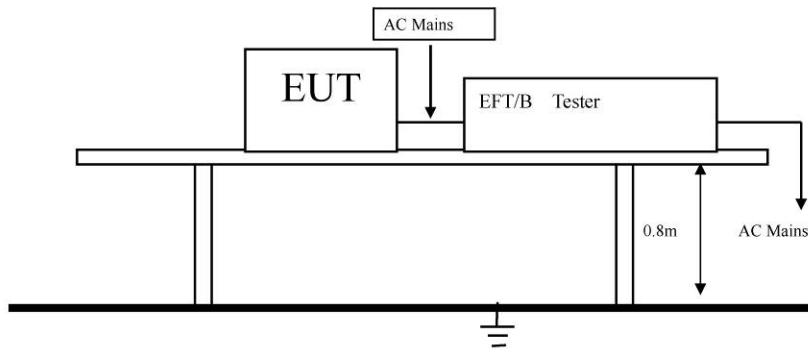
5.3.2 Test Method

The test was performed in accordance with EN 61000-4-4:2012

Severity: Level 2 (1kV)

Performance Criterion Require: **B** (Please see following table)

Block diagram of Test setup



5.3.3 Susceptibility performance Criteria and Severity Level

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

Severity Level

Open Circuit output Test Voltage $\pm 10\%$		
Level	On power Supply Lines	On I/O (Input/output) Signal data and control lines
1	0.5kV	0.5kV
2	1kV	1kV
3	2kV	2kV
4	4kV	4kV
X	Special	Special

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 advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof 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.



5.3.4 Test Results

EUT Operating Environment

Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa
Please refer to the following table for individual results.

Inject location: AC mains

Inject Line	Voltage kV	Inject Times (s)	Method	Results
L	± 1	120	Direct	Pass
N	± 1	120	Direct	Pass
L-N	± 1	120	Direct	Pass

Note: EUT powered by AA battery, this test item not applicable

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 advertizing. 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.



5.4 Surge test

5.4.1 Schematics of the test



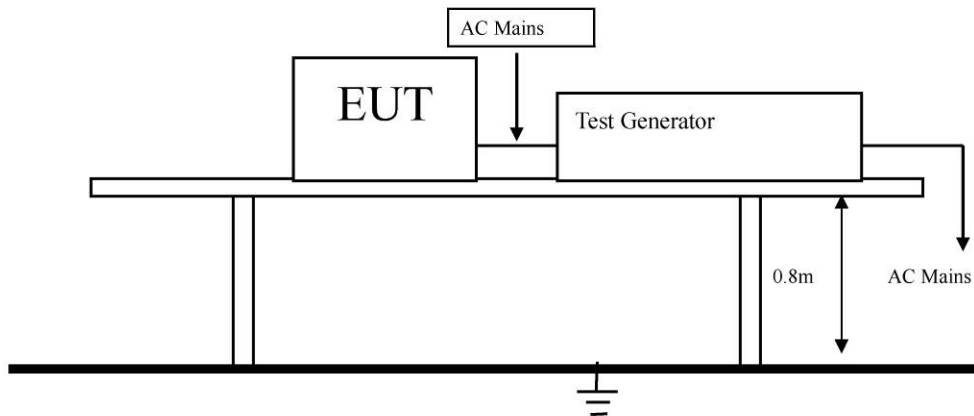
5.4.2 Test Method:

The test was performed in accordance with EN 61000-4-5:2014

Severity: Level 2 (Line to Neutral at 1kV)

Performance Criterion Require: B (Please see following table)

Block diagram of Test setup



5.4.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

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 advertising. 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.



Severity Level

Severity Level	Open-Circuit Test Voltage kV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

5.4.4 Test Results

EUT Operating Environment

Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa
Please refer to the following table for individual results.

Test location:

Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage(kV)	Results
L-N	+	90	5	1.0	Pass
	-	270	5	1.0	Pass

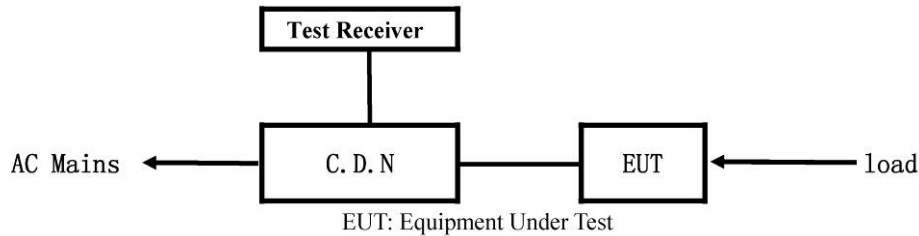
Note: EUT powered by AA battery, this test item not applicable

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 advertising. 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.



5.5 Conducted Immunity test

5.5.1 Schematics of the test



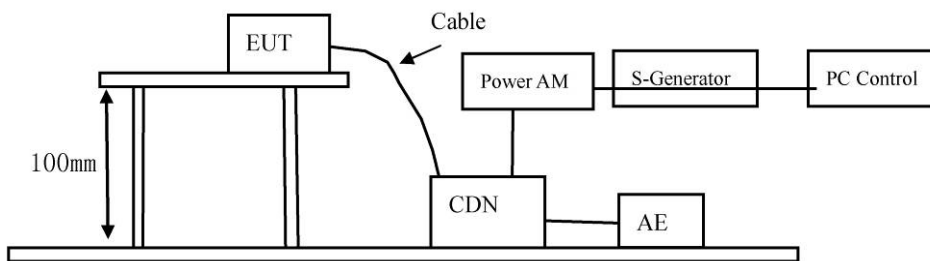
5.5.2 Test Method

The test was performed in accordance with EN 61000-4-6:2014

Severity: Level 2 (3 V rms), 0.15MHz—80MHz

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



5.5.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

Severity Level

Severity Level	Voltage Level (e.m.f) V
1	1
2	3
3	10
*	Special

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.



5.5.4 Test Results:

EUT Operating Environment

Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 KPa

Please refer to the following table for individual results.

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 - 10	AC Line	3V (rms)	A	Pass
10 - 30	AC Line	3 to 1V (rms)	A	Pass
30 - 80	AC Line	1V (rms)	A	Pass

Note: the amplitude of a test level varies over a given frequency range, it changes linearly with respect to the logarithm of the frequency

Note: EUT powered by AA battery, this test item not applicable

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 advertizing. 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.



5.6 Power-Frequency magnetic field test

5.6.1 Schematics of the test



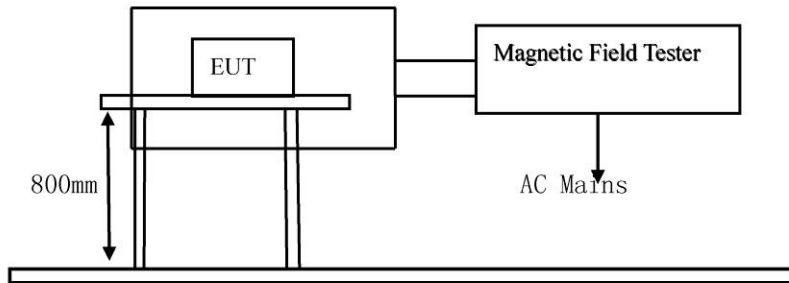
5.6.2 Test Method

The test was performed in accordance with EN 61000-4-8:2010

Severity: Level 1 (1A/m),

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



5.6.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

Severity Level

Severity Level	Magnetic Field Strength A/m
1	1
2	3
3	10
4	30
5	100
*	Special

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 advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof 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.



5.6.4 Test Results:

EUT Operating Environment

Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa
Please refer to the following table for individual results.

Test Level	Testing Duration	Coil Orientation	Criterion	Result
1A/m	5 Mins	X	A	N/A
1A/m	5 Mins	Y	A	N/A
1A/m	5 Mins	Z	A	N/A

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 advertizing. 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.



5.7 Voltage Dips/Interruptions immunity test

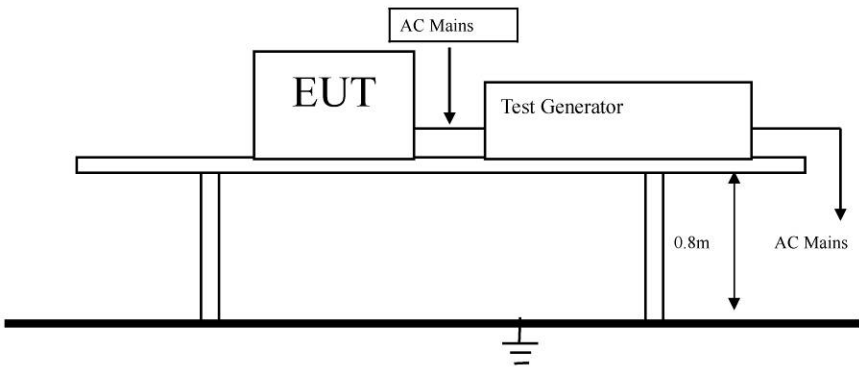
5.7.1 Schematics of the test



5.7.2 Test Method:

The test was performed in accordance with EN IEC 61000-4-11: 2020
Performance Criterion Require: C&B (Please see following table)

Block diagram of Test setup



5.7.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

Criterion	Description
A	No change in operational mode or degradation of performance outside of specification and no change in stored parameters.
B	Degradation of performance allowed during the test the EUT returning to intended operation after the test.
C	Loss of function allowed during the test, provided that function is self recoverable or can be recovered by operation of controls.

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 advertizing. 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.



Severity Level

Voltage Dip	Test Level %Ut	Reduction	Duration (Periods)	Performance Criteria
	<5	>95	0.5	B
	70	30	25	C
Voltage Interceptions	Test Level %Ut	Reduction	Duration (Periods)	Performance Criteria
	<5	>95	250	C

5.7.4 Test Result:

EUT Operating Environment

Temperature: 25°C Humidity: 75%RH Atmospheric Pressure: 101 kPa

Please refer to the following table for individual results.

Voltage Dip:

Test Level % Ut	Reduction	Duration (periods)	Phase Angle	Meet Criterion	Result
0	100	0.5	0° - 360°	B	Pass
70	30	25	0° - 360°	C	Pass

Voltage Interceptions:

Test Level % Ut	Reduction	Duration (periods)	Phase Angle	Meet Criterion	Result
0	100	250	0° - 360°	C	Pass

Note: EUT powered by AA battery, this test item not applicable

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 advertising. 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.



6.0 Product Labelling

6.1 CE Mark label specification

Text of the mark is black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



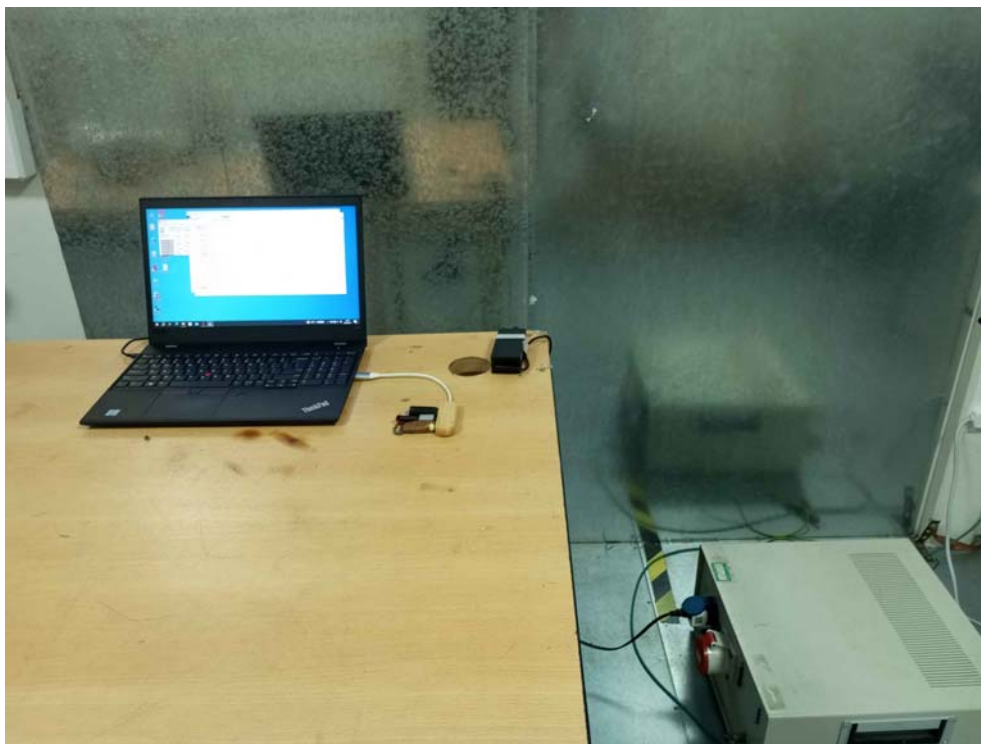
6.2 Mark Location: Rear enclosure

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 advertising. 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.



Appendix:

Conducted Emissions



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

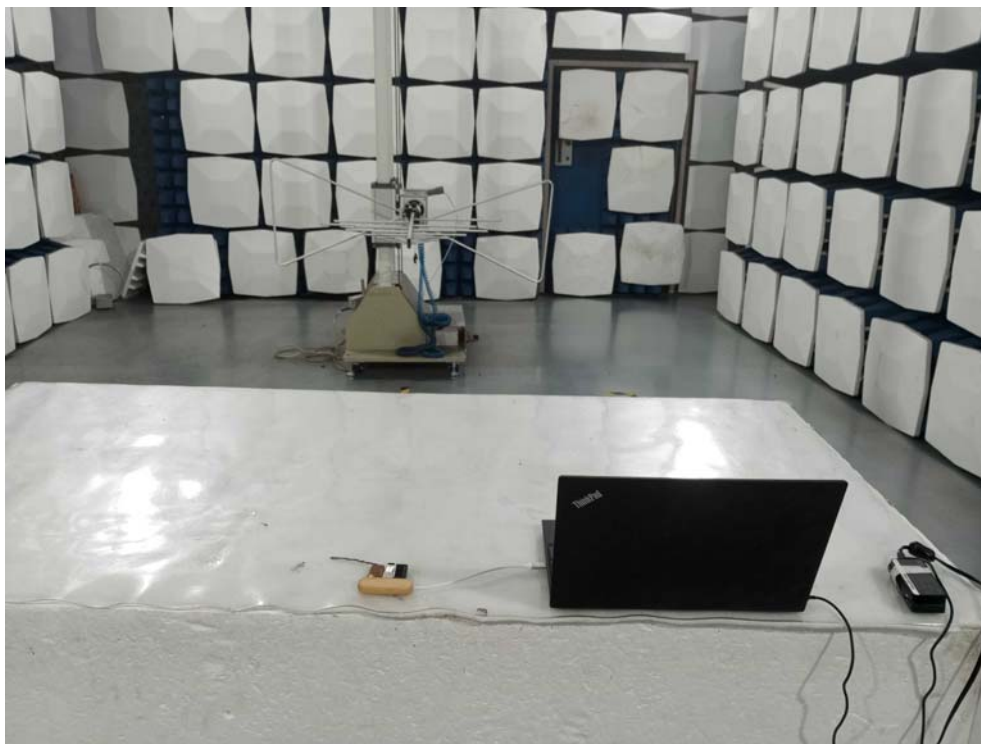
This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send 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.



Appendix:

Radiated Emissions



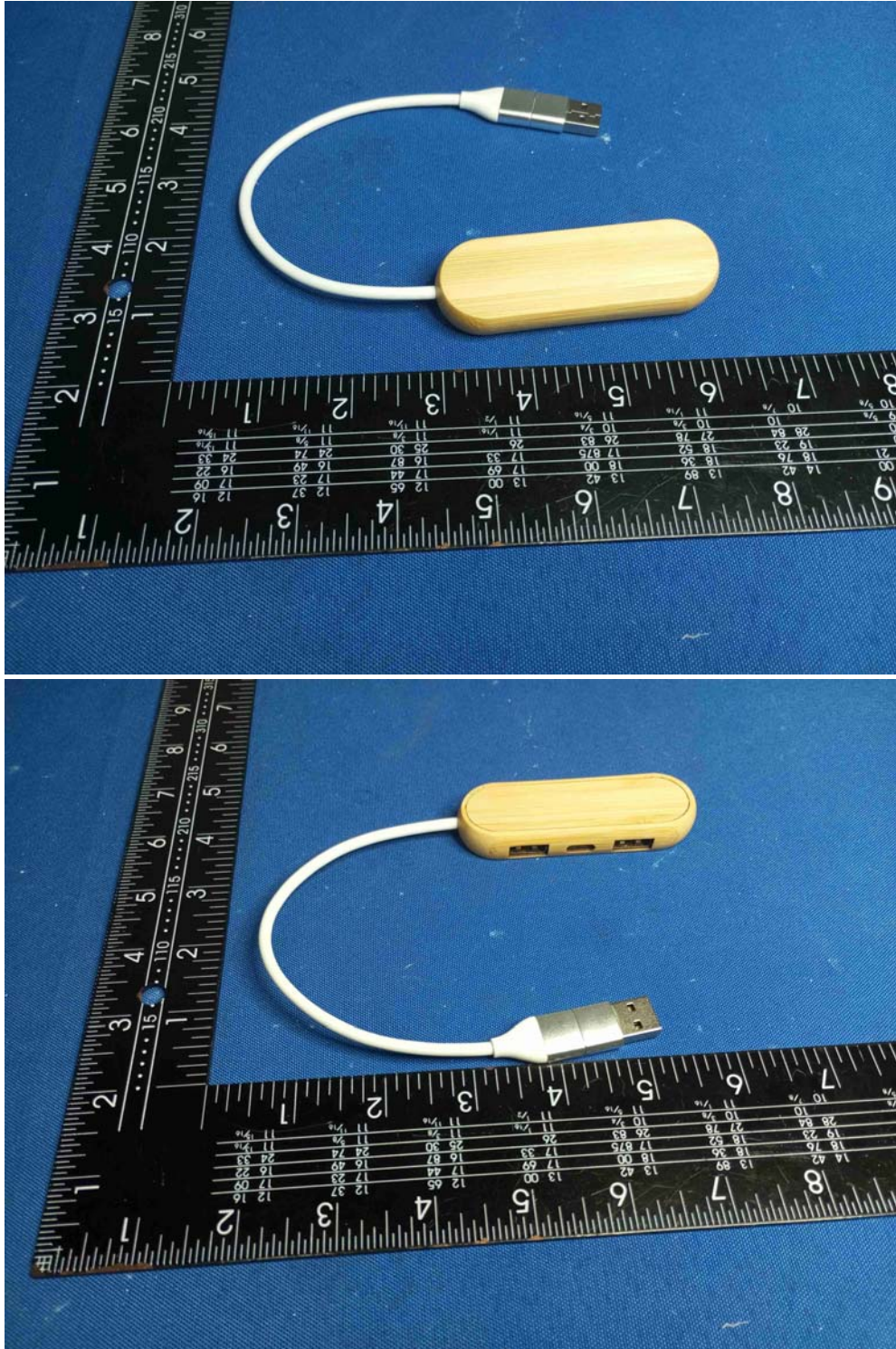
The report refers only to the sample tested and does not apply to the bulk.

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 advertising. 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.



Photographs – EUT



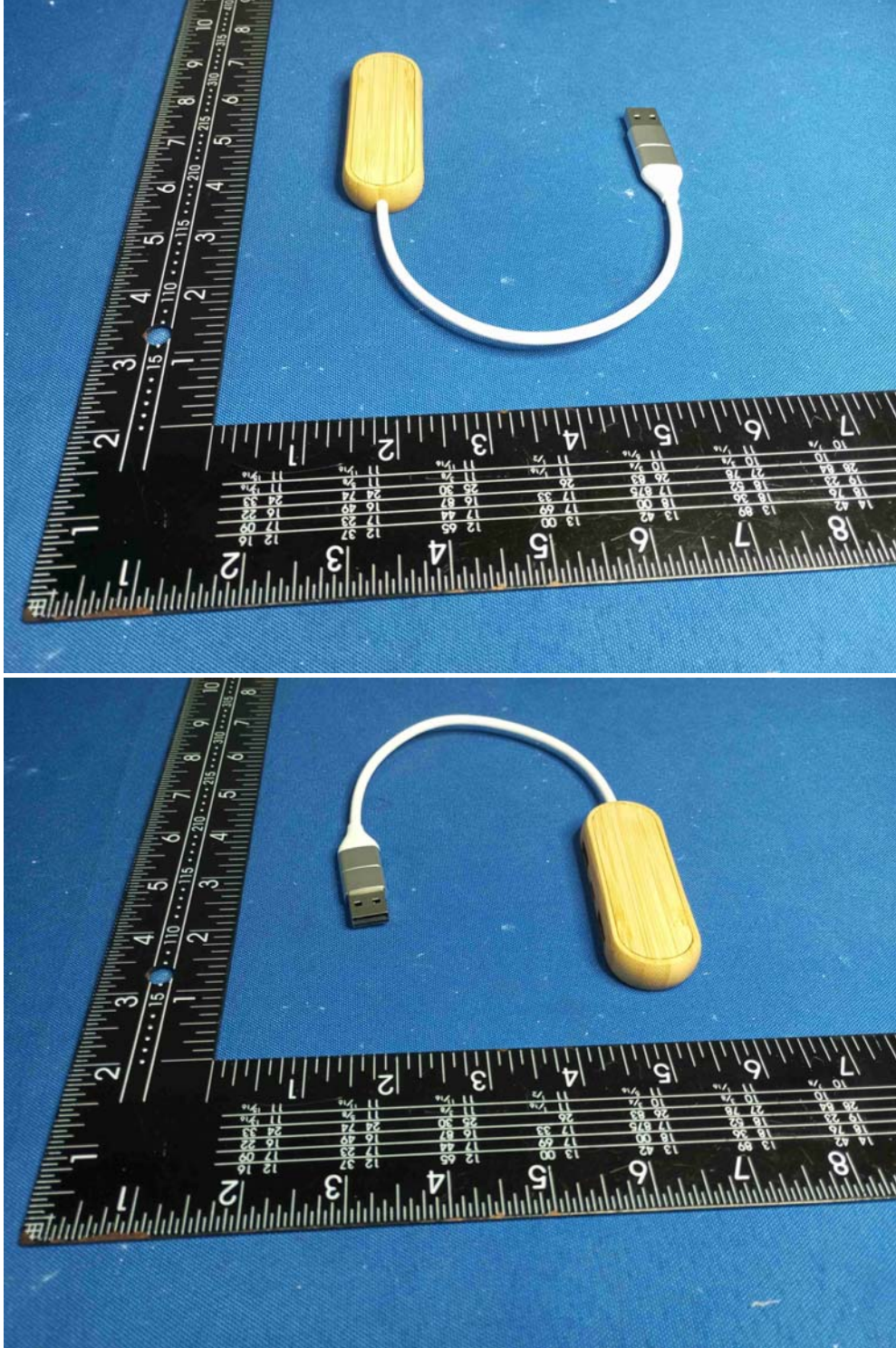
The report refers only to the sample tested and does not apply to the bulk.

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 advertising. The client to whom the report is issued may, however, show or send it . or a certified copy thereof 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.



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 advertising. 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.



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 advertising. 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.



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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or other 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.



Photographs – EUT



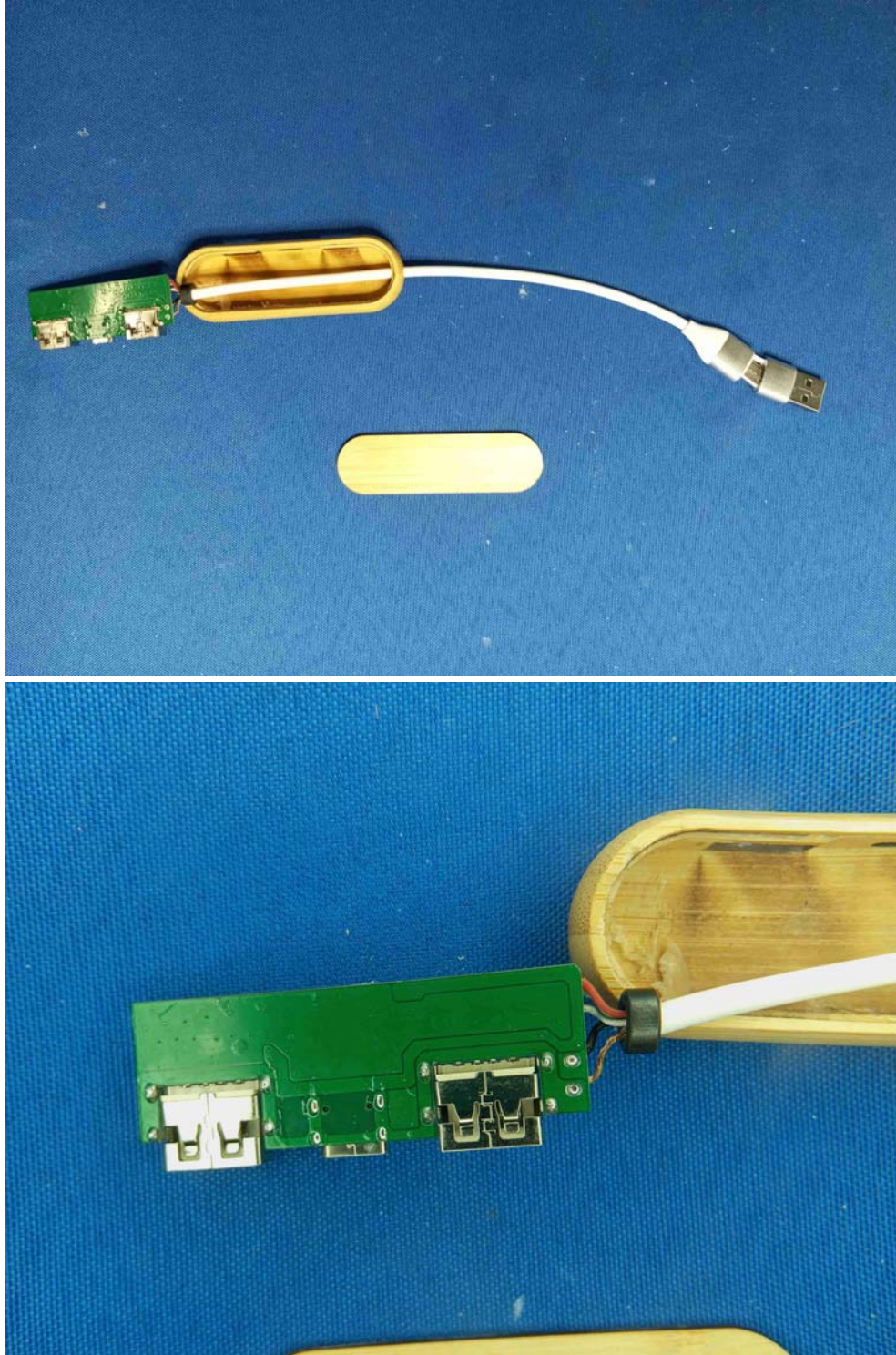
The report refers only to the sample tested and does not apply to the bulk.

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 advertising. 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.



Photographs – EUT



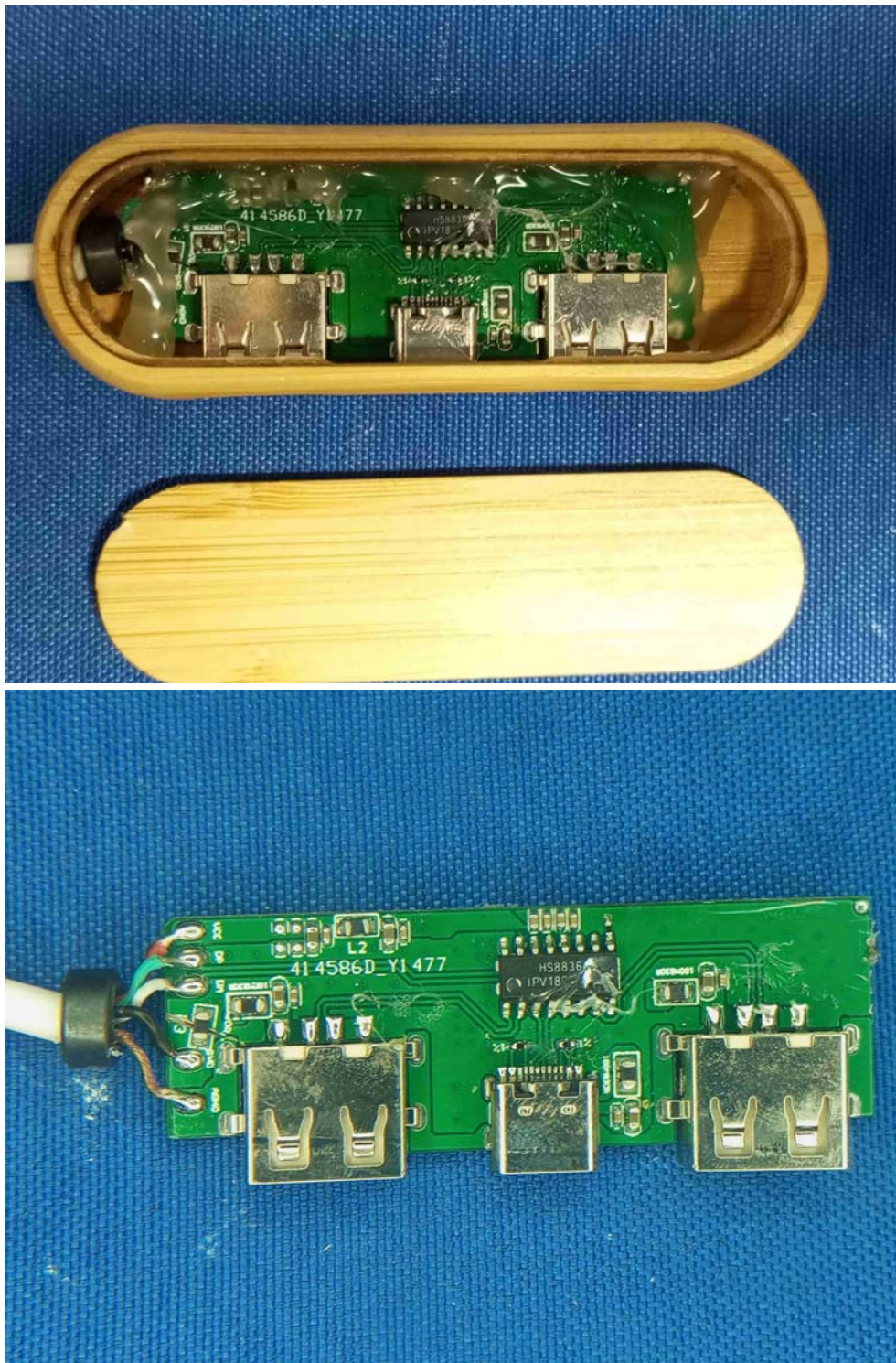
The report refers only to the sample tested and does not apply to the bulk.

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 advertising. 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.



Photographs – EUT



-End of the report-

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 advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof 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.