UN38.3 测试报告

UN38.3 Test Report

申请商 APPLICANT	:	益誠國際驗證股份有限公司
产品名称 PRODUCT NAME	:	可充电锂离子聚合物电芯 Rechargeable Li-ion Polymer Cell
型号/MODEL NAME	:	FHPV476792P
商标/TRADE NAME	:	N/A
品牌/BRAND NAME	:	N/A
额定值/RATING	:	3.85 V, 4850 mAh, 18.67 Wh
接收日期 RECEIPT DATE	:	2021-01-14
测试日期 TEST DATE	:	2021-01-14 to 2021-02-19
签发日期 ISSUE DATE	:	2021-04-02

编制
Edited by: 陈碧莲

陈碧莲

签发
Approved by: 李冬

李冬

NOTE: This document is issued by MORLAB, the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

MORLAB
SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
Tel: 86-755-36698555 Fax: 86-755-36698525
Http://www.morlab.cn E-mail: service@morlab.cn

测试报告声明

Test Report Declaration

申请商/Applicant	益誠國際驗證股份有限公司	
申请商地址 Applicant Address	臺北市中山區長安東路 2 段 108 號 7 樓之 5	
产品名称 Product Name	可充电锂离子聚合物电芯 Rechargeable Li-ion Polymer Cell	
型号/ Model Name	FHPV476792P	
额定值/ Rating	3.85 V, 4850 mAh, 18.67 Wh	
制造商信息 Manufacturer information	制造商/Manufacturer	广东风华新能源股份有限公司 Guangdong Fenghua New Energy Co., Ltd.
	制造商地址 Manufacturer Address	中国广东省肇庆市端州区睦岗镇太和路 2 号 No.2 Taihe Road, Mugang Town, Duanzhou District, Zhaoqing, Guangdong Province, China
尺寸/Size	4.65*67.0*91.5 mm	
电池信息 Battery information	单电芯/ Single cell	
	物理特性/Physical description	棱形固体/ Prismatic solid
检验方法及判定标准 Test Method and Criterion	联合国《关于危险货物运输的建议书试验和标准手册》第六版修正1第38.3节 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria"ST/SG/AC.10/11/Rev.6/Amend.1, section 38.3	
测试项目 Test Items	高度模拟试验；温度试验；振动试验；冲击试验；外短路试验；挤压试验；强制放电 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Force discharge	
测试结论 Conclusion	受检样品通过 UN 38.3 各项检测，检测结果合格 The sample has passed the test items of UN38.3	
备注/ Remarks	无/None	

摩尔实验室检验报告

Morlab Test Report

序号 No.	检验项目名称 Name of test items	标准要求或标准款号 Standard Requirement or the Clause Number of Standard	检测结果 Test Result	本项结论 Test Conclusion	备注 Remarks
1	高度模拟试验 Altitude simulation	联合国《关于危险货物运输的建议书 试验和标准手册》(以下简称:试验和标准手册)UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.1 Test T.1	见附表 1 See Appendix 1	合格 Passed	/
2	温度试验 Thermal Test	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.2 Test T.2	见附表 2 See Appendix 2	合格 Passed	/
3	振动试验 Vibration	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.3 Test T.3	见附表 3 See Appendix 3	合格 Passed	/
4	冲击试验 Shock	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.4 Test T.4	见附表 4 See Appendix 4	合格 Passed	/
5	外短路试验 External short circuit	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.5 Test T.5	见附表 5 See Appendix 5	合格 Passed	/
6	挤压试验 Crush	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.6 Test T.6	见附表 6 See Appendix 6	合格 Passed	/
7	过充电试验 Overcharge	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.7 Test T.7	见附表 7 See Appendix 7	N/A	/
8	强制放电 Force discharge	试验和标准手册 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.8 Test T.8	见附表 8 See Appendix 8	合格 Passed	/
检验环境条件 Test Environment Condition		环境温度: 15~25℃ Ambient Temperature: 15~25℃			
备注 Remarks		试验样品为单电芯，无过充电保护装置，不适用于过充电试验。 The battery cell do not equip with overcharge protection that are not subjected to the overcharge test.			

Change History		
Version	**Date**	**Reason for change**
1.0	2021-04-02	First edition

检验报告-附件 1

Test Report-Appendix 1

序号 No.	1	检测项目名称 Name of test items		高度模拟试验 Altitude simulation				
样品编号 Sample No	样品状态 Sample Status	试验前 Before		试验后 After		质量损失 Mass Loss/%	剩余电压 Residual OCV/%	其他现象 Other Event
		质量 Weight/g	开路电压 OCV/V	质量 Weight/g	开路电压 OCV/V			
1	首次充满 Fully charged at first cycle	65.5215	4.364	65.5207	4.361	0.0012	99.93	O
2	首次充满 Fully charged at first cycle	65.5674	4.364	65.5666	4.360	0.0012	99.91	O
3	首次充满 Fully charged at first cycle	65.1790	4.361	65.1783	4.356	0.0011	99.89	O
4	首次充满 Fully charged at first cycle	65.5793	4.363	65.5784	4.358	0.0014	99.89	O
5	首次充满 Fully charged at first cycle	65.3069	4.356	65.3063	4.352	0.0009	99.91	O
6	25 次循环后充满 Fully charged after 25 cycles	66.1711	4.379	66.1703	4.378	0.0012	99.98	O
7	25 次循环后充满 Fully charged after 25 cycles	65.2497	4.368	65.2491	4.364	0.0009	99.91	O
8	25 次循环后充满 Fully charged after 25 cycles	65.4106	4.372	65.4099	4.366	0.0011	99.86	O
9	25 次循环后充满 Fully charged after 25 cycles	65.5458	4.367	65.5451	4.362	0.0011	99.89	O
10	25 次循环后充满 Fully charged after 25 cycles	65.1916	4.370	65.1907	4.366	0.0014	99.91	O

备注: L-漏液，V-漏气，D-解体， R-破裂，F-起火，O-无漏液，无解体，无破裂，无起火；

Remark: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No Leakage, No Venting, No Disassembly, No Rupture, No Fire

检验报告-附件 2

Test Report-Appendix 2

序号 No.	2	检测项目名称 Name of test items		热测试 Thermal Test				
样品编号 Sample No	样品状态 Sample Status	试验前 Before		试验后 After		质量损失 Mass Loss/%	剩余电压 Residual OCV/%	其他现象 Other Event
		质量 Weight/g	开路电压 OCV/V	质量 Weight/g	开路电压 OCV/V			
1	首次充满 Fully charged at first cycle	65.5207	4.361	65.5173	4.279	0.0052	98.12	O
2	首次充满 Fully charged at first cycle	65.5666	4.360	65.5614	4.277	0.0079	98.10	O
3	首次充满 Fully charged at first cycle	65.1783	4.356	65.1739	4.280	0.0068	98.26	O
4	首次充满 Fully charged at first cycle	65.5784	4.358	65.5740	4.278	0.0067	98.16	O
5	首次充满 Fully charged at first cycle	65.3063	4.352	65.3016	4.274	0.0072	98.21	O
6	25 次循环后充满 Fully charged after 25 cycles	66.1703	4.378	66.1628	4.286	0.0113	97.90	O
7	25 次循环后充满 Fully charged after 25 cycles	65.2491	4.364	65.2448	4.287	0.0066	98.24	O
8	25 次循环后充满 Fully charged after 25 cycles	65.4099	4.366	65.4066	4.286	0.0050	98.17	O
9	25 次循环后充满 Fully charged after 25 cycles	65.5451	4.362	65.5413	4.282	0.0058	98.17	O
10	25 次循环后充满 Fully charged after 25 cycles	65.1907	4.366	65.1859	4.286	0.0074	98.17	O

备注: L-漏液，V-漏气，D-解体， R-破裂，F-起火，O-无漏液，无解体，无破裂，无起火；

Remark: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No Leakage, No Venting, No Disassembly, No Rupture, No Fire

检验报告-附件 3

Test Report-Appendix 3

序号 No.	3	检测项目名称 Name of test items		振动试验 Vibration				
样品编号 Sample No	样品状态 Sample Status	试验前 Before		试验后 After		质量损失 Mass Loss/%	剩余电压 Residual OCV/%	其他现象 Other Event
		质量 Weight/g	开路电压 OCV/V	质量 Weight/g	开路电压 OCV/V			
1	首次充满 Fully charged at first cycle	65.5173	4.279	65.5171	4.278	0.0003	99.98	O
2	首次充满 Fully charged at first cycle	65.5614	4.277	65.5610	4.276	0.0006	99.98	O
3	首次充满 Fully charged at first cycle	65.1739	4.280	65.1736	4.279	0.0005	99.98	O
4	首次充满 Fully charged at first cycle	65.5740	4.278	65.5737	4.277	0.0005	99.98	O
5	首次充满 Fully charged at first cycle	65.3016	4.274	65.3014	4.273	0.0003	99.98	O
6	25 次循环后充满 Fully charged after 25 cycles	66.1628	4.286	66.1625	4.285	0.0005	99.98	O
7	25 次循环后充满 Fully charged after 25 cycles	65.2448	4.287	65.2444	4.286	0.0006	99.98	O
8	25 次循环后充满 Fully charged after 25 cycles	65.4066	4.286	65.4061	4.285	0.0008	99.98	O
9	25 次循环后充满 Fully charged after 25 cycles	65.5413	4.282	65.5408	4.281	0.0008	99.98	O
10	25 次循环后充满 Fully charged after 25 cycles	65.1859	4.286	65.1855	4.285	0.0006	99.98	O

备注: L-漏液，V-漏气，D-解体， R-破裂，F-起火，O-无漏液，无解体，无破裂，无起火；

Remark: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No Leakage, No Venting, No Disassembly, No Rupture, No Fire

检验报告-附件 4

Test Report-Appendix 4

序号 No.	4	检测项目名称 Name of test items		冲击试验 Shock				
样品编号 Sample No	样品状态 Sample Status	试验前 Before		试验后 After		质量损失 Mass Loss/%	剩余电压 Residual OCV/%	其他现象 Other Event
		质量 Weight/g	开路电压 OCV/V	质量 Weight/g	开路电压 OCV/V			
1	首次充满 Fully charged at first cycle	65.5171	4.278	65.5169	4.278	0.0003	100.00	O
2	首次充满 Fully charged at first cycle	65.5610	4.276	65.5607	4.276	0.0005	100.00	O
3	首次充满 Fully charged at first cycle	65.1736	4.279	65.1734	4.278	0.0003	99.98	O
4	首次充满 Fully charged at first cycle	65.5737	4.277	65.5735	4.277	0.0003	100.00	O
5	首次充满 Fully charged at first cycle	65.3014	4.273	65.3013	4.273	0.0002	100.00	O
6	25 次循环后充满 Fully charged after 25 cycles	66.1625	4.285	66.1623	4.284	0.0003	99.98	O
7	25 次循环后充满 Fully charged after 25 cycles	65.2444	4.286	65.2441	4.285	0.0005	99.98	O
8	25 次循环后充满 Fully charged after 25 cycles	65.4061	4.285	65.4059	4.284	0.0003	99.98	O
9	25 次循环后充满 Fully charged after 25 cycles	65.5408	4.281	65.5405	4.281	0.0005	100.00	O
10	25 次循环后充满 Fully charged after 25 cycles	65.1855	4.285	65.1853	4.285	0.0003	100.00	O
备注: L-漏液，V-漏气，D-解体， R-破裂，F-起火，O-无漏液，无解体，无破裂，无起火； Remark: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O-No Leakage, No Venting, No Disassembly, No Rupture, No Fire								

检验报告-附件 5

Test Report-Appendix 5

序号 No.	5	检测项目名称 Name of test items	外短路试验 External short circuit
样品编号 Sample No.	样品状态 Sample status	样品表面最高温度 Max. External Test Items / ℃	其他现象 Other Event
1	首次充满 Fully charged at first cycle	104.0	O
2	首次充满 Fully charged at first cycle	102.4	O
3	首次充满 Fully charged at first cycle	110.8	O
4	首次充满 Fully charged at first cycle	118.3	O
5	首次充满 Fully charged at first cycle	100.6	O
6	25 次循环后充满 Fully charged after 25 cycles	113.0	O
7	25 次循环后充满 Fully charged after 25 cycles	108.3	O
8	25 次循环后充满 Fully charged after 25 cycles	112.5	O
9	25 次循环后充满 Fully charged after 25 cycles	107.9	O
10	25 次循环后充满 Fully charged after 25 cycles	105.9	O
备注: D-解体， R-破裂，F-起火，O-无解体，无破裂，无起火； Remark: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture, No Fire			

检验报告-附件 6
Test Report-Appendix 6

序号 No.	6	检测项目名称 Name of test items	挤压试验 Crush
样品编号 Sample No.	样品状态 Sample status	样品表面最高温度 Max. External Test Items/ ℃	其他现象 Other Event
11	首次 50%容量 50% of capacity at first cycle	22.8	O
12	首次 50%容量 50% of capacity at first cycle	22.7	O
13	首次 50%容量 50% of capacity at first cycle	23.0	O
14	首次 50%容量 50% of capacity at first cycle	22.9	O
15	首次 50%容量 50% of capacity at first cycle	22.7	O
16	25 次循环后 50%容量 50% of capacity after25 cycles	23.1	O
17	25 次循环后 50%容量 50% of capacity after25 cycles	23.1	O
18	25 次循环后 50%容量 50% of capacity after25 cycles	23.8	O
19	25 次循环后 50%容量 50% of capacity after25 cycles	23.2	O
20	25 次循环后 50%容量 50% of capacity after25 cycles	23.2	O
备注: D-解体，F-起火，O-无解体，无起火； Remark: D-Disassembly, F-Fire, O-No Disassembly, No Fire			

检验报告-附件 7

Test Report-Appendix 7

序号 No.	7	检测项目名称 Name of test items	过充电试验 Overcharge
样品编号 Sample No.	样品状态 Sample status	其他现象 Other Event	
N/A	N/A	N/A	
备注: D-解体， F-起火，O-无解体，无起火； Remark: D-Disassembly, F-Fire, O-No Disassembly, No Fire			

检验报告-附件 8
Test Report-Appendix 8

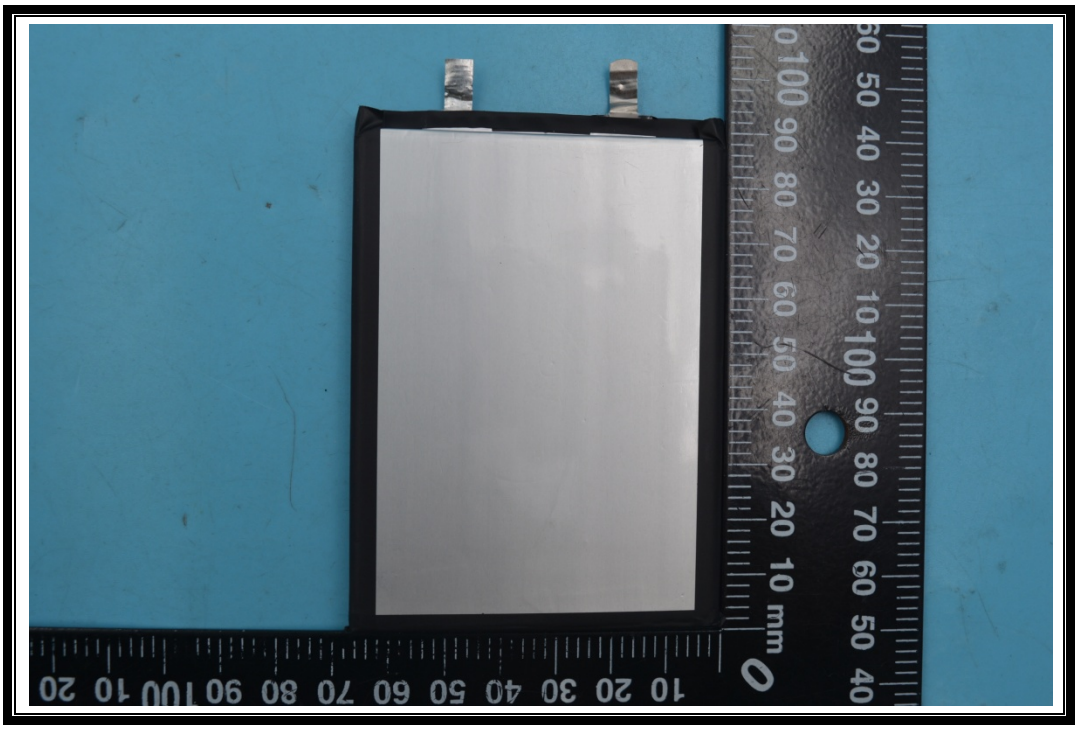
序号 No.	8	检测项目名称 Name of test items	强制放电 Force discharge
样品编号 Sample No.	样品状态 Sample status	放电时间（H） Discharge time	其他现象 Other Event
21	首次完全放电 Fully discharged at first cycle	1	O
22	首次完全放电 Fully discharged at first cycle	1	O
23	首次完全放电 Fully discharged at first cycle	1	O
24	首次完全放电 Fully discharged at first cycle	1	O
25	首次完全放电 Fully discharged at first cycle	1	O
26	首次完全放电 Fully discharged at first cycle	1	O
27	首次完全放电 Fully discharged at first cycle	1	O
28	首次完全放电 Fully discharged at first cycle	1	O
29	首次完全放电 Fully discharged at first cycle	1	O
30	首次完全放电 Fully discharged at first cycle	1	O
31	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
32	25 次循环后完全放电 Fully discharged after 25 cycles	1	O

33	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
34	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
35	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
36	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
37	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
38	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
39	25 次循环后完全放电 Fully discharged after 25 cycles	1	O
40	25 次循环后完全放电 Fully discharged after 25 cycles	1	O

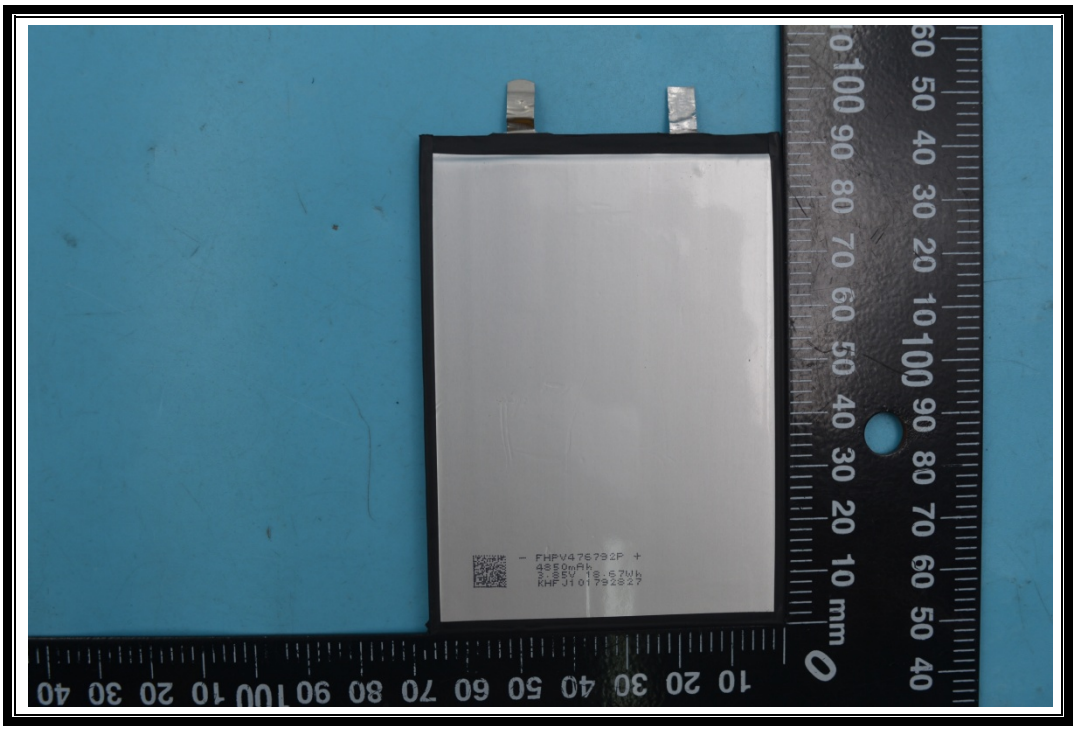
备注: D-解体， F-起火，O-无解体，无起火；
Remark: D-Disassembly, F-Fire, O-No Disassembly, No Fire
最大放电电流/ Max Continuous Discharge Current: 4850 mA

样品图片 Photographs of the EUT

1



2



仪器设备清单/ List of test equipment used:

仪器设备名称/equipment	型号/model	规格/Range used	校准日期/Calibration date	失效日期/Expiration date
高性能电池检测系统/High-performance battery detection system	CT-4008-5V6A-S1	5V, 6A	2020/07/27	2021/07/26
低气压箱/Vacuum chamber	CHKX-125	0.5KPa~101Kpa	2021/03/17	2022/03/16
快速温变箱/Rapid temperature change box	QW1070P6W15	-70~+150℃ ≥15℃/min	2021/03/17	2022/03/16
振动试验台/Vibration test bench	ES-30-370	30kN 5Hz～2800Hz	2020/10/26	2021/10/25
冲击碰撞试验台/Impact test bench	SY11-50	150～4000 m/s^2	2021/03/18	2022/03/17
防爆温箱/explosion-proof oven	DE207C	25~200℃	2021/03/17	2022/03/16
短路器/Short circuit	/	80±20mΩ	2021/03/17	2022/03/16
挤压试验机/Crush Apparatus	BE-6045	0~15KN	2020/10/26	2021/10/25
落球冲击台/Impact Test Apparatus	BE-5066	25~1000mm	2021/03/17	2022/03/16
电池充放电系统/Battery Testing System	BTS-30V20A-8CH	30V, 20A	2020/07/27	2021/07/26
电池充放电系统/Battery Testing System	M-60V60A-2CH-1Hz	60V, 60A	2021/03/17	2022/03/16
直流电源/DC power supply	KXN-6050D	0-60V/0-50A/300W	2020/10/26	2021/10/25
电子负载/Electronic load	IT8512A+	300W/120V/30A, 0Ω~7.5KΩ	2020/07/27	2021/07/26

Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Laboratory Address:	FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525
E-mail:	service@morlab.cn
Website	Http://www.morlab.cn

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

***** END OF REPORT *****