

COVER PAGE FOR TEST REPORT

| | |
|-----------------------------|--|
| Test Item Description: | Laptop Computer (OLPC) |
| Model/Type Reference: | XO-1 |
| Rating(s): | 12 Vdc, 1.42 A |
| Standards: | IEC 60950-1:2001, First Edition; EN 60950-1:2001 |
| Applicant Name and Address: | QUANTA COMPUTER INC 188 WEN-HWA 2ND RD KUEI SHAN HSIANG TAOYUAN HSIEN 333 TAIWAN |
| Factory Location(s): | 1. TECH-FULL COMPUTER (CHANGSHU) CO LTD, DIV OF QUANTA COMPUTER INC NO 8 JINZHOU RD, HIGH-TECH INDUSTRIAL PARK, CHANGSHU ECONOMIC DEVELOPMENT ZONE, CHANGSHU JIANGSU 215500, CHINA 2. TECH-FRONT (SHANGHAI) COMPUTER CO LTD SONGJIANG EXPORT PROCESSING ZONE, 68 SAN-ZHUANG RD, SHANGHAI 201613, CHINA 3. TECH-PRO (SHANGHAI) COMPUTER CO LTD SONGJIANG EXPORT PROCESSING ZONE, 6 LANE 58 SANZHUANG RD, SHANGHAI, CHINA 4. TECH-COM (SHANGHAI) COMPUTER CO LTD 68 SANZHUANG RD, SONGJIANG EXPORT PROCESSING ZONE, SHANGHAI 201613, CHINA |

This Report includes the following parts, in addition to this cover page:

1. Specific Technical Criteria
2. Clause Verdicts
3. Critical Components
4. Test Results

The original report was modified on 2007-12-13 to include the following changes/additions:

- This test report shall be read in conjunction with the original report, number: E142692-A138-CB-1, issued 2007-11-06, with CB Certificate (DK-12031), issued 2007-11-06

- This report has been amended, due to:

1. Correct Battery Pack manufacturer name from GP to Sylva Industries Ltd Rechargeable Battery Div.
2. Alternate Battery Pack manufacturer by Li-Fe Battery Pack, Model: NTA2490, rated 7.3 Vdc, 2800mAh.
3. Alternate Enclosure manufacturer by Chimei-Asahi Corporation(TPI), Model PC-540, rated V-0 , 1.5 mm min., 60 degree C.

- Only the following tests are conducted:

1. 1.6.2 - Input Test: Single-Phase
2. 4.5.1, 1.4.12, 1.4.13 - Heating Test



All applicable tests according to the above standard(s) have been carried out.


Test results are valid only for the tested equipment.



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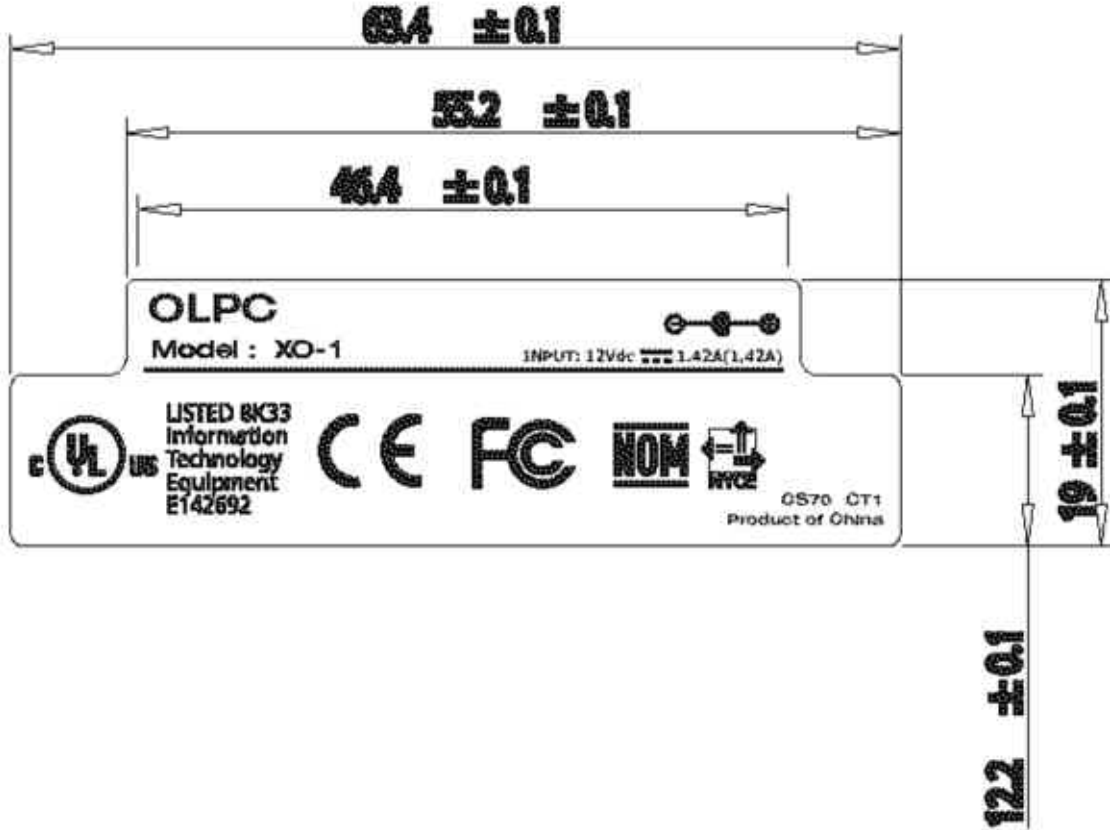
| | | |
|--|--|--|
|  | Test Report issued under the responsibility of: |  Underwriters Laboratories |
| UL International Demko A/S | | |
| TEST REPORT IEC 60950-1 and/or EN 60950-1 Information technology equipment-Safety Part 1:General Requirements | | |
| Report Reference No | E142692-A138-CB-1 | |
| Date of issue | 2007-11-06 | |
| Total number of pages | 15 | |
| CB Testing Laboratory | Underwriters Laboratories Taiwan Co., Ltd. | |
| Address | 260 Da-Yeh Road Peitou Taipei City, Taiwan 112 | |
| Applicant's name | QUANTA COMPUTER INC | |
| Address | 188 WEN-HWA 2ND RD KUEI SHAN HSIANG TAOYUAN HSIEN 333 TAIWAN | |
| Test specification: | | |
| Standard | IEC 60950-1:2001, First Edition; EN 60950-1:2001 | |
| Test procedure | CB/CCA -Scheme | |
| Non-standard test method | N/A | |
| Test Report Form No. | IECEN60950_1B | |
| Test Report Form originator | SGS Fimko Ltd | |
| Master TRF | dated 2003-03 | |
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| This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02. | | |

| | |
|------------------------------------|---|
| Test item description | Laptop Computer (OLPC) |
| Trade Mark | OLPC |
| |  |
| Model/Type reference | XO-1 |
| Manufacturer | QUANTA COMPUTER INC 188 WEN-HWA 2ND RD KUEI SHAN HSIANG TAOYUAN HSIEN 333 TAIWAN |
| Rating | 12 Vdc, 1.42 A |

| Testing procedure and testing location: | |
|--|--|
| <input checked="" type="checkbox"/> CB Testing Laboratory | |
| Testing location / address..... : | Underwriters Laboratories Taiwan Co., Ltd. 260 Da-Yeh Road Peitou Taipei City, Taiwan 112 |
| <input type="checkbox"/> Associated CB Test Laboratory | |
| Testing location / address..... : | |
| Tested by (name + signature) : | Kevin Hsu  |
| Approved by (+ signature) : | Derek Chen  |
| <input type="checkbox"/> Testing Procedure: TMP | |
| Tested by (name + signature) : | _____ |
| Approved by (+ signature) : | _____ |
| Testing location / address..... : | _____ |
| <input type="checkbox"/> Testing Procedure: WMT | |
| Tested by (name + signature) : | _____ |
| Witnessed by (+ signature)..... : | _____ |
| Approved by (+ signature) : | _____ |
| Testing location / address..... : | _____ |
| <input type="checkbox"/> Testing Procedure: SMT | |
| Tested by (name + signature) : | _____ |
| Approved by (+ signature) : | _____ |
| Supervised by (+ signature) : | _____ |
| Testing location / address..... : | _____ |
| <input type="checkbox"/> Testing Procedure: RMT | |
| Tested by (name + signature) : | _____ |
| Approved by (+ signature) : | _____ |
| Supervised by (+ signature) : | _____ |
| Testing location / address..... : | _____ |

| | |
|---|------------------------------------|
| Summary of Testing: Unless otherwise indicated, all tests were conducted at Underwriters Laboratories Taiwan Co., Ltd. 260 Da-Yeh Road Peitou Taipei City, Taiwan 112. | |
| Tests performed (name of test and test clause) | Testing location / Comments |
| Input: Single-Phase (1.6.2) Heating (4.5.1, 1.4.12, 1.4.13) | |
| Summary of Compliance with National Differences: AR, AT, AU, BE, CA, CH, CN, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IL, IN, IT, JP, KE, KR, MY, NL, NO, NZ, PL, SE, SG, SI, SK, US | |

Copy of Marking Plate



| | |
|---|------------------------------|
| Test item particulars : | |
| Equipment mobility | transportable |
| Operating condition | continuous |
| Mains supply tolerance (%) | No direct connection |
| Tested for IT power systems | No |
| IT testing, phase-phase voltage (V) | N/A |
| Class of equipment | Class III (supplied by SELV) |
| Mass of equipment (kg) | 1.49 (max.) |
| Protection against ingress of water | IP 20 |
| Possible test case verdicts: | |
| - test case does not apply to the test object | N / A |
| - test object does meet the requirement | P(Pass) |
| - test object does not meet the requirement | F(Fail) |
| Testing: | |
| Date(s) of receipt of test item | 2007-10-16 |
| Date(s) of Performance of tests | 2007-12-07 |
| General remarks: | |
| The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. | |
| "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. | |
| Throughout this report a point is used as the decimal separator. | |
| Refer to the Cover Page For Test Report for a list of all Factory Locations. | |

| |
|---|
| GENERAL PRODUCT INFORMATION: |
| Report Summary |
| The original report was modified on 2007-12-13 to include the following changes/additions: - This test report shall be read in conjunction with the original report, number: E142692-A138-CB-1, issued 2007-11-06, with CB Certificate (DK-12031), issued 2007-11-06 - This report has been amended, due to: 1. Correct Battery Pack manufacturer name from GP to Sylva Industries Ltd Rechargeable Battery Div. 2. Alternate Battery Pack manufacturer by Li-Fe Battery Pack, Model: NTA2490, rated 7.3 Vdc, 2800mAh. 3. Alternate Enclosure manufacturer by Chimei-Asahi Corporation(TPI), Model PC-540, rated V-0 , 1.5 mm min., 60 degree C. |
| - Only the following tests are conducted: 1. 1.6.2 - Input Test: Single-Phase 2. 4.5.1, 1.4.12, 1.4.13 - Heating Test |

Product Description

Electronic components are mounted on PWB, which is enclosed by plastic enclosure and accompanied with three USB ports, one Card Reader.

The OLPC XO is a laptop computer system consisting of a (a) laptop computer, (b) direct-plug in power supply (power adapter) and (c) removable battery pack. The OLPC XO is intended for use as a child development tool primarily by children five years of age and older. In addition to IEC 60950-1, CSA/UL 60950-1 and EN 60950-1, applicable parts of ASTM F 963, 2007 Edition, Standard Consumer Safety Specification on Toy Safety, were applied to address use of the product by the intended user group.

Model Differences

N/A

Additional Information

Technical Considerations

The product was submitted and tested for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 45°C

The product was investigated to the following additional standards: 1. EN 60950-1:2001+A11:2004 (which includes all European national differences, including those specified in this test report)., 2. UL Standard for Safety for Electric Toys, UL 696, Ninth Edition, Dated March 15, 1996, Revisions: This Standard contains revisions through and including June 12, 2006., 3. ASTM F963, 2007 Edition, Standard Consumer Safety Specification on Toy Safety.

The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): All USB ports.

Technical Considerations - Engineering Considerations: The OLPC XO is a laptop computer system consisting of a (a) laptop computer, (b) direct-plug in power supply (power adapter) and (c) removable battery pack. The OLPC XO is intended for use as a child development tool primarily by children five years of age and older. In addition to IEC 60950-1, CSA/UL 60950-1 and EN 60950-1, applicable parts of ASTM F 963, 2007 Edition, Standard Consumer Safety Specification on Toy Safety, were applied to address use of the product by the intended user group.

| IEC 60950-1 | | | |
|-------------|---|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 1.6.2 | Input current | (see appended table 1.6.2) | Pass |
| 4.5.1 | Maximum temperatures | Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established. (see appended table 4.5) | Pass |
| | Normal load condition per Annex L : | Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established. | Pass |

| IEC 60950-1 | | | |
|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 1.5.1 | TABLE: list of critical components | | | | | Pass |
|---|------------------------------------|---------------|---|---------------------|--|------|
| object/part No. | manufacturer/ trademark | type/model | technical data | standard | mark(s) of conformity ¹⁾ | |
| 01 Connectors and Receptacles (secondary ELV/SELV circuits) | -- | Metal/Plastic | Copper alloy pins housed in bodies of plastic rated V-2 min. | UL94, UL498, UL1977 | UL, -- | |
| 02 Insulating Tubing/Sleeving | Various | Various | FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; 105 degree C, 300V. | UL224 | UL, -- | |
| 03 Label | Various | Various | 60 degree C if Max. surface temperature not specified | UL969 | UL, -- | |
| 04-01 Wiring, internal, secondary | Various | Various | FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; min 30 V, 60 degree C, routed away from primary uninsulated live parts, and unless insulated for the highest voltage involved, from insulated primary circuit wiring | UL758 | UL, -- | |
| 05 Internal Plastic Part Materials | Various | Various | Min. V-2 | UL94, UL746C | UL, -- | |
| 06 Printed Wiring Board | Various | Various | V-1 min., rated min. 105 degree C | UL796 | UL, -- | |
| 07 Plastic Material of Flexible Printed Wiring | Various | Various | V-2 min. or VTM-2 min. when no components mounted on surface | UL94, UL746C | UL, -- | |
| 08 Enclosure | GE Plastics | CY0156 | V-0 , 1.5 mm | UL94, UL746C | UL, --- | |

| IEC 60950-1 | | | | | |
|----------------------------------|---|-------------------|--|---------------------|------------------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| | Pacific | | min., 70 degree C, overall 231.0 x 244.0 x 32.8 (with LCD panel) or 231.0 x 244.0 x 22.0 (without LCD panel area) | | |
| 08a Enclosure (Alternate) | Chimei-Asahi Corporation(TPI) | PC-540 | V-0 , 1.5 mm min., 60 degree C, overall 231.0 x 244.0 x 32.8 (with LCD panel) or 231.0 x 244.0 x 22.0 (without LCD panel area) | UL94, UL746C | UL, --- |
| 09 Power Adaptor | PI Electronics (H.K.) Ltd. | AD5953 | INPUT: 100-240Vac 560mA 50/60Hz, OUTPUT: 12Vdc 1.417A.(Class II) | UL60950-1 | UL, DK-11960 |
| 09a Power Adaptor (Alternate) | Lite-On | PA-1150-05Q1 | I/P: 100-240VAC, 0.5A, 50-60HZ; O/P: 12V/1.42A(Class II) | UL60950-1 | UL, NO45038 |
| 09b Power Adaptor (Alternate) | Delta | ADP-17FB A | I/P: 100-240VAC, 0.8A, 50-60HZ; O/P: 12V/1.42A(Class II) | UL60950-1 | UL, JPTUV-020617 |
| 10 Battery pack | BYD | CL1 | 6.5 V, 3,100 mAh (Li-ion) | UL60950-1 UL2054 | UL, -- |
| 10a Battery pack (Alternate) | Sylva Industries Ltd Rechargeable Battery Div | NTA2488 | 6.0 V, 3,000 mAh (Ni-MH) | UL60950-1 UL2054 | UL, -- |
| 10b Battery pack (Alternate) | Sylva Industries Ltd Rechargeable Battery Div | NTA2490 | 7.3 V, 2800 mAh (Li-Fe) | UL60950-1 UL2054 | UL, -- |
| 11 Mother board (for model XO-1) | Various | 31CL1MB0060 Rev J | 105 degree C | -- | --, -- |
| 11-1 Wireless LAN Card | Various | Various | 3.3Vdc | -- | --, -- |
| 11-2 R.T.C. Battery | Hitachi Maxell Ltd. | ML1220 | 3V, 18 mAh rechargeable maximum abnormal | UL1642 | UL, -- |

| IEC 60950-1 | | | | | |
|-------------|--------------------|--|--|-----------------|---------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |

| | | | | | |
|---|---|---------------|--|------------------------|--------|
| | | | charging current 10mA by multiple components Q33, D18 and R275 rated 1kohm | | |
| 11-2a R.T.C. Battery (Alternate) | Matsushita Electric Industrial Co Ltd., Panasonic Corp Of North America. | ML1220 | 3V, 17 mAh rechargeable maximum abnormal charging current 10mA by multiple components Q33, D18 and R275 rated 1kohm | UL1642 | UL, -- |
| 11-3. Protector IC U56 (for USB use) | RICHTEK | RT9703 series | 2.0-5.5Vdc, 3.5A | -- | --, -- |
| 11-3 a Protector IC U56 (for USB use) (Alternate) | GMT | G5282 series | 2.0-5.5Vdc, 1.0 A | -- | --, -- |
| 11-4 SELV connectors | Various | Various | three USB ports Connector | UL94, UL498, UL1977 | UL, -- |
| 12 Speakers | Various | Various | Rated 8 ohm, max. 1.0 Watt, max. two provided | -- | --, -- |
| 13 Keyboard | Various | Various | Min. flame HB | UL94 UL746C | UL, -- |
| 14 LCD panel | Various | Various | 7.5" TFT-LCD type, LED backlight module. | -- | --, -- |
| 15 Printed wiring board, flexible | Various | Various | Min V-2 or VTM- 2, 105 degree C | UL796 UL94 | UL, -- |
| ¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance | | | | | |

| IEC 60950-1 | | | |
|-------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |

| 1.6.2 | TABLE: electrical data (in normal conditions) | | | | | | Pass |
|--|---|---------|-------|--------|-------------|--|------|
| fuse # | I rated (A) | U (V) | P (W) | I (mA) | I fuse (mA) | condition/status | |
| -- | -- | 6.5Vdc | 7.1 | 1090 | 1090 | Maximum normal load with system discharge Battery pack power only D | |
| -- | -- | 6 Vdc | 6.9 | 1070 | 1070 | Maximum normal load with system discharge Battery pack power only E | |
| --- | -- | -- | -- | -- | -- | Alternate Battery Pack, Sylva Industries Ltd Rechargeable Battery Div., Li-Fe Battery Pack, Model: NTA2490, rated 7.3 Vdc, 2800mAh | |
| -- | 1.42 | 12Vdc | 17.1 | 1440 | 1440 | Maximum normal load with empty battery pack, A and F. | |
| -- | -- | 7.3 Vdc | 11 | 1500 | 1500 | Maximum normal load with system discharge Battery pack power only F | |
| supplementary information: | | | | | | | |
| Maximum Normal Load: The unit was installed fully discharged battery pack, playing software continuously, each USB ports load 2.5 W. Adaptor A. PI adaptor (Model AD5953LF) B. Delta adaptor (Model ADP-17FB A) C. Lite-on adaptor (Model PA-1150-05Q1) Battery pack model : D. BYD Battery Pack (Model CL1) E. Sylva Industries Ltd Rechargeable Battery Div., Battery Pack (Model NTA2488) F. Sylva Industries Ltd Rechargeable Battery Div., Li-Fe Battery Pack, (Model: NTA2490) | | | | | | | |

| 4.5 | TABLE: temperature rise measurements | | | | | | Pass |
|--|--------------------------------------|---------------------------|------------------------|---------------------------|----|-------------------|------|
| test voltage (V)..... | See below | -- | -- | -- | -- | -- | — |
| t1 (°C)..... | -- | -- | -- | -- | -- | -- | — |
| t2 (°C)..... | -- | -- | -- | -- | -- | -- | — |
| maximum temperature T of part/at: | T (°C) | | | | | allowed Tmax (°C) | |
| 5. Outside enclosure, top section, near CPU | 34 | 54 | 32 | 52 | -- | 95 | |
| 9. Outside enclosure, bottom surface, battery pack (Sylva Industries Ltd Rechargeable Battery Div.,) | 27 | 47 | 29 | 49 | -- | 75 | |
| Alternate Battery Pack, Sylva Industries Ltd Rechargeable Battery Div., Li-Fe Battery Pack, Model: NTA2490, rated 7.3 Vdc, 2800mAh | Condition 3 (Original) | Condition 3 (Shift to 45) | Condition 4 (Original) | Condition 4 (Shift to 45) | -- | -- | |
| 1.Amibent | 25 | 45 | 25 | 45 | -- | -- | |
| 2. RTC battery | 42 | 62 | 39 | 59 | -- | 100 | |

| IEC 60950-1 | | | | | | |
|-------------|--------------------|--|--|--|-----------------|---------|
| Clause | Requirement + Test | | | | Result - Remark | Verdict |

| | | | | | | |
|--|----|--------------------|--------------------|--------|-------------------|------------------|
| 3. CPU near PWB | 42 | 62 | 44 | 64 | -- | 105 |
| 4. Enclosure inside, top section, near CPU | 39 | 59 | 40 | 60 | -- | 70 |
| 5. Outside enclosure, top section, near CPU | 35 | 55 | 35 | 55 | -- | 95 |
| 6. Outside enclosure, top section, front panel LCD | 31 | 51 | 30 | 50 | -- | 75 |
| 7. Outside enclosure, bottom section, near mouse control board | 26 | 46 | 26 | 46 | -- | 75 |
| 8. Outside enclosure, bottom surface, battery pack (Sylva Industries Ltd Rechargeable Battery Div.,) | 27 | 47 | 28 | 48 | -- | 75 |
| 9. Enclosure inside near T1 (Adaptor) | 48 | 68 | 32 | 52 | -- | 95 |
| temperature T of winding: | | R ₁ (Ω) | R ₂ (Ω) | T (°C) | allowed Tmax (°C) | insulation class |
| supplementary information: | | | | | | |
| Test Condition 1: Maximum normal load 12 Vdc, Duration 15hrs.50mins. Test Condition 2: Discharge battery pack only, Duration 2hrs.50mins. Test Condition 3: Maximum normal load 12 Vdc, Duration 15hrs.50mins. Test Condition 4: Discharge battery pack only, Duration 2hrs.50mins. Comments: The temperatures were measured under worst case normal mode defined in 1.2.2.1 load as described in 1.6.2 at voltages as described in 1.4.5. With max. ambient temperature specified as 45 degree C, the ore, the maximum temperature rise is calculated as follows: Components with: Max.temp.of 105 degree C(PWB) Max.temp.of 100 degree C(RTC) User accessible area: material is plastic 70 degree C (for Enclosure inside, top section, near CPU) material is plastic 75 degree C (for Outside enclosure, top section, front panel LCD) material is plastic 75 degree C (for Outside enclosure, bottom section, near mouse control board) material is plastic 75 degree C (for Outside enclosure, bottom surface, battery pack (BYD)/ (Sylva Industries Ltd Rechargeable Battery Div.,)) material is plastic 95 degree C (for Enclosure inside near T1 (Adaptor)) | | | | | | |