Tadiran Lithium Ion Rechargeable Battery
Model TLI-1020A

1. **Scope**

This specification applies to the AAA size Lithium Ion Rechargeable battery supplied by Tadiran Batteries Ltd.

*Notice: Charging circuit and application load profile have to be approved by Tadiran prior to the use of this cell.*

2. **Characteristics**

2.1. **Physical**

2.1.1. Length: 21 mm Max.

2.1.2. Diameter: 10.5 mm Max.

2.1.3. Weight: 4.2 gr. Max.

2.2. **Electrical / Charge**

2.2.1. Charge Voltage: 4.1 V

2.2.2. Charge Current: 8 mA Max.

2.2.3. Charge Method: CCCV (Constant Current/Constant Voltage)

2.2.4. End of Charge: 1.6 mA Max. per cell

2.2.5. Charge Temp. Range: -20 to +50 °C

Charge temperature can be extended to -40 ÷ +85 °C provided that the max. charge current is limited to 1.6 mA.

2.3. **Electrical / Discharge**

2.3.1. Nominal Current: 20 mA

2.3.2. End of Discharge: 2.5 V @ Room Temperature

2.3.3. Discharge Temp. Range: -40 to +85 °C

2.3.4. Performance Characteristics:

<table>
<thead>
<tr>
<th>Item</th>
<th>Performance</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Capacity</td>
<td>27 [mAh]</td>
<td>Discharge at 8 mA</td>
</tr>
<tr>
<td></td>
<td>26 [mAh]</td>
<td>Discharge at 80 mA</td>
</tr>
<tr>
<td>Charge Discharge Cycles</td>
<td>24 [mAh]</td>
<td>After 100 cycles Discharge at 20 mA</td>
</tr>
<tr>
<td>Temperature</td>
<td>24 [mAh]</td>
<td>Discharge at -20 °C at 20 mA</td>
</tr>
<tr>
<td></td>
<td>27 [mAh]</td>
<td>Discharge at 60 °C at 20 mA</td>
</tr>
<tr>
<td>Charge Retention (reversible)</td>
<td>24 [mAh]</td>
<td>After 5 years at RT, Discharge at 20 mA</td>
</tr>
<tr>
<td>Impedance</td>
<td>Less than 600 mohm</td>
<td>Impedance at 1 KHz</td>
</tr>
</tbody>
</table>
THE INFORMATION PROVIDED HERE IS NECESSARILY OF A GENERAL NATURE. SINCE SPECIFIC PERFORMANCE DEPENDS ON ACTUAL OPERATING AND STORAGE CONDITIONS, OUR ENGINEERS WILL PROVIDE PARTICULAR APPLICATION INSTRUCTIONS UPON REQUEST. DATA SUBJECT TO REVISION WITHOUT NOTICE. ANY REPRESENTATION IN THIS BROCHURE CONCERNING PERFORMANCE ARE FOR INFORMATION PURPOSES ONLY AND NOT WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF FUTURE PERFORMANCE. TADIRAN’S STANDARD LIMITED WARRANTY, STATED IN ITS SALES CONTRACT OR ORDER CONFIRMATION FORM IS THE ONLY WARRANTY OFFERED BY TADIRAN.

Discharge curves at Room Temperature

Discharge Curves at Several Temperatures, @ 100 mA
THE INFORMATION PROVIDED HERE IS NECESSARILY OF A GENERAL NATURE. SINCE SPECIFIC PERFORMANCE DEPENDS ON ACTUAL OPERATING AND STORAGE CONDITIONS, OUR ENGINEERS WILL PROVIDE PARTICULAR APPLICATION INSTRUCTIONS UPON REQUEST. DATA SUBJECT TO REVISION WITHOUT NOTICE. ANY REPRESENTATION IN THIS BROCHURE CONCERNING PERFORMANCE ARE FOR INFORMATION PURPOSES ONLY AND NOT WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF FUTURE PERFORMANCE. TADIRAN’S STANDARD LIMITED WARRANTY, STATED IN ITS SALES CONTRACT OR ORDER CONFIRMATION FORM IS THE ONLY WARRANTY OFFERED BY TADIRAN.
Charge/ Discharge Cycling Performance

![Graph showing typical cycling behavior at RT. Charge: 8 mA (EOC 1.6 mA) to 4.1V. Discharge: 20 mA to 2.5V.]

2.4. Cell / Battery Protection (to be applied by the user)

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over charge protection</td>
<td>Cell voltage should not be higher than 4.2 V</td>
</tr>
<tr>
<td>Over discharge protection</td>
<td>Cell voltage should not be lower than 2.4 V</td>
</tr>
</tbody>
</table>

2.5. Safety Characteristics

The cells successfully passed the following safety tests:
- Short circuit at RT, 55 °C and 85 °C.
- Temperature test up to 170 °C.
- Crush.
- Impact.
- Nail penetration.
- Over charge up to 40 mA, 12 V.
- Over discharge (300%) up to 160 mA.

2.6. Battery pack assembly and usage considerations

- For 2 cells or more in series, voltage shall be monitored on each cell.
- For more than 2 cells in parallel, maximum charge current shall be limited to 20 mA for the whole pack.