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General specification of lithium-ion battery for cellular phone

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Preface

This specification refers to GB/T 15844.2-1995 Environmental Requirements and Test Methods for Radio Transceiver Employing F3E Emission Used in the Mobile Services for the compilation of some terms. It incorporates related requirements in IEC 61960 (draft), which is adapted for international trade. This Standard also addresses the requirements for the technical properties and application scenarios of Lithium-ion battery for cellular phone, which will further facilitate the development of Lithium-ion battery for cellular phone.

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General Specification of Lithium-ion Battery for Cellular Phone

1 Scope

This Standard specifies the definition, requirements, test method, quality evaluation procedure and mark, packaging, transportation, and storage of Lithium-ion battery for cellular phone.

This Standard is applied for Lithium-ion battery for cellular phone (hereinafter referred to as the “battery”).

2. Quoted Standards

The following standards contribute the stipulations of the specification after being quoted. At the release of this specification, the illustrated versions are valid. All standards will be revised. Users are encouraged to explore the possibility to use the latest version of the specifications.

GB191-1990 Packaging – Pictorial Markings for Handling of Goods;

GB/T 2828-1987 Sampling Procedures and Tables for Lot-by-Lot Inspection by Attributes (Apply to Inspection of Successive Lots of Batches);

GB/T 2829-1987 Sampling Procedures and Tables for Periodic Inspection by Attributes (Apply to Inspection of Stability for Productive Process);

GB/T 2900.11-1988 Terminology of (Secondary) Cell or Battery (eqv IEC 60486:1986)

3 Definition

This Standard uses the terms defined in GB/T 2900.11 and the following definitions.

3.1 Lithium-ion Battery for Cellular Phone

It refers to the battery composed of one or more lithium-ion single battery and accessories, which is used for cellular phone.

After completing battery charging as defined in section 5.3.2.2, put the battery into low-temperature box of $-20^{\circ}\text{C}\pm 2^{\circ}\text{C}$, and keep constant temperature for 16hs - 24hs. Then discharge it to cut-off voltage at $0.2C_5A$, and the discharging time shall comply with the specification in section 4.4. After concluding the test, take out the battery and keep it at an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 2hs, then visually inspect battery appearance. It shall comply with the definition in section 4.4

For polymer lithium-ion battery, after the battery is charged as defined in section 5.3.2.2, put the battery into low-temperature box of $-10^{\circ}\text{C}\pm 2^{\circ}\text{C}$, and keep constant temperature for 16hs - 24hs. Then discharge it to cut-off voltage at $0.2C_5A$, and the discharging time shall comply with the definition in section 4.4. After concluding the test, take out the battery and keep it at an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 2hs, then visually inspect battery appearance. It shall comply with the definition in section 4.4

5.3.5 Charge retention capacity

After the battery completes charging as defined in section 5.3.2.2, it is placed at 28d power source in open loop mode at an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$. Then the battery is discharged to the cut-off voltage at $0.2C_5A$, and the discharging time shall comply with the specification in section 4.5.

5.3.6 Cycle life

5.3.6.1 The battery cycle life test shall be performed at an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$.

5.3.6.2 Charge the battery at $1C_5A$ at an ambient temperature of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$, and switch to constant voltage charging when the voltage at battery side reaches limited charge voltage until charging current is less than or equal to 20mA. Stop charging, and lay it aside for 0.5h – 1h, then discharge it to cut-off voltage at $1C_5A$. After completing discharging, lay it aside for 0.5h – 1h, and perform the next charge/discharge cycle until the duration of 2 successive discharges is less than 36min. it is assumed that the battery life ends. Lifecycle of the battery shall comply with the specification in section 4.6.

7.2 Packaging

Each battery shall have external packing, and instruction manual of the product shall be attached in the packaging. The packaged products shall be placed in dry, dust-proof and moisture-proof packing boxes.

Product name, model, quantity, gross weight, manufacturer, date of production shall be indicated at the outside of the packing box. There shall be necessary marks like “Handle with care”, “Keep dry”, and “Keep upward”, and its pictorial markings for packaging storage shall be compliant with the definition in GB 191.

7.3 Transportation

Batteries shall be packed into boxes for transportation. Batteries shall be prevented from severe vibration, shock or extrusion, and sun and rain during transportation, and truck, railway, ship and airplane can be used for transportation.

7.4 Storage

Battery shall be stored in clean, dry and ventilated room with an ambient temperature of $-5^{\circ}\text{C}\sim 35^{\circ}\text{C}$, and relative humidity of no more than 75%, prevented from contact with corrosive substances, and kept away from fire or heat.

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