**No. B.V-7/2013-14-C(QRs)(11)**

Government of India/भारत सरकार

Ministry of Home Affairs/गृह मंत्रालय

P M Division/Prov.I/संभरण-I डेस्क

26, Man Singh Road, Jaisalmer House
New Delhi, Dated : 9th September, 2013

To,

DsG : AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

**Subject : QRs and Trial Directives of Lithium Battery for Hand Held Radio Set.**

The QRs and Trial Directives of Lithium Battery for Hand Held Radio Set as per Appendix 'A' and Appendix 'B" respectively have been accepted by the Competent Authority in MHA

2. Henceforth, all the CAPFs should procure the above items required by them strictly as per the laid down Technical Specifications/QRs.

Yours faithfully,

**(Smt. S. B. Nanda)**
Under Secretary to the Govt. of India
Tel : 23381278

Encl : As above.

Copy forwarded to : SO (IT), MHA, with the requested to host the QRs (soft copy being sent through email) on the MHA website (under the page Organisational Set up-Police Modernisation Division - Qualitative Requirements)

(R K Soni)
Section Officer (Prov.I)

Copy to : Director (Procurement), MHA.

Copy for information to : PS to JS (PM)

Appx "A"

## QRS / SPECIFICATION OF LITHIUM BATTERY FOR HAND HELD RADIO SET

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| Sl No | Description/ Specification | Parameters |
|---|---|---|
| 1 | **Application** | Use with VHF/UHF Hand Held Radio Set (Type& Model of Radio set for which battery is required will be decided by user organization during procurement) |
| 2 | **Electrical** | |
| | a) Type of Battery Chemistry | Lithium-Ion/poly (Chemistry of battery will be decided by user organization during procurement) |
| | b) Rated Capacity | 2000/2200/2300/2500mAH or higher capacity @ C5 rating(Capacity of battery will be decided by user organization during procurement) |
| | c) Voltage | 7.4 Volts ( Working) , 8.8V ( Peak) |
| 3 | **Mechanical** | |
| | a) The battery casing should make of high strength polycarbonate/ABS blend. | |
| | b) The Battery casing should be bonded by ultrasonic welding. | |
| | c) The Cell should be inter connected by spot-welded through necessary circuit. | |
| | d) The battery to be made of premium grade cells to achieve – consistent capacity & longer lasting performance | |
| | e) The Battery should communicate with the Radio/chargers easily with minimal force insertion or in same manner as the OEM supplied battery | |
| | f) The battery should be equipped with spring loaded belt clip or belt clip (optional where as applicable) | |
| 4 | **Protection** : - Battery should be equipped with protection circuit to protect from :- Over Temperature, Short Circuit & Reverse Polarity etc. | |
| 5 | **Description :-**<br>i)The sleeve of cells used should preferably indicate the following:- Part Number/Month & Year of Manufacturer/Voltage of cell/Capacity of Cell/Country of Cell<br>ii)The label of the battery should be self destructive type and specified the following:- Battery voltage/Capacity/Chemistry of cell/ Suitable Model of Set/ Serial number of/Part of battery/Month & Year of Manufacturer & trade mark " Logo" of the firm to be embossed / heat stamped.<br>iii) Clear instruction shall be given "To charge the battery on suitable chargers". | |
| 6 | The battery should pass the following Environmental Tests as per IS: 9000 or any equivalent standard followed by Capacity Test @ C/5 rate.<br>1. Equipment should be suitable for operation in the following environmental conditions.<br>a. Operating Temp. Range: - 10° C to + 55° C<br>b. Storage Temp. Range : - 40° C to + 70° C<br>c. Relative Humidity : 95% Max at + 40° C non-condensing<br>2.**Tests to be conducted & Conditions of tests as per IS: 9000**<br>a) Dry Heat: Part III/SEC.5/1977 °C ± 2 °C, RH < 50%, duration 16 hours.<br>b) Damp Heat (Cyclic) Test: PartV/SEC.2/variant1/1981 40° C (+/-) 2° C, RH 95%, two cycles of 24 (12+12) hours each.<br>c) Cold Test: Part II/ SEC. 4/1977 (-) 10° C +/- 3° C, Duration 16 hours. | |

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| | d) Drop Test(in packed : Part VII/SEC.3/1979 Six drops one on each condition face , Height of fall 1000mm in case of hand held items and 500mm in case of other items.<br>e) Vibration Test: Part VIII/1981 12 hours, 4 hours along with each axis, at 15-150Hz and with amplitude of 0.15mm/2g<br>f) Storage Test: Part III/ SEC. 5/1977 & - 40° C for 5 hours.Part II/SEC. 4/1977 then raises the temperature to 70° C for 16 hours.<br>g) Bump test: Part VII/SEC.2/1979 4000 bumps at peak acceleration of 400m/s sq.<br>3. Environmental test Report with equivalent or superior conditions would be acceptable.<br>4. The functional tests and permissible degradation shall be as under:-<br>No degradation in battery capacity when measured at C/5 rate. |

(M S Yadav, AC (Tech), CRPF)

(D.K.Bhatt, Asstt Comdt, SSB)

(Gurbachan Singh, SSO (E), BPR&D)

(Sunil Kumar, DC (Comn), ITBP)

(Major Kapil Dahiya,TC(Eqpt),NSG)

(S.K.Singh, Comdt(C-Eqpt), BSF)

(Virendra Agrawal, DIG(Eqpt), CRPF)

(Shailendra Kumar, IG (Comn), CRPF)

APPROVED/NOT APPROVED

**(Pranay Sahay, IPS)**
**DG, CRPF**

Appx "B"

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# TRIAL DIRECTIVES OF LITHIUM BATTERY FOR HAND HELD RADIO SET

Trial/ Testing of Lithium Battery for Hand Held Radio Sets will be conducted by a Board of Officers in the presence of representative of Firm to assess actual performance of the Battery.

**2)** All parameter / Specifications mentioned in the QRs will be checked by board of officers by ascertaining /verifying following checks.

**Physical Checks**: In this category specifications of the equipment will be checked physically as per QRs.

**Functional Check**:- The vendors will show all features/ configuration of the equipment to the board of officers during technical evaluation.

**Submission of certificates**: - Specification which cannot be checked due to lack of testing facilities/ expertise, a certificate of test from Govt authorized Laboratory shown against each will be provided by firm during physical trial of the equipment.

| Sl No | Description/ Specification | Parameters | Trial Procedure |
|---|---|---|---|
| 1 | Application | Use with VHF/UHF Hand Held Radio Set ( Type & Model of Radio set for which battery required will be decided by user organization during procurement) | The B.O.Os will check physically and practically by fitting in required radio set & its charger and will ensure that battery is as per their requirement. |
| 2 | Electrical | | |
| | a) Type of Battery Chemistry | Lithium-Ion/poly ( Chemistry of battery will be decided by user organization during procurement) | The B.O.Os will check physically that type of chemistry of battery produced by the firm is as per tender specification. |
| | b) Rated Capacity | 2000/2200/2300/2500 mAh or higher capacity @ C5 rating( Capacity of battery will be decided by user organization during procurement) | The B.O.Os will check practically capacity of battery with the help of standard testing instruments and will ensure that it is as per tender requirement.. |
| | c) Voltage | 7.4 Volts ( Working) , 8.8V ( Peak) | The B.O.Os will ensure that voltage of battery is as per specification by measuring with the help of standard measuring instrument. |
| 3 | **Mechanical** | | |
| | a) The battery casing should make of high strength Polycarbonate/ABS blend. | | The B.O.Os will check it physically as well as firm will provide certificate of govt. approved laboratory about material used in power pack casing. |
| | b) The Battery casing should be bonded by ultrasonic welding. | | The B.O.Os will check physically. |
| | c) The Cell are inter connected by spot-welded through necessary circuit. | | Firm will provide a loose battery during sample evolution for checking the internal connection. |
| | d) The battery to be made of premium grade cells to achieve – consistent capacity & longer lasting performance | | The B.O.Os will check it physically. Firm should submit certificate to this effect. |
| | e) The Battery should communicate with the Radio/chargers easily with minimal force insertion or in same manner as the OEM supplied battery | | The B.O.Os will check it practically by inserting it in radio set as well as in battery charger. |
| | f) The battery should be equipped with spring loaded belt clip or belt clip (optional where as applicable) | | The B.O.Os will check it physically. |
| 4 | **Protection** : - Battery should be equipped with protection circuit to protect from- Over Temperature, Short Circuit & Reverse Polarity etc. | | The B.O.Os will check practically is the battery is provided with safety circuit for all parameters. Firm should submit the certificate to this effect. |

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| 5 | **Description :- i)**The sleeve of cells used should preferably indicate the following:- Part Number/Month & Year of Manufacturer/Voltage of cell/Capacity of Cell/Country of Cell.<br>**ii)**The label of the battery should be self destructive type and specified the following:- Battery voltage/ Capacity/ Chemistry of cell/ Suitable Model of Set/ Serial number of/Part of battery/Month & Year of Manufacturer & trade mark " Logo" of the firm to be embossed / heat stamped.<br>**iii)** Clear instruction shall be given "To charge the battery on suitable chargers". | The B.O.Os will check physically that description mentioned at para 5 i) to iii) is available on battery. |
| 6 | The battery should pass the following Environmental Tests mentioned as under as per IS: 9000 or any equivalents standard followed by Capacity Test @ C/5 rate.<br>1. Equipment shall be suitable for operation in the following environmental conditions.<br>a. Operating Temp. Range : - 10° C to + 55°C<br>b. Storage Temp. Range : - 40°C to + 70°C<br>c. Relative Humidity : 95% Max at + 40 °C non-condensing<br>2.**Tests to be conducted & Conditions of tests as per IS: 9000**<br>a) Dry Heat: Part III/SEC.5/1977 55°C ± 2°C, RH < 50%, duration 16 hours.<br>b) Damp Heat (Cyclic) Test: PartV/SEC.2/variant1/1981 40°C (+/-) 2°C, RH 95%, Two cycles of 24 (12+12) hours each.<br>c) Cold Test: Part II/ SEC. 4/1977 (-) 10°C +/- 3° C, duration 16 hours.<br>d) Drop Test(in packed condition): Part VII/SEC.3/1979 Six drops one on each condition face , Height of fall 1000mm in case of hand held items and 500mm in case of other items.<br>e) Vibration Test: Part VIII/1981 12 hours, 4 hours along with each axis, at 15-150Hz and with amplitude of 0.15mm/2g<br>f) Storage Test: Part III/ SEC. 5/1977 & -40 degree C for 5 hours, then raises the temperature to 70°C for 16 hours.<br>g) Bump test : Part VII/SEC.2/1979 4000 bumps at peak acceleration of 400m/s sq<br>3. Environmental test Report with equivalent or superior conditions would be acceptable.<br>4. The functional tests and permissible degradation shall be as under:-<br>No degradation in battery capacity when measured at C/5 rate. | The B.O.Os will check the Environmental test certificate submitted by the firm and will ensure that these test have been carried out as per specification in Govt of India approved Laboratory. |

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