No. B.V-7/2013-14-C (QRs)-(8) 9537

भारत सरकार/Government of India

गृह मंत्रालय/Ministry of Home Affairs

पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division

संभरण-I डेस्क /Prov.I Desk

26, Man Singh Road, Jaisalmer House
New Delhi, the 5th November, 2014

To,

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

Subject: QRs and Trial Directives of Foldable Solar Charger for Batteries.

Sir (s)

The QRs and Trial Directives in respect of Foldable Solar Charger for Batteries as per Annex-I and Annex-II respectively have been accepted by the Competent Authority in MHA.

2. Henceforth, all the CAPFs should procure the above item required by them strictly as per the laid down QRs.

Yours faithfully,

5/11/14

(M. K Chahar)
Under Secretary to the Govt. of India
Tel : 23381278

Encl: As above.

Copy forwarded to SO (IT), MHA, with the request to host the QRs and Trial Directives of Foldable Solar Charger for Batteries on the website of MHA (under the page Organizational Set up-Police Modernization Division-Qualitative Requirements), soft copy is being sent through email.

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

Copy to: DDG(Procurement), MHA.

Annex - I

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QRs/SPECIFICATION FOR FOLDABLE SOLAR CHARGER FOR BATTERIES

Sl. No.	PARAMETERS	SPECIFICATION
1.	**Type of Panel Material**	Amorphous Silicon Thin film
2.	**Type of Solar Panel**	Solar Panel should be flexible and easily foldable.
3.	**Nominal peak power**	30 Watt ± 10%
4.	**Voltage at Maximum Power (Vmp)**	15.4 to 17.0 Volt
5.	**Open Circuit Voltage**	17.0 to 22.0 Volt
6.	**Current at Maximum Power (Imp)**	1.8 Amp ± 10%
7.	**Short Circuit Current**	1.88 to 2.6 Amp
8.	**Maximum Size while folded**	380 mm x 220 mm ± 10%
9.	**Maximum Size while unfolded**	1170 mm x 730mm ± 10%
10.	**Panel Weight**	1Kg ± 10%
11.	**Features**	i) Reverse blocking diode, rugged construction, Ultraviolet resistant and weather resistant. ii) Provision to charge two batteries of Mobile phone, GPS and or Hand held radio set simultaneously.
12.	**Accessories**	a)Twin type 12V Female Cigarette lighter adapter b) Two numbers Male Cigarette lighter adapter with Multi- option plugs to charge the batteries of Mobile phone & Satellite phone. c) Two numbers Male Cigarette lighter adapter with Multi - option plugs to charge the batteries of hand held radio sets. d) 15ft Extension Cord with Plug. e) One carrying bag of good quality to carry Solar Panel with all accessories. f) User Manual.
13	**The Solar panel charger should pass following Environmental Test as per JSS: 55555 or any equivalent standard.**	
	i) Damp Heat (Cyclic) Test:-Test Number-10, Clause 3.2.2 to 3.2.3, 40°C ± 2°C, RH 95%, duration 16 hours.	
	ii) High Temperature Test :-Test Number- 17, Clause 3.2.6.1 Test condition "K, operation at 55°C±3°C. Duration 16 hours followed by storage at 70°C±3° C for 16 hours.	
	iii) Low Temperature Test:-Test Number-20, Clause 3.2.4, Test Condition "H" :, operation at -10°C ± 3°C,procedure -4.Duration 16 hours.	
	iv) Vibration Test:-Test Number 28, Clause 3 to 3.4 endurance by sinusoidal with frequency 5- 350 Hz, 2g acceleration or ±6mm displacement constant 2 hours in each direction.	
	v) Altitude Test:-Test Number-3 sub – clause 3.2.5.2, temp. -30°C, Altitude 4160 meters, Air pressure 60kps.Duration 16 hours.	

	vi) Salt Corrosion Test:-Test Number-9, sub- clause 3.3.1 to 3.3.1.5, exposure to salt mist, period-2 hours followed by a storage at 35°C ± 2°C, RH 95%, No's of cycles-4. Period 7 days.
	vii) Drop Test:-Test Number-13, sub- clause 3 to 3.2.3 , Test Conditions-"F", 4 drops on each face.
	viii) Driven Rain Test:-Test Number–12, sub clause 3 to 3.2.3, Test conditions "C", duration 1 hour.
	ix) Bump Test:-Test Number-5, sub-clause 3.3.2, test table 4.5.1 (Peak acceleration 400m/s2, Pulse duration-16ms @ 4000±10bumps)
	x) Dust Test:-Test Number-14, Test as per clauses 3.2.1 to 3.2.3. Duration–1 hour.During test period the dust concentration shall be maintained as per clause 2.2.

(SI/E Sohrab Ansari, CISF)

(M S Yadav, AC, CRPF)

(U.C. Joshi, AC, BSF)

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

(Sunil Kumar, DC, ITBP)

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

[Virendra Agrawal, DIG(Eqpt), CRPF]

[Mahesh Kumar, DIG (Comn), CRPF]

[Shailendra Kumar, IG (Comn), CRPF]

Approved/ ~~Not approved~~

19/12

(Dilip Trivedi, IPS)
DG, CRPF

Annex-II

TRIAL DIRECTIVES OF FOLDABLE SOLAR CHARGER FOR BATTERIES

Trial of foldable solar charger will be conducted by a Board of Officers in the presence of vendor to assess actual performance of the Solar Charger.

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 shown against each will be provided by the firm from any Government approved accredited laboratory during physical trial of the equipment.

Sl. No.	PARAMETERS	SPECIFICATION	TRIAL PROCEDURE
1.	**Type of Panel Material**	Amorphous Silicon Thin film	B.O.O will check it physically as well as certificate of Govt. of India approved accredited laboratory will be provided by the firm.
2.	**Type of Solar Panel**	Solar Panel should be flexible and easily foldable.	Flexibility of solar panel will be checked by B.O.O. by folding and unfolding.
3.	**Nominal peak power**	30 Watt ± 10%	B.O.O will check it practically by using the standard measuring instrument during full sun light.
4.	**Voltage at Maximum Power (Vmp)**	15.4 to 17.0 Volt	
5.	**Open Circuit Voltage**	17.0 to 22.0 Volt	
6.	**Current at Maximum Power (Imp)**	1.8 Amp ± 10%	
7.	**Short Circuit Current**	1.88 to 2.6 Amp	
8.	**Maximum Size while folded**	380 mm x 220mm ± 10%	B.O.O will measure it with the help of standard measuring tape/ scale.
9.	**Maximum Size while unfolded**	1170 mm x 730mm ±10%	
10.	**Panel Weight**	1Kg ± 10%	B.O.O will measure weight of panel with the help of weighing machine.

11.	**Features**:- i) Reverse blocking diode, rugged construction, Ultraviolet resistant and weather resistant. ii) Provision to charge two batteries of Mobile phone, GPS and or Hand held radio set simultaneously.	i) B.O.O will check practically as well as firm will produce certificate of any Govt. approve accredited laboratory. ii) B.O.O will check it practically by charging two batteries of Mobile phones, GPS or and Hand held radio set simultaneously.
12.	**Accessories**:- a)Twin type 12V Female Cigarette lighter adapter. b) Two numbers Male Cigarette lighter adapter with Multi- option plugs to charge the batteries of Mobile phone & Satellite phone. c) Two numbers Male Cigarette lighter Adapter with Multi - option plugs to charge the batteries of hand held radio sets. d) 15ft Extension Cord with Plug.	a) B.O.O will check it practically by connecting with solar panel. b) B.O.O will check it practically by connecting both male cigarette lighter adaptor and charging batteries of mobile phone and satellite phone. c) B.O.O will check it practically by connecting both male cigarette lighter adaptor and charging two batteries of hand held radio set. d) B.O.O will check it practically and will also measure length of cord.
	e) One carrying bag of good quality to carry Solar Panel with all accessories. f) User Manual.	e) B.O.O will check practically by putting Solar Panel with all accessories in carrying bag and will also ensure that quality of bag is also good. f) B.O.O will check it physically.
13	**The Solar panel charger should pass following Environmental Test as per JSS: 55555 or any equivalent standard**.	Firm will provide certificate of Govt. of India approved accredited laboratory in this regard. Environmental test Report with equivalent or superior conditions would be acceptable.
	i) Damp Heat (Cyclic) Test:-Test Number-10, Clause 3.2.2 to 3.2.3, 40°C ± 2°C, RH 95%, duration 16 hours.	
	ii) High Temperature Test :- Test Number- 17, Clause 3.2.6.1 Test condition "K, operation at 55° C ± 3°C. Duration 16 hours followed by storage at 70°C ±3°C for 16 hours.	
	iii) Low Temperature Test:-Test Number-20, Clause 3.2.4, Test Condition "H", operation at -10°C ± 3°C,procedure-4.Duration 16 hours.	
	iv) Vibration Test:-Test Number 28, Clause 3 to 3.4 endurance by sinusoidal with frequency 5- 350 Hz, 2g acceleration or ±6mm displacement constant 2 hours in each direction.	

	v) Altitude Test:-Test Number-3 sub – clause 3.2.5.2, temp. -30°C, Altitude 4160 meters, Air pressure 60kps.Duration 16 hours.	
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