

**Appendix-‘A’****Draft QRs/TDs of Photo Voltaic Module (Solar Charger ) Foldable for Batteries**

<b>SL.No</b>	<b>Parameters</b>	<b>Specifications</b>	<b>Trial Directives</b>
1	Solar Panel Cell material	Amorphous Silicon/CIGS/CdTe /Monocrystalline (As per user requirement)	B.O.O will check it physically as well as Supplier will produce certificate issued by Govt accredited laboratory.
2	Solar Battery charging Voltage should be field selectable.	5V/12V (As per user requirement)	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
3	Nominal Peak Power	100W $\pm$ 2W or better	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
4	Peak power voltage while selected at 12V	15 to 17 Volt	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
5	Short circuit current while selected 12V	7 to 7.6 Amp	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
6	Peak power current while selected at 12V	6 to 6.5 Amp	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
7	Peak open circuit voltage while selected at 12V	20 Volt $\pm$ 2V	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
8	Maximum size while folded	405x385x88(mm)	B.O.O. will measure size with the help of measuring tape/scale.
9	Maximum dimensions while unfolded	1885x1490(mm)	B.O.O. will measure size with the help of measuring tape/scale.
10	Solar Panel weight	$\leq$ 2.5 Kg or lesser	B.O.O. will measure weight with the help of weighting machine.
11	Operating Temperature	-20°C to + 55°C	Firm will produce certificate issued by Govt. accredited laboratory.
12	Charging Lead	Should be provided	B.O.O. will check it practically by connecting battery with solar panel.
13	LED indication	Controller have the facility of charging /discharging indication	B.O.O. will check it practically by connecting battery with solar panel.

14	There should be option of load controller for connecting load also online.	B.O.O. will check it physically by connecting load with Solar Panel.
15	Manpack/compact, portable, light in weight & convenient to carry portable type (with folding) solar battery charging system for mobile use, charging of Ni-Mh/Lithium-ion battery (7.5V, 2000 to 2500 mAh and above/better), SMF/NI-Mh/Lithium-ion btys 12 V, 7-15 Ah of HF Manpack / VHF and UHF set.	B.O.O. will check physically/practically by connecting various types of battery one by one with solar panel and will ensure that battery is being charged properly.
16	Proper plug/coupling arrangement must be provided for charging of various type of batteries including the batteries of mobile, laptop, HF, VHF, UHF or other electronics eqpts with the use of universal (as per user requirement) connector.	B.O.O will check physically/practically by connecting various types of battery one by one with solar panel through proper connector/coupling arrangement and will ensure that battery is being charged properly.
17	Inbuilt protection against low voltage, short circuiting, over charge & deep discharge of battery should be provided.	B.O.O. will check all practically and ensure their workability.

**Draft QRs/TDs of Photo Voltaic Module (Solar charger) Flexible & Rollable For Batteries**

<b>SL.No</b>	<b>Parameters</b>	<b>Specifications</b>	<b>Trial Directives</b>
1	Solar Panel Cell material	Amorphous Silicon/CIGS/CdTe (As per user requirement)	B.O.O will check it physically as well as Supplier will produce certificate issued by Govt accredited laboratory.
2	Solar Battery charging Voltage should be field selectable Out put voltage (user slectable)	5V/12V	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
3	Nominal Peak Power	60W ±2W	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
4	Peak power voltage while selected at 12V	15 to 17 Volt	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
5	Short circuit current while slected 12V	3.5 ± 10% Amp	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
6	Peak power current while selected at 12V	3.4 to 3.5 Amp	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
7	Peak open circuit voltage while selected at 12V	20 Volt ±2V	B.O.O. will measure practically by using the standard measuring instrument during full sun light.
8	Maximum dimensions while unfolded	2180x675mm	B.O.O will measure size with the help of measuring tape/scale
9	Solar Panel weight	≤2 Kg	B.O.O will measure weight with the help of weighting machine.
10	Operating Temperature	-20°C to + 55°C	Firm will produce certificate issued by Govt accredited Laboratory.
11	Charging Lead	Should be provided	B.O.O. will check it practically by connecting battery with solar panel.
12	LED indication	Contrroller have the facility of charging /discharging indication.	B.O.O. will check it practically by connecting battery with solar panel.

13	There should be option of load controller for connecting load also online.	B.O.O. will check it physically by connecting load with Solar Panel.
14	Manpack/compact, portable, light in weight & convenient to carry portable type (with folding) solar battery charging system for mobile use, charging of Ni-Mh/Lithium-ion battery (7.5V, 2000 to 2500 mAh and above/better ), SMF/Ni-Mh/Lithium-ion btys 12 V, 7-15 Ah of HF Manpack / VHF and UHF set.	B.O.O. will check physically/practically by connecting various types of battery one by one with solar panel and will ensure that battery is being charged properly.
15	Proper plug/coupling arrangement must be provided for charging of various type of batteries including the batteries of mobile, laptop, HF, VHF, UHF or other electronics eqpts with the use of universal (as per user requirement) connector.	B.O.O will check physically/practically by connecting various types of battery one by one with solar panel through proper connector/coupling arrangement and will ensure that battery is being charged properly.
16	Inbuilt protection against low voltage, short circuiting, over charge & deep discharge of battery should be provided.	B.O.O. will check all practically and ensure their workability.