

**GOVERNMENT OF INDIA**  
**(Ministry of Home Affairs)**  
**DIRECTORATE GENERAL**  
**CENTRAL RESERVE POLICE FORCE**  
**EAST BLOCK-7, SEC-1, R.K. PURAM, NEW DELHI-110066**  
(Email:- [comncell@crpf.gov.in](mailto:comncell@crpf.gov.in) Tele/Fax:011-26107493)

No. B.V-7/2020-21-C (LIPO)

Dated, the 14<sup>th</sup> October'2020

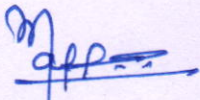
To

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|---|--|
| 1. DIG (Comn), ITBP<br>Block No. 2, CGO Complex<br>Lodhi Road, New Delhi-03 | 2. DIG (Comn), NSG<br>Meharam Nagar<br>Palam, New Delhi-37                       |
| 3. DIG (Comn), SSB<br>East Block-V, R.K Puram<br>New- Delhi-66              | 4. AIG (Comn), CISF<br>Block No. 13, CGO, Complex<br>Lodhi Road, New Delhi-03    |
| 5. DIG (Prov), BSF<br>Block No. 10, CGO Complex<br>Lodhi Road, New Delhi-03 | 6. Liaison Office, Assam Rifle<br>Room No-171, North Block, MHA<br>New Delhi -01 |

**Subject: Regarding QRs/TDs of "Lithium based battery for Micro UAV (V1 & V2)".**

Please find enclosed QRs and TDs of "Lithium based battery for Micro UAV (V1 & V2)" as Annexure-A & Annexure-B respectively duly approved by the competent authority is forwarded herewith for further necessary action.

Encl: (QRs & TDs of "Lithium based battery for Micro UAV (V1 & V2)")

  
{P.R.Jha, DC (Comn)}  
**For DIG (Equipment)**  
**Directorate General, CRPF**

**QRs of Lithium based Battery for Micro UAV (Netra V1 & V2)**

S. N	Specification	Parameters
1	Type of Battery	Lithium based
2	Smart Battery	<p>a) Inbuilt Intelligent battery management system with the ability to do active logging of battery health for at least 2 years of data, monitoring and maintenance of battery health.</p> <p>b) Logged data during in flight mode includes:</p> <ul style="list-style-type: none"> <li>- battery voltage</li> <li>- cell voltage</li> <li>- charge/discharge current</li> <li>- date/time of logging</li> <li>- acceleration/shock</li> <li>- temperature of battery</li> </ul> <p>c) Self-discharge of battery to moderate voltage if left fully charged and unused for few days to maximize battery life.</p>
3	Nominal Capacity	Minimum 10,000 mAh
4	Nominal Voltage	22.2 V
5	Container/ Cover Material	Composite or plastic enclosure to provide handling and ingress protection (IP53) in standalone condition.
6	Charging current	Minimum 7 A
7	Maximum discharge current	Minimum 25 A
8	Maximum power rating	Minimum 500 W
9	Compatibility with NETRA Universal charger	The battery should be compatible with the universal battery charger supplied with NETRAv1 and NETRAv2 with compatible connectors.
10	Weight	≤1600 gms
11	Battery endurance	Minimum 40 minutes or more at full range and full AGL mission on NETRA(V1&V2) UAV while ensuring compatibility with NETRAv1 and NETRAv2 autonomous battery failsafe system to ensure flight safety of the UAV.
12	Charging cycle/ Prescribed life	Minimum 200 charging cycles or 2 years whichever is earlier while retaining minimum 60% of capacity if maintained under rated environmental conditions.
13	Dimension	Less than 20cm x 10cm x 10cm



S. N	Specification	Parameters
14	Operating & Storage temperature	-5°C to 55°C
15	Ingress Protection	IP53 or better
16	Miscellaneous	a) Compatible with Micro UAV (NETRA V1 & V2) in flight battery health monitoring feature without any error. b) Inflight battery cell balancing health monitoring feature without any error. c) High cycle life mixed power-signal connector compatible with NETRA (V1 & V2) with one-year limited warranty on connectors. d) Battery having provision of connecting and mounting safely to UAV NETRA (V1 & V2)

AC-II R.K.Panday  
NSG

Insp/T Ashwani Kumar  
BSF

Amarjeet Singh, AD(Tele)  
DCPW

Dr. Ajit Mukharjee  
PSO(LS), BPR&D

P. R. Jha, DC(Comn)  
CRPF

Hem Chandra Kapil  
DC(T), ITBP

R. K. Meel, DC  
CISF

Lt.Col Harish Chandra  
Assam Rifles

Harjinder Singh,  
DIG(Eqpt),CRPF

Ravideep Singh Sahi  
IG(Comn &IT), CRPF

Sanjay Arora, IPS  
ADG(HQ),CRPF

Virendra Agrawal,  
DIG(Comn),CRPF

✓  
Approved/Not Approved

Dr. A P Maheshwari,IPS  
DG, CRPF

**TDs of Lithium based Battery for Micro UAV (Netra V1 & V2)**

1	Type of Battery	Lithium based	Firm will submit OEM certificate.
2	Smart Battery	a) Inbuilt Intelligent battery management system with the ability to do active logging of battery health for at least 2 years of data, monitoring and maintenance of battery health.	Firm will submit OEM certificate.
		b) Logged data during in flight mode includes: - battery voltage - cell voltage - charge/discharge current - date/time of logging - acceleration/shock - temperature of battery	BOO will check practically.
		c) Self-discharge of battery to moderate voltage if left fully charged and unused for few days to maximize battery life.	Firm will submit OEM certificate.
3	Nominal Capacity	Minimum 10,000 mAh	BOO will check practically and firm will submit OEM certificate.
4	Nominal Voltage	22.2 V	BOO will check practically and firm will submit OEM certificate.
5	Container/ Cover Material	Composite or plastic enclosure to provide handling and ingress protection (IP53) in standalone condition.	Firm will submit certificate of Govt. Lab or NABL or ILAC accredited laboratory.
6	Charging current	Minimum 7 A	BOO will check practically and firm will submit OEM certificate.
7	Maximum discharge current	Minimum 25 A	BOO will check practically and firm will submit OEM certificate.

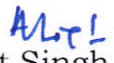
S. No.	Specification	Parameters	Trial directives
8	Maximum power rating	Minimum 500 W	BOO will check practically and firm will submit OEM certificate.
9	Compatibility with NETRA Universal charger	The battery should be compatible with the universal battery charger supplied with NETRAv1 and NETRAv2 with compatible connectors.	BOO will check practically
10	Weight	≤1600 gms	BOO will check practically.
11	Battery endurance	Minimum 40 minutes or more at full range and full AGL mission on NETRA(V1&V2) UAV while ensuring compatibility with NETRAv1 and NETRAv2 autonomous battery failsafe system to ensure flight safety of the UAV.	BOO will check practically.
12	Charging cycle/ Prescribed life	Minimum 200 charging cycles or 2 years whichever is earlier while retaining minimum 60% of capacity if maintained under rated environmental conditions.	Firm will submit OEM certificate.
13	Dimension	Less than 20cm x 10cm x 10cm	BOO will check practically and firm will submit OEM certificate.
14	Operating & Storage temperature	-5°C to 55°C	Firm will submit certificate of Govt. Lab or NABL or ILAC accredited laboratory.


*[Handwritten signatures and initials]*

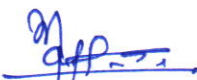
S. No.	Specification	Parameters	Trial directives
15	Ingress Protection	IP53 or better	Firm will submit certificate of Govt. Lab or NABL or ILAC accredited laboratory.
16	Miscellaneous	a) Compatible with Micro UAV (NETRA V1 & V2) in flight battery health monitoring feature without any error.	BOO will check practically and firm will submit OEM certificate.
		b) Inflight battery cell balancing health monitoring feature without any error.	BOO will check practically and firm will submit OEM certificate.
		c) High cycle life mixed power-signal connector compatible with NETRA (V1 & V2) with one-year limited warranty on connectors.	Firm will submit OEM certificate.
		d) Battery having provision of connecting and mounting safely to UAV NETRA (V1 & V2)	Firm will submit OEM certificate.


  
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NSG

  
Insp/T Ashwani Kumar  
BSF

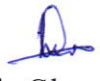
  
Amarjeet Singh, AD(Tele)  
DCPW

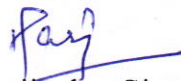
  
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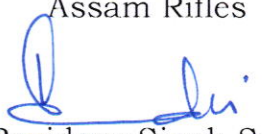
  
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DC(T), ITBP

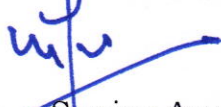
  
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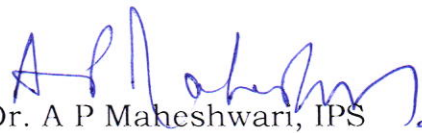
  
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