

///Through Email///

Directorate General CRPF
Block No.1, CGO Complex, Lodhi Road, New Delhi
(Ministry of Home Affairs)
(Tele No. 011-24369587 Fax -011-24360155)
(E-mail : dcordnance@crpf.gov.in)

No. M.V-1/2024-25-Prov-Ord-2 (HH-GPR-QRs)

Dated, the 18 July, 2024

To,

The DG's all CAPF
(A/R, BSF, CISF, ITBP, SSB & NSG)

The Director, DLIC, DRDO Bhawan, Rajaji Marg,
New Delhi. (E-Mail: director-dlic@gov.in)

The IG/Director (Mod)
BPR & D, Mahipalpur, New Delhi. (E-mail - sushilkumar@bprd.nic.in)

The Director, DCPW, Block No.9,
CGO Complex, New Delhi. (E-mail: ramprasad@dcpw.gov.in & rksingh@dcpw.gov.in)

Subject :- QR/TDs of Ground Penetrating Radar (Hand Held)

As per direction of MHA vide UO Note No.IV-24011/24/2019-Prov-1/316 dated 04/05/2023, the competent authority has approved the **QRs & TDs of Ground Penetrating Radar (Hand Held)** after due diligence of a sub-group of inter CAPF technical experts.

2. Henceforth, all CAPFs should procure the Ground Penetrating Radar (Hand Held) strictly as per laid down technical specifications/QRs. It is also intimated that no deviation will be made from the approved Qualitative Requirements (QRs) & Trial Directives (TDs) without the permission of MHA.

Encl: As above



18/7/24
(Des Raj)
DIGP (Ord) Dte

No. M.V-1/2024-25-Prov-Ord-2 (HH-GPR-QRs)

Dated, the 18 July, 2024

Copy forwarded to:-

- (i) The Director (Proc) MHA, PM Division, 26 Man Singh Road, New Delhi for kind information with reference to MHA's UO note under reference. (E-mail: proc-mha@gov.in).
- (ii) Smt. M.P Suganthi, Senior Technical Director, Ministry of Home Affairs, 12-A, North Block, New Delhi for kind information with the request to upload finalised QR/TDs of Ground Penetrating Radar (Hand Held) on MHA website under a special category "Special Equipments" E-Mail: mpsuganthi@nic.in & soit@nic.in


18/7/24
(Des Raj)
DIGP (Ord) Dte

Internal:


DIG (IT) Dte. Genl., CRPF along with copies of finalized QRs and TDs of Ground Penetrating Radar (Hand Held) with the request to upload above QR/TDs in CRPF Website under Special Equipments category QRs/TDs. (Encl: QRs/TDs) : webitwing@crpf.gov.in

QUALITATIVE REQUIREMENTS (QRs) AND TRIAL DIRECTIVES (TDs) FOR HAND HELD GROUND PENETRATING RADAR (HH-GPR)

S/ N	PARAMETER	SPECIFICATION	TRIAL DIRECTIVE
1	Physical Features	i) The GPR system should be capable to detect metallic and non-metallic threats like IEDs, Pressure plates, wires and mines (Anti-Personnel & Anti-Vehicle) etc. ii) The system must provide GPR data in real time to detect investigate IEDs or suspicious objects. GPR should have option of GPS logging, mapping feature for scanning. iii) Manual/Automatic brightness sensor or adapt to environment lighting conditions. iv) Weight of the system	Physically check GPR for the detection of metallic and non-metallic objects like IEDs, pressure plate wires and mines etc, underground at specific depths. Physically check the system for the detection of IEDs or suspicious objects by displaying the data in real time on LCD/LED screen to investigate and mark the threats. To be physically checked by the BOOs. The total weight of the system should not be more than 4 kg \pm 5% including batteries.
2		i) The GPR system should be capable of Automatic Target Recognition (ATR) which will provide audio clue or visual clue on LED/LCD screen to the operator. The Firm should feed the details of following 7 ATR targets in the library of their GPR and demonstrate the procedure of uploading it to BOOs:- The suggested targets are : a) A steel container of approx. 4" dia (from top) to be placed at 15 cm depth. b) GI pipes in horizontal position 2" dia and 1 feet length	The 6 different targets can be dug at the following depths: a) A steel container of approx. 4" dia (from top) to be placed at 15 cm depth. b) GI pipes in horizontal position 2" dia and 1 feet length-30 cm



11.7.24
Ph. K. K. Sharma
AC, (BSF)


11.7.24
Ram Pal,
DC, (ITBP)



11.7.24
A.K. Rana,
WO, (Assam Rifles)



11.7.24
Anil Kumar,
DC, (CISF)


11.7.24
Maj. Shubham
(NSG)


11.7.24
Devender Singh,
DC, (SSB)


11.7.24
K.L. Puri,
SP(Mod) BPR&D

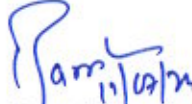

11.7.24
Vishal Veer Singh,
Addl. Dir. DRDO



11.7.24
Vivek Kumar Gupta,
Asstt. Dir. DCPW


11.7.24
Dharendra Verma,
CO (Mod/Ord) (CRPF)


	<p>c) Gas cylinder of 5 kg at a depth of 45 cm in vertical position d) Ferrous(Iron) container of any shape of 2 Kg e) Steel pot of approx 10 litre capacity at depth of 45 cm f) 3 litre standard pressure cooker</p> <p>The ATR is an optional feature which will be specified by the user during the tender process. The number of memory of targets will be decided by the user.</p>	<p>c) Gas cylinder of 5 kg at a depth of 45 cm in vertical position. d) Ferrous(Iron) container of 2 Kg- 30 cm e) Steel pot of approx 10 litre capacity at a depth of 45 cm f) 3 litre standard pressure cooker- 30 cm</p> <p>The targets can be first fed into the memory of the equipment with a name/ number in different positions and orientations. On detection, the equipment should detect the target with the same name/ number as was fed in the system</p>
3	<p>Readiness time</p> <p>The system should be ready to use within 2 min. further sufficient time (10 min) to be given to the firm for calibration on ground condition</p>	To be physically checked by the BOO.
4	<p>The system should be able to plot the threat on LED/LCD display in real time. Display to be available in English language</p>	Check the detected threat indication on the LED/LCD display.
5	<p>Search Head</p> <p>The search head should be of any shape.</p>	To be physically Checked by the BOOs.
6	<p>Detection Capability</p> <p>The system should minimum have the following modes a) MD(Metal Detection) b) GPR (Ground Penetrating Mode) c) Combined Mode d) The system should be checked in all modes for targets given in Trial Directives. e) 90% detection of targets in all modes (19 targets) should be the accepting criteria.</p>	<p>The System should be checked in following modes:- 1. GPR mode:- T-1 - Steel container of 5-6" dia and a length of 5-6" filled up with sugar (simulating explosive) and a detonator. (Anti personal)- 30 cm. T-2 - 2" PVC pipe of 1 foot length in horizontal position - 30 cm T-3 - Wooden box (1 CFT) filled with sugar- 45 cm</p>



Ph. K. K. Sharma
AC, (BSF)


Ram Pal,
DC, (ITBP)



A.K Rana,
WO, (Assam Rifles)


Anil Kumar,
DC, (CISF)

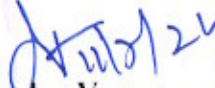

Maj. Shubham
(NSG)


Devender Singh,
DC, (SSB)


K.L. Puri,
SP(Mod) BPR&D


Vishal Veer Singh,
Addl. Dir. DRDO



Vivek Kumar Gupta,
Asstt. Dir. DCPW


Dharendra Verma,
CO (Mod/Ord) (CRPF)


		<p>T-4 – 50 litre plastic barrel with 200 gram metal splinters- 50 cm</p> <p>T-5 - Plastic Tiffin of 1000 ml capacity filled with sugar and metal splinters- 30 cm</p> <p>T-6 – Plastic pot of around 5 litre filled with water (simulating liquid explosive) with a detonator- 45 cm.</p> <p>T-7- fox hole of 1 meter length dug at a depth of 60 cm and width (diameter) of 50 cm.</p> <p>2. MD mode:-</p> <p>T-1 - 2" GI Pipe of 1 feet long -15 cm.</p> <p>T-2- 1 litre steel container of 4-6" dia & 4-6" height filled with urea - 30 cm.</p> <p>T-3- 200 grams PEK explosive in 50 litre steel metal drum-70 cm.</p> <p>T-4 - 5 litre pressure cooker-50 cm.</p> <p>T-5- Gas cylinder (5 kg) at 45 cm depth in vertical position.</p> <p>T-6 - 10 litre steel container filled with sugar -60 cm</p>
--	--	--



11.7.24
Ph. K. K. Sharma
AC, (BSF)



11/09/24
Ram Pal,
DC, (ITBP)


A.K Rana,
WO, (Assam Rifles)



11.7.24
Anil Kumar,
DC, (CISF)



11/7/24
Maj. Shubham
(NSG)


11/7/24
Devender Singh,
DC, (SSB)



11.7.24
K.L. Puri,
SP(Mod) BPR&D


Vishal Veer Singh,
Addl. Dir. DRDO



Vivek Kumar Gupta,
Asstt. Dir. DCPW


11/7/24
Dharendra Verma,
CO (Mod/Ord) (CRPF)


		<p>3. Combined mode:-</p> <p>T-1 – 2” GI pipe of 1 foot long at 15 cm. T-2- 5 litre pressure cooker-45 cm. T-3 – Wooden box (1CFT) filled with sugar- 45 cm. T-4 – 50 litre plastic barrel filled with a TNT slab and 200 gram metal splinters - 50cm T-5 – Plastic bag (30x30cm of any width) filled with sugar and metal splinters of 200 grams- 30 cm. T-6 – cordtex bundle of length 10 meters in folded position- 30 cm.</p> <p>Note: All the depths will be measured from the top of the target and in combined mode the system should be able to detect the target in any one of the mode (i.e. GPR & MD mode)</p>
7.	False Alarm should not be more than 10%.	<p>To be Physically checked by BOOs. This test should be done during detection test of targets in various modes:-</p> <p>i) GPR mode:- T-1 to T-6 as mentioned in col. No.6 ii) Metal Mode:- T-1 to T-6 as mentioned in col. No. 6 iii) Combined Mode:- T-1 to T-6 as mentioned in col. No. 6 iv) System giving an alarm/indication without any target will be dug and if no object/material like metal/wood/plastic/cavity etc. Is noticed then it will be counted as false alarm.</p>



11.3.24
Ph. K. K. Sharma
AC, (BSF)



11/07/24
Ram Pal,
DC, (ITBP)



A.K Rana,
WO, (Assam Rifles)



11.7.24
Anil Kumar,
DC, (CISF)



11/7/24
Maj. Shubham
(NSG)


11/07/24
Devender Singh,
DC, (SSB)



11.7.24
K.L. Puri,
SP(Mod) BPR&D

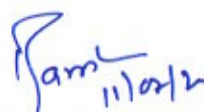

Vishal Veer Singh,
Addl. Dir. DRDO



Vivek Kumar Gupta,
Asstt. Dir. DCPW


11/7/24
Dharendra Verma,
CO (Mod/Ord) (CRPF)

8. Technical Features	(i) The sensor head should be attached to a ruggedized telescopic rod assembly suitable for a standing, kneeling & prone person to scan the area.	Check the system for having a ruggedized telescopic rod assembly. A standing person should be able to scan the area with the help of the system comfortably.
	(ii) Control unit should have facility to control the sensitivity of detection and audio volume.	Switch 'On' the system and check the detection of an object. Change the sensitivity of detection and observe its effect on detection. Check also the volume control for alarm audio
	(iii) It should have feature to determine the target depth.	To be tested along with Detection capability parameter at sl. No 6.
	(iv) It should have modes i.e. metal detection mode, GPR mode and combined mode.	Switch 'ON' the system and put it in different modes as mentioned in the QRs Para and check the performance in each of the mode one by one.
	(v) It should have automatic soil compensation feature for use in mineral, sand and wet soil environment.	Check the system performance in different soil conditions.
	(vi) The audio alarm should be through inbuilt buzzer / speaker and head phone. Vibration alarm along with audio/visual alarm is an optional feature which will be given during tender process.	Check the detection alarm in system control unit and also through head phone.
	(vii) The system should be operated on rechargeable battery. The battery should run the system for minimum 8 hours continuously in operational mode on single charge. Low battery indication should be available.	Physically check the system operation on rechargeable battery provided. Check the continuous run time of the system on fully charged rechargeable battery provided and note down the continuous run time. To be physically checked by BOOs.



11.7.24
Ph. K. K. Sharma
AC, (BSF)


11/07/24
Ram Pal,
DC, (ITBP)


A.K Rana,
WO, (Assam Rifles)



11/7/24
Anil Kumar,
DC, (CISF)


11/7/24
Maj. Shubham
(NSG)


11/7/24
Devender Singh,
DC, (SSB)


11/7/24
K.L. Puri,
SP(Mod) BPR&D



Vishal Veer Singh,
Addl. Dir. DRDO



Vivek Kumar Gupta,
Asstt. Dir. DCPW


11/7/24
Dharendra Verma,
CO (Mod/Ord) (CRPF)

		(viii) A suitable battery charger should be provided to charge the battery/ batteries. (ix) The charger should be able to charge on AC mains line as well as DC source.	Charge a fully discharged battery with the battery charger provided with the system and note down the time to get fully charge. Check the battery charger operation on AC mains power supply by varying it from 100 to 240 volts. Also check the charger operation on DC source.
		(x) The system should have inbuilt/external memory of minimum 32 GB or 16 hours data storage facility. (technical data and GPS coordinates both should be able to be recorded). The data should be able to be transferred to Desktop or laptop.	Firm to provide certificate from NABL accredited labs.
9	Transportation	A ruggedized transportation box and rain/splash proof canvas carrying case should be provided which accommodates the system with all accessories comfortably. Ruggedized transportation should be complied with minimum IP 65.	<ul style="list-style-type: none"> • Check the transportation box and canvas carrying case for accommodation of system with all accessories. • Check the National (NABL accredited)/International accredited lab certificate/report in respect of ruggedness of transportation box. • Physically check the canvas carrying case for rain/splash proofing.
10	EMI & EMC	The system must confirm to lay down EMI and EMC specifications.	Check the National (NABL accredited)/ International accredited lab certificate/report in respect of the same.
11	Environmental Specification:	i) Operational temp: -20°C to +55°C ii) Storage temp : -30°C to +55°C	Check the National (NABL accredited)/ International accredited lab certificate/report in respect of the same.
12	System Ruggedness	The system (GPR) must conform to MIL standard 810G or JS55555 or better for a) Humidity	Check the National (NABL accredited) /International accredited lab certificate/report in respect of the same.



11.7.24
Ph. K. K. Sharma
AC, (BSF)



11/7/24
Ram Pal,
DC, (ITBP)



A.K Rana,
WO, (Assam Rifles)



11.7.24
Anil Kumar,
DC, (CISF)



11/7/24
Maj. Shubham
(NSG)


11/7/24
Devender Singh,
DC, (SSB)

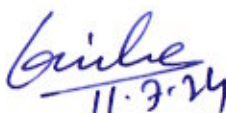

11.7.24
K.L. Puri,
SP(Mod) BPR&D


Vishal Veer Singh,
Addl. Dir. DRDO



Vivek Kumar Gupta,
Asstt. Dir. DCPW


11/7/24
Dharendra Verma,
CO (Mod/Ord) (CRPF)


		b) Shock c) Thermal Shock d) Rain proof e) Vibration f) The complete equipment without accessories should be IP 67 compliant or better	
13	Warranty	03 Years	OEM will submit an undertaking certificate in this regard.
14	Shelf life	10 Years	OEM will submit an undertaking certificate in this regard.
15	02 sets of additional rechargeable batteries with charger to be provided by the firm.	OEM will submit an undertaking certificate in this regard.	To be physically checked by BOOs.
16	User Manual and Operation Instructions	Detailed instructions technical literature with schematic diagram, maintenance manual and Inspection standards be provided with the equipment.	Not to be evaluated at the time of physical evaluation.



11.7.24
Ph. K. K. Sharma
AC, (BSF)


11/7/24
Ram Pal,
DC, (ITBP)



A.K Rana,
WO, (Assam Rifles)



11/7/24
Anil Kumar,
DC, (CISF)



11/7/24
Maj. Shubham
(NSG)


11/7/24
Devender Singh,
DC, (SSB)


11.7.24
K.L. Puri,
SP(Mod) BPR&D


Vishal Veer Singh,
Addl. Dir. DRDO


Vivek Kumar Gupta,
Asstt. Dir. DCPW

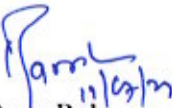

11/7/24
Dharendra Verma,
CO (Mod/Ord) (CRPF)


17	Miscellaneous	
a)	Cleaning kit be provided with each of the equipment.	Not applicable at the time of technical/physical evaluation
b)	Supplier to submit undertaking to provide spare parts for next 10 yrs minimum from the date of supply.	Not applicable at the time of technical/physical evaluation
c)	Technical manual/operational manual including repair manual of GPR	Not applicable at the time of technical/physical evaluation
d)	Repair & maintenance training should be arranged for at least 05 persons for 05 days. The training should be conducted at field location for 03 days.	Not applicable at the time of technical/physical evaluation
e)	Illustrated Spare Parts List (ISPL), photograph and CAT parts number be provided.	Not applicable at the time of technical/physical evaluation

Note:


- i) All targets will be provided by users during Field Trial / Demo.
- ii) User to ensure that the testing ground is not heavily saturated with water.
- iii) Targets to be manually buried i.e. without using JCB at-least one week prior to the trials.
- iv) All targets to be placed separately at once having sufficient distance between 2 targets.

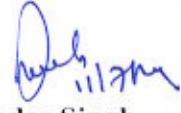

11.7.24
Ph. K. K. Sharma
AC, (BSF)


11/09/24
Ram Pal,
DC, (ITBP)


A.K Rana,
WO, (Assam Rifles)



11.7.24
Anil Kumar,
DC, (CISF)

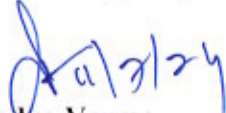

11/7/24
Maj. Shubham
(NSG)


11/7/24
Devender Singh,
DC, (SSB)



11.7.24
K.L. Puri,
SP(Mod) BPR&D

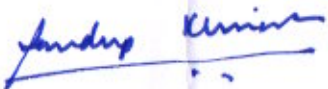

Vishal Veer Singh,
Addl. Dir. DRDO


Vivek Kumar Gupta,
Asstt. Dir. DCPW


11/7/24
Dharendra Verma,
CO (Mod/Ord) (CRPF)


11/7/24
Des Raj
DIG(Ord) CRPF


Sonal V. Misra
IG (Prov) CRPF


Sandeep Khirwar
ADG (HQR), CRPF

Approved

DG, CRPF