F/No- P-63013/8/GPRs/2012-Ord/BSF/MHA-Prov-I -1793

Bharat Sarkar/Government of India
Griha Mantralaya/Ministry of Home Affairs
PM Division/Prov.I Desk

26, Man Singh Road, Jaisalmer House
New Delhi, Dated November, 2016

To,

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

Subject: QRs and Trial Directive of Ground Penetrating RADAR (Hand Held).

The QRs and Trial Directives in respect of **Ground Penetrating Radar (Hand Held)** as per Annexure-'A' and 'B' have been accepted by the Competent Authority in MHA.

2. The CAPFs concerned will be accountable for correctness of the QRs/Trial Directives.

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

Yours faithfully,

Encl: As above

(Ritesh Kumar)
Under Secretary to the Govt of India
Tel: 23381278

Copy forwarded for necessary action to :-

The Section Officer (IT), MHA: It is requested to host the QRs and Trial Directives (soft copy attached) on the MHA website under the page of Organizational Set up- Police Modernization Division- Qualitative Requirement under Surveillance Equipments.

(V. Devadas)
Section Officer (Prov-I)

Copy to: DDG (Procurement), MHA

Appendix –'A'

DIRECTOR GENERAL BORDER SECURITY FORCE
(PROVISIONING DIRECTORATE (Mod Cell)

The Sub-group of Technical Experts on Surveillance Equipment's constituted by MHA vide their letter No. IV-1017/18/2001-Prov-I dated 05 Jul 2002 held its meeting at BSF Headquarters on 02nd Dec 2014, 12th Jan 2015, 12th Feb 2015 16th June 2015, 20th Nov 2015, 1st Feb 2016, 11th April 2016, 11th May 2016, 31st May 2016, 15th June 2016 and 15th July 2016 to formulate the QRs of **'Ground Penetrating Radar (Hand Held)'.**

After detailed deliberations the referred Sub-group has finalized the QRs of **'Ground Penetrating Radar (Hand Held)'** which are as under:-

QUALITATIVE REQUIREMENT OF 'GROUND PENETRATING RADAR' (Hand Held)

S No.	PARAMETER	SPECIFICATION
1	**Features**	
	(i)	The GPR system should be capable to detect metallic and non-metallic threats like IEDs, Pressure plates and mines (Anti-Personnel & Anti-Vehicle) etc.
	(ii)	The system should provide GPR data in real time to the operator to detect investigate and mark IEDs or suspicious objects.
2	ATR & Alarm	Must contain automatic target recognition feature which will provide audio clue as well as visual clue on LCD screen to the operator.
3	Self-test	The system should have self-test feature to ensure the system operating properly.
4	Physical	The system should be a **Hand Held GPR System**. The weight of the GPR system should not be more than 5 Kg.
5	**Physical & Technical features : Hand Held GPR system:**	
	The detail physical & technical features of the hand held unit are:	
	(i)	The system detection swath width should be 45 cms (minimum) and detection range 50 cms (minimum) underground.
	(ii)	The sensor head should be attached to a ruggedized telescopic rod assembly suitable for a standing person to scan the area.
	(iii)	Control unit should have facility to control the sensitivity of detection and audio volume.
	(iv)	The system should be able to plot the threat on LCD screen in real time.
	(v)	It should give accurate threat position and depth information with a tolerance of +- 5 cm.
	(vi)	It should have uniform and continuous detection throughout the sensor swath width.
	(vii)	It should have modes i.e. metal detection mode, GPR mode and combined mode.
	(viii)	It should have automatic soil compensation feature for use in mineral soil environment.
	(ix)	It must be capable to detect all type of mines/IEDs in all soil conditions.
	(x)	The audio alarm should be through inbuilt buzzer / speaker and head phone.
	(xi)	The system should be operated on rechargeable battery. The battery should run the system for minimum 8 hrs continuously on single charge.
	(xii)	A suitable battery charger should be provided to charge the battery/ batteries within 8 hrs (maximum).
	(xiii)	The charger should have the provision to charge the battery from 100V to 240 V AC mains supply and DC source to 12-24 V.

	(xiv)	**Optional Requirement (To be specify by the user at the time of indent)** The system should have data storage facility through either external memory card of 16 GB capacity or inbuilt memory system of minimum 4 GB.	
6	Transportation	A ruggedized transportation box with water proof canvas carrying case should be provided which accommodates the system with all accessories comfortably.	
7	EMI & EMC	The system must confirm to lay down EMI and EMC specifications.	
8	Environmental Specification:	i)	Operational temp: -20°C to 55°C
		ii)	Storage temp : -40°C to 70°C
9	System Ruggedness	The system (GPR) must conform to Mil STD 810F.	
10	Spare Batteries	For one additional cycle of operation, required batteries be provided.	
11	User Manual and Operation Instructions	Detailed instructions technical literature with schematic diagram, maintenance manual and Inspection standards be provided with the equipment.	

RECOMMENDED/ NOT RECOMMENDED

(K K SHARMA) IPS
DIRECTOR GENERAL
BORDER SECURITY FORCE

Appendix – B

TRIAL DIRECTIVES FOR GROUND PENETRATING RADAR (HAND HELD)

S No.	PARAMETER	SPECIFICATION	Procedure suggested for trial for Board of Officers	Result expected / desired	Complied / Not Complied
1.	Features	i) The GPR system should be capable to detect metallic and non-metallic threats like IEDs, Pressure plates and mines (Anti-Personnel & Anti-Vehicle) etc.	Physically check GPR for the detection of metallic and non-metallic objects like IEDs, pressure plate etc, underground in specific depth.	The GPR system must be capable to detect metallic and non-metallic threats like IEDs, Pressure plates and mines (Anti-Personnel & Anti-tank) etc.	
		ii) The system should provide GPR data in real time to the operator to detect investigate and mark IEDs or suspicious objects.	Physically check the system for the detection of IEDs or suspicious objects by displaying the data in real time on LCD screen to investigate and mark the threats.	The system must provide GPR data in real time to detect, investigate and mark the IEDs or suspicious objects.	
2.	ATR & Alarm	Must contain automatic target recognition feature which will provide audio clue as well as visual clue on LCD screen to the operator.	• Detect some known objects hidden underground and check the system for audio & visual alarm. • Check the system for automatic target recognition feature while detection.	• It must give audio clue as well as visual clue on LCD screen to the operator. • It must also have the feature of automatic target recognition for threat confirmation.	
3.	Self-test	The system should have self-test feature to ensure the system operating properly.	Switch 'ON' the system and put it in self-test mode to ensure proper operation of the system.	The system must have self-test feature to ensure the system operating properly.	
4.	Physical	The system should be a **Hand Held GPR System**. The weight of the GPR system should not be more than 5 Kg.	Check the system provided by the firm as per the user requirement of the user. Weigh the GPR system with the weighing machine.	The system provided must be as per the user requirement. Weight of GPR should be less than 5 kg.	
5.	Physical & Technical features	**Hand Held GPR system The detail physical & Technical features of the hand held unit are:-**			
		(i) The system detection swath width should be 45 cms (minimum) and detection range 50 cms (minimum) underground. (ii) The sensor head should be	i) Measure the detector swath width and check the detection range of an object dig underground. ii) Check the system for having a ruggedized telescopic rod	i) The system detection swath width must be 45 Cms (min) and detection range 50 Cms (min) underground. ii) The sensor head must be supported by ruggedized telescopic rod	

		attached to a ruggedized telescopic rod assembly suitable for a standing person to scan the area.		assembly. A standing person should be able to scan the area with the help of the system comfortably.	assembly for scanning the area.
		(iii) Control unit should have facility to control the sensitivity of detection and audio volume.	iii)	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) The control unit must have sensitivity control for detection and volume control for alarm.
		(iv) The system should be able to plot the threat on LCD screen in real time.	iv)	Check the detected threat indication on the display screen. i.e (LCD screen).	iv) The system must display the threat in real time on LCD screen.
		(v) It should give accurate threat position and depth information with a tolerance of ± 5 cm.	v)	Place a known target underground at a known depth and check its detection with in deviation of +- 5 cm.	v) The system must give threat position and depth information with in permissible deviation.
		(vi) It should have uniform and continuous detection throughout the sensor swath width.	vi)	Check the detection of a target at different locations under the swath width by keeping the position of detector swath fixed.	vi) The system must have uniform and continuous detection throughout the sensor swath width.
		(vii) It should have modes i.e. metal detection mode, GPR mode and combined mode.	vii)	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.	vii) The system must detect threats in different modes, as mentioned in QR.
		(viii) It should have automatic soil compensation feature for use in mineral soil environment.	viii)	Check the system performance in different soil conditions like in sand, in available soil, in wet soil & salt mixed soil.	viii) The system must have an automatic soil compensation feature to neutralise the mineral soil environment and perform effectively without affecting the sensitivity.

	(ix) It must be capable to detect all type of mines/IEDs in all soil conditions.	ix) Check the detection of the system for available mines/IEDs dug in different soil conditions as in Para (viii).	ix) It must be capable to detect all type of mines/IEDs indifferent soil conditions.	
	(x) The audio alarm should be through inbuilt buzzer / speaker and head phone.	x) Check the detection alarm in system control unit and also through head phone.	x) The system must give audio alarm through inbuilt buzzer / speaker and head phone.	
	(xi) The system should be operated on rechargeable battery. The battery should run the system for minimum 8 hours continuously on single charge.	xi) 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.	xi) The system must operate on rechargeable battery. The battery must run the system continuously for 8 hours on single charge.	
	(xii) A suitable battery charger should be provided to charge the battery/ batteries within 8 hrs (min).	xii) Charge a fully discharged battery with the battery charger provided with the system and note down the time to get fully charge.	xii)Battery charger provided must recharge a fully discharged battery within 8 hrs (min).	
	(xiii) The charger should have the provision to charge the battery from 100 V to 240 V AC mains supply and DC source from 12V to 24V.	xiii) 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 from 12 V to 24 V	xiii) The battery charger provided must have the facility to charge the battery from 100 to 240 volt AC mains supply and from DC 12 V to 24 V.	
	(xiv)Optional Requirement (To be specify by the user at the time of indent) The system should have data storage facility through external memory card of 16 GB or inbuilt memory system of minimum 4GB.	xiv) Check the system for the facility of external memory card and inbuilt memory system for data storage.	xiv) The system must have data storage facility through either external memory card of 16 GB capacity or internal inbuilt memory system of minimum 4 GB.	

6.	Transportation	A ruggedized transportation box and water proof canvas carrying case should be provided which accommodates the system with all accessories comfortably.	• Check the transportation box and canvas carrying case for accommodation of system with all accessories. • Check the National/International accredited lab certificate/report in respect of ruggedness of transportation box. • Check the canvas carrying case for water proofing.	• The transportation box and canvas carrying case must accommodate the system with all accessories comfortably. • The firm must provide the National/ International Accredited lab certificate/report in respect of the transportation box. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab. • Canvas carrying case must be water proof.	
7.	EMI & EMC	The system must confirm to lay down EMI and EMC specifications.	Check the National/International accredited lab certificate/report in respect of the same.	The firm must provide the National/ International Accredited lab certificate/report in respect of EMI & EMC specifications. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	
8.	Environmental Specification:	i) Operational temp: -20°C to 55°C ii) Storage temp : -40°C to 70°C	Check the National/International accredited lab certificate/report in respect of the same.	The firm must provide the National/ International Accredited lab certificate/report in respect of the same. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	
9.	System Ruggedness	The system (GPR) must conform to Mil STD 810F.	Check the National/International accredited lab certificate/report in respect of the same.	The firm must provide the National/ International Accredited lab certificate/report in respect of the same. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	
10.	Spare Batteries	For one additional cycle of operation, required batteries be provided.	Not to be evaluated at the time of physical evaluation.	--	

11.	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.	--	

(ASEEM VYAS, DIG BIW)

DC, CRPF

(Rajesh ... DCPW)

(R. K. ..., DC (Tech) CISF

(Manoj, ITBP)

SIW BSF

APPROVED/NOT APPROVED

29/9/16

(K K SHARMA) IPS

DIRECTOR GENERAL

BORDER SECURITY FORCE