223

No. P-63013/17/2013-Ord/BSF/ 1257-64

Government of India
Ministry of Home Affairs
Directorate General Border Security Force
(Prov Dte : Mod Cell)
Fax: 011- 243676830
Mail id: comdtord@bsf.nic.in

Block No.10, CGO Complex,
Lodhi Road, New Delhi – 03

Dated, the 8th May 2018

1. DIG (Prov)
   HQ CRPF, SSB, ITBP & CISF

2. DIG (Prov)
   HQ DG NSG, Mehram Nagar,
   Near Domestic Airport, Palam,
   New Delhi-110037

3. DIG (Prov)
   AR (Through LoAR)

Sub : **Forwarding of QRs and TDs of Night Vision Device (Thermal)**

I have been directed to forward herewith QRs and Trial Directives of "Night Vision Device (Thermal)" as per appendix-'A' and 'B' duly formulated & finalized by Sub-group of technical experts and approved by DG BSF for your information and necessary action please.

Encl :- As above

8/5/18

(J K Rudola)
Dy. Inspector General (Prov)

Copy to:-

1. DS (Prov), PM Division, MHA — For information with a request to host the above QRs and TDs on MHA website please.

2. IT Cell, FHQ BSF, New Delhi — For information with a request to host the above QRs and TDs on BSF website please.

178 129 (8)

Appendix –'A'

DIRECTOR GENERAL BORDER SECURITY FORCE
PROVISIONING DIRECTORATE (MOD CELL)

The Sub-group of Technical Experts on Surveillance Equipment constituted by MHA vide their letter No. IV-24011/12/2011-Prov-I dated 13 Jun 2012, No. IV-24011/12/2011-Prov-I dated 28 Dec 2012 & UO No. IV-24011/12/2011-Prov-I- 350 dated 27 Jun 2013 held its meeting at BSF Headquarters on **01 Mar 2013, 27 Aug 2013, 25 Sep 2013, 23 Oct 2013, 20 Jan 2014, 11 Apr 2014, 04 June 2014, 4 Aug 2014, 20 Oct 2014, 12 Dec 2014, 13 July 2015 , 28 Sep 2015, 21 Dec 2015, 22 Jan 2016** & 22 Apr 2016 to formulate the Qualitative Requirement of **'NIGHT VISION DEVICE (THERMAL)**.

After detailed deliberations the referred Sub-group has finalized the QRs of **'Night Vision Device (Thermal)'** which are as under:-

QUALITATIVE REQUIREMENT OF NIGHT VISION DEVICE (THERMAL)

S/No	SPECIFICATION	PARAMETERS
1.	Night vision un-cooled thermal Monocular Hand Held compact device which is **helmet mountable, head** mountable.	
2.	Magnification	1 x
3.	a) Type of Detector	Micro Bolometer.
	b) Spectral Range	3 to 5 µm or 8 to 14 µm or both.
	c) FPA Resolution	320 x 240 or better at 17 µm.
4.	Capturing Frame Rate	25 FPS or better.
5.	OLED Resolution	800 x 600 (min).
6.	Field of View (FOV)	40° X 30° (Max).
7.	Range: (Single man size target)	
	a) Detection range - 400 meters or better.	
	b) Recognition range - 150 meters or better.	
8.	Diopter Adjustment	+2 to -4d or automatic.
9.	The system should have mechanism for	a) On/off.
		b) Black Hot / White Hot polarity change.
		c) Brightness Control.
		d) NUC .
10.	Battery Status Indicator	System should display battery status on its screen.
11.	Weight: 400 gms with cell/battery with 10 % tolerance.	
12.	Mil Std	Complete System should confirm the parameters of latest Mil STD or JSS 55555.
13.	Battery	Lithium based rechargeable cell / battery be provided with the system to keep it operational in the range of operating temperature with proper temperature protection.
14.	Battery Efficiency	The system should remain fully operational on single/set of batteries (rechargeable) for not less than 4 Hrs or better on single charge.

S/NO	SPECIFICATION	PARAMETERS
15.	Battery charger	A suitable and Intelligent Charger operating on 100 volt to 270 volt AC mains supply should be provided to charge the battery. There should be provision of keeping the battery safe from over-charging. The charger should be able to charge the cells / battery fully within 5 hours.
16.	Operating Temperature	- 20^{0}C to + 55^0 C.
17.	Storage Temperature	- 30^{0}C to + 60^0 C.
18.	Focus	Adjustable (manual or automatic)
19.	Carrying case	a) A ruggedized Polypropylene shockproof container Mil Std for transportation.
		b) An additional soft carrying case with shoulder strap be provided.
20.	Miscellaneous	a) Suitable & stable Head and helmet mount accessories to be provided as per the operational requirement of the user.
		b) Suitable sling should be provided with each equipment for safety.
		c) Purging kit should be provided at the time of supply (quantity of kits will be specified by the user).
		d) Technical manual/Operational manual should be provided.
		e) One spare Eye guard and OG cover should be provided with each system.

(B C Joshi) DIG, SIW BSF

(Rajesh Ekka) Dy Dir DCPW

(Harjinder Kumar) DC SIW BSF

(Abhiram Pankaj) DC CRPF

(R K Meel) AC, CISF

(Satvinder Kumar) AC ITBP

(Ajitha Kumar) Sr. IOA SSB

(Ramesh Rai) SI/RM BSF

(Sudhir Kumar) ASI/RM SIW BSF

APPROVED/ ~~NOT APPROVED~~

16/5/16

(K K SHARMA) IPS
DIRECTOR GENERAL
BORDER SECURITY FORCE

Appendix –'B'

TRIAL DIRECTIVE OF NIGHT VISION DEVICE (THERMAL)

Srl No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
1.	Night vision un-cooled thermal Monocular Hand Held compact device which is **helmet mountable, head** mountable.		a) Check physically the system for compactness and monocular version. b) Check the monocular for use as hand held, helmet mountable and head mountable with suitable adaptors/dovetails. c) The firm has to submit National / International accredited lab certificate / report to confirm that the monocular is Thermal (un-cooled).	a) System must be compact and Monocular. b) The monocular must have the facility to be used in Hand held role, helmet and head mountable role with hands free operation. c) Check the authenticity of accredited lab certificate / report for Thermal (Un-cooled). In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	
2.	Magnification	1 x	Fix the equipment on Instrument Testing Scale of Integrated test equipment and measure the magnification of the Thermal sight as per the standard procedure.	Magnification must be 1x.	

Sr No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
3.	a) Type of Detector: Micro bolometer. b) Spectral Range: 3 to 5 µm or 8 to 14 µm or both. c) FPA Resolution: 320 x 240 or better at 17 µm		Check the detector OEM data sheet/certificate duly attested by the participating firm and OEM in respect of QRs Para 3 (a) to (c).	Detector OEM data sheet /certificate must confirm the same. In case of any doubt in the test report, the veracity of the same may be checked from the concerned OEM.	
4.	Capturing Frame Rate	25 FPS or better.	a) Physically switch ON the system, hold it in hand and observe the performance of the Thermal picture by moving the sight horizontally from right to left & vice versa with speed (not less than 6° per second). b) Additionally, the firm should submit National / International accredited Lab test report / certificate in respect of the same.	a) The Thermal picture must not freeze and there should not be lag/delay in image relay. b) Check the authenticity of National/ International accredited lab test report/Certificate for the same. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	
5.	OLED Resolution	800 x 600 (min)	The firm should submit National/International accredited Lab certificate/ report or OEM data sheet/certificate duly attested by the participating firm in respect of type of display (i.e. OLED) and its	Check the authenticity of National/ International accredited lab test report/Certificate or detector OEM data sheet/certificate for the display type and its resolution.	

Sr No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
			Resolution.	In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	
6.	Field of View (FOV)	40° X 30° (Max)	Fix the equipment on Acceptance Test Station (ATS) and measure the Field Of View as per the procedure.	FOV must be 40° X 30° (Max).	
7.	Range: (Single man size target). Detection range - 400 meters or better. Recognition range- 150 meters or better.		Move a single man as target at the range of 400 meters for detection and at 150 mtrs for recognition at night	Human target must be detected from a distance of 400 meters & recognized from a distance of 150 meters minimum clearly.	
8.	Diopter Adjustment	+2 to -4 d or automatic	a) Check the sight for facility of diopter setting. Proceed as per the provision for dioptor setting provided manually or automatic: i) If provided manually, measure the Diopter adjustment limits with the help of Diopter measuring apparatus in the lab. ii) If automatic, switch ON the system and observe the thermal picture for reading the OSD texts by wearing spectacles having lens power from +2 to -4D in the lab.	The Sight should have manual diopter adjustment from +2 to -4D (min) or automatic. The OSD text must be sharp focused at different dioptor ratings manually or automatically.	
9.	The system should have mechanism for	i. On/off. ii. Black Hot / White Hot polarity	Check the system for the following parameters: i) Facility to switch On/Off the system. ii) Facility to change Polarity of	The system must have mechanism for i) On/off ii) Black Hot / White Hot	

Sr. No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
		change. iii. Brightness Control. iv. NUC.	Hot. iii) Facility to control the brightness of the screen. iv) Switch On the system and observe the picture performance continuously for 30 min for any flickering, freezing of the video and any dead pixels (white or black spot) appearing on the screen.	change. iii) Brightness Control. iv) The system must not have any flickering, freezing of the video and dead pixels appearance on screen during monitoring after performing NUC manually or automatically.	
10.	Battery Status Indicator	System should display battery status on its screen.	Physically check the battery status indication on the screen of the system.	System must display battery status on its screen.	
11.	Weight:	400 Gms with cell/battery with 10% tolerance.	Check the weight of the system with the help of weighing machine physically without accessories.	The complete system must weight 400 Gms with 10% tolerance with cell / battery.	
12.	Mil Std	Complete System should confirm the parameters of latest Mil STD or JSS 55555	The firm should submit National / International accredited Lab test report / certificate in respect of Mil STD or JSS 55555.	Check the authenticity of National/ International accredited lab test report/Certificate for latest Mil STD or JSS 55555. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab.	

Sr. No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
13.	Battery	Lithium based rechargeable cell / battery be provided with the system to keep it operational in the range of operating temperature with proper temperature protection.	a) Check the battery for its type, recharge ability and facility of proper temperature protection. b) Additionally, obtain National/ International accredited lab certificate / test report from the firm in respect of the same.	The battery provided must be Lithium based, rechargeable, with proper temperature protection and operational in the range of operating temperature.	
14.	Battery Efficiency	The system should remain fully operational on single/set of batteries (rechargeable) for not less than 4 Hrs or better on single charge.	Switch 'ON' the system with fully charged battery in operational mode and note down the continuous run time.	System must run for 4 hours continuously in operational mode with fully charged battery on single charge.	
15.	Battery charger	A suitable and Intelligent Charger operating on 100 volt to 270 volt AC mains supply should be provided to	a) Check the charging current of full discharged battery and full charged battery to confirm the suitability and intelligent behaviour with over charging protection.	a) The charger must have facility to indicate the charging status (charging On, Status of percentage of charge and full charge) intelligently.	

Sr. No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
		charge the battery. There should be provision of keeping the battery safe from over-charging. The charger should be able to charge the cells / battery fully within 5 hours.	b) Connect the charger to AC mains power supply and vary the input voltage of the charger with the help of Variac from 100 volt to 270 volt. c) Connect a fully discharged battery with the charger and note down the time taken to charge the battery fully.	b) Connect the charger to AC mains power supply and vary the input voltage of the charger with the help of Variac from 100 volt to 270 volt. c) Connect a fully discharged battery with the charger and note down the time taken to charge the battery fully not more than 5 hours.	
16.	Operating Temperature	- 20° C to + 55° C	The firm should submit National / International accredited Lab test report / certificate in respect of temperature - 20°C to + 55°C.	Check the authenticity of National/ International accredited lab test report/Certificate in respect of temperature - 20°C to + 55°C. In case of any doubt in the test report, the veracity of the same may be checked from the concerned lab .	
17.	Storage Temperature	- 30° C to + 60° C	The firm should submit National / international accredited Lab test report / certificate in respect of temperature - 30°C to + 65°C.	Check the authenticity of national/ international accredited lab test report/Certificate in respect of temperature - 30°C to + 65°C. In case of any doubt in the	

Sr. No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
				test report, the veracity of the same may be checked from the concerned lab.	
18.	Focus	Adjustable (manual or automatic)	Place or select a target at a distance of 50 meters & 400 meters and observe through equipment during night.	The system must be able to focus the target from a distance of 50 meters (min) and 400 meters (considered as parallel rays coming from infinity) with the help of focusing mechanism provided or **automatically**.	
19.	Carrying case	a) A ruggedized, Polypropylene shockproof container Mil Std for transportation. b) An additional soft carrying case with shoulder strap be provided.	a) Drop the transportation box with equipment & all accessories from a height of 3 meters on hard surface. b) The firm should submit National / international accredited Lab test report / certificate in respect of ruggedized, Polypropylene, shock proofing, IP-67,latest Mil Std for transportation and soft carrying case for water proofing.	a) The equipment as well as carrying case must not get damaged and sight must function properly after the drop. b) The firm must submit National / international accredited Lab test report / certificate in respect of the same.	

Sl No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
			c) Check the system for soft carrying case with shoulder strap physically.	c) Carrying case with shoulder strap must be provided additionally.	
20.	Miscellaneous	a) Suitable & stable Head and helmet mount accessories to be provided as per the operational requirement of the user. b) Suitable sling should be provided with each equipment for safety. c) Purging kit should be provided at the time of supply (quantity of kits will be specified by the user). d) Technical manual/Operational manual should be provided.	a) Mount the monocular on head and helmet one by one with the help of respective accessories provided. Check the system mounted on head & helmet for operational suitability in field conditions by cross country movement of soldier in order to ensure the stability. (b) Check the sling provided with the equipment for suitability. **Not to be checked at the time of physical evaluation from sub Para (c) to (e)**	a) The thermal monocular must be provided with suitable and stable head & helmet mount accessories as per the user requirement. The system must not be unstable, loose fit and should not misalign with the eyes on head and helmet mounted role during cross country movement. b) Suitable sling must be provided with each equipment.	

Sl. No.	SPECIFICATION	PARAMETERS	Procedure suggested for trial	Result expected / desired	Complied / Not Complied
		e) One spare Eye guard and OG cover should be provided with each system.			

(B C Joshi) DIG, SIW BSF

(Rajesh Ekka) Dy Dir DCPW

(Harjinder Kumar) DC SIW BSF

(Abhiram Pankaj) DC CRPF

(R K Meel) AC, CISF

(Satvinder Kumar) AC ITBP

(Ajitha Kumar) Sr. IOA SSB

(Ramesh Rai) SI/RM BSF

(Sudhir Kumar) ASI/RM, SIW BSF

APPROVED/ ~~NOT APPROVED~~

16/5/16

(K K SHARMA) IPS
DIRECTOR GENERAL
BORDER SECURITY FORCE