No. P-63013/36/2019/Mod-I/BSF 2843-51
Government of India Ministry of Home Affairs
Directorate General Border Security Force
(Prov Dte: Mod Cell)
(Fax: 011-24367683)

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

Dated, the 10 Dec 2019

To,

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

Sub: **Forwarding of QRs and Trial Directives**

Find enclosed herewith QRs and Trial Directives of Passive Night Telescopic Sight for 5.56 mm INSAS Rifle and LMG as per appendix 'A' and 'B' duly finalized by Sub group of technical experts and approved by DG BSF for your information and necessary action please.

Encl : As above

(Satish Chandra Budakoti)
Dy. Inspector General (Prov)
FHQ BSF, New Delhi

Copy to :-

1. SO (IT), North Block MHA, New Delhi : You are requested to host the above QRs and TDs on MHA website please.

2. IT Cell FHQ BSF, New Delhi : You are requested to host the above QRs and TDs on BSF website please.

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DIRECTOR GENERAL BORDER SECURITY FORCE
(PROVISIONING DIRECTORATE (MOD CELL)

EXPRESSION OF INTEREST

Commandant (Ord)
HQ DG BSF, Prov Dte (Ord Sec)
Block No. 10, CGO Complex
Lodhi Road, New Delhi
(Tele/Fax No. 011-24367683)

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 27th Jun 2013 held its meeting at BSF Headquarters on 19th April 2017, 15th June 2017, 29th August 2017, 08th Nov 2017, 01st Jan 2018, 24th July 2018,16 January 2019, 12 April 2019, 09 July 2019 and 12th September 2019 to revise the Qualitative Requirement of **'Passive Night Telescopic Sight For 5.56 mm INSAS Rifle and LMG'.**

2. After detailed deliberation the referred Sub-group of technical experts has revised the QRs and TDs of **'Passive Night Telescopic Sight For 5.56 mm INSAS Rifle and LMG'** on 07th September 2019 which are as under:-

QUALITATIVE REQUIREMENTS OF PASSIVE NIGHT TELESCOPIC Sight FOR 5.56 mm INSAS RIFLE AND LMG

1.	**Description of Equipment**	The passive Night Telescopic Sight (PNTS) for 5.56 mm INSAS Rifle/LMG is a compact and light weight passive system for accurate weapon aiming and surveillance at night. The sight is suitable for fitment on weapon by use of special mounting bracket.
2.	**Terminology used in this QRs**	
i	II Tube	Image Intensify Tube, are used to amplify low light level image in a wide light spectrum.
ii	LP/mm	Line Pair per Millimeter, unit used to measure image intensifier resolution. Typically the highest the line pair, the better the image resolution.
iii	SNR	Signal to Noise Ratio, it is defined as the ratio of signal power to the noise power in a given bandwidth and compares the level of a desired signal to the level of background noise.
iv	FOV	Field of View is the open observable area, a person can see through his or her eyes or via an optical device. In case of optical devices and sensors FOV describes the angle through which the devices can pick up electromagnetic radiation.
v	IP	Stands for Ingress Protection and an IP rating is used to specify the level of environmental protection of electrical

		equipment against solids & liquids. In other words, it tells us what amount of size of solids or liquids can get inside the enclosure and possibly damage the device. IP ratings are displayed as a 2 digit number. The first digit reflects the level of protections against dust (0=No protection, 1=upto 50 mm, 2= 12 mm, 3= 2.5 mm, 4= 1 mm, 5= limited ingress, 6= total protection against dust). The second digit reflects the level of protection against liquids (Water) 0- No protection 1- against dripping water 2- against dripping water(tilted) 3- against water spray less than 60 degree from vertical 4- against water spray from any direction 5- against water jets 6- a nozzle under pressure 7- immersion (1 meter for 30 minutes) 8- submersion (at depth under pressure)
vi	Mil Grade	Mil standard/Grade are the standard issued by the United State Army's Developmental Test Command. Mil Standard given for II assembly, for 18 mm is – Mil-I-49052F. These standard describe protection of II assembly against Shock, Vibration, Temperature etc.

S.No	Parameter				
1	Magnification	4x Min			
2	II Tube : All parameters of II Tube mentioned below should be supported by certificate of II Tube manufacturer and data sheet of each II Tube must be provided :-				
	a	Resolution	64lp/mm or better.		
	b	Signal to Noise Ratio (SNR)	22 or better.		
	c	Mean Time to Failure (MTTF)	Minimum 10000 operational hrs.		
	d	II tube standard	Mil Grade		
	e	It should have inbuilt Auto gated Circuitry≥ 50 lp/mm @ 200 lux.			
	f	Permissible black spot level			
		Size of spot (in inches)	Zone 1 (6mm)	Zone 2 (6mm-15mm)	Zone 3 (15mm-18mm)
		0.003 to 0.006	0	1 (Max)	2 (Max)
		0.006 to 0.009	0	1 (Max)	1 (Max)
		>0.009	0	0	0
	g	Equivalent Background Illuminator (EBI)- 0.25 μ lux @ $23^0 \pm 2^0$ C			
3	Field of View	8^0 Minimum			
4	Range	Single Man Size Target			
	a	Detection Range	400 Mtr Minimum		
	b	Recognition Range	300 Mtr Minimum		
5	Ingress protection level of	IP67			

	equipment		
6	Diopter Adjustment		-4.5 to +2 Diopter or better
7	Range of Focus		25m to infinity or better
8	Low Bty Indicator		Should be provided on screen/display
9	Operating Temp		-30°C to +55°C
10	Reticule		Should be provided
11	Reticule illumination On/Off		The reticule illumination should be capable of being turned ON/OFF with adjustable brightness level or brightness level can be bring down to zero level with a brightness control knob.
12	Azimuth and Elevation		
	a	Should be provided with the help of reticle on FOV screen.	
	b	The operational suitability of PNTS will be checked by firing on the target.	
13	Mount Kit		There should be a common mounting adaptor should be provided both for 5.56 INSAS Rifle and LMG or as specified by the user.
14	Weight including eye guard, light cover, adaptor, batteries.		1.375 Kg Maximum.
15	Power Source		
	a	Should be operable independently on primary and rechargeable cells and battery. The equipment is to be supplied with one set of commercially available primary & rechargeable NiMH/Li-Ion cells or battery.	
	b	The cell/battery should be capable to run the equipment at least for 15 hrs in continuous mode.	
	c	A commercially available battery charger should be provided which should have the provision to charge the cells from 90-270 volt (50 Hrtz) AC mains supply as well as 12/24 Volt DC supply.	
16	Suitable cover for eye piece & OG.		
17	MIL grade (protection against shock/vibration and water) ruggedized transportation box to be provided.		
18	**Misc (To be a part of AT)**		
	a	Purging kit to be provided **(To be specified by the user)**	
	b	Operational (user) manual to be provided with each equipment.	
	c	Technical maintenance manual to be provided as specified by the user.	
	d	Operational training and base level repair & maintenance training to be provided to the user (trainees) as per number specified by the user department.	
	e	One spare eye guard & OG cover should be provided with each sight.	

	f	Supplier to agree to provide spare parts for next 07 years minimum from the date of supply.

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ADG (Log) BSF

(Dhananjay Mishra)
Comdt, SIW BSF

(Brij Kishor), Sc 'E'
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BPR&D

APPROVED/ NOT APPROVED

(**Vivek Kumar Johri**) **IPS**
DIRECTOR GENERAL
BORDER SECURITY FORCE

TRIAL DIRECTIVES OF PASSIVE NIGHT TELESCOPIC SIGHT FOR 5.56 MM INSAS RIFLE AND LMG (Revision)

S.No	Parameter		Trial procedure suggested for Board of Officers	Result expected/desired	Remarks
1	Magnification	4x Min	Physically checked by the BOO. Fix the equipment on Instrument Testing Scale of integrated test equipment and measure the magnification of the PNTS as per the procedure.	Magnification should be 4 x minimum.	
2	II Tube : All parameters of II Tube mentioned below should be supported by certificate of II Tube manufacturer and data sheet of each II Tube must be provided :-		Physically checked by the BOO The equipment will be tested in a accredited/Government laboratory as per laid down procedure to verify/check the QRs Parameter 2(a), 2(b), 2(e), 2(f) & 2 (g). The firm should also submit OEM certificate/report in respect of QRs Para 2 (c) & 2 (d) from original manufacturer of II tube.	The certificate/reports must confirm the QRs Parameter.	

a	Resolution			64lp/mm or better.	
b	Signal to Noise Ratio (SNR)			22 or better.	
c	Mean Time to Failure (MTTF)			Minimum 10000 operational hrs.	
d	II tube standard			Mil Grade	
e	It should have inbuilt Auto gated Circuitry ≥ 50 lp/mm @ 200 lux				
f	Permissible black spot level				
	Size of spot (in inches)	Zone 1 (6mm)	Zone 2 (6mm-15mm)	Zone 3 (15mm-18mm)	
	0.003 to 0.006	0	1 (Max)	2 (Max)	
	0.006 to 0.009	0	1 (Max)	1 (Max)	
	>0.009	0	0	0	
g	Equivalent Background Illuminator				

	(EBI)- 0.25 μ lux @23^0 ± 2^0 C				
3	Field of View	8^0 Minimum	Physically checked by the BOO. Fix the equipment on instrument testing scale of integrated test equipment and measure the Field of View as per the procedure	FOV should be 8^0 Minimum	
4	Range	Single Man Size Target	Physically check by the BOO. Place single man size target at the range of 400 meters & 300 meters for detection & recognition, respectively.	Human target must be detected at the range of 400 meters minimum and recognized at 300 meters minimum clearly. **Note :- Detection means** : Ability to detect any movement of man. **Recognition means :** Ability to differentiate between civilian/ uniformed personnel with man pack & weapon having rifle & above.	
	a Detection Range	400 Mtr Minimum			
	b Recognition Range	300 Mtr Minimum			
5	Ingress protection level of equipment	IP67	Firm has to submit national/ International accredited lab certificate in respect of the same Also physically checked by the BOO . Tighten the battery cover properly. The equipment should be immersed in one meter depth of water excluding the height/width of the equipment, for 30 minutes. Take out the equipment from the water container and switch it 'ON' after externally drying it.	The certificate/reports must confirm the QRs Parameter. Wipe the equipment with a soft cleaning cloth and dry it externally. Check by opening the battery compartment and other external open able parts for ingress of water content inside. If it is found OK then insert the battery and switch 'ON' the equipment. It should run properly and	

				no water contents/ wipes should be appearing on the view.	
6	Diopter Adjustment	-4.5 to +2 Diopter or better	Physically checked by the BOO. Measure the Diopter adjustment with the help of Diopter kit or apparatus.	The PNTS must have Diopter adjustment from- -4.5D to +2D.	
7	Range of Focus	25m to infinity or better	Physically checked by the BOO. Switch 'ON' the equipment and observe any target from a distance of more than 25 meters away and focus it.	The target at a distance of 25 meters or above must be focused easily.	
8	Low Bty Indicator	Should be provided on screen/display	Physically checked by the BOO. Switch 'ON' the equipment on power supply and reduce the supply voltage linearly for low battery indication confirmation	Low battery indication must be provided inside the FOV/ screen/display. Low battery indication must be displayed during operational mode of the equipment.	
9	Operating Temp	-30°C to +55°C	Firm has to submit national/ International accredited lab certificate in respect of the same.	The certificate/reports must confirm the QRs Parameter.	
10	Reticule	Should be provided	Physically checked by the BOO Switch 'ON' the equipment and observe it for reticule confirmation.	Reticule pattern for aiming the target must glow on the FOV	
11	Reticule illumination On/Off	The reticule illumination should be capable of being turned ON/OFF with	Physically checked by the BOO Switch 'ON' the equipment and confirm the facility of reticule 'ON/OFF'/control knob and its brightness level adjustment.	There must be a proper provision provided in the equipment for reticule "ON/OFF" & reticule brightness level adjustment or brightness level can	

		adjustable brightness level or brightness level can be bring down to zero level with a brightness control knob.		be bring down to zero level with a brightness control knob.	
12	Azimuth and Elevation		Physically checked by the BOO Switch 'ON' the equipment and check the provision of adjustment of reticule in azimuth & elevation. **BOO will check the suitability of PNTS after zeroing of the sight by firing 05 Rds each at the centre of the 4x4 camouflage target followed by adjusting the azimuth and elevation i.e total 15 Rds each by both the 5.56 mm INSAS Rifle as well as LMG from a distance of 100 yards.** *** Firm may like to bring their firer/shooter alongwith them.**	There must be proper provision provided for the azimuth & elevation adjustment of reticule. **There must be minimum 12 Hits on the target from each weapon.**	
	a	Should be provided with the help of reticle on FOV screen.			
	b	The operational suitability of PNTS will be checked by firing on the target.			
13	Mount Kit	There should be a common mounting adaptor should be provided both for 5.56 INSAS Rifle and LMG or as specified by the user.	Physically checked by the BOO Fix the PNTS on 5.56 mm INSAS Rifle and LMG with the help of mounting adaptor provided. Fire 5 rounds with each weapon (5.56 mm INSAS Rifle and LMG) to check the suitability/compatibility & locking of the adaptor.	The equipment must be easily mounted on the weapon i.e 5.56 mm Rifle & LMG. The mounting adaptor must be suitable with the weapon and locking should remain intact during firing. **BOO will also check the compatibility by fixing the sight. The sight should remain intact and sustain a**	

				small jerk when weapon dropped from a height of one feet. BOO will check this aspect by dropping the weapon from one feet, after fixing the sight on the weapon, from butt side. While dropping the weapon the barrel of the weapon be holded by the BOO.	
14	Weight including eye guard, light cover, adaptor, batteries	1.375 Kg Maximum.	Physically checked by the BOO Measure the weight of the equipment including cells or battery, Eye guard, light cover, mounting adaptor and Picatinny with the help of weighing machine.	Must be less than or equal to 1.375 Kgs.	
15	Power Source				
	a	Should be operable independently on primary and rechargeable cells and battery. The equipment is to be supplied with one set of commercially available primary & rechargeable NiMH/Li-Ion cells or battery.	Physically checked by the BOO Insert primary cells in the equipment provided with tender sample and confirm the operation of the equipment. Again replace the battery with the rechargeable NiMH/Li-Ion cells and confirm the operation of the equipment.	The equipment must be operable independently on primary & rechargeable cells and battery.	
	b	The cell/battery should be capable to run the equipment at least for 15 hrs in continuous mode.	Physically checked by the BOO Switch 'ON' the equipment on fully charged rechargeable cells	The cell/battery must be capable to run the equipment for at least 15 hrs in continuous mode.	

			and keep it in the same mode for at least 15 hours.		
	c	A commercially available battery charger should be provided which should have the provision to charge the cells from 90-270 volt (50 Hrtz) AC mains supply as well as 12/24 Volt DC supply.	Physically checked by the BOO Connect discharged cells with battery charger provided on AC mains supply and observes the output voltage of the charger. Now vary the input AC mains voltage from 90-270 volt (50 Hrtz) and monitor the output of the charger. Again connect discharged cells with the battery charger provided on 12 volt or 24 volt DC supply and observe the output voltage of the charger.	The output of the battery charger must not vary with the input voltage variation in either of the case i.e AC mains supply or DC supply as mentioned in the QR.	
16	Suitable cover for eye piece & OG.		Physically checked by the BOO	Suitable cover for eye piece & OG should be provided.	
17	MIL grade (protection against shock/vibration and water) ruggedized transportation box to be provided.		Physically checked by the BOO Place the equipment inside container and drop it on hard surface from a height of 2 meters. The transportation box will be checked by BOO by temporary immersing it in one meter of water for 30 minutes.	The equipment inside not get damaged and function properly and there must not be any trace of water/liquid inside the box.	
18	**Misc (To be a part of AT)**				
	a	Purging kit to be provided **(To be specified by the user)**	Not applicable	Applicable at the time of supply	
	b	Operational (user) manual to be provided with each equipment.	Not applicable	Applicable at the time of supply	
	c	Technical maintenance manual to be provided as specified by the user.	Not applicable	Applicable at the time of supply	

	d	Operational training and base level repair & maintenance training to be provided to the user (trainees) as per number specified by the user department.	Not applicable	Applicable at the time of supply	
	e	One spare eye guard & OG cover should be provided with each sight.	Not applicable	Applicable at the time of supply	
	F	Supplier to agree to provide spare parts for next 07 years minimum from the date of supply.	Not applicable	Applicable at the time of supply	

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