

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

The Sub-group of Technical Experts constituted by MHA vide their letter No. IV-24011/12/2011-Prov-I dated 13 Jun 2012 and order No. 11012/02/2009-Fin-I/Prov-I/17 dated 02nd Jan 2018 held its meeting at BSF Headquarters on 17th Feb 2016, 25th April 2016, 27th July 2016, 05th Oct 2016, 08th Feb 2017, 15th March 2017, 25th July 2017, 18th Aug 2017, 14th Sep 2017, 31st May 2018, 26th October 2018 and 28th December 2018 to revise the QRs of '**Flexible Fiber Scope**'. Same equipment has been authorized to CRPF with nomenclature '**Fiber optic Scope**'. Therefore the QRs apply to them also.

After detailed deliberation the referred Sub-group of technical experts has revised the QRs and TDs of **Flexible Fiber Scope/Fiber optic Scope** on 18th March 2019 which are as under :-

Description of Equipment		Flexible Fiber Scope/Fiber Optic Scope- These are very similar to normal Fiberscopes. Fiberscopes can be either rigid or flexible. In which Fiber optic cables or glass fiber bundles relay an image to the user's eyepiece. This allows visual inspections of hard-to-reach areas in a wide variety of inspection applications.
Terminology used in this QRs		
i)	CCD	Charged Coupled Device (CCD) are sensors used in digital cameras and video cameras to record still and moving images. The CCD captures light and converts it to digital data that is recorded by the camera.
ii)	CMOS	Complementary metal-oxide semiconductor (CMOS) is the semiconductor technology used in the transistors that are manufactured into most of today's computer microchips.
iii)	MPEG4	MPEG4 is a method of defining compression of audio and visual digital data. MPEG4 can be used for compression of AV data for web, as used for streaming media, for CD distribution, as well as for voice broadcast television applications.
iv)	JPEG	JPEG is a standard file format for compressing pictures so they can be stored or sent by email more easily. JPEG is an abbreviation for "Joint Photographic Experts Group".
v)	AVI	A computer file format that contains audio and video data and is used to play back the audio and video data simultaneously.
vi)	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)

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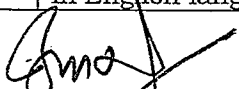
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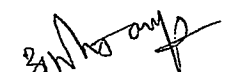
vii)	MIL Std	The defense standards, commonly referred to as Milspec/mil std, are developed by the US Department of Defense (DoD) for the purpose of enhancing interoperability among critical defense systems. The goal of the standards is to provide precise descriptions on the procedures and practices for the design, manufacturing, and deployment of military devices and equipment. Ultimately, the standards aim to increase the maintenance, repair, and operations capability across the military organizations. The military standards are presented in several forms, defense handbooks, standards, performance specifications, detailed specifications, and specifications.
SPECIFICATIONS		PARAMETERS
1.	Probe.	
a	Probe effective length.	3 mtrs or more.
b	Outer diameter.	10 mm (maximum).
c	Probe type & flexibility.	Flexible / Semi-flexible.
2.	Optics.	
(a)	Field of view.	50 degrees or more.
(b)	Direction of view.	Forward.
(c)	Depth of field.	50 mm to infinity.
(d)	Recognition.	Capable of recognizing a human target at least up to a distance of 5 mtrs or more.
(e)	Day/night viewing capability.	Should be able to recognize objects in pitch darkness (standard dark room) & day light.
(f)	Light Source	Eye safe infra-red (invisible to naked eye).
(g)	Lamp Life	Minimum 1000 hours of operation.
3.	Articulation Section.	
(a)	Articulation angle.	4 ways, up/down/right/left/90 degrees or more (to view 360 degrees). All movements should be controlled with joystick/ control lever/ articulation knobs.
(b)	Articulation control.	Control with power assist mechanism including locking function. All movements should be electronic or joystick/control lever/articulation knobs controlled.
(c)	Operating temperature.	-10 degrees C to +45 degrees C or better (in air).
4.	Camera.	
(a)	Camera sensor.	CCD or CMOS (To be specified by the user department at the time of indent)
(b)	Camera resolution.	Should be 300,000 pixels or more.
(c)	Lens.	Wide angle 1.8 mm or better.
(d)	Digital zoom.	5X or better.
5.	Audio. Microphone inbuilt/ external in flexible fiberscope.	Supersensitive audio microphone with 5-7 mtrs audio pickup.
6.	LCD Monitor.	
(a)	Type.	Handheld LCD monitor to be provided. (shoulder harness/neck strap for monitor is an optional requirement which is to be mentioned by the user at the time of indent).
(b)	Size.	Minimum - 4" diagonal. Maximum - 7" diagonal.
(c)	Control.	Should have controls for brightness, contrast & zoom.
(d)	Audio video interface.	Provision for audio & video interface should be provided.

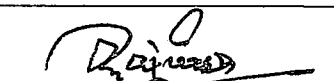
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7.	Recording.	
(a)	Encoding wideband.	MPEG4/JPEG/AVI.
(b)	Frame rate.	30 per sec or better.
(c)	Memory.	Minimum 32 GB on detachable SD card.
8.	Safety	
		Should be comply with MIL Std 810 F, IP-67 or better for probe part and IP 65 or better for LCD Monitor.
9.	Power Supply.	
(a)	Battery.	Rechargeable & replaceable Lithium Battery. Should be available in India.
(b)	Battery working life.	Minimum 2 hours in day/night working conditions on full charge.
(c)	Battery charging time.	Less than 4 hours.
(d)	Weight of complete system excluding carrying case.	Operational weight (excluding carrying case) – 2 kg or less.
10.	Accessories with each Fiberscope.	
(a)	Carrying case.	(i) Soft & hard carrying case with back strap. (ii) Soft & hard carrying case for transport (water proof).
(b)	Spare batteries.	2 Nos. of spare batteries.
(c)	Battery charger.	Quantity 01 per fiberscope. Should work with 220V/230V AC, 50 Hz & battery to battery charging with 12 V battery.
(d)	Belt sets.(Optional requirement to be mentioned by the user at time of indent)	Belt set should enable comfortable operation.
11.	Literature. Operating & technical literature for each discrete components of system should be in English language.	

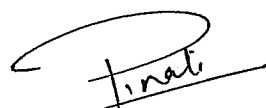

(Ashok Kumar Sharma)
ADG (Log) BSF



(Aseem Vyas)
DIG, SIW BSF



(Rajnish Kumar), PSO (E)
BPR&D

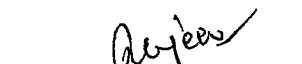

(A P Singh), DC
SIW BSF

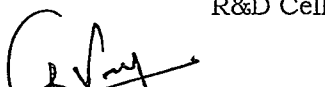

(Partha Sarathi Sahoo)
DC, CRPF



(Pinaki Aggarwal)
TC, NSG


(Insp Nandan Singh Mehra)
ITBP

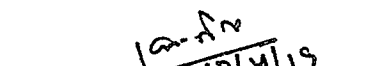

(Insp/T Anil K.J.)
R&D Cell, BSF


(Insp/E Rajeev Dahiya)
CISF


(SI/RM Ravinder Singh)
SIW BSF


(Nb/Sub Jeet Singh)
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(Rajni Kant Mishra) IPS
DIRECTOR GENERAL
BORDER SECURITY FORCE

TRIAL DIRECTIVE FLEXIBLE FIBER SCOPE/FIBER OPTIC SCOPE

S.No	Specification	Parameters	Trial Directives	Result expected/desired
1.	Probe.			
a	Probe effective length.	3 mtrs or more.	To be physically checked by the BOO, by measuring the length with a measuring tape.	Length must be as specified in the parameters.
b	Outer diameter.	10 mm (maximum).	To be physically checked by the BOO.	Outer diameter should be as per the requirement of the QRs.
c	Probe type & flexibility.	Flexible / Semi-flexible.	To be physically checked by the BOO.	Probe type & flexibility must be as specified in the parameters.
2.	Optics.			
a	Field of view.	50 degrees or more.	Fix the equipment on instrument testing scale of integrated test equipment and measure the Field of View as per the procedure.	Field of view must be as specified in the parameters.
b	Direction of view.	Forward.	To be physically checked by the BOO.	Direction of view must be forward as specified in the parameters.
c	Depth of field.	50 mm to infinity.	To be physically checked by the BOO.	Depth of field must be as specified in the parameters.

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	d	Recognition.	Capable of recognizing a human target at least up to a distance of 5 Mtrs or more.	To be physically checked by the BOO.	The equipment should be capable of recognizing a human target as specified in the parameters.
	e	Day/night viewing capability.	Should be able to recognize objects in pitch darkness (standard dark room) & day light.	To be physically checked by the BOO.	Day/night viewing capability must be as specified in the parameters.
	f	Light Source	Eye safe infra-red (invisible to naked eye).	Firm has to submit National /International accredited Lab certificate. If no such lab available in India then , firm has to submit any Indian Govt Lab/OEM certificate in respect of the same.	The light source must be eye safe infrared.
	g	Lamp Life	Minimum 1000 hours of operation.	Firm has to submit National /International accredited Lab certificate. If no such lab available in India then , firm has to submit any Indian Govt Lab/OEM certificate in respect of the same.	The lamp life should be as specified in the parameter.
3.	Articulation Section				
	a	Articulation angle.	4 ways, up/down/right/left/90 degrees or more (to view 360 degrees). All movements should be controlled with joystick/control lever/ articulation knobs.	To be physically checked by the BOO by moving the camera 4 way up/down/right/left/90 degrees or more.	Articulation angle must be as specified in the parameter.
	b	Articulation control.	Control with power assist mechanism including locking function. All movements should be electronic or joystick/control lever/articulation knobs controlled.	To be physically checked by the BOO.	Articulation control must be as specified in the parameter.
	c	Operating temperature.	-10 degrees C to + 45 degrees C or better (in air).	Check the National/International Accredited lab certificate/report	Operating temperature must

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			submitted by the firm in respect of operating Temp. BOO will also physically check in different climatic condition in the field (i.e. cold as well as hot).	be as specified in the parameter.
4.	Camera			
a	Camera sensor.	CCD or CMOS (To be specified by the user department at the time of indent)	Firm has to submit National /International accredited Lab certificate. If no such lab available in India then , firm has to submit any Indian Govt Lab/OEM certificate in respect of the same.	Camera sensor must be CCD or CMOS as specified in the parameter.
b	Camera resolution.	Should be 300,000 pixels or more.	Data sheet/specifications sheet to be submitted by the OEM. BOO to check the authenticity, validity & correctness of such documents.	Camera resolution must be as specified in the parameter.
c	Lens.	Wide angle 1.8 mm or better.	Data sheet/specifications sheet to be submitted by the OEM. BOO to check the authenticity, validity & correctness of such documents.	Lens must be as specified in the parameter
d	Digital zoom.	5X or better.	To be checked by the BOO as per procedure.	Digital zoom must be as specified in the parameter
5.	Audio :- Microphone inbuilt in flexible fiberscope.	Supersensitive audio microphone with 5-7 mtrs audio pickup.	To be physically checked by the BOO.	The equipment should have inbuilt microphone.
6.	LCD Monitor.			
a	Type.	Hand held LCD monitor to be provided. (Shoulder harness/neck strap for monitor is an optional requirement which is to be mentioned by the user at the time of indent.	To be physically checked by the BOO.	Type of the LCD monitor must be hand held as specified in the parameter.
b	Size.	Minimum - 4" diagonal. Maximum - 7" diagonal.	To be physically checked by the BOO by measuring tape.	Size of the LCD monitor must be

					hand held as specified in the parameter.
	C	Control.	Should have controls for brightness, contrast & zoom.	To be physically checked by the BOO.	System control must be as specified in the parameter.
	d	Audio video interface.	Provision for audio & video interface should be provided.	To be physically checked by the BOO.	Audio video interface must be as specified in the parameter.
7	Recording				
	a	Encoding wideband.	MPEG4/JPEG/AVI.	The file format to be physically checked by the BOO.	Encoding wideband must be as specified in the parameter.
	b	Frame rate.	30 per sec or better.	Data sheet/specifications sheet to be submitted by the OEM. BOO to check the authenticity, validity & correctness of such documents.	Frame rate must be as specified in the parameter.
	c	Memory.	Minimum 32 GB on detachable SD card.	To be physically checked by the BOO.	Memory must be as specified in the parameter.
8.	Safety		Should be comply with MIL Std 810 F, IP-67 or better for probe part and IP 65 or better for LCD Monitor.	Firm has to submit National /International accredited Lab certificate. If no such lab available in India then , firm has to submit any Indian Govt Lab/OEM certificate in respect of the same.	The equipment must be comply with MIL Std as specified in the parameter.
9	Power				
	a	Battery.	Rechargeable & replaceable Lithium Battery. Should be available in India.	To be physically checked by the BOO.	Battery must be as specified in the parameter

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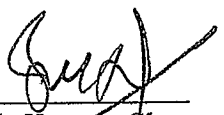
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	b	Battery working life	Minimum 2 hours in day/night working conditions on full charge.	To be physically checked by the BOO.	Battery working life must be as specified in the parameter
	c	Battery charging time.	Less than 4 hours.	To be physically checked by the BOO.	Battery charging time must be as specified in the parameter.
	d	Weight of complete system excluding carrying case.	Operational weight (excluding carrying case) – 2 kg or less.	To be physically checked by the BOO by weighing machine.	Weight of complete system must be as specified in the parameter
10	Accessories with each Fiberscope.				
	a	Carrying case.	(i) Soft & hard carrying case with back strap. (ii) Soft & hard carrying case for transport (water proof).	To be physically checked by the BOO.	Carrying case must be as specified in the parameter
	b	Spare batteries.	2 Nos of spare batteries.	To be physically checked by the BOO.	Spare batteries must be provided with the equipment.
	c	Battery charger.	Quantity 01 per fiberscope. Should work with 220V/230V AC, 50 Hz & battery charging with a 12 V battery.	To be physically checked by the BOO.	Battery charger must be provided with the equipment.
	d	Belt sets.(Optional requirement to mentioned by the user at time of indent)	Belt set should enable comfortable operation.	To be physically checked by the BOO.	Belt sets should be provided as per the requirement of the user.

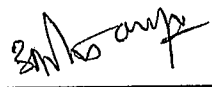
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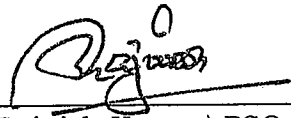
* 11	Literature. Operating & technical literature for each discrete components of system should be in English language.	To be physically checked by the BOO.	Literature should be provided with the equipment.
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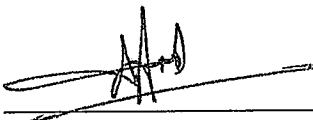
(Ashok Kumar Sharma)
ADG (Log) BSF




(Aseem Vyas),
DIG, SIW BSF



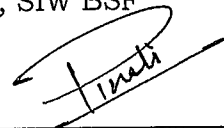
(Rajnish Kumar), PSO (E)
BPR&D




(A P Singh), Dy Comdt
SIW BSF




(Partha Sarathi Sahoo), DC
CRPF



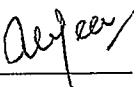
(Pinaki Aggarwal), TC
NSG



(Insp Nandan Singh Mehra),
ITBP




(Insp/T Anil K J),
R&D Cell, BSF



(Insp/E Rajeev Dahiya),
CISF



(SI/RM Ravinder Singh)
SIW BSF



(Nb/Sub Jeet Singh)
Assam Rifle

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(Rajni Kant Mishra) IPS
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