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No. P-63013/20/2013-Ord/BSF/
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 Hand Held Thermal Imaging Camera with Wireless System**

I have been directed to forward herewith QRs and Trial Directives of "Hand Held Thermal Imaging Camera with Wireless System" 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

08/5/18

(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.

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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 27th Jun 2013 held its meeting at BSF Headquarters on 08th July 2015, 16th Sep 2015, 20th Jan 2016 ,09th Feb 2016, 22nd Aug 2016, 23rd Sep 2016 and 03rd Feb 2017 to formulate the Qualitative Requirement of **'Hand Held Thermal Imaging Camera with Wireless System'**.

After detailed deliberations the referred Sub-group has finalized the QRs of **''Hand Held Thermal Imaging Camera with Wireless System'** which are as under:-

QUALITATIVE REQUIREMENT OF HAND HELD THERMAL IMAGING CAMERA WITH WIRELESS SYSTEM

S/NO	SPECIFICATION			
1	General Description: - Hand Held Thermal Imaging Camera should be either Bi-ocular or binocular and have the following sub systems			
	(a)	Cooled Thermal Imager		
	(b)	Colour Camera		
	(c)	Global Positioning System		
	(d)	Digital Magnetic Compass		
	(e)	Laser Range Finder		
2	Physical Characteristics			
	(a)	HHTI should be portable to be carried by single operator and weight be 4.2 kg (max) including Battery with tolerance of +10%.		
	(b)	Quickly deployable	Start-up time for complete system ≤ 8 minutes.	
	(c)	Should be Hand Held with option of mounting on Tripod	Telescopic Tripod, so provided should be non-magnetic.	
	(d)	Environmental Characteristics		
		(i) Ruggedized	MIL STD 810 E or better/JSS55555.	
		(ii) Operating Temperature	- 20° C to + 55 °C	
3	Operational Characteristics			
	(a)	Cooled Thermal Imager		
		(i) Spectral range	LWIR/MWIR or both	
		(ii) Sensor Resolution	640 x 512 or better with 15 µm or better pixel pitch	
		(ii) Wide FoV	9° x 6° (min)	
		(iii) Narrow FOV	3.5^0 x 2.5^0 (max)	
		(iv) Magnification	Optical : 5x (min) continuous Digital : 2X, 4X or better	
		(v) Human Detection range	3000 meters or better	
		(vi) Human	1500 meters or better	

			recognition range	
		(vii)	Human Identification range	700 meters or better
		(viii)	Non uniformity calibration: Should be able to perform NUC manually /automatically.	
	(b)	Colour Camera		
		(i)	CCD/ CMOS resolution	768x494 pixels or better.
		(ii)	Magnification	Optical : 5x (min) continuous Digital : 2X, 4X or better
		(iii)	Human Detection range	5000 meters or better
		(iv)	Human recognition range	2000 meters or better
		(v)	Human Identification range	800 meters or better
	(c)	Global Positioning System		
		(i)	It should be inbuilt and give co-ordinates in Lat/Lon and Indian Military Grid Reference system. The accuracy should be less than 10 meters.	
	(d)	Digital Magnetic Compass		
		(i)	Angular Range Azimuth	360°
		(ii)	Angular Range Elevation	±40° or higher
		(iii)	Accuracy	1° or lower in both directions
	(e)	Laser Range Finder		
		(i)	Laser should be Class 1 Eye Safe.	
		(ii)	Ranging Distance	5000 meter or better
		(iii)	Accuracy	±5 Meters or better
	(f)	Mode: The system should have following mode of display: a) Thermal picture mode b) Day camera picture mode. c) Fusion mode which displays real time sensor fusion between Thermal Camera video and colour camera video (Fusion mode requirement is optional being force specific and should be defined by the user at the time of indent).		
	(g)	Image Processing and Storage		
		(i)	Software based Image Stabilization	
		(ii)	Should have the provision to save images along with metadata on board the equipment and also on external USB device/ SD Card. External storage device to be provided.	
		(iii)	Should have the provision to save video along with metadata on external USB device/ SD Card (Minimum 64 GB or better).	
		(iv)	Necessary cables for image and video storage and any software if required be provided.	

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	(h)	Power : The equipment should be able to run on 220 V AC (± 30 V) and batteries. Suitable connectors to be provided.		
		(i)	Battery	Lithium battery
		(ii)	Endurance	4 hours or higher
		(iii)	Battery Charger	Operate from 90 V to 270 volt, 50 Hz AC mains supply.
		(v)	Qty Two Spare Battery packs.	
	(j)	Ports and Connectors Analogue and Digital I/O ports should be there and suitable connectors should be provided for video output to a TV or a DVR.		
4.	WIRELESS TRANSMITTER			
	(a)	The transmitter should be compact and lightweight such that it can be carried by a Soldier during operation, in addition to his tactical gear (Bullet Proof Jacket, Helmet, Weapon and Ammunition).		
	(b)	The transmitter should provide video transmission ranges of 500 meter or better in Non-Line of Sight Environment through omni directional antenna.		
	(c)	The power output of the transmitter should be 1 Watt or better. The form factor of the transmitter should be compact, with least number of wires and all components should be sandwiched in a single unit.		
	(d)	The transmitter should have suitable video in ports.		
	(e)	The transmitter should have the provision of being operated on rechargeable batteries and also on 90 to 270 V, 50 Hz AC mains supply.		
	(f)	Rechargeable Lithium battery pack for the transmitter should offer 4 hours of endurance. Two spare rechargeable battery pack to be provided.		
	(g)	Suitable Battery Charger should be provided to charge the transmitter batteries through 90 to 270 V, 50 Hz AC mains supply.		
	(h)	The transmitter should be able to operate from -10^0 C to $+55^0$ C or better.		
	(j)	The Transmitter should comply to IP 66 or higher.		
	(k)	The transmitter should offer 128 bits AES or better to avoid eavesdropping.		
	(l)	Multi interface cable to support a variety of cameras should be provided.		
	(m)	The transmitter should offer MPEG-2 and MPEG-4 video compressions or better.		
	(n)	The Transmitter should offer bandwidth option of 1.5 Mhz -8Mhz or better.		
	(o)	The transmitter should offer a latency of 1 sec or lower.		
	(p)	Transmitter should comply to MIL STD 810 E or better.		
5.	RECEIVER			
	a)	The receiver should be a diversity receiver to eliminate fade and multi path effects.		
	b)	The receiver should offer a suitable screen, 8 inches or better to see the video being received.		
	c)	The receiver should have suitable omni directional antenna and additional high gain directional antenna to enhance the transmission ranges.		
	d)	The receiver should be able to operate on internal rechargeable Lithium battery pack for 4 hours or better continuously on single charge.		
	e)	Suitable Battery Charger should be provided to charge the receiver batteries through 90 to 270 V, 50 Hz AC mains supply.		
	f)	There should be a provision to power the Receiver through 90 to 270 V, 50 Hz AC mains supply.		

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	g)	The receiver should have inbuilt DVR with memory of 1 TB (Min) to record and play the video feeds for analysis and evidence purposes.
	h)	The receiver should offer a video out port for further connection with TV.
	i)	The receiver with all its accessories should be such that it can be carried by a single Soldier.
	j)	The Receiver should comply to IP 66 or better and should have harden ruggedized box for ease of carriage and safety during transportation.
	k)	The receiver should offer IP interface for IP streaming and network connections.
	l)	Receiver should comply with MIL STD 810 E or better.
	m)	Two spare rechargeable Lithium battery pack to be provided.
6.	<u>Portability and Storage</u> The equipment to be provided in a suitable Polypropylene box for ease of carriage.	

03/2/17
ASEEM VIVAS, DIG SIW, BSF

COL. A.K. SHARMA, GC TSG, NSG

03/02/2017
ABHIRAM PANKAJ, DC CRPF

RABISH CHANDRA, SIW, BSF

(Rajendra Singh) SSB

Insp. Sheelkumar. P ITBP

Sgt. Sunil Madallil SIW, BSF

<u>Recommended/Not Recommended</u>

(K K SHARMA)
DIRECTOR GENERAL
BORDER SECURITY FORCE

Appendix –'B'

TRIAL DIRECTIVES OF HAND HELD THERMAL IMAGING CAMERA WITH WIRELESS SYSTEM

S/N	SPECIFICATION			PROCEDURE SUGGESTED FOR THE BOOS	RESULT EXPECTED
1	General Description: - Hand Held Thermal Imaging Camera should be either Bi-ocular or binocular and have the following sub systems			Check the system for Bi-ocular /binocular version physically.	The system must be of Bi-ocular or binocular version.
	(a)	Cooled Thermal Imager		The firm should submit OEM attested certificate in respect of QRs Para 1 (a), (c) and (d) i.e. Cooled Thermal imager, Inbuilt GPS and DMC.	The certificate must confirm that thermal imager is cooled version and having inbuilt GPS & DMC.
	(b)	Colour Camera		Check the day camera video for colour image by switching ON the camera.	The day camera used must be a colour camera.
	(c)	Global Positioning System		Check the range of a target with the help of LRF physically by firing laser beam.	Laser range finder must be integrated in the system for ranging.
	(d)	Digital Magnetic Compass			
	(e)	Laser Range Finder			
2	Physical Characteristics				
	(a)	HHTI should be portable to be carried by single operator and weight be 4.2 kg (max) including Battery with tolerance of +10%.		Check the system for portability and weigh the system with the help of weighing machine physically.	The system must be portable and weight must be 4.2 kg (max) including Battery with tolerance of +10%.
	(b)	Quickly deployable	Start-up time for complete system ≤ 8 minutes.	Switch ON the system and note down the time to ready the system.	The system must be ready after initialisation within ≤ 8 minutes.
	(c)	Should be Hand Held with option of	Telescopic Tripod, so provided should be	Check the system operation in hand held role and tripod mounted role.	The system must be used in Hand Held role and should be mountable

		mounting on Tripod		non-magnetic.	Check the Tripod for telescopic legs and for its non-magnetic character.	on tripod as well. Tripod must be telescopic and made of non-magnetic material.
	(d)	Environmental Characteristics			The firm should submit National/International accredited lab certificate / report in respect of QRs Para 2 (d) (i) & (ii).	Check the authenticity of the National / International accredited lab. Certificate must confirm the same. In case of any doubt, the veracity of the certificate may be checked from the concerned lab.
		(i)	Ruggedized	MIL STD 810 E or better/JSS55555.		
		(ii)	Operating Temperature	- 20° C to + 55 °C		
3	Operational Characteristics					
	(a)	Cooled Thermal Imager			The firm should submit National/ International accredited lab certificate / report in respect of QRs Para 3 (a) (i) & (ii).	Check the authenticity of the National / International accredited lab. Certificate must confirm the same. In case of any doubt, the veracity of the certificate may be checked from the concerned lab.
		(i)	Spectral range	LWIR/MWIR or both		
		(ii)	Sensor Resolution	640 x 512 or better with 15 µm or better pixel pitch		
		(ii)	Wide FOV	9° x 6° (min)	Measure the wide FOV on Test station of thermal imager in the Lab as per the standard procedure.	The WFOV must be 9° x 6° (min).
		(iii)	Narrow FOV	3.5^0 x 2.5^0 (max)	Measure the wide FOV on Test station of thermal imager in the Lab as per the standard procedure.	The NFOV must be 3.5° x 2.5° (max)
		(iv)	Magnification	Optical : 5 x (min) continuous Digital : 2 X, 4 X or better	Check the optical zoom as per the standard procedure in Lab by zooming in fully and then verify the zoom facility for continuous zooming in & out. Check the facility of digital zoom and measure the value as per the standard procedure.	The optical zoom must be 5 x (min) and should be continuous. The digital zoom must be 2 x & 4 x or better.
		(v)	Human Detection Range	3000 meters or better	Place a human target at a distance of 3000 meters physically during night and check the detection.	The human target must be detected clearly.
		(vi)	Human	1500 meters or	Place a human target at a distance of	The human target must be recognised

			Recognition Range	better	1500 meters physically during night and check for the recognition..	clearly as a human being with contrast.
		(vii)	Human Identification range	700 meters or better	At the range of 700 Meter the target must be identified as friend or Foe. Which means a person with weapon or without weapon can be easily identified	The human target must be identified clearly as mentioned in the TD.
		(viii)	Non uniformity calibration : Should be able to perform NUC manually / automatically.		Check the system for manual or automatic NUC facility by observing image quality continuously for 30 minutes.	There must be no freezing and deformation in image quality during observation.
	(b)	Colour Camera				
		(i)	CCD/ CMOS resolution	768x494 pixels or better.	The firm should submit National/ International accredited lab certificate / report in respect of QRs Para 3 (b) (i).	Check the authenticity of the National / International accredited lab. Certificate must confirm the same. In case of any doubt, the veracity of the certificate may be checked from the concerned lab.
		(ii)	Magnification	Optical : 5 x (min) continuous Digital : 2 X, 4 X or better	Check the optical zoom as per the standard procedure in Lab by zooming in fully and then verify the zoom facility for continuous zooming in & out. Check the facility of digital zoom and measure the value as per the standard procedure	The optical zoom must be 5 x (min) and continuous. The digital zoom must be 2 x & 4 x or better.
		(iii)	Human Detection Range	5000 meters	Place a human target at a distance of 5000 meters physically and check the detection during day light condition.	The human target must be detected clearly.
		(iv)	Human Recognition Range	2000 meters	Place a human target at a distance of 2000 meters physically and check the recognition during day light condition.	The human target must be identified clearly as a human being with good contrast.
		(v)	Human Identification range	800 meters or better	Place a human target at a distance of 800 meters physically and check the identification during day light condition.	The human target must be identified clearly as a human being with good contrast.

	(c)	Global Positioning System				
		(i)	It should be inbuilt and give co-ordinates in Lat/Lon and Indian Military Grid Reference system. The accuracy should be less than 10 meters.		Check the system for inbuilt GPS. Check co-ordinates of a location/target in Lat/Lon and IMGRS one by one physically. Select a location and check the co-ordinates of the same.	Integrated GPS must be inbuilt. The system must display the coordinates of a location or target in Lat/Long and IMGRS as per the requirement. The displayed coordinates must have the accuracy of less than 10 meters.
	(d)	Digital Magnetic Compass				
		(i)	Angular Range Azimuth	360°	Check the azimuth angle by moving the system in azimuth direction.	The system must give azimuth angle up to 360°.
		(ii)	Angular Range Elevation	±40° or higher	Check the angle by tilting the system up to ±40° or higher.	The system must give the correct bearing.
		(iii)	Accuracy	1° or lower in both directions	The firm should provide National / International accredited Lab certificate in respect of accuracy-1° or lower in both directions.	A National / international accredited Lab certificate/report submitted by the firm must confirm the same. In case of doubt in the veracity of the report, the same may be checked from the concerned lab.
	(e)	Laser Range Finder				
		(i)	Laser should be Class 1 Eye Safe.		The firm should submit National/International accredited lab certificate / report in respect of class 1 and eye safe laser.	Check the authenticity of the National / International accredited lab. Certificate must confirm the same. In case of any doubt, the veracity of the certificate may be checked from the concerned lab.
		(ii)	Ranging Distance	5000 meter or better	Select a target at a distance of 5 Kms and range it.	The system must be capable to range a target at a distance of 5 Kms or more.
		(iii)	Accuracy	±5 Meters or better	Check the accuracy of the range shown by the system after ranging it.	The range accuracy must be ±5 Meters or better.
	(f)	Mode: The system should have following mode of display: a) Thermal picture mode			Switch ON the day and night camera of the system. Check the video of the following :	The system must have the modes of display as mentioned at QRs Para 3 (f).

			b) Day camera picture mode. c) Fusion mode which displays real time sensor fusion between Thermal Camera video and colour camera video (Fusion mode requirement is optional being force specific and should be defined by the user at the time of indent).		a) Day camera picture alone b) Thermal camera picture alone c) Digitally fused image from day and thermal camera.	
	(g)	Image Processing and Storage				
		(i)	Software based Image Stabilization		Switch ON the system and shake the camera very slowly.	There must be no vibration or tilting of image while shaking of the camera. Software based image stabilization must be provided in the system.
		(ii)	Should have the provision to save images along with metadata on board the equipment and also on external USB device/ SD Card. External storage device to be provided.		Switch ON the system and store the day & night camera images in the system. Check the facility of data storage on SD Card or on external USB device. Check the system for external storage device physically.	The system must have the facility to save images along with metadata on board the equipment. There must be facility of SD card for data storage and USB port for data storage on external USB device. External storage device must be provided with the system.
		(iii)	Should have the provision to save video along with metadata on external USB device/ SD Card (Minimum 64 GB or better).		To be physically checked by the BOO	Should be able to save video along with metadata on external USB device/ SD Card (Minimum 64 GB or better).
		(iv)	Necessary cables for image and video storage and any software if required be provided.		To be physically checked by the BOO	
	(h)	Power : The equipment should be able to run on 220 V AC (± 30 V) and batteries. Suitable connectors to be provided.			Check the system operation on 220 volt AC (± 30 V) mains supply and batteries.	The system must be able to run on 220 volt AC (± 30 V) mains supply and batteries.
		(i)	Battery	Lithium battery	The firm should submit OEM certificate to confirm the battery type.	The battery must be Lithium based and rechargeable.
		(ii)	Endurance	4 hours or higher	Run the system on fully charged battery and note down the running time of	The battery must be capable to run the system for 4 hours or higher on

					system on single charge.	single charge.
		(iii)	Battery Charger	Operate from 90 V to 270 volt, 50 Hz AC mains supply.	Check the battery charger performance as per the standard procedure by varying the in-put AC mains supply from 90 to 270 volt, 50 Hz supply.	Battery charger must be capable to charge the battery from 90 to 270 volt, 50 Hz mains supply without any degradation in out-put.
		(iv)	Qty Two Spare Battery packs		Not applicable at the time of physical evaluation of tender sample.	
	(j)		Ports and Connectors Analogue and Digital I/O ports should be there and suitable connectors should be provided for video output to a TV or a DVR.		Check the I/O ports for analogue and digital video out-put by connecting TV or a DVR.	I/O ports for analogue and digital video output must be provided to connect it with TV or DVR.
4.	WIRELESS TRANSMITTER					
	(a)		The transmitter should be compact and lightweight such that it can be carried by a Soldier during operation, in addition to his tactical gear (Bullet Proof Jacket, Helmet, Weapon and Ammunition)		Check the soldier (well equipped with the bullet proof jacket, helmet, weapon and ammunition) comforts to carry system transmitter during operation.	The transmitter must be compact and lightweight in such a manner that soldier can easily carry it during operation in addition to his tactical gear (Bullet Proof Jacket, Helmet, Weapon and Ammunition).
	(b)		The transmitter should provide video transmission ranges of 500 meter or better in Non Line of Sight Environment through omni directional antenna.		Install the system and switch it ON. Check the video transmission up to a distance of 500 meters non line of sight environment like behind buildings or small hills through omni directional antenna.	The transmitter must be capable to transmit the video in non-line of sight environment up to a distance of 500 meters with omni directional antenna.
	(c)		The power output of the transmitter should be 1 Watt or better. The form factor of the transmitter should be compact, with least number of wires and all components should be sandwiched in a single unit.		Measure the power out-put of the transmitter. Check the system for compactness, least number of wires and housed in a single cabinet.	The power out-put of the transmitter must be 1 Watt or better. The form factor must be compact, with least number of wires and housed in a single unit or housing.
	(d)		The transmitter should have suitable video		Check the transmitter for	The transmitter must have suitable video in ports.

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		in ports.	suitable in-put ports for video-in.	
	(e)	The transmitter should have the provision of being operated on rechargeable batteries and also on 90 to 270 V, 50 Hz AC mains supply.	Check the transmitter operation on rechargeable battery and also on 90 to 270 volt, 50 Hz AC mains supply.	The transmitter must operate on rechargeable battery and on 90 to 270 volt, 50 Hz AC mains supply.
	(f)	Rechargeable Lithium battery pack for the transmitter should offer 4 hours of endurance. Two spare rechargeable battery pack to be provided.	Check the transmitter battery for recharge ability and its type. Switch ON the transmitter on fully charged battery in operational mode and note down the time of operation.	The battery used must be rechargeable and Lithium based. The battery must be capable to run the transmitter continuously for 4 hours.
	(g)	Suitable Battery Charger should be provided to charge the transmitter batteries through 90 to 270 V, 50 Hz AC mains supply.	Check the battery charger performance as per the standard procedure by varying the in-put AC mains supply from 90 to 270 volt, 50 Hz supply.	Battery charger must be capable to charge the battery from 90 to 270 volt, 50 Hz mains supply without any degradation in out-put.
	(h)	The transmitter should be able to operate from -10^0 C to $+55^0$ C or better.	The firm should submit the national / international accredited lab certificate / report in respect of QRs Para 4 (h), (j), (k), (m), (n), (o), (p) & (q).	Check the authenticity of the National / International accredited lab certificate must confirm the same. In case of any doubt , the veracity of the certificate may be checked from the concerned lab.
	(j)	The Transmitter should comply to IP 66 or higher.	Refer to Sub Para (h)	
	(k)	The transmitter should offer 128 bits AES or better to avoid eavesdropping.	Refer to Sub Para (h)	
	(l)	Multi interface cable to support a variety of cameras should be provided.	Check the transmitter cable for multi interface facility to support a variety	Multi interface cable to support a variety of cameras must be provided.

			of cameras physically.	
	(m)	The transmitter should offer MPEG-2 and MPEG-4 video compressions or better.	Refer to Sub Para (h)	
	(n)	The Transmitter should offer bandwidth option of 1.5 Mhz to 8Mhz or better.	Refer to Sub Para (h)	
	(o)	The transmitter should offer a latency of 1 sec or lower.	Refer to Sub Para (h)	
	(p)	Transmitter should comply to MIL STD 810 E or better.	Refer to Sub Para (h)	
5.	RECEIVER			
	a)	The receiver should be a diversity receiver to eliminate fade and multi path effects.	Check physically the availability of diversity receiver.	There will be no fading.
	b)	The receiver should offer a suitable screen, 8 inches or better to see the video being received.	Measure the screen provided in the receiver for its dimensions.	The receiver must offer a display screen of 8 inches or better.
	c)	The receiver should have suitable omni directional antenna and additional high gain directional antenna to enhance the transmission ranges.	To be physically checked by BOO by placing the transmitter 500 Metres away from the receiver at different locations.	Receiver should be able to receive clear images.
	d)	The receiver should be able to operate on internal rechargeable Lithium battery pack for 4 hours or better continuously on single charge.	Check the receiver for battery used and its type. Switch ON the receiver on fully charged battery and note down the continuous run time on single charge.	The battery used must be rechargeable and Lithium based. A single fully charged battery must be capable to run the receiver continuously for 4 hours or more.
	e)	Suitable Battery Charger should be provided to charge the receiver batteries through 90 to 270 V, 50 Hz AC mains supply.	Check the battery charger performance as per the standard procedure by varying the in-put AC mains supply from 90 to	Battery charger must be capable to charge the battery from 90 to 270 volt, 50 Hz mains supply without any degradation in out-put.

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			270 volt, 50 Hz supply.	
	f)	There should be a provision to power the Receiver through 90 to 270 V, 50 Hz AC mains supply.	Check the receiver operation by connecting it on 90 to 270 volt, 50 Hz mains supply.	The receiver must have the provision to operate on 90 to 270 volt, 50 Hz AC mains supply.
	g)	The receiver should have inbuilt DVR with memory of 1 TB (Min) to record and play the video feeds for analysis and evidence purposes.	Check the receiver for inbuilt DVR and its storage capacity to store and play the video feeds.	The receiver must have inbuilt DVR with 1 TB (min) memory.
	h)	The receiver should offer a video out port for further connection with TV.	Connect TV with the video out-put port of the receiver.	There must be a video out-put port facility provided in the receiver to interface with TV.
	i)	The receiver with all its accessories should be such that it can be carried by a single Soldier.	Check the soldier comforts to carry system receiver with all accessories.	The receiver with all its accessories should be easily carried by a single Soldier.
	j)	The Receiver should comply to IP 66 or better and should have harden ruggedized box for ease of carriage and safety during transportation.	The firm should submit the national / international accredited lab certificate / report in respect of QRs Para 5 (w). Drop the transportation box equipped with all the accessories from a height of 1 meter on hard surface.	The transportation box must not get damaged after drop test and equipment must be serviceable.
	k)	The receiver should offer IP interface for IP streaming and network connections.	The firm should arrange demonstration of their equipment on IP interfacing.	The receiver must offer IP interface for IP streaming and network connections.
	l)	Receiver should comply with MIL STD 810 E or better	The firm should submit the national / international	Check the authenticity of the National / International accredited lab certificate must

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			accredited lab certificate / report in respect of QRs Para 5 (y).	confirm the same. In case of any doubt, the veracity of the certificate may be checked from the concerned lab.
	m)	Two spare rechargeable Lithium battery pack to be provided.	Not applicable at the time of physical evaluation of tender sample.	
6.	Portability and Storage The equipment to be provided in a suitable Polypropylene box for ease of carriage.		Check physically the storage box for ergonomics. The firm should submit the national / international accredited lab certificate / report in respect storage box material.	The storage box must facilitate easy carriage. Check the authenticity of the National / International accredited lab. Certificate must confirm the same. In case of any doubt, the veracity of the certificate may be checked from the concerned lab.

03/2/17
ASEEM VIYAS, DIG SIW BSF

R K Meel
Comdt, BSF

INSP. Sreekumar. R
ITBP

COL. A.K. SHARMA, GC
TSG, NSG

RABISH CHANDRA
2IC, SIW, BSF

03-2-17
NGISub Dam Singh
HC

By Dir Delhi

S/I/r Sunil Kumar
SIW, BSF

3/2/2017
ABHIRAM PANKAJ, DC CRPF

(Insp/Comm Rajendra Singh)
SSB

RECOMMENDED/ ~~NOT RECOMMENDED~~

(K K SHARMA), IPS
DIRECTOR GENERAL
BORDER SECURITY FORCE