No. IV.17018/3/07-Prov-I/MHA-Prov.I
Bharat Sarkar/Government of India
Griha Mantralaya/Ministry of Home Affairs
PM Division/Prov. I Desk
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26, Man Singh Road, Jaisalmer House
New Delhi, Dated : 28th June, 2013

To,

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

Subject : Trial Directives for Non Linear Junction Detector (NLJD).

The Trial Directives in respect of Non Linear Junction Detector (NLJD) as per the Annexure have been accepted by the Competent Authority in MHA

2. Henceforth, all the CAPFs should trial evaluate the above items strictly as per the laid down Trial Directive and Technical Specifications/QRs issued vide letter of even number dated 24-1-2008.

Yours faithfully,

(Smt. S B Nanda)
Under Secretary(Prov.I)
Tel : 23381278

Copy forwarded for necessary action to :-

SO(IT), MHA : It is requested to host the Trial Directives (soft copy attached) on the MHA website (under the page of Organizational Set up-Police Modernization Division-Qualitative Requirements) alongwith QRs for Non Linear Junction Detector (NLJD).

(R K Soni)
Section Offcier (Prov.I)

Copy to : Director (Procurement), MHA.

Copy for information to : PS to JS (PM)

TRIAL DIRECTIVES FOR NON LINEAR JUNCTION DETECTOR (NLJD)

S no.	Parameter	Specification	Method	Remarks
Transmitter				
1.	Frequency	840 MHz to 915 MHz	Certificate from an accredited Lab would be the acceptance criteria.	Check the certificates submitted.
2.	Power Out-Put	Should not be more than or equivalent to 4 watt continuous		
3.	Modulation	AM / FM / Pulse or continuous		
Receiver				
4.	Should have Rx Frequency for 2nd and 3rd harmonics	1680 to 1830 MHz and 2520 to 2745 MHz respectively.	Certificate from an accredited Lab would be the acceptance criteria.	Check the certificates submitted.
5.	Sensitivity	'Should be more than -115dbm.		
Antenna: Should have high gain antenna.				
6.	Cables	All cables and connectors should be well secured.	Assemble the NLJD and check all the cables and connectors for easy & smooth operation of the equipment.	To be physically checked by the BOO.
7.	Display	Should have a visual display.	Assemble the NLJD and check the visual display for 2nd & 3rd harmonic detection & indications like battery status etc.	Suitable display like LED bar graph or other means should be provided bright enough to observe in day light conditions.
8.	Should have control functions	a) Volume b) Power selection	To be physically checked by the BOO.	
Out-Put				
9.	Audio	With and without headphone.	Assemble the NLJD and check the audio in both of the modes i.e. built in speaker /buzzer and with head phone.	To be physically checked by the BOO.

S No.	PARAMETER	SPECIFICATION	Method	Remarks
10.	Display	Visual display distinguishing both 2nd and 3rd harmonics.	Assemble the NLJD and check the visual display for 2nd & 3rd harmonic detection separately.	There should be provision to display visually the 2nd & 3rd harmonics by bar graph or by other means through LED or LCD separately.
11.	Test target	A single power diode.	Switch 'ON' the NLJD and check the detection on a single power diode.	NLJD should detect the single power diode and give audio as well as visual indication in 2nd harmonic display.
12.	Detection range in open space (max Tx and max sensitivity) in dug underground.	(a) Minimum 0.4 m or better. (b) Minimum 0.15 m or better.	(a) Switch 'ON' the NLJD. Take a diode and place it on the ground and detect it, Measure the maximum distance of detection from the diode on which it gives audio & visual detection indications (b) Switch 'ON' the NLJD. Take a diode and dug underground at a depth of approximately 15 cms and detect it. **Note: BOOs to ensure that the testing ground/area is free from metals & e-waste.**	*NLJD should detect the diode placed on the ground from a height of minimum 40 cm. * NLJD should detect the diode placed underground from a height of minimum 15 cm.
13.	Test false alarm rate	Should be less than 5%.	Take 12 single power diodes available with the users. Make 20 pits at a distance to be decided by the BOOs in a single line. Put diodes in 12 pits out of 20 pits randomly and make the record of 20 pits on paper in a tabular form by the BOOs . The firm representative has to swap 20 pits in sequence as decided by the BOOs 20 times and the record of detection should be maintained.	The false alarm should be less than 5%.

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Power Requirements				
14.	Battery	Rechargeable battery should provide minimum 3 hrs operation time on single full charge. Should provide one spare battery. Battery should have protection against reverse polarity.	Switch 'ON' the equipment with a fully charged battery in detection mode and note down the 'start time'. Observe the equipment time to time and keep it in the same operational condition for at least 3 hours. Spare battery should be physically and electrically checked by the BOO. The battery will be inserted in the battery charging slot of the charger. The charger should not allow the bty to be fitted in reverse polarity and in case the battery does gets fitted in reverse polarity, it should not get damaged.	The battery should run the equipment in detection mode (give audio and visual detection indication) for the entire 3 hours period with the same sensitivity. If the detector fails or switches 'OFF' in between the period of 3 hours; the time should be recorded and sentenced as 'Not Complied'. One spare battery should be provided with the equipment. To be physically checked by BOO.
15.	Battery charger specification	180 to 240 V	Connect the battery charger to a varying AC source and vary the AC input voltage of the charger from 180 to 240 volt.	Output voltage of the charger should remain constant for the entire input voltage range.
Weight required (Approx)				
16.	Operational weight	Should not be more than 6.5 Kg. (weight in hand should not exceed 3.5 Kg.	Weigh the equipment along with its operational accessories in hand. Weigh the equipment along with all the accessories including hard carrying case.	To be physically checked by BOO.
Operation Conditions				
17.	Operational temp. range	-5°C to +50°C or better	Certificate from an accredited Lab would be the acceptance criteria.	Certificate to be checked by BOO.

S. No.	PARAMETER	SPECIFICATION	Method	Remarks
18.	Humidity	90 % RH	Certificate from an accredited Lab would be the acceptance criteria.	Certificate to be checked by BOO.
19.	Activation	The system should not activate any active radio controlled device in close proximity to search head.	To be physically checked by the BOO and certificate from an accredited lab also to be provided by the firm.	
20.	Miscellaneous	The firm should be able to provide the following, as applicable, along with the equipment:- a) Cleaning kit. b) Special maintenance tools. c) Training aggregate- charts, slides, training brochure, training work model, blow up diagram, video films etc. d) Physical training in India. e) Tech manual giving full description of the item. f) User's handbook and literature on preservation / maint, as applicable. g) Procedure for packing, handling/ transportation/ storage.	Firm to demonstrate the use of tools and cleaning kit and the same to be checked by the BOO. Sub Para (c),(d),(e), (f) & (g)- Firm to provide an undertaking for the same.	

SI/T MANISH RAJ, BSF

AC MAHESH RAWAT ITBP

HN Patra SSB

Maj George Abraham (Retd) BPR&D

S.K. SAHARIA, Jt Dir HQ, DGQA(L)

Md. Yusuf CRPF

TC, BD NSG 13/12

Approved / ~~Not Approved~~

13/12/12

(Subhash Joshi)
Director General, NSG