Azadi Ka Amrit Mahotsav

Government of India
Ministry of Home Affairs
Directorate General National Security Guard
(Provisioning Branch/Ord Section)
Mehram Nagar, Palam, New Delhi-110034
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P/604/20/389/NLJD /Prov/Ord/NSG/ 2412 Dated : 26 July 2022

FORWARD OF FINAL REVISED QUALITATIVE REQUIREMENT (QRs) AND TRIAL DIRECTIVES (TDs) OF NON LINEAR JUNCTION DETECTOR (NLJD)

1. The final QRs and TDs in respect of Non Linear Junction Detector (NLJD) duly approved by competent authority is forwarded herewith for your information and necessary action please.

(P K Singh)
Group Commander
26/07/22

Encls : As above

Distribution :-

1.	JS (PM), MHA, Jaislmer House, New Delhi	- For information please.
Copy to *अनुभाग अधिकारी,* IT Cell, *रूम न0–10, नार्थ ब्लॉक, नई दिल्ली ।* **Email : soit@nic.in**		-You are requested to upload the same on MHA website in approved QRs/TDs of **BDDS Equipment** please.
2.	IG/Director (MoD), BPR&D, Mahipalpur, New Delhi, Email : sushilkumar@bprd.nic.in	
3.	ADG, PP & T, RoomNo 37, H Block, DGQA, Govt of India, Min of Defence, Department Defence Production, Directorate of Quality Assurance, New Delhi-110011, Email : saarmt-dgqa@gov.in	
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8.	DIG (Prov), SSB, RK Puram, New Delhi, Email : cr.ssbdel@nic.in,	
9.	JDSR, Room No, 49-T, Directorate of Staff Requirement (DSR), A Block Hutments, Dalhousie Road, New Delhi-110011	
10.	DIG (Prov), Assam Rifle (Through LOAR), Email : loar-mha@nic.in	
11.	Ops (WE), HQ NSG	
12.	BD Unit, NSG	

REVISED QRs/TDs OF NON LINEAR JUNCTION DETECTOR (NLJD) : 29 MAR 2022

S No	Parameters	Qualitative Requirements	Trial Directives
1	**Physical Characteristics**	(i) The equipment should be light weight and made of non-corrosive material/aluminum/ carbon fibre/ glass fibre etc.	i) Firm to provide OEM certificate specifying the composition of the material of the equipment, BOO to physically check the same.
		(ii). The detector and its accessories should be comfortable for handling	ii) BOO to physically check the same
		(iii) Material should have proven reliability and durability.	iii) BOO to physically check the same
2	**Transmitter**	a) **Frequency:**Any Frequency ranges in between 800- 915 MHz.	a) OEM to furnish test certificate from any Indian Government lab. BOO to physically check the certificates and same will be tested at SIW , BSF by BOO.
		(b) **Maximum Average Power Output :** Should not be more than 4 watts	b) OEM to furnish test certificate from Indian Govt lab. BOO to check the certificates
		c) **Power Type:** Pulse or Continuous.	c) OEM to furnish test certificate from Indian Govt lab. BOO to check the certificates.
		d) **Different Frequency Channels**: Equipment should be capable of switching min 20 different frequency channels with each channel having spacing of min 1 MHZ.	d) OEM to provide test certificate from any Indian govt lab. BOO to check the certificates and also test the equipment at SIW, BSF for the same.
3.	**Receiver**	Should have appropriate receiver frequency for 2nd and 3rd harmonics (1600-1830 MHz and 2400 to 2745 MHz).	OEM/firm to furnish test certificate from any Indian Govt lab. BOO to check the certificates
		Equipment should have sensitivity of -125 dbm or better.	OEM/firm to provide test certificate from any Indian Govt lab/national accredited lab. BOO to physically check the certificates for correctness

S No	Parameters	Qualitative Requirements	Trial Directives
4	**Search Head with Telescopic Extension**	a) **Search Antenna :** Should have high gain antenna	a) OEM to furnish self -declaration certificate. BOO to physically check the certificates for correctness.
		b) **Search Head Light**. (**Optional Requirement**)Should have a LED search light on the search head to carryout search during dark condition.	b) BOO to physically check the same inside a dark room.
		c) **Cables:** No cable and connectors to be seen when the equipment is in collapsed position and when the eqpt is fully extended. No cables and connectors should also be seen between the search head and the extension arm in any circumstances. All wires to be integrated into telescopic pole. It should not interfere with operators comfort & working.	c) BOO to physically check the same
		d) **Telescopic Arm:** Length of the telescopic arm when in fully extended position to be min 1.25m (to be measured from front edge of the equipment to the rear edge of the equipment	d) BOO to physically check the same.
5	**Detection Alarm**	Equipment should give detection alarm by audio & visual. Vibration (Optional)	BOO to physically check the same

S No	Parameters	Qualitative Requirements	Trial Directives
6.	**Display:**	Equipment should have LED /LCD visual indicator. Display to be clearly visible to operator during day time and night Following parameters to be displayed on to the display.	BOO to physically check the same
		(i) Power Selection Status	BOO to physically check the same
		(ii) Channel/Frequency band	BOO to physically check the same.
		(iii) Standby Mode status	BOO to physically check the same
		(iv) Harmonic selection status	BOO to physically check the same
		(v) Volume	BOO to physically check the same
		(vi) Sensitivity	BOO to physically check the same
		(vii) Detection Alarm status	BOO to physically check the same
		(viiii) Low battery indicator -Equipment should indicate low battery	BOO to physically check the same
		(ix) LED representation for 2nd and 3rd harmonics with different colour of lights when eqpt detects suspicious object	BOO to physically check the same

S No	Parameters	Qualitative Requirements	Trial Directives
7	**Control Functions**	Control function necessary to operate the Equipment should be facilitated on the hand grip for better operator comfort and efficiency. The control functions includes following function that can be selected using different buttons for different functions or using a navigation menu:-	BOO to physically check the same.
		(i)**Power Selection:** Power Selection facility for the operator to select power.	BOO to physically check the same.
		(ii)**Volume:** Volume adjustment facility for the operator to select volume level.	BOO to physically check the same.
		(iii)**Channel Selection** Both automatic and manual channel selection to be available for selecting different frequency channels/bands as per operator need.	BOO to physically check the same.
		(iv) **Standby Mode**Equipment should have a facility to put the equipment on standby mode manually in order to save the battery of the equipment.	BOO to physically check the same.
		(v)**Harmonic Selection**Equipment should have facility to select 2nd harmonic, 3 rd harmonic and both.	BOO to physically check the same.
		(vi) **Brightness** Equipment should have facility to adjust the brightness of the display.	BOO to physically check the same.
		(vii)**Search Head Light(Optional Requirement)** Equipment should be capable of switching ON/OFF the search light.	BOO to physically check the same.
		(viii)Sensitivity Selection facility for the operator to selectSensitivity.	BOO to physically check the same.
8.	**Audio**	Compatible headphones to be provided. There should be different audio tone for different Harmonics	BOO to physically check the same. OEM to furnish self- declaration certificate

S No	Parameters	Qualitative Requirements	Trial Directives
9.	**Test Target**	Different test targets for 2nd and 3rd harmonics respectively provided by firm.	BOO to physically check the same in the following manner.
			(i) Switch on the Equipment and keep the test target for each harmonics independently at a distance more than 2 m apart on ground surface.
			(ii) Bomb technician will sweep the eqpt in the prescribed manner as decided by the BOO
			(iii) Equipment should give detection alarm visually, by audio means and by vibration (Optional) for each test targets differently.
10	**Detection Capability**	(i) Open Space – Min 0.40 m or better	**For Open Space**
			(i) Make a search lane for **4x4 m** and mark the lane.
			(ii) Keep any power diode in open space on the search lane at any point.
			(iii) Switch **ON** the equipment and keep the test target for each harmonics independently at a distance more than **2 m apart**.(with max power output/ transmission and max sensitivity)
			(iv) Start sweeping the equipment in the manner prescribed by BOO.
			(v) When detection alarm sounds, measure the vertical distance of diode from the bottom of the search head.
		(ii)) Dug underground- **Min 0.20 m** or better	**For Dug Underground**
			(i) Make a search lane for **4x4 m** and mark the lane.
			(ii) Take a power diode and place it underground at a **depth of 20 cm and cover it with soil recovered** .(In the absence of operator/ bomb technician handling or sweeping the equipment)
			(iii) Switch **ON** the equipment (with max power output/ transmission and max sensitivity)
			(iv) Start sweeping the equipment in the manner prescribed by BOO.
			(v) When detection alarm sounds; measure the vertical distance of diode from ground surface to the bottom of the search head.

S No	Parameters	Qualitative Requirements	Trial Directives
11.	**False Alarm Rate**	The false alarm to be less than 5 % percent	Trial to be conducted in the following manner:
			(i) Take any 10power diodes available with the user
			(ii) Dug out 20 pits at a distance to be decided by the BOO in a single line.
			(iii) Put diodes in 10 pits out of 20 pits at a **depth of 20 cm and cover it with soil recovered**.(In the absence of firm representative handling or sweeping the eqpt)
			(iv) Enter the record of 20 pits on a paper in a tabular **form by BOO**
			(v) The firm representative has to swap 20 pits in sequence as decide by BOO and the record of detection to be maintained.
			(vi) The false alarm to be less than 5 % percent
	Pin Point Detection	Equipment should be capable of pinpointing detected material to ± 10 cm in open space and underground.	**For Open Space**
			(i) Make a search lane for 4x4 m and mark the lane.
			(ii) Keep a power diode in open space on the search lane at any point.
			(iii) **Switch ON** the eqpt (with max power output/ transmission and max sensitivity)
			(iv) Start sweeping the eqpt in the manner prescribed by BOO.
			(v) When detection alarm sounds measure the horizontal distance of diode from the centre of the search head to the centre of the diode.
			For Dug Underground
			(i) Make a search lane for **4x4 m** and mark the lane.
			(ii) Take a power diode and dug it underground at a depth of 20 cm.(In the absence of operator/ bomb technician handling or sweeping the Equipment)
			(iii) Switch **ON** the eqpt (with max power output/ transmission and max sensitivity)
			(iv) Start sweeping the eqpt in the manner prescribed as decided by BOO.
			(v) When detection alarm sounds measure the horizontal distance of diode from the center of the search head to the center of the diode.

S No	Parameters	Qualitative Requirements	Trial Directives
12	**Battery**	(a) Dry rechargeable battery to be provided.	(a) BOO to physically check the same
		(b) Operational time to be **min 4 hrs.**	(i) Switch ON the Equipment with a fully charged battery in detection mode with max power output and max sensitivity.
			(ii) Note down the start time.
			(iii) Observe the eqpt time to time and keep the eqpt in operational condition.
			(iv) Operational time should be **min 4 hrs**.
		(c) One set Spare rechargeable battery to be provided	(c) BOO to physically check the same.
		(d) Battery to be commercially available in the local market.	(d) OEM to furnish self declaration certificate for the same and BOO to physically check the same.
		(e) Reverse polarity protection to be provided.	The battery should not enter in reverse polarity inside battery slot of the equipment. In case battery does get fitted in reverse polarity equipment should not get damage. BOO to physically check the same Firm to provide undertaking for the same.
		(f) Battery to be having warranty of **min 2 yrs**	(f) OEM to furnish self declaration certificate for the same
		(g) Full battery charging time to be **max 3 hrs**(There should be provision to charge all Operational batteries simultaneously in one charger).	(g) BOO to physically check the same.

S No	Parameters	Qualitative Requirements	Trial Directives
13	**Battery Charger**	a) 180-240 V AC battery charger to be provided with short circuit protection. Charger should have battery charging status indicator. Battery charger to be capable of charging all the batteries required for operation of the equipment at a single time. If, multiple batteries exist, single/multiple battery charges may be provided to charge all batteries simultaneously.	a) BOO to physically check the same.
		b) 12-15 V DC (**input**) Charger to be provided with the equipment capable of charging all the batteries required for operation of the equipment at a single time	b) BOO to physically check the same.
		(c) Reverse polarity protection to be provided.	c) The battery will be inserted in the battery charging slot of the battery charger. The charger should not allow the battery to be fitted in reverse polarity and in case the battery does get fitted in the reverse polarity it should not get damage. BOO to physically check the same. Firm to provide OEM/self declaration certificate.
14	**Operational Weight**	Operational weight **should notexceed 2.5 kg** (which includes equipment with battery inserted & switched ON, Harness and Headphones).	BOO to physically check the same
15	**Transportation weight**	Transportation weight **should not exceed 13 kg**(Which includes) Hard Carrying case, equipment with battery inserted, Harness, Headphone, Spare battery, battery charger- AC Charger, DC Charger, test targets and technical literature)	BOO to physically check the same
16	**Mutual Interference**	Two equipment of the same make from same OEM while working in close range (min 100 cm) should not interfere each others operational efficiency/ working.	OEM/firm to provide test certificate from Indian Govt lab for the same. BOO to physically check the certificate.
17	**Booting Time**	Booting time for the equipment should not **exceed 60 sec**	BOO to physically check the same
18	**Search Head Cover**	Cover for the search head to be provided.	BOO to physically check the same and OEM to furnish self declaration certificate for the same.
19	**Operational Temp Rage**	-5 degree c to +55 degree c or better	OEM to furnish test certificate from national/international accredited lab. BOO to physically check the same

S No	Parameters	Qualitative Requirements	Trial Directives
20	**Humidity**	90 % RH	OEM to furnish test certificate from national/international accredited lab. BOO to physically check the same
21	**Activation**	The system should not activate any radio controlled device in close proximity to search head	OEM to furnish relevant certificate from national/international accredited lab. BOO to physically check the same.
22.	**IP Standard**	Equipment to be IP 63 standard or better	OEM to furnish test certificate from national/ international accredited lab. BOO to check the certificates for correctness and validity.
23.	**Soft Carrying case**	The detector should come with its all accessories in a lightweight, durable, compact soft carrying case preferable water resistant.	BOO to physically check the same
24	**Hard Carrying case**	A ruggedized hard carrying case as per MilStd 810 H to be provided for transportation and storage of the eqpt which will also accommodate all accessories of the eqpt.	OEM to furnish test certificate from national/international accredited lab. BOO to physically check the same
25	**Operational Life**	**Minimum eight years**	OEM to furnish undertaking for the same.
26	**Warranty**	All covered warranty of the eqpt should be **three years (36 months)** and Supplier and OEM should give undertaking for supplying spare parts and service **for 8 years including warranty period**.	OEM to furnish undertaking for the same.

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27	**Spare List and Spare parts**	a) OEM to furnish MRLS (manufacturer recommended list of spares)	a) OEM to furnish list, self declaration regarding the same and BOO to physically check the certificate and list.
		b) OEM to provide each number/set of MRLS at the time of tendering in a carrying case	b) OEM to furnish undertaking for the same.
28	**Training**	a) OEM/OEM auth firm to provide operational training to Bomb technicians/ individual for a week as per user requirement.	(a) OEM to furnish undertaking for the same.
		b) OEM/OEM auth firm to provide user level maintenance training Bomb technicians/ individual as per user requirement	(b) OEM to furnish undertaking for the same.

S No	Parameters	Qualitative Requirements	Trial Directives
29	**Tools**	a) OEM to provide tool kit to carryout repair of the eqpt at user level (List of tools to be furnished by OEM)	(a) BOO to check the list of tools and OEM to furnish undertaking.
		b) OEM to provide cleaning tool kit required for the eqpt (List of tools to be furnished by OEM)	(b) BOO to check the list of tools and OEM to furnish undertaking
30	**Manual**	a) OEM to provide User manual	a) BOO to physically check the same
		b) OEM to provide maintenance manual	b) BOO to physically check the same

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