
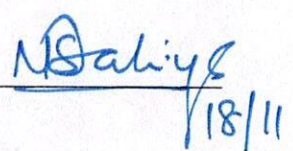
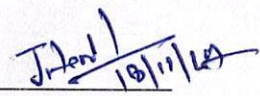


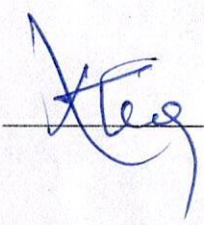
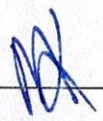
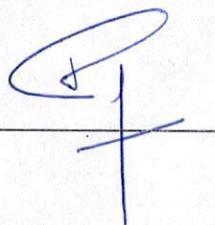
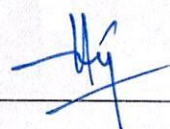
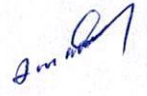
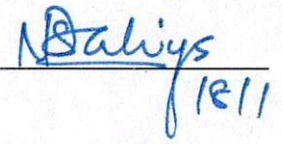
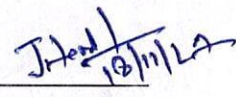


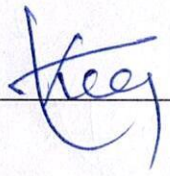

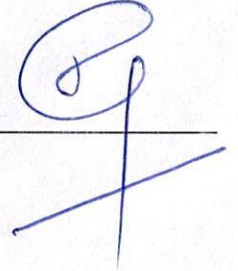



REVISED DRAFT QRs/TDs OF NON LINEAR JUNCTION DETECTOR

S No	Parameters	Qualitative Requirements	Trial Directives
1.	<u>Physical Characteristics</u>	(a) The eqpt should be light weight and made of non-corrosive material/aluminium/ carbon fiber/ glass fiber etc. (b) The detector and its accessories should be comfortable for handling. (c) Material should have proven reliability and durability.	For Sr No (i) Firm to provide OEM certificate specifying the composition of the material of the eqpt, BOO to physically check the same. For Sr No (ii) and (iii) BOO to physically check the same
2.	<u>Transmitter</u>	<u>Frequency:</u> Frequency range to be between 800- 1000 MHz.	OEM to furnish test certificate from any Indian Govt Lab. BOO to physically check the certificates and same will be tested at SIW, BSF by BOO.
		<u>Maximum Average Power Output :</u> Should not be more than 4 watts.	OEM to furnish test certificate from any Indian Govt Lab. BOO to physically check the certificates
		<u>Power Type:</u> Pulse or Continuous.	OEM to furnish test certificate from any Indian Govt Lab. BOO to physically check the certificates
3.	<u>Receiver</u>	Should have receiver frequency for 2 nd and 3 rd hamonics (1600-2000 MHz and 2400 to 3000 MHz).	OEM to furnish test certificate from any Indian Govt Lab. BOO to physically check the certificates.
		Eqpt should have sensitivity to be max -125 dbm or less.	OEM to furnish test certificate from any Indian Govt Lab. BOO to physically check the certificates for correctness.

S No	Parameters	Qualitative Requirements	Trial Directives
4.	<u>Search Head with Telescopic Extension</u>	<p>Search Antenna: Should have high gain antenna.</p> <p>Search Head Light. (Optional Requirement) Should have a LED search light on the search head to carryout search during dark condition.</p> <p>Cables: No cable and connectors to be seen when the eqpt 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.</p> <p>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).</p>	<p>OEM to furnish test certificate from any national/ international accredited lab. BOO to physically check the same.</p> <p>BOO to physically check the same</p> <p>BOO to physically check the same</p> <p>BOO to physically the same. OEM to furnish self declaration regarding provision of one spare lock for each extension step.</p>
5.	<u>Detection Alarm</u>	Eqpt should give detection alarm by audio & visual. Vibrational (Optional).	BOO to physically check the same

S No	Parameters	Qualitative Requirements	Trial Directives
6.	<u>Display</u>	(a) Equipment should have LED/LCD visual indicator. (b) Display to be clearly visible to operator during day time and night following parameters to be displayed on to the display. (i) Power selection status (ii) Channel/ Frequency band (iii) Standby Mode Status (iv) Harmonic selection status (v) Volume (vi) Sensitivity (vii) Detection Alarm status (viii) Low battery indicator-Equipment should indicate low battery. (ix) LED representation for 2 nd and 3 rd harmonics with different colour of lights when eqpt detects suspicious object.	BOO to physically check the same BOO to physically check the same BOO to physically check the same BOO to physically check the same BOO to physically check the same BOO to physically check the same BOO to physically check the same BOO to physically check the same BOO to physically check the same
7.	<u>Control Functions</u>	Control function necessary to operate the eqpt 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:- (a) Power Selection : Power Selection facility for the operator to select power. (b) Volume : Volume adjustment facility for the operator to select volume level. (c) Channel Selection Both automatic and Manual channel selection to be available for selecting different frequency channels/bands as per operators need.	BOO to physically check the same. BOO to physically check the same. BOO to physically check the same. BOO to physically check the same.

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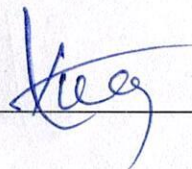
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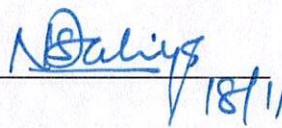
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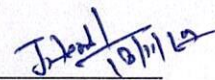
S No	Parameters	Qualitative Requirements	Trial Directives
		(d) Standby Mode Eqpt should have a facility to put the eqpt on standby mode manually in order to save the battery of the eqpt. (e) Harmonic Selection Eqpt should have facility to select 2 nd harmonic, 3 rd harmonic and both. (f) Brightness Equipment should have facility to adjust the brightness of the display. (g) Search Head Light (Optional Requirement) Equipment should be capable of switching ON/OFF the search light. (h) Sensitivity Selection facility for the operator to select sensitivity.	BOO to physically check the same. BOO to physically check the same. BOO to physically check the same. BOO to physically check the same. BOO to physically check the same.
8.	Audio	Compatible headphones with active noise cancellation feature to be provided.	BOO to physically check the same. OEM to furnish self – declaration certificate.
9.	Test Target	Different test targets for 2 nd and 3 rd harmonics respectively provided by firm.	BOO to physically check the same in the following manner. (i) Switch on the eqpt 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 a decided by the BOO Eqpt should give detection alarm visually, by audio means and by vibration (Optional) for each test targets differently.

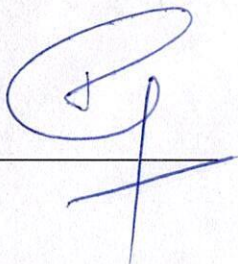





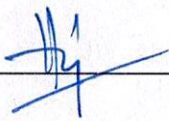















S No	Parameters	Qualitative Requirements	Trial Directives
10.	<u>Detection Capability</u>	(a) Open Space – Min 16" or better.	<p>For Open Space.</p> <p>Make a search lane for 4 x 4 m and mark the lane.</p> <p>Keep electronic and corrosive material targets in open space on the search lane at any two different points.</p> <p>Switch ON the eqpt and test the targets for each harmonics independently at a distance more than 2 m apart (with max power output/ transmission and max sensitivity).</p> <p>Start sweeping the eqpt in the manner prescribed by BOO.</p> <p>When detection alarm sounds measure the distance of target from the bottom of the search head.</p>
		(b) Dug underground Min 12" or better	<p>For Dug Underground</p> <p>(i) Make a search lane for 4 x 4 m and mark the lane.</p> <p>(ii) Take a power diode and place it underground at a depth of 12" and cover it with soil recovered. (In the absence of operator/ bomb technician handling or sweeping the eqpt).</p> <p>(iii) Switch ON the eqpt (with max power output/ transmission and max sensitivity).</p> <p>(iv) Start sweeping the eqpt in the manner prescribed by BOO.</p> <p>(v) When detection alarm sounds measures the vertical distance of diode from ground surface to the bottom of the search head.</p>
		(c) Dug concrete - Min 4" or better.	<p>For Dug Concrete</p> <p>(i) Make a search lane for 4 x 4 m and mark the lane.</p> <p>(ii) Take a power diode and place it under concrete at a depth of 4". (In the absence of operator/ bomb technician handling or sweeping the eqpt).</p> <p>(iii) Switch ON the eqpt (with max power output/ transmission and max sensitivity).</p> <p>(iv) Start sweeping the eqpt in the manner prescribed by BOO.</p> <p>(v) When detection alarm sounds measures the vertical distance of diode from ground surface to the bottom of the search head.</p>

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S No	Parameters	Qualitative Requirements	Trial Directives
11.	False Alarm Rate	Should be less than 5 % percent.	Trial to be conducted in the following manner: (i) Take 10 power diodes as given below:- 02 x Sim card 02 x Diode 02 x Corrosive substance 02 x Transistor 02 x Capacitor (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.
12.	Pin Point Detection	Eqpt should be capable of pinpointing detected material to (+-)10cm in open space and underground. The eqpt should be capable of detecting the target pin point with accuracy.	For Open Space (i) Make a search lane for 4 x 4 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 ouput/ 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 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) When detection alarm sounds measure the horizontal distance of diode from the centre of the search head to the centre of the diode.

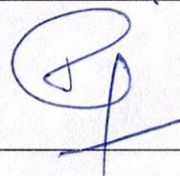
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S No	Parameters	Qualitative Requirements	Trial Directives
13.	Battery	(a) Dry rechargeable battery to be provided.	BOO to physically check the same.
		(b) Operational time to be min 4 hrs.	(i) Switch ON the equipment with a fully charged battery in 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.	BOO to physically check the same.
		(d) Battery to be commercially available in the local market.	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.		
(f) Battery to be having warranty of min 2 yrs.	OEM to furnish self declaration certificate for the same.		
(g) Full battery charging time to be max 3hrs (There should be provision to charge all Op batteries simultaneously in one charger).	BOO to physically check the same.		

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S No	Parameters	Qualitative Requirements	Trial Directives
14.	<u>Bty Charger</u>	(a) 180-240 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.	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.	BOO to physically check the same.
		(c) Reverse polarity protection to be provided.	The battery will be inserted in the battery charging slot of the charger. The charger should not allow the battery to be fitted in reverse polarity it should not get damage. BOO to physically check the same. Firm to provide OEM/self-declaration certificate.
15.	<u>Operational Weight</u>	Operational weight should not exceed 2.5 kg (which includes equipment with battery inserted & switched ON, Harness and Headphones).	BOO to physically check the same.
16.	<u>Transportation weight</u>	Transportation weight should not exceed 10 kg including all accessories.	BOO to physically check the same

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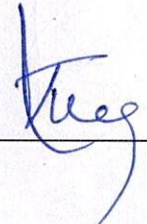
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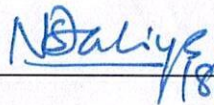
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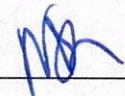
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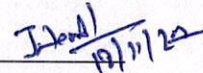
S No	Parameters	Qualitative Requirements	Trial Directives
17.	<u>Mutual Interference</u>	Two eqpts of the same make from same OEM while working in close range (min 50 cm) should not interfere each other's operational efficiency/ working.	OEM to provide test certificate from Indian Govt lab for the same. BOO to physically check the certificate.
18.	<u>Booting Time</u>	Booting time for the equipment should not exceed 60 sec.	BOO to physically check the same.
19.	<u>Search Head Cover</u>	Cover for the search head to be provided.	BOO to physically check the same and OEM to furnish self-declaration certificate for the same.
20.	<u>Operational Temp Range</u>	-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.
21.	<u>Humidity</u>	90 % percent RH	OEM to furnish test certificate from national/international accredited lab. BOO to physically check the same
22.	<u>Activation</u>	The system should not activate any radio controlled device in close proximity to search head.	To be physically checked by BOO. OEM to furnish relevant certificate from national/international accredited lab. BOO to physically check the same.
23.	<u>IP Standard</u>	Eqpt to be min IP 67 standard or better.	OEM to furnish test certificate from national/international accredited lab. BOO to physically check the same.
24.	<u>Soft Carrying case</u>	The detector should come with its all accessories in a water proof soft carrying case.	BOO to physically check the same

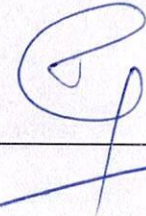


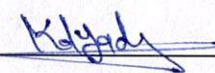


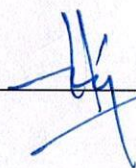















S No	Parameters	Qualitative Requirements	Trial Directives
30.	<u>Tools</u>	(a) OEM to provide tool kit to carryout repair of the eqpt at user level (List of tools to be furnished by OEM) (b) OEM to provide cleaning tool kit required for the eqpt (List of tools to be furnished by OEM)	(a) BOO to check the list of tools and OEM to furnish undertaking (b) BOO to check the list of tools and OEM to furnish undertaking
31.	<u>Anti jamming features</u>	The equipment should be capable of detecting in areas where Jammers are activated.	Jammers to be activated while evaluating false alarm during trials. OEM to furnish test certificate from any national/ international accredited lab. BOO to physically check the certificate for correctness.
32.	<u>Manual</u>	(a) OEM to provide User manual (b) OEM to provide maintenance manual	BOO to physically check the same

Anand Kumar
Anand Kumar, DC
CISE

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Narender Singh, AC

Jitendra
Jitendra Singh, AC
CRPF

Kuldeep
Insp/4D Kuldeep (ITBP)

M. P. Tyagi
H/Sub. M. P. Tyagi

Kumar
As/Comr Nitin
Kumar. SSB

MS
Maj MS Ramdas
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