

DIRECTOR GENERAL BORDER SECURITY FORCE
PROVISIONING DIRECTORATE (MOD CELL)

EXPRESSION OF INTEREST

Commandant (ord)
HQ DG BSF, Prov Dte (Ord Sec)
Block No. 10, CGO Complex
Lodhi Road, New Delhi
(Tele/Fax No. 011-24367683)

The Sub-group of Technical Experts 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 27 Jun 2013 held its meeting at BSF Headquarters on **21st April 2017** and **13th July 2017** to formulate the Qualitative Requirement of "Man Portable Automatic Direction/Location Finder". After detailed deliberations the referred Sub-group has formulated the QRs/TDs which are as under:-

Draft QRs of Man Portable Automatic Direction/Location Finder

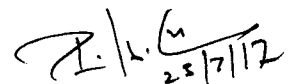
S.No	Parameters
General: For operational deployment in jungle/hilly terrain, man portable automatic radio direction finder system should be able to find the direction of the clandestine/hostile transmitter (Line of Bearing) and location fixing (LF) while on move. It should have minimum following capabilities:	
a	Frequency range of the system should be 10 KHz to 6 GHz. The equipment should be able to work in DF mode & receive mode by press of a button. It should show the direction of signal (Line of Bearing) in the DF mode and in receiver mode the system should be able to detect, listen & record the demodulated audio signals.
b	High scan speed of a user defined frequency range or the entire frequency range to provide a fast overview of the spectrum and waterfall for active transmissions. The equipment should be able to carry out automatic library base (memory channel scanning) target frequency search/Memory search to find if they are active for listening and then Direction/location finding.
c	Should provide real time bandwidth of min 10 MHz for finding out the Radio transmission network talking to each other.
d	Should be laptop controllable via LAN as well as front panel controllable. It should have built-in internal signal recording & reply capability (in the equipment) as well as possible to record signals on Laptop.
e	Should be self-sufficient with built-in battery operated as well as mains for operation and charging the internal batteries.
f	Demodulated signal audio listening by headphone or by built in loudspeaker.
g	Direction finding antenna should have built-in GPS and compass for automatic DF and LF while on continuous move.
h	DF antenna to be based on correlative interferometer/Watson Watt principle for direction finding (Line of Bearing). Equipment's own position as well as signal LOB should be displayed on Map.
1	Frequency range for DF and receiver mode 20 MHz to 1 GHz
2	Rx Sensitivity
(i)	Amplitude Modulation/6 KHz 1μ V at 10 dB SINAD bandwidth
(ii)	Frequency Modulation/15 KHz 1μ V at 15 dB SINAD bandwidth



3	Frequency resolution	1Hz
4	Display	Average, RMS, Max Peak, Sample
5	Rx- Pre-selection	
	(i) >30MHz	Low Pass Filter
	(ii) < 1.5 GHz	Tuned band pass filters
6	Rx IF Spectrum Display range	1 KHz to 10 MHz
7	De-Modulation	AM, FM, Pulse, I/Q, USB, LSB, CW
8	Rx scan modes	Frequency scan, Memory scan, Panorama scan (Fast Fourier Transform based scanning)
9	Rx scan speed	10 GHz's or more
10	I/Q output(≤ 200 KHz)	Ethernet port
11	Output	
	(i) Audio Output	Built in speaker & headphone
	(ii) Digital output	Ethernet port
	(iii) Analogue output (IF filter & de-modulation)	10 Hz/300Hz to 12.5 KHz
12	Data, Control, interfaces	Ethernet port
13	Recording	USB & SD card
14	Map display function	Built in automatic display of own position & line of bearing (LoB) on Map
15	Power Supply	It should work on AC mains 90V to 270V, 50Hz & 12 to 48 V DC
16	Battery operating time (Spare Battery to be provided)	3 Hrs (Min)
17	Built in display	Color graphic, RF spectrum, IF spectrum, Water Fall, Polar Diagram for Bearing, Map, Distance from target.
18	Weight	≤ 6 Kg (Excluding Antenna & Battery)
19	Antenna System	
	(i) Frequency Range	10KHz to 6 GHz
	(ii) DF method	Correlative Interferometer/Watson Watt/Doppler
	(iii) GPS & Compass	In built GPS & electronic compass
	(iv) System DF Accuracy	1° or better
20	Environmental Specification:	
	(i) Operating temp	-10 °C to +55 °C
	(ii) Storage temp	-20 °C to +55 °C
	(iii) Climatic & mechanical	MIL-STD810F or More

The Sub-group has decided to upload the QRs on MHA & BSF website for 15 days to invite the views/comments/suggestion of prospective bidders to make the QRs more broad.

Note - All the firms are requested to comment upon the above mentioned QRs and furnish Brochure/catalogue of their products from the OEMs.



(Rishipal Singh)

Second-In-Command (Mod)