

No.IV-17017/48/02-Prov.I  
Ministry of Home Affairs

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New Delhi the 6<sup>TH</sup> Oct.,2004

To

The DGs:Assam Rifles/BSF/CISF/CRPF/ITBP/NSG/SSB/BPR&D

**Subject: Finalization of QRs/Specifications Communication and other Security Equipments.**

The Sub-Group constituted by MHA vide Memorandum No. IV.IV.17017/18/2001-Prov.I dated 5-7-2002 for laying down QRs/specifications of various items/equipments has since submitted its recommendations in respect of following communication and security equipments:

- (i) Fax Encrypter
- (ii) Frequency hopping HF/VHF sets
- (iii) Digital hand held mobile/static VHF/UHF Radio
- (iv) Wideband surveillance receiver (VHF/UHF Analog)
- (v) Wideband surveillance receiver (HF Analog)
- (vi) Wideband surveillance receiver (HF/VHF/UHF Analog and digital)
- (vii) Light Vehicle based Direction finder ✓
- (viii) Portable Direction finder ✓
- (ix) Discone, Parabolic Dish Antenna
- (x) High altitude Parachute Penetration System(HAPPS)
- (xi) Bomb Data Centre Equipment
  - i. IED Response Vehicle
  - ii. Explosive Test Kit
  - iii. FBI Kit
- (xii) ✓ Telescopic Manipulator
- (xiii) ✓ Waterman ship Equipment
- (xiv) ✓ Deep search Mine/Metal Detector.
- (xv) ✓ Digital HF Transceiver
- (xvi) ✓ Satellite Phone (Hand Held)

2. These recommendations have been accepted by MHA. The QRs finalized by the Sub-Group and accepted by MHA in respect of the equipments are enclosed herewith

3. Henceforth, all the CPMEs should procure the above items required by them to meet their operational needs strictly as per the laid down QRs/specifications.

Yours faithfully,

  
(Alok Mukhopadhyay )  
Under Secretary(Prov.I)

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SQR FOR LIGHT VEHICLE BASED DIRECTION FINDER

DF Equipment

DF Processor

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|-----|---|---|
| 1.  | Frequency Range                         | 20 MHz - 3000 MHz.  |
| 2.  | DF Accuracy (Multi Path Propagation)    | Better than 0.2 degree RMS over entire freq range   |
| 3.  | Bearing Resolution                      | Better than or equal to 0.1 degree  |
| 4.  | Display Parameters                      | (a) Modulation<br>(b) Bandwidth<br>(c) Signal Strength in dbm<br>(d) Bearing and Location Fix<br>(e) Bearing quality<br>(f) Time of DF.<br>(g) Should have facility for working in darkness by lighting the displays. |
| 5.  | Detection Modes                         | AM, FM, SSB, CW, PSK, FSK, Frequency Hopping and Burst Signals  |
| 6.  | Operating Modes                         | (a) Automatic<br>(b) Manual   |
| 7.  | FH DF Capability                        | Minimum 350 hops per sec  |
| 8.  | DF-Receiver Channels                    | Minimum Three Channel DF Processor.   |
| 9.  | Minimum Required signal duration for DF | Less than or equal to 1 m sec.  |
| 10. | Response Time of LF system              | Display of location fix within 2 seconds of initiating LF command. The entire procedure of requesting the bearings, location calculation and plotting the same on the map must complete within 2 seconds.             |

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11. Receiver Sensitivity
12. Frequency History
13. Calibration
14. Computer
15. External PC port

State-of-art, better than 2 micro volts per meter in entire frequency range for 10db SNR and 6 KHz Bandwidth.

Store history of minimum 1000 frequency including time of DF, LF, modulation and bearing quality

Should cater for auto-calibration as well as site error calibration.

Rugged laptop. GIS software should facilitate display of maps digitized in DTD/DGN/DEM (in DTED) formats.

All DF stations should provide port for extending Control Station data base to a remotely connected PC.

DF Antenna system

16. DF Antenna

(a) Coverage of Azimuth 360°, Elevation 00°.

(b) Light weight, robust, telescopic type pneumatically/electro mechanically raised masts

(c) Mast and antennae should be able to withstand high wind velocities of upto 150 Km/h.

(d) Height of antenna mast should not be more than 10 meters from ground.

(e) Mast should be mounted on top of vehicle and should permit erection on ground upto 50 meters away from vehicle.

(f) All antenna accessories should be capable of being carried in suitable modification to be made on top/side of vehicle.

17. GPS Receiver

Should be available with each station of the system. Facility for manual entry of own location should also exist in the system.

18. GPS Integration

Each station of the system should have an additional port for integration of GPS results.

Search and Intercept Receiver

- 19. Frequency Band 20MHz - 3000 MHz
- 20. Memory scan 1500 channels per sec
- 21. Scan Rate search Minimum 10 GHz /Sec
- 22. Protected frequency Minimum 200
- 23. Pre-settable scanning frequencies band
  - (a) Edge Scan. Facility to scan between specified lower and upper limits covering entire freq band.
  - (b) Should be able to cover entire frequency band for scanning.
  - (c) Should be able to select a sub band for scanning.
  - (d) Should be able to protect frequencies and sub bands from scanning.

24. Antennae

Omni directional and directional with 6 dB gain. The antenna should be software selectable from the Scanning Post.

Intra System Communication

- 25. Intra System Communication (Between DF stations in a cluster).
  - (a) Tactical VHF/UHF FM radio.
  - (b) Transmitter power minimum 20W.
  - (c) For voice and data communication between posts of DF station.
  - (d) Should incorporate FH technologies for ECCM for communication between DF stations.
  - (e) Small in size and light weight.
  - (f) Minimum range 20 Km, with suitable antenna system mounted on the vehicle.

26. Intra System Communication (Between DF stations and Hand held terminals).

- (a) Tactical VHF/UHF FM radio.
- (b) Transmitter power
  - (i) LVDFS end. Minimum 20W.
  - (ii) Hand held. 5W.
- (c) For voice or data communication between LVDFS and Hand held terminals.
- (d) Should incorporate digital secure

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communication technique.  
(e) Small in size and light weight.  
(f) Minimum range 10 Km, with suitable antenna system.

Power Supply

27. Power Supply

- (a) System should be self contained for stabilized power requirement by provisioning re-chargeable batteries and light weight noiseless generators.
- (b) Should also be capable of operating from single phase 220 Volt AC with built-in facility to charge the battery. A stabilizer should be catered for this purpose.
- (c) The battery pack should be capable of providing uninterrupted power supply for six hours without charging.
- (d) Circuit breakers should be catered for protection of critical subsystem from power fluctuations.
- (e) Earthing protection should be catered both in the System Unit vehicle and in the Power Supply vehicle.
- (f) Noise level of the generator sets should be better than 86 dBA.

Environment

28. Temperature operating and storage

-10 degree Celsius to + 50 degree Celsius.

29. EMI/EMC

To conform to MIL STD 461 C/D specifications.

(Kealash Deka)  
Inspector General (Comn), BSF

(B. S. Sanjiv)  
DIG (Comn), NSG

(B. B. Lal)  
Dy. Director (Tech), IB Hqr

(R. N. Kulkarni)  
Scientist 'B' DRDO

(S. K. Malhotra)  
Dy. Director (Works) (Comn)  
D. C. P. W.