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No.IV.17017/48/2002-Prov.I
Ministry of Home Affairs
Prov.I

New Delhi, the 27 April 2004

To

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

Sub. Finalization of QRs/Specifications surveillance Equipments.

Sir,

The Sub-Group constituted by MHA (Vide Memorandum No.IV.17017/18/2001-Prov.I dated 5/7/2002) for laying down QRs/ Specifications in respect of communication equipments for which at present there is no designated agency under DGS&D and DGQA of MOD, has finalised and submitted the QRs in respect for the following equipments:

- (a) ~~III Mobile/Static Repeater Radio sets~~
- (b) ~~III Hand Held Radio Set~~
- (c) ~~Satellite Phones~~
- (d) ~~Satellite Terminal~~

2. These QRs have been approved by MHA and are forwarded herewith as Appendix-A, B, C and D. Henceforth, all the CPMFs should procure the above items required by them to meet their operational needs strictly as per the laid down QRs/specifications.

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By. NO. _____
E. W&D _____
New Delhi _____
Dated 28/7/04

Yours faithfully

Alok
(Alok Mukhopadhyay)
Under Secretary (Prov)

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QUALITATIVE REQUIREMENT : UHF HAND HELD RADIO SET

Following Qualitative Requirements (QR) for the UHF Hand held Radio Sets have been framed :-

Essential Physical Characteristics

2. Radio set must be easy to maintain. The transceiver should be in service without major modification for the next 8 (eight) yrs.
3. The Radio set should be able to communicate under and in the following situations/ environments:
 - (a) Within multi storey buildings: -
 - (i) From one room to another on the same floor.
 - (ii) The Radio set should be able to communicate from one floor to another in the same building upto 2 storeys above or below.
 - (b) From outside a building to a room inside the building from a range upto 2 Km plus or minus 20 percent when the rooms are not fully screened.
 - (c) In heavily crowded by-lanes / localities with a range of 500 to 600 m in case of Handheld / Body worn Radio sets.
 - (d) Airport / Dense electronic environment.
 - (e) The range of communication from inside an aircraft to out side with all the aircraft doors closed should be minimum 500 meters.
 - (f) Communication between moving vehicles at speeds up to 50 Kmph for Handheld / Body worn Radio sets.

4. Front Panel Control. All the controls should be available on the front panel in mobile and Handheld radio sets.
5. Alphanumeric Display. It should have an easy to read alphanumeric Liquid Crystal Display to provide the user with instant mode and radio status information. It should be backlit for night time use with control switch.

Essential Technical Characteristics

6. The features common to all hand held categories of UHF R/ssets must be as under : -

- (a) Frequency Range -400 to 450 Mhz. It should be synthesizer controlled.
- (b) Channel Spacing -12.5/25 KHz
- (c) Modulation -Frequency Modulated
- (d) Microprocessor Controlled- The radio sets should be microprocessor controlled, Software programmable and easy to update to the latest operating software release.
- (e) Digital Series- The radio sets should be Digital with an option to work in analogue mode. Modulation should be QPSK/BPSK .
- (f) Sensitivity
 - (a) Analog Mode -0.25 micro volt at 12 db Signal to Noise ratio
 - (ii) Digital Mode -0.25 micro volt at 5 percent BER 0.40 micro volt at 1 percent BER .
- (g) Frequency stability -Plus 0.00025 percent (minus 20 to plus 60 deg C)
- (h) Communication range Handheld radio sets must provide a comm range of at least 5 Km in plain terrain and 3 Km in built up areas.

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- (j) Receiver Selectivity
- (i) Adjacent Channel -70 db or better
 - (ii) Inter modulation rejection -65 db or better
 - (iii) Spurious response rejection -65 db or better
7. The other common features of the radio sets must be: -
- (a) BITE/Repair-Software programme be available to aid fault diagnosis.
 - (b) Dual Mode Operation- Should have both digital and analogue modes.
 - (c) Advanced Scanning- It should be able to scan a list of modes such as non-priority operation, Talk Back Scan and Auto-scan priority user programme etc.
 - (d) Advanced Features- It should have advanced features such as Unit identification, Call alert, Emergency alarm, Radio check option or priority check scan etc.
8. Other Features for Handheld Body worn Radio Set The features that a Handheld/ Body worn radio sets should have are :-
- (a) RF Power output- 4/ 5 Watt in steps of 1 watt programmed from front panel /selector/ toggle switch.
 - (b) Audio output- It should have an inbuilt speaker with output of 500 milli watt.
 - (c) Microphone -should be inbuilt

- (d) **VOX Unit** -A limited quantity of radio sets will be provided with VOX kits for hands free operation. The VOX units must be able to be easily fit in the ear canal along with an ear clip for safety. The VOX unit must be able to be operated in dual mode i.e. FTT or Vocal cord option.
- (e) **Communication Range** -As specified in Para 6(h). However, in plain terrain it should give a range of 5 Km.
- (f) **Belt Clip** -A belt clip is necessary to clip it to the belt of the commando.
- (g) **Power Source** -A re-chargeable Ni-Cd / Lithium/ Ni-Metal Hydride state of the art bty. It should be able to last for 6 to 8 hours at 5:5:90 (Tx::Rx:Stand by) working ratio.
- (h) **Battery charger**- Each handled radio set to have a Rapid battery charger for single btys and a multi-bty battery charger capable of charging 06 or more batteries at a time. One multi-bty charger per six (06) radio sets must be procured. A foldable solar bty charger (Portable) able to charge bty in solated areas is desirable.
- (i) **Weight**- The total weight including bty (not less than 1200 mAH rated capacity) should be less than 800 gms.
- (j) **Low Battery Indication**- A LCD visual low battery indication should be available with a shutter to hide the visual indicator to avoid detection.
- (k) **Programmable Switch/buttons**- It should be available on front panel which should help in setting of various modes of operation and facilities.
- (l) **Compatibility**- The radio set should be compatible with existing UHF radio sets in service on selected channels.

- (m) **Antenna** -It should be small in size and be fixed on radio set. It should have flexibility to avoid breakage during ops.
- (n) **Whisper Mode** -It should have a facility to work in whisper or low condition to avoid detection. Should not give any crackling sound when switch it 'ON/OFF'.
9. **Spare** -The firm offering the radio sets should be able to supply the spares for the assessed life of 8 years .
10. **Training** -The firm Should train a team of 4x Mechanic in repairing of the radio sets free of cost. The firm should also include in its proposal to supply any accessory / special kit or test equipment required for repair of sets.
11. **Literature** -The following literature / manual will be supplied along with radio sets:-
- (a) User manual with each radio sets .
- (b) Technical repairing manual at a scale of 5% of the population of radio sets procured.
12. **Radio Programming** -The firm shall include in their proposal all necessary radio set programming software and hardware packages that may be required for the proposed radio system.
13. **Attachment for data transmission**- The firm shall include in their proposal if any attachment / software / hardware packages that may required for transmission of data.
14. **Trial of Radio System** -The firm shall provide adequate qty of Radio Sets for field trial at no cost and no commitment basis, to ascertain the user satisfaction before the proposal is accepted.
15. **After Sales Services** -Warranty period should be one year from the date of purchase.

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20/11/83

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