

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

-0-

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 recover (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 CPMFs 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)

## QRs/SPECIFICATION FOR FAX ENCRYPTER

1. User requirement setout this qualitative requirement represent attainable features as foreseen by CPMF.
2. It may be possible to design the equipment accordingly to the qualitative requirement (QR) in number of ways. In order to drive maximum benefit from the latest advancements and also to avoid the equipment being out moded soon after production, maximum use should be made of latest techniques including such usable techniques as become known during the period of deployment. However , in view of the phenomenal progress which is taking place in the field of Electronics and Telecommunication techniques, it is possible that equipment may become outdated during the production phase, or even before the development is completed. In view of this, the equipment developed above cater for post development and post production improvement. designing

### Part I - General Information

#### Proposed Service Employment:

3. Fax Encrypter is an appliqué unit to the standard G3 and G4 facsimile equipment, it provides as the name implies, security for the facsimile data transmitted which is otherwise susceptible to interception in public telephone network. The equipment operates in secret key environment and it effectively provides total security to the message sent across the telephone line. A large number of keys are stored and the key for the session is selected automatically and randomly by the equipment.

#### Equipment Configuration:

4. The one piece equipment will be connected between the fax equipment and the telephone line. Encrypted Messages sent from other fax equipment are decrypted and the decrypted message is received automatically.

5. Construction : Fax Encrypter is simple in construction easy to operate. It should be a multiprocessor based unit and employing a separate DSP processor module for encryption . The user should be able to an easily configure the equipment for various modes of operation..

### Part II - Operational Characteristics

6. Interface: The equipment should be compatible with modulation systems as specified in CCITT T-4 recommendations. A RS 232- C port should be available for

interfacing the equipment to a PC or FILLGUN for down loading of keys. A real time clock should be built in to the equipment.

7. Management. It should be able to store large number keys are stored and the key for the session should be selected automatically by the equipment during the transmission or reception. There should be a option to provide the user to select either a FILLGUN or PC as the load equipment to load keys into the system. The system should generate automatic generation of unique keys for every transmitted message.

8. Display: The front panel should be consists of the LCD display through the built - in LCD module and key pad or the front panel. The user should be able to easily configure the equipment for various modes of operation.

9. Erase Cipher keys. There should be an option to erase all the key information data in the system. There should be a provision to ensure that unless new keys pertaining to the date , are loaded the system will not send or receive any secure facsimile message. Sufficient protection should be built in to ensure that even if the equipment loaded with live keys falls in to enemy hands should not be in a position to find out the algorithm or to read the keys. A facility for emergency destruction of circuit should also be provided.

10. Secrecy ; High grade inbuilt secrecy with crack resistivity of minimum SAG grade should provided. The system should be SAG approved. Un authorized persons should have no access to the system. Both software as well as hardware measure shall be adopted. Password access to the secrecy codes should be provided with user identification.

11. SETUP: Following menu driven software setup should be made available.

- a) RS 232 Interface.
- b) Fax Machine Info.
- c) Cipher Setting.
- d) Line Interface.
- e) System Setup.
- f) Restore Setup.
- g) Fax Save Setup.

### Part III - Technical Characteristics

12. Cryptography Characteristics:

- a) Key Generator Cycle Length : > 1,000,000 Year.
- b) Key Diversity : >  $10^{36}$ .
- c) Key Management : Offline System based on Smart Card.

13. FAX Machine Interface: Standard G3 protocol two wire half duplex, 300, 9600 bps V.21 / V.27 ter/V.29 termination.

14. Line Interface:

- a) Impedance : 50/600 Ohm
- b) Output Level : -3 to -15 dbm
- c) Ringer Output : 500 RMS minimum
- d) Ring detect : 30 V RMS (min)
- e) Band : Compatible with modulation Specification in CCITT T-4 V.29, 9600, 7200. V.27 ter 4800, 2400

15. Power Supply:

- a) Supply Voltage : 220 V AC (Nominal) 50 Hz  $\pm$  5 Hz, 24 VDC
- b) Power Dissipation : Max 1.5 Amp

16. Interface: RS 232 C port should be available for interfacing the equipment to a PC or FILLBUN for downloading keys.

17. Clock: A Real Time Clock (RTC) should also be build to automate the activities of the system. Which should be compatible with the past generation Fax Machine also.


18. Construction: The equipment should be modular in construction, and should not need special installation, or operator intervention for reception and transmission of facsimile messages.

**Part IV**  
**PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS.**


19. **Size and Weight:**
- a) W x D x H : 200 x 100 x 300 mm.
  - b) Weight : Not more than 3.5 Kg.
20. **Environmental specifications:**
- a) Op temp range : 0 to 50 C
  - b) Storage : -10 c to 55 C
  - c) **EMI/EMC:** The machine should not cause interference to any nearby electronic or electric eqpt and its performance should not be affected by electronic environment in which it is expected to work.
  - d) **Noise Level:** Operating noise level should be less than 70 dB.
  - e) **Mean Time between failure (MTBF):** MTBF not less than 8000 working hours.
  - f) **Mean Time To Repair (MTTR):** MTTR should not be more than 30 minutes.
  - g) **Diagnostics:** A built-in diagnostic routine should be provided which all machine functions. A self-test diagnostic is desirable. Remote diagnostic is also preferred.
21. **Safety Measure:** Enough state of the art protection features to safeguard the limits of current voltage and freq should be incorporated. Protection against short cct, open cct and reversal of polarity should be catered for, protection on the line side against sudden surge voltage to be provided.
22. **Test Equipment:** Two sets of special maintenance, tools if any will be provided with the equipment.
23. **Literature:** The following literature shall be made available by the supplier.
- a) Tech Specification.
  - b) User hand book.
  - c) Design Specification.
  - d) Accessories list for each role.
  - e) Technical manual.

- f) Component list.
- g) Priced component list.
- h) Recommended list of
- i) Carried spares.
  - ii) Spares for 36 months maintenance and overhaul.
- j) Recommended list of tools.
- k) Packing Specifications.
- l) Recommended complete eqpt schedule.;

24. Indication All positive indication should be on green colour and negative indication in red colour.

  
(Kamlesh Deka)  
IG (COMN),BSF

  
(Brig. B.S. Sandhu)  
DIG(COMN),NSG

  
(B.B. Lal)  
DD(Tech),IB HQr

  
(R.N Kulkarni)  
Scientist 'E', DRDO

  
(S.K. Malhotra)  
DD, DCPW

(Sanjeet Kumar) *Not attended*  
DD(QA),DGS&D