ISRO:SAC:TT:2011:02

AGREEMENT

BETWEEN

INDIAN SPACE RESEARCH ORGANISATION (ISRO)

AND

M/S AE TELELINK SYSTEMS LTD (AE TELELINK)

REGARDING

UTILISATION BY M/S. AE TELELINK OF

ISRO KNOW-HOW RELATING TO

INSAT MSS TYPE-C REPORTING TERMINAL
(MSS-RT)

AND

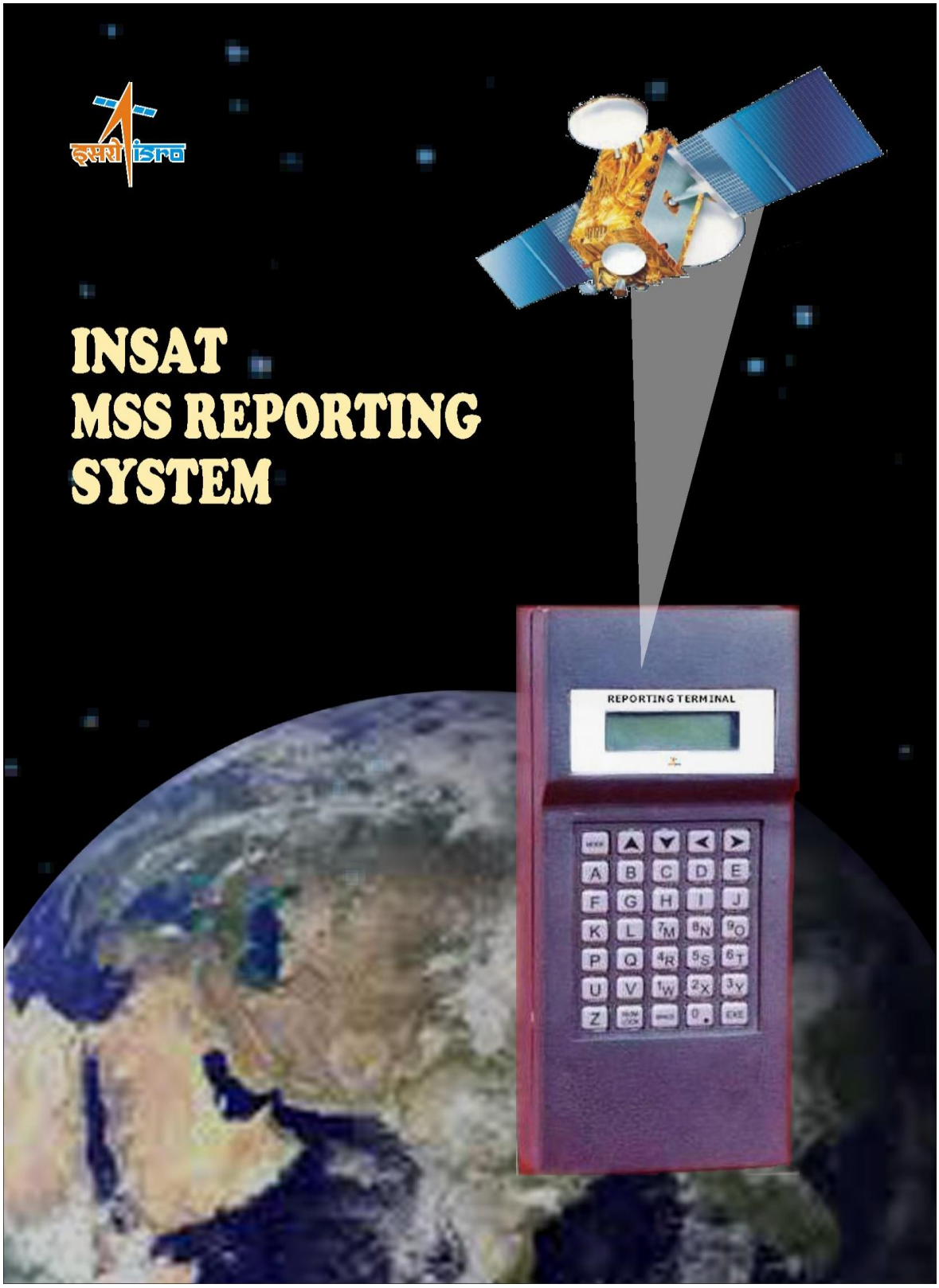
GRANT OF LICENCE TO M/S. AE TELELINK

TO UTILISE THE KNOW-HOW FOR THE MANUFACTURE

IN INDIA OF THE SAID MSS-RT FOR SALE IN INDIA

JUNE 2011

About MSS Type C Reporting Terminal



SYSTEM

INSAT Mobile Satellite Service (MSS) Reporting System provides for one-way transmission of short message or position from Reporting Terminals to a pre-defined central location. Reporting Terminals can be either handheld, vehicle mounted or stationary. The Indian landmass and surrounding ocean regions are covered by the INSAT MSS transponder footprint.

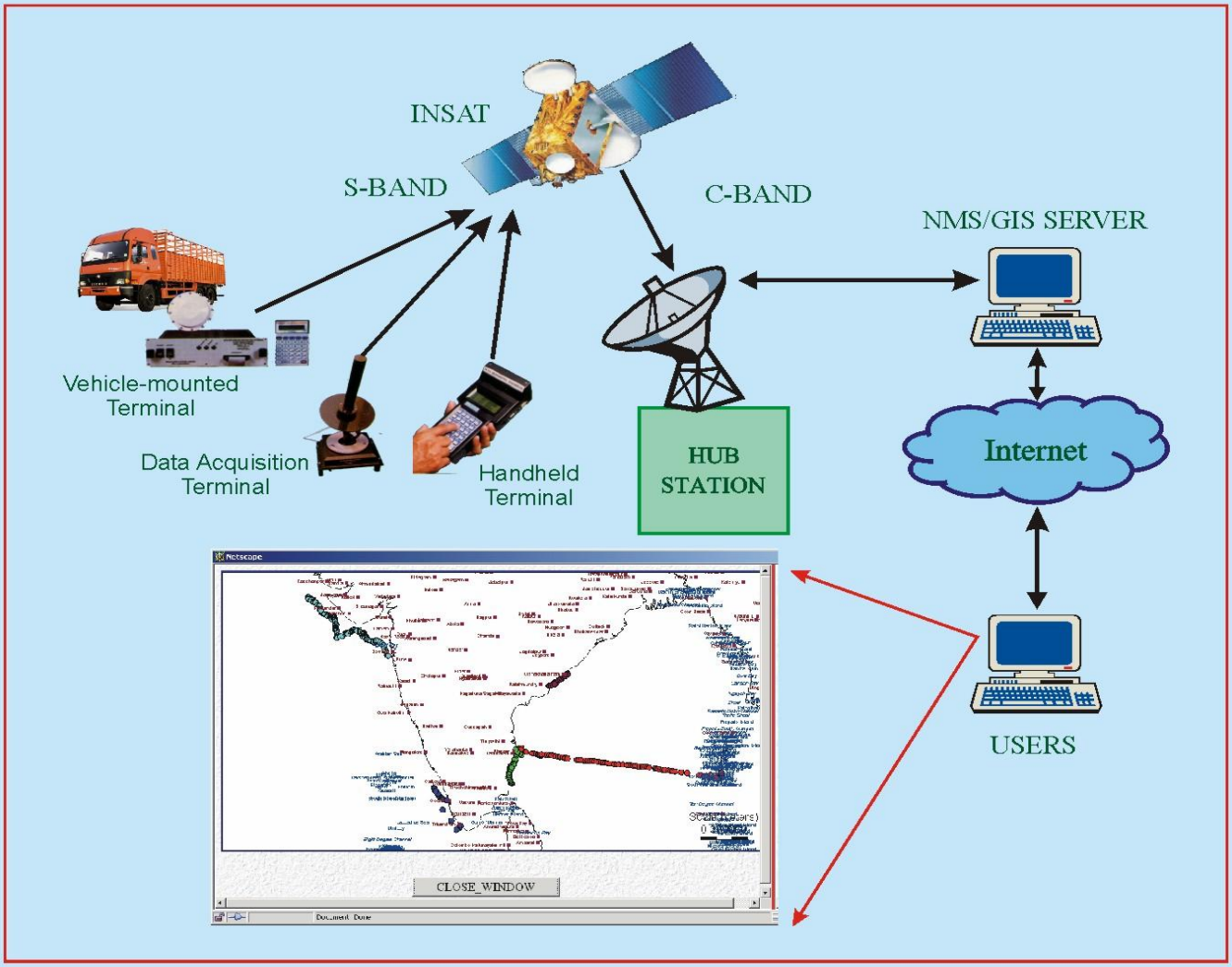
APPLICATIONS

- Fleet monitoring
- Remote data acquisition
- SOS messaging
- As a request or acknowledgement channel for on-demand services.

NETWORK

Group of reporting terminals time-share a common satellite channel to send their data to a hub station. At the hub, a Network Management System (NMS) transfers the data automatically to the desired destination through internet. Alternately, messages can be delivered through independent dedicated networks. Security of messages is maintained at the hub.

This is low bit-rate, thin-traffic messaging system. About 45,000 terminals can be accommodated in the available spectrum of 1MHz in each INSAT MSS transponder.

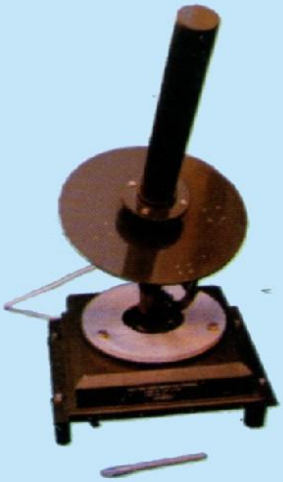


TERMINALS

Reporting Terminals have built-in GPS receivers. Both position and timing of GPS receivers are used for transmission. Three variants of the Reporting Terminals have been developed - Handheld Terminals, Vehicle-mounted Terminals and Data Acquisition Terminals.

HANDHELD TERMINAL

- For emergency, SOS messaging
- Simple edit facility
- Built-in rechargeable battery
- Light weight, easy to carry



DATA ACQUISITION TERMINAL

- Suitable for remote data transmission
- Accepts pre-edited data through external port
- Automatic transmission enabling unattended operation
- Option for manual editing by external PC
- Also useful as acknowledgement or request channel for on-demand services.

VEHICLE-MOUNTED TERMINAL

- For transport fleet monitoring
- Automatic transmission of vehicle location at predefined intervals.
- Uses vehicle battery
- Optional key-board cum display attachment for sending messages

HUB

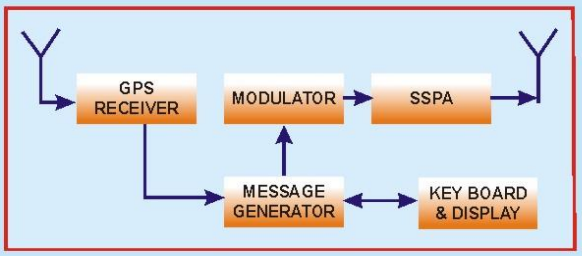
Reporting System hub consists of an earth station capable of receiving multiple reporting carriers from satellite and an NMS to route the messages/data to the desired destination. Based on user requirement, hub could be configured for delivery of data though LAN or through Internet.

SERVICES

TRAI has recommended that the INSAT MSS Reporting Service may be treated as a new service, which is different from cellular mobile service, radio paging service, VSAT service and also GMPCS service. License for operating the MSS Reporting Service is issued by DOT.

REPORTING TERMINAL

Information Rate	:	300 BPS
Message Length	:	Upto 40 characters (extendable with external s/w)
Error correction	:	Rate ½ FEC and 16-bit CRC
Message Transmission	:	For handheld terminal : 3 times randomized transmission in 46 s For vehicle-mounted and data acquisition terminals : TDMA with selectable frame time
Modulation	:	BPSK
Transmission Frequency	:	2677.56 - 2678.56 MHz or 2688.56 - 2689.56 MHz
L.O. Stability	:	±1 ppm
Channel Spacing	:	10 KHz
Transmit EIRP	:	For vehicle-mounted and handheld terminals 8 dBW min. over ± 45^0 off axis For data acquisition terminal : 8 dBW min. over ± 15^0 off axis
GPS Receiver	:	Built - in
External Port	:	RS-232C
Power	:	12 V DC
Weight	:	650 g for handheld terminal
Size	:	20 x 9 x 4.5 cm for handheld terminal
Operating Temperature	:	-10 to +60^0 C



HUB STATION

EARTH STATION

Receive G/T	:	>25 dB/K
Receive Band	:	3680 - 3700 MHz

AFC

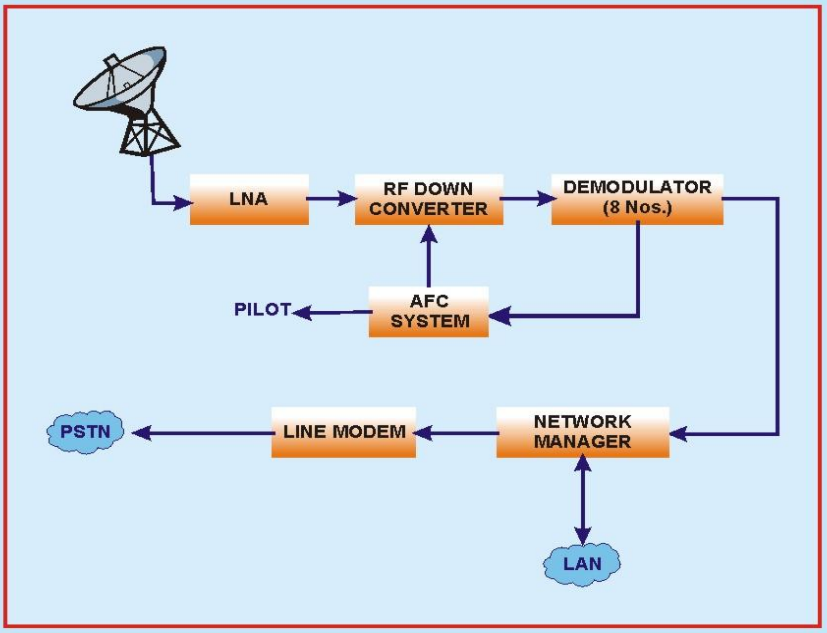
Pilot Transmission	:	2670.04 MHz
Stability	:	<± 100 Hz
Pilot EIRP	:	20 dBW
AFC Range	:	± 45 KHz

MESSAGE DECODER

Demodulation	:	BPSK
IF Frequency	:	Tunable
Error Correction	:	Viterbi decoding
Tracking Range	:	± 5 KHz
Packet Error Probability	:	0.01

NETWORK MANAGER

Message Delivery	:	E-mail, FTP



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Sh. K S Parikh, Deputy Director presiding over the event.


प्रौद्योगिकी अंतरण करार
हस्ताक्षर समारोह
TECHNOLOGY TRANSFER
AGREEMENT SIGNING CEREMONY
अंतरिक्ष उपयोग केंद्र (इसरो)
अहमदाबाद
SPACE APPLICATIONS CENTRE (ISRO)


EXIT
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GROUP PHOTO