Technical Specifications

Network Architecture
- DAMA, FTDMA, full mesh, single hop
- Up to 8,000 remote stations
- Up to 330,000 calls per hour
- Ku, extended Ku, and extended C band
- QPSK

Forward Error Correction
- For BER = 10^-6: 3/4, 1/2
- For BER = 10^-4: 1/2

BER Performance
- FEC: 3/4
- For BER = 10^-6: 70 MHz ± 18 dB
- For BER = 10^-4: 6.0 dB

Data Interface
- RS-232 / RS-530 sync and async internally, and Ethernet (RJ-45), V.35, G.703, RS-422 externally

Telephony Interface
- FXS and Fxo
- 4 wire E&M types I-V
- 4 wire E&M types I-V
- E1 / T1

Payphone Support
- 12 / 16 KHz metering pulses, or reverse polarity

Signaling Standards
- SS7
- R2, R1
- China #1 (option)
- DTMF: / Duadic (pulse)
- Other standards are available upon request

Voice
- Voice Encoding
  - ITU G.728, 16 kbps LD-CELP
  - ITU G.729A, 8 kbps
- Echo Cancelling
  - ITU G.165

Facsimile
- Group 3, up to 9.6 kbps over voice ports

Data
- In-Band Data
  - V.32 voice-band data up to 9.6 kbps over voice ports
  - On demand data up to 128 kbps internally, and up to 5 Mbps, with a fully integrated high rate modem
- Data Rates
  - V.25 bis
  - AT Command

Network Control Center (NCC)
- NMS: Redundant Windows NT Workstation with GUI as a server, supporting multiple NMS clients
- Fully automatic redundant DA MA controller
- Fully automatic redundant modules

Remote Terminal

Outdoor Unit (ODU)
- Antenna Size: 1.2m and larger
- Operating Temperature: 40° to 49°C
- Weatherproof

Indoor Unit (IDU)
- Number of Ports: 1 to 16 per chassis, are stackable
- Operating Voltage: A.C.: 120 / 220V, 50 / 60Hz
- D.C.: 48V to 60V (up to 72V optional)
- Power Consumption: 26 to 65W per chassis, (depending of number of ports)
- Dimensions: 17.7 cm (h) x 43.7 cm (w) x 42.7 cm (d)
- Weight: 8.5kg
- Humidity: Up to 95%, non condensing
- Typical Site Power Consumption: 140W for 16 channels (1/2 E1) site including the IDU & ODU (typically 70W implementing sleep mode)

Local Offices:
- South Africa: (27) 11 542 3649
- Canada: (604) 242 3849
- France: +33 1 58 22 56 30
- Germany: +49 7142 1951
- Indonesia: +62 21 4061-3000
- Japan: +81 3 5258 3650
- Spain: +34 91 607 6476
- United States: +1 202 283 0000
- United Kingdom: +44 845 767 8876
- Other: +91 11 465 1566

The FaraWay™ is a communications network that provides on-demand voice, fax and data services to remote locations via satellite. It employs a full-mesh, DA MA network architecture that maximizes the use of available space and ground-based resources. FaraWay V SAT offers a cost-effective solution for areas where telephone and data services are unavailable, unreliable or too expensive. By utilizing the unique FT DMA access scheme, FaraWay offers the most effective space segment utilization. FaraWay V SAT satisfies the exacting standards of PST N and private network operators for voice encoding, high-rate data links, signaling, call accounting and maintenance.
Corporate/ Government Network

- Enabling corporations/ governments offices to expand their reach to remote areas
- Combined voice, fax and data services on one single platform
- Data networking: e-mail, Internet/intranet, ERP, video conferencing
- Transportable/ mobile communications: armed forces, disaster recovery, oil rigs
- Tailored applications: air traffic control, oil & gas, military communications

Satellite Telephony

- Full mesh DAMA telephony services
- Multiple channels per site
- PSTN interface, supporting the most advanced telephony signaling standards (SS#7, M FC-R2)
- Backbone for rural switches (E1 trunking)
- Public call offices
- Backbone for WLL/ cellular base stations

Features

**Full Mesh**
A full mesh network architecture enables single hop VSAT-to-VSAT voice and data calls, minimizing delay and allowing for routing calls through the optimal PSTN gateway in a multiple gateway environment.

**Demand Assigned Multiple Access (DAMA)**
DAMA voice and data circuits are assigned to users ensuring efficient use of satellite resources according to actual user needs.

**High-Speed Data Links on Demand**
High-speed data links can be established in a star or full mesh configuration on a permanent basis or on demand, using the V.25bis or AT Command data dialing protocols. Data links can be synchronous or asynchronous, at any rate up to 128 kbps with the FaraWay IDU utilizing the same space segment for voice and data circuits, or up to 5 M bps with the integrated High Rate Modem.

**Toll-quality Voice & ITU Standard Implementation**
FaraWay employs toll-quality voice compression at rates of 16 or 8 kbps, in compliance with ITU recommendations G.728 and G.729A, respectively, and is also in compliance with echo cancellation ITU recommendation G.165.

**Single Modem/ Single Carrier Operation**
The FaraWay unique FTDMA access scheme supports up to 16 voice or data channels over a single modem, a configuration typical of multi-route applications. A single modem transmits a single carrier so no costly RF back-off is required, and a low-power ODU can be used, which results in additional cost savings, reliability, power consumption savings and simplicity.

**Group 3 Fax & Voice Band Data**
Voice ports support Group III fax and V.32 voice band data with no add-ons or modification required.

**Encryption**
An advanced encryption algorithm over all voice, fax and data channels provides full security for network users. The encryption is based on a AES (A advanced Encryption Standard) recommendations, with a 128 bit encryption key size.

**PSTN Interfaces & Signaling Support**
Implementing the most advanced international signaling standards, including SS#7 and R2 as well as tailored signaling solutions ensures connectivity to almost any existing PSTN equipment, eliminating degradation caused by external adapters.

Efficient Space Segment Utilization
By utilizing the unique M CPC FT DMA access scheme and its ITU approved compression rates of 8 and 16 kbps, FaraWay offers the best space segment utilization, using 17 kH z of bandwidth for a full duplex voice channel (compared to a typical 30-45 kHz in SCPC systems) enabling the network operator to conduct almost twice the traffic over the same space segment.

Voice Activity Detection (VAD)
A VAD mechanism shutting down transmission from the remote when no speech is detected, accounts for 40% or more power savings over the satellite.

Easy Expansion
The network can start small and hubless, and, as requirements grow, a hub and thousands of additional remote sites can be added. Similarly, a site can start with only 2 channels of voice or data and then grow to up to 16 channels without any costly RF or power changes.

A Selective NMS
The redundant NMS is a powerful NT workstation accommodating an object oriented Graphic User Interface (GUI), designed to provide a user-friendly, simple control of all network components, which also includes an SNMP agent for integration with other management systems. Client-server architecture allows multiple NMS clients to be operated by multiple users with different levels of authorization. Call Data Records (CDR’s) are automatically collected in a simple ASCII format capable of being read by any off-the-shelf billing software.

Architecture

The FaraWay provides a full mesh DAMA network architecture based on multi-carrier TDMA, combining the benefits of FDM A and TDMA. Each remote station transmits a single carrier with several channels (up to 16), enabling multi-channel operation without costly ODU back-off. The network consists of a Network Control Center (NCC) and numerous remote terminals. The NCC acts as an exchange for the user equipment connected to the network and performs switching functions based on an unrestricted numbering plan. The NCC also operates the network automatically, carrying out control and monitoring functions, provides network usage reports, traffic statistics and billing data, and manages the satellite space segment. The remote station equipment includes an antenna, an Outdoor Unit (ODU) and an Indoor Unit (IDU). The ODU includes an SSPA, LNA, and up and down converters between the C, Ex-C, Ku or Ex-Ku band RF and the required IF frequency. The IDU includes a controller, a satellite modem and user interface cards, and can also include a High Bit Rate modem for very high bit rate applications.

Efficient use of satellite resources according to actual user needs. DAMA voice and data circuits are assigned to users ensuring efficient use of satellite resources according to actual user needs. High-speed data links can be established in a star or full mesh configuration on a permanent basis or on demand, using the V.25bis or AT Command data dialing protocols. Data links can be synchronous or asynchronous, at any rate up to 128 kbps with the FaraWay IDU utilizing the same space segment for voice and data circuits, or up to 5 M bps with the integrated High Rate Modem.

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- On demand data up to 128 kbps internally, and up to 5 Mbps, with a fully integrated high rate modem

**Data Dialing Protocols**
- V.25bis

**Remote Terminal**
- **Outdoor Unit (ODU)**
  - Antenna Size: 1.2m and larger
  - Operating Temperature: -40°C to +60°C
  - Weatherproof

- **Indoor Unit (IDU)**
  - Number of Ports: 1 to 16 per chassis, are stackable
  - Operating Voltage: 120 / 220V; 50 / 60Hz
  - DC: -48V to -60V (up to -72V optional)
  - Power Consumption: 26 to 65W per chassis, (depending of number of ports)
  - Dimensions: 7.7 cm (h) x 43.7 cm (w) x 42.7 cm (d)
  - Weight: 8.5kg
  - Operating Temperature: 0 to 40°C
  - Humidity: Up to 95%, non condensing

**Typical Site Power Consumption:**
- 140W for 16 channels (1/2 E1) site including the IDU & ODU (typically 70W implementing sleep mode)

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- Fully A tomatic redundant DA MA -controller
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FaraWay™

Satellite-Based Voice and Data Networking

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