

Alcatel 9400 UX

Microwave Short-Haul Low/Medium Capacity

7-8-13-15-18-23-25-38 GHz



The short-haul microwave systems of the Alcatel 9400 UX Microwave family feature:

- A complete homogeneous family from 7 to 38 GHz
- All traffic capacities from 2x2 to 16x2/34 Mbit/s
- Enhanced transmission performance with 16 QAM or 4 QAM high spectrum efficiency modem, forward error correction and adaptive equalization
- Compliance to the relevant ITU and ETSI standards
- Very compact Indoor and Outdoor units
- Integration in Base Stations (GSM,UMTS,LMDS)
- Integrated antenna
- Single coax interconnection
- Frequency agility
- Capacity agility options up to 16x2 Mbit/s
- Built-in service channels
- 2 Mbit/s wayside traffic (at 34 Mbit/s)
- Link identity code
- Multilevel loopback and test facilities
- User-friendly Windows™ based PC interface
- Integrated network management (TMN)
- SNMP Agent with TCP/IP re-routing capacity
- Software download capacity



ARCHITECTS OF AN INTERNET WORLD

APPLICATIONS

The Alcatel 9400 UX Microwave is a family of digital point-to-point radio systems designed to satisfy the numerous digital transmission needs of public and private networks for multiple applications. The short-haul microwave systems of the Alcatel 9400 UX Microwave family offer homogeneous technical solutions from 7 to 38 GHz thereby ensuring maximum radio performances in each frequency band.

The 7,8,13,15,18,23,25 and 38 GHz bands are internationally normalized frequency bands for the transmission of low and medium capacities. The short-haul microwave systems are particularly recommended for the interconnection of cellular networks base stations and base station controllers, they can also be used for the roll-out of public and private networks, in urban or suburban zones:

- cellular mobile networks and microcellular networks
- cellular LMDS
- regional and local traffic for telephone transmission and data
- private data networks (WANs, LANs) and digital terminals connections (PABX, videoconference etc...)
- Utility networks (pipelines, electricity, railways, etc..)

CAPACITY

The short-haul microwave system features embedded multiplexing and transmission functions for the following capacities: 2x2, 4x2, 8x2, 16x2 and 34+2 Mbit/s.

STANDARDS

The Alcatel 9400 UX Microwave family is compliant to ITU-R, ITU-T, ETSI standards, including EMC and safety standards.

TECHNICAL HIGHLIGHTS

- Excellent spectrum efficiency is achieved, using 16 QAM (for 7/8-13-23-25 GHz frequency bands) or 4 QAM modulation digital filtering;
- The modem features Forward Error Correcting (FEC) and equalizer for even better radio performance (ATM networks);
- The digital frame incorporates a link identity code to prevent from the capture of an unwanted signal;
- Frequency agile front-ends provide coverage of a complete frequency band with only four different outdoor units (only one for the 7/8 GHz band);
- Different software packages make the system capacity-agile, up to a maximum (defined as an option). This maximum can be as high as 16x2 Mbit/s with the same unit. This feature permits an optimization of the used spectrum and easy upgrade;
- 13/23/25/38 GHz frequency bands systems feature static power control with accurate settings;
- The system features near-end and remote-end loopback facilities as well as an embedded tributary cross-connect matrix for test or network reconfiguration purposes;
- 1+1 configuration use embedded automatic errorless receiver switching to protect the most critical transmission paths;

- Integrated 2 Mbit/s wayside traffic is also available (at 34 Mbit/s);
- the system incorporates built-in test functions such as a pseudo random bit sequence generator able to insert a standard test signal for bit error rate measurements.

COMPACT DESIGN

The short-haul microwave system consists of two main parts:

- an Outdoor Unit (ODU),
- an Indoor Unit (IDU).

Between the two main units, the system uses a single standard coaxial cable carrying the main traffic, the remote supply voltage and auxiliary information over long runs. The ODU was designed for operation in harsh climatic conditions. The ODU gives the received signal level and a connection to the service channel of the link by means of a service kit enabling quick installation.

The ODU can be used with:

- integrated antenna (13 GHz and above) up to 600 mm diameter. The ODU is fixed by means of quick latches. A specific pole mounting, provided with an accurate antenna alignment system, permits easy installation. It features compact light-weight design.
- separate antenna

The IDU is very compact (1U height) and can be adapted for a large configuration range:

- the light IDU optimized to fit mobile applications (up to 4x2 Mbit/s, 1+0).

The IDU can be installed in standard 19" racks or integrated in base station.

- The classic IDU able to provide all possible features (up to 16x2Mbit/s, 1+0, 1+1 HSB or Space diversity)

A FULL RANGE OF OPTIONS

- software determines maximum system capacity, defining the capacity agility range;
- ODUs can house an integrated RF loop allowing standalone tests of a terminal (13 GHz and above);
- The short-haul microwave systems can incorporate as many as five 64 kbit/s auxiliary channels with a wide range of voice and data options;
- Multiplex & switching elements can be protected on request in 1+1 configurations.

EASY INSTALLATION, SET-UP & OPERATION

Thanks to its mechanical design, built-in test functions and user-friendly PC interface (Windows™ environment), the short-haul microwave systems allow fast and affordable installation as well as quick set-up and easy operation.



SIMPLIFIED MAINTENANCE

The Alcatel 9400 UX Microwave family achieves maximum commonality across frequencies and capacities, hence greatly reducing the sets of spare part and training requirements.

The high reliability is obtained through the use of advanced technologies, highly qualified components and severe test procedures in factory. High MTBF limits the maintenance to routine visits.

NETWORK MANAGEMENT

The Alcatel 9400 UX Microwave family features a leading concept of network management, using either SNMP Agent over TCP/IP or an Alcatel proprietary protocol. The Alcatel 9400 UX/SNMP Network Element provides SNMP interfaces and integrates an SNMP Agent in order to be managed by an external Network Management System (NMS).

By SNMP the NE can be placed in a multi-vendor environment and managed by both Alcatel 1300 equipment and others NMS provider. The SNMP protocol brings also a valuable facility to re-route automatically the TMN messages over all the operational TCP/IP interfaces of the equipment.

Whatever the size of the network is, appropriated solutions can be carried out in an evolution path:

- Standalone solution using integrated management, with reporting of alarms and controls, configuration management and quality information to a master terminal (which monitors simple networks using the Alcatel 9400 UX Microwave family). This user-friendly management requires only a PC in a Windows™ environment.
- Alcatel TMN using a workstation with other available protocol based on QB3* interface.



SERVICES

Fulfilling any customer requirement, supporting operators is a key issue for Alcatel. Therefore, a full range of services are proposed such as:

- Hot line
- On line: repair and return express, swap and repair, spare parts, software update, ...
- On site: on site intervention, on site urgent intervention, technical assistance, ...
- Advanced services: network design, contract management, software upgrade, ...
- Training: on factory or on site
- Bundle of services: services during warranty period, warranty extension, ...

