The cable headend installed by Rohde & Schwarz in Vaduz for the Liechtensteinische Kabelgesellschaft is now supplying the whole country with sound and TV programs. Since reception is extremely difficult due to the geographics of Liechtenstein, several receiving stations had to be set up integrating the control system into the main station. More than 50 analog TV programs, three digital TV packages, 31 VHF FM programs, a country-specific channel for the transmission of parliament sittings using a fixed camera, and a local service channel for district council sittings are fed into the network.

The cable headend is equipped with components of CATV Headend System CT200*. Thanks to the modular design of this system, the complete equipment can be accommodated in only eight 19" racks (FIG 1) and there is still enough room left for extensions. Every rack is controlled and monitored by a separate controller. Different active and passive combiners allow various module combinations.

Troublefree operation of the CATV network is indispensable – not only because of the competition from other satellite operators – and so the reliability of the CT200 system has been given top priority. CT200 is the only system worldwide which monitors the module under test in every detail. Each module has a microprocessor allowing module-to-controller communication via a system-internal bus. The microprocessor not only carries out controlling, it also provides test data and thus makes elaborate test routines for certain applications unnecessary. In practice, this means that all the changes are registered and that response times are extremely short.

The continuous monitoring of certain tolerance ranges means that a kind of permanent check-up is made. System-relevant parameters (e.g. level, frequency drift) can be defined as default values by the user; the processor of the device responds with a corresponding message. All the drifts are logged over a certain period of time and, if a more accurate analysis is required, can be displayed and printed out any time. All parameters are logged continuously.

Operational reliability is complemented by a n+1 standby system which is currently the fastest, most effective and attractively priced switchover system worldwide. The controller decides about switchover in a couple of seconds without any measurements being required. Switchover is possible at different signal levels and depends on the requirements and philosophy of the cable network operator.

The interactive Windows user interface of the system software can be managed very easily by anyone especially as the complete system is displayed graphically. By clicking the graphic elements using the mouse the user can go deep down into the system and modify any setting or parameter whenever required. A password is of course required to access the system and all accesses are logged.

The main station of the cable headend system in Vaduz controls and monitors the two receiving stations Sücka and Gaflei that are difficult to access with cable modems via the broadband coaxial cable (FIG 2). The advantages of this solution are evident: high transmission rates, no point-to-point lines, low costs, permanent connection between the CPU in the main station and the external stations.

Special frequency-relevant measures were required because the receiving stations (as seen from the headend) are located one behind the other and the whole data transfer from Sücka has to
The use of surface-mounted devices (SMDs) in electronic circuits has increased rapidly in the past few years. In some areas, their proportion in the circuitry makes up over 90%.

While in production soldering methods used are aimed at high throughputs per unit time, the requirements for service are of a different nature. Devices have to be soldered and desoldered without affecting the highly sensitive board circuitry. When conventional soldering techniques are used, devices and boards are often damaged. Rohde & Schwarz Cologne has developed a soldering workstation particularly designed for servicing applications: Repair System SMD-RS11 (FIG). This system assists the user in complying with the standards required by quality management, for instance the stringent MIL standards. Thanks to the wealth of experience gathered during the in-house use of the system, it can be updated to match new requirements. The user can be assured that the described technique is an optimal system solution. To date, SMD-RS11 is being used successfully by renowned companies and authorities worldwide.

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