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Summaries

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Basis of Analogue Wideband Transmission with Optical Fibres

H. Berger, A. Dill, G. Guekos, H. Melchior, A. Sollberger, R. Welter, Zurich, and W. Steffen, Berne

The transmission of TV and Sound Programmes over optical fibres is becoming increasingly interesting thanks to technical progress. Besides digital transmission the analogue modulation technique is also used due to simplicity of the equipment. In the analogue modulation technique the signal is directly intensity modulated (AM-IM). Theoretical, experimental and completely constructed systems were tested to determine the distances over which analogue modulation of TV and sound signals can be transmitted at high quality. It is possible to transmit 4 TV and 6 FM sound channels simultaneously over one fibre (1 km) or 1 TV channel (4 km) due to linear transmit module, sensitive receiver and an almost perfect splicing technique. A video signal with a 40 dB signal-to-noise ratio and less than -67 dB distortion can be realized with a fibre attenuation of 3.5 dB/km. Care should be given to the selection of laser diodes of excellent quality in the current-light characteristics, to good stability and to good noise performance as well as to an optimal working point. The equally tested FM-IM system requires considerable higher expenditures on circuit as well as on the side of the receiver and transmitter as compared with the AM-IM system. The requirements on the laser diode are less severe and greater distances can be overcome.

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Digital Network Synchronization: Synchronous Operation (End)

P.-A. Probst and P. Vörös, Berne

Digital transmission systems and digital central offices allow to construct today a complete telecommunication network. The interconnection and circuit switching are being performed at 64 kbit/s. In order to faultlessly realize the two functions the corresponding clock pulses of the hierarchical multiplex stages of 2,048 kbit/s must bear a fixed phase relationship. This requirement can be met with very stable oscillators or through the introduction of the synchronous process. This article describes the characteristics and limitations of these

two possibilities, namely the plesiochronous and the synchronous operation. A preselected master-slave synchronous process is planned for the Swiss digital telecommunications network. This article concludes with a short description of the structure of the clock distribution network and the accompanying equipment.

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Field Measurements of TV Sound Channels in a Two-Carrier System

H. Gysel, Berne

A second sound carrier in the TV channel can be broadcast on the VHF (I and III TV bands) at 242 kHz higher than the first carrier. It is possible to broadcast up to 4 additional sound carriers in the spare spectrum for corresponding channels of the UHF (IV and V TV bands). As ZDF (Second German Television) started its second sound channel in 1981 a few thoughts ought to be given to the problems such procedures will bring forth on some of the Swiss transposer and CATV networks. This article describes the two field measurements of the transposer networks and examines the signal-to-noise ratio of the second sound channel.

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Efficient Use of Radio Relay Links for Distribution of CATV Programmes

M. Fiechter, J. Furrer, B. Nold, Berne, and P. Noesen, Zurich

For the distribution of community antenna TV and Radio programmes a radio

relay network with efficient multiple use of the radio channels at 2.5 GHz band has been put into operation. Each RF channel of a 1800 telephone channel system can transmit 2 TV or 14 radio programmes. Special equipment was designed and built to this purpose. 14 TV and 14 radio programmes for CATV can be nationally distributed over the PTT radio relay links. Measurements at the first operational transmit links show that the quality of the signals meets the specifications. They correspond to a quality of good to excellent for the pictures i.e. to 4.5 of the CCIR subjective assessment five-grade scale. The quality shall not fall below this value for 98 pc of the propagation time at the CATV receiving terminal during the worst month.

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Universal Time Clock Generator NZG 731 for the National Telephone Network

P. Beiner and M. Schild, Solothurn, W. Baumann and R. Lüscher, Berne

A universal time clock generator NZG 731 has been introduced into the national telephone network replacing the different units used so far in the junction and the national transit exchanges. This will specially allow flexibility in the allocation of different rates for different tariff zones. It can also take better account of the operational requirements. This article describes the concept, operating principle and modification in operation.

News Items

Telephone

Satellite circuits via Leuk earth station increased last year by 134 to 542 operating with 23 extra-European countries. Further 138 fixed satellite circuits at foreign European earth stations are at the Swiss PTT's disposal.

At the end of 1981 there were 459 (1980: 449) **subscriber lines** and 751 (1980: 730) **telephone stations** per 1,000 inhabitants in Switzerland.

Teleinformatics

The **telex service** has been available to 353 subscribers in 1981, 233 more than a year ago.

Telex terminal rose from 486 to 514 per 100,000 inhabitants at the end of last year.

Radio, Television

Licenses for radio broadcast receivers rose from 354 to 360 per 1,000 inhabitants at the end of 1981.

Licenses for TV receivers rose from 311 to 316 per 1,000 inhabitants at the end of 1981.

Miscellaneous

Last year the Swiss PTT ordered **telecommunications equipment** worth around 1,246 million francs, which is 183 million francs more than in the previous year.