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## Summaries

### 12tube Coaxial Cable for 60 MHz High Capacity Systems

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#### Requirements, Economy, Flexibility

R. Trachsel, Berne

There is a need for a new large capacity coaxial cable to be introduced into the main arteries of the Swiss telecommunication network. The new cable must be able to meet the requirements of both analog and future digital systems. At first, mainly 60 MHz FDM systems will be used, which will be replaced by digital systems later. Changeover from analog to digital shall be by simply changing repeaters. CCITT recommendations will be met as far as possible. The first links using the new cable are already under construction. They are sections of an interconnecting network which will span Switzerland in an east-west and north-south direction.

p. 9...16

### Transmission Characteristics of High Capacity Systems on 2.6/9.5 mm Coaxial Cables

H. K. Pfyffer, Berne

After summarizing the main electrical characteristics of cables, the author discusses transmission aspects of high capacity systems. With analog systems, noise is the chief design consideration; with digital systems it is the error rate. In both cases a so-called capacity factor is defined which combines the system requirements to be met by repeaters and regenerators and serves to show the effect of variation of different parameters. In addition, aspects such as crosstalk, equalization and jitter are touched on.

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### Line Equipment on 2.6/9.5 mm Coaxial Cables

J.-F. Bütikofer, Berne

This article, after considering general system philosophy for 60 MHz, 10,800-channel plant, describes the equipment selected by Swiss PTT. Regulation, equalization and fault location are dealt with in detail.

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### Multiplexing Schemes for Carrier Systems

J.-F. Bütikofer, Berne

After a review of the internationally valid frequency multiplexing schemes extending from the telephone channel up to the 60 MHz cable system for 10,800 channels, Swiss PTT's supermastergroup translators as well as the associated through-connection and branching equipment are described.

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### New 12tube 2.6/9.5 mm Coaxial Cable for High Capacity Transmission Systems

E. Hadorn, Berne and P.-H. Fellrath, Cor-tailod

The new 12tube coaxial cable is of conventional design, based on the 2.6/9.5 mm coaxial tube standardized in 1950. Nonetheless, the new cable make-up and above all the opening up of new frequency bands – up to 60 MHz for analog systems and 500 MHz for digital systems – necessitated basic re-examination and improvement of all manufacturing stages.

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### Splicing of the New 12tube 2.6/9.5 mm Coaxial Cable

W. Fink, Berne

The splicing method adapted to the new 12tube coaxial cable is described. Details of the electrical and mechanical characteristics of joints are given and compared with those previously obtained.

## News Items

### Telephone

Switzerland connected its **four millionth telephone** in mid-November. With a telephone density of 625 for 1000 population, it ranks third behind the USA and Sweden. There are at present 16 telephones for every 10 main stations.

**Geneva/Monthoux international exchange** was opened on 5 November with two groups of outgoing circuits to Lyon and Paris. A further ten groups were put into operation up to the end of December.

Swiss PTT and the Tunisian telecomms administration have acquired the joint

right of user of 24 circuits in the **Perpignan-Bizerta submarine cable**.

In the new **MARPAL submarine cable** between **Marseilles** and **Palo** near Rome, which accommodates 2280 4kHz-channels, Swiss PTT has acquired the right of user of 84 circuits.

Switzerland's five **satellite circuits to Mexico** were transferred from Plemeur-Bodou to **Leuk earth station** on 24 November. Mexico is the eighth country available over direct, permanent links from Leuk.

Telephone service with **Irak** has been available over **SPADE** from **Leuk** earth station since mid-November. Switzerland now operates SPADE links to nine countries.

### Telegraph, Telex

**Automatic telex service to Taiwan and Thailand** was opened on 1 November.

Switzerland's **1976/77 telex directory** was published in mid-November. In the 323-page alphabetical section there are some 24,500 entries, an increase of 15 % on the 1975 edition.

### Miscellaneous

The fourth round of talks on the **revision of the PTT agreement signed by Switzerland and the Principality of Liechtenstein in 1920** was held at Bern on 17 and 18 November. The draft agreement under discussion provides for the PTT to continue operating the postal and telecommunication services, but grants Liechtenstein its own P + T monopoly. It also recognizes the Principality's claim to a radio and television monopoly, stipulating however that advertising shall be subject to the same provisions as in Switzerland. Remuneration for Switzerland's services will be discussed in early 1977.

On 16 November the **Swiss Transport and Communications Museum** in Lucerne opened its redesigned and reequipped **Telecommunications hall**, which is part of the PTT permanent exhibition.

**Swiss Expo '76**, the largest Swiss industries fair ever held in an Arab country, took place at **Cairo** from 23 November to 3 December. The programme included a **Telecommunications Day** (24 November), arranged by the PTT, Radio-Suisse Ltd, and the telecommunication industry for a special presentation of their products and services.