VHF and HF Radio Networks

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Communication Standards

General

According to your request, we will hand over to you our standards for h.f. and v.h.f. radio networks.
The standards are prepared in such a way to give the necessary information in order to project and to realize several kinds of radio communication networks established with RFT h.f. or v.h.f. radio equipment supplied by Elektrotechnik Export-Import, GDR.

Due to our experiences gai-ned throughout years, we have been able to prepare standards serving the purpose of realizing radio networks and radio systems required by the customer,in a high quality.
Qur standards shall be used for country-wide radio network projects. v.h.f. radio networks for towns or rural areas are coordinated by 0.7m u.h.f. radio links or h.f. radio stations to big country-wide radio systems.
In addition to the v.h.f. or h.f. links, you will be able to have the phone patch connection to C.B. telephone systems together with the v.h.f. radio equipment , and to L.B. and C.B. telephone systems with the h.f. radio stations, if necessary.

VHF radio stations and networks

For realizing the v.h.f. radio networks shown in our v.h.f. radio standards, we are using our equipment system U 700. The walky-talky UFT 721 with an output power of 2 W, reducible to 0.5 W, for the 2m band, and the UFT 771 for the use in the 0.7m band, are part of this equipment system.

The mobile stations are equipped with the transceivers UFS 721 with an output power of 10 W, and UFS 723 with an output power of 20 W.
In special cases the UFS 721 is combined with the unit UPZ 720, a 40 W power amplifier.

Fixed stations can be equipped with the transceivers UFS 721, UFS 723 and the special stationary equipment UGZ/UZZ with different output powers and network functions.
All v.h.f. units are transceivers, duplex operation is also possible, if necessary.

A large number of different control units will provide all facilities necessary for operation.
Antennas and the other materials necessary for assembly and installation have been selected in the right manner for all v.h.f. radio stations mentioned, too.

The fixed stations are equipped with lightning protected antennas. In the drawings of the v.h.f. standards you will find the most-used v.h.f. radio network systems.
The number of substations belonging to one central station or to one relay station (repeater) should not be increased to more than 60.
By means of the mentioned 0.7 m link stations, u.h.f. networks along roads or railway lines can also be realized.
In fig.3 a complete portable network is shown with a portable repeater assembled on a rover or other rigid cars. This kind of network system, for example, linked by an h.f. and a 0.7m u.h.f. radio unit, will mostly be used for frontier protection (military use) in rural areas and in case of disasters.
Fig. 5 represents a proposal for an extensive police v.h.f. radio network. Three different services, for instance, detective forces (crime), traffic and paramilitary police, are connected to one headquarters.

The headquarters itself has also a certain number of stations directly connected, available.

All the network proposals shown are basic systems. Extensions according to the ideas or projects of the customer are always possible.

HF radio stations and networks

The proposals for h.f. radio network systems have been developed in order to establish communication within two different levels realized by means of two different modes of operation.
Between a central base station and base stations the most important type of communication should be r. t. ty (F1 and A7J) by using electronic noiseless teleprinters. For this kind of operation, the new RFT standard teleprinter F1100 (F 1200 r.t.ty receiver only) equipped with latin letters and several keyboard standards, will be available. All other types of teleprinters prepared for radio operation can also be connected to our system of h.f. transceivers.

The base stations are ready to operate in two services, that means, with two radio units to the central base station and to one of its substations at the same time. Due to the proposals concerning mobile, portable and fixed h.f. radio stations, you will have a large number of possibilities to prepare and to establish many types of h.f. network systems.
In our standards, we are using the 15W transceiver SEG 15 D and the 100W transceiver SEG 100 D. Both transceivers are designed for several modes of operation. Generally, the frequencies can be selected by means of a synthesizer in 1kHz steps. On special order, four channel operation will also be possible.
This four channel version can firmly be programmed with four frequencies out of the range 1.6 ... 11.999 MHz. The additional decadic frequency setting can be blocked or not according to your order.

For independent service of two radio units operating at the same time and at the same place, you have to provide the mentioned space required for the antenna arrangement of appr. 100m x 50m. The position and the exact dimensions of the two antennas you will find in the drawings for the central base station and the base station.
Between the two transceiver frequencies used, a frequency shift of equal or more than 50 kHz is necessary and important.

As appendix to the h.f. standards you will find a network proposal showing how to use the standards for developing a small h.f. radio network. All the base stations are operating on different frequencies with their own substations and, using the same frequency, with the central base station. The central base station is equipped for direct communication with the base stations and the substations or through the base stations. Besides this communication, the central base station has some own substations for operative use, additionally.

The h.f. antennas proposed and in this standards also used, are lightning protected and selected for operation between 0 ... 3000 km.
For establishing h.f. radio communication systems, you will have to select and to test the right and usable frequencies before. You have to pay attention to two different frequencies (day and night frequency). In some areas, a third frequency for the noon can become necessary and useful as well. The use of the right frequencies is more important for the quality of communication than the output power of the transceiver only.

In case any other principle of communication is wanted that is not referred to in our standards, we are always ready to advise and to assist you to find economical solutions for high quality radio communication.