REPORT 626-1

SIMPLIFICATION OF SYNCHRONIZING SIGNALS IN TELEVISION

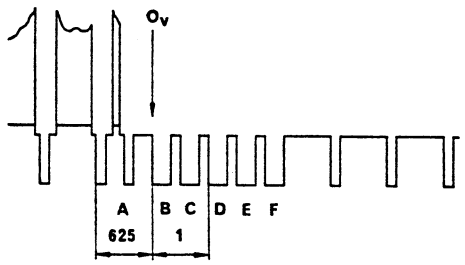
(Question 1/11, Study Programme 1E/11)

(1974-1978)

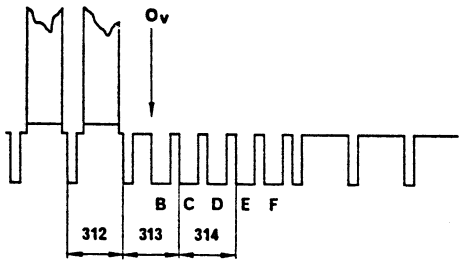
Proposals have been made that the television synchronizing signal should be simplified firstly by reducing the number of equalizing pulses [CCIR, 1963-66; 1966-69; 1970-74a, b and c; Recommendation 472, note (5)] and secondly reducing the number of broad pulses [CCIR, 1970-74a and b]. Study Programme 1E/11 requests investigation into the effect of reducing the number of equalizing pulses.

The simplification of the synchronizing signal leads to a simplification of synchronizing generators and also makes available more line-periods of the field-blanking interval for injecting test or measuring signals, standard reference frequencies [CCIR, 1970-74d], commercial information (e.g. facsimile transmissions), auxiliary audio signals for bilingual programmes, sub-titles for the deaf, remote control and supervision of unattended centres [CCIR, 1970-74b] or for the transmission of any other information.

Studies [CCIR, 1970-74d] have been made which indicate that, in the member countries of OIRT, the characteristics of the receivers are such that the "second" sequence of equalizing pulses may be completely eliminated without deterioration of the quality of line interlace and, furthermore, the number of equalizing pulses in the "first" sequence may be reduced to one of standard duration, according to Fig. 1. These results are confirmed by experiments [CCIR, 1970-74c] carried out in the USSR, not only upon receivers, but also upon monitors, radio-relay equipment, transmitters, video tape recorders and industrial television equipment. These experiments have also shown an improved performance with video tape recorders, receivers and other equipment containing flywheel circuits [CCIR, 1970-74c]. In the USSR, the use of a single pre-equalizing pulse and no post-equalizing pulses (Fig. 1) is permitted. However, the reduction in the number of broad pulses leads to impairment of interlace and other disadvantages, and thus has been proved unacceptable [CCIR, 1970-74c and d]. Following laboratory studies and experiments carried out in operational conditions by the OIRT [CCIR, 1974-78a], it was decided to continue to investigate the possibility of simplifying synchronizing signals.



First field



Second field

FIGURE 1

A : Single equalising pulse at the end of each second field

B, C, D, E, F : broad pulses

Note. – Experiments mentioned in [CCIR, 1970-74a and b] examined effect of deleting broad pulses F and E and replacing them by line sync. pulses where appropriate.

Laboratory experiments [CCIR, 1970-74b] and field trials conducted in Italy [CCIR, 1974-78b] seem to indicate that one pre-equalizing pulse and no post-equalizing pulses are satisfactory for domestic receivers, provided that the single pre-equalizing pulse, situated in the middle of line number 625 (Fig. 1) has a duration of about 2.8 μs. The same set of experiments included tests in which not only was the number of pre-equalizing pulses reduced to one and the post-equalizing pulses absent, but also the number of broad pulses was progressively reduced from five to two (see Note to Fig. 1). It was found that with this form of field-synchronizing waveform, the number of broad pulses could, in the foreseeable future, be reduced to three without appreciable increase in receiver instability.

Experiments carried out in the United Kingdom [CCIR, 1970-74a] on monochrome and colour receivers with a pre-equalizing pulse in the middle of line number 625, no post-equalizing pulses and only three broad pulses (Fig. 1 and Note), revealed that a small but significant number of receivers suffered impairment of interlace, probably due to the 2.5 μs duration of the single pre-equalizing pulse operating upon receivers having integrators with a time-constant less than 100 μs. The reduced number of broad pulses (three) also produced a tendency for the "vertical hold" controls of some receivers to require more critical adjustment.

REFERENCES

CCIR Documents

[1963-66]: XI/115 (United Kingdom).

[1966-69]: XI/55 (USSR).

[1970-74]: **a.** 11/266 (United Kingdom); **b.** 11/309 (Italy); **c.** 11/340 (USSR); **d.** 11/34 (OIRT).

[1974-78]: **a.** 11/53 (OIRT); **b.** 11/423 (Italy).

BIBLIOGRAPHY

CCIR Documents

[1970-74]: 11/84 and Corr.1 (OIRT).

REPORT 409-4

BOUNDARIES OF THE TELEVISION SERVICE AREA IN RURAL DISTRICTS HAVING A LOW POPULATION DENSITY

(1966-1970-1978-1982-1986)

Where television services are to be provided for a sparsely populated region, in which better receivers and antenna installations are likely to be employed than those considered in Recommendation 417, administrations may find it desirable to establish the appropriate median field strength for which protection against interference is planned as low as shown in Table I.

TABLE I

Band	I	III	IV	V
dB(μV/m)	+46	+49	+58	+64

These values refer to the field strength at a height of 10 m above ground level.