

RECOMMENDATION ITU-R F.396-1*

**Hypothetical reference circuit for trans-horizon radio-relay systems
for telephony using frequency-division multiplex**

(1963-1966)

The ITU Radiocommunication Assembly,

considering

- a) that trans-horizon radio-relay systems may form part of an international connection;
- b) that the characteristics of trans-horizon systems do not allow the application of existing hypothetical reference circuits for line-of-sight radio-relay systems;
- c) that trans-horizon systems are generally limited to 120 telephone channels not utilizing supergroup through-connection;
- d) that the specific characteristics of trans-horizon systems are usually individually optimized,

recommends

- 1 that a hypothetical reference circuit for trans-horizon radio-relay systems should be 2 500 km long;
- 2 that the hypothetical reference circuit for trans-horizon radio-relay systems should not be divided into homogeneous sections of fixed length because these systems, as distinct from line-of-sight systems, are usually composed of long radio sections, the length of which depends on local conditions and may vary considerably (e.g. between 100 and 400 km);
- 3 that, if a radio section under study is L km long, the hypothetical reference circuit should be composed of $2\,500/L$ sections of this type in tandem, the value $2\,500/L$ being taken to the nearest whole number;
- 4 that the hypothetical reference circuit should include:
 - 3 sets of channel modulators,
 - 6 sets of group modulators,
 - 6 sets of supergroup modulators,

for each direction of transmission, the term “set of modulators” being taken to comprise a modulator and a demodulator.

* Radiocommunication Study Group 9 made editorial amendments to this Recommendation in 2001 in accordance with Resolution ITU-R 44.