

RECOMMENDATION ITU-R F.404-2^{*,**}**Frequency deviation for analogue radio-relay systems
for telephony using frequency-division multiplex**

(1956-1959-1963-1966-1970)

The ITU Radiocommunication Assembly,

considering

- a) that frequency-division multiplex systems for telephony using frequency modulation may form part of an international circuit;
- b) that it may at times be desirable to make international connections between such systems at intermediate or radio frequencies;
- c) that, to economize in the use of the frequency spectrum, it is desirable to use the smallest satisfactory frequency deviation;
- d) that the use of pre-emphasis allows a more uniform distribution of signal-to-noise ratio in the various channels of a multi-channel telephony system,

recommends

that, as far as practicable, radio-relay systems for telephony using frequency-division multiplex forming part of an international circuit should conform to the following characteristics:

1 Frequency deviation without pre-emphasis

Maximum number of channels	r.m.s. deviation per channel ⁽¹⁾ (kHz)
12	35
24	35
60	50, 100, 200
120	50, 100, 200
300	200
600	200
960	200
1 260	140, 200
1 800	140
2 700	140

⁽¹⁾ For 1 mW, 800 Hz tone at a point of zero reference level.

* This Recommendation applies to line-of-sight and near line-of-sight radio-relay systems and, where appropriate, to trans-horizon radio-relay systems.

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

Larger capacity systems are not excluded.

NOTE 1 – It is recognized that it may sometimes be desirable to use other deviations by agreement between the administrations concerned. This applies in particular to trans-horizon radio-relay systems.

2 Frequency deviation with pre-emphasis

Where pre-emphasis is used, the pre-emphasis characteristic should preferably be such, that the effective (r.m.s.) deviation due to the multi-channel signal is the same with and without pre-emphasis.
