



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Q.312

**SPECIFICATIONS OF SIGNALLING SYSTEM R1
LINE SIGNALLING**

**2600 Hz LINE SIGNAL SENDER
(TRANSMITTER)**

ITU-T Recommendation Q.312

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation Q.312 was published in Fascicle VI.4 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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2.2 2600 Hz LINE SIGNAL SENDER ¹⁾ (TRANSMITTER)

2.2.1 Signal frequency

2600 ± 5 Hz.

2.2.2 Transmitted signal level of tone-on signals

- 8 ± 1 dBm0 for the duration of the signal or for a minimum of 300 ms (whichever is shorter) and for a maximum of 550 ms after which the level of the signal shall be reduced to - 20 ± 1 dBm0.

2.2.3 Transmitted signal durations

The transmitted signal durations are shown in Table 1/Q.311.

2.2.4 Signal frequency leak

The level of signal frequency leak power transmitted to the line should not exceed -70 dBm0, during the tone-off condition.

2.2.5 Extraneous frequency components

The total power of extraneous frequency components accompanying a tone signal should be at least 35 dB below the fundamental signal power.

2.2.6 Transmitting line split

The following splitting arrangements are required when transmitting line signals to prevent incorrect operation of the receiving equipment due to transients caused by the opening or closing of direct current circuits in the exchange at the transmitting end:

- a) when a tone-on signal is to be transmitted, the speech path from the exchange shall be split (disconnected), if not already split, within an interval from 20 ms before, to 5 ms ²⁾ after tone is applied to the line, and remain split for a minimum of 350 ms and a maximum of 750 ms;
- b) when a tone-off signal is to be transmitted, the speech path from the exchange shall be split (disconnected), if not already split, within an interval from 20 ms before to 5 ms after tone is removed from the line, and remain split for a minimum of 75 ms and a maximum of 160 ms after the tone is removed;
- c) when the signalling equipment is receiving and sending tones simultaneously the split shall be maintained until:
 - i) the transmitted tone is terminated, in which case the split must be removed in the interval from 75 to 160 ms after tone is removed [as in *b*)]; or
 - ii) the incoming tone ceases, in which case the split must be removed in the interval from 350 to 750 ms after tone ceases;
- d) when the signalling equipment is sending tone, a split shall be introduced, if not already split, within 250 ms of receipt of an incoming tone.

The above requirements given in *a*), *b*), *c*) and *d*) establish a transmitting path split at both ends of the circuit during the idle condition.

¹⁾ See also Recommendation Q.112.

²⁾ The 5 ms may be relaxed to 15 ms if tone is applied while tone is being received.