



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

**M.1040**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**MAINTENANCE:  
INTERNATIONAL LEASED CIRCUITS**

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**CHARACTERISTICS OF ORDINARY QUALITY  
INTERNATIONAL LEASED CIRCUITS**

**ITU-T Recommendation M.1040**

(Extract from the *Blue Book*)

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## NOTES

1 ITU-T Recommendation M.1040 was published in Fascicle IV.2 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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## Recommendation M.1040

### CHARACTERISTICS OF ORDINARY QUALITY INTERNATIONAL LEASED CIRCUITS<sup>1)</sup>

#### 1 Scope

This Recommendation details the characteristics of international leased circuits for telephony and other purposes that do not require the use of special quality leased circuits conforming to either Recommendation M.1020 or Recommendation M.1025.

#### 2 Characteristics

##### 2.1 *Nominal overall loss*

Because of the differing nominal level at renters' premises due to the various national practices, it is not normally possible to predict the nominal overall loss of the circuit at the reference frequency. Only exceptionally can a predetermined specified nominal overall loss at the reference frequency between renters' installations be offered to renters and then only after prior consultation among the Administrations concerned.

For 4-wire circuits the receiving relative level at the renters' premises should not be lower than  $-15$  dBr. If a mean sending signal power of  $-15$  dBm<sub>0</sub> is assumed, the resulting minimum received power ( $-30$  dBm) is sufficient for telephony and the other purposes for which circuits to this Recommendation are intended. Should these circuits be used for other purposes, higher receiving relative levels may be required in some circumstances. Reference should be made to Supplement No. 2.16 to Volume IV (Fascicle IV.3).

It should be noted that the overall loss in each direction of transmission may not have the same value.

##### 2.2 *Loss/frequency distortion*

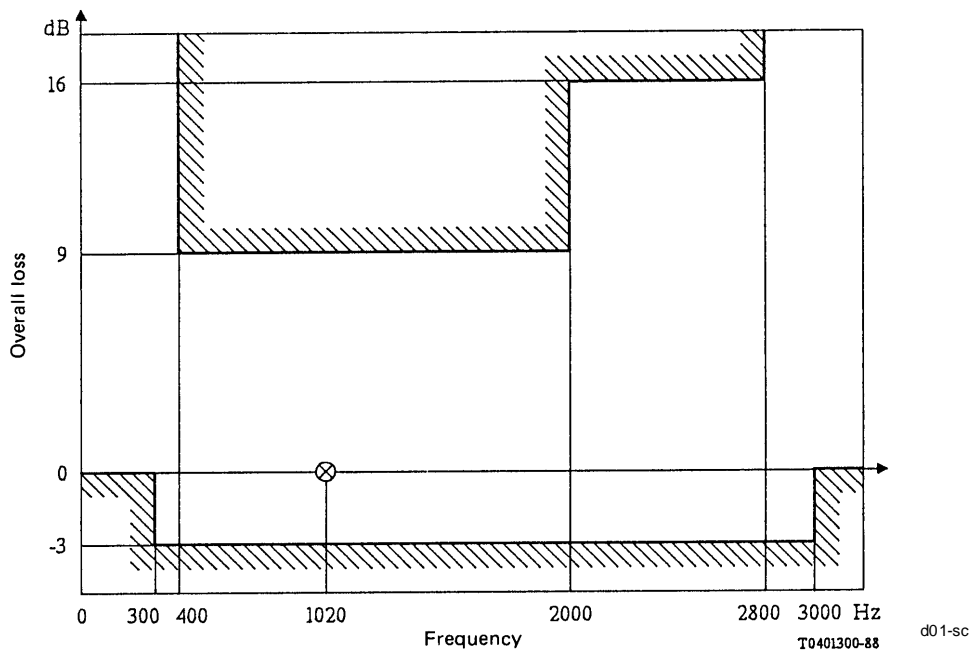
The provisional limits for the overall loss relative to that at 1020 Hz for the circuit between renters' installations are given in Figure 1/M.1040.

##### 2.3 *Random circuit noise*

The level of the psophometric noise power at a renter's premises depends upon the actual constitution of the circuit, in particular upon the length of frequency division multiplex carrier systems in the circuit. The provisional limit for leased circuits of distances greater than 10 000 km is  $-38$  dBm<sub>0p</sub>. However, circuits of shorter length will have substantially less random noise (see also Annex A to this Recommendation and Recommendation M.1050, § 3.5).

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<sup>1)</sup> The application of this Recommendation to multiterminal leased circuits is intended only for radial networks in which these specifications are to be met between a designated central station and each of the outlying stations. It does not apply to multiterminal conference networks between any two stations.



*Note* – At frequencies below 300 Hz and above 3000 Hz the loss shall not be less than 0.0 dB but is unspecified. These frequencies should be confirmed or amended after further study.

FIGURE 1/M.1040

Limits for the overall loss of the circuit relative to that at 1020 Hz

ANNEX A

(to Recommendation M.1040)

Random circuit noise

Figure A-1/M.1040 displays random noise versus length of circuit of FDM carrier systems and is presented as a guide to the random noise performance which may be found on an international leased circuit.

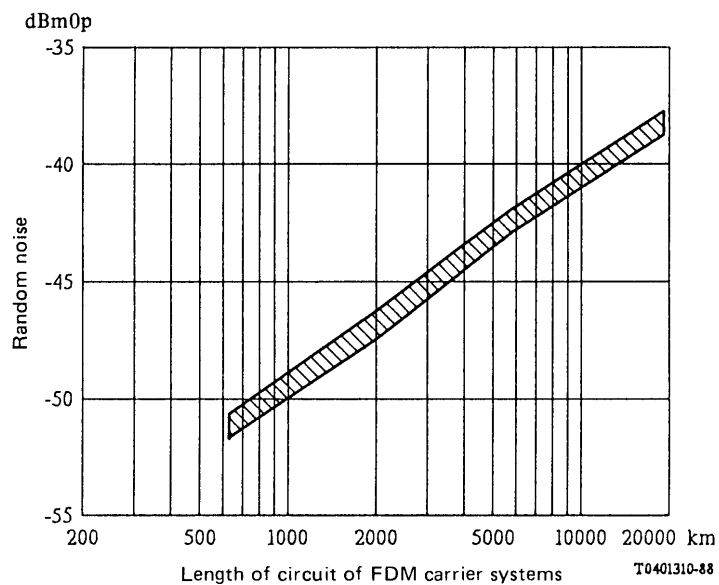


FIGURE A-1/M.1040

Random circuit-noise performance

*Note* – At the present time the section of the circuit provided by satellite (between earth stations) employing FDM techniques contributes approximately 10 000 pW0p (–50 dBm0p) of noise. Therefore, for the purpose of determining maintenance limits for noise measurement on leased circuits, the length of this section may be considered to be equivalent to 1000 km in Figure A-1/M.1040.

The contribution to noise of a circuit section provided by a satellite employing TDM techniques remains as a subject for further study.