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G.601

TRANSMISSION MEDIA CHARACTERISTICS

TERMINOLOGY FOR CABLES

ITU-T Recommendation G.601

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation G.601 was published in Fascicle III.3 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.

Recommendation G.601

TERMINOLOGY FOR CABLES

(Geneva, 1980)

1 General terms: repeaters, power feeding, etc.

1001 repeater

F: répéteur

S: repetidor

An equipment essentially including one or several amplifiers and/or *regenerators*, and associated devices, inserted at a point in a transmission medium.

Note - A repeater may operate in one or both directions of transmission.

1002 analogue repeater; analog repeater

F: répéteur analogique

S: repetidor analógico

A *repeater* for amplifying analogue signals or *digital signals* and capable of other functions, but excluding *regeneration of digital signals.*

1003 regenerative repeater

F: répéteur régénérateur

S: repetidor regenerativo

A *repeater* ensuring *regeneration* of *digital signals*, and capable of other functions.

Note - This definition is different from that given in Recommendation G.701 [1]. At the time when Recommendation G.701 was drafted, a suitable CCITT definition of *repeater* was not available. The ensemble of definitions given here makes it desirable to incorporate the *regenerative repeater* in the family of transmission systems, instead of defining it only as a device, as is the case in Recommendation G.701.

1004 directly powered (repeater) station

F: station (de répéteurs) à alimentation indépendante

S: estación (de repetidores) alimentada directamente

A *repeater station* which receives its electric power directly from the local mains or from a local generator.

1005 power feeding (repeater) station

F: station d'alimentation (de répéteurs)

S: estación (de repetidores) de telealimentación

A *directly powered repeater station* which supplies electric power to other *repeater stations*

1006 **dependent (repeater) station**

F: station (de répéteurs) téléalimentée

S: estacion (de repetidores) telealimentada

A *repeater station* which receives its electric power supply from a *power feeding repeater station.*

Note - Electric power may be conveyed to the dependent station either by the physical transmission medium itself, or by conductors in the same cable sheath, or by exterior cables.

1007 **section termination**

F: extrémité de section

S: extremo de sección

A point selected conventionally to be the interface between the physical transmission medium and associated equipment such as *repeaters.*

Note - The precise selection of the point to constitute the section termination should take into account associated accessories such as splices, connectors or flexible connecting cables in order to include them, as the case may be, on one side or on both sides of the termination.

1008 **elementary cable section**

F: section élémentaire de câble

S: sección elemental de cable

All of the physical transmission media and accessories such as splices, connectors or flexible connecting cables included between two consecutive *section terminations.*

1009 **elementary repeatered section**

F: section élémentaire amplifiée

S: sección elemental con amplificación

In a given direction of transmission an *elementary cable section* together with the immediately following *analogue repeater,* all included between two *section terminations.*

1010 **elementary regenerated section**

F: section élémentaire régénérée

S: sección elemental con regeneración

In a given direction of transmission, an *elementary cable section* together with the immediately following *regenerative repeater,* all included between two *section terminations.*

1011 **take-up factor**

F: facteur de câblage

S: factor de cableado

Ratio between the value of a linear parameter measured on the length unit of a cable and the value of the same parameter measured on the length unit of a pair of that cable.

The result of cabling (assembly of components and possibly twisting of wires in pairs and then in quads) is that the length of the cable components is greater than that of the axial length of the cable. The take-up factor is the ratio between these two lengths.

1012 Graphic illustration of the use of some terms in § 1.

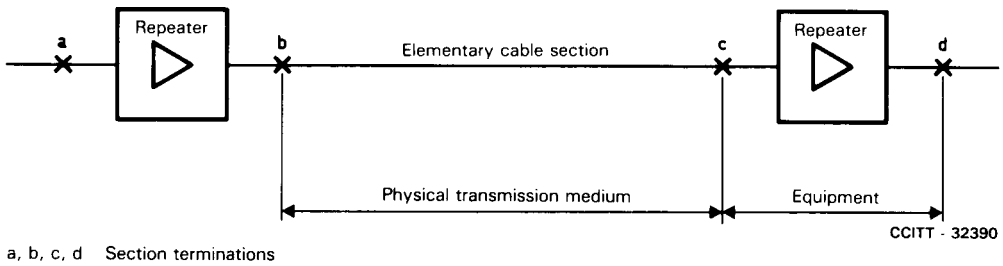

FIGURE 1/G.601

Terminology for generic reference to repeaters and cable sections

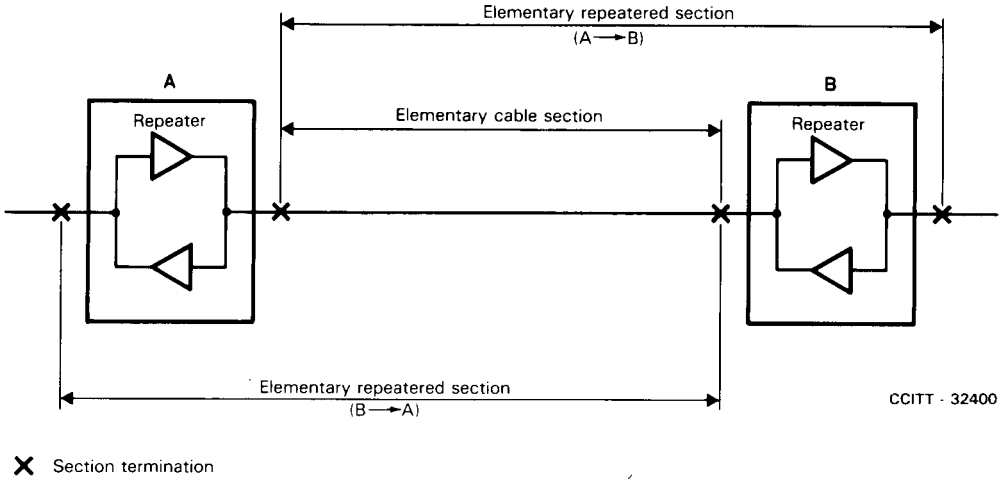

FIGURE 2/G.601

Terminology for elementary repeatered section

2 Terms concerning cables measurements

2.1 *Use of the word echo, in cable testing only*

2101 **echo**

F: écho

S: eco

An electric, acoustic or electromagnetic wave which arrives at a given point, after reflection or indirect propagation, with sufficient magnitude and delay for it to be perceptible at the given point, as a wave distinct from that directly transmitted.

2102 **backward echo**

F: écho (vers l'amont)

S: eco hacia atrás

An *echo* arriving at a defined point and having a direction of transmission opposite to that of the direct signal.

2103 **forward echo**

F: écho vers l'aval,. traînage

S: eco hacia adelante

An *echo* arriving at a defined point and having the same direction of transmission as that of the direct signal.

2.2 *Pulse measurements*

2201 **echometric measurement**

F: mesure échométrique

S: medición ecométrica

A measurement made by studying the *echo* which follows the emission of a signal of limited duration, known as a "measuring signal", with a view to analyzing all the causes of reflections.

2202 **pulse duration**

F: durée d'une impulsion

S: duración del impulso

The interval of time between the first and last instant at which the instantaneous value of a pulse (or of its envelope if a carrier frequency pulse is concerned) reaches a specified fraction of the peak amplitude.

2203 **sine-squared**

F: impulsion en sinus carré

S: impulso en seno cuadrado

A unidirectional pulse defined by the expression:

$$y = K \sin^2 (\pi t/2T);\ 0 \leq t \leq 2T$$

$$y = 0;\ t < 0 \text{ and } t > 2T$$

where

K is the amplitude

T is the *pulse duration* at half-amplitude

t is the time.

2204 **pulse echo meter**

F: échomètre à impulsions

S: ecómetro de impulsos

Apparatus designed to take *echometric measurements* by means of pulses.

2205 **elementary echo**

F: écho élémentaire

S: eco elemental

In an *echometric measurement*, the state of the echo in a time interval of a duration comparable to that of the test signal.

2206 **peak amplitude of an elementary echo**

F: amplitude de crête d'un écho élémentaire

S: amplitud de cresta de un eco elemental

Maximum value of echo amplitude reached in the duration of an *elementary echo*

2207 **relative amplitude of an elementary echo**

F: amplitude relative d'un écho élémentaire

S: amplitud relativa de un eco elemental

Ratio between the *peak amplitude of an elementarv echo* and the maximum amplitude of the measuring signal, evaluated at the emission point.

2208 **pulse echo return loss ; pulse echo attenuation**

F: affaiblissement d'écho

S: pérdida de retorno para el eco; atenuacion de eco

Relative amplitude of an elementary echo expressed in transmission units.

2209 **amplitude-corrected echo**

F: écho corrigé en amplitude

S: eco corregido en amplitud

An *echo* observed, after processing to carry out at least partial correction of propagation effects.

2210 **amplitude- and phase-corrected echo**

F: écho corrigé en amplitude et phase

S: eco corregido en amplitud y en fase

An *echo* observed, after processing has been made to correct the propagation effects on the amplitude and shape of the echo.

2211 **echo curve**

F: courbe d'écho

S: curva de eco

A graphic or oscilloscopic representation of *echo* amplitude function of time.

Note - The echo may be corrected in amplitude or in amplitude and phase; the curve is then called, as the case may be, "amplitude-corrected echo curve" or "amplitude- and phase-corrected echo curve".

2212 **equivalent resistance error**

F: écart équivalent

S: error de resistencia equivalente

The value of a hypothetical impedance deviation which, if situated at the end of a section of a transmission medium, would produce in an echometric measurement at that end the same reflected energy as all the irregularities of the section.

2213 **corrected equivalent resistance error**

F: écart équivalent corrigé

S: error de resistencia equivalente corregido

Equivalent resistance error evaluated by an echometric measurement comprising echo correction. The correction may be effected in amplitude or in amplitude and phase or according to other criteria (e.g. in energy).

Note - The corrected equivalent resistance error may be evaluated in terms of one kilometre, as the ratio Δ_k between corrected equivalent resistance error Δ_e as measured on a cable section, and the square root of the length L of this section, in km.

$$\Delta_k = \Delta_e / \sqrt{L}\ \Omega \cdot \mathrm{km}^{-1/2}$$

2.3 *Measurements made with sine-wave signals*

2301 **irregularity reflection coefficient**

F: facteur de réflexion sur les irrégularités

*S: coeficiente de reflexión de las irregularidade*s

The reflection coefficient measured at one end of a section of a transmission medium, for a specified mode of propagation, under conditions allowing for the elimination of the effects of reflections other than those due to irregularities inherent in the section concerned.

2302 **regularity loss**

F: affaiblissement de l'onde réfléchie sur les irrégularités

S: pérdida de retorno por irregularidades

The expression in transmission units of the modulus of *irregularity reflection coefficient* P_i. Its value in decibels is equal to:

$$A_i = -20 \log_{10} |P_i|.$$

Reference

[1] CCITT Recommendation *Vocabulary of pulse code modulation (PCM) and digital transmission terms*, Vol III, Rec. G.701.