

RECOMMENDATION ITU-R F.592-2*, **

TERMINOLOGY USED FOR RADIO-RELAY SYSTEMS***

(1982-1986-1990)

The ITU Radiocommunication Assembly,

recommends

that the following definitions be considered for the analysis of the F-Series ITU-R:

1. Terms relating to radio transmission

1.1 **Radio-relay system;** *Faisceau hertzien; Sistema de relevadores radioeléctricos:*

Radiocommunication system in the fixed service operating at frequencies above about 30 MHz which uses tropospheric propagation and which normally includes one or more intermediate stations.

1.2 **Trans-horizon radio-relay system;** *Faisceau hertzien transhorizon; Sistema de relevadores radioeléctricos transhorizonte:*

Radio-relay system using *trans-horizon* tropospheric propagation, chiefly forward scatter.

Note. – Recommendation ITU-R P.310 gives a definition for *trans-horizon* (tropospheric) propagation.

1.3 **Point-to-point communication;** *Communication point à point; Comunicación punto a punto:*

Communication provided by a link, for example, a radio-relay link between two stations located at specified fixed points.

1.4 **Point-to-multipoint communication;** *Communication point à multipoint; Comunicación punto a multipunto:*

Communication provided by links, for example, radio-relay links between a single station located at a specified fixed point and a number of stations located at specified fixed points.

1.5 **Point to area communication****;** *Communication point à zone; Comunicación punto a zona:*

Communication provided by links between a station located at a specified fixed point and any number of stations located at non-specified points in a given area which is the *coverage area* of the station located at the fixed point.

1.6 **(Orthogonal) co-channel;** *Cocanal (orthogonal), cofréquence (orthogonal); Cocanal (ortogonal):*

Refers to an arrangement of radio channels in a radio-relay link in which the same nominal centre frequency is used on two orthogonal polarizations for the transmission of two signals which may or may not be independent.

1.7 **Alternated;** *Alternée; Alternada:*

Refers to an arrangement of radio channels in a radio-relay link in which two adjacent channels are cross-polarized.

* The ITU-R Secretariat should transmit this Recommendation to the CCV.

** Radiocommunication Study Group 9 made editorial amendments to this Recommendation in 2000 in accordance with Resolution ITU-R 44.

*** Other terms, together with their definitions, relating to radiocommunications and telecommunications in general, are contained in Recommendations ITU-R V.573 and ITU-R V.662.

**** This type of communication, which is mainly used by broadcast and mobile services, is included here for comparison with terms 3 and 4.

1.8 **Interleaved; Intercalée; Intercalada:**

Refers to an arrangement of radio channels in a radio-relay link in which additional channels are inserted between the principal channels, the centre frequencies of the additional channels being shifted by a specified value which is a significant proportion, such as a half, of the channel bandwidth from the centre frequencies of the principal channels.

1.9 **Digital radio-relay for synchronous hierarchy (symbol: SDH-DRRS); Faisceau hertzien numérique pour hiérarchie synchrone (HNS-FHN); Relevador radioeléctrico digital para jerarquías sincronas (JDS-RRD):**

A digital radio-relay system capable of carrying synchronous digital hierarchy payloads.

1.10 **Diversity reception; Réception en diversité; Recepción por diversidad:**

A reception method in which one resultant signal is obtained from several received radio signals which convey the same information but for which the radio path or the transmission channel differs by at least one characteristic such as frequency, polarization, or the position or orientation of antennas.

Note 1 – The quality of the resultant signal can be higher than that of the individual signals, due to the partial decorrelation of propagation conditions over the different radio paths or transmission channels.

Note 2 – The term “time diversity” is sometimes used to refer to the repetition of a signal or part of a signal over a single radio path or transmission channel.

1.11 **Order of diversity; Ordre de diversité; Orden de diversidad:**

The number of different radio signals used for diversity reception. For two signals, reception is said to be “double diversity”, and so on.

1.12 **Space diversity reception; Réception en diversité d'espace; Recepción con diversidad de espacio:**

Diversity reception in which several antennas and associated receivers are used at appropriate distances from each other in a radio station.

Note – For line-of-sight radio-relay systems, separation is generally vertical, whereas for trans-horizon radio-relay systems, it is generally horizontal.

1.13 **Frequency diversity reception; Réception en diversité de fréquence; Recepción con diversidad de frecuencia:**

Diversity reception in which several radio channels are used with appropriate frequency separations.

Note – If the channels are situated in different frequency bands, the frequency diversity is said to be “cross-band diversity”.

1.14 **Cross polarization canceller (circuit); (Circuit) annuleur de transpolarisation; Circuito cancelador de transpolarización:**

Adaptive coupling circuit between two orthogonal co-frequency channels or two alternated adjacent channels, used to reduce cross-polar interference, during adverse propagation conditions.

1.15 **Digital radio concentrator (system); Concentrateur en radiocommunications numériques; Sistema concentrador de radiocomunicaciones digitales:**

Point-to-multipoint radio systems using TDMA transmission between a central station and several remote stations, in which the central station allocates time intervals to each remote station according to demand.

2. Terms relating to quality in digital transmission

2.1 **Bit error ratio (symbol: BER); Taux d'erreur binaire (TEB); Proporción de bits erróneos (TEB):**

For a binary digital signal, the ratio of the number of errored bits received to the total number of bits received over a given time interval.

2.2 **Residual bit error ratio (symbol: RBER); Taux d'erreur binaire résiduel (TBER); Proporción residual de bits erróneos (TEBR):**

Bit error ratio in the absence of fading, including allowance for system inherent errors, environment, aging effects and long-term interference.

- 2.3 **Errorred second (symbol: ES);** *Seconde avec erreurs, seconde entachée d'erreurs (SE); Segundo con errores (SE):*

Time interval of 1 s during which a given digital signal is received with one or more errors.

Note – According to ITU-T Recommendations, an errored second is defined for each direction of a 64 kbit/s circuit-switched connection.

- 2.4 **Severely errored second (symbol: SES);** *Seconde gravement entachée d'erreurs (SGE); Segundo con muchos errores (SME):*

Time interval of 1 s during which a given digital is received with an error ratio greater than a specified value.

Note – According to ITU-T Recommendations, a severely errored second is defined for each direction of a 64 kbit/s circuit-switched connection and the specified BER value is 10^{-3} .

- 2.5 **Degraded minute (symbol: DM);** *Minute dégradée; Minuto degradado:*

Time interval comprising m seconds, 60 of them being not severely errored seconds but for which the error ratio is greater than a specified value.

Note 1 – According to ITU-T Recommendations, a degraded minute is defined for each direction of a 64 kbit/s circuit-switched connection and the specified BER value is 10^{-6} .

Note 2 – If the time interval includes n severely errored seconds, $m = 60 + n$.

3. Terms relating to data transmission

- 3.1 **Data under voice (transmission) (symbol: DUV);** *(Transmission de) données infravocales; (Transmisión de) datos en la parte inferior de la banda de base:*

A method of data transmission consisting of transmitting data within the baseband of an analogue radio system, under the frequency band occupied by a frequency division multiplex signal.

- 3.2 **Data above voice (transmission) (symbol: DAV);** *(Transmission de) données supravocales; (Transmisión de) datos en la parte superior de la banda de base:*

A method of data transmission consisting of transmitting data within the baseband of an analogue radio system above the frequency band occupied by a frequency division multiplex signal.

Note – Transmission is generally carried out by modulating a sub-carrier.

4. Terms relating to digital modulation

- 4.1 **n-state quadrature amplitude modulation (symbol: n-QAM);** *Modulation d'amplitude en quadrature à n états (MAQ-n); modulación de amplitud en cuadratura de n estados (MAQ-n):*

A type of modulation in which two carriers in phase quadrature are amplitude modulated by a digital signal, with a finite number of amplitude levels, and subsequently added to each other, the modulation effect being represented by a scatter of n points in an amplitude/phase diagram.

Note – In many applications, n is equal to 2^{2p} , p being an integer.

- 4.2 **Simple modulation;** *Modulation simple; Modulación simple:*

A digital modulation in which the RF signal can assume four or fewer values of frequency or phase or amplitude at the symbol sampling point.

- 4.3 **Multi-level modulation;** *Modulation multiniveaux; Modulación multiniveles:*

A digital modulation in which the RF signal can assume more than four values of frequency or phase or amplitude at the symbol sampling point.

Note – When the term “high level modulation” or “low level modulation” is used, it refers not to a modulation scheme but to the power level of the signal at the modulator input.

- 4.4 **Multi-state modulation;** *Modulation multiétats; Modulación multiestados:*

A digital modulation in which the RF signal can assume more than four states of phase and amplitude at the symbol sampling point.