RECOMMENDATION ITU-R F.1399-1*, **

Vocabulary of terms for wireless access

(Questions ITU-R 215/8 and ITU-R 140/9)

(1999-2001)

1 Introduction

This Recommendation consists primarily of those terms and definitions that are considered essential to the understanding and application of the principles of wireless access. However, they are not exclusive to wireless access and are recommended also for application, insofar as they are relevant, to other types of telecommunication systems and services.

Included are terms that may already be defined in the Radio Regulations (RR) and other ITU-R/ ITU-T Recommendations. However, the definitions given here embrace only the essential concepts and on this basis it is considered that they are not inconsistent with the more specialized definitions that appear in those texts.

Where a truncated term is widely used in an understood context, the complete term is quoted following the colloquial form.

Some definitions include terms in italic face to indicate that these terms are defined elsewhere in this Recommendation.

Technologies in use today for implementing wireless access include cellular systems, cordless phone and cordless telecommunication systems, satellite systems, etc. New technologies and systems such as IMT-2000, wireless broadband ISDN, wireless ATM, HAPS, etc., also form part of wireless access if they satisfy the basic criteria of end-user radio connection(s) to core networks (see § 4.4 for list of acronyms and abbreviations).

Wireless access may be considered from many perspectives, for example:

– *Mobility capabilities* of the terminal: fixed, nomadic (may be used in different places but the terminal must be stationary while in use), mobile, restricted mobility (e.g. within a single cell), etc.

– *Service support capabilities*: narrow-band, broadband, multimedia, etc.

– *Type of telecommunication service*: conversational, distribution, information retrieval.

– *Connectivity*: (which would depend on the switched network that the terminal accesses, e.g. Internet, PSTN, etc.). (See § 4.4 for list of acronyms and abbreviations.)

– *Radio transmission technology*: access technique (TDMA, CDMA, etc.), modulation technique (analogue, digital, etc.), duplex technique (FDD, TDD, etc.), etc. (See § 4.4 for list of acronyms and abbreviations.)

– *Delivery mechanism*: terrestrial, satellite, etc.

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* This Recommendation was developed jointly by Radiocommunication Study Groups 8 (Working Party 8A) and 9 (Working Party 9B), and any further revision should be undertaken jointly.

** This Recommendation should be brought to the attention of Radiocommunication Study Groups 4 (Working Party 4A), 8 (Working Party 8A) and Coordination Committee for Vocabulary (CCV).

Of particular interest are the mobility characteristics of wireless access systems; thus this Recommendation provides definitions of the terms “fixed”, “mobile” and “nomadic” wireless access.

The purpose of this Recommendation is to specify terms and definitions for terrestrial wireless access.

2 Scope

The Recommendation specifies definitions for terms primarily focused in the field of terrestrial wireless access systems. Wireless access applications may be provided within the definitions of the radio services FS, MS, FSS and MSS contained in the RR.

The ITU has deprecated the use of the term “loop” (see References below: CCITT Blue Book, Vol. I, Fascicle I.3, 1988); for this reason, and more so because this term does not make any sense with radio technologies, the use of the terms that include loop are deprecated. These include wireless local loop, radio local loop, and wireless access local loop.

It should be noted that in many cases systems may be able to support a mixture of users (i.e. fixed, mobile and nomadic) and possibly with restrictions on the type of mobility. It is not practical to define terms for each possible combination, but those above should suffice to refer to the primary characteristics of the system.

3 References

The following references have been used in the development of the vocabulary of terms for wireless access:

– ITU, terms and definitions; abbreviations and acronyms; recommendations on means of expression (Series B), General Telecommunications Statistics (Series C), CCITT Blue Book, Vol. I, Fascicle I.3, 1988.

– Recommendation ITU-R F.592: Terminology used for radio-relay systems

– Recommendation ITU-R M.1224: Vocabulary of terms for International Mobile Telecommunications-2000 (IMT-2000)

– ITU-T Recommendation D.000: Terms and definitions for the Series-D Recommendations

– ITU-T Recommendation E.600: Terms and definitions of traffic engineering

– ITU-T Recommendation G.100: Definitions used in Recommendations on general characteristics of international telephone connections and circuits

– ITU-T Recommendation I.112: Vocabulary of terms for ISDNs

– ITU-T Recommendation I.113: Vocabulary of terms for broadband aspects of ISDNs

– ITU-T Recommendation I.114: Vocabulary of terms for universal personal telecommunication

– ITU-T Recommendation J.112: Transmission systems for interactive cable television services.

4 Recommendations

The ITU Radiocommunication Assembly recommends that the terms and definitions for wireless access in this Recommendation be adopted.

4.1 Vocabulary of terms: Main terms

4.1.1 Wireless access

F: *accès hertzien; accès sans fil*

S: *acceso inalámbrico*

End-user radio connection(s) to core networks.

NOTE 1 – Core networks include, for example, PSTN, ISDN, PLMN, PSDN, Internet, WAN/LAN, CATV, etc. (See § 4.4 for list of acronyms and abbreviations.)

NOTE 2 – The *end-user* may be a single *user* or a *user* accessing the services on behalf of multiple *users*.

4.1.2 Fixed wireless access (FWA)

F: *accès hertzien fixe (AHF)*

S: *acceso inalámbrico fijo (FWA)*

Wireless access application in which the location of the *end-user termination* and the network access point to be connected to the end-user are fixed.

4.1.3 Mobile wireless access (MWA)

F: *accès hertzien mobile (AHM)*

S: *acceso inalámbrico móvil (MWA)*

Wireless access application in which the location of the *end-user termination* is mobile.

4.1.4 Nomadic wireless access (NWA)

F: *accès hertzien transportable ou nomade (AHN)*

S: *acceso inalámbrico nómada (NWA)*

Wireless access application in which the location of the *end-user termination* may be in different places but it must be stationary while in use.

4.2 Vocabulary of terms: General terms

4.2.1 Backhaul communication

F: *liaison de raccordement*

S: *comunicación de enlace de retroceso*

Transport of aggregate communication signals from base stations to the core network.

4.2.2 Base station

F: *station de base*

S: *estación de base*

See central station.

4.2.3 Broadband wireless access (BWA)

F: *accès hertzien à large bande (AHLB)*

S: *acceso inalámbrico de banda ancha (BWA)*

Wireless access in which the connection(s) capabilities are higher than the primary rate.

4.2.4 Central station

F: *station centrale*

S: *estación central*

The common name for all the radio equipment located at one and the same place used for serving one or several cells.

NOTE 1 – Also known as hub station, and also as base station, even though RR No. 1.71 defines base station more restrictively as "a land station in the land mobile service".

4.2.5 Customer premises equipment/network

F: *équipement/réseau des locaux d'abonné*

S: *equipo/red en las instalaciones del cliente*

The equipment/network administered by the user.

NOTE 1 – Based on ITU-T Recommendation H.310.

4.2.6 Distribution system

F: *système de distribution*

S: *sistema de distribución*

System for unidirectional delivery (transmission) of services to end-users.

NOTE 1 – This is strictly not wireless access as such, for the latter requires an additional return (reverse) or interaction channel to be included. Such distribution systems include LMDS, but it should be noted that some systems labelled distribution systems are in fact MWS systems and should be so referenced.

4.2.7 Dynamically variable bandwidth

F: *largeur de bande dynamiquement variable*

S: *anchura de banda dinámicamente variable*

A capability of a system to be able to change the bandwidth of the information payload capacity of a communication channel available to a user for services according to negotiated user requirements.

NOTE 1 – This is also known as bandwidth on demand.

4.2.8 End-user

F: *utilisateur final*

S: *usuario final*

A human being, organization, or telecommunications system that accesses the network in order to communicate via the services provided by the network.

(See ITU-T Recommendation J.112.)

4.2.9 End-user connection point

F: *point de connexion d'utilisateur final*

S: *punto de conexión de usuario final*

Point at which the *end-user* obtains the communications service (see Fig. 1).

4.2.10 End-user termination, end-user radio termination

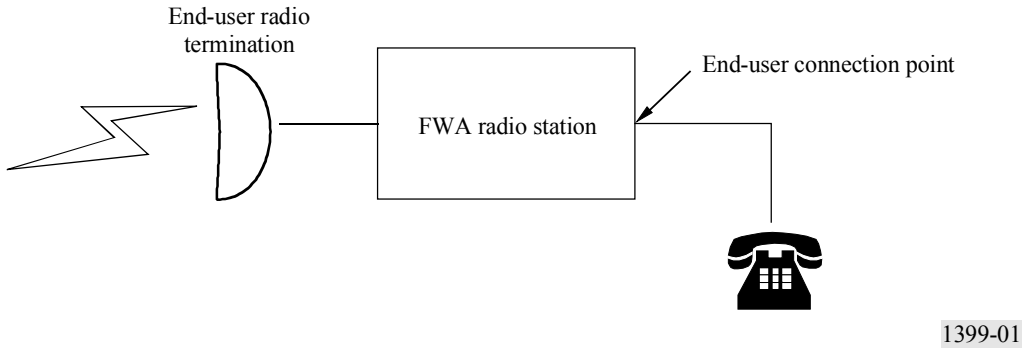
F: *terminaison radioélectrique d'utilisateur final*

S: *terminación de usuario final; terminación radioeléctrica de usuario final*

The *end-user* radio equipment antenna (see Fig. 1).

FIGURE 1

Illustration of terms



4.2.11 High altitude platform station (HAPS)

F: *station placée sur une plate-forme à haute altitude (SPHA)*

S: *estación en plataforma a gran altitud (HAPS)*

A station located on an object at an altitude of 20 to 50 km and at a specified nominal, fixed point relative to the Earth (see Note 1).

(See RR No. 1.66A.)

NOTE 1 – Systems using HAPS which consist of a HAPS and ground stations located at the end-user termination provide wireless access serving as links for various communications. The communication mode of a system using HAPS is, for the time being, limited to FWA applications on account of technical reasons at the ground station equipment. However, nomadic or mobile wireless access applications are also expected in the future.

4.2.12 Hub station

F: *station pivot*

S: *estación central*

See central station.

4.2.13 Internet protocol

F: *protocole Internet*

S: *protocolo Internet*

Networking protocol defined by IETF standards.

4.2.14 Multimedia wireless system (MWS)

F: *système hertzien multimédia*

S: *sistema inalámbrico multimedios*

A *wireless system* which supports information exchange of more than one type, such as text, graphics, voice, sound, image, data and video.

4.2.15 Multipoint systems

F: *systèmes multipoint*

S: *sistemas multipunto*

A generic term for P-MP, MP-MP and variations/hybrids of these.

4.2.16 Narrow-band wireless access

F: *accès hertzien à bande étroite*

S: *acceso inalámbrico de banda estrecha*

Wireless access in which the maximum usable end-user bit rate is up to and including 64 kbit/s.

NOTE 1 – The access is typically digital but could encompass equivalent analogue access.

4.2.17 Point-to-multipoint system

F: *système point à multipoint*

S: *sistema punto a multipunto*

A system that establishes connections between a single specified point and more than one other specified points.

NOTE 1 – It should be noted that wireless access systems commonly feature air-side concentration in order to preserve valuable spectrum resources, although not necessarily so (as, for example, in some lower density, rural systems). Generally point-to-multipoint systems offer FWA, hence the use of the term “fixed wireless access” defined above to distinguish such point-to-multipoint systems from mobile or nomadic wireless access systems.

4.2.18 Point-to-point system

F: *système point à point*

S: *sistema punto a punto*

A system that establishes a connection between two end points only.

NOTE 1 – These systems may be cascaded geographically, including in the form of a ring.

4.2.19 Primary rate

F: *débit primaire*

S: *velocidad primaria*

The transmission bit rate of 1 544 kbit/s (T1) or 2 048 kbit/s (E1).

4.2.20 Quality of service

F: *qualité de service*

S: *calidad del servicio*

The collective effect of service performance which determines the degree of satisfaction of a user of the service.

NOTE 1 – The quality of service is characterized by the combined aspects of service support performance, service operability performance, serveability performance, service security performance and other factors specific to each service.

NOTE 2 – The term "quality of service" is not used to express a degree of excellence in a comparative sense nor is it used in a quantitative sense for technical evaluations. In these cases a qualifying adjective (modifier) should be used.

NOTE 3 – ITU-T Recommendation E.800 (94).

4.2.21 Repeater; repeater station

F: *répéteur; station répétrice*

S: *repetidor; estación repetidora*

A station used to extend geographical range or coverage ability incorporating both receive and transmit functions, which may or may not feature frequency translation.

4.2.22 Station

F: *station radioélectrique*

S: *estación radioeléctrica*

The common name for all the radio equipment at one and the same place (see Fig. 1).

NOTE 1 – The term "station" may refer to any *end-user* radio equipment or network radio equipment.

4.2.23 Teledensity; access density

F: *densité d'accès; densité de terminaisons*

S: *teledensidad; densidad de accesos*

Number of *end-user terminations* per square kilometre.

4.2.24 Teledensity; terminal density

F: *densité de terminaux*

S: *teledensidad; densidad de terminales*

Number of *end-user* terminals per square kilometre.

4.2.25 Teledensity; telephone density

F: *télédensité; densité téléphonique*

S: *penetración; densidad telefónica; teledensidad*

The number of telephones (or lines) relative to a characteristic element such as number of inhabitants (telephones per 100 population), number of households, business premises, area units, income groups, etc., used generally for planning purposes.

(See TERMITE – TERMInology of TElecommunications – ITU, Serial number: MT1886, Modified: June 1997.)

4.2.26 Terminal station

F: *station terminal*

S: *estación terminal*

The user or end-user station.

NOTE 1 – Also known as remote station, out station, subscriber station, subscriber radio terminal and remote terminal.

4.2.27 Termination; radio termination

F: *terminaison radioélectrique*

S: *terminación; terminación radioeléctrica*

The physical location of the radio equipment antenna.

4.2.28 Total station density

F: *densité totale de stations radioélectriques*

S: *densidad total de estaciones radioeléctricas*

The total number of *stations* per square kilometre in a service area.

4.2.29 Total transmitter density

F: *densité totale d'émetteurs*

S: *densidad total de transmisores*

The total number of transmitters per square kilometre in a service area.

4.2.30 User

F: *utilisateur*

S: *usuario*

Any entity external to the network which utilizes connections through the network for communication.

(See ITU-T Recommendation E.600.)

4.2.31 Virtual point-to-point connection

F: *connexion virtuelle point à point*

S: *conexión virtual punto a punto*

Providing a point-to-point connection to a subscriber using a point-to-multipoint system.

4.2.32 Wideband wireless access

F: *accès hertzien à large bande*

S: *acceso inalámbrico de banda amplia*

Wireless access in which the maximum usable end-user bit rate is greater than 64 kbit/s and up to, and including, the primary rate.

NOTE 1 – The access is typically digital but could encompass equivalent analogue access.

4.3 Vocabulary of terms: Frequency management terms

4.3.1 Block, frequency block, spectrum block

F: *bloc; bloc de fréquences; bloc de spectre*

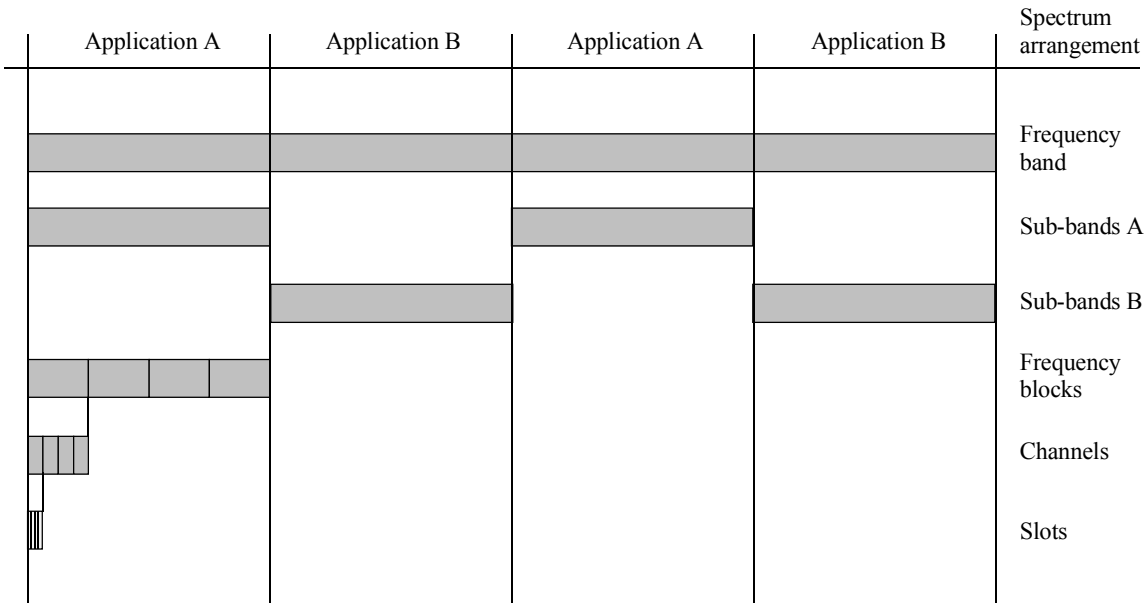
S: *bloque; bloque de frecuencias; bloque de espectro*

A contiguous portion of spectrum within a sub-band or frequency band, typically assigned to a single operator.

NOTE 1 – A collection of frequency blocks may form a sub-band and/or a frequency band. See Fig. 2.

FIGURE 2

Example of relationships between spectrum terminology



Note 1 – Guardbands can occur at any frequency edge in this diagram.

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4.3.2 Channel; radio-frequency channel

F: *canal; canal radiofréquence*

S: *canal; canal de radiofrecuencia*

A specified portion of the RF spectrum which carries a specific radio signal.

NOTE 1 – A frequency channel includes one or more transmission channels.

NOTE 2 – A channel is composed of one or more slots. A collection of channels is a frequency block and/or a sub-band. See Fig. 2.

4.3.3 Channel; transmission channel

F: *canal de transmission*

S: *canal de transmisión*

A means of transmission of signals between two points.

NOTE 1 – This is normally, but not always, unidirectional.

4.3.4 Downlink channel

F: *canal de liaison descendante*

S: *canal de enlace descendente*

A unidirectional transmission channel from central station to terminal station. Also referred to as downstream.

4.3.5 Downstream

F: *descendant*

S: *descendente*

The direction from base station to subscriber station(s).

4.3.6 Downstream; downstream channel

F: *canal descendant*

S: *canal descendente*

See downlink channel.

4.3.7 Forward channel

F: *canal aller*

S: *canal de ida*

A unidirectional transmission channel from central station to terminal station. Also known as forward link/path.

NOTE 1 – The use of the term forward channel implies the presence of an associated reverse channel.

4.3.8 Frequency division duplex

F: *duplex à répartition de fréquence*

S: *dúplex por división de frecuencia*

Separation of upstream and downstream transmission in the frequency domain at the same time.

4.3.9 Frequency plan; frequency arrangement

F: *plan de fréquences; arrangement de fréquences*

S: *plan de frecuencias; disposición de frecuencias*

A systematic division of a frequency band into a collection of *sub-bands*, *blocks*, and/or *channel*s, that are applicable to a radiocommunication service or services using the frequency band.

NOTE 1 – The term “plan” in this context does not imply the regulatory plans in the RR. The latter should be referred to by using title case “Plan”.

4.3.10 Interaction channel; interaction transmission channel

F: *canal d'interaction*

S: *canal de transmisión interactivo*

A bidirectional transmission channel (path or link) used in conjunction with a higher capacity, main traffic forward channel which enables the terminal and central stations to communicate independently of the main traffic delivery.

Also known as interaction link or path.

NOTE 1 – In some cases the central-to-terminal station part of this interaction channel may be combined with the main traffic delivery. In this case the interaction channel may refer only to the reverse channel.

NOTE 2 – The main traffic capacity is normally offered in the forward (down) direction and the interaction channel is of lower capacity.

4.3.11 Return channel

F: *canal retour*

S: *canal de retorno*

A unidirectional transmission channel from terminal station to central station. Also known as reverse channel/link/path.

NOTE 1 – The use of the term return channel implies the presence of an associated forward channel.

4.3.12 Slot; frequency slot

F: *intervalle; intervalle de fréquence*

S: *intervalo; intervalo de frecuencias*

The smallest unit of spectrum used in construction of a *frequency plan*, such that all *bands*, *sub-bands*, *blocks* and *channels* which are used in this plan are integer multiples of the slot size.

NOTE 1 – See Fig. 2.

4.3.13 Sub-band; frequency sub-band

F: *sous-bande; sous-bande de fréquences*

S: *subbanda; subbanda de frecuencias*

A portion or portions of a frequency band, which identifies a particular use, service, category and/or system type.

NOTE 1 – A sub-band may be a collection of slots, channels and/or frequency blocks. The sub-band may also include guardbands. See Fig. 2.

4.3.14 Time division duplex

F: *duplex à répartition dans le temps*

S: *dúplex por división en el tiempo*

Separation of upstream and downstream transmission in the time domain using the same frequency.

4.3.15 Uplink channel

F: *canal de liaison montante*

S: *canal de enlace ascendente*

A unidirectional transmission channel from terminal station to central station. Also referred to as upstream channel.

4.3.16 Upstream

F: *montant*

S: *ascendente*

The direction from subscriber station(s) to base station.

4.3.17 Upstream; upstream channel

F: *canal montant*

S: *canal ascendente*

See uplink channel.

4.4 Acronyms and abbreviations used in wireless access

ATM	Asynchronous transfer mode
BWA	Broadband wireless access
CATV	Community antenna television
CDMA	Code division multiple access
FDD	Frequency duplex division
FDMA	Frequency division multiple access
FSS	Fixed-satellite service
FWA	Fixed wireless access
HAPS	High altitude platform stations
IMT-2000	International Mobile Telecommunications-2000
ISDN	Integrated services digital network
LAN	Local area network
LMCS	Local multipoint communication system(s)
LMDS	Local multipoint distribution system(s)
MMDS	Multichannel multipoint distribution system(s)
MP	Multipoint
MP-MP	Multipoint-to-multipoint
MSS	Mobile-satellite service
MVDS	Multipoint video distribution system(s)
MWA	Mobile wireless access
MWS	Multimedia wireless system(s)
NWA	Nomadic wireless access
P-P	Point-to-point
P-MP	Point-to-multipoint
PLMN	Public land mobile network
PSDN	Public switched data network
PSTN	Public switched telephone network
TDD	Time division duplex
TDMA	Time division multiple access
WAN	Wide area network

APPENDIX 1

Alphabetical list of terms