

Appendix C: Acronyms and Glossary of Terms

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Allocation: The designation of a band of frequencies for a specific radio service or services. Allocations are made internationally at World Radio Conferences and are incorporated into the international Table of Frequency Allocations. Domestic allocations are made by the Federal Communications Commission (FCC) and the National Telecommunications and Information Administration (NTIA).

AMPS: Advanced Mobile Phone Service. AMPS is the existing U.S. analog cellular telephone standard.

Analog: In analog radio communications, information is transmitted by continuously varying the phase, amplitude, or frequency of a radio carrier wave.

Assignment: The granting by a government of the right to use a specific frequency (or group of frequencies) to a specific user or station. Each television station, for example, is assigned a small group of frequencies that correspond to a specific channel or number on the television dial.

Attenuation: The loss of power of electromagnetic signals between transmission and reception points. Attenuation is exacerbated by physical barriers, such as rain, buildings, and trees.

Bandwidth: The total range of frequencies required to transmit a radio signal without undue distortion. The required bandwidth of a radio signal is deter-

mined by the amount of information in the signal being sent. More complex signals contain more information, and hence require wider bandwidths. The bandwidth required by a television channel is 600 times greater than that of an AM radio channel.

BETRS: Basic Exchange Telecommunications Radio Service. BETRS is used as a wireless substitute to copper loops for providing basic telephone service.

Bps: Bits per second. The rate at which digital data are transmitted over a communications path. Speeds are usually designated kbps (thousands of bits per second), Mbps (millions of bits per second), and Gbps (billions of bits per second).

BSS: Broadcasting-Satellite Service. An ITU-defined service that refers to the delivery of information or programming directly from satellites to user receivers. The BSS includes new systems planned to deliver high-definition television services (BSS-HDTV) and audio services (BSS-Sound).

CAI: common air interface. Refers to the standard (there are many) that allows a mobile unit such as a cellular phone to communicate with a base station.

Cellular Telephony: A mobile radio service in which a geographic area is divided into smaller areas known as “cells.” A transmitter in each cell provides radio coverage to the users in the cell. Calls

are handed off from one transmitter to the next as the user moves between cells.

CDMA: Code division multiple access. CDMA is a radio communication format that uses digital technology and spread spectrum transmission to send information. Each radio signal is assigned its own unique code and is then spread over a range of frequencies for transmission.

CDPD: Cellular Digital Packet Data. Announced in 1992 by McCaw Cellular, IBM, and a group of eight other major cellular companies, CDPD uses the idle time in the analog cellular telephone system to transmit packetized data at rates up to 19.2 kbps.

Cloning: Cloning is the practice of reprogramming a phone with a MIN/ESN pair from another phone.

CMRS: Commercial Mobile Radio Service. A new regulatory classification for mobile telephone service created by the FCC in response to the Omnibus Budget Reconciliation Act of 1993. Under the new rules, cellular, SMR/ESMR, and PCS will be brought under the same regulatory umbrella.

Common Carrier: A company that is recognized by an appropriate regulatory agency as providing communications service to the general public on a nondiscriminatory basis. Common carriers cannot exercise any control over content of the messages they carry.

DAB: Digital Audio Broadcasting. DAB refers to the transmission of audio broadcasts in digital form as opposed to today's (AM and FM) analog form. DAB promises compact disc quality sound over the air. DAB systems may use terrestrial, satellite, or hybrid transmission.

DBS: Direct Broadcast Satellite. Medium- to high-power satellites that are designed to transmit programming directly to small satellite receiver dishes at users' homes.

Digital: In digital communication, information is sent by modulating the carrier frequency in such a way that there are discrete changes in the phase, frequency, or amplitude.

Downlink: In satellite communications, the signal that travels from the satellite down to the receivers on earth is called the downlink. The direction the downlink signal travels is also called space-to-Earth. *See* Uplink.

Encryption: The process of electronically altering or "scrambling" a signal, usually for security purposes.

EPA: Environmental Protection Agency.

ESMR: Enhanced Specialized Mobile Radio. The next generation of SMRs, ESMR systems take advantage of digital technology combined with a cellular system architecture to provide greater capacity than existing SMR systems. *See* Specialized Mobile Radio.

ESN: Electronic serial number. A number encoded in each cellular phone that uniquely identifies each cellular telephone manufactured.

FCC: Federal Communications Commission. Established by the Communications Act of 1934, the FCC is an independent federal agency that regulates all electronic interstate communications, including telephony, cable television, and broadcasting. The FCC is also responsible for assigning the radio frequencies used by all non-federal users of the spectrum.

FDA: Food and Drug Administration.

FDMA: Frequency Division Multiple Access. FDMA allows multiple users to share a band of radio frequencies by dividing the spectrum into separate channels. Analog cellular systems, for example, use separate frequencies for each call in each cell.

GPS: Global Positioning System. GPS is a network of satellites that provides precise location determination to receivers.

GSM: Global System for Mobile Communications, formerly Groupe Special Mobile. GSM is a second-generation digital system adopted as a European standard in the mid-1980s and introduced in 1992. Now deployed across Europe, GSM is intended to replace existing analog cellular telephone services. GSM allows systems in different countries to interoperate, permitting consumers to use their cellular phones anywhere in Europe.

HDTV: High-definition television. Refers to future generations of television that will have higher picture resolution, a wider aspect ratio, and digital quality sound.

HIPERLAN: High-Performance Radio Local Area Network. HIPERLAN is a European standard for a short-range (50 meters) high-performance radio local area network. The current specification is for

- operation in the 5.1 - 5.3 GHz band. Another band from 17.1 - 17.3 has been designated for HIPER-LAN use, but detailed specifications have not yet been developed.
- Hz:** Hertz. Cycles per second. Radio frequencies are described in multiples of Hertz:
- kHz, kilohertz: thousand cycles per second;
 - MHz, megahertz: million cycles per second;
 - GHz, gigahertz: billion cycles per second.
- IEEE:** Institute of Electrical and Electronics Engineers. The IEEE is the professional society for electrical engineers. It produces standards for a range of communications technologies.
- Internet:** Refers to a large collection of interconnected computer networks that use a common transmission protocol, allowing users to communicate across networks.
- IRAC:** Interdepartment Radio Advisory Committee. Established in 1922 and now located in the Department of Commerce, the IRAC consists of 20 representatives from the various government agencies involved in or using the radio frequencies.
- ISDN:** Integrated Services Digital Network. A new digital service offered by local phone companies that allows users to send digital data over copper wires.
- ITS:** Intelligent Transportation System (formerly referred to as IVHS—see below).
- ITU:** International Telecommunication Union. The ITU is a specialized agency of the United Nations responsible for international regulation of telecommunications services of all kinds, including telegraph, telephone, and radio.
- IVHS:** Intelligent Vehicle Highway System. IVHS uses information technology and sensors to improve the management of traffic flow.
- LAN:** Local area network. Computers are connected so that they can talk to each other and share a central file server and printer. A LAN is confined to a limited area, usually a single office, or building, or campus.
- LATA:** Local Access and Transport Area. Refers to the local exchange areas developed in connection with the divestiture of AT&T, within which the Bell Operating Companies (BOCs) may provide service. Pursuant to the Modified Final Judgment (MFJ), BOCs are not permitted to transport calls across LATA boundaries but rather must connect these calls to interexchange carriers.
- LEC:** Local Exchange Carrier. The LEC is the local telephone company. There are over a thousand LECs, ranging in size from the very small independent telephone companies that serve rural areas to the much larger Bell Operating Companies (BOCs).
- LEO:** Low-Earth orbiting satellite. LEO satellites are smaller and cheaper to design, build, and launch than traditional geosynchronous satellites. Networks of these small satellites are being planned that will provide data (“little” LEOS) and voice (“big” LEOS) services to portable receivers all over the world.
- LMDS:** Local Multipoint Distribution Service. An experimental service using low-power transmitters, configured in a cellular-like arrangement, to transmit video to receivers in homes and businesses.
- Microwave:** Radio frequency spectrum signals between 890 MHz and 20 GHz. Point-to-point microwave transmission is commonly used as a substitute for copper or fiber cable.
- MIN:** Mobile identification number. A number encoded in each cellular telephone that represents the telephone number.
- Modulation:** The process of encoding information onto a radio wave by varying one of its basic characteristics—amplitude, frequency, or phase—in relation to an input signal such as speech, music, or video. Two of the most common types of modulation are amplitude modulation (AM) and frequency modulation (FM).
- MMDS:** Multi-Channel, Multi-Point Distribution Service. Also known as “wireless cable,” MMDS uses high-power transmitters to broadcast up to 33 channels of subscription video programming to receiving equipment in homes and businesses. By using digital technology, MMDS operators may be able to transmit a much larger number of channels.
- MSS:** Mobile-Satellite Service. MSS is an ITU-defined service in which satellites are used to deliver communications services (voice or data, one- or two-way) to mobile users such as cars, trucks, ships, and planes. It is a generic term that encompasses several types of mobile services delivered by satellite, including Maritime MSS (MMSS),

Aeronautical MSS (AMSS), and Land MSS (LMSS).

NTIA: National Telecommunications and Information Administration. NTIA is the President's adviser on communications and is responsible for administering all federal government use of the radio frequency spectrum, including military communications. NTIA is located in the Department of Commerce.

NTSC: National Television Systems Committee. A committee composed of industry representatives that established the NTSC standard for black-and-white television in 1940, and color television in the early 1950s.

Part 15: Part 15 refers to a section of the Rules enacted and administered by the Federal Communications Commission. Part 15 rules govern unlicensed radio communications in certain frequency bands. Examples of Part 15 communications devices include: cordless telephones, spread spectrum ISM band devices, low-power wireless microphones, and baby monitors.

PBS: Public Broadcasting Service.

PCS: Personal Communications Service. A radio service broadly defined by the FCC to be a "family" of communications services providing mobile and incidental fixed services for voice and data applications.

PSTN: Public switched telephone network. The publicly accessible dial-up telephone network.

Roaming: Roaming is the practice of using a cellular phone in cellular networks outside the user's home system.

SMR: Specialized Mobile Radio. The FCC established the SMR service in 1974 to provide dispatch service to trucking, taxi and similar industries, government entities, and to individuals on a for-profit basis. SMR systems can also connect to the

PSTN. The FCC's ongoing CMRS proceeding will bring SMR under the same regulatory umbrella as cellular and new PCS. *See* Commercial Mobile Radio Service and Enhanced Specialized Mobile Radio.

Spectrum: The spectrum consists of all the radio frequencies that are used for radio communication.

Spread Spectrum: Spread spectrum modulation uses a wide band of frequencies to send radio signals. Instead of transmitting a signal on one channel, spread spectrum systems process the signal and spread it across a wider range of frequencies.

TDMA: Time division multiple access. Refers to a form of multiple access where a single communications channel is shared by segmenting it by time. Each user is assigned a specific time slot.

Tumbling: Tumbling is the practice of programming a phone with ESN/MIN pairs until a valid combination is found.

Uplink: In satellite communications, the signal that travels from the Earth transmitting station up to the satellite. The direction the uplink signal travels is also known as Earth-to-space. *See* Downlink.

VBI: Vertical blanking interval. After a television image has been displayed, it takes a certain amount of time for the electron gun to be moved into position to scan the next image. No picture information is sent during this time, allowing data for other types of information services to be sent.

VSAT: Very small aperture terminal. Refers to small (less than 6 feet in diameter) satellite receive dishes that can send and receive voice, data and video communications. VSATs are usually deployed in networks, allowing tens or even hundreds of sites to be connected in one network.

Wireless Local Loop: Wireless systems can be used instead of copper loops to provide basic telephone service to households.