

**FEDERAL STANDARD**

## Telecommunications: GLOSSARY OF TELECOMMUNICATION TERMS

**1. SCOPE.**

a. This glossary provides standard definitions for the fields subsumed by the umbrella discipline of telecommunications. Fields defined herein include: antenna types and measurements, codes/coding schemes, computer and data communications (computer graphics vocabulary, file transfer techniques, hardware, software), fiber optics communication, facsimile types and techniques, frequency topics (frequency modulation, interference, spectrum sharing), Internet, ISDN, LANs (MANs, WANs), modems, modulation schemes, multiplexing techniques, networking (network management, architecture/topology), NII, NS/EP, power issues, PCS/UPT/cellular mobile, radio communications, routing schemes, satellite communications, security issues, switching techniques, synchronization/timing techniques, telegraphy, telephony, TV (UHF, VHF, cable TV, HDTV), traffic issues, transmission/propagation concerns (signal loss/attenuation, transmission lines), video technology, and wave propagation/measurement terminology.

b. The terms and accompanying definitions contained in this standard are drawn from authoritative non-Government sources such as the International Telecommunication Union, the International Organization for Standardization, the Telecommunications Industry Association, and the American National Standards Institute, as well as from numerous authoritative U.S. Government publications. The FTSC Subcommittee to Revise FED-STD-1037B has rewritten many definitions as deemed necessary either to reflect technology advances or to make those definitions that were phrased in specialized terminology more understandable to a broader audience.

1.1 **Applicability.** This standard incorporates and supersedes FED-STD-1037B, June 1991. Accordingly, all Federal departments and agencies shall use it as the authoritative source of definitions for terms used in the preparation of all telecommunications documentation. The use of this standard by all Federal departments and agencies is *mandatory*.

1.2 **Purpose.** The purpose of this standard is to improve the Federal acquisition process by providing Federal departments and agencies a comprehensive, authoritative source of definitions of terms used in telecommunications and directly related disciplines by national, international, and U.S. Government telecommunications specialists.

**2. REQUIREMENTS AND APPLICABLE DOCUMENTS.**

a. The terms and definitions that constitute this standard, and that are to be applied to the uses cited in paragraph 3 below, are contained on page A-1 through Z-1 of this document. There are no other documents applicable to implementation of this standard. A list of acronyms and abbreviations is presented as Appendix A. The list of abbreviations and acronyms uses **bold** font to

identify those term names that are defined in this glossary. An abbreviated index of selected principal families of related term names is presented in Appendix B.

b. Within this document, symbols for units of measurement (and the font type for these symbols) are in accord with ANSI/IEEE Std. 260.1-1993, *American National Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units)*.

### 3. USE.

a. All Federal departments and agencies shall use the terms and definitions contained herein. Only after determining that a term or definition is not included in this document may other sources be used. The *Legend* beginning on page *xii* is provided to assist users in determining the documentary source of the definitions.

b. Nearly all terms are listed alphabetically; a few exceptions to this rule include (1) the family of network topologies, which are grouped under the definition of "*network topology*," and (2) the family of dispersion terms, which are grouped under the definition of "*dispersion*." In all cases, ample cross references guide the reader to the location of the definition. Term names containing numerals are alphabetized as though the numbers were spelled out; thus, "*144-line weighting*" will appear in the "O" portion of the alphabet between the terms "*on-board communication station*" and "*one-way communication*," since it is pronounced as if it were spelled "one-forty-four line. . . ." For user convenience, exceptions to the rule are taken for entries comprising numerically consecutive terms, e.g., "*digital signal 0*," . . . "*digital signal 4*," which are grouped numerically following the "*digital signal*" entry.

c. An abbreviation for the term name often appears in parentheses following the term name. When both the abbreviation and the spelled-out version of a term name are commonly used to name an entity defined in this glossary, the definition resides with the more commonly used version of the term name. If the more commonly used designation is the fully spelled-out term name, then the definition resides under that name. If, however, the more common term name is the abbreviation, then the definition rests with the abbreviated spelling of that term name. For example, the definition of "*decibel*" resides under "*dB*."

d. When more than one definition is supplied for a given term name, the definitions are numbered, and the general definition is given first. Succeeding definitions are often specific to a specialized discipline, and are usually so identified.

e. Notes on definitions are **not** a mandatory part of this document; these notes are expository or tutorial in nature. When a note *follows* a source citation (such as "[JP1]"), that note is not part of the source document cited. Notes and cross references apply only to the immediately preceding definition, unless stated otherwise.

- f. Three types of cross references are used: "*Contrast with*," "*Synonym*," and "*See*":
- (1) "*Contrast with*" is used for terms that are nearly antonyms, or when understanding one concept is aided by examining the definition of its counterpart.
  - (2) When term names are synonymous, the definition is placed under only one of the term names, *i.e.*, the preferred term name, which is generally the most common name. Synonyms are listed for cross-reference purposes only. The other term name entries contain only a "*Synonym*" listing; *i.e.*, the definition for synonymous term names is not repeated. Terms labeled "*Colloquial synonym*" are in occasional informal use, but may be semantically inexact or may border on slang.
  - (3) "*See*" is used where an undefined term name is entered as a cross reference only to direct the reader to a related term name (or term names) that is (are) defined in the glossary.
- g. Term names that are semantically incorrect, that have been replaced by recent advances in technology, or that have definitions that are no longer applicable, are designated as "*deprecated*." In such case, the reader is referred to current term names, where applicable.
- h. The telecommunications terms included in this glossary either are not sufficiently defined in a standard desk dictionary or are restated for clarity and convenience. Likewise, combinations of such words are included in this glossary only where the usual desk-dictionary definitions, when used in combination, are either insufficient or vague.
- i. Definitions that carry the source citation "[47CFR]" (which refers to *Title 47 U.S. Code of Federal Regulations*), or "[NTIA]" (which refers to the *NTIA Manual*), or the source citation "[RR]" (which refers to the *ITU Radio Regulations*) may have a format or syntax that differs from the definitions in the remainder of FED-STD-1037C because the FTSC Subcommittee to Revise FED-STD-1037B was not authorized to make any changes whatever to the definitions in these three documents. One minor formatting change was made to definitions from NSTISSI No. 4009, *National Information Systems Security (INFOSEC) Glossary*, cited [NIS]: Often the introductory indefinite article or definite article was added at the beginning of the cited definition, and that article was added in square brackets "[ ]" to indicate that its addition was the only change made in the quoted definition.
- j. Figures have been added to many definitions throughout the glossary to illustrate complex concepts or systems that are defined herein. With the exception of the figure called "**electromagnetic spectrum**," these figures are **not** a mandatory part of this document.
- k. This standard contains two appendixes, **neither** of which is mandatory.

Appendix A consists of a list of abbreviations used in this glossary. In that list, the **bold** font graces the term names that are defined in this glossary.

Appendix B consists of an abbreviated index of families of defined terms whose technologies are related. This index is provided as a tool to identify all related terms within a specific discipline so that the reader's understanding of a definition may be amplified by reading related definitions within a specific discipline. The index also provides the reader with information on the breadth and scope of disciplines addressed in the glossary.

**4. EFFECTIVE DATE.** The use of this approved standard by U.S. Government departments and agencies is mandatory, effective 180 days following the date of this standard.

**5. CHANGES.** When a Federal department or agency considers that this standard does not provide for its essential needs, a statement citing inadequacies shall be sent in duplicate to the General Services Administration (K), Washington, DC 20405, in accordance with the provisions of the Federal Information Resources Management Regulation Part 201-39.1002. The General Services Administration will determine the appropriate action to be taken and will notify the applicable agency.

Federal departments and agencies are encouraged to submit updates to this standard; those updates will be considered for the next revision of this standard. The General Services Administration has delegated the compilation of suggested changes to the National Communications System, whose address is given below.

Preparing Activity:

Office of the Manager, National Communications System  
Technology and Standards Division  
701 South Court House Road,  
Arlington, VA 22204-2198

## 6. DEVELOPMENT OF THIS STANDARD.

FED-STD-1037C was developed by a subcommittee of the Federal Telecommunication Standards Committee, the Subcommittee to Revise FED-STD-1037B. The U.S. Department of Commerce, National Telecommunications and Information Administration, Institute for Telecommunication Sciences (NTIA/ITS), 325 Broadway, Boulder, CO 80303-3328, supplied the chair, secretariat, and technical editorial services for the subcommittee. The work of the subcommittee was reviewed by the National Communications System Member Organizations, by the Federal Telecommunication Standards Committee members, and by representatives from other Federal agencies as well as representatives from industry and from the general public. The following Federal Agencies and Departments participated in the subcommittee:

Federal Aviation Administration Technical Center/Information Technology and Systems  
Section, ACT-142, Atlantic City International Airport, NJ  
General Services Administration, Washington, DC  
Joint Tactical Command, Control, and Communications Agency/ADW-S  
National Security Agency, Fort Meade, MD  
U.S. Department of the Army, ISEC, Ft. Huachuca, AZ  
U.S. Air Force, 1842 EEG/EEMST, Scott Air Force Base, IL  
U.S. Department of Commerce/NTIA/Washington, DC  
U.S. Department of Commerce/NTIA/Annapolis, MD  
U.S. Department of Commerce/NTIA/ITS, Boulder, CO  
U.S. Department of Defense, Defense Information Systems Agency, Joint Interoperability  
and Engineering Organization, Center for Standards, Fort Monmouth, NJ  
U.S. Department of Interior/OIRM, Washington, DC  
U.S. Department of Justice/JMD/IRM/TSS, Washington, DC  
U.S. Department of the Navy, NAVSEA, Arlington, VA  
U.S. Marine Corps, Quantico, VA

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This document is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Telephone (703) 487-4650.

**LEGEND (for labels appended to definitions)**

<b>LEGEND</b>	<b>MEANING</b>
<b>[After...]</b>	Definitions cited "After..." (as in "[After 2196]") are the responsibility of the FTSC Subcommittee to Revise FED-STD-1037B, and not the source-cited document, because of rewriting by the Subcommittee.
<b>(188)</b>	Terms and definitions in direct support of the MIL-STD-188 series of standards and their associated military handbooks. <b>This is <i>not</i> a source citation.</b>
<b>[2196]</b>	Terms and definitions extracted verbatim from MIL-STD-2196 (SH), <i>Glossary, Fiber Optics</i> (1989).
<b>[47CFR]</b>	Terms and definitions extracted verbatim from <i>Title 47 Code of Federal Regulations, Telecommunications</i> , Parts 0-199 (rev. Oct. 1, 1987, Oct. 1, 1988).
<b>[CCITT/CCIR]</b>	Recommendations and other documents from the ITU-T (the former CCITT and CCIR). The "CCITT" and "CCIR" citations are retained in this glossary because many of the cited documents have not been reissued by the ITU-T and given a new prefix.
<b>[FAA]</b>	FAA (1991), <i>Glossary of Optical Communication Terms</i> , DOT/FAA/CT-TN91/9 (FAA Technical Center, Atlantic City International Airport, NJ 08405).
<b>[FIRMR]</b>	<i>Federal Information Resources Management Regulation, Title 41 CFR Chapter 201.</i>
<b>[FS1045A]</b>	Federal Standard 1045A, <i>Telecommunications: Automatic Link Establishment</i> (1994).
<b>[ITU-T]</b>	Recommendations and papers from the International Telecommunication Union—Telecommunication Standardization Bureau.
<b>[JP1]</b>	Telecommunications terms and definitions extracted from Joint Pub 1-02 (DOD Joint Staff Publication No. 1-02), 1994, <i>Department of Defense Dictionary of Military and Associated Terms</i> , and established for use by all DOD Components, which will use the terms and definitions so designated without alteration unless a distinctly different context or application is intended.
<b>[JP1-A]</b>	Final draft of proposed revision of Joint Pub 1-02; memo from Chief, Joint Doctrine Division, the Joint Staff, 20 October 1994.
<b>[NATO]</b>	NATO ADatP-2(f) <i>Automatic Data Processing (ADP) NATO Glossary</i> , June 1991.

- [NIS]** *National Information Systems Security (INFOSEC) Glossary*, NSTISSI No. 4009, June 5, 1992, (National Security Telecommunications and Information Systems Security Committee, NSA, Ft. Meade, MD 20755-6000). *Note:* The FTSC Subcommittee used the most recent version of the NSTISSI 4009 document that was available at the time the Subcommittee meetings were held (November 1993 through September 1994). However, the NSTISSI document may have changed asynchronously with the 1037C standard, and those NSTISSI definitions may have been amended. The NSTISSI source document is scheduled to be updated on Internet. For the latest version of the NSTISSI No. 4009 Glossary, the reader must access the document on Internet. For hard copy of the 4009 Glossary, write NSA at Ft. Meade, MD. The user may wish to enhance his/her researches into definitions by reviewing the newer version of the 4009 glossary. The changes on 4009 on Internet do not, *per se* revise FED-STD-1037C. Therefore, the user should be aware that if he/she wishes to cite official NSTISSI No. 4009 definitions in a procurement document or other official paper, the official standard glossary is FED-STD-1037C.
- [NTIA]** Term names and definitions extracted verbatim from the *NTIA Manual of Regulations and Procedures for Federal Radio Frequency Management*. [U.S. Government agencies may obtain the NTIA Manual from the NTIA Office of Spectrum Management, Room 1605, Herbert C. Hoover Bldg., 14th and Constitution, N.W., Washington, DC 20230. The NTIA Manual may be purchased by non-Government interests at the U.S. Government Printing Office, Stock No. 903-008-00000-8.]
- [OMB]** OMB Circular A-130, *Management of Federal Information*.
- [RR]** Terms and definitions extracted verbatim from the *International Telecommunication Union Radio Regulations*, Malaga-Torremolinos (Oct. 1984, rev. 1985).
- [From Weik '89]** Use of this source citation acknowledges that the cited information is from *Communications Standard Dictionary*, 2nd ed., Dr. M. Weik, 1989 [Van Nostrand Reinhold Co., New York, NY], with the written permission of the holders of the copyright. These definitions are usually verbatim, but in some cases have been abbreviated or edited.

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*Note 1:* Appreciation is extended to ASC T1A1.5 for generously providing their draft glossary of terms and definitions relating to video-quality degradation. *Note 2:* Appreciation is extended to ANSI-accredited technical committee X3K5 for use of their draft definitions, which were used as a launching point for many of the computer-related definitions herein. No source citation is given the committee's work because their definitions were edited for format consistency and for broad applicability.

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