## Exhibit C

## IEEE 100 The Authoritative Dictionary of IEEE Standards Terms

**Seventh Edition** 



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ccitation control system with the circuited.

fference between the upper and ne response is 0.707 (-3 dB) ofe frequency. Usually both upper are specified rather than the difn only one number appears, it is ites: 1. The reference frequency tter for the lower bandwidth limit r the upper bandwidth limit than per and lower reference frequensame. In cases where exceptions noted. 2. This definition assumes ne essentially free of departures acteristic. 3. If the lower bandfrequency, the response at zero he response at the reference fre-(IM/HFIM) [40]

persive delay lines) A specified the amplitude response does not ount. Note: Typically, amplitude 1B bandwidth. (UFFC) [22] ) Of a signal, the difference be-

cies encountered in the signal. device, the range of frequencies n respect to some characteristic

(C) 165-1977 he range of frequencies within pect to some characteristic, falls ridth is commonly defined at the three decibels less than the ref-(PE) 599-1985w

networks) The frequency range system passes or uses. For extelephone requires a bandwidth A television channel occupies a (6 MHz). Cable systems occupy electromagnetic spectrum.

(LM/C) 802.7-1989r es, expressed in hertz, that can ee also: pass band.

(C) 610.7-1995 ange over which the amplitude e than a defined amount. Note: ns to specify bandwidth are 1 dB lispersive delay lines).

(UFFC) 1037-1992w 812-1984w fiber bandwidth. is The protocols used to allocate involves inhibiting send-packet ore nodes when another node is opportunity to transmit its send

(C/MM) 1596-1992 ism A procedure to facilitate efidth, whereby a node occasionueued Arbitrated (QA) slots.

(LM/C) 8802-6-1994

ersive bandwidth. persive bandwidth.

tive bandwidth.

ive See: frequency selective

fiber optics) The condition prewidth, rather than the amplitude s performance. The condition is orts the shape of the waveform linear systems, bandwidth-limto distortion-limited operation. operation; distortion-limited op-

(Std100) 812-1984w entation feature that multiplies spacity of the spaceborne fiberwork by allowing independent ring segments to use the same dedicated data bandwidth. (C/BA) 1393-1999

bang snuffer (nonlinear, active, and nonreciprocal waveguide components). A switch used in radar receivers to suppress carrier leakage during the transmit period. See also: gate. (MTT) 457-1982x

bank (A) (navigation) Lateral inclination of an aircraft in flight. See also: list. (B) An aggregation of similar devices (for example, transformers, lamps, etc.) connected together and used in cooperation. Note: In automatic switching, a bank is an assemblage of fixed contacts over which one or more wipers or brushes move in order to establish electric connections. See also: relay level.

(AES/EEC/PE/GCS) 172-1983, [119] (2) (A) One or more disk drives lined up in a row. (B) Any group of similar devices that are connected together for use as a single device. For example, a row of light-emitting diodes connected to form a display. (C) A contiguous section of addressable memory. For example, eight memory devices, each of which is 64 kB by 1; forming a 64 kB × 8 memory (C) 610.10-1994 bank.

bank-and-wiper switch (telephone switching systems) A switch in which an electromagnetic ratchet or other mechanisms are used, first, to move the wipers to a desired group of terminals, and second, to move the wipers over the terminals of this group to the desired bank contacts.

(EEC/PE) [119]

banked winding See: bank winding.

bank winding (banked winding) A compact multilayer form of coil winding, for the purpose of reducing distributed capacitance, in which single turns are wound successively in each of two or more layers, the entire winding proceeding from one end of the coil to the other, without return.

(IM) [120]

bar (1) (illuminating engineering) (of lights) A group of three or more aeronautical ground lights placed in a line transverse to the axis, or extended axis, of the runway

(EEC/IE) [126]

(2) The darker element of a bar code.

(PE/TR) C57.12.35-1996

bar code (1) An identification code consisting of a pattern of vertical bars whose width and spacing identifies the item marked. Note: The code is meant to be read by an optical input device, such as a bar code scanner. Applications include retail product pricing labels, identification of library documents, and railroad box car identification. Synonym: optical bar code. See also: universal product code.

(C) 610.2-1987, 610.10-1994w (2) An array of rectangular marks and spaces in a predeter-(PE/TR) C57.12.35-1996 mined pattern.

bar code reader See: bar code scanner.

bar code symbol An array of rectangular bars and spaces which are arranged in a predetermined pattern following specific rules to represent elements of data that are referred to as characters. A bar code symbol typically contains a leading quiet zone, start character, data character(s) including a check character (if any), stop character, and a trailing quiet zone.

(PE/TR) C57.12.35-1996 bar code scanner An optical scanner used to read a bar-code using reflected light. Synonym: bar code reader. See also: light pen. (C) 610.10-1994w

bare conductor A conductor having no covering or electrical insulation whatsoever. See also: covered conductor.

(NESC/NEC) [86]

barehand work A technique of performing live maintenance on energized wires and equipment whereby one or more line workers work directly on an energized part after having been raised and bonded to the same potential as the energized wire or equipment. These line workers are normally supported by an insulating ladder, nonconductive rope, insulating aerial device, helicopter, or the energized wires or equipment being worked on. Most barehand work includes the use of insulating live tools. (T&D/PE) 516-1995

bare lamp (illuminating engineering) A light source with no (EEC/IE) [126] shielding. Synonym: exposed lamp.

barette (illuminating engineering) A short bar in which the lights are closely spaced so that from a distance they appear to be a linear light. Note: Barettes are usually less than 4.6 m (EEC/IE) [126] (15 ft) in length.

bar generator (television) A generator of pulses that are uniformly spaced in time and are synchronized to produce a stationary bar pattern on a television screen. See also: television.

Barker code A binary phase code used for pulse compression, in which a long pulse is divided into n subpulses with the phase of each subpulse being 0 or  $\pi$  radians. Barker coded pulses have the property that after matched filter processing there are (n-1)/2 sidelobes, or n/2 for n even, on each side of the main response, each at a voltage level 1/n relative to the main response. Barker codes exist with n = 2, 3, 4, 5, 7, 9, and 13. See also: coded pulse. (AES) 686-1997

Barkhausen-Kurz oscillator An oscillator of the retarding-field type in which the frequency of oscillation depends solely upon the electron transit-time within the tube. See also: oscillatory circuit. (AP/ANT) 145-1983s

Barkhausen tube See: positive-grid oscillator tube.

barometric altimeter (navigation aid terms) Essentially an aneroid barometer, an instrument which determines atmospheric pressure and is graduated in feet above sea level.

(AES/GCS) 172-1983w barothermograph (navigation aid terms) An instrument which automatically records pressure and temperature.

(AES/GCS) 172-1983w

bar pattern (television) A pattern of repeating lines or bars on a television screen. When such a pattern is produced by pulses that are equally separated in time, the spacing between the bars on the television screen can be used to measure the linearity of the horizontal or vertical scanning systems. See also: television. (EEC/PE) [119]

bar printer An element printer in which the members of the character set are carried on a type bar. (C) 610.10-1994w

barrel connector A double-sided male coupling that interconnects two coaxial cables. Contrast: end connector.

(C) 610.7-1995

barrel distortion (1) A defect in a display surface that causes parallel lines to bow away from each other, causing a distorted image. See also: pin-cushion distortion

(C) 610.6-1991w (2) A distortion that results in a progressive decrease in radial magnification in the reproduced image away from the axis of symmetry of the electron optical system. Note: For a camera tube, the reproducer is assumed to have no geometric distor-(ED) 161-1971w

barrel plating Mechanical plating in which the cathodes are kept loosely in a container that rotates. See also: electroplat-(EEC/PE) [119]

barrel shifter A circuit which will shift a word a certain number of bits in either direction within a single clock cycle.

(C) 610.10-1994w

barretter (waveguide components) A form of bolometer element having a positive temperature coefficient of resistivity which typically employs a power-absorbing wire or thin metal (MTT) 147-1979w

barrier (1) A partition for the insulation or isolation of electric circuits or electric arcs.

(SWG/PE) C37.40-1993, C37.100-1992

(2) (Class 1E equipment and circuits) A device or structure interposed between redundant Class 1E equipment or circuits, or between Class 1E equipment or circuits and a potential source of damage to limit damage to Class 1E systems to an acceptable level. (PE/NP) 384-1992r

for transmission, or the effect of such departure on a trans-(PE) 599-1985w mitted signal.

(3) Instantaneous phase departure from a nominal phase. (SCC27) 1139-1999

phase difference (general) The difference in phase between two sinusoidal functions having the same periods.

(Std100) 270-1966w (2) (A) (automatic control) Between sinusoidal input and output of the same frequency, phase angle of the output minus phase angle of the input: it is called "phase lead" if the input angle is the smaller, "phase lag" if the larger. (B) (automatic control) Of two periodic phenomena (for example, in nonlinear systems) the difference between the phase angles of their two fundamental waveforms. Note: Regarded as part of the transfer function which relates output to input at a specified frequency, phase difference is simply the phase angle  $\theta(j\omega)$ in  $A(j\omega)$  exp  $j\theta(j\omega)$ . Measurement of phase difference in the complex case is sometimes made in terms of the angular interval between respective crossings of a mean reference line, but values so measured will generally differ from those made in terms of the fundamental waveforms. See also: phase shift. (PE/EDPG) [3]

phase distance relay A distance relay designed to detect phase-(PE/PSR) C37.113-1999 to-phase and three-phase faults.

phase distortion (1) (data transmission) Either the lack of direct proportionality of phase shift to frequency over the frequency range required for transmission, or the effect of such departure on a transmitted signal. (PE) 599-1985w (2) (facsimile) See also: delay distortion; phase-frequency (C) 610.7-1995 distortion.

phased satellite (communication satellite) A satellite, the center of mass of which is maintained in a desired relation relative to other satellites, to a point on earth or to some other point of reference such as the sub-solar point. Note: If it is necessary to identify those satellites that are not phased satellites, the term "unphased satellites" may be used.

(COM) [19]

phase-failure protection See: open-phase protection; phase-undervoltage protection.

phase-frequency distortion (facsimile) Distortion due to lack of direct proportionality of phase shift to frequency over the frequency range required for transmission. Notes: 1. Delay distortion is a special case. 2. This definition includes the case of a linear phase-frequency relation with the zero frequency intercept differing from an integral multiple of p. See also: phase delay distortion; phase distortion; facsimile transmis-(COM) 168-1956w sion; distortion.

phase function matrix The matrix that results when the elements of the Mueller matrix are averaged over all scatterer orientations. The phase function matrix relates the average scattered Stokes vector to the incident Stokes vector.

(AP/PROP) 211-1997

phase grouping The same phase of a number of circuit breaker poles is grouped in an adjacent configuration along the line of the same row.

(SWG/SUB/PE) C37.122-1983s, C37.100-1992

phase hit or change A sudden change in the received signal phase (or frequency) lasting longer than 4 ms. Since two common modulation techniques for high-speed data transmission are phase and frequency modulation, phase hits cause errors by looking like data. See also: gain hit or change; dropouts. (PE/IC) 1143-1994r

phase instability  $(S_{\phi}(f))$  One-sided spectral density of the (SCC27) 1139-1999 phase deviation.

phase-insulated terminal box (rotating machinery) A terminal box so designed that the protection of phase conductors against electric failure within the terminal box is by insulation (PE) [9] only

phase jitter An instability in the phase of a transmission signal. (C) 610.7-1995 See also: amplitude jitter.

phase lag (phase delay) (2-port network) The phase angle of the input wave relative to the output wave  $(\phi_{in} - \phi_{out})$ , or the initial phase angle of the output wave relative to the final phase angle of the output wave  $(\phi_i - \phi_f)$ . Note: Under matched conditions, phase lag is the negative of the angle of the transmission coefficient of the scattering matrix for a 2port network. See also: phase difference.

(IM) 285-1968w, [38]

phase localizer (navigation aid terms) A localizer in which the on-course line is defined by the phase reversal of energy radiated by the sideband antenna system, a reference carrier signal being radiated and used for the detection of phase.

(AES/GCS) 172-1983w

phase lock The state of synchronization between two ac signals in which they remain at the same frequency and with constant phase difference. This term is typically applied to a circuit that synchronizes a variable oscillator with an independent (PE/PSR) 1344-1995 signal.

phase-locked Pertaining to two signals whose phases relative to each other are kept constant by a controlling device.

(C) 610.10-1994w

phase lock loop (communication satellite) A circuit for synchronizing a variable local oscillator with the phase of a transmitted signal. Widely used in space communication for coherent carrier tracking, and threshold extension, bit synchronization and symbol synchronization. (COM) [24]

phase locus (for a loop transfer function, say G(s) H(s) A plot in the s plane of those points for which the phase angle, ang GH, has some specified constant value. Note: The phase loci for 180 degrees plus or minus n 360 degrees are also root (PE/EDPG) [3] loci. See also: feedback control system.

phase margin (1) (loop transfer function for a stable feedback control system) (excitation systems) 180 degrees minus the absolute value of the loop phase angle at a frequency where the loop gain is unity. Note: Phase margin is a convenient way of expressing relative stability of a linear system under parameter changes, in Nyquist, Bode, or Nichols diagrams. In a conditionally stable feedback control system where the loop gain becomes unity at several frequencies, the term is understood to apply to the value of phase margin at the highest of these frequencies. See also: feedback control (PE/EDPG) 421A-1978s

(2) (speed governing of hydraulic turbines) 180 degrees minus the absolute value of the open-loop phase angle at a frequency where the open-loop gain is unity.

(PE/EDPG) 125-1977s

(3) The absolute value of loop phase angle subtracted from 180 degrees found in a feedback system at the frequency for which its gain reaches unity. The margin from 180 degrees represents a measure of dynamic stability

(PEL) 1515-2000

phase meter (phase-angle meter) An instrument for measuring the difference in phase between two alternating quantities of the same frequency. See also: instrument. (EEC/PE) [119]

phase modifier (rotating machinery) An electric machine, the chief purpose of which is to supply leading or lagging reactive power to the system to which it is connected. Phase modifiers may be either synchronous or asynchronous. See also: con-(IA/PE/MT) 45-1983s, [9]

phase-modulated transmitter A transmitter that transmits a phase-modulated wave

(AP/BT/ANT) 145-1983s, 182-1961w

phase modulation (1) (data transmission) Angle modulation in which the angle of a carrier is caused to depart from its reference value by an amount proportional to the instantaneous value of the modulating function. Notes: 1. A wave phase modulated by a given function can be regarded as a wave frequency modulated by the time derivative of that function. 2. Combinations of phase and frequency modulation are commonly referred to as frequency modulation. See also: reactance modulator; angle or phase; pulse duration; phase deviation. (IT/AP/PE/ANT) 145-1983s, 599-1985w, [123] (2) (overhead-power-line corona and radio noise) Modulation in which the angle of a carrier is caused to depart from (3) A a fixe

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ocess of receiving and re nat the amplitudes, wave lements are re-established

(COM/TA) 1007-1991 itment of a depleted elecin an electrolyte cell. See

(EEC/PE) [119] iic brake in which the elec-; is returned to the power loads, or a combination nstead of being dissipated (VT) 1475-1999

amic braking in which the ven machinery is returned so: dynamic braking; elec-

E/IA/ICTL/IAC) [9], [60] tated converters) (coniliary branch intended to ie supply side of the con-

(IA/SPC) 936-1987w modulator) A frequency mplification, and selective (PE/EEC) [119] em in which the reactance al energy source. See also: (AES) [41]<sup>5</sup>

ismission) A repeater that The retransmitted signals (PE) 599-1985w designed for digital transalso: optical repeater.

(Std100) 812-1984w o re-time and re-transmit ave been restored to their (C) 610.7-1995

ck on a magnetic drum or 1 with a read/write head, to function as circulating (C) 610.10-1994w

er. mage.



(C) 610.4-1990w space of a process, a ses to a file, a sequence of 945-1-1996, 1003.5-1999 physical section or block (C/DA) 1481-1999

RBOC) A regional tele-: be made up of individual

1390.3-1999, 1390-1995 ing systems) A toll office s are connected. Regional es. See also: office class.

(COM) 312-1977w rican hierarchical routing tional centers of the telesectional center; end of-(C) 610.7-1995

region, Geiger-Mueller See: Geiger-Mueller region.

<sub>region</sub>, Geiger-Mueller

region growing (image processing and pattern recognition) An image segmentation technique in which regions are formed by repeatedly taking the union of subregions that are similar in gray levels or textures. See also: region partition-(C) 610.4-1990w

region of limited proportionality (radiation counter tubes) The range of applied voltage below the Geiger-Mueller threshold, in which the gas amplification depends upon the charge liberated by the initial ionizing event. (ED) 161-1971w

region partitioning (image processing and pattern recognition) An image segmentation technique in which regions are formed by repeatedly taking the union of sub-regions that are similar in gray levels or textures and by repeatedly splitting apart subregions that are dissimilar. See also: region growing. (C) 610.4-1990w

region, proportional See: proportional region. regions of electromagnetic spectrum (1) (illuminating engineering) For convenience of reference, the electromagnetic spectrum is arbitrarily divided as follows:

Vacuum ultraviolet Extreme ultraviolet 10-100 nm Far ultraviolet 100-200 nm Middle ultraviolet 200-300 nm Near ultraviolet 300-380 nm Visible 380-770 nm Near (short wavelength) 770-1400 nm infrared Intermediate infrared 1400-5000 nm Far (long wavelength) 5000-1 000 000 nm infrared

Note: The spectral limits indicated above have been chosen as a matter of practical convenience. There is a gradual transition from region to region without sharp delineation. Also, the division of the spectrum is not unique. In various fields of science, the classifications may differ due to the phenomena of interest. Another division of the ultraviolet spectrum often used by photobiologists is given by the International Commission on Illumination (CIE):

- UV-A 315 to 400 nm
- UV-B 280 to 315 nm
- UV-C 100 to 280 nm

(EEC/IE) [126]

(2) (light-emitting diodes) For convenience of reference the electromagnetic spectrum near the visible spectrum is divided as follows.

Spectrum Wavelength in Nanometers	
10-280 280-315 315-380 380-780 790-10	
79	

Note: The spectral limits indicated above should not be construed to represent sharp delineations between the various regions. There is a gradual transition from region to region. The above ranges have been established for practical pur-(EEC/IE) [126] poses. See also: radiant energy.

register (1) (electronic computation) A device capable of retaining information, often that contained in a small subset (for example, one word), of the aggregate information in a digital computer. See also: address register; index register; circulat-(C) 162-1963w ing register; shift register.

(2) (telephone switching systems) A part of an automatic switching system that receives and stores signals from a calling device or other source for interpretation and action. (COM) 312-1977w

(3) A term used to describe quadlet addresses that can be read or written by software. In the context of this document, a register does not imply a specific hardware implementation. If a bus standard allows transactions to be split, and sufficient time is allowed between the request and response subactions,

the functionality of the register can be emulated by (C/MIVI)/al/24/24/190 sor on the module.

(4) A storage device or storage location having a specified storage capacity. See also: strobe. (C) 610.10-1994v (5) A set of records (paper, electronic, or a combination)

maintained by a Registration Authority containing assigned names and the associated information. (C/LM) 802.10g-1995

register architecture A computer architecture whose design is based on the maintenance of data items in registers. Contrast: (C) 610.10-1994w

stack architecture. register-arithmetic and logic unit An arithmetic and logic unit (C) 610.10-1994w which also contains a register array. register array See: register file.

register-based device A servant-only device that supports VXIbus configuration registers. Register-based devices are typically controlled by message-based devices via device-depen-(C/MM) 1155-1992 dent register reads and writes.

register constant (meter) The factor by which the register reading must be multiplied in order to provide proper consideration of the register, or gear, ratio and of the instrument transformer ratios to obtain the registration in the desired unit. Note: It is commonly denoted by the symbol Kr. See also: (ELM) C12.1-1982s electricity meter; moving element.

registered images Two or more images of the same scene that have been positioned with respect to one another so that corresponding points in the images represent the same point in (C) 610.4-1990w the scene.

register file A set of registers which may be addressed by their number in the set. Synonym: register array. (C) 610.10-1994w

register length (1) (electronic computation) The number of (Std100) 270-1966w characters that a register can store. (C) 610.10-1994w (2) The storage capacity of a register.

register marks Any mark or line printed or otherwise impressed on a web of material and which is used as a reference to maintain register. See also: photoelectric control.

(IA/ICTL/IAC) [60]

register, mechanical See: mechanical register.

register memory (A) Use of high-speed general purpose registers as one would use memory, as in using registers to hold frequently-used data items. (B) Registers specifically included in the machine design for use as high-speed storage. (C) 610.10-1994

register ratio (watthour meter) The number of revolutions of the first gear of the register, for one revolution of the first dial pointer. Note: This is commonly denoted by the symbol  $R_r$ (ELM) C12.1-1982s

register reading The numerical value indicated by the register. Neither the register constant nor the test dial (or dials), if any exist, is considered. See also: electricity meter. (EEC/PE) [119]

register set A subset of the full array of registers in a machine which the processing unit is currently allowed to use. Note: Machines may have N registers of which the processor may be able to address only M at a time; this divides the register (C) 610.10-1994w array into N/M register sets.

register transfer language (RTL) A computer language used to represent the flow of information on a system level; for example, to show data at the level of computer devices such (C) 610.10-1994w as registers, gates, and ALUs.

register-transfer level (RTL) (1) A description of computer operations where data transfers from register to register, latch to latch and through logic gates are described. Note: This may be an abstract description or microcoding. (C) 610.10-1994w

(2) A level of description of a digital design in which the clocked behavior of the design is expressly described in terms of data transfers between storage elements, which may be implied, and combinational logic, which may represent any computing or arithmetic-logic-unit logic. RTL modeling al-