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**The New IEEE Standard Dictionary
of Electrical and Electronics Terms**
[Including Abstracts of All Current IEEE Standards]

Fifth Edition

Gediminas P. Kurpis, Chair

Christopher J. Booth, Editor

The Institute of Electrical and Electronics Engineers, Inc.
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kHz subcarrier with ± 6 kHz modulation is often used. 185-1975w

subsidiary conduit (lateral). A terminating branch of an underground conduit run, extending from a manhole or handhole to a nearby building, handhole, or pole. See: **cable.** [119]

subsonic frequency. See: **infrasonic frequency.**

sub-split. A frequency division scheme that allows two-way traffic on a single cable. Inbound path signals come to the headend from 5 to 30 MHz. Outbound path signals go from the headend from 54 to the upper frequency limit. The guardband is located from 30 to 54 MHz. 802.7-1989

substantial (transmission and distribution). So constructed and arranged as to be of adequate strength and durability for the service to be performed under the prevailing conditions. C2.2-1960

substation (1) (generating stations electric power system). An area or group of equipment containing switches, circuit breakers, buses, and transformers for switching power circuits and to transform power from one voltage to another or from one system to another. 505-1977

(2) (transmission and distribution). An assemblage of equipment for purposes other than generation or utilization, through which electric energy in bulk is passed for the purpose of switching or modifying its characteristics. Service equipment, distribution transformer installations, or other minor distribution or transmission equipment are not classified as substations. Note: A substation is of such size or complexity that it incorporates one or more buses, a multiplicity of circuit breakers, and usually is either the sole receiving point of commonly more than one supply circuit, or it sectionalizes the transmission circuits passing through it by means of circuit breakers. See: **alternating-current distribution: direct-current distribution.** [10]

substitute character (SUB). A control character used in the place of a character that is recognized to be invalid or in error, or that cannot be represented on a given device. 610.5-1990

substitution error, direct-current-radio-frequency (bolometers). The error arising in the bolometric measurement technique when a quantity of direct-current or audio-frequency power is replaced by a quantity of radio-frequency power with the result that the different current distributions generate different temperature fields that give the bolometer element different values of resistance for the same amounts of power. This error is expressed as where ϵ is the effective efficiency of the bolometer units and η is the efficiency of the bolometer unit. See: **bolometric power meter.** [40]

substitution error, dual-element. A substitution error peculiar to dual-element bolometer units that results from a different division of direct-current (or audio-frequency) and radio-frequency powers between the two elements. [40]

substitution power (bolometers). The difference in bias power required to maintain the resistance of a bolometer at the same value before and after radio-frequency power is applied. Commonly, a bolometer is placed in one arm of a Wheatstone bridge that is balanced when the bias current (direct current and/or audio frequency) holds the bolometer at its nominal operating resistance. Following the application of the radio-frequency signal, the reduction in bias power is taken as a measure of the radio-frequency power. This reduction in the bias power is the substitution power and is given by

$$P = I_1^2 R - I_2^2 R$$

where I_1 and I_2 are the bias currents before and after radio-frequency power is applied and R is the nominal operating resistance of the bolometer. See: **bolometric power meter.** 470-1972w

substrate (1) (integrated circuit). The supporting material upon or within which an integrated circuit is fabricated or to which an integrated circuit is attached. 274-1966w

(2) (photovoltaic power system). Supporting material or structure for solar cells in a panel assembly. Solar cells are attached to the substrate. [41]

(3) (planar transmission lines). The supporting material upon or within which a planar transmission line is fabricated or to which it is attached. A substrate can be composed of one or more nonconducting layers. 1004-1987

subsurface corrosion. Formation of isolated particles of corrosion product(s) beneath the metal surface. This results from the preferential reaction of certain alloy constituents by inward diffusion of oxygen, nitrogen, sulfur, etc. (internal oxidation). [59]

subsurface switch (power switchgear). A submersible switching assembly suitable for application in a below-grade enclosure that does not allow space for personnel access. C37.71-1984

sub-surface transformer (power and distribution transformer). A transformer utilized as part of an underground distribution system, connected below ground to high-voltage and low-voltage cables, and located below the surface of the ground. C57.12.80-1978

subsynchronous reluctance motor. A form of reluctance motor that has the number of salient poles greater than the number of electrical poles of the primary winding, thus caus-