

**IEEE
Standard Dictionary
of
Electrical and
Electronics
Terms**

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November 3, 1988

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low enough so that the test currents under considera-
tion would cause less than five (5) percent distortion
(instantaneous) in the voltage amplitude or waveshape
at the load terminals. 95

**essential performance requirements (nuclear power
generating stations).** Requirements that must be met
if a component, module, or channel is to carry out its
part in the implementation of a protective function. 109

**essential process control (electric pipe heating sys-
tems).** The use of electric pipe heating systems to
increase or maintain or both, the temperature of fluids
(or processes) in desirably available or essential me-
chanical piping systems including pipes, pumps,
valves, tanks, instrumentation, etcetera, in fossil
fueled generating stations. An example of an essential
process control system is the heating for the fuel oil
system. 448

**estimated life (performance)(thermal classification of
electric equipment and electrical insulation).** The ex-
pected useful service life based upon service experi-
ence or the results of tests performed in accordance
with appropriate evaluation procedures established by
the responsible technical committee, or both. 506

estimated position (navigation aid terms). The most
probable position of a craft determined from incom-
plete data or data of questionable accuracy. 526

EU. See: erythema flux.

evacuating equipment. The assembly of vacuum
pumps, instruments, and other parts for maintaining
and indicating the vacuum. See: rectification. 328

evanescent field (fiber optics). A time varying electro-
magnetic field whose amplitude decreases monotonically,
but without an accompanying phase shift, in a
particular direction is said to be evanescent in that
direction. 433

evanescent mode (cutoff mode) (waveguide). A field
configuration in a waveguide such that the amplitude
of the field diminishes along the waveguide, but the
phase is unchanged. The frequency of this mode is less
than the critical frequency. See: waveguide. 179

evanescent mode. See: cutoff mode.

evanescent waveguide. See: cutoff waveguide.

**event (1)(supervisory control, data acquisition, and
automatic control)(station control and data acquisi-
tion).** A discrete change of state (status) of a system
or device. 570, 403

(2) (sequential events recording systems). A change
in a process or a change in operation of equipment
which is detected by bistable sensors. 48

**event recognition (sequential events recording sys-
tems).** The capability to detect and process changes of
state of one or more inputs. 48

everyday load (composite insulators). The bare con-
ductor weight and wind load that predominates for the
greatest period of time over the life of a line. 483

evh (power line maintenance). See: extra high voltage. 458

E-viton. See: erythema flux.

evolving fault (power switchgear). A change in the
current during interruption whereby the magnitude of
current increases to a fault current or to a higher value
of fault current in one or more phases. 103

EW (radar). (1) Abbreviation for early warning. (2)
Abbreviation for electronic warfare. 13

(2) (radar). Refers to the signal after envelope or
phase detection, which in early radar was the dis-
played signal. Contains the relevant radar information
after removal of the carrier frequency. 13

exalted carrier reception. See: reconditioned carrier
reception.

exception (software). An event that causes suspension
of normal program execution. See: program execu-
tion. 434

exception condition (logical link control). The condi-
tion assumed by a logical link control (LLC) upon
receipt of a command protocol data unit (PDU) which
it cannot execute due to either a transmission error or
an internal processing malfunction. 585

excess insertion loss (fiber optics). In an optical wave-
guide coupler, the optical loss associated with that
portion of the light which does not emerge from the
nominally operational ports of the device. See: optical
waveguide coupler. 433

excess meter. An electricity meter that measures and
registers the integral, with respect to time, of those
portions of the active power in excess of the predeter-
mined value. See: electricity meter (meter). 328

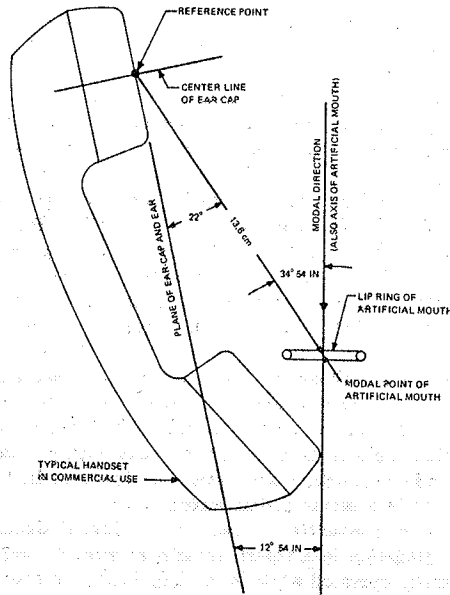
excess reactivity (power operations). More reactivity
than that needed to achieve criticality. In order to
avoid frequent reactor shutdowns to replace fuel that
has been consumed and to compensate for the ac-
cumulation of fission products which have high neu-
tron absorption cross sections and negative tempera-
ture coefficients, excess reactivity is provided in a
reactor by including additional fuel in the core at
startup. See: reactivity. 516

excess-three code (electronic computation). Number
code in which the decimal digit n is represented by the
four-bit binary equivalent of $n + 3$. Specifically:

decimal digit	excess-three code
0	0011
1	0100
2	0101
3	0110
4	0111
5	1000
6	1001
7	1010
8	1011
9	1100

See: binary-coded-decimal system. 235

exchange. See: central office exchange; private auto-



artificial mouth, the center of the external plane of the lip ring. 491

modal position (1)(telephony). The position a telephone handset assumes when the receiver of the handset is held in close contact with the ear of a person with head dimensions that are modal for a population. For this standard, the modal position is defined, by the modal head adopted by the CCITT (*Comité Consultatif International Télégraphique et Téléphonique*) Laboratory for the measurement of AEN. The point of reference for the handset and the head is the center of the circular plane of contact of the handset earcap and the ear. If the handset earcap is not circular or has no external plane of contact, an effective center and an effective plane of contact must be determined. The modal point is the position of the center of the lips with respect to the center and plane of the earcap point of reference. 122

(2)(transmission performance of telephone sets). The position a telephone-set handset assumes when the ear-cap of the handset is held in close contact with the ear of a modal head and the modal direction is in the plane defined by the axes of the transmitter cap and ear-cap. 491

mode (1)(binary floating point arithmetic)(radix-independent floating-point arithmetic). A variable that a user may set, sense, save, and restore to control the execution of subsequent arithmetic operations. The default mode is the mode that a program can assume to be in effect unless an explicitly contrary statement is included in either the program or its specification. The following mode is implemented: (A) Rounding, to control the direction of rounding errors. (B) In certain implementations, rounding precision, to shorten the precision of results. (C) The implementor may, at his option, implement the following modes: traps disabled or enabled, to handle exceptions. 469, 588

(2) (electron tubes). A state of a vibrating system to which corresponds one of the possible resonance frequencies (or propagation constants). *Note:* Not all dissipative systems have modes. *See:* **modes, degenerate; oscillatory circuit.** 190, 125

(3) (fiber optics). In any cavity or transmission line, one of those electromagnetic field distributions that satisfies Maxwell's equations and the boundary conditions. The field pattern of a mode depends on the wavelength, refractive index, and cavity or waveguide geometry. *See:* **bound mode; cladding mode; differential mode attenuation; differential mode delay; equilibrium mode distribution; equilibrium mode simulator; fundamental mode; hybrid mode; leaky modes; linearly polarized mode; mode volume; multimode distortion; multimode laser; multimode optical waveguide; single mode optical waveguide; transverse electric mode; transverse magnetic mode; unbound mode.** 433

mode conversion (waveguide). The transformation of an electromagnetic wave from one mode of propagation to one or more other modes. 267

mode conversion loss (or gain) (waveguide). The loss (or gain) due to the conversion of power from one waveguide mode to another. 267

mode coupler (waveguides). A coupler that provides preferential coupling to a specific wave mode. *See:* **waveguide.** 185

mode coupling (fiber optics). In an optical waveguide, the exchange of power among modes. The exchange of power may reach statistical equilibrium after propagation over a finite distance that is designated the equilibrium length. *See:* **equilibrium length; equilibrium mode distribution; mode; mode scrambler.** 433

mode dispersion. *See:* **multimode distortion.**

mode (or modal) distortion. *See:* **multimode distortion.**

mode filter (1) (fiber optics). A device used to select, reject, or attenuate a certain mode or modes. 433

(2) (waveguide components). A device designed to pass energy along a waveguide in one or more selected modes of propagation, and substantially to reject energy carried in other modes. 166

mode, higher-order (waveguide or transmission line). Any mode of propagation characterized by a field configuration other than that of the fundamental or first-order mode with lowest cutoff frequency. 185

model (1). A mathematical or physical representation of the system relationships. *See:* **mathematical model; system.** 209

(2) (software). A representation of a real world process, device, or concept. *See:* **analytical model; availability model; debugging model; error model; process; reliability model; simulation; statistical test model.** 434

modeling. Technique of system analysis and design using mathematical or physical idealizations of all or a portion of the system. Completeness and reality of the model are dependent on the questions to be answered,