Designation: F1457 – 94b (Reapproved 2011)

Standard Terminology Relating to Laser Printers[1]

This standard is issued under the fixed designation F1457; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 These definitions are intended for users of laser printers, so that they will be able to better understand the terminology used by others in the field. For general terms related to printers, see Terminology F909.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

F909 Terminology Relating to Printers

F1125 Terminology of Image Quality in Impact Printing Systems

3. Terminology

3.1 *Definitions:*

A4A—symbol for ISO standard metric cut-size paper which is nominally 20 by 30 cm or exactly 210 by 297 mm.

ACK, *n*—a communication control character transmitted by a receiver as an affirmative response to a sender; a signal that the printer receiver sends to the host indicating that the printer has received a message and is ready to receive the next message.

ADC—abbreviation for **automatic density control**.

American Standard Code for Information Interchange—a data communications code set consisting of a 7-bit-plus-parity code that can be translated with a leading "0" as an 8-bit set. (See **ASCII**.)

ASCII—American **S**tandard **C**ode for **I**nformation **I**nterchange.

asynchronous, *adj*—a data transmission in which the time between transmitted characters can vary, it is controlled by start and stop codes at the beginning and end of data sets. (See **synchronous**.)

automatic density control , *n*—the process whereby the toner layer deposited on the substrate is controlled by the printer. (See **ADC**.)

baud, *n*—a measure of data transmission speed; ideally one baud equals one bit per second.

BCD—abbreviation for **block circuit diagram**.

bead carryover—beads of developer appearing on a print or copy, or both; a deletion around each particle is common.

binary digit, *n*—a unit of electronic data. (See **bit**.)

binary synchronous transmission, *n*— a form of data sending. (See **binary digit, synchronous** , and **asynchronous**.)

bisynic (BSC), *n*—an IBM-developed method of binary synchronous transmission.

bit—binary digi**t**.

bit map—a pattern of bits representing the dots in a printed image.

block, *n*—a group of data transmitted as a unit.

block circuit diagram, *n*—an illustration of the interconnection of the major elements of a system, each element being presented by a block. (See **BCD**.)

bridging, *v*—the clumping of toner which causes a hollow area in the toner supply that prevents the free flow of toner to the dispenser auger.

DISCUSSION—Bridging is a different phenomenon from the image quality bridging as defined in Terminology F1125.

byte, *n*—a set of seven or eight bits used to represent a character or control function.

carrier detect, *n*—a communication control character used in an RS232 system to signal the sender that the receiver is on-line. (See **CD**.)

carriage return, *n*—an operation which advances the cursor to the beginning of a new line. (See **CR**.)

carrier return, *n*—a code which instructs the printer to begin a new line.

centronics interface, *n*—a parallel interface standard that connects elements of a communications system.

[1] This terminology is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.01 on Nomenclature and Definitions.

Current edition approved Nov. 1, 2011. Published September 2012. Originally approved in 1993. Last previous edition approved in 2006 as F1457–94b (2006). DOI: 10.1520/F1457-94BR11.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

character cel, *n*—the rectangular-shaped areas on a page containing a single character with its portion of the space which separates it from adjacent characters.

character pitch, *n*—the number of characters that can be printed in a horizontal 1 in. (25.4 mm).

character set—the collection of all the characters available in a given font.

CCITT—abbreviation for Comite Consultatif International Telegraphique et Telephonique (Consultive Committee for International Telephone and Telegraph).

CD—abbreviation for **carrier detect**.

clear to send, *n*—a control circuit that indicates to the data terminal equipment that data can or cannot be transmitted. (See **CTS**.)

cluster controller, *n*—a device in an IBM Model 3274, 3276, or equivalent that controls the flow of information in a local area network.

command, *n*—a byte or sequence of bytes from the host computer which invokes options available with the laser printer.

Comite Consultatif International Telegraphique et Telephonique (Consultive Committee for International Telephone and Telegraph), *n*—a committee established under the United Nations to recommend worldwide communication usage standards. (See **CCITT**.)

configuration, *n*—the state of the various interface and printing options that are set for the host and printer.

constant velocity transport, *n*—a mechanism which feeds the paper through the printer at a steady rate. (See **CVT**.)

corotron, *n*—a name for a specific type of corona.

corona, *n*—a device used to place a uniform electrical charge on the surface of a xerographic photoreceptor.

CR—abbreviation for **carriage return**.

CRC—abbreviation for **cyclic redundancy check**.

CTS—abbreviation for **clear to send**.

customer video, *n*—a printer control printed wiring board that receives video data and commands from a host to transfer them to the image output terminal control. (See **C-Video**.)

C-Video—customer video.

CVT—abbreviation for **constant velocity transport**.

cyclic redundancy check, *n*—an error checking system used in data transmission. (See **CRC**.)

data monitor, *n*—a mode of printer operation in which the information transmitted to the printer is printed in hexadecimal numbers.

data set, *n*—data communications equipment for transmitting coded data over phone lines.

data products interface, *n*—a parallel interface standard that is used to connect elements of a communications system.

data stream compatibility, *n*—the extent to which an electronic signal agrees with the signal requirements of a system. (See **DSC**.)

data terminal equipment, *n*—any piece of equipment at which a communications path ends or begins, a terminal or a printer. (See **DTE**.)

data terminal ready, *n*—an electronic signal from the printer to the host that the printer is ready to be used. (See **DTR**.)

DC1/DC3, *n*—a control sequence used with asynchronous transmission that enables the printer to signal the host to start and to stop transmitting data.

descender, *n*—that portion of an alphabetic character that extends below the baseline.

DIP switch—dual **i**n-line **p**ackage **switch**.

direct memory access, *n*—an input/output facility which allows transfers directly in or out of main storage without passing through the processors general registers. (See **DMA**.)

distorted image, *n*—a character, symbol, line drawing, or halftone that is deformed in shape or is vague and lacking a definite outline.

DMA—abbreviation for **direct memory access**.

download, *v*—to transfer data from the host to a server, in this case a printer.

DRAM—dynamic **r**andom **a**ccess **m**emory.

dry toner, *n*—the material in a dry developer system which when deposited on a substrate by the field of an electrostatic charge pattern, becomes the visible record.

DSC—abbreviation for **data stream compatibility**.

DTE—abbreviation for **data terminal equipment**.

DTR—abbreviation for **data terminal ready**.

dual in-line package switch, *n*—a device used to direct the signal line to or from one component or another. (See **DIP switch**.)

duplex channel, *n*—a data transmission system capable of transmitting in both directions at once.

dynamic random access memory, *n*—RAM than cannot be retained without continuous or regular stimulation. (See **DRAM**.)

EBCDIC—extended **b**inary **c**ode **d**ecimal **i**nterchange **c** ode.

electronic scanning system, *n*—a device used to look at readable pages and convert the text found there to an electronic signal. (See **ESS**.)

EM—abbreviation for **end of message**.

emulation, *n*—a technique where one device (in this case, a printer) is expected to behave exactly like another.

end of message, *n*—an electronic signal from the sender to the receiver indicating the last byte has been transmitted. (See **EM**.)

end of text, *n*—an electronic signal sent to indicate the end of the printable body of the message, it may be followed by control bytes. (See **ETX**.)

EPROM—erasable **p**rogrammable **r**ead **o**nly **m**emory; a type of memory chip used in computing equipment (in this case, a printer).

equipment check, *n*—an indication of a problem in the printer, sent by the printer to the cluster controller.

erasable programmable read only memory, *n*—a type of memory chip used in printers where the content of the chip can be read only when in normal use, but with special treatment it can be erased and reprogrammed.

ERR—external **r**OM **r**eceptacle.

ERR, *n*—an error.

ESC, *n*—abbreviation for **escape**; a keyboard control character whose function varies with the software or type of terminal.

Esc key, *n*—the keyboard key which is used to generate the ESC.

ESS—abbreviation for **electronic scanning system**.

ETX—abbreviation for **end of text**.

ETX/ACK, *n*—a standard for "ready/not-ready" status communication between the host and a printer.

extended binary code decimal interchange code, *n*—an eight-bit code set used on communications lines with IBM or IBM-compatible terminals and computers. (See **EBCDIC**.)

external ROM receptacle, *n*—a printed wiring board that accepts read only memory cartridges containing fonts or emulations. (See **ERR**.)

family, *n*—a set of fonts sharing the same type style, but differing in height, weight, and posture.

fixed pitch, *adj*—describes a character set in which all character cells are of equal width. (See **proportional spacing**.)

font, *n*—a set of characters that share the same type style and size.

glitch, *n*—a print defect that displaces the laser scan line so that it appears to start and stop late.

GE—graphic **e**scape.

graphic escape, *n*—an electronic signal sent to the printer to take it out of the graphic mode. (See **GE**.)

half-duplex channel, *n*—a data transmission channel capable of transmitting in both directions, but in one direction at a time.

handshaking, *v*—an exchange of signals between two devices in a computer network, as prelude to data exchange, it is to determine the readiness of each device to a data exchange.

HDLC—abbreviation for **high-level data link control**.

hex, *n*—abbreviation for **hexadecimal**.

hexadecimal, *n*—a base-16 numbering system consisting of 16 different digits, 0 through 9 and A through F. (See **hex**.)

high-level data link control, *n*—a CCITT standard for communication line protocol. (See **HDLC** .)

high-voltage power supply, *n*—a source of electrical power which provides voltage above logic levels, usually internal to the component. (See **HVPS**.)

hollow characters, *n*—print defects in which the center of the dark area is lighter than the edge, such that the character appears to have a heavy outline.

host, *n*—a device or computer delivering the information to a server, in this case a printer.

HVPS—abbreviation for **high-voltage power supply**.

image area, *n*—that portion of the page which is printed, including the space between letters and lines. (See **percent coverage** and **maximum image area**.)

image density, *n*—a perception of the image darkness as detected by the eye or measured by a reflection densitometer, where the image density is the log to the base ten of the reciprocal of the reflectance. (See **reflectance**.)

interface, *n*—the area in a device where different subsystems connect electrically or a device used to establish a connection between two different devices.

International Organization for Standards, *n*—an organization that develops and publishes international standards for a variety of technical applications, including data processing and communications. (See **ISO**.)

intervention required, *n*—a message from the host computer indicating to the operator that some action is required before printing can continue.

IOT controller, *n*—a printed wiring board in the image output terminal that controls the operation of the image output terminal and communicates with the electronic scanning system.

ISO—abbreviation for **International Organization for Standards.**

landscape mode, *adj*—a printer output orientation in which the printed lines run parallel to the direction of movement of the paper. (See **portrait mode.**)

LASER—light **a**mplification by **s**timulated **e**mission of **r**adiation.

leading—a typographical term indicating the amount of white space between lines of printed characters.

LED—light **e**mitting **d**iode.
LF, see line feed.

light amplification by stimulated emission of radiation , *n*—a device that generates a narrow beam of coherent light. (See **LASER**.)

light emitting diode, *n*—a solid-state electronic device or transistor which emits light. (See **LED**.)

line ending, *n*—an electronic code sequence denoting the end of a printed line or of a command.

line feed, *n*—an ASCII command, which when sent to a printer will advance the printing to the next line. (See **LF**.)

logotype, *n*—a single image which generally contains a symbol, trademark, or identifying name of a business, association, or product. (See **logo**.)

*logo***—**see **logotype**.

loopback test, *n*—a test in which a known signal is sent from a source to a remote device or interface, and the received signal is then returned and checked against the transmitted signal to verify that no change occurred.

low-voltage power supply, *n*—a source of electrical power which provides voltage at logic levels, usually internal to the component.

*LVPS***—**see **low-voltage power supply**.

maximum image area, *n*—the portion on a page which can be printed. (See **percent coverage** and **image area**.)

maximum page length, *n*—the maximum number of lines of text or graphic equivalent which a printer can output onto a sheet of paper; this value can be set by either the printer or the computer, or both.

maximum print position, *n*—the rightmost point at which the printer can mark the paper.

*MDSA***—**see **message data storage area**.

message data storage area, *n*—a RAM in the receiving device where the incoming signal is stored until it is ready to be taken into the device's working memory.

microprocessor unit/image generator, *n*—a set of components on the printer PWB which convert coded data (ASCII) into video data.

*MPP***—**see **maximum print position**.

*MPU/IG***—**see **microprocessor unit/image generator**.

MODEM—modulator/**dem**odulator.

modulator/demodulator, *n*—a device that converts electronic signals from the form used in data processing (digital) to the form used in communication (analog), and vice versa. (See **MODEM**.)

NAK, *n*—a signal from the printer which indicates that the previous data block was in error and that retransmission can begin; also used as a not ready signal.

not ready signal, *n*—a signal from a device in a system indicating that it will not be able to receive or send the next data segment.

*NUL***—**see **null signal**.

null signal, *n*—an electronic signal with no data.

OL—abbreviation for **open loop**.

open loop, *n*—a way of electronically interconnecting the components of a system.

overstriking, *v*—printing characters over each other, in some cases this is desired, in others it is a defect.

overtoning, *n*—any of the conditions occurring in the developing unit when the toner concentration is too high.

PA—abbreviation for **program attention**.

parallel communication, *n*—the transmission system where code for a character is sent over a set of channels, all bits at once, one bit per channel. (See **serial communication** .)

parity, *n*—an error checking system in which an extra bit may be added to the character data bits to show whether the number of bits in the character transmitted is even or odd.

parity error, *n*—a parity error occurs when the receiving device counts the number of bits in the received character, including the parity bit, and finds that the number does not agree with the predetermined odd/even requirement.

*PCB***,—**see **printed circuit board**.

Pel—picture **el**ement.

PEM—abbreviation for **printer emulation module**.

percent coverage, *n*—the ratio of the area actually covered by the ink (or print material) to the area of the page times one hundred. (See **image area** and **maximum image area**.)

personal computer, *n*—an electronic device programmable to carry out a variety of functions and intended primarily for use by one operator at a time.

picture element, *n*—in pictures or displays which are made up of tiny dots, each dot is a picture element.

pitting, *n*—small defects in the surface of the photoreceptor that produce spots or voids on the printout.

pixel—picture **el**ement.

*PM cycle***—**see **preventative maintenance cycle**.

*POA***—**see **printer output area**.

point size, *n*—a measurement of the height of a type font, where a point is approximately 1/72 in. or 0.353 mm.

poll, *n*—an electronic method the cluster controller uses to sequentially select each connected device.

portrait mode, *adj*—a printer output orientation in which the printed lines run perpendicular to the direction of movement of the paper. (See **landscape mode.**)

preventative maintenance cycle—the predetermined interval through which specified servicing events take place. (See **PM cycle**.)

print contrast, *n*—a differential measurement of light reflectance between image area and background area.

*printed circuit board***—** see **printed wiring board and PWB**.

printed wiring board, *n*—a circuit board on which the conductors have been set by a print-like process. (See **PWB**.)

printer emulation module, *n*—a device used to simulate the presence of a printer in a system. (See **PEM**.)

printer output area, *n*—the maximum area on the page to which the printer will print.

*printer ready***—**see **data terminal ready**.

printing module, *n*—those components in the laser printer that together drive the laser scanner, create the image on the page, and deliver the page to the stacker.

printout—information printed on paper.

printout queuing, *n*—a feature which allows a number of documents to be lined up or queued in memory for subsequent printout while other documents are being processed or printed, or both.

programmable read only memory, *n*— an information storage area that can be recorded on and read by an operator, but modified only through special physical processes. (See **PROM**.)

PROM—programmable **r**ead **o**nly **m**emory.

proportional spacing—a system of printing where the character spacing is set in accordance with the character width; this is in contrast to a fixed number of characters per inch such as 10 pitch (10 characters/inch), 12 pitch (12 characters/inch), 15 pitch (15 characters/inch), etc.

protocol, *n*—a formal set of conventions governing a communication process.

program attention, *n*—an application-dependent signal sent by the operator to the cluster controller from the printer to signify that a task was performed.

DISCUSSION—A typical PA could indicate that new paper stock had been inserted.

proportional spacing, *n*—a system of printing wherein the character spacing is set in accordance with the character width. (See **fixed pitch**.)

*PWB***—**see **printed wiring board**.

queue, *n*—a set of tasks stored in memory for use by a device in a specified order. (See **printout queuing**.)

RAM—random **a**cess **m**emory.

random assess memory, *n*—an electronic data storage system in which the data can be stored and retrieved directly from any memory location. (See **ROM**.)

raster output scanner, *n*—an output peripheral, that converts computer data into a bit mapped image, which is sent to the host for storage or a printer for output. (See **ROS**.)

read only memory, *n*—a form of electronic memory from which the system can extract information, but which cannot be altered or added to.

reflectance, *n*—the percentage of incident light reflected from an image area, where zero percent reflectance is black. (See **image density**.)

request to send, *n*—an electronic signal sent by one component to another to determine if the second component is ready to receive a transmission from the first.

ROM—read **o**nly **m**emory.

ROS—abbreviation for **raster output scanner**.

RS232, *n*—a serial interface standard to connect elements of a communication system.

RTS—abbreviation for **request to send**.

screen dump, *n*—a command that causes information showing on a terminal display to be printed just as it appears on the display.

scorotron, *n*—a corotron with a screen.

SCS—abbreviation for **system network architecture character string**.

SDLC—abbreviation for **synchronous data link control**.

serial communication, *n*—in data communications, refers to sending the code for a character over a single line one bit at a time. (See **parallel communication**.)

simplex channel, *n*—a data transmission system capable of transmitting in only one direction. (See **duplex channel**.)

sixel encoding, *n*—a method of grouping data, so that each byte resembles a code for an ASCII character.

space compression, *n*—a method of packing a series of space characters into a shorter sequence; to save time for transmission, the receiving device then expands the shorter sequence to its original length.

SNA—abbreviation for **system network architecture**.

SOS—abbreviation for **start of scan**.

start bi, *n*—the first element in a character in asynchronous serial transmission.

start of scan, *n*—an electronic signal in a transmission which indicates to the receiver that the next series of signals are from an image and not text code.

start of text, *n*—an electronic signal in a transmission which indicates to the receiver that the next series of signals are from text and not image code.

status, *n*—a message sent by a device to the host describing its condition, the condition can be any of several things, such as ready, able to execute the command, etc.

stop bit, *n*—in asynchronous serial transmission, the last element(s) in a character.

STX—abbreviation for **start of text**.

synchronous, *adj*—data sent together with a time base that allows the sender and receiver to operate locked together.

synchronous data link control, *n*— the set of electronic signals used in the system network architecture.

sysgen, *n*—the definition of all elements in a computing system.

system network architecture, *n*—a proprietary communication system developed by IBM. (See **SNA**.)

telco lines—telec**co**mmunication **lines**, such as telephone and other communication pathways that are used to transmit information from one location to another.

telecommunication lines, *n*—any communication pathways such as telephone and others that are used to transmit information from one location to another.

terminator, *n*—a character or sequence of characters, such as a line ending, used to mark the end of a command whose length is variable.

video data, *n*—a signal sent to the image output terminal by the electronic subsystem that turns the laser on and off to create an image on the photoreceptor.