



Glossary - Digital Photography Terms TIP 5111

DIGITAL CAMERA AND PHOTO PRINTER GLOSSARY

Achromatic color: A color with no saturation, like light gray.

Acquire: The opening up and importing of files into a given software application. The term is applied differently within different types of software. With imaging software it is most often done through a twain interface or plug-in mini-application.

Additive Primary Color: (Also see RGB) The RGB color model used by emitted imaging devices that allows white to be created by adding all colors, while black is the absence of all colors.

Addressability: A reference to the accurate placement of pixels of a digital file rendered to output devices such as film recorders and image setters. The size of the recorded pixel, the size of the imaging sensor, system illumination, and optical quality all affect addressability.

Aliasing: The noticeable repeated patterns, lines, or textures in any photographed or scanned subject that conflict with the pattern of an electronic sensor's pixel arrangement. For example diagonal lines represented by square pixels will produce jagged lines.

Analog: The measurement and recording of continuously varying values of elements in the physical world, such as sound, light, temperature, etc., corresponding proportionally to values such as electronic voltage. Consumer electronic devices like camcorders and tape players and so on are analog devices.

Anti-aliasing: The process used to remove "jaggies" or stair stepping in an image. Antialiasing smooths the diagonal lines by placing dots of an in-between tone in appropriate places.

Artifacts: (Artifacting), Misinterpreted or extraneous digital information resulting from the technical limitations of an imaging system. Artifacts alter pixel values,

and are the results of flare, motion, compression, dust, scratches, and so on. Artifacts create color faults or line faults that visibly impact the image negatively.

Aspect Ratio: The ratio of length to width. This term can be used at the many levels to describe an individual pixel, a CCD, the image or device such as the computer display.

Bayer Pattern: A color filter pattern used on single CCD imaging devices to create all the visible colors. Named after the inventor who defined the color pattern design and use.

Bit: The smallest amount of digital information. Made up of a 1 or 0 representing an on or off state.

Bit Depth: Refers to the gray scale range of an individual pixel. A pixel with 8 bits per color gives a 24-bit image (8 bits X 3 colors is 24 bits). CCD are colored in a pixel-by-pixel method, see CCD. 30/36-bit is billions of colors; 24-bit is 16.7 million colors; 16-bit is 65,535 colors; 8-bit is 256 levels of gray or color; 4-bit is 16 levels of gray or color; 2 bit is black or white.

Bitmap: 1. Originally was the image file using the on or off bit to produce a black or white pixel or dot. This type of image has no color or grayscale. 2. Is the method of storing information that maps an image pixel, bit-by-bit. These bitmapped file formats include .bmp, .pcx, .pict, .pict-2, tiff/.tif, .gif (89a), and so on.

Most image files are this type of bit mapped. This type of file gives you stair-stepped edges, the 'jaggies'. When examined closely you can see the line of pixels that creates edges. All computers use Bitmap images. The desktop or screen information for all Windows machines uses .bmp files, while the Macintosh uses pict files.

Black Noise: Is also know as Dark Current, is the signal charge the pixel develops in the absence of light. This charge is temperature sensitive, and normal in electrical image sensing devices.

Bleeding: The color value of one pixel unintentionally appearing in the adjacent pixel or pixels.

Blooming: Is the bleeding of signal charge from extremely bright pixels to adjoining pixels, over-saturating those pixels. Mask or potential barriers and charge sinks are used to reduce blooming.

.BMP: Windows Bitmap file format was created by Microsoft® as the system standard format .RLE compression can be used with this format.

Brightness: One of the three dimensions of color (HSB). Brightness is the relative lightness or darkness of a color from 0% black to 100% white.

Byte: Digital or computer measurement of storage, memory, file size or information made of 8 bits of information.

Calibration: The method of adjusting scanners, printers and displays to a defined standard to represent color accurately. Color calibration is necessary for accurate WYSIWYG color management.

CAMEDIA: The name given to the Olympus Digital Imaging Products (a combination of "Camera" and "Media").

CCD: Charged Coupled Device, a light sensitive chip used for image gathering. In their normal condition these are grayscale devices. To create color, a color Bayer pattern is laid down on the sensor pixels, using a color mask like RGBG, (Red, Green, Blue and Green). The extra Green is used to create contrast in the image. The CCD Pixels gather the color from the light and pass it to the shift register for storage. CCDs are analog sensors, the digitizing happens when the electrons are passed through the A to D converter.

CD-ROM: Compact Disc Read Only Memory. A "read only CD-ROM can hold up to approximately 700 MB of programs, pictures, text or other data.

Chroma: Color or Hue.

CMD: Charge Modulated Device is an active pixel sensor (APS), using a pixel structure borrowed from CCD technology. Two transistors reside in each pixel producing a high fill factor. CMDs also use CMOS technologies to produce images.

CMOS: The integrated circuitry having both digital and analog circuits fabricated on the same substrate allowing for controlling ASIC technology to be embedded into the chip design. Commonly used in computer designs for controllers, recently light sensitive designs have been produced. Unlike CCD they use less power, but are more prone to problem noise and low temperature failures.

CMY(K): Cyan, Magenta, Yellow, Black; these are the colors used in printing. Color Printers; Ink-Jet, Laser, Dye-Sublimation, Thermal Wax, and Solid Ink printers use CMY as their primary colors. This is a color management problem on computers. Converting RGB files to CMYK files causes color shifts. CMYK is also known as a reflective color since it is printed on paper, or reflective films.

Color Fringing: Is a CCD artifact caused when color filtering arrays or patterns conflict with information in a scene or image scanned or digitally photographed.

Color Gamut: Another term for a color model or color space used to describe visible colors used in imaging.

Color Management System (CMS): A set of software utilities that help calibrate color on input and output devices like displays, printers, and scanners. Color management systems control the accurate conversion of colors from RGB to CMYK, in printing and display. (also see ICC, ColorSync, calibration, CMYK, and RGB).

ColorSync: a color management system developed by Linotype-Hell for use on computers. Used on the Apple® Macintosh™ computers as a standard from controlling color through out the imaging process by using ColorSync ICC profiles for each color device like the display, scanner and printer.

Color Wheel: A color model designed to show all the visible colors.

Complementary colors are opposite each other, with secondary colors and so fall between primary colors.

CompactFlash cards: Rewritable removable memory or function card developed by SanDisk in 1994. In contrast with SmartMedia technology, it has a built-in controller.

Complementary Color: The opposite color or hue on a color wheel. For example green is opposite magenta, red is opposite cyan, and blue is opposite yellow on the color wheel.

Compression: Software algorithms that reduce the number of binary digits in a digital file by eliminating redundant information. The resulting files are reduced in size. (also see JPEG, LZW and RLE.)

Compression Ratio: The ratio of the size of a compressed digital file to the original uncompressed digital file. Ratios between 15:1 and 8:1 are the most often used in digital cameras. Highest quality ratios are less than 5:1, non-lossy compression is 2:1 or less.

Continuous-tone: The smooth infinite gradation of grays from black to white with out banding. This gradation also produces the full range in colors. (photographic quality printing)

Contrast: The visual relationship between each tone in an image. High contrast will produce an abrupt and sharp difference in tones, when low the image will appear flat.

Dark Current: Is also know as Black Noise, is the signal charge the pixel develops in the absence of light. This charge is temperature sensitive, and normal in electrical image sensing devices.

DCF: Design Rule for Camera File System - an industry standard for saving digital images. This not only determines the file type, but also sets the rule for naming the folder and file structure. It allows the conversion of uncompressed TIFF files into compressed JPEG files. This JPEG file is of the Exif type and can contain camera information such as the date.

Density: The ability of a color or gray to stop or absorb light, the less light reflected or absorbed the higher the density.

Density Range: The range from the smallest highlight dot the press can print to the largest shadow dot that can be printed. The amount of detail that can be seen in the shadow (blacks) to the highlight (whites) of an image.

Digital: The measurement and recording of continuously varying values of elements in the physical world, such as sound, light, temperature, etc., corresponding proportionally to values such as electronic voltage. These values are then converted into

binary bits of information to be stored, or used on magnetic or optical media.

Digital products include CD-players, digital cameras, and computers.

Digital ESP: Digital Electro-Selective Pattern. The employment of a selective multi zone metering system ensures an optimal exposure even in difficult lighting conditions.

Digital zoom: A digital zoom merely "blows up" the image in the viewfinder (or on the LCD) and crops in on a section of it. Enlarging the image in this way results in the reduction of picture quality, unlike an optical zoom.

Dithering: A method of simulating gradations or grays or colors by spacing the same colored dots or pixels at different intervals.

Download: Describes the process of receiving data, usually via the Internet or from another device such as a digital camera to a PC.

Dot: The unit (size) printers use to describe the ink or toner placed for printing. Dot can correspond to a single pixel used to show an image or a group of pixels to produce a larger printer dot(s) to represent grays.

Dot Gain: The tendency in printing for dots to print larger than they should. The increased dot size causes darker tones or colors, and an increase in the density of light reflected by the image. This is most pronounced when using poor quality papers, or when inks are absorbed and spread.

DPI: Dots Per Inch, a printing term that describes the number of dots per inch that are used to create an image. The smaller the size and greater the number, the higher the geometric resolution of the printer. The image can be a font or graphic. (Note: digital input devices such as scanners and cameras do not have a dpi, but use pixels.) Most printers are symmetrical in their dpi layout, like 600 X 600 dpi. However it is not uncommon to see asymmetrical resolutions on inkjet and low-end laser printers such as 720 X 360 or 600 X 300 dpi.

DPOF: Digital Print Order Format. A format that enables images stored on Camera Media cards to be accessed directly by supporting printers for a simpler printing solutions at home or by photo labs.

Driver: A small program that allows the communication between the application program and a certain device, such as a printer or digital camera.

Dye-Sublimation Printer: The printing system that transfers colors from RGB, CMY, or CMYK computer files onto ribbons containing dyes that are heated and fused onto paper. Dye sublimation printers are continuous-tone printers capable of producing photographic quality images. (The Olympus P-200, P-330 and P-400 printers are all dye-sublimation printers.)

Dynamic Range: Has two distinct and different meanings in digital products.

1. Dynamic range is the ratio of the specific maximum signal level capability of a system or component to its noise level. Usually expressed in decibels and used in engineering specifications. Also known as signal-to-noise ratio.
2. Dynamic range is the ratio of contrast, tonal range or density in an image between black and white. The number 0.0 represent white and black is 4.0. A flatbed scanner may have a dynamic range of 2.4-2.7 while a drum scanner may be as high as 3.6-3.8. The numeric ranges stated is the ability of the device to record and reproduce the range of grays between black and white. The higher the number the greater the detail in shadow (black) and highlight (white) reproduced in an image. Film is generally given a dynamic range of 4.0, while digital devices range from 2.4-3.0 for most digital cameras and scanners. A drum scanner can achieve as high as 3.7 to 3.9.

EfiColor: Electronics for Imaging's (Efi) software color management program for creating device independent color files.

Emitted Color: The additive RGB color model used to produce colors on televisions and computer displays.

.EPS: Encapsulated Postscript, a computer file standard set by Adobe for printers, which is the mathematical definition of shapes, lines, color and space. This is one of the most accurate ways to define a font or image, but creates a much larger file size. EPS files also add page description information to the files. Used on all computers, but not all postscript files are the same, nor readable between programs. EPSF is an IBM file generally, EPSP is usually found on Macintosh, there are several different variations of each type.

EXIF: A new storage, compression file format used to store images on flash memory cards and digital cameras. Exif file contain either JPEG compressed files or uncompressed TIFF files, and can contain addition header information. (Also see TIFF and JPEG)

Export: The act of sending a file out through a specialized mini-application to print, compress, or to a specialized file format.

Fill Factor: The ratio of the light sensitive area to the pixels total size.

Filter: has two distinct and different meanings in digital products.

1. A specialized mini-application to extend or offer unique expansions of a software package, usually through the use of plug-in architecture. This is a key component of many imaging software packages.
2. An optical attachment placed on the front of the lens. It is used to correct color, or enhance an image by absorbing part(s) of the visible light spectrum, or create special effects through prisms and other optical enhancements.

Firmware: An often-used microprogram or instruction set stored in ROM. Usually refers to the ROM-based software that controls a unit. Firmware is found in all computer-based products from Cameras to Digital Peripherals.

Fixed-Pattern Noise: (FTP) The unvarying display noise present in CCDs and CMOS sensors.

FlashPath Adapter: Permits the trouble-free transfer of digital images saved on SmartMedia cards to a PC. The storage cards need only be inserted into the adapter and then into the computer's disk drive.

Flash Pix (*.FPX): This file format is a cooperative venture between Kodak, Microsoft and Hewlett-Packard that can contain more than one physical resolution with out fixed dimensions. The resolution loaded will control the size of the resulting bitmap. JPEG is used as the compression engine, and the resulting file is about 30% larger than single resolution file.

Frequency: The number of lines per inch in a half-tone screen.

Gamma: Refers to the mid-tone contrast in an image, or on a display. Gamma values will affect the balance of the mid-tones without any effect on pure white or black.

Gamma correction: The changing of the brightness, contrast or color balance by assigning new values to the gray or color tones. Gamma correction can be either linear or nonlinear. Linear changes affect all tones, non-linear changes affect only areas tone by tone, like highlights, shadows, or mid-tones.

.GIF: Graphic Interface designed by CompuServe for using images on line. This is a 256 color or 8-bit image.

*.**GIF 89:** The most recent GIF standard that allows the selection of area for transparency. The primary use is on the Internet and other on-line services. Like GIF it is 256 color or 8-bit imaging.

Gray Balance: Is the combination of the RGB or CMYK colors to produce a neutral gray.

GUI: Pronounced Goey, stands for Graphic User Interface. Refers to the computer interface with software in a user-friendly appearance.

Halftone: The reproduction of a continuous-tone image, made by using a screen to break the image into various size dots. (see screen angle and screen frequency)

HSB: The color model that most closely resembles the human perception of color. It is made up of Hue, Saturation and Brightness.

Hue: One of the three dimensions of color (HSB). Hue is the wavelength of light reflected from or transmitted through an object, seen as the visible spectrum. Red, yellow, blue, and so on are the names of the hues.

ICC: International Color Consortium, device dependant color profiles used to manage color in the capture, editing and printing of digital images.

Image capacity: The number of images that can be taken before the storage medium needs to be replaced.

Image compression: In order to store digital pictures economically, the image data is compressed. However, compression often causes a reduction in picture quality.

Image-editing software: Describes software that allows the user to view and alter digital images. An commonly used image editing program is Adobe Photoshop.

Index Color: Reduced Color mapping, 8 bits or less. Done to reduce images to their smallest size. Commonly used for images placed on home pages of the Internet and games. The 256 color pallets are also mapped for best results.

Inkjet Printer: A printing system that sprays fine droplets of CMYK ink through very small nozzles to form dot on papers. The "Photo Inkjet Printers" also use the fine nozzles to spray 6 colors of CMY and pastel versions of CMY to create dots on paper.

ISO: International Standards Organization, is a committee of representatives from different countries responsible for the establishment of consistent global standards. ISO products include film speeds, computer standards like JPEG, and so on.

IVUE: The proprietary file format used by Live Picture image editing software. The IVUE format converts bitmapped images into a vector format for easy editing.

"Jaggies": Slang term for the stair-stepped appearance of a curved or angled line in digital imaging. The smaller the pixels and the greater their number, the less apparent the "jaggies". Also known as pixelization.

.jpg/JPEG: The de facto ISO standard for image compression in digital imaging devices. There are several versions of JPEG, such as JFIF. JPEG uses 8 X 8

pixels and compresses the information to its lowest common value based on a set ratio. This is the reason you can get many images into the digital cameras. The name comes from Joint Photographic Experts Group.

Kilobyte: equal to 1024 bytes, written as "KB", used to refer to size of files, which relates to amount of information in a file.

LCD: Liquid Crystal Display. The LCD can be used as a viewfinder when taking pictures and you can also use it to review pictures and decide which ones to keep and which to delete from memory. A good LCD display should be easy to see under a variety of lighting conditions.

LZW: (Limple-Ziv-Welch) is the non-lossy compression algorithm, usually compressed no more than 2:1, on *.tif (TIFF) files most often. LZW non-lossy compressions are most often used in archiving image files that cannot sustain any loss in quality.

Laser Printer: A low to medium/high output device similar to a photocopier. Laser printers can reproduce line images, text, or photographic half-tones on plain paper. Most laser printers use a 53-85 lpi screen.

L*a*b*-Lab Color: is a color model developed by the Centre Internationale d'Eclairage (CIE). These standards are internationally accepted standards for all color metric measurements. The Lab model, like other CIE color models, defines color values mathematically in a device independent manner. Lab color is consistent color regardless of the device producing the color.

LPI: The printing term for Lines Per Inch. LPI refers to the rows of dot in half tones or the frequency of the screen. Most newspapers print halftones at 85 lpi., while a magazine or book will use 133 lpi. or higher. Most home computer printers use a 53 lpi. frequency, while a high-end 600 X 600 dpi printer will use 85 to 100 lpi. frequency.

Megabyte: The computer measurement for 1024 Kilobytes (or 1,048,576 bytes), written "MB", used to refer to sizes of files and media such as hard drives or RAM.

Megapixel: The imaging term for an Image sensor of one million pixels or more. The higher geometric pixel resolution of these sensors produces higher quality digital photographic images.

Micro Lens: Lenses designed for and placed on CCDs to enhance the pixel sensitivity and focus the light into the pixel well.

Micron: Is the metric measurement equal to one millionth of a meter, or 0.00003937 inch.

MPEG: Motion Picture Expert Group. The abbreviation is used to describe a compression format for digitized video images.

NiCd battery: Nickel-Cadmium battery.

Ni-MH battery: Nickel-Metal Hydride battery. Rechargeable batteries that have an energy density 100% higher than NiCd batteries and can supply high energy levels when required, e.g. when using the flash in quick succession. They can be recharged more than 300 times and are environmentally-friendly (free of

cadmium and mercury). Among other devices, Ni-MH are used to power digital cameras.

Noise: The unwanted or uncontrolled electronic buildup in a device. If the noise become too high the signal or image is degraded to an unusable condition.

NTSC TV connectivity: National Television Standards Committee. American television standard that allows you to view snapshots on a regular TV. With this you can display images and remove pictures from memory without using a computer or the camera's LCD screen. Defined by an image of 640 x 480 pixels and a frequency of 60Hz.

Optical Zoom: Operates the lens of the camera to move you closer to your subject. Uses conventional lenses to provide the best resolution.

Pantone: The industry standard color management system for printer color reproduction. Pantone uses exact percentages of cyan, magenta, yellow, and black to create colors.

.PCD: Kodak's PhotoCD™ high-resolution file format for storage on CD-ROM containing up to 5 different resolutions present.

.PCX: A Paintbrush bitmap image extension, standard created by ZSoft. RLE type compression is used in this format, which includes a multi-page version known as DCX.

.PDD: Adobe® PhotoDeluxe™ native file format used to save files for the application.

.PDF: Portable Document Format is Adobe® System's cross-platform file. Images, text and movies can be sent to many different computers and read with the Acrobat Reader.

.Pict/.Pict 2: The native bitmapped file format for Macintosh™ images. Pict 2 can be up to 32 bits of color.

Pitch: The center-to-center measurement of dots in printing (dots) or pixels in a CCD or CMOS sensors.

Pixel: The pixel is the smallest part of a digitized or digital image. Pixel comes from the term "picture elements". Also used in measuring image size and geometric resolution, i.e., 640 X 480 is the pixel resolution of most VGA Monitors. (Note pixels are square in computers and rectangular in video.)

Plug-In: The plug-in architecture was first popularized by Adobe Photoshop and is now the de facto standard for all major imaging programs. Unlike Twain it allows more flexibility in design so acquiring, exporting, and performing specific tasks can be accomplished within a software application. This is the preferred choice of operation in the Macintosh and 'Power User' computers. Plug-in ideology has spread to other applications like Netscape Navigator, Macromedia Director, and so on. Not all plug-ins work with all products, specific interfaces are required for different types of software. Plug-Ins are also software version dependent.

PPI: Pixels Per Inch is a term that describes geometric resolution for display purposes. Most quality Windows® monitors standard is 96 ppi, while the

standard Macintosh® monitor would be 72 ppi. High-end video cards allow the adjustment of the ppi of the display.

.PSD: is the Adobe Photoshop file format used on versions 3.0 and higher.

QuickTime: Developed by Apple Computer Inc., this is a standard for digital videos and streaming media. It provides the ability to record and view motion picture video with a digital camera.

RAM: Random Access Memory, the volatile memory used to temporarily store information for processing. This is the fastest type of memory for the computer and the most expensive. There are several types of RAM. S-RAM, Static RAM, is the most expensive type of RAM found in on-board memory units, some Printers, and in PCMCIA Type I Cards. D-RAM, Dynamic RAM, is most often seen as the expandable RAM used by the computer for memory.

Reflected Color: (Also see CMYK) The color model that allows us to see color. The visible light striking an object has all colors not seen absorbed while reflecting the visible color.

Resolution: The sharpness, tonal range and color accuracy of an image. The pixel count determines the geometric resolution and tonal dynamic range of the image. The optical resolution or lens determines the clarity, focus and contrast of the information provided to the image capture material. The dynamic range (tonal shadow and highlight detail), color fidelity and over-all sharpness of the image are its resolution.

RGB: Red, Green, Blue; the color model of computers. Computer monitors and digital cameras use these colors to create all the colors seen on the monitor and saved in files. Green gives the color green, but is also used for contrast control. RGB as used on a color display monitor is also an emitted color set, which may view differently than when printed.

RLE: Run-Length-Encoding is the non-lossy compression algorithm, usually compressed no more than 2:1, used on Windows *.bmp files most often. RLE non-lossy compressions are most often used in archiving image files that cannot sustain any loss in quality.

ROM: Read Only Memory, used for primary instructions in many Computer Peripherals and CPU's Firmware. Their instructions can be upgraded from a computer for specific types of Flash ROM.

Saturation: One of the three dimensions of color (HSB). Saturation is the measure of the purity of a color or colors from 0% black to 100% for a fully saturated color.

Screen Angle: The angle at which a halftone screens are placed in relation to one another for printing.

Screen Frequency: The density of dots (number of dots) on the halftone screen. This density is commonly measured in lines per inch (lpi.).

Serial Port connectivity: A serial or COM port is typically used for communications devices such as a modem. Serial ports usually are the slowest ports on a PC, however all desktop and most laptop PCs have at least one serial port.

Shift Register: (Also see CCD) The area of the CCD, which receives the electronic information for processing and cataloging before passing it to the A to D converter.

SHQ, HQ, and SQ Quality Modes: Digital cameras offer a variety of quality modes for saving images to the cameras memory. SHQ; Super High Quality, HQ; High Quality, and SQ; Standard Quality. These modes vary among camera models and you should refer to the camera's owner's manual for exact information on sizes and use. To save files in these quality modes digital cameras may use TIFF, or JPEG file formats. JPEG offers a variety of different compressions, allowing the user to save more images or higher quality images. These Quality modes also allow the selection of various pixel resolutions of images from lower (e-mailable) pixel resolutions to the highest (print quality) pixel resolutions of the camera. For additional information on file formats, see JPEG compression [JPEG *.jpg], TIFF [TIFF *.tif] or RAW in this glossary.

Signal-to-Noise: Is the ratio or relationship of accurate electrical signals to unwanted signals like static disturbances creating noise.

SmartMedia: SmartMedia cards are small and light storage media. The controller is located in the drive instead of being incorporated in the card to allow simple construction. SmartMedia cards are very affordable and ideal for the storage of digital photos and music. All Olympus digital cameras use SmartMedia cards for data storage.

Software: Operating instructions for specific task based applications. The computer processors carry out these instructions. These include all packaged for use like image editing, word processing, databases, CAD-CAM, games, and so on. Software has to be written for a specific Computer OS.

SSFDC (Smart Media): Toshiba's removable flash RAM memory cards. Used to store portable digital camera files. (Solid State Floppy Disk Card)

Subtractive Primary Color: (Also see CMYK) The CMY(K) color model that allows the absorption of light by translucent ink, reflecting only the visible color.

SVGA: Super Video Graphics Array. Refers to a display screen resolution of more than 800 x 600 pixels.

TIFF: Tagged Information File Format, is the file for-mat developed for universal transfer between many digital imaging applications and devices.

Thermal Wax Printer: Like a dye-sublimation printer, thermal wax printers transfer colors from RGB, CMY, or CMYK ribbons containing waxes, which are warmed and fused onto special papers. These printers generally have excellent imaging quality with poor text quality.

Tonal range: The maximum range of tones visible in any image or reproduction.

TruePic: Developed by Olympus and introduced in 1999, the TruePic technology optimizes the image information captured on the CCD before the data is saved. Employing the algorithm 3 D Cubic, it uses the brightness and color information of the neighboring pixels when processing the pixel data. These calculations,

only possible with the super-fast Risc and Olympus Asic processor, lead to digital pictures that set standards for picture sharpness, contrast, true colors, and gradation.

Twain: An acquire interface developed by a consortium of software developers as a standard for communications between scanners, imaging devices and now digital cameras and the computer software. Twain allows you to import (acquire) an image into your software. This is the interface of choice on the Window's platform.

USB connectivity: Universal Serial Bus or USB ports are a type of connection that supports plug-and-play for easier device setup and offers faster data transfers than serial or parallel ports. Plus, more than one device can be connected to the same USB Port. Note: You must be using a PC with a USB port and running Windows98 or higher to use a camera with a USB output.

VGA: Video Graphics Array. Refers to images with a resolution of 1600 x 1280 pixels.

WYSIWYG: Slang for "What You See Is What You Get", refers to accurate screen images to print out. This is a primary result of Xerox Graphics interface. Pronounced "WizzyWig."

White Balance: Unlike film cameras, digital cameras have the ability to adjust the color based on the lighting situation where they are used. This is know as "White Balance" The cameras use white as a reference and adjust the color balance to give as true as possible a white, correcting all the other colors by doing this. Additionally some cameras may offer manual or preset white balance settings like daylight, tungsten fluorescent, or cloudy. In some cases these may be given as color temperatures, like 5500 degrees K. The more advanced digital camera may also allow the user the option of manually setting a white balance from a white card for the most accurate white balance control. For more specific information on the use of White Balance see the cameras owners guide as it may vary by camera model and manufacturer.

Windows Metafile Format (WMF): Is a vectored Windows format that may also contain a raster image. When read many applications turn the image to a raster image.

XGA: Extended Graphics Array. A graphics standard developed by IBM that allows the display of 1024 x 768 pixels with up to 65, 535 colors.