

Symbol or Term	Explanation
α	exponential attenuation coefficient – normal units dB/m (see attenuation)
K	relative permittivity or dielectric constant
σ	electrical conductivity – normal units mS/m
v	propagation velocity – normal units m/ns
dB/m	decibels/metre, common unit for attenuation, α
m/ns	metre/nanosecond, common unit of GPR velocity, v (see nanosecond)
mS/m	milli Siemens/metre, common unit for conductivity, σ
ns	nanosecond, normal unit of GPR time (see nanosecond)
ps	picosecond = 0.001 ns = 10^{-12} s, occasion unit of GPR time
us	microsecond = 1000ns = 10^{-6} s, occasion unit of GPR time
COR	common offset reflection (survey type where a constant antenna separation is maintained).
CMP	common mid-point (survey type where a transmitter and receiver antenna separation are changed but the mid point remains constant)
GPR	ground penetrating radar
EM	electromagnetic (common abbreviation)
antenna	Device used to couple electromagnetic energy into the ground. Sometimes called a transducer.
antenna separation	Spacing between transmitting and receiving antennas.
attenuation	A reduction in signal amplitude caused by energy dissipation in the transmitting media (see α).
bandwidth	The range of frequencies over which a given device transmits or detects signals above a specified amplitude or power
centre frequency	Middle of the frequency band defined by a device's bandwidth
conductivity	The ability of a material to conduct electrical current. In isotropic materials the reciprocal of resistivity. Sometimes called specific conductance. Units are siemen/m or S/m. (Or occasionally, mhos/m). For GPR, usually expressed as mS/m . Common symbol σ
nanosecond	10^{-9} s (One Billionth of a second)
radio wave	Electromagnetic fields that travel through a material as waves and typically have oscillating frequencies in the 1 GHz to 10 GHz range
receiver (Rx)	General term for electronics devices used to detect fields and translate signals into records or displays
resolution	The minimum separation of two objects before their individual responses merge into a single response

signal amplitude	A measure of the strength of the radio wave signal
station interval	Spatial distance between observation points along a survey traverse line or mesh points on a grid
step size	See station interval
transmitter (Tx)	General term used for electronics devices used to create propagating electromagnetic fields
transducer	Name used where GPR antenna, electronics, and shield are combined into one physical unit
sample point	Signal amplitude measured at specific point in time
trace	Sequence of sample points from a single GPR channel that indicate time variation of signal amplitude
cross section	Image that results from side-by-side display of a number of traces which are from adjacent spatial measurement position
gain	Process of amplifying signals to match recording device or display dynamic range