12. LIST OF SYMBOLS AND ABBREVIATIONS

In the following list the English alphabet precedes the Greek alphabet, and lower-case letters precede upper-case letters. As a general rule, upper-case letters have been used for quantities expressed in decibels, for example w_t is transmitter power in watts, and W_t is transmitter power in decibels above one watt. When the upper-case symbol is the decibel equivalent of a lower-case symbol they are usually listed together. Symbols that are used only in an annex are defined at the end of the appropriate annex, in Volume 2.

Sometimes a symbol may be used in quite different contexts, in which case it is listed for each separate context. Subscripts are used to modify the meaning of symbols. The order is:

1.	Symbol without a subscript	h
2.	Symbol with a subscript, (letter subscripts in alphabetical	h_r
	order followed by number subscripts in numerical order	h_1
3.	Symbol as a special function.	$h(x)$
4.	Abbreviations.	ht

Following each definition an equation number or section number is given to show the term in its proper context. Where applicable, reference is made to a figure.

Throughout the report, logarithms are to the base 10 unless otherwise noted.

a Effective earth's radius, allowing for average radio ray bending near the surface of the earth, (4.4) figure 4.2.

a_e An equivalent earth's radius which is the harmonic mean of the radii a_t and a_r, (7.10).

a_r The radius of a circular arc that is tangent to the receiving antenna horizon ray at the horizon, and that merges smoothly with the corresponding arc through the transmitting antenna horizon, (8.9) figure 8.7.

a_s Effective earth's radius factor corresponding to D_s, (8.15).

a_t Radius of a circular arc that is tangent to the transmitting horizon ray at the horizon, and that merges smoothly with the corresponding arc through the receiving antenna horizon, (8.9) figure 8.7.

a_x The axial ratio of the polarization ellipse of a plane wave, (2.11).

a_{xr} The axial ratio of the polarization ellipse associated with the receiving pattern (2.11).

a_o The actual earth's radius, usually taken to be 6370 kilometers, (4.4).

a_1 Radius of the circular arc that is tangent to the transmitting antenna horizon ray at the horizon, and that passes through a point h_{te} kilometers below the transmitting antenna, (8.8) figure 8.7.

a_2 Radius of the circular arc that is tangent to the receiving antenna horizon ray at the horizon, and that passes through a point h_{re} kilometers below the receiving antenna, (8.8) figure 8.7.

A	Attenuation relative to free space, expressed in decibels, defined as the basic transmission loss relative to that in free space, (2.20).
A_a	The long-term median attenuation of radio waves due to atmospheric absorption by oxygen and water vapor, section 3.
A_{ar}, A_{at}	For transhorizon paths, $A_a = A_{at} + A_{ar}$, the sum of the absorption from the transmitter to the crossover of horizon rays and the absorption from the crossover of horizon rays to the receiver, section 3.
A_c	Total absorption attenuation within a cloud, (3.13).
A_r	Total absorption due to rainfall over a given path, (3.7).
A_w	Rate of attenuation through woods in full leaf, (5.18).
A_0	Diffraction attenuation relative to free space at an angular distance $\theta = 0$ over a smooth earth, section 9.2.
$A(v, 0)$	Attenuation relative to free space as a function of the parameter v, (7.2) figure 7.1.
$A(v, \rho)$	Diffraction attenuation relative to free space for an isolated perfectly conducting rounded obstacle, (7.7), figure 7.3.
$A(0, \rho)$	The diffraction loss for $\theta = 0$ over an obstacle of radius r, (7.7) figure 7.4.
B_s	The parameter $B(K, b)$ corresponding to the effective earth's radius a_s, (8.15).
$B_{1,2,t,r}$	Values of the parameter $B(K, b)$ that correspond to values of $K_{1,2,t,r}$, (8.13).
B_{01}, B_{02} B_{ot}, B_{or}	Defined by (8.2), (8.13) and (8.15) as the product of several factors, combined for convenience in computing diffraction attenuation.
B'	Any point along the great circle path between antenna terminals A and B, figure 6.3.
$B(K, b°)$	A parameter plotted in figure 8.3 as a function of K and $b°$, (8.2).
c	Free space velocity of radio waves, $c = 299792.5 \pm 0.3$ km/sec.
$C_1(K_1 b°)$	A parameter used in calculating diffraction attenuation, (8.1) figure 8.4.
$C_1(K_1, b°)$, $C_1(K_2, b°)$	The parameter $C_1(K, b°)$ corresponding to K_1 and K_2, also written $C_1(K_1)$ and $C_1(K_2)$, (8.11).
$\bar{C}_1(K_{1,2})$	The weighted average of values of $C_1(K_1, b°)$ and $C_1(K_2, b°)$, (8.11).
CCIR	International Radio Consultative Committee.
d	Great circle propagation path distance, measured at sea level along the great circle path determined by two antenna locations, A_1 and A_2, figure 6.1.
d_c	Clearing depth in meters, defined as the distance from the edge of woods to the lower antenna along a propagation path, (5.19).
d_e	Effective propagation path distance, a function of d, f_{mc}, h_{te}, and h_{re}, section 10.1, (10.3).
d_L	The sum of the horizon distances d_{Lr} and d_{Lt}. In section 10, d_L is defined for a smooth spherical earth of radius 9000 km, (10.2) and (10.3).
d_{Lr}, d_{Lt}	Great circle distances from the receiving and from the transmitting antennas to the corresponding horizons, figure 6.1.

d_{sr}, d_{st} Distance between the receiving or transmitting antenna horizon and the crossover of horizon rays as measured at sea level, (6.20).

d'_{sr}, d'_{st} If θ_{or} or θ_{ot} is negative, d'_{sr} or d'_{st} is computed (6.23) and substituted for d_{sr} or d_{st} in reading figure 6.9.

d_{si} The theoretical distance where diffraction and scatter fields are approximately equal over a smooth earth, (10.1).

d_o The greatest distance for which the attenuation relative to free space is zero, (5.10).

d_1, d_2 Distance from the transmitting, or the receiving antenna, to the crossover of horizon rays, measured at sea level, figure 6.1.

d_1, d_2 Great circle distance from one antenna of a pair to the point of reflection of a reflected ray, figure 5.1.

dB Decibels = 10 $\log_{10}$ (power ratio) or 20 $\log_{10}$ (voltage ratio). In this report, all logarithms are to the base 10 unless otherwise stated.

dB u Decibels above one microvolt per meter.

dBW Decibels above one watt.

D Divergence coefficient, a factor used to allow for the divergence of energy due to reflection from a convex surface, (5.2).

D Diameter of a parabolic reflector in meters, (2.7).

D_s Great circle distance between transmitting and receiving horizons, (6.17), figure 6.1.

D_{str} A function of d_{st}, d_{sr} used in computing diffraction loss, (8.16), figure 8.8.

e_c, e_p The positive to negative amplitude of the cross-polarized vector component $\vec{e}_c$ and of the principal polarization component $\vec{e}_p$ of a complex polarization vector $\underline{\vec{e}}$, section 2.3 and annex II.

$\underline{\vec{e}}$ A complex vector $\underline{\vec{e}} = \vec{e}_p + i\vec{e}_c$, section 2.3 and annex II.

f Radio wave frequency in megahertz (megacycles per second).

$f(\nu)$ A function used in computing path antenna gain, defined by (9.13) figure 9.7.

F_o The correction term F_o allows for the reduction of scattering efficiency at great heights in the atmosphere, (9.1) and (9.7).

$F(x_1)$, $F(x_2)$ Functions used in computing diffraction attenuation, (8.1) and figures 8.5 and 8.6.

$F(\theta d)$ The attenuation function used in calculating median basic transmission loss for scatter paths, (9.1) figures 9.1, and III.11 to III.14.

g_r, g_t, G_r, G_t Maximum free space directive gains for the receiving and transmitting antennas respectively, $G_r = 10 \log g_r$ db, $G_t = 10 \log g_t$ db, section 2.2.

g_{r1}, g_{r2} Directive gain factors defined for each antenna in the direction of the point of ground reflection, (5.1).

g_o The maximum value of the operating gain of a receiving system, (V.7).

g_o The directive gain for one antenna in the direction of the other, section 5.1.

g_{o1}, g_{o2} The directive gain of the transmitting and receiving antennas, each in the direction of the other, assuming matched antenna polarizations, (5.1).

$g(p, f)$ A frequency factor used to adjust predicted long-term variability to allow for frequency-related effects, (10.6) figure 10.3.

$g_t(\hat{r}), G_t(\hat{r})$ Free space directive gain of the transmitting antenna in the direction $\hat{r}$, see also $g_t'(\hat{r})$, $G_t(\hat{r}) = 10 \log g_t(\hat{r})$ db, section 2.2.

g_t' Power gain of a transmitting antenna when the power input to the antenna terminals is w_t' watts, section 2.2.

$g_t'(\hat{r}), G_t'(\hat{r})$ Power gain of a transmitting antenna in the direction $\hat{r}$, $G_t'(\hat{r}) = 10 \log g_t'(\hat{r})$ db, section 2.2.

G The maximum free space directive gain relative to an isotropic radiator (2.5).

G_p Path antenna gain, the change in transmission loss or propagation loss if hypothetical loss-free isotropic antennas with no orientation, polarization, or multipath coupling loss were used at the same locations at the actual antennas, (2.14).

G_{pf} Path antenna gain in free space, (2.17).

G_{pp} Path antenna power gain, (2.14).

$G(\overline{h})$ Residual height gain function, figure 7.1.

$G_r'(\hat{r})$ Power gain, in decibels, of a receiving antenna, (2.4).

$G(\overline{h}_1), G(\overline{h}_2)$ The function $G(\overline{h})$ for the transmitting and receiving antennas, respectively, (7.5).

$G(\hat{r})$ Directive gain of an antenna in the direction $\hat{r}$. The maximum value of $G(\hat{r})$ is G, section 2.2.

$G_r(\hat{r})$ Directive gain, in decibels, of a receiving antenna in the direction $\hat{r}$, (2.4).

$G(x_o)$ A function used in computing diffraction, (8.1) figures 8.5 and 8.6.

GHz Radio frequency in gigacycles per second.

h Height above the surface of the ground as used in (3.10), (3.12).

h Height referred to sea level.

h_i Equidistant heights of terrain above sea level, (5.15), (6.10).

h_{Lr}, h_{Lt} Height of the receiver or transmitter horizon obstacle above sea level, (6.15).

h_o Height of the intersection of horizon rays above a straight line between the antennas, determined using an effective earth's radius, a, (9.3b) and figure 6.1.

h_r, h_t The height h_r or h_t is defined as the height of the receiving or transmitting antenna above the average height of the central 80% of the terrain between the antenna and its horizon, or above ground, whichever gives the larger value, (6.11).

h_{re}, h_{te} Effective height of the receiving or transmitting antenna above ground. For h_r, h_t less than one kilometer $h_{re} = h_r$, $h_{te} = h_t$. For higher antennas a correction Δh is used, (6.12).

h_{rs}, h_{ts} Height of the receiving antenna or transmitting antenna above sea level, figure 6.1, (6.11), (6.15).

h_s Elevation of the surface of the ground above mean sea level, (4.3).

h_{ti} The heights above sea level of evenly spaced terrain elevations between the transmitter and its horizon, (6.11).

h_1 — Height of the crossover of horizon rays above a straight line between the transmitter and receiver horizon obstacles, (9.7) figure 6.1.

h_1, h_2 — Heights of antenna terminals 1 and 2 above the surface of the earth, figure 5.1.

h'_1, h'_2 — Heights of antenna terminals 1 and 2 above a plane tangent to a smooth earth at the bounce point of a reflected ray, (5.8).

$\bar{h}$ — Average height above sea level, (5.15).

$\bar{h}_t$ — Average height of the transmitting antenna above the central 80% of terrain between the transmitter and its horizon, (6.11).

$\bar{h}_1, \bar{h}_2$ — Normalized heights of the transmitting and receiving antennas, (7.6).

$h(x)$ — A straight line fitted by least squares to equidistant heights above sea level, (5.15).

$h(0), h(d)$ — Height above sea level of a smooth curve fitted to terrain visible to both antennas, and extrapolated to the transmitter at $h(0)$ and the receiver at $h(d)$, (5.17).

$h_i(x_i)$ — A series of equidistant heights above sea level of terrain visible to both antennas, section 5.1.

H_o — The frequency gain function, discussed in section 9.2.

$H_o(\eta_s < 1), H_o(\eta_s = 1)$ — Value of the frequency gain function, H_o, where the parameter η_s is less than or equal to one, respectively, (9.6).

$H_o(\eta_s = 0)$ — The frequency gain function when $\eta_s = 0$ which corresponds to the assumption of a constant atmospheric refractive index, figure 9.5.

Hz — Abbreviation for hertz ≡ cycle per second.

K — A frequency-dependent coefficient, (3.8).

K — A parameter used in computing diffraction attenuation, K is a function of the effective earth's radius, carrier frequency, ground constants, and polarization, figure 8.1 and annex III.4.

K_1 — A frequency and temperature-dependent attenuation coefficient for absorption within a cloud, (3.13) and table 3.1.

K_1, K_2, K_r, K_s, K_t — Values of the diffraction parameter K for corresponding earth's radii a_1, a_2, a_r, a_s, a_t, (8.8) to (8.13).

$K(a)$, $K(8497)$ — The diffraction parameter K for an effective earth's radius a, and for a = 8497 km.

$K(f_{GHz})$ — A frequency-dependent coefficient used in computing the rate of absorption by rain, (3.9a) and figure 3.8.

ℓ_{er}, L_{er} — The effective loss factor for a receiving antenna, or the reciprocal of the power receiving efficiency, (2.3), $L_{er} = 10 \log \ell_{er}$ db.

ℓ_{et}, L_{et} — The effective loss factor for a transmitting antenna, (2.3), $L_{et} = 10 \log \ell_{et}$ db.

L — Transmission loss expressed in decibels, (2.2).

L_b — Basic transmission loss, (2.13) and (2.14).

L_{bd} — Basic transmission loss for a diffraction path, (7.3), (7.4).

L_{bf} — Basic transmission loss in free space, (2.16).

L_{bm} Hourly median basic transmission loss.

L_{bsr} Reference value of long-term median basic transmission loss based on forward scatter loss, (9.1).

L_c Calculated value of transmission loss.

L_{cp} Polarization coupling loss, (2.10).

L_{cr} Reference value of hourly median transmission loss when diffraction and scatter losses are combined, (9.14).

L_{dr} Reference value of hourly median transmission loss due to diffraction, (9.14).

L_f An "equivalent free-space transmission loss," (2.19).

L_{gp} Loss in path antenna gain, defined as the difference between the sum of the maximum gains of the transmitting and receiving antennas and the path antenna gain, (2.21).

$L_{\ell r}$, $L_{\ell t}$ Transmission line and matching network losses at the receiver and transmitter.

L_o Path loss, defined as transmission loss plus the sum of the maximum free space gains of the antennas, (2.12).

L_s The system loss expressed in decibels, defined by (2.1). System loss includes ground and dielectric losses and antenna circuit losses.

L_{sr} Reference value of median forward scatter transmission loss, used with L_{dr} to obtain the reference value L_{cr}, (9.14).

$L(q)$, $L(0.5)$ Long-term value of transmission loss not exceeded for a fraction q of hourly medians; $L(0.5)$ is the median value of $L(q)$, section 10.

$L_b(q)$, $L_b(0.5)$ Long-term value of basic transmission loss not exceeded for a fraction q of hourly medians; $L_b(0.5)$ is the median of $L_b(q)$.

M Liquid water content of a cloud measured in grams per cubic meter, (3.13).

MHz Radio frequency in megahertz.

n Refractive index of the atmosphere, section 4.

n The ratio α_o/δ_t or β_o/δ_r used to compute $\hat{n}$, (9.12).

n_s Atmospheric refractive index at the surface of the earth, (4.1).

$\hat{n}$ A parameter used in calculating path antenna gain, (9.12).

N Atmospheric refractivity defined as $N = (n-1) \times 10^6$, section 4.

N_o Surface refractivity reduced to sea level, (4.3).

N_s The value of N at the surface of the earth, (4.1).

$\underline{\hat{p}}(\hat{r})$, $\underline{\hat{p}}_r(-\hat{r})$ Complex polarization vectors, section 2.3 and annex II.

$|\underline{\hat{p}} \cdot \underline{\hat{p}}_r|^2$ Polarization efficiency for transfer of energy in free space at a single radio frequency, (2.11) and (II.62).

q Time availability, the fraction of time a given value of transmission loss is not exceeded, section 10.

q The ratio $q = r_2/s\,r_1$ used to compute ΔH_o, (9.5).

r The length in free space of the direct ray path between antennas, figure 5.1.

r Radius of curvature, (7.9).

r_{eo} Effective distance for absorption by oxygen in the atmosphere, (3.4) figures 3.2 to 3.4.

r_{er} Effective rain-bearing distance, (3.11) and (3.12) figures 3.10 to 3.13.

r_{ew} Effective distance for absorption by water vapor in the atmosphere, (3.4), figures 3.2 to 3.4.

r_o Length of a direct ray between antennas over an effective earth of radius a, figure 5.1.

r_1, r_2 Parameters used in computing the frequency gain function H_o, and defined by (9.4).

r_1, r_2 Distances whose sum is the path length of a reflected ray, figure 5.1.

$\hat{r}_1, \hat{r}_2$ Direction of the most important propagation path from the transmitter to the receiver, or from the receiver to the transmitter.

r_{1i}, r_{2i} Straight line distances from transmitting and receiving antennas to a point on the ground a distance x_i from the transmitting antenna, figure 6.4.

r.m.s. Abbreviation of root-mean-square.

R The magnitude of the theoretical coefficient $R \exp[-i(\pi - c)]$ for reflection of a plane wave from a smooth plane surface of a given conductivity and dielectric constant, (5.1).

R_e An "effective" ground reflection coefficient, (5.1).

R_r Rainfall rate in millimeters per hour, (3.10).

R_{rs} Surface rainfall rate, (3.10).

$\overline{R}_r$ Cumulative distribution of instantaneous path average rainfall rates, figure 3.14.

R(0.5) A function of $L_{dr} - L_{cr}$, (9.14) figure 9.9.

s Path asymmetry factor, $s = \alpha_o/\beta_o$, (6.19).

T_o Reference absolute temperature, $T_o = 288.37$ degrees Kelvin.

T(r) Temperature in the troposphere in degrees Kelvin.

T_s(°K) Effective sky noise temperature in degrees Kelvin.

T.A.S.O. Abbreviation of Television Allocations Study Organization.

U(vρ) A parameter used in computing diffraction over a rounded obstacle, (III.26) and figure 7.5.

v A parameter used in computing diffraction over an isolated obstacle, (7.1).

$V(0.5, d_e)$ A parameter used with the calculated long-term reference value, L_{cr}, to predict median long-term transmission loss, figure 10.1 equations (10.4) and (III.67).

$V_n(0.5, d_e)$ The parameter $V(0.5, d_e)$ for a given climatic region characterized by the subscript n, (10.4) figure 10.1.

w_a, W_a Radio frequency signal power that would be available from an equivalent loss-free receiving antenna, $W_a = 10 \log w_a$ dbw, (2.2).

w'_a, W'_a Radio frequency signal power available at the terminals of the receiving antenna, $W'_a = 10 \log w'_a$ dbw, (2.1).

w_t, W_t Total power radiated from the transmitting antenna in a given band of radio frequencies, $W_t = 10 \log w_t$ dbw, (2.2).

W_{ab} Available power at the terminals of a hypothetical loss-free isotropic receiving antenna, assuming no orientation, polarization, or multipath coupling loss between transmitting and receiving antennas, (2.13).

x	A specified value, the discussion preceding (2.14).
x	A variable designating distance from an antenna, figure 6.4
x_i	The i^{th} distance from the transmitter along a great circle path, figure 6.4.
x_0, x_1, x_2	Parameters used to compute diffraction loss, (8.2) figures 8.5 and 8.6.
x_0, x_{20}	Points chosen to exclude terrain adjacent to either antenna which is not visible to the other in computing a curve fit, (5.15).
$\bar{x}$	The average of distances x_0 and x_{20}, (5.15b).
X, Y	Initial bearings from antenna terminals A and B, measured from true north, figure 6.3.
y_i	Terrain elevations, modified to account for the curvature of the earth, (6.10).
y(x)	Modified terrain elevation, $y(x) = h(x) - x^2/(2a)$, (5.16).
Y'	Bearing from any point B' along the great circle path AB, figure 6.3.
Y(q)	Long-term variability of L_m or of W_m in terms of hourly medians, (10.6) and (V.4).
Y(q, 100 MHz)	Basic estimate of variability in a continental temperate climate, figure 10.2.
Y(q, d_e, 100 MHz)	Basic estimate of variability as a function of effective distance, (10.6) figure 10.2.
Z	Great circle path length between antenna terminals A and B, figure 6.3.
Z'	Great circle path distance between an antenna and an arbitrary point B', figure 6.3.

α The parameter α is defined in equation (3.9b) and plotted as a function of frequency on figure 3.9.

α_o, β_o The angles α_{oo}, β_{oo} modified by the corrections $\Delta\alpha_o$, $\Delta\beta_o$, (6.19).

α_{oo}, β_{oo} The angles between a transmitter or receiver horizon ray and a line drawn between the antenna locations on an earth of effective radius, a, (6.18) figure 6.1.

$\alpha(f_{GHz})$ The function α in (3.9b) as a function of frequency in GHz, figure 3.9.

γ_{oo} Differential absorption in decibels per kilometer for oxygen under standard conditions of temperature and pressure, (3.4).

γ_r Rate of absorption by rain, (3.8).

γ_{rs} Surface value of the rate of absorption by rain, (3.11).

γ_{wo} Differential absorption in decibels per kilometer for water vapor under standard conditions of temperature and pressure and for a surface value of absolute humidity of 10 g/cc, (3.4).

$\gamma(r)$ Differential atmospheric absorption in db/km for a path length r, (3.1).

$\gamma_r(r)$ Differential rain absorption along a path r, (3.7).

$\gamma_o(h)$, $\gamma_w(h)$ Differential absorption in dB/km for oxygen and water vapor, respectively, as a function of height, h, (3.3).

$\Gamma(r)$ Absorption coefficient as a function of path distance r, (3.2) and (3.6).

δ_r, δ_t The effective half-power semi-beamwidth for the receiving and transmitting antennas, respectively, (9.11) and (9.12).

δ_w, δ_z Azimuthal and vertical semi-beamwidths, (2.6).

$\Delta\alpha_o$, $\Delta\beta_o$ Correction terms applied to compute α_o, β_o (6.19) figure 6.9.

Δ_c Depression of field strength below smooth earth values, (5.19).

Δh_e A correction term used to compute the effective height for high antennas, (6.12) figure 6.7.

Δr The path length difference between a direct ray, r_o, and a reflected ray, $\Delta r = r_1 + r_2 - r_o$, (5.4), (5.9) and (7.1).

Δ_{x_1}, Δ_{x_2} Auxiliary functions used to check the magnitude of error in the graphical determination of diffraction attenuation, (8.5) figures 8.5 and 8.6.

ΔH_o A correction term applied to the frequency gain function, H_o, (9.5) and figure 9.4.

ΔN The refractivity gradient from the surface value, N_s, to the value of N at a height of one kilometer above the surface, (4.2).

$\Delta\alpha_o(N_s)$, $\Delta\beta_o(N_s)$ The correction terms $\Delta\alpha_o$, $\Delta\beta_o$ for values of N_s other than 301, (6.21) figure 6.10.

$\Delta\alpha_o(301)$, $\Delta\beta_o(301)$ The correction terms $\Delta\alpha_o$, $\Delta\beta_o$ for $N_s = 301$, (6.21) read from figure 6.9.

$\Delta h(h_r, N_s)$, $\Delta h(h_t, N_s)$ The correction Δh_e as a function of N_s and of receiver and transmitter heights h_r and h_t, (6.12) figure 6.7.

η_s A function of h_o and N_s used in computing F_o and H_o, (9.3) and figure 9.2.

θ The angular distance, θ, is the angle between radio horizon rays in the great circle plane defined by the antenna locations, (6.19).

θ_{er}, θ_{et} Horizon elevation angles at the receiver and transmitter, respectively, (6.15).

θ_h Angle of elevation of a direct ray relative to the horizontal at the lower antenna, (5.12). See θ_b and $f(\theta_h)$.

θ_o Angle of elevation above the horizontal, figures 3.2 to 3.4.

θ_{oo} Angle between radio horizon rays, assuming straight rays above an earth of effective radius, a, figure 6.1.

θ_{or}, θ_{ot} The angular elevation of a horizon ray at the receiver or transmitter horizon, (6.16) figure 6.1.

λ Free space radio wave length, used for example in (2.7).

μ The ratio δ_r/δ_t used in (9.12) and figure 9.8.

ν A parameter that is half the value of η_s, used in computing loss in antenna gain, (9.11), (9.12) and figure 9.7.

ν Radio frequency in hertz.

π A constant, $\pi \cong 3.14159264$.

ρ Correlation coefficient between two random variables.

ρ Index of curvature for the crest curvature of a rounded obstacle in the great circle path direction, (7.8).

ρ_{ij} The correlation between variations due to sources i and j, (10.8).

ρ_{1a} The correlation between variations Y and Y_a, (10.9).

ρ_{1r} The correlation between variations Y and Y_r, (10.9).

σ_h The root-mean-square deviation of great circle path terrain elevations relative to a smooth curve fitted to the terrain, (5.1).

$\sigma_c(p)$ The standard deviation corresponding to the variance $\sigma_c^2(p)$.

Σ A symbol to represent the summation of terms, as in (5.15) where $\sum_{i=0}^{20} h_i$ means the sum of all values of h_i from $i = 0$ to $i = 20$.

$\Phi(v, \rho)$ The total phase lag of the diffracted field over an isolated rounded obstacle with reflections from terrain, (7.13).

$\Phi(v, 0)$ The total phase lag of the diffracted field over an ideal knife edge with ground reflections, (7.13).

Φ_A, Φ_B Latitudes of antenna terminals A and B, (6.1) to (6.9) figure 6.3.

$\Phi_{B'}$ Latitude of an arbitrary point along the great circle path from A to B, (6.7).

ψ The grazing angle of a ray reflected from a point on the surface of a smooth earth, (5.1) figure 5.1, or grazing angle at a feuillet, annex IV.

ψ_m Minimum grazing angle, section 5.1

ψ_p The acute angle between principal polarization vectors $\vec{e}_p$ and $\vec{e}_{pr}$, (2.11).

Ω_r, Ω_t The half-power beamwidths of the receiving and transmitting antennas, respectively, (9.10).

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