

e	4 th and 5 th characters of the string
0.00	VA
0.05	VB
0.10	VC
0.15	VD
0.20	VE
0.25	VF
0.30	VG
0.35	VH
0.40	VI

The basic relations are :

IF e=0 THEN e= 1E-5

$$k_5 = \left(\frac{1+e}{2} \right)^2$$

$$b^2 = \frac{k_5 * \frac{1 - \cos^2(\alpha)}{2}}{k_5 - \left(\frac{\cos(\alpha)}{\sqrt{2}} - \frac{1-e}{2} \right)^2}$$

$$k_4 = b^2 - k_5$$

$$k_3 = b^2 * e * k_5$$

$$k_2 = b^4 * k_5 - k_3$$

$$k_1 = b^2 * \frac{1-e}{2}$$

$$r_i = \frac{k_1 * \cos(x) + \sqrt{k_2 * \cos^2(x) + k_3}}{k_4 * \cos^2(x) + k_5} \quad \text{The relative gain of the i-th beam (i=1,2)}$$

In the above equations x is the running angle coordinate of the beams.

$r_1 = \text{fnct}(\phi)$ is the relative gain of beam 1
 $r_2 = \text{fnct}(\phi - 2 * \beta)$ is the relative gain of beam 2
 with ϕ being the current angle

The resulting pattern is formed by taking the maximum from r_1 , r_2 and r_0 calculated for any given direction.

The field 9A of the database must contain the azimuth of that main beam axis with respect to which the other one can be reached by a positive angular turn of less than 180 degrees.

Examples of the V type antenna

