ABSTRACT

Monopol 0,3 GHz – 3,0 GHz Chebyshev - Omnidirectional Caturcula Antenna is designed on two purposes, they are:

1. To supply a wideband unidirectional antenna prototype so it can be used by some operators at once therefore economize the load of tower.
2. To prove the hypothetic of first advisor which told antenna is a device which used as a transformator between free space and transmission lines

The Specifications of antenna that must be fulfilled are the working frequency 0,3GHz-3,0GHz in VSWR max. 1,5 at 50Ω unbalance, gain min. 2,14 dBi, omnidirectional pattern and linear polarization. This antenna was constructed with two strip rows, by using chebyshev transformator which is used in air or vacuum. This device is also using monopol-konik as balun to deliver a wideband antenna without any coil.

Based on twin rows strips theory, construction is obtained (with the materials and size), like this: N = 3,69 ≡ 4 tingkat, εr1= 2,193 (A4 paper = 3,06 cm), εr 2= 1,911(A4 paper = 3,28 cm), εr3 = 1,6512(Printer cardboard= 3,536 cm), εr4 = 1,438 (Stabilizer cardboard = 3,78 cm). This antenna is also using brass strip with its size 0,59 cm (w) x 13,656 cm (l) x 3,5 cm (s). Monopol-conic feed was built, 20mm in height, terminal 50 Ω unbalance.

By measurement of these specification in IT TELKOM's garden , the results are : in VSWR maximum 1,5 , the working frequency 800 MHz – 2700 MHz at terminal Zt 50Ω unbalance, the value of gain 5,043 dBi at 1650 MHz , ellipse polarization. The hypothesis has been proved, it can be seen that all the results are proper to the specification, only the lower frequency and the polarization out of plan. To widen the range frequency 800 MHz – 2700 MHz by make the monopol-conic feed angle larger. For the ellipse polarization, it can be a linear one if it is measured in anechoic chamber with pencil beam antenna.

Keyword : *unbalance, chebyshev, monopol-conic,* dan *prototype.*