

ABSTRACT

Research on wide band antenna is done to fulfill human need for antenna that is able to transmit large amounts of data and can be used by multiple applications at once. In general, tricola antenna means by three arrays antenna of parallel twin wire with space between array antenna is 120° . In this final project has done designed of software engineering based on MATLAB for tricola-omnidirectional-chebyshev antenna fed by monopole at frequency (0,3 to 3,0) GHz with $VSWR \leq 1.5$, the terminal impedance 50Ω unbalance, type of radiation pattern is omnidirectional and type of polarization is linear.

Software design performs varying amount of space between the wire with $VSWR = 1.5$. By using condition of Transverse Electromagnetic with space allowed is $\leq \lambda_{min}/2$, in this case is equivalent to 0.275λ is obtained gain 8,386 dBi, bandwidth 2694,91 MHz at frequency range (300 to 3000) MHz, the impedance of level one is $190,581 \Omega$, the impedance of level two is $207,21 \Omega$, the impedance of level three is $255,035 \Omega$, the impedance of level four is $274,819 \Omega$, the impedance of level five is $317,339 \Omega$, the impedance of level six is $330,909 \Omega$. Type of radiation pattern on the length of wire 0.964λ is omnidirectional.

From the measurement, with spacing 0.275λ is obtained bandwidth 2097,8 MHz at frequency range (902,20 to 3000) MHz with $VSWR = 1.5$ MHz, the impedance of antenna is $50-j17,93 \Omega$, at frequency of 2943,006 MHz, gain 7,983 dBi at 1300 MHz, omnidirectional pattern and ellipse polarization.

For further experiment advised to perform measurements without echo in the room to maximize the results of measurements.

Keywords: Omnidirectional Tricola Antenna, Chebyshev, MATLAB