

## ABSTRACT

Mobile Cognitive Radio Base Station (MCRBS) is a technology developed for the provision of post-disaster networks. MCRBS serves to provide communication from generation 2G to 5G to serve post-disaster communication. This Final Project designs an antipodal Vivaldi antenna to meet the MCRBS specifications.

This thesis designs a Vivaldi antenna that has high gain, wide bandwidth, and unidirectional radiation patterns. This antenna is designed to have ultra-wideband (UWB) characteristics to fulfill the work frequency of the MCRBS. To expand bandwidth and reduce return loss the transformer  $\lambda/4$  matching impedance is added, the array method also added to increase the gain

This thesis uses software and realize antipodal Vivaldi antenna with Flame Resistant 4 (FR-4) substrate with a dielectric constant 4.6 and thickness of 1.6 mm. The antenna is designed to work in the 0.9 to 6 GHz frequency range. Realization results show that the antenna has a bandwidth of 5.1 GHz, return loss and VSWR which is tested at a frequency of 0.9 - 6 GHz which has met the initial design specifications with unidirectional radiation patterns. The results of the design are in accordance with UWB antenna criteria and have met the antenna specifications for MCRBS systems that require wide bandwidth, high gain, and unidirectional radiation patterns.

**Keyword:** *MCRBS, Ultra Wideband, Antena Vivaldi, Bandwidth*