UNIVERSITI TEKNOLOGI MARA

COMPACT OMNIDIRECTIONAL VHF ANTENNA FOR PDRM TWO WAYS RADIO COMMUNICATION VEHICLES

WAN ZAMZULRI BIN WAN IBRAHIM

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ABSTRACT

Development of Very High Frequency (VHF) omnidirectional antenna for two ways radio communication of Polis DiRaja Malaysia (PDRM) vehicle is reported. The size of the antenna is increasing relatively on the shifting down of the operational frequency which is effect to the rising of wavelength. The most challenges is due to the large size of patch antenna at the VHF band. The antenna was invented from combination method of slots and meander line and partial ground plane. The narrow and deep slot were fixed on the ground plane after computing the dimensions. However an optimization was using the width of antenna feedline in order to overcome the mismatch impedance of the design. The size of the proposed antenna dimension are 251mm x 181mm or about $0.129\lambda_o$ x $0.093\lambda_o$ if refer to the center frequency of 155 MHz. This reduction size was 68% from the conventional approach. This antenna produces an omnidirectional radiation pattern with 1.364 dBi gain. Results from both simulation and measurement agreed well each other.

Keywords: Patch antenna, VHF (Very High Frequency), Omnidirectional, Meander Line, Partial ground plane

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