MICROSTRIP PATCH ANTENNA WITH DEFECTED GROUND STRUCTURE (DGS) USING METAMATERIAL

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With the name of ALLAH Most Gracious Most Merciful

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ABSTRACT

Metamaterial exhibiting negative permittivity and negative permeability in certain frequency range or known as left-handed material (LHM). It provides another alternative to the existing right-hand rule. This theory offers a new dimension to the antenna applications. This project looks into the effect of metamaterial structure to the conventional antenna and concentrates on improving the performance of antenna such as return loss, bandwidth and gain. Also, the existence of the negative permittivity and negative permeability using the Defected Ground Structure (DGS) method were constructed. Nicolson-Ross-Weir (NRW) approach has been used for verifying the double-negative properties of the proposed metamaterial. Then, patch antenna along with the proposed metamaterial structure operate at 5.56 GHz. The comparison parameter antenna between simulation and measurement results were presented. A bandwidth of 140MHz and return loss of -18.696 dB were obtained at the resonant frequency.

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