

High Gain SIW Cavity-Backed Antenna with Metallic Superstrate For WLAN Repeater Applications

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A high gain substrate-integrated waveguide (SIW) cavity-backed antenna with a metallic superstrate is proposed. Recently, as smart devices have been rapidly developed, the demand of the repeater system for WLAN is also increasing. The high gain performance is an important factor for the repeater system. The high gain performance of transmitter and receiver antennas helps to decrease isolation between two antennas and increase the communication range. To realize high gain performance, the substrate integrated waveguide (SIW) technology is employed. A number of researches have presented the SIW technology (Z.F. Hu, W.J. Li, X.H. Zhang and L. Ling, *Ant. and Propag. Trans.*, 60, 4, 1689-1704). Especially, the SIW can replace an expensive bulky conventional waveguide while keeping a low-profile configuration. In addition, the directivity is further increased by a metallic superstrate.

Figure 1 illustrates the geometry of the proposed antenna. It consists of two substrate layers and one superstrate layer. The aperture coupling feeding structure is employed. The antenna is built on the cost-effective FR4 substrate.

Figure 2 shows the simulated and measured return losses. In the 2.4 GHz ISM band, the return loss is larger than 10dB. From the measured radiation pattern, the maximum gain is observed to be 9.4dBi at 2.46 GHz.

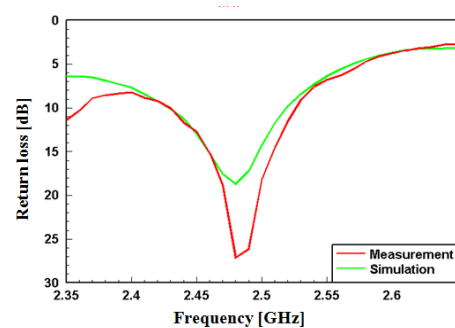
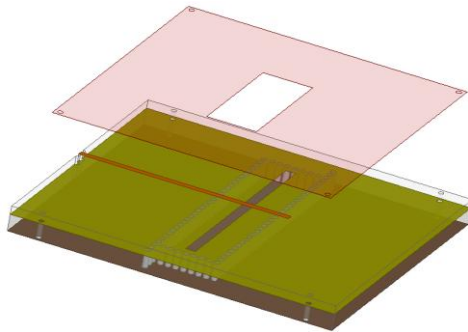


Figure 1 Configuration of the proposed antenna. Figure 2 Simulated and measured return losses.

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