Abstract

The broadband microstrip antenna is realized by fabricating the patch on lower dielectric constant thicker substrate in conjunction with proximity feeding technique. Using thicker substrates, a formulation for an edge extension length and design guidelines for strip dimensions in proximity fed broadband antennas, are not available. In this paper, first by designing suspended rectangular and circular microstrip antennas on different substrate thickness and at various frequencies in 800 to 6000 MHz frequency band, graphs for an edge extension length are developed. Using them an edge extension length at given frequency and substrate thickness is calculated. The suspended patches were further designed using edge extension length graphs which give closer result with the desired frequency. Further by using proposed equations, proximity fed microstrip antennas were optimized at various frequencies in
800 to 6000 MHz frequency band. Using these optimized designs, a formulation for coupling strip parameters is proposed. By using proposed formulations for edge extension length and strip parameters, proximity fed antennas were re-designed at different frequencies in 800 to 6000 MHz frequency band. In all the configurations, broadband response with formation of loop inside VSWR = 2 circle is obtained. Also by using the proposed formulation, design procedure for proximity fed U-slot cut rectangular microstrip antenna is explained. The U-slot cut antenna gives bandwidth of more than 450 MHz at center frequency of around 1000 MHz. The proposed formulations can be used to design broadband antennas using thicker substrate at any given frequency.

References

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Index Terms

Computer Science
Communications
Keywords
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