

# ANTENNAS AND PROPAGATION

*Modeling, Simulation & Measurements*

Edited by

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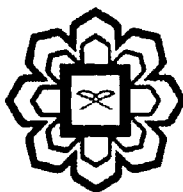
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## Chapter 7

# Design of Unsymmetrical Fed Patch UWB Antenna With Unsymmetrical Slotted Ground

Md. Rafiqul Islam<sup>1</sup>, AHM Zahirul Alam<sup>1</sup>,  
Shaker MM. Al-Karaki<sup>1</sup> and Muhammad Feroze Akbar J. Khan<sup>1</sup>

### 7.1 Introduction

A symmetrical fed patch antenna has been designed and tested in the previous chapter. However, the design of unsymmetrical fed patch antenna will be presented in this chapter. So this chapter will examine the effect of the unsymmetrical feeding on the antenna characteristics. Therefore, few parameters such as radiation pattern, antenna gain and bandwidth are compared with antenna designed in previous chapter.

The proposed design of the unsymmetrical patch antenna that is discussed in this chapter is mainly based on the design that presented in the previous chapter. Therefore, the objective of this chapter is to examine the effect of the feed position on the antenna characteristics, specially, the antenna's bandwidth.

### 7.2 Detailed Design of the Proposed Antenna

The configuration of the proposed antenna is an improvement of the previous one. In this configuration, slotted partial ground is present to increase the antenna's bandwidth, extra step is added to achieve higher bandwidth [1-3], while unsymmetrical feed position has been developed to enhance the antenna's bandwidth and avoid serious notches on certain frequencies as shown in Figure 7.2[4-5].

The feed line position affects the antenna bandwidth. It has been shown in the previous chapter that the designed antenna suffers from a notch 15.7 - 20 GHz. But, we found that a variation of the feed line position will remove this notch and of course will improve the antenna bandwidth.

The full explanation of the feed line position effect on the bandwidth can be noticed in the following return loss comparison between symmetrical fed with an unsymmetrical fed Rectangular patch antenna through Figure 7.1 to 7.3.

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