

**BROADBAND CDMA WIRELESS LOCAL LOOP WITH
EMPHASIS ON THE AIRLOOP SYSTEM
(SMALL-SCALE PROPAGATION)**

**This thesis is presented in partial fulfilment for the award of the
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ABSTRACT

The demand for telephone network access is enhanced by economic pressure to expand a region or nation's access to telecommunications, and by the impact of deregulation. Due to the rapid development of wireless technology over the last decade, there now is a wide choice of wireless technology potentially suitable for deployment in Wireless Local Loop (WLL) applications. The motivation for the WLL may, therefore, be derived from first, the extension of existing service for new or under supported areas, and the support of competitive networks in both advanced and under developed market. This trial paper demonstrates some of the properties of the AirLoop system developed by the Lucent Technologies and planned to be implemented by the TRI/Celcom in Malaysia. In general the main objectives of this project are:

- 1) Study and analyze the concept of Wireless Local Loop (WLL) system deploying the Code Division Multiple Access (CDMA) techniques.
- 2) Describe the characteristics of the small-scale propagation.

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CHAPTER 1

1.0 INTRODUCTION

1.1 General

Since its invention, the telephone has become a necessary fixture in homes and offices of our society. Each telephone represents a connection to a wider telecommunication network, and it is in the last stage of the phone network-the wireless local loop. For a number of years, a wired local loop have been used to provide basic telephone services. In general, it has two basic problems. First, it is expensive to install and maintain. This is especially true in rural areas, where connections distances can be long and exposed overhead wires are prone to damage. The second difficulty is that, being dedicated to a single customer, the overall utilisation of the link is low.

If the wires are the problem, then a possible solution is to eliminate them completely and use wireless to connect subscribers into the network. Today, the wireless local loop has become a real option, not only to provide basic services in remote areas, but also to provide sophisticated services in cities. A wireless channel can be relatively cheap to install - it doesn't necessitate digging holes in the ground, it won't blow down in high wind and can readily be shared between multiple users. In order to move quickly, as well as, inexpensively, to provide communications, countries began to employ the wireless loop solution using FDMA or TDMA, and recently it was seen that B-CDMA may be used to advantage [1]. In this project, more emphasis are focused on the AirLoop system