

## BreezeCom 2.4GHz System description

### 1. Overview

The BreezeCom 2.4GHz IF outdoor indoor system contains the following blocks:

1. Outdoor radio unit
2. Indoor radio unit.
3. Single coaxial cable connecting the both.

The base station outdoor radio unit and the subscriber outdoor radio unit are identical. The indoor unit of the base station and of the subscriber is identical electrical circuits in different casing. The base station is mounted in a 19" rack and the subscriber unit card is mounted in an individual box.

The system is a TDD frequency hopping system operating in the full range of the 2.4GHz frequency band from 2400-2484MHz. The system is designed to meet the channel allocation designed for the 2.4GHz range. This is established by applying the frequency hopping ability to cover the entire allocated bandwidth.

The system is based on a cellular deployment using either a single center base station unit or several base station units located at the same place creating a sectorial center base station. The subscriber units are located in the user location either as an integrated indoor unit or as a subscriber two box unit with an outdoor unit and a indoor unit connected by a single coax cable.

### 2. 2.4GHz radio Unit description

The 2.4GHz radio unit is connected in one end to a communication 10BaseT port and in the other end is a 26dBm power output transceiver unit with a 15dBi antennas enabling it to communicate in a bit rate up to 3Mbit/s.

The signal flow in transmit mode is as followed. In the indoor unit a 10BaseT data signal is added with control bits and transferred to the modem and the IF section where it is modulated to an 8FSK modulation with a carrier frequency of 440MHz with a bandwidth of about 1.6MHz (Occupied band width 99%). This signal is then transferred to the outdoor unit where it is unconverted to the 2400-2484MHz ranges according to the selected channel using a hop synthesizer that is set to the correct channel assignment. The unconverted signal is then amplified to about 26dBm and is fed to a Tx/Rx switch. In transmit mode the Tx/Rx switch is set to transmit connecting the power amplifier output to the antenna.

The signal flow in the receive mode is as followed. The signal is received by an antennas on the out door unit and is feed through the Tx/Rx switch to a LNA. The received signal is then amplified by a LNA and down converted to 440MHz IF. On the same coaxial cable that used in transmit mode the outdoor unit sends the 440MHz IF received signal to the indoor unit. This IF frequency is filtered by a 440MHz SAW filter and is applied to a discriminator for detection. The detected signal is then feed to propriety ASIC for final detection and converted to the 10BaseT signal that is the output of the unit at the user side.

### 3. Base Station Unit

The base station units come in two basic configurations. One configuration is a stand-alone base station unit that is identical to a subscriber unit constructed from an outdoor unit and a single indoor unit the second configuration is a sectorial based base station that can apply up to 6 indoor and outdoor base station units using a single 19" rack established to hold up to 6 base station indoor units and 48V power supplies. Each of the 6 indoor base station units is then connected to an outdoor unit through a single coaxial cable carrying on it 440MHz IF signal, 12V DC power to the outdoor unit and control signals from the indoor unit to the outdoor unit. In both cases the signal flow is similar due to the fact that the 19" base station rack and the stand-alone base station box are the same units in a different PCB from the RF and Modem aspect. The difference between the two is the power supply in each unit.