AireSurf Networks
SPK-1000
Operations Description

Version: 1.0

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Revision History

Revision	Author	Release Date	Description of Change
1.0	B.M.	2008-07-27	Original Revision

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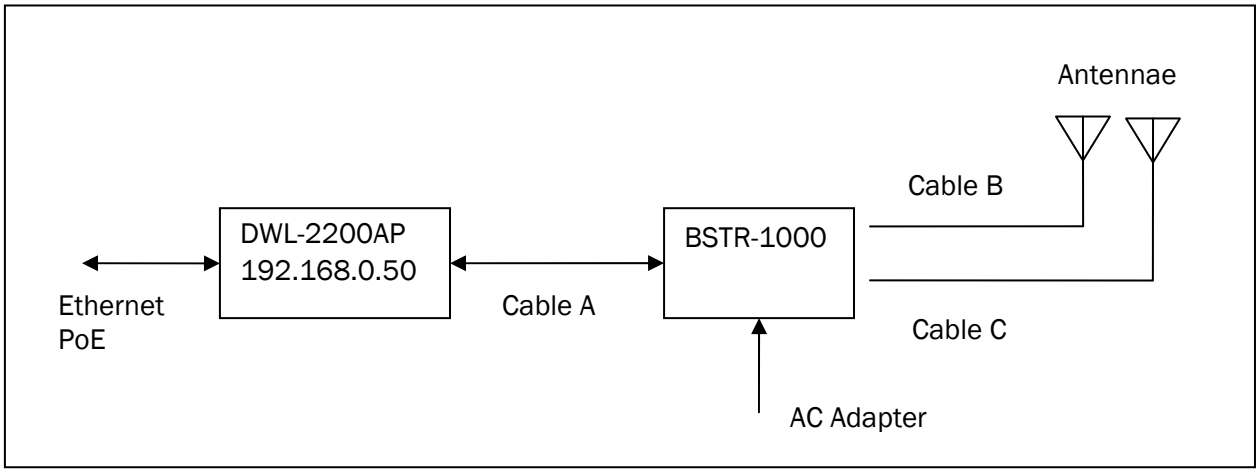
1. SCOPE

The purpose of this system is to split and amplify a WiFi Access Point signal, thus increasing the effective range and number of users for a single WiFi access point.

2. OVERVIEW

The system is a Wifi Access Point with signal boost in the 802.11b/g topology. The system uses the D-Link DWL-2200AP device as the signal source for transmit and receive functions of the WiFi signal. The booster (BSTR-1000) is a single circuit board in a finned heatsink shield box. It has power, Tx/Rx separation and separate amplifier paths for Tx and Rx. The receive and transmit antenna are both Omni-directional antenna.



3. SYSTEM DESIGN

3.1 Wireless Access Point

3.1.1 Access Point

The access point is a D-Link DWL-2200Ap (FCC: RRK2004042018-1) It may use Power over Ethernet for its internal power needs or be powered by AC Mains. The output of the AP is boosted by the BSTR-1000.

3.2 Booster

3.2.1 Power supply

The power supply has a direct 9 volt DC input which is filtered for RF on the power lead.
The voltage regulators are 3.3 at 150ma and 6 at 1 amp fixed voltage.

3.2.2 Tx/Rx separation

The design uses a T/R switch for better signal transfer and lower noise..

3.2.3 Transmit Receive Detect

We use a directional coupler, moving it to the input of the device so the T/R switch operates correctly, and we also use a signal level detector. The comparator detects signal level, and the other half of the dual device provides inversion. The comparator operates on 3.3 which is acceptable for both enables and the T/R switch.

3.2.4 Receive path

The receive path has a 2.45GHz notch filter between stages.

3.2.5 Transmit path

There is an attenuator after the RF switch that reduces the signal from the AP by 13db before the pre-amp stage. After the pre-amp stage, the signal is delivered to the transmit stage at at gain of 20dBm,

3.3 Antenna

3.3.1 Receive Antenna

The SPK-1000 uses an Omni-directional antenna with an 8dBi gain.

3.3.2 Transmit Antenna

The SPK-1000 uses an Omni-directional antenna with an 8dBi gain.