

# Description of Operation

Date: 2006/6/11

EUT is an **3Com Outdoor 11a Building to Building Bridge and 11bg Access Point** with 11 channels (5150 ~ 5350MHz, Space 20MHz) and has Atheros Super AG® mode. It allows you to connect to other WLAN device.

## General Operational Description:

### 1. Time base of the transmission frequency:

For IF and RF frequency, Crystal is a clock reference.

### 2. Synthesizer:

Synthesizer inside Transceiver IC and operate frequency in 2.4GHz and 5GHz Band. Internal voltage controlled oscillator (VCO) provides the desired LO signal base on the phase-locked loop (PLL) with a relatively wide tuning range for this application.

### 3. Transmission:

BBP IC has DSSS (BPSK/QPSK/CCK) and OFDM (BPSK/QPSK/16QAM/64QAM) modulation function, it provides transmission data rate are 1, 2, 5.5, 11 Mbps on DSSS and 6, 12, 18, 24, 36, 48, 54, 108 Mbps on OFDM. Digital data signal will be converted to analog (TX IQ) signals through DAC in BBP IC, TX IQ pass through to low pass filter. TX I/Q signal use direct conversion (zero-IF) architecture converter to generate carrier frequency signal. Transceiver IC and external PA magnify output power.

### 4. Receiver:

Reverse direction isolation of LNA inside Transceiver IC suppresses unwanted radiation. Then 2.4GHz and 5GHz RF signal will be directly down to IF signal (RX IQ) and high frequency spurious emissions are suppressed by LPF. At last RX IQ signal will be demodulated digital data.

### 5. Base band Processing:

Channel Selection: Channel selection is controlled by BBP IC.

Data Modulation: DSSS (BPSK/QPSK/CCK) and OFDM (BPSK/QPSK/16QAM/64QAM) modulation type is controlled by BBP IC.

Power Control Level: BBP IC has the power leveling loop table are calibrated by manufacturer, then uses closed-loop power control function to limit RF output power level. Power leveling step accuracy is  $\pm 0.5$ dB.

Transmit/Receive Switch: EUT has Transmit/Receive Switch and Antenna switch

Data Link Layer:

Firmware implements the full IEEE 802.11 Wireless LAN MAC protocol. It supports BSS and IBSS operation under DCF, and operation under the optional Point Coordination Function (PCF). Lower level protocol functions such as RTS/CTS generation and acknowledgment, fragmentation and de-fragmentation, and automatic beacon monitoring are handled without host intervention. Active scanning is performed autonomously once initiated by host command. Host interface command and status handshakes allow concurrent operations from multi-threaded I/O drivers.

### 6. Interface: POE / Console / Antenna

### 7. Power: Input 100-240VAC and output 48VDC from POE. This power is provided to regulator components to regulated DC power.

8. Product Details

Items	Description
Product Type	WLAN
Radio Type	Intentional Transceiver
Power Type	POE
Interface Type	POE / Console / Antenna
Modulation	OFDM for IEEE 802.11a
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	OFDM (6/9/12/18/24/36/48/54/108)
Frequency Range	5150 ~ 5350MHz
Channel Number	11a: 11
Channel Band Width (99%)	11a: 33.49 MHz ; 11a Turbo: 33.65 MHz
Conducted Output Power	Band 1: 14.89 dBm ; Band 2: 21.23dBm

9. Table for Filed Antenna

For 5GHz Band

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	3Com	3CWE591	Omni directional Antenna	N Type	8.00
2	3Com	3CWE596	Panel Antenna	N Type	20.00
3	3Com	3CWE598	Panel Antenna	N Type	10.00
4	3Com	Embedded antenna	Printed Antenna	MMCX	17.00

Note: The Ant. 2 is unsuitable to be used in Band 1 and 2.