

High Performance, Wireless Platform

Abicom International's "Freedom CPE450" is an unparalleled wireless platform, offering a wealth of features that enable the creation of high performance, flexible wireless installations

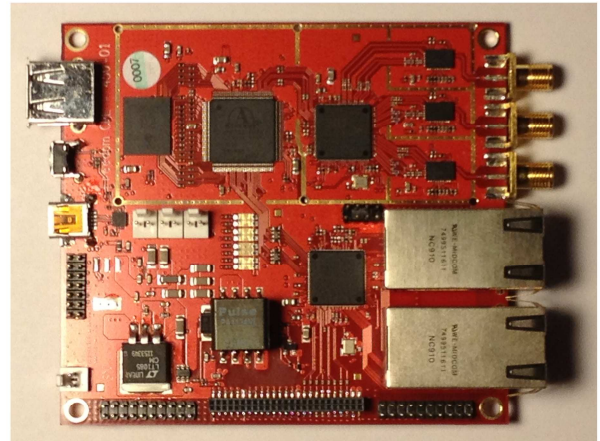
The "Freedom CPE450" combines an enterprise level 3 stream, dual band 802.11n based radio with a 5 port gigabit Ethernet switch, allowing multiple radios to be closely coupled via either a "riser" or via the second powered RJ45 Port.

Dual band technology

Freedom CPE450 supports 2.4GHz, 802.11b/g/n and 5GHz 802.11a/n operation through a highly integrated single chip solution enabling 3x3 Spatial Stream MIMO configurations

Enhanced features include, DFS selection in all required bands, 5,10,20 & 40MHz channelization, cyclic-delay diversity (CDD), Low density parity check (LDPC), maximal rasion combining (MRC), Space Time Block Code (STBC), TX Beamforming (TxBF) and 8 bit spectral analysis resolution.

Additionally Freedom CPE450 includes, two 1000Mbps full-duplex auto cross-over Ethernet interfaces, three combined 2.4GHz and 5GHz antenna ports, and support for smart antenna control through a serial antenna control connector.



Freedom CPE450 Module

Technical Specifications

Frequency Range:	2300 – 2500 MHz b/g/n 4900 – 6000 MHz a/n
Transmit Power:	Up to 26dBm in 3x3 g/n modes Up to 24dBm in 3x3 a/n modes
Max Transmit data-rate:	450Mbit/sec in MCS23 Mode.
Operating Modes:	AP, WDS Repeater, Point to Multipoint FWA.
Security:	WEP, AES, TKIP, WPA and RADIUS.
Ethernet:	Integrated 5 port gigabit Ethernet switch with 2 x 1000Mbit full duplex auto cross-over ports
USB:	1x USB2.0 interface
Serial Console:	via JTAG Header
Power:	Power over Ethernet (802.3at), 12-24Vdc Input.
Dimensions:	85 x 100 mm

About Abicom: Abicom International Ltd. provides wireless engineering services and product development in all aspects of data communications.

Abicom has extensive experience in WLAN, WISP (Wireless ISP) and is an Atheros Authorised Design Center.

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General Description

The "Freedom CPE450" wireless access point supports 2.4GHz 802.11b,g and 5GHz 802.11a operation through a single wireless MAC. The Freedom CPE450 has been optimised for a range of high performance wireless applications including wireless bridges, last mile access and mixed hotspot/backbone applications.

In addition to supporting standard 802.11a/b/g/n operation, Freedom CPE450 also offers a range of extended features such as 5,10,20& 40 MHz operation, 3x3 MIMO technology, spatial multiplexing, cyclic-delay diversity, low-density parity check, maximal ratio combining, Space Time Block coding and Tx Beam forming. Data rates of 216.7 Mbps for 20MHz channels and 450Mbps for 40MHz channel can be achieved.

The onboard 5 port gigabit switch allows multiple FreedomCPE450 devices to be connected together in Bridge, Mesh or Repeater configurations. Multiple CPE450's can be paralleled together to provide redundant or higher capacity wireless links.

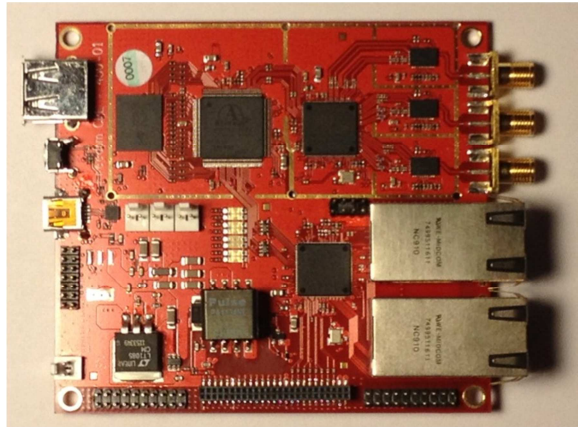
Inbuilt hardware encryption provides an unparalleled level of security. Freedom CPE450 supports all mandatory and optional modes specified in 802.11i. In addition a 128-entry Key Cache holds both shared and unique keys on a per-station basis. WPA and WPA2 are offered as standard.

Abicom International can customise the Freedom CPE for special applications and is able to provide engineering support to customers wishing to integrate the Freedom into their own products.

Hardware Configuration

- Board-Level Product Suitable for OEM's
- Full-Duplex 5 port gigabit switch with 2 RJ45 ports.
- 2 Gigabit "riser" ports, with support for up to 4 boards Per Wi-Fi-stack.
- Combined 2.4GHz and 5GHz Antenna Ports
- Integrated 32-bit 400MHz MIPS Processor
- 64MB DDR SDRAM, 16MB Flash
- USB2.0 Port

- Gigabit Power over Ethernet (802.3at) eases installation in confined and remote sites.
- Optional 12-24Vdc, wide-input power supply



Freedom CPE Module

- 4 programmable LEDs for indication with provision for off-board connection to External LEDs
- Multipurpose IO port with support for 3.3V GPIO and SPI interfaces

Features

- Connects to any 802.11 Client
- 450Mbps Data Rates
- Extended Tuning Range for Worldwide Use
- Hardware Encryption For WPA and 802.11i, AES TKIP and WEP
- DFS/TPC For International Operation
- Support for 802.11e,h and i standards
- WDS, AP and Client functionality for hotspot and bridging applications
- OpenWRT support (Q2 2012)

INTERFACE	
Ethernet Interface	5 Gigabit capable ports presented as 2x RJ45 2x Backplane Ethernet (Voltage Mode) 1x Stackable Ethernet
Antenna Ports	50 Ohms. SMA Connectors
Power	802.3at, Power over Ethernet or 12-24 Vdc Option

HARDWARE	
Processor	Atheros AR7242 @ 400MHz
Radio	Atheros AR9390 3x3 802.11n a/b/g/n
Flash Memory	16 Mbytes, Upgradable to 48Mbytes via GPIO Bus.
SDRAM	64Mbytes
Ethernet Controller	Atheros AR8237N with NAT Support

FUNCTIONALITY	
Single Multiprotocol MAC	Encryption WEP, WPA (2), AES/TKIP
Wireless Distribution System (WDS)	Radius Authentication
IEEE 802.1x Support	
Link Test Feature	Hardware Data Compression
Standards Compliant Bursting	Draft 802.11e QoS Support
Dynamic Frequency Selection (DFS)	Draft 802.11h,i Support
Extended Tuning Range	LED Indicators
Dynamic Transmit Optimisation	Transmit Power Control (TPC)
Combined 2.4GHz and 5GHz Antenna Ports	MAC Filtering

MANAGEMENT	
TELNET Command Line Interface	Secure WEB Interface
FTP Firmware Upload	SNMP Support

POWER SUPPLY				
Parameter	Condition	Min	Typ	Max
Voltage Range	PoE Input		-48Vdc	
	Standard DC Input	6Vdc	6.0Vdc	24Vdc

TRANSMIT POWER (dBm)				
Operating Mode*	Data Rate (Mbps)	Min	Typ	Max
802.11b	Any		20	
802.11a,g,n	Any		18	
802.11a,g,n – 3 stream	Any		23	

RECEIVE SENSITIVITY (dBm)				
Operating Mode*	Data Rate (Mbps)	Min	Typ	Max
802.11b	1		-102	
	11		-92	
802.11a,g,n	6		-96	
	54		-82	
	MCS0 3x3		-95	
	MCS23 3x3		-74	

FREQUENCY	
Tuning Range 802.11b/g/n	2.3GHz-2.5GHz
Tuning Range 802.11a/n	4.9GHz-6GHz

PHYSICAL	
Size	85mm X 100mm
Weight	0.1 Kg

ENVIRONMENTAL	
Operating Temperature Range	0°C to 60°C
Storage Temperature Range	-10°C to 80°C
Humidity	Max. 95% Relative Humidity, Non-Condensing

Hardware reference

