

## High Performance Wireless Platform

Abicom International's "Freedom CPE" is the latest offering from Abicom and is designed to be the ideal partner to the "Freedom AP".

The "Freedom CPE" enables the creation of cost effective, small footprint devices that can be easily integrated into customer's own equipment or built into an antenna housing.

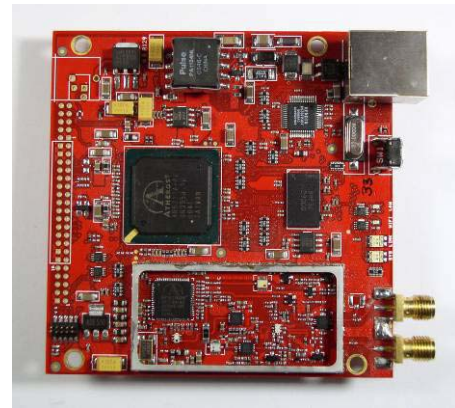
The Freedom range is particularly suited to Fixed Wireless Access (FWA) applications, including wireless bridges, wireless Internet backbone, hotspot and last mile access.

## Dual band technology

Freedom CPE supports 2.4GHz, 802.11b/g and 5GHz 802.11a operation through a single medium access controller.

Enhanced features are available, including Turbo mode (up to 108Mbps), eXtended Range (XR), real-time compression and packet bursting. These features give Freedom unparalleled data throughput capabilities.

Additionally Freedom CPE includes, a 100Mbps full-duplex auto cross-over Ethernet interface, two combined 2.4GHz and 5GHz antenna ports for antenna diversity, an optional "U.FL" antenna connection, Power over Ethernet Interface and an expansion interface.



**Freedom CPE Module**

## Technical Specifications

<b>Frequency Range:</b>	2300 – 2500 MHz b/g 4900 – 6000 MHz a
<b>Transmit Power:</b>	Up to 20dBm b/g mode Up to 18dBm a mode
<b>Max Transmit data-rate:</b>	108 Mbit/sec Turbo Mode
<b>Practical data-rate<sup>1</sup>: (SuperAG Enabled)</b>	45+ Mbit/Sec of user data or 80+ Mbit/Sec in turbo mode
<b>Operating Modes:</b>	AP, WDS Repeater, Point to Multipoint FWA.
<b>Security:</b>	WEP, AES, TKIP, WPA and RADIUS.
<b>Ethernet:</b>	100Mbit full duplex auto cross-over.
<b>Power:</b>	Power over Ethernet (802.3af), 6- 8v dc input or optional 12-24Vdc Input.
<b>Dimensions:</b>	85 x 85 mm

<sup>1</sup>Practical data rate, is a representative measurement of usable data throughput, it is not meant to be an absolute measurement, and will depend on many factors.

**About Abicom:** Abicom International, Inc. 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.

For more information, contact:  
Ken Bennett at 978-851-8140 (US) or  
Dave Edwards at +44 (0) 1630-655933 (UK).

[www.abicom.net](http://www.abicom.net)  
[www.abicom.co.uk](http://www.abicom.co.uk)

## General Description

The "Freedom CPE" wireless access point supports 2.4GHz 802.11b,g and 5GHz 802.11a operation through a single MAC. Freedom CPE has been optimised for Fixed Wireless Access (FWA) applications including wireless bridges, last mile access and mixed hotspot/backbone applications.

In addition to supporting standard 802.11 operation, Freedom also offers 108Mbps Turbo mode, extended range mode (XR), real-time data compression, superpacketisation and packet bursting for enhanced throughput. All of these operate in both standard AP and WDS repeater modes.

The SuperAG mode (Compression, frame bursting and superpacketisation) enables Freedom to achieve a usable data throughput in excess of 80Mbps per second (under ideal conditions, in turbo mode).

Inbuilt hardware encryption provides an unparalleled level of security. Freedom 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 10/100Base-T auto cross over Ethernet Interface
- Combined 2.4GHz and 5GHz Antenna Ports, optional "U.FL" antenna connection.
- Integrated 32-bit 220MHz MIPS Processor



**Freedom CPE Module**

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

System Status  
Link Status  
WLAN Activity  
Ethernet Activity

## Features

- Connects to any 802.11 Client
- Super AG Mode for up to 108Mbps Data Rates
- XR Mode for Extended Range Operation
- Extended Tuning Range for Worldwide Use
- Hardware Encryption For WPA and 802.11i, AES TKIP and WEP
- DFS/TPC For International Operation
- Support for Draft 802.11e,h and i standards
- Hardware Data Compression and Dynamic Transmit Optimisation
- WDS or AP functionality for hotspot or bridging applications

<b>INTERFACE</b>	
Ethernet Interface	10/100 Base, With Auto MDI/MDIX
Antenna Ports	50 Ohms. SMA Connectors
Power	802.3af, Power over Ethernet or 3.5mm Power Jack

<b>HARDWARE</b>	
Processor	Integrated 32-bit MIPS R4Kc 200MHz
Flash Memory	8Mbytes
SDRAM	32Mbytes
Ethernet Controller	Kendin

<b>FUNCTIONALITY</b>	
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

<b>MANAGEMENT</b>	
TELNET Command Line Interface	Secure WEB Interface
FTP Firmware Upload	SNMP Support

<b>LED INDICATORS</b>	
Ethernet Activity	Link status
WiFi Activity	
System Status	

<b>POWER SUPPLY</b>				
<b>Parameter</b>	<b>Condition</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>
Voltage Range	PoE Input		-48Vdc	
	Standard DC Input	5.5Vdc	6.0Vdc	8.0Vdc
(Optional)	Wide Input*	12Vdc		24Vdc

<b>TRANSMIT POWER (dBm)</b>				
<b>Operating Mode*</b>	<b>Data Rate (Mbps)</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>
802.11b	Any		20	
802.11a,g	6, 9, 12, 18, 24		20	
	36		19	
	48		18	
	54		17	
802.11a,g SuperAG Mode	12,18,24,36,48		20	
	72		19	
	96		18	
	108		17	

<b>RECEIVE SENSITIVITY (dBm)</b>				
<b>Operating Mode*</b>	<b>Data Rate (Mbps)</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>
802.11b	1		-95	
	2		-94	
	5.5		-93	
	11		-90	
802.11a,g	6		-91	
	9		-90	
	12		-89	
	18		-88	
	24		-85	
	36		-82	
	48		-75	
54		-72		
802.11a,g SuperAG Mode	12		-88	
	18		-87	
	24		-86	
	36		-85	
	48		-82	
	72		-79	
	96		-72	
108		-69		

\* 802.11b,g Specifications are for 2.4GHz-2.5GHz and 802.11a Specifications are for 5.0GHz-5.825GHz.

---

**FREQUENCY**

---

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

---

**PHYSICAL**

---

Size	85mm X 85mm
Weight	0.1 Kg

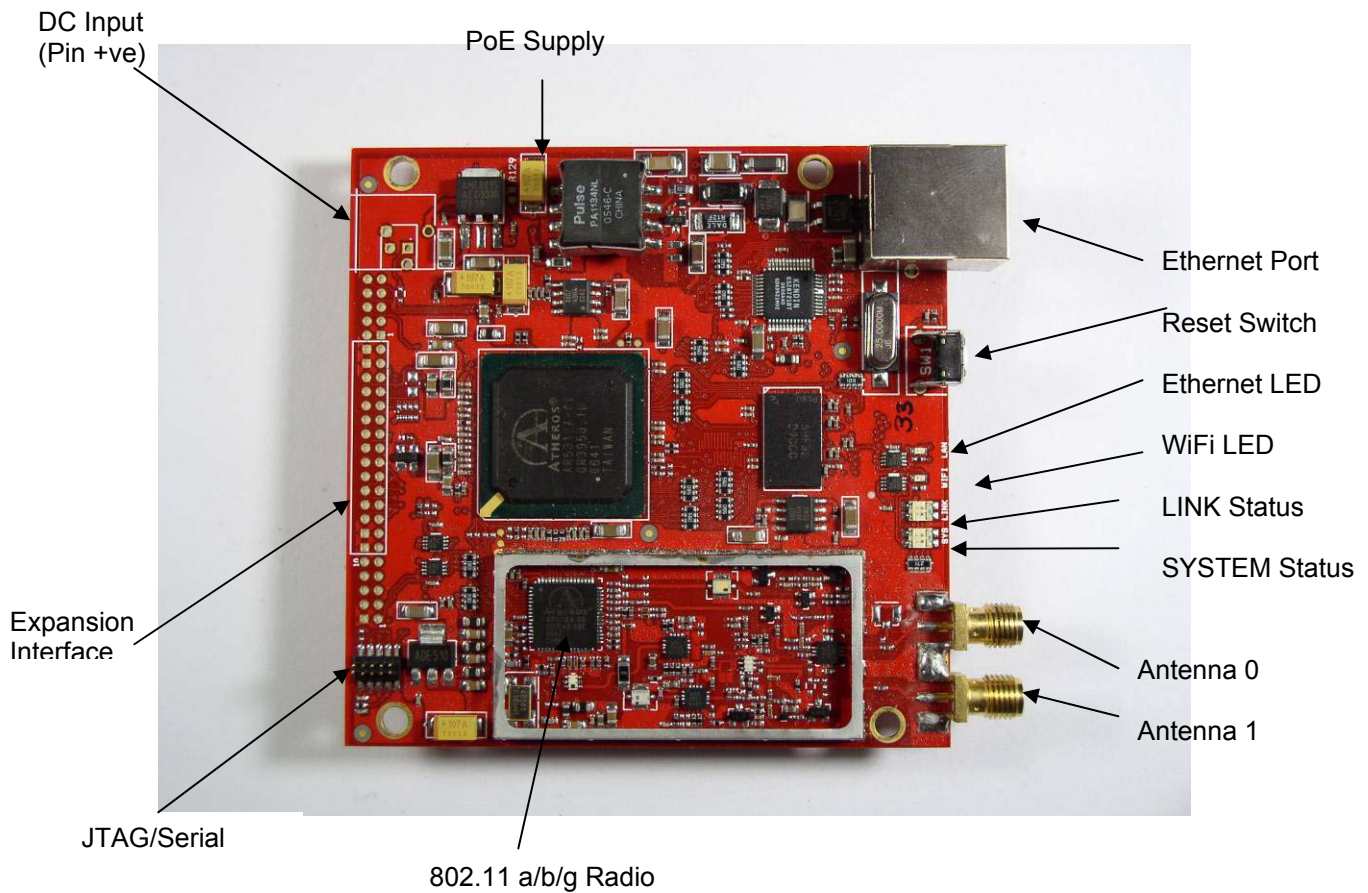
---

**ENVIRONMENTAL**

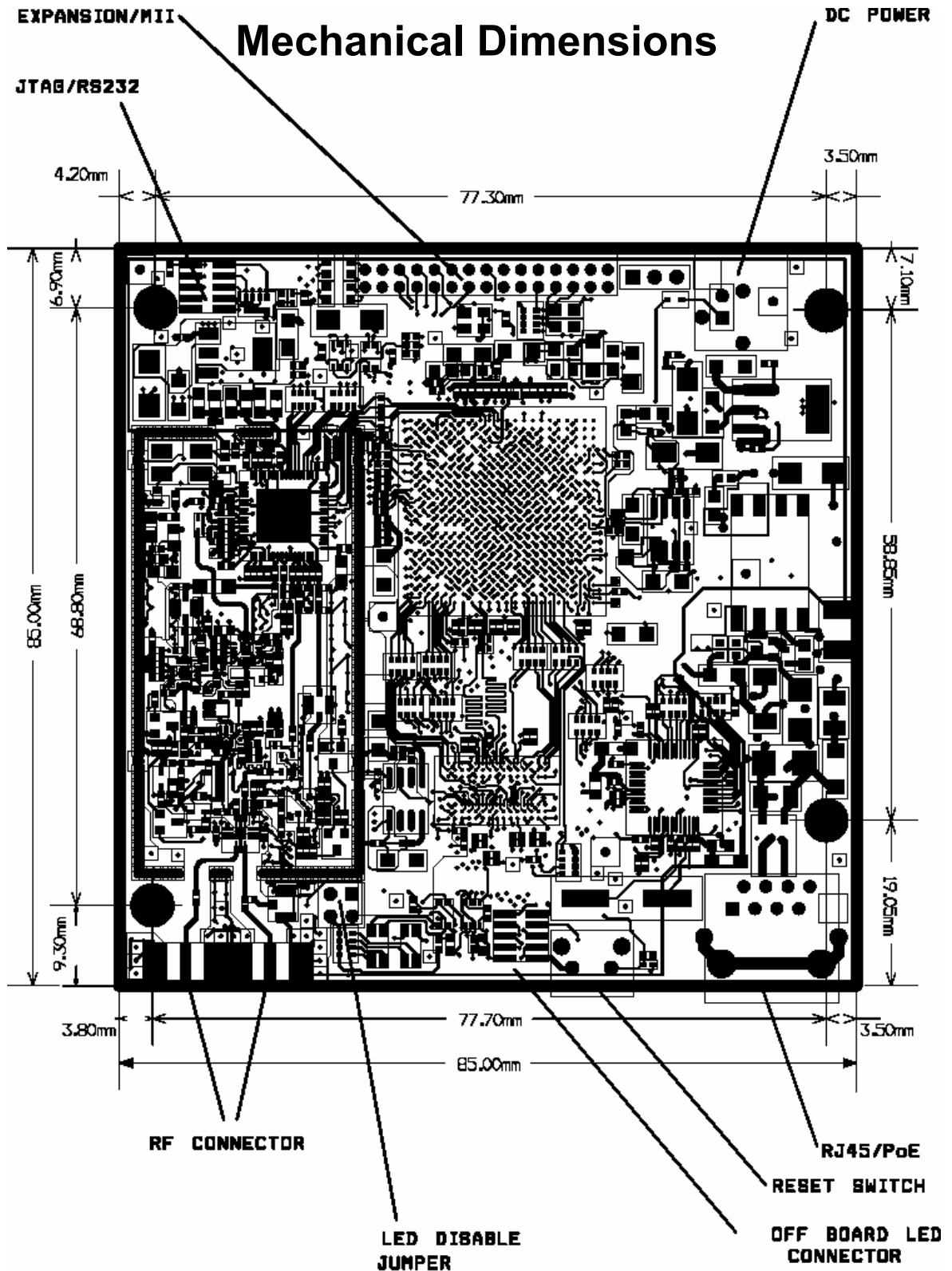
---

Operating Temperature Range	0°C to 50°C
Storage Temperature Range	-10°C to 60°C
Humidity	Max. 95% Relative Humidity, Non-Condensing

## Hardware reference



Feature	Function
Ethernet Port	10/100Mbit Auto cross over Ethernet
Ethernet LED	Ethernet activity
WiFi LED	Wireless activity
LINK Led	AP Mode: Green indicates system ready for connections CPE/STA Mode: Yellow Searching for AP CPE/STA Mode: Green Connected to APS
SYSTEM STATUS	GREEN: System booted and running FLASHING: System booting
Reset Switch	Short press: - System reset Long hold: - Reset to factory defaults
Antenna Ports	Two ports for antenna diversity. Can be set to use just one port
JTAG/SERIAL	Factory programming and test interface
DC Input	12-24 Vdc or 6-8 Vdc depending on option.



FreedomCPE DualBand AP - REV04  
(C) Abicom International 2005,2006

PN AP48-ABICOM-03-REV04

© Abicom International, Ltd. May 2007

Freedom CPE Rev05. Specifications are subject to change without notice.