

### High Performance Wireless Router

Abicom's "Freedom FWA" incorporates all of the key components needed to deliver high-performance, dual concurrent AP/Router/Bridge solutions and is particularly suited to outdoor Fixed Wireless Applications (FWA)

The Freedom FWA builds upon the strength of Abicom's partnership with Atheros communications and features the industry's only custom-designed WLAN network processor.

The "Freedom FWA" leverages the outstanding performance of Atheros' 720MHz AR7161 WNPU to achieve Gigabit Ethernet connectivity, whilst, when combined with Abicom's 802.11n wireless solutions delivers the ultimate in 802.11n networking.

Simultaneous, dual radio capability enables a bandwidth of up to 600Mbps PHY/Link rate to be achieved, with an aggregate throughput of over 400Mbps.

### Flexible software configuration

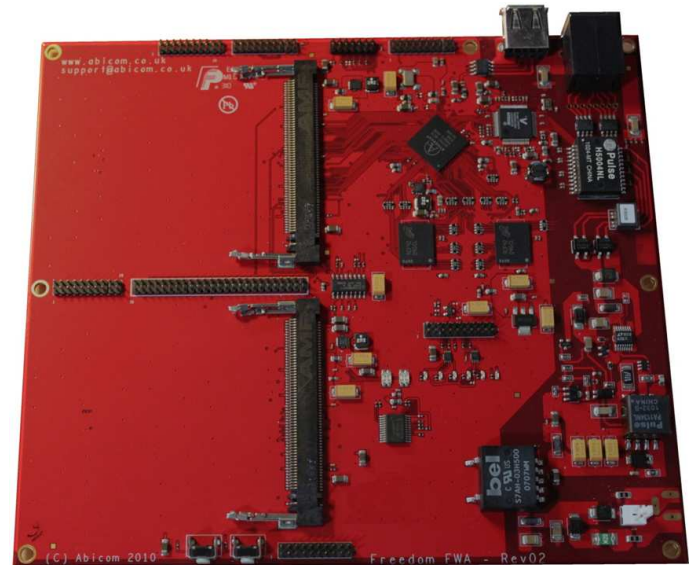
Abicom's fully functional software suite allows the Freedom FWA to operate as:

- Part of an existing wireless network
- Point to point/Point to multipoint bridge
- Hotspot
- Wireless CCTV / Wireless ISP
- Traditional AP

Additionally, the Freedom FWA fully supports open source software, through the OpenWRT wireless router project.

### Key Platform Features

- 720Mhz, AR7161 WLAN-NPU
- 128MB DDR SDRAM
- 32MB Flash
- 1 Gigabit Ethernet port
- Gigabit compatible Power Over Ethernet
- 12-28 Vdc PSU (optional)
- Two USB2.0 MAC/PHYS
- 2x 32 Bit 66Mhz PCI2.3 Host Interfaces
- Feature Rich Expansion bus.



### Freedom FWA Platform

### Radio Features

- AR9220 2x2 802.11n radio
- Up to 26dBm output power
- HT20/HT40 Support
- 6W power consumption under full load
- 32-bit mini-PCI, Type III format
- Up to 300 Mbps data rate
- Fully DFS2.0 compliant solution

### Bridge/Router Features

- Wireless AP/Wireless Bridge Modes
- WPA/WPA2 Authentication
- Radius Authentication
- Client access control
- Webserver based configuration
- Remote syslog support
- Centralized management tools

**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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**INTERFACE**


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Ethernet Interface	10/100/1000, With Auto MDI/MDIX
Power	Gigabit compatible Power over Ethernet
Power	Optional 12-28 V dc

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**HARDWARE**


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Processor	Integrated 32-bit MIPS 24K 720MHz
Flash Memory	32Mbytes
SDRAM	128Mbytes
Ethernet Controller	Vitesse

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**FUNCTIONALITY**


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Supports multiple radio chipsets	Encryption WEP, WPA (2), AES/TKIP
Wireless Distribution System (WDS)	Radius Authentication
IEEE 802.1x Support	MAC Address Filtering
Standards Compliant Bursting	802.11e QoS Support
Dynamic Frequency Selection (DFS 2.0/3.0)	802.11h,i Support
Extended Tuning Range	LED Indicators
Dynamic Transmit Optimisation	Transmit Power Control (TPC)

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**MANAGEMENT**


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TELNET Command Line Interface	Secure WEB Interface
FTP Firmware Upload	

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**APPLICATION**


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Traditional dual radio Access Point	Point to Multipoint Wireless Bridge
Point to point wireless bridge	Wireless Backhaul

## Freedom FWA Radio Options

Abicom International's "Freedom MiMo-HP" range is designed specifically for direct, dual-band (2.4/5.xGHz) integration into wireless routers and outdoor wireless networking products, such as Abicom's Freedom FWA OEM router board.

The Freedom MiMo-HP is based upon Atheros' latest 802.11n wireless chipsets and comes in two offerings, the MiMo-HP3 which offers high output power (up to 28dBm, 3x3 MiMo configuration) and the MiMo-HP2 which offers 23dBm, 2x2 configuration. Both devices are capable of delivering over 200 Mbit/sec of usable data throughput.

The "Freedom MiMo-HP" enables the creation of cost effective, wireless networking devices that can be easily integrated into customer's own equipment or built into 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.

### Industrial Wireless Solutions

Freedom MiMo-HP3 is an industrial grade product, specifically designed to offer the Highest Performance, reliability and durability in the harshest temperature ranges.

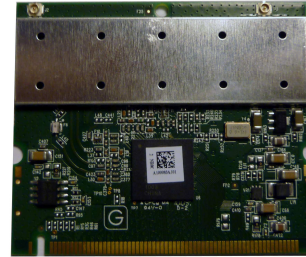
A unique RX Filter design and RF power control accuracy dramatically reduces Wi-Fi interference and helps improve data throughput in concurrent applications and high-density outdoor environments.

The Freedom MiMo-HP3 is RF ESD/ Surge protected to 10KV and ensures the highest levels of performance and reliability even in the harshest of environments.

### Cost effective Wi-Fi

The Freedom MiMo-HP2 offers a cost effective balance between the requirements of harsh industrial applications and the need to keep component costs down.

The MiMo-HP2 is based upon the Atheros AR9220 chipset and offers improved performance over the MB92 reference design.



Abicom provides a full wireless point to point and point to multipoint solution, with advanced features such as multicast mitigation and spectral scanning. These are available when the MiMo-HP is combined with our Freedom Nx2 and Freedom FWA platform boards.

### Open Source support

Both cards are also supported under the Ath9K open source project and can be used in applications such as OpenWRT.

Abicom can also provide a full Atheros based source code sublicense,, and can assist in their customization and development.

### Key Specifications

<b>Frequency Range:</b>	2300 – 2700 MHz b/g/n 4900 – 6000 MHz a/n
<b>Transmit Power:</b>	
<b>MiMo-HP2</b>	Up to 23dBm n/g/b mode Up to 21dBm n/a mode
<b>MiMo-HP3</b>	Up to 28dBm n/g/b mode Up to 25dBm n/a mode
<b>RF Connector</b>	
<b>MiMo-HP2</b>	2x U.FL Ultra Miniature coaxial
<b>MiMo-HP3</b>	3x MMCX
<b>Max Transmit data-rate:</b>	300 Mbit/sec
<b>Practical data-rate :</b>	100+ Mbit/Sec in HT20 Mode 210+ Mbit/Sec in HT40 Mode
<b>Operating Modes:</b>	AP, WDS Repeater, Point to Multipoint FWA, Station/Client
<b>Security:</b>	64, 128 & 152 bit WEP AES-CCM, TKIP, WPA/WPA2 and 802.1x.
<b>Power Consumption:</b>	
<b>MiMo-HP2 (3.3V)</b>	2.0W - 3.5W Max
<b>MiMo-HP3 (3.3V/5.0V)</b>	5.0W - 6.4W Max
<b>Temperature range:</b>	
<b>MiMo-HP2</b>	-20°C ~ +60°C
<b>MiMo-HP3</b>	-40°C ~ +75°C

### Approvals:

FCC Part 15.401, Part 15.407, Part 15.247, FCC Part 15.247, 47 CFR, FCC Class-B,  
FCC Part 15.107 & Part 15.109,  
IC RSS210, RSS139-1, ICES-003, limited module level approval.  
ETSI, EN301893, EN60950, EN 301.893, EN 300.328, EN 301489- 1/17, EN 55022, EN 55024

<b>POWER SUPPLY</b>				
Parameter	Condition	Min	Typ	Max
Voltage Range	PoE		-48Vdc	
	DC Input	8.0 Vdc	12.0Vdc	28.0Vdc

<b>TRANSMIT POWER (dBm)</b>				
Operating Mode*	Data Rate (Mbps)	Min	Typ	Max
802.11a	Any		26 (400mW)	
802.11b,g	Any		28 (600mW)	
802.11na, ng (Dependent on datarate)		19		28

<b>RECEIVE SENSITIVITY (dBm)</b>				
Operating Mode*	Data Rate (Mbps)	Min	Typ	Max
802.11b	1		-96	
	11		-90	
802.11a,g	6		-93	
	54		-80	
802.11na,ng	130		-76	
	300		-73	

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

<b>FREQUENCY</b>	
Tuning Range 802.11b/g/ng	2.3GHz-2.7GHz
Tuning Range 802.11a/na	4.9GHz-6GHz

<b>PHYSICAL</b>	
Size	TBC
Weight	TBC

<b>ENVIRONMENTAL</b>	
Operating Temperature Range	-20°C to 75°C
Storage Temperature Range	-20°C to 75°C
Humidity	Max. 95% Relative Humidity, Non-Condensing