

FREEDOM AP/CPE
User Guide

User Guide Version	1.6.15
Firmware Version	V1.6.15+
Release Date	December 2011
Support contact	support@abicom.co.uk



Preface

The intent of this document is to familiarize users with the FreedomAP and Freedom CPE Access Points/wireless bridges, their setup, configuration, and usage.

Audience

The reader is assumed to have conceptual and practical knowledge about AP concepts, features, and functions. This guide relies on the reader's familiarity with APs in general while discussing the specific characteristics of the FreedomAP /CPE.

Regulatory Compliance Information

This section contains Regulatory Compliance Information for the Freedom AP/CPE.

Radio Frequency Interference Requirements

The operation of this device in the 5.15 GHz to 5.25 GHz frequency range is restricted to indoor use. FCC regulations require this product to be used indoors while operating at 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference. However, the operation of this device in the 5.25 GHz to 5.35 GHz frequency range is allowed for both indoor and outdoor use. High power radars are allocated as primary users of the 5.25 GHz to 5.35 GHz and 5.65 GHz to 5.85 GHz bands. These radar stations can cause interference with and/or damage to this device.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. No guarantee exists that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the radio/TV receiving antenna.
- ☐ Increase the separation between the equipment and the radio/TV receiver.
- ☐ Connect the equipment into an outlet on a circuit different from that to which the radio/TV receiver is connected.
- ☐ Consult the dealer or an experienced radio/TV technician for help. Modifications made to the product, unless expressly approved by Abicom International, could void the user's authority to operate the equipment.

RF Exposure Requirements

To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in this user guide.

CE Statement

The Freedom AP/CPE OEM device is intended to be used by suitably trained individuals/organisations who are familiar with the requirements of the R&TTE directive. In particular the OEM client must ensure that appropriate antennas and transmit power levels are selected to ensure that all power limits are met.

Selection of the correct country of operation (country code) will ensure that the device operates only on the frequencies permissible within that country.

Hereby, Abicom International declares that this device is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/5/EC. However, the use of the following warning symbol



Means that this equipment is subject to restrictions of use in certain countries.

Czech	Abicom International Ltd tímto prohlašuje, že tento Freedom AP/CPE je ve shod_ se základními požadavky a dalšími p_řslušnými ustanoveními sm_řnice 1999/5/ES.
Danish	Undertegnede Abicom International Ltd erklærer herved, at følgende udstyr Freedom AP/CPE overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
German	Hiermit erklárt Abicom International Ltd, dass sich das Gerát Freedom AP/CPE in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet
Estonian	Käesolevaga kinnitab Abicom International Ltd seadme Freedom AP/CPE vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Abicom International Ltd .ΗΛ.ΝΕΙ ΟΤΙ Freedom AP/CPE ΣΥΜΜΟΡΦ.ΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙ..ΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ .ΙΑΤΑΞΕΙΣ ΤΗΣ Ο.ΗΓΙΑΣ 1999/5/EK.
English	Hereby, Abicom International Ltd, declares that this Freedom AP/CPE is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Spanish	Por medio de la presente Abicom International Ltd declara que el Freedom AP/CPE cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Finnish	Abicom International Ltd vakuuttaa täten että Freedom AP/CPEtyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
French	Par la présente Abicom International Ltd déclare que l'appareil Freedom AP/CPEest conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italian	Con la presente Abicom International Ltd dichiara che questo Freedom AP/CPE è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latvian	Ar šo Abicom International Ltd deklar_, ka Freedom AP/CPE atbilst Direkt_vas 1999/5/EK
	b_tiskaj_m pras_b_m un citiem ar to saist_tajiem noteikumiem.
Lithuanian	Šiuo Abicom International Ltd deklaruoja, kad šis Freedom AP/CPE atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas
Hungarian	Alulírott, Wavelength Ltd nyilatkozom, hogy a Freedom AP/CPE megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Maltese	Hawnhekk,Wavesight Ltd, jiddikjara li dan Freedom AP/CPE jikkonforma mal-_ti_ijiet essenzjali u ma provvedimenti o_rajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.
Dutch	Hierbij verklaart Abicom International Ltd dat het toestel Freedom AP/CPE in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Portuguese	Wavesight Ltd declara que este Freedom AP/CPE está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovak	Wavelength Ltd týmto vyhlasuje, že Freedom AP/CPE sp_a základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Slovenian	Abicom International Ltd izjavlja, da je ta Freedom AP/CPE v skladu z bistvenimi zahtevami in ostalimi relevantnimi dolo_ili direktive 1999/5/ES.
Swedish	Härmed intygar Abicom International Ltd att denna Freedom AP/CPE står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

.....	1
PREFACE	2
AUDIENCE	2
REGULATORY COMPLIANCE INFORMATION	3
CE STATEMENT	4
INTRODUCTION	7
WARRANTY	7
HARDWARE CONFIGURATION	8
HARDWARE INSTALLATION	11
INITIAL CONFIGURATION	12
QUICK-START GUIDE	12
WEBSERVER INTERFACE	13
LOGGING INTO THE WEB INTERFACE	13
SYSTEM STATUS, MAIN STATUS PAGE	14
SYSTEM SETUP	15
RADIO CONFIGURATION	17
SITE CONFIGURATION TOOLS	18
FIRMWARE UPDATES	19

Introduction

The Freedom AP and Freedom CPE Reference Designs implement IEEE 802.11a/b/g wireless LAN (WLAN) access points or point to multipoint wireless bridges. The Freedom AP is a dual-band, concurrent design offering simultaneous 802.11a + 802.11b/g connectivity. The Freedom CPE is a single channel a/b/g device. Both devices offer the same functional web server interfaces.

Warranty

Each standard product manufactured by **Abicom** is warranted to meet all published specifications and to be free from defects in material and workmanship for a period of 1 (one) year from date of delivery as evidenced by the packing slip or other transportation receipt.

Products showing damage by misuse, abnormal conditions of operation or products which have been modified by Buyer or have been repaired or altered outside the Abicom factory, without a specific authorisation from Abicom shall be excluded from this warranty.

Abicom shall in no event be responsible for incidental or consequential damages including without limitation, personal injury or property damage.

Abicom's responsibility under this warranty shall be to repair or replace, at its option, defective work or parts returned to **Abicom** with transportation charges to the **Abicom** factory paid by Buyer and return paid by **Abicom**. If **Abicom** determines that the Product is not defective within the terms of the warranty, Buyer shall pay all handling and transportation costs. **Abicom** may, at its option, elect to correct any warranty defects by sending its supervisory or technical representative, at its expense, to customer's plant or location.

Since **Abicom** has no control over conditions of use, no warranty is made or implied as to suitability for customer's intended use. There are no warranties, expressed or implied, except as stated herein. This limitation on warranties shall not be modified by verbal representations.

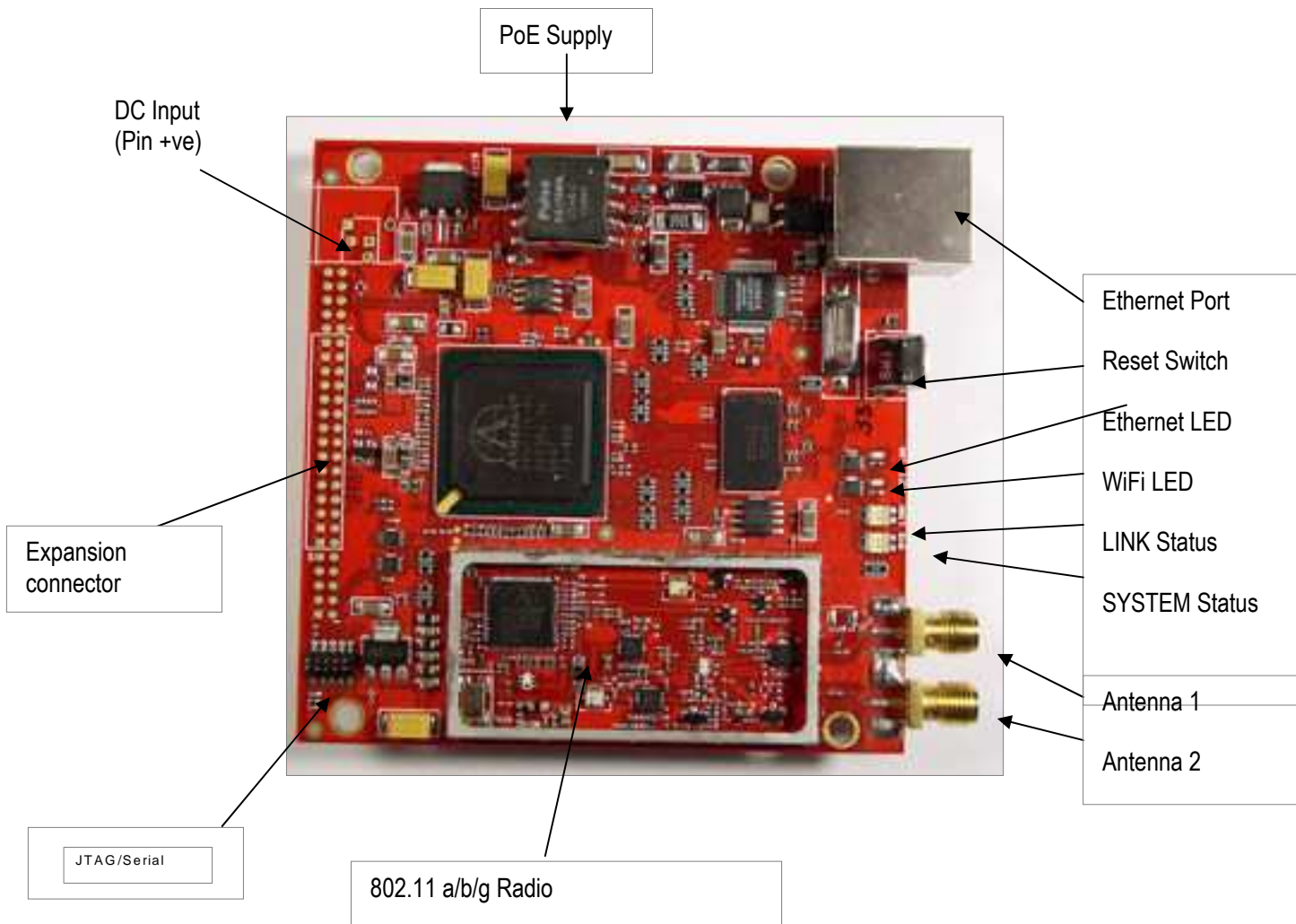
Equipment shipped ex-works **Abicom** factory shall become the property of Buyer, upon transfer to the common carrier. Buyer shall communicate directly with the carrier by immediately requesting carrier's inspection upon evidence of damage in shipment. Buyer must obtain a 'return materials authorisation' (RMA) number and shipping instructions from **Abicom** prior to returning any product under warranty. Do not return any **Abicom** product to the factory until RMA and shipping instructions are received.

The warranty becomes void if the product is altered in any way. In the event that your system should require repair, it is recommended that you contact the **Abicom** Returns Department.

Hardware Configuration

Freedom CPE Revision 05.

The Freedom CPE is a single channel, dual band device. It supports 802.11 operation at either 5.xGHz (802.11a) or 2.4GHz (802.11b/g). Concurrent operation is not possible. The Freedom CPE supports a PoE 802.3af compatible power supply and either a 5V DC input or an optional 12-24V DC Input.



Rev 05 Expansion connector (Optional)

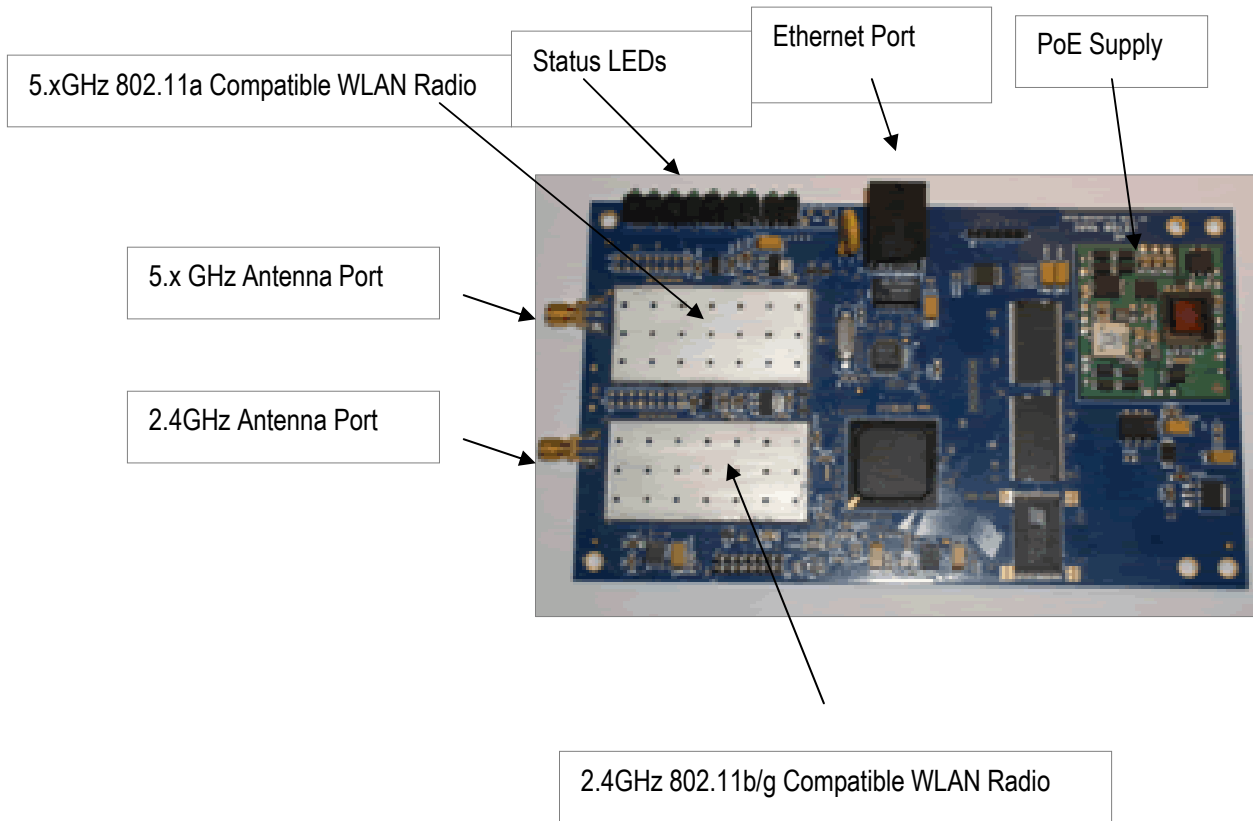
The Freedom CPE provides additional expansion capabilities via an off-board expansion connector. This header provides access to the second Ethernet interface, along with additional GPIO controls.

The pin configuration for the header is as follows:

PIN #	Function	Pin#	Function
1	Wifi TX	2	GND
3	Wifi RX	4	LED0
5	RS232/RS485	6	LED1
7	3.3V	8	LED2
9	RS422/RS485	10	LED3
11	5.0V	12	GND
13	5.0V	14	GND
15	MII_TXD0	16	MII_RXD0
17	MII_TXD1	18	MII_RXD1
19	MII_TXD2	20	MII_RXD2
21	MII_TXD3	22	MII_RXD3
23	MII_TXC	24	MII_RXC
25	GPIO4	26	MII_RXDV
27	GPIO5	28	MII_TXEN
29	GPIO6	30	MII_COL
31	GPIO7	32	MII_CRS
33	NC	34	MII_RXERR
35	SIO_CK	36	MII_RESET_L
37	DC_IN	38	GND
39	DC_IN	40	GND
41	GND	42	GPI8
43	RS232TX-1	44	GPI9
45	RS232TX	46	GPI10
47	RS232RX	48	MII_MDIO
49	RS232RX-1	50	MII_MDC

Freedom AP

The Freedom AP is a dual channel, dual band device. It supports 802.11 operation at both 2.4GHz and 5GHz concurrently. The Freedom AP will operate with a PoE 802.3af compatible power supply or a 6V DC input.



Initial Configuration

The Freedom AP and CPE units are shipped with a common default configuration to enable users to quickly access the device and begin the configuration process. The table below lists the key features of the default configuration

Parameter	Value
IP Address	192.168.0.1
IP Mask	255.255.255.0
Administrator Username	admin
Password	5up
Operational mode	Access Point
Country Code	Not Set
Wireless Mode	802.11a
SSID	Freedom
WDS Mode	Enabled
Encryption	Disabled

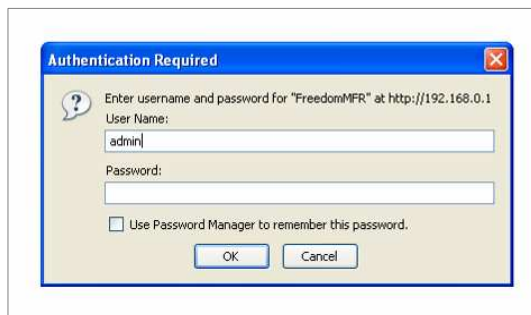
Quick-start guide

Webserver Interface

The Freedom Webserver provides a simplified interface to the wireless device. It allow's the end use to quickly set up and manage the device and covers all typical management functions generally blah blah bla

Logging into the WEB interface

The onboard web-server requires the operator to submit a username and password. The factory default is "admin" and "5up", this admin password can be changed once successfully logged in.



System Status, Main Status Page

Upon logging into the device, the user is presented with the system status. This is shown below, and reports a summary of the device. Detailed information can be retrieved by selecting pages from the Maintenance menu on the left hand side.

The screenshot shows a web browser window titled "Freedom MFR - Mozilla Firefox" with the address bar displaying "http://192.168.0.1/". The page header includes the Abicom International logo and the text "Freedom MFR The power to communicate".

On the left side, there is a "Maintenance" menu with the following items: Status, System Log, Connected Devices, Network Scan (STA Only), System Setup, Wireless Setup, Site Tools, and Firmware.

The main content area is titled "System Status" and displays the following information:

Hostname	192.168.0.1
IP Address	192.168.0.1
IP Mask	255.255.255.0
Temperature	35 degC
Firmware Version	01.03.18.58
Bootrom Version	1.3.20.3
Uptime	00:04:47 up 4 min, load average: 3.13, 1.95, 0.83

Below this, the "Radio 0" configuration is shown:

Wireless Mode	11a
SSID	Freedom
Operational Mode	AP
RF Channel	Auto
Transmit Power	0
Connected Devices	0
Encryption	Disabled
Authentication	open

At the bottom of the System Status section, there is a "Reboot Device" button.

System Setup

Selecting “system” from the system setup menu will show the following screen. From here the user can adjust general operational parameters relating to the device.

The screenshot shows the 'System Setup' page of the Freedom MFR device. The browser window title is 'Freedom MFR - Mozilla Firefox' and the address bar shows 'http://192.168.0.1/'. The page features the Abicom International logo and the slogan 'Freedom MFR The power to communicate'. A left-hand navigation menu includes 'Maintenance', 'System Setup', 'Wireless Setup', 'Site Tools', and 'Firmware'. The 'System Setup' section contains the following fields and options:

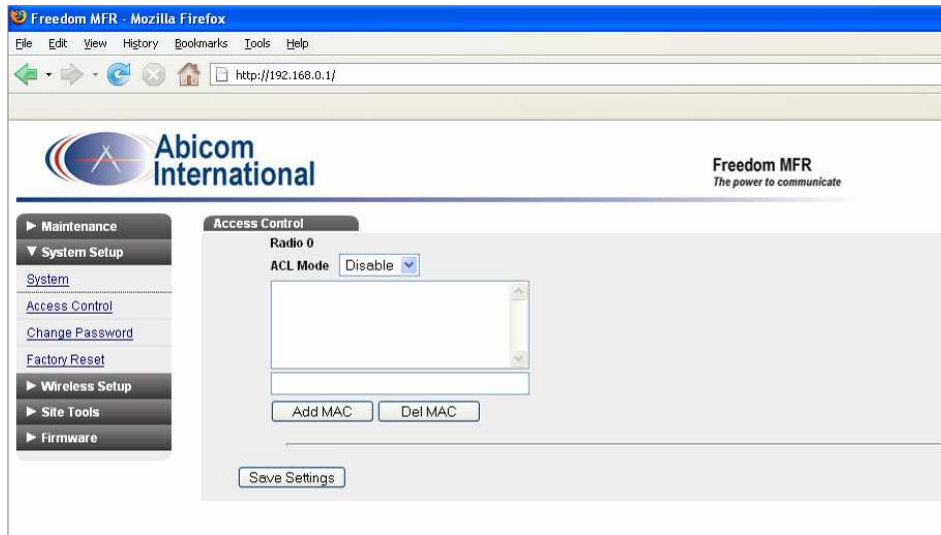
Field	Value
System Name	
Country Code	NA
IP Address	192.168.0.1
IP Mask	255.255.255.0
Default Gateway	0.0.0.0
IP Forwarding	<input checked="" type="checkbox"/> enabled
Syslog IP	0.0.0.0
Timeserver IP	0.0.0.0
Dual Ethernet	<input checked="" type="checkbox"/> enabled
Wireless Devices	
Radio 0	<input checked="" type="checkbox"/> enabled
Services	
Telnet	<input checked="" type="checkbox"/>
SNMP	<input checked="" type="checkbox"/>
DHCP	<input type="checkbox"/>
SSH	<input checked="" type="checkbox"/>
NAT	<input type="checkbox"/>

At the bottom of the form are 'Save Settings' and 'Reset' buttons.

Please refer to the CLI reference for detailed information about these settings. The operator should however note that as an absolute minimum the Country Code and IP Address details should be set.

Access Control

From the Access control page it is possible to restrict wireless access to the device, based upon MAC address.



Select the ACL mode to determine how the device will behave when particular devices attempt to connect. Use the Add and Delete buttons to add devices to the ACL list.

System Password

Use the “Change Password” page to modify the WEB password. This is independent of the CLI password which must be changed via the CLI interface.

Factory Reset

Use the “Factory Reset” page to set the device back to the factory or OEM defaults. Please contact Abicom for more information regarding OEM branding.

Radio Configuration

The radio configuration page is shown below.

The screenshot shows the 'Radio0 BSS0 Setup' page in the Freedom MFR web interface. The page is organized into several sections:

- Device Mode:** 11a
- Operational Mode:** Access Point
- SSID:** Freedom
- RF Channel:** Auto
- Outdoor Mode:** abc
- Device Range:** 0 meters
- Antenna Mode:** both
- SuperA/G:** Compression (checked), Bursting (checked), Fast Frames (checked), XR (unchecked), WDS (checked)
- VLAN:** Enable VLAN (unchecked), VLAN TAG: 0, VLAN IP ADDR: VLAN currently disabled, VLAN IP MASK: VLAN currently disabled, VLAN IP GW: VLAN currently disabled
- Security:** Enabled (unchecked), Authentication: open, WPA Update Interval: 600, WPA Cipher: auto, WPA Passphrase: (empty), KEY1-4: WEP-40 (unchecked)

Buttons for 'Save Settings' and 'Reset' are located at the bottom of the configuration area.

The top area of the page allows the operator to specify RF and operational details for the device, including allowing the unit to switch between AP and STA modes. RF Channels and 5GHz band limitations can also be specified.

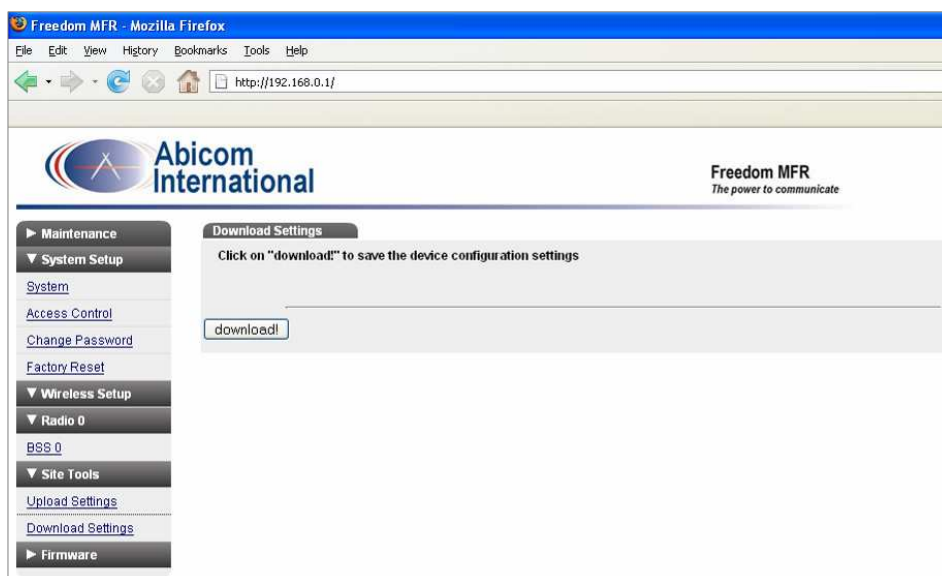
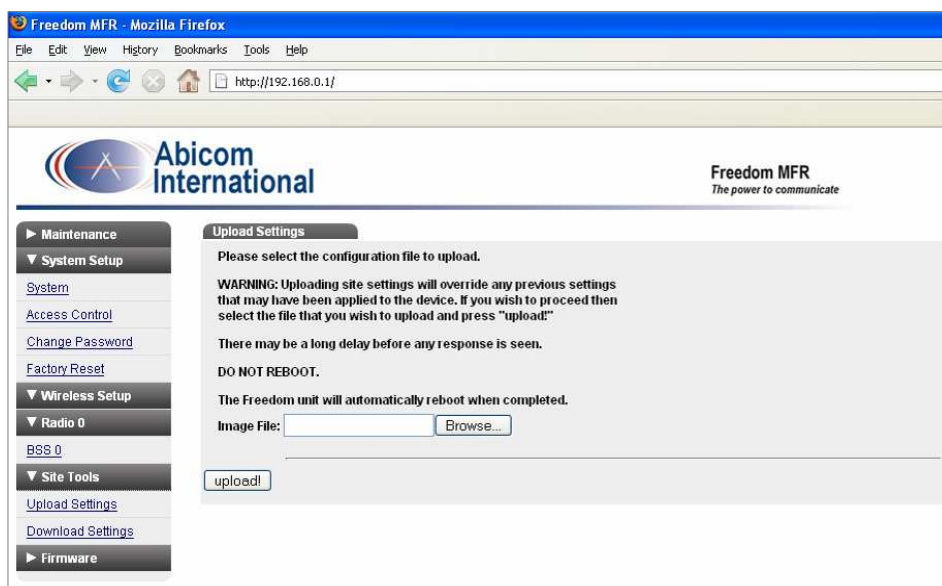
The device range can also be set, 0 implies a default of 4000meters. Longer links will require that this is increased.

The next section sets up SuperG features such as packet compression and frame bursting. Additionally a VLAN tag can be specified for all data being received on the wireless interface.

Finally, the security section enabled WPA/WPA2 and WEP encryption. Refer to the CLI for additional documentation.

Site Configuration tools

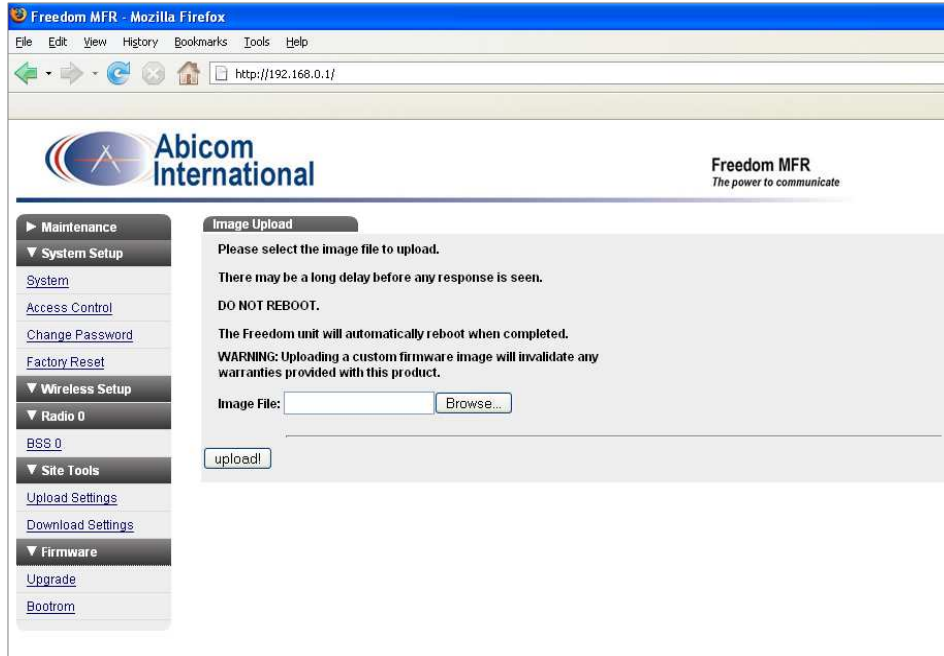
It is possible to download a copy of the devices configuration, this is useful when a number of identical or nearly identical units are required. To achieve this go to the "Site Tools" menu and use either the upload or download settings pages.



Once a device has been "cloned" it is then possible to make minor adjustments such as ip address etc. The upload/download settings will also preserve any changes that have been made by the CLI interface.

Firmware updates

The system firmware can now be updated using the onboard WEB server. Select firmware and then “upgrade”. The following screen will be presented, use browse to locate the Abicom Firmware Image.



Bootrom update

It is also possible to upgrade the bootrom on the device. Please contact Abicom for assistance when upgrading the bootrom. Note that uploading a custom bootrom will invalidate any warranties with this device.

