



**802.11 a/b/g/n Mini-PCI module**

**MB82HP**

**RF Module User's Guide**



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## INTRODUCTION

The Proxim MB82HP miniPCI module implements an IEEE 802.11a/b/g/n wireless LAN (WLAN) with Master function. MIMO operation is implemented using three transmit and three receive chains per the 802.11n standard.

The device will be marketed under brand name: Proxim and model: MB82HP.

This module may be installed in PC and host processor systems using approved external antennas. The module may be configured for 5GHz and 4.9GHz operation USING THE Web Server function provided by Atheros Communications Inc. Please, refer to Atheros' driver User Manual instructions for details.

※ **The 2.4GHz radio frequency band will be turn off by firmware on this module.**

## CONFIGURATION

This section provide procedures for connecting and configuring the AP. Configuration can be performed either from a web browser accessing the build-in web server, or by entering commands using the command line interface (CLI). For detailed information on using the server refer to "AP Web Server and for using CLI, refer to detailed operational guide provided by Atheros for the chipset.

### AP Initial Configuration

Configure the AP for its Service Set Identifier (SSID) unique to the application. This configuration can be done either through a web browser with access to the build-in AP web server, or by commands using the command line interface (CLI).

#### WEB Browser

3. Select the Access Point Web Server hotlink.
4. A dialog box appears requesting login authorization. When prompted, enter the following

Follow these steps to configure the channel frequency and SSID using a web browser:

1. Launch a web browser (Netscape Navigator or Internet Explorer are examples of commonly used web browsers).
2. From the HPC, enter the IP address that is assigned to the AP as the URL address, for example `http://192.168.1.1`.

information to log in:

Login: **Admin** (case-sensitive) Password: 5up

5. Click OK to complete the login process. The 5GHz Statistics window will appear.
6. Select the Configuration hotlink from the navigation menu. The system Configuration window will appear.
7. Enter the SSID (name or address) for the AP in the SSID field. The SSID must be 132 characters in length.



To configure a single SSID to have more than one AP in a single SSID, specify a unique System Name for each AP within that single SSID. Note that range of available channels will be automatically determined by factory settings.

Note that the radio channel is specified using the IEEE 802.11a standard. For example, channel 48 is the equivalent of 5.240 GHz. The channel number is derived as:

$$\text{Channel Frequency (in MHz)} - 5000\text{MHz Channel Number} = 5\text{MHz}$$

- 1 Click Update to commit the changes.
- 2 After all configuration changes are complete, reboot the AP to enable them. To reboot AP, click on the REBOOT AP button that appears.

For detailed information on using the server refer to "AP Web Server" and for using CLI refer to "AP Command-Line Interface" provided in Appendixes A and B of Atheros MPC1 Module User's Guide.



## FCC Requirements for Operation in the United States

This device is restricted to **indoor** use only due to its operation in 5150 to 5250 MHz frequency ranges in accordance with latest FCC regulations.

Host systems using Porxim Firmware with this 802.11a/b/g/n 3x3 MIMO niniPCI module to be sold in the United States do not have country code settings and are factory configured to only operate on the channels allowed by the FCC. Master devices with a US SKU that contain the 802.11a/b/g/n Radio module are limited to the following operating channels:

- ? 36 – 64 (5180 to 5320 MHz) in the 5150 to 5250 MHz band
- ? 149 – 165 (5745 to 5825 MHz) in the 5725 to 5825 MHz band
- ? 4940 to 4990MHz band.

**FCC Statement:****Federal Communication Commission Interference Statement**

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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

This device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

FCC NOTICE: To comply with FCC part 15 rules in the United States, the system must be professionally installed to ensure compliance with the Part 15 certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States. The use of the system in any other combination (such as co-located antennas transmitting the same information) is expressly forbidden.

The module (Model number: MB82HP) is Limited Module Approval and only limited to install to the AP (Proxim / MP 8200).

**IMPORTANT NOTE:****FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 50cm between the radiator & your body.

**IMPORTANT NOTE:**

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

50cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

**USERS MANUAL OF THE END PRODUCT:**

In the user's manual of the end product, the end user has to be informed to keep at least 50cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

**LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: HZB-MB83HP5 ". The FCC part 15.19 statement below has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.



## IC Statement

This Class B digital apparatus complies with Canadian ICES-003.  
*Cet appareil numérique de la classe B conforme à la norme NMB-003 du Canada.*

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

*Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

*Cet appareil et son antenne (s) ne doit pas être co-localisés ou fonctionnement en association avec une autre antenne ou transmetteur.*

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

*Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.*

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

*Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.*

The device could automatically discontinue transmission in case of absence of information to transmit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

*Le dispositif pourrait automatiquement cesser d'émettre en cas d'absence d'informations à transmettre, ou une défaillance opérationnelle. Notez que ce n'est pas l'intention d'interdire la transmission des informations de contrôle ou de signalisation ou l'utilisation de codes répétitifs lorsque requis par la technologie.*

This device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

The module (Model number: MB82HP) is Limited Module Approval and only limited to install to the AP (Proxim / MP 8200).

**IMPORTANT NOTE:****IC Radiation Exposure Statement:**

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 50cm between the radiator & your body.

*Declaración de exposición a la radiación de Canada: Este equipo cumple con los límites de exposición a la radiación de la IC establecidos para un ambiente no controlado. Este equipo se debe instalar y operar con una distancia mínima de 50 cm entre el radiador y su cuerpo.*

**IMPORTANT NOTE:**

This module is intended for OEM integrator. The OEM integrator is still responsible for the IC compliance requirement of the end product, which integrates this module.

50cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

**USERS MANUAL OF THE END PRODUCT:**

In the users manual of the end product, the end user has to be informed to keep at least 50cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. IC statement is required to be available in the users manual: This Class B digital apparatus complies with Canadian ICES-003. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

**LABEL OF THE END PRODUCT:**

The final end product must be labeled in a visible area with the following " Contains TX IC: 1856A-MB83HP5 ".

**Antenna information:**

Ant.	Brand	Model Name	Antenna Type	Chain	Attenuator (dBi)	Connector	Antenna Gain	Cable loss	Test Ant Gain (dBi)
1	MARS	MA-WA55-30	Panel	1/2/3	20	N-Type, Female	30	2	8
2	MARS	MA-WB55-20	Sector	1/2/3	10	N-Type, Female	20	2	8
3	SmartAnt	USI05-220170	Dipole	1/2/3	-	RP SMA Plug	5	1	4
4	MARS	MA-WO55-10NH	Ommi	1/2/3	-	N-Type, Female / N-Type, Male (optional)	10	2	8
5	CommScope	PX3F-52-N7A	Dish	1/3	20	N Female	34	2	12
6	MARS	MA-WA56-DP25N	Panel	1/3	20	N-Type, Female	23.5	2	1.5
7	MARS	MA-WD56-DP16	Sector	1/3	10	N-Type, Female	16	2	4