

HaLow-U User Guide

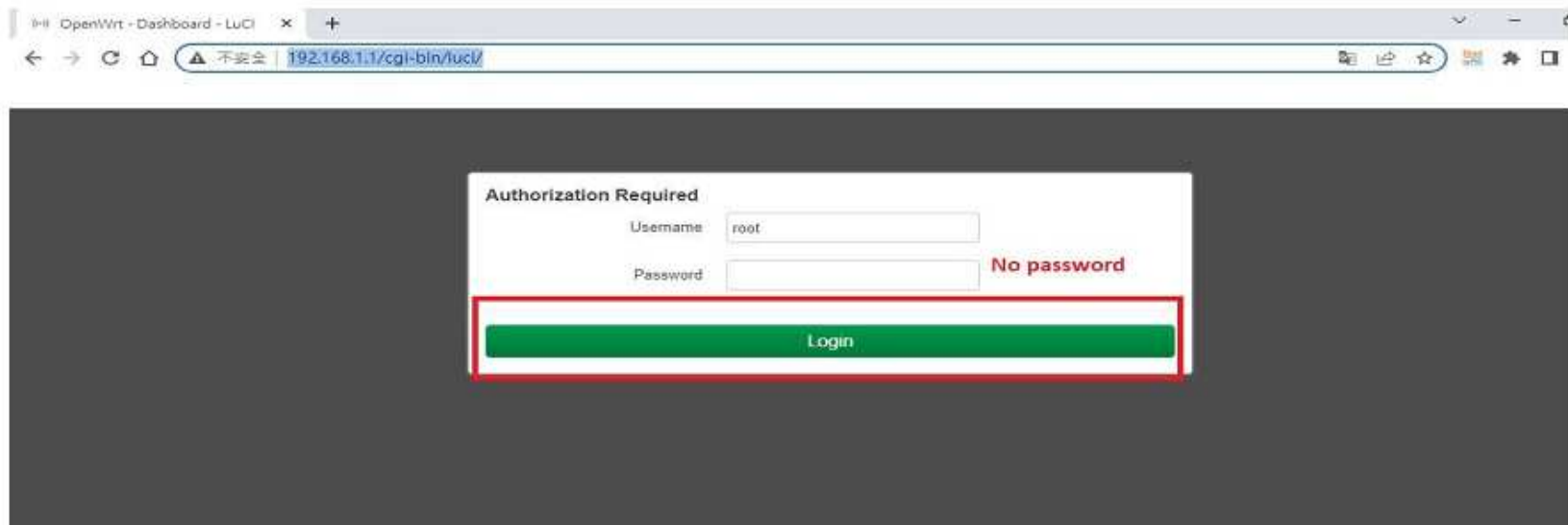


OFFICIALLY SUPPORTED



How to log In

Please plug the USB cable between USB port of the PC and USB port of the HaLow-U



- Disable g laptop (PC)wireless / ethernet connection
- Disable firewall
- Default IP – 192.168.1.1
- No password required

Laptop 1 (AP Setting)

The screenshot shows the OpenWrt LuCI web interface for wireless settings. The browser address bar shows the URL `192.168.1.1/cgi-bin/luci/admin/network/wireless`. The page header includes the OpenWrt logo and navigation links: Dashboard, Status, System, Network, and Logout. A yellow warning banner at the top states "No password set!" with a message to configure a root password. The main content area is titled "Wireless Overview" and contains two wireless device entries:

- radio0**: Generic 802.11ah, Device is not active. Buttons: Restart, Scan, Add.
- disabled**: SSID: OpenWrt | Mode: Master, Wireless is disabled. Buttons: Enable, Edit, Remove. The "Edit" button is highlighted with a red box.

Below the wireless overview is the "Associated Stations" section, which is currently empty with the message "No information available". At the bottom right, there are buttons for "Save & Apply", "Save", and "Reset".

Status: Mode: wireless (ath10k); Chipset: ath10k; Wireless is not associated

Wireless network is disabled

Operating frequency: Mode: N, Band: 900M, Channel: 903.5MHz, Width: 1 MHz

Maximum transmit power: driver default - Current power: unknown

Specifies the maximum transmit power the wireless radio may use. Depending on regulatory requirements and wireless usage, the actual transmit power may be reduced by the driver.

Interface Configuration

General Setup | Wireless Security | MAC-Filter | Advanced Settings

Mode: Access Point

ESSID: OpenWrt

Network: lan

Choose the network(s) you want to attach to this wireless interface or fill out the custom field to define a new network.

Hide ESSID:

Where the ESSID is hidden, clients may fail to roam and airtime efficiency may be significantly reduced.

WMM Mode:

Specifies the maximum transmit power the wireless radio may use. Depending on regulatory requirements and wireless usage, the actual transmit power may be reduced by the driver.

Interface Configuration

General Setup Wireless Security MAC Filter Advanced Settings

Mode Access Point

ESSID OpenWrt

Network lan

Choose the network(s) you want to attach to this wireless interface or fill out the custom field to define a new network.

Hide ESSID

Where the ESSID is hidden, clients may fail to roam and airtime efficiency may be significantly reduced.

WMM Mode

Where Wi-Fi Multimedia (WMM) Mode QoS is disabled, clients may be limited to 802.11ah rates.

Dismiss

Save

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

Wireless Overview

radio0	Generic 802.11ah Device is not active	Restart Scan Add
disabled	SSID: OpenWrt Mode: Master Wireless is disabled	Enable Edit Remove

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

Save & Apply Save Reset

No password set!

There is no password set at the moment.

Applying configuration changes... 85s

Wireless Overview

radio0

Generic 802.11ah

Device is not active

Refresh

Save

Add

radio1

ESSID: OpenWrt / Mode: Master

Wireless is not associated

Refresh

Edit

Remove

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
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No information available

Save & Apply

Save

Reset

Laptop 1 AP Setup Completed

OpenWrt Dashboard Status System Network Logout REFRESHING

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

Wireless Overview

radio0	Generic 802.11ah Channel: 1(903.5MHz) Bitrate: ? Mbit/s	Restart Scan Add
---92 dBm	SSID: OpenWrt Mode: Master BSSID: 00 C0 CA B0 C5 E8 Encryption: None	Disable Edit Remove

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

Save & Apply Save Reset

Laptop 2 (STA Setting)

The screenshot shows the OpenWrt LuCI web interface. The browser address bar displays 'openwrt.lan/cgi-bin/luci/'. The navigation menu includes 'OpenWrt', 'Dashboard', 'Status', 'System', 'Network', and 'Logout'. A yellow warning banner at the top states 'No password set! There is no password set on this router. Please configure a password for the web interface.' The 'Network' menu is open, with 'Wireless' highlighted in red. Below the menu, there are two main sections: 'Internet' and 'System'. The 'Internet' section is divided into 'IPv4 internet' and 'IPv6 internet', both showing 'Connected: NO'. The 'System' section displays various system information including uptime, local time, kernel version, model, architecture, and firmware version.


Internet	
IPv4 internet	IPv6 internet
Connected : NO	Connected : NO
Connected since : -	Connected since : -
Protocol : -	Protocol : -
IPv4 : -	IPv6 prefix : -
GatewayV4 : -	GatewayV6 : -
DNSv4 : -	DNSv6 : -

System
Uptime : 0h 1m 51s
Local Time : 2022-03-21 21:37:42
Kernel Version : 5.10.107
Model : ALFA Network AHUC7292U
Architecture : ARMv7 Processor rev 5 (v7l)
Firmware Version : OpenWrt SNAPSHOT r19053+134-921392e216

No password set!

There is no password set on this router. Please configure a root password to protect the web interface.

Wireless Overview

 radio0	Generic 802.11ah Device is not active	Restart	Scan	Add
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Join Network: Wireless Scan

Signal	SSID	Channel	Mode	BSSID	Encryption
Starting wireless scan...					

[Dismiss](#)

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

[Save & Apply](#) [Save](#) [Reset](#)

Join Network: Wireless Scan

Signal	SSID	Channel	Mode	BSSID	Encryption
-52 dBm	OpenWrt	1	Master	90:C0:CA:B0:C6:E8	None

[Join Network](#) [Stop refresh](#) [Dismiss](#)

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

[Save & Apply](#) [Save](#) [Cancel](#)

REFRESHING

Join Network: Wireless Scan

Signal	SSID	Channel	Mode	BSSID	Encryption	
-50 dBm	OpenWrt	1	Master	00:C0:CA:B0:C6:E8	None	Join Network Stop refresh Dismiss

Wireless ip disabled [Enable] [Edit] [Remove]

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

Save & Apply Save Reset

Joining Network: "OpenWrt"

Replace wireless configuration

Check this option to delete the existing networks from this radio.

Name of the new network

The allowed characters are: `a-z`, `0-9` and `_`

Lock to BSSID

Instead of joining any network with a matching SSID, only connect to the BSSID `00:c0:ca:00:c6:c4`.

Create / Assign firewall-zone

to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the custom field to define a new

- lan lan: g*
- unspecified
- lan lan: g*
- wan (empty)
- custom --

Cancel

Operating frequency	Mode	Band	Channel	Width
	N	900M	1(903.5MHz)	1 MHz

Maximum transmit power: driver default - Current power: unknown

Specifies the maximum transmit power the wireless radio may use. Depending on regulatory requirements and wireless usage, the actual transmit power may be reduced by the driver.

Interface Configuration

General Setup | Wireless Security | Advanced Settings

Mode	Client
ESSID	OpenWrt
BSSID	
Network	wlan1

Choose the network(s) you want to attach to this wireless interface or fill out the custom field to define a new network.

Dismiss Save

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

Wireless Overview

radio0	Generic 802.11ah Device is not active	Restart Scan Add
disabled	SSID: OpenWrt Mode: Client Interface has 6 pending changes	Disable Edit Remove

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

Save & Apply Save Reset

No password set!
There is no password set on this router. Please configure a password for the web interface.

- Interfaces
- Wireless
- Routing
- DHCP and DNS
- Diagnostics
- Firewall

Wireless Overview

radio0	Generic 802.11n Device is not available	Restart Scan Add
disabled	SSID: OpenWrt Mode: Client Interface has 6 pending changes	Disable Edit Remove

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

Save & Apply Save Reset

No password set!
There is no password set on this router. Please configure a root password to protect the web interface

Interfaces Devices Global network options

Interfaces

LAN
Protocol: Static address
Uptime: 0h 13m 21s
MAC: 90:C0:CA:B0:C6:E2
RX: 773.53 KB (7578 Pkts.)
TX: 1.72 MB (4401 Pkts.)
IPv4: 192.168.1.1/24
IPv6: fd02:7f0b:3a0f::1/60

Restart Stop **Edit** Delete

WWAN
Protocol: DHCP client
Interface has 2 pending changes

Restart Stop **Edit** Delete

Add new interface...

Save & Apply Save Reset

Add new interface...

Name: Relay

Protocol: Relay bridge

- DHCP client
- DHCPv6 client
- ppp
- Unmanaged
- Static address
- PPPoE
- Relay bridge**

Cancel Create interface

LAN
eth0
ip net

IPv4: 192.168.1.1/24
IPv6: fe80::3a01:1:0:0

Restart Stop Edit Delete

WAN
eth1
radsl network 1

Protocol: DHCP client
Interface has 2 pending changes

Restart Stop Edit Delete

Add new interface

Save & Apply Save Reset

Add new interface...

Name

Protocol

LAN eth1 (wan)	MAC: 08:00:C4:80:06:E2 RX: 545.05 KB (8477 Pkts) TX: 1.01 MB (4092 Pkts) IPv4: 192.168.1.1/24 IPv6: 1002:705:3a3:160	Restart Stop Edit Delete
WAN eth0 (wan)	Protocol: DHCP client interface has 2 pending changes	Restart Stop Edit Delete

Interfaces » RELAY

[General Settings](#) [Advanced Settings](#) [Firewall Settings](#) [DHCP Server](#)

Status: Device: Relay "Relay"
RX: 0 B (0 Pkts.)
TX: 0 B (0 Pkts.)

Protocol: Relay bridge

Bring up on boot:

Local IPv4 address:
Address to access local relay bridge

Relay between networks: lan: g0 wwan: g1

- lan: g0
- wwan: g1

[Add new interface](#)

Interfaces » RELAY

General Settings | **Advanced Settings** | **Firewall Settings** | DHCP Server

Create / Assign firewall-zone: **lan: lan: 2f**

Choose the firewall zone you want to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the custom field to define a new zone and attach the interface to it.

Dismiss **Save**

LAN
2f (2) (eth)

Protocol: static address
Options: 3h 25m 20s
MAC: 00:02:8A:88:C8:E2
RX: 1.24 MB (13473 Pkts.)
TX: 2.34 MB (5525 Pkts.)
IPv4: 192.168.1.1/24
IPv6: fe80::78e:3a07:1:88

Restart Stop **Edit** Delete

WAN
3h (redud network)

Protocol: DHCP client
Interface has 2 pending changes

Restart Stop **Edit** Delete

Add new interface

Save & Apply Save Revert

Interfaces » RELAY

General Settings | **Firewall Settings** | DHCP Server

Create / Assign firewall-zone: unspecified

to assign to this interface. Select unspecified to remove the interface from the dropdown field to define a new zone and attach the interface to it.

lan lan | wan wan | - custom -

Dismiss **Save**

LAN eth0 wan	MAC: 98:00:0A:8E:0E:52 RX: 1.15 MB (12915 Pkts.) TX: 2.24 MB (5281 Pkts.) IPv4: 192.168.1.124 IPv6: FE80::706:3A9F:1458	Restart Stop Edit Delete
WAN eth1 wan	Protocol: DHCP client Interface has 2 pending changes	Restart Stop Edit Delete

Add new interface...

No password set!

There is no password set on this router. Please configure a root password to protect the web interface

Interfaces Devices Global network options

Interfaces

RELAY 🔌 📶 📶	Protocol: Relay bridge Interface has 4 pending changes	Restart Stop Edit Delete
LAN 🔌 📶 br-lan	Protocol: Static address Uptime: 0h 7m 4s MAC: 00:C0:CA:B0:C6:E6 RX: 747.56 KB (5921 Pkts.) TX: 999.81 KB (3469 Pkts.) IPv4: 192.168.1.1/24 IPv6: fd90:40ff:c5aa:1/60	Restart Stop Edit Delete
WWAN 📶 wannc80211	Protocol: DHCP client Uptime: 0h 1m 18s MAC: 00:C0:CA:B0:C6:E8 RX: 5.62 KB (44 Pkts.) TX: 196.10 KB (365 Pkts.) IPv4: 192.168.2.248/24	Restart Stop Edit Delete
Add new interface...		

Interfaces » LAN

General Settings Advanced Settings Firewall Settings **DHCP Server**

General Setup Advanced Settings IPv6 Settings IPv6 RA Settings

Ignore interface

Disable DHCP for this interface.

Start

Lowest leased address as offset from the network address.

Limit

Maximum number of leased addresses.

Lease time

Expiry time of leased addresses, minimum is 2 minutes (2m)

Dismiss

Save

No password set!

There is no password set on this router. Please configure a root password to protect the web interface.

Interfaces Devices Global network options

Interfaces

RELAY

🔌 (🔌)

Protocol: Relay bridge
Interface has 4 pending changes

Restart

Stop

Edit

Delete

LAN

🔌 (🔌)

br-lan

Protocol: Static address
Interface has 2 pending changes

Restart

Stop

Edit

Delete

WWAN

📶

wlanrc80211

Protocol: DHCP client
Uptime: 0h 6m 3s
MAC: 00:C0:CA:B0:C6:E8
RX: 15.41 KB (130 Pkts.)
TX: 797.95 KB (1818 Pkts.)
IPv4: 192.168.2.248/24

Restart

Stop

Edit

Delete

Add new interface...

Save & Apply

Save

Reset

Applying configuration changes... 86s

Interfaces

WLAN eth0 (PCI) 802.11n	Protocol: Rate limit Interface has 4 pending changes	Restart Stop Edit Delete
LAN eth1 (PCI) 802.11n	Protocol: Static address Uptime: 2h 23m 40s MAC: 88:CC:CA:80:CA:E2 RX: 1.57 MB (1462 Pkts) TX: 2.51 MB (7084 Pkts) IPv4: 192.168.1.124 IPv6: fd02:78b:3d8:140	Restart Stop Edit Delete
WAN eth2 (PCI) 802.11n	Protocol: DHCP client Interface has 2 pending changes	Restart Stop Edit Delete

Add New Interface

Save & Apply Save Revert

No password set!
There is no password set on this router. Please configure a root password to protect the web interface

Wireless Overview

radio0 **Generic 802.11ah** Channel: 1(903.5MHz) | Bitrate: 6 Mbit/s [Restart] [Scan] [Add]

-58/-92 dBm SSID: OpenWrt | Mode: Client BSSID: 00-C0-CA-B0-C6-E4 | Encryption: None [Disable] [Edit] [Remove]

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
Client "OpenWrt" (wanrc00211)	00-C0-CA-B0-C6-E4	?	-54/-92 dBm	6.0 Mbit/s, 20 MHz 6.0 Mbit/s, 20 MHz

[Save & Apply] [Save] [Reset]

Interfaces

RELAY
🔌 📶 📡

Protocol: Relay bridge
Interface has 4 pending changes

Restart Stop **Edit** Delete

LAN
🔌 📶 📡
br-lan

Protocol: Static address
Uptime: 0h 4m 26s
MAC: 00:C0:CA:B0:C6:E6
RX: 761.90 KB (5347 Pkts.)
TX: 1.12 MB (4087 Pkts.)
IPv4: 192.168.1.1/24
IPv6: fdaf:894d:4b0a::1/60

Restart Stop **Edit** Delete

WWAN
🔌 📶 📡
wlanrc80211

Protocol: DHCP client
Uptime: 0h 1m 41s
MAC: 00:C0:CA:B0:C6:E8
RX: 221.95 KB (557 Pkts.)
TX: 200.10 KB (572 Pkts.)
IPv4: 192.168.2.248/24

Restart Stop **Edit** Delete

Add new interface...

Save & Apply Save Reset

Interfaces » WWAN

General Settings Advanced Settings **Firewall Settings** DHCP Server

Create / Assign firewall-zone

wan wwan
unspecified
lan lan Relay
wan wwan
-- custom --

it to assign to this interface. Select unspecified to remove the interface from the form field to define a new zone and attach the interface to it.

Dismiss **Save**

WWAN
wan00211

Protocol: DHCP client
Uptime: 1h 3m 1s
MAC: 98:02:CA:88:0E:EB
RX: 270.31 KB (763 Pkts.)
TX: 279.33 KB (785 Pkts.)
IPv4: 192.168.2.240/24

Refresh Stop **Edit** Delete

Add new interface

Save & Apply Save Discard

Interfaces » WWAN

General Settings Advanced Settings **Firewall Settings** DHCP Server

Create / Assign firewall-zone

lan lan Relay

Choose the firewall zone you want to assign to this interface. Select unspecified to remove the interface from the associated zone or fill out the custom field to define a new zone and attach the interface to it.

Dismiss

Save

IPv6: fe80:8b4d:4b0a::162

Protocol: DHCP client
Uptime: 0h 4m 21s
MAC: 80:C8:CA:06:CE:E8
RX: 301.17 KB (525 Pkts)
TX: 216.06 KB (356 Pkts)
IPv4: 192.168.2.24/24

wwan
192.168.2.24

Restart Stop **Edit** Delete

Add new interface

Save & Apply Save Reset

HaLow-U Default Setting

The screenshot shows the OpenWrt web interface. At the top, there is a navigation bar with 'OpenWrt', 'Dashboard', 'Status', 'System', 'Network', and 'Logout'. A dropdown menu is open under 'System', listing options: System, Administration, Software, Startup, Scheduled Tasks, LED Configuration, Backup / Flash Firmware (highlighted with a red circle), Custom Commands, and Reboot. The main content area features a yellow warning box: 'No password set! There is no password set on this router. Please set a password to protect the web interface.' Below this is the 'LED Configuration' section, which includes a table with columns for Name, LED, and Trigger. The table contains two entries: 'WLAN' with 'green' LED and 'netdev' Trigger. There are 'Edit' and 'Delete' buttons for each entry. At the bottom of the configuration area, there are 'Save & Apply', 'Save', and 'Reset' buttons.

Name	LED	Trigger
WLAN	green	netdev

Flash operations

Actions Configuration

Backup

Click "Generate archive" to download a tar archive of the current configuration files.

Download backup [Generate archive](#)

Restore

To restore configuration files, you can upload a previously generated backup archive here. To reset the firmware to its initial state, click "Perform reset" (only possible with squashfs images).

[Reset to defaults](#) [Perform reset](#)

Restore backup: [Upload archive](#)

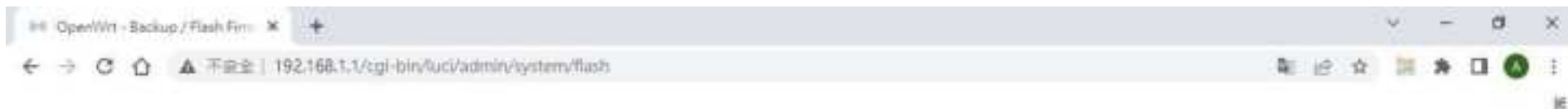
ⓘ Custom files (certificates, scripts) may remain on the system. To prevent this, perform a factory-reset first.

Save mtdblock contents

Click "Save mtdblock" to download specified mtdblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS!)

Choose mtdblock:

Download mtdblock: [Save mtdblock](#)



OpenWrt [Dashboard](#) [Status](#) [System](#) [Network](#) [Logout](#) REFRESHING

Main Operations

[Actions](#) [Configuration](#)

Erasing...
 The system is erasing the configuration partition now and will reboot itself when finished.

Backup

Click "Generate archive" to download a tar archive of the current configuration files.

[Download backup](#) [Generate archive](#)

Restore

To restore configuration files, you can upload a previously generated backup archive here. To reset the firmware to its initial state, click "Perform reset" (only possible with equivelent images).

Reset to defaults [Perform reset](#)

Restore backup [Upload archive](#)

Custom files (certificates, scripts) may remain on the system. To prevent this, perform a factory reset first.

Save mtblock contents

Click "Save mtblock" to download specified mtblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS!)

Choose mtblock: [Save mtblock](#)

less than 1 minute time to reboot

Authorization Required

Username

Password

[Login](#)

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the 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.

Note: 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 or more 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 Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.