AP5621-N-TH

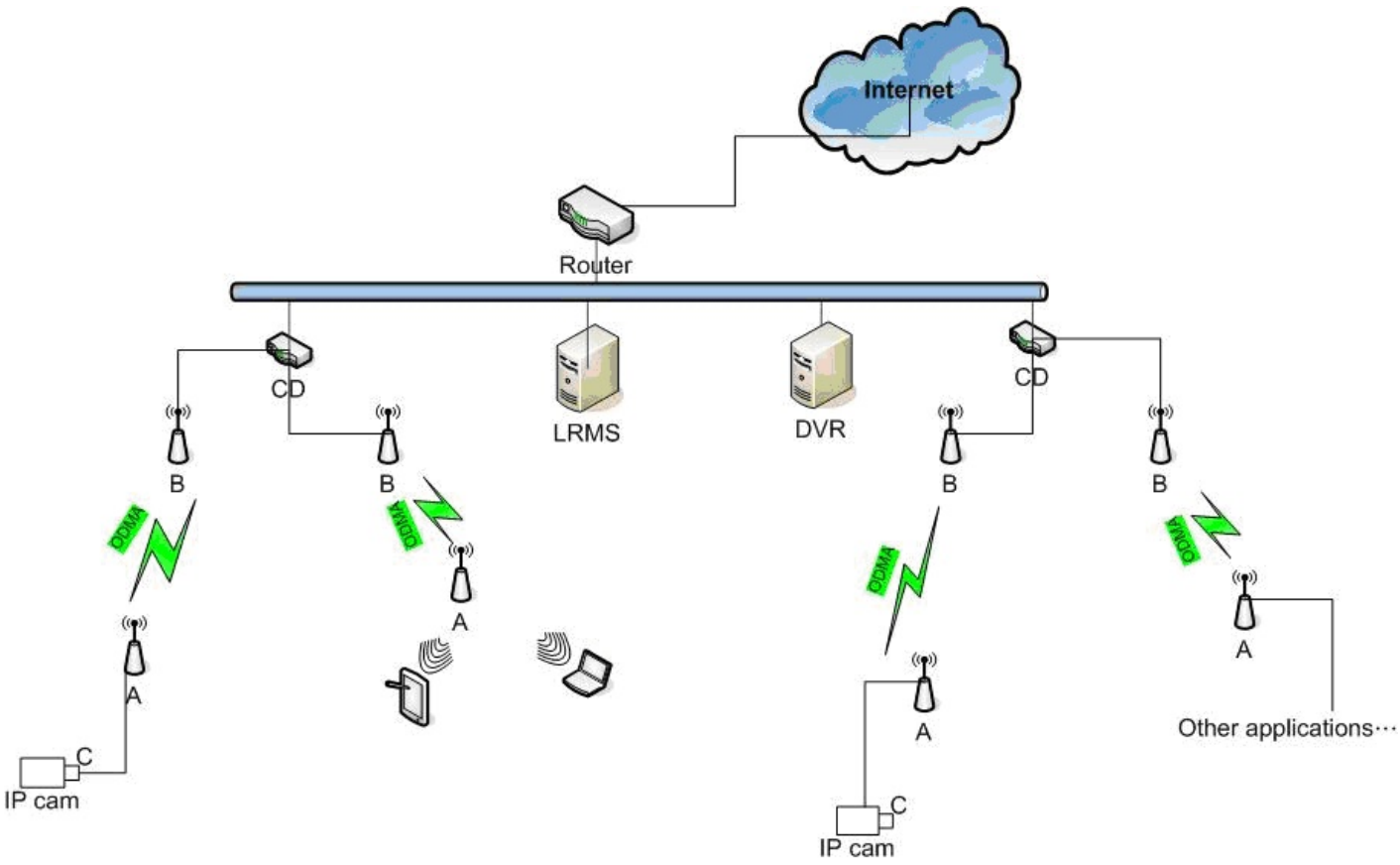
Mesh WI-FI User Manual

揚華科技股份有限公司
YANG HWA TECHNOLOGY CORP

Contents

Chapter 1 : Brief Introduction

1. System Map :



A Station – Transmission a wireless network device to connect a desktop, or laptop computer, to an Opportunity Driven Multiple Access™ (ODMA™), wireless network. The image on this page is an installed.

B Station - Transmission a wireless network device to connect a desktop, or laptop computer, to an Opportunity Driven Multiple Access™ (ODMA™), wireless network.

CD Station - Transmission a wireless network device to connect a desktop, or laptop computer, to an Opportunity Driven Multiple Access™ (ODMA™), wireless network.

LRMS - A software application that enables the user to locate and manage devices on an opportunity-driven multiple access (ODMA), wireless network.

Various Stations on the network report to the Locater; it then updates its database with their location. A and B Stations report to the nearest Concentrator, which then reports a lists of A and B Stations to the Locater, which records it in the Locater database. When stations need to connect to each other, they request the nearest Concentrator (C Station), from the Locater, which then matches two concentrators for the stations to connect to each other.

Introduction of MESH-WIFI technology

Opportunity Driven Multiple Access (MESH-WIFI)

1. An intelligent wireless subscriber relay communication technology
2. Finds multiple access opportunities and adapts the best opportunity to communicate faster, further with less power

MESH-WIFI Network- PARROT

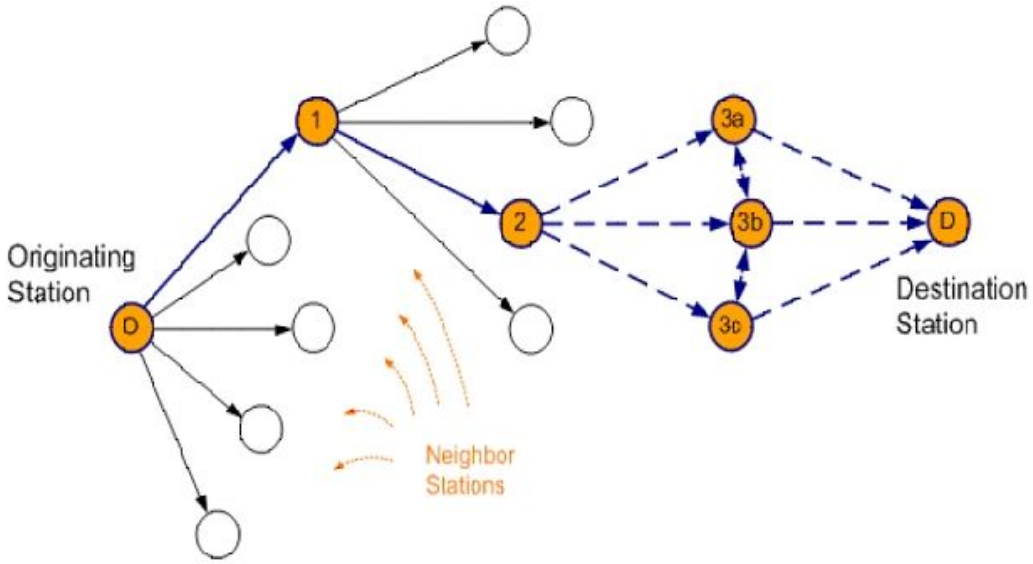
1. Programmable
2. Adaptive
3. Repeater/ Relay/ Router
4. Revert Back
5. Onward/ Opportunity
6. Transmission

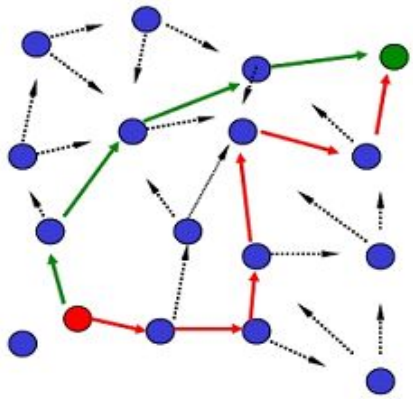
Intelligent Wireless Subscriber Relay

1. Use any MESH-WIFI subscriber or device to relay data, no base station needed
   - Dynamically select the nearest neighbor to relay
   - Multi-hopping constructs the wireless backhaul
   - Fast deployment & cost effective
   - Subscribers are part of the infrastructure More usersMore system capacity
   - The best “last mile” solution

2. Adaptive power, route, channel, taking the best burst opportunity to transmit data
   - Adaptive Output Power
   - Adaptive Routing
   - Intelligent Channel Hopping
   - Burst Opportunity
   - Finds multiple access opportunities to avoid failure of a single access point

Adaptive Routing

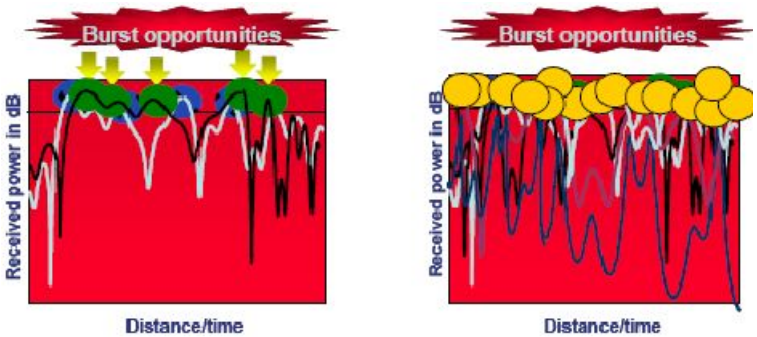




Adaptive routing
(Ubiquitous Network)

Burst Opportunity

1. Wireless connection condition changes over time. MESH-WIFI chooses the best quality period to transmit burst data
2. The more routes, the more best burst opportunities
3. Taking only the best burst opportunity instead of continuous link Lower interference to others



High Mobility

1. Mobile node bursts and receives data from many different neighbors in different locations thousand times per second while speeding
2. MESH-WIFI can communicate at speeds up to 300 km/hr

High Security

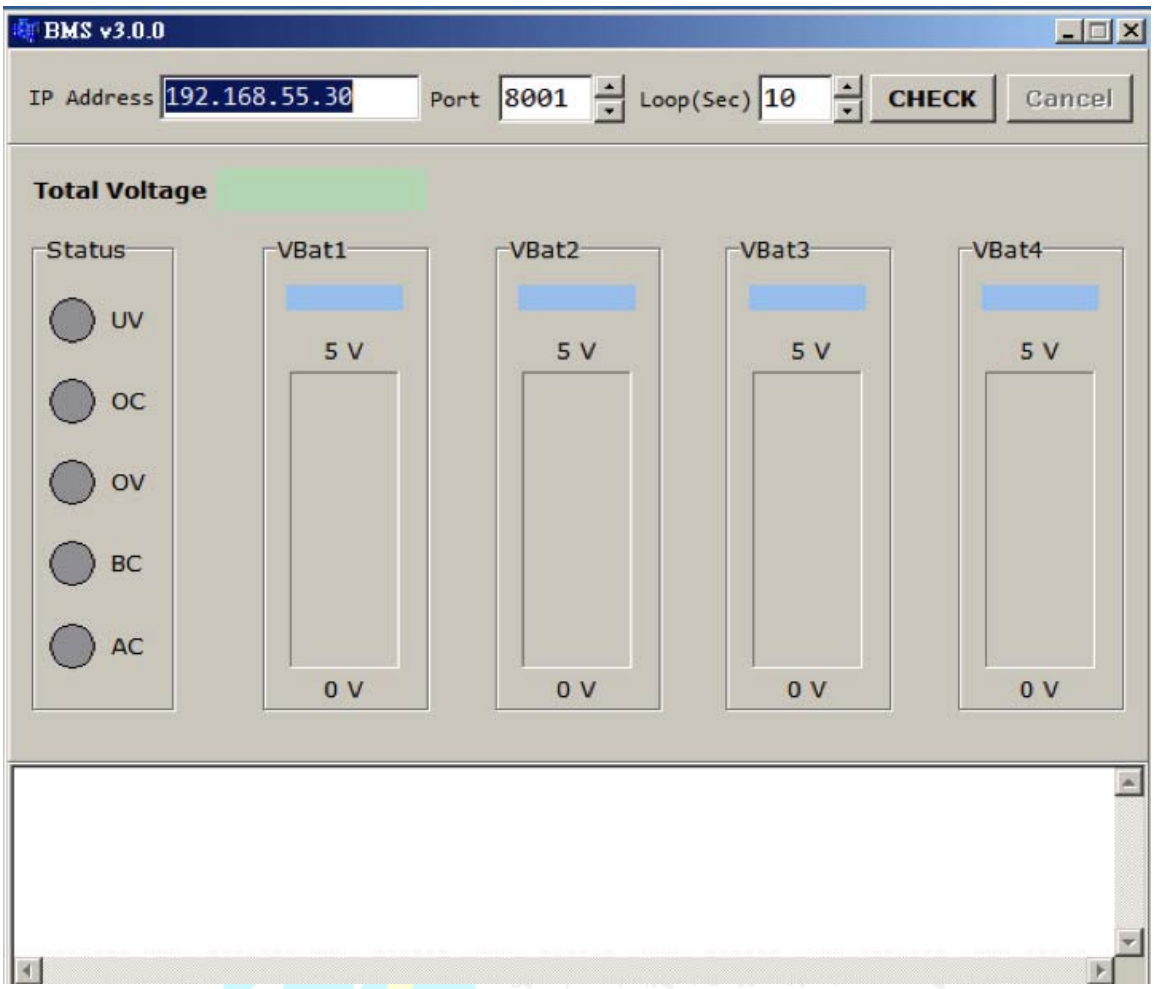
1. No fixed path from source to destination
2. Packets are forwarded with very low power consumption
3. Neighbor watching mechanism

Frequency Independent

1. MESH-WIFI operates independently of any frequency bands, transmission or coding modulation
2. MESH-WIFI can enhance any existing wireless communication technology

   MESH-WIFI-enhanced WiFi, WiMAX, 3G, GSM, PHS, WCDMA, etc.

2. Battery control Software :



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IP Address : 192.168.55.30

TCP/IP Port : 8001

Loop : Interval Time

UV : Under Voltage

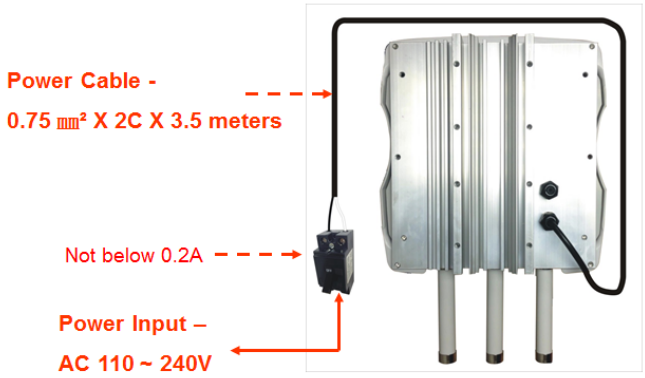
OC : Over Current

OV : Over Voltage

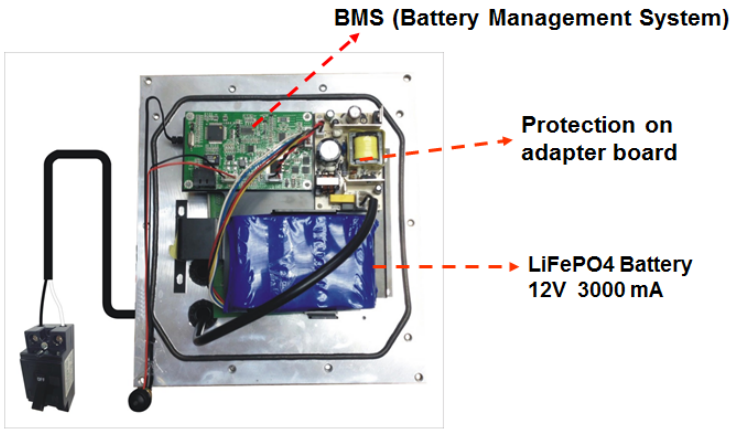
BC : Battery Charging

AC : AC power ready

3. Components Section :



Cable&Power Input



Schematic Diagram

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTION.

Chapter 2 : Operational Mode

Mesh WiFi Network architecture and planning

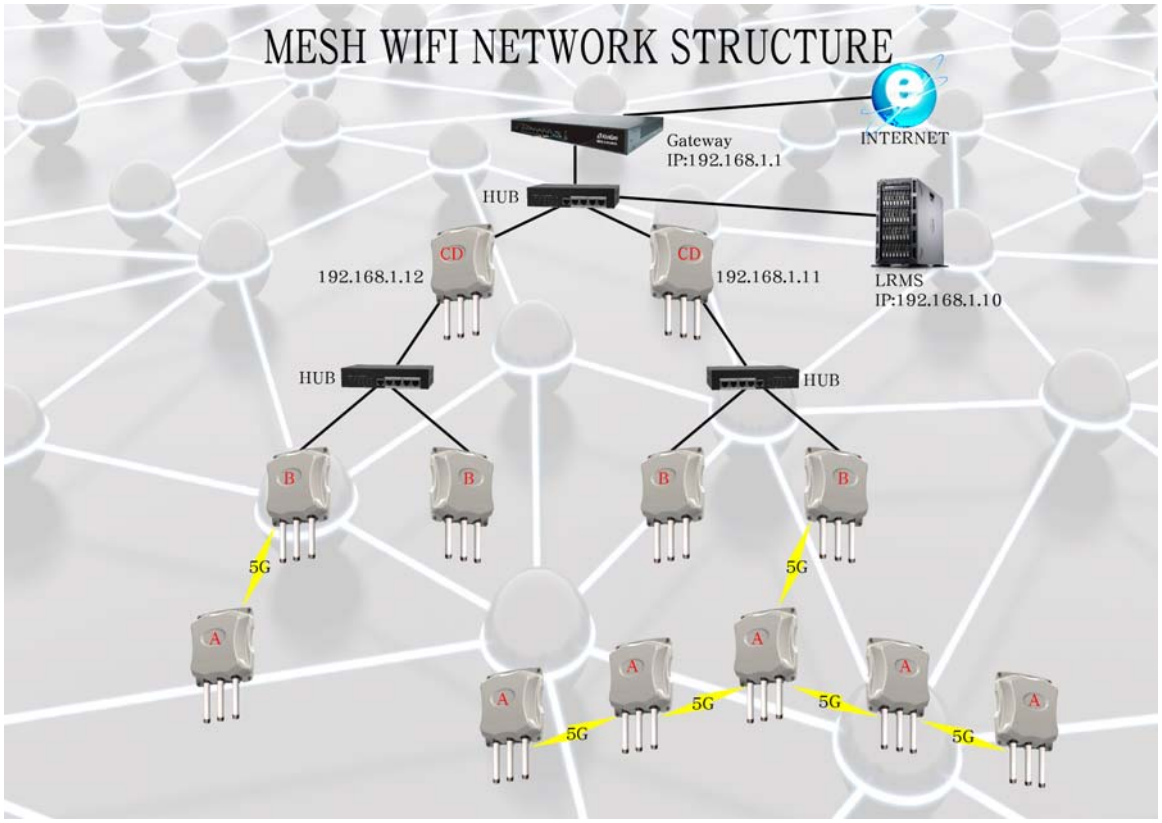
Gateway:192.168.1.1

DHCP Server: 192.168.1.1

LRMS:192.168.1.10

CD Stations:192.168.1.11、192.168.1.12

Overall architecture:



Picture 1

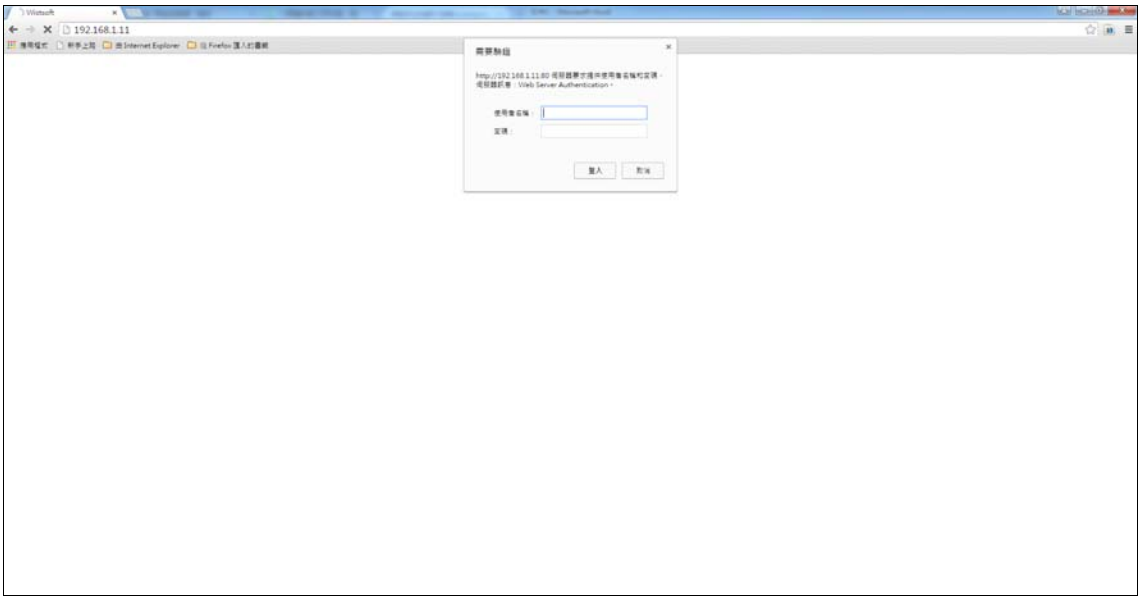
1. CD Station :

1. CD station system login

   CD station default IP:192.168.2.11

Set up the NB LAN IP:192.168.2.15、mask:255.255.255.0

Browser : http://192.168.2.11



Picture 2

Account : admin

Passwd:winwin8686

Picture 3

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2. CD station firmware version

System status

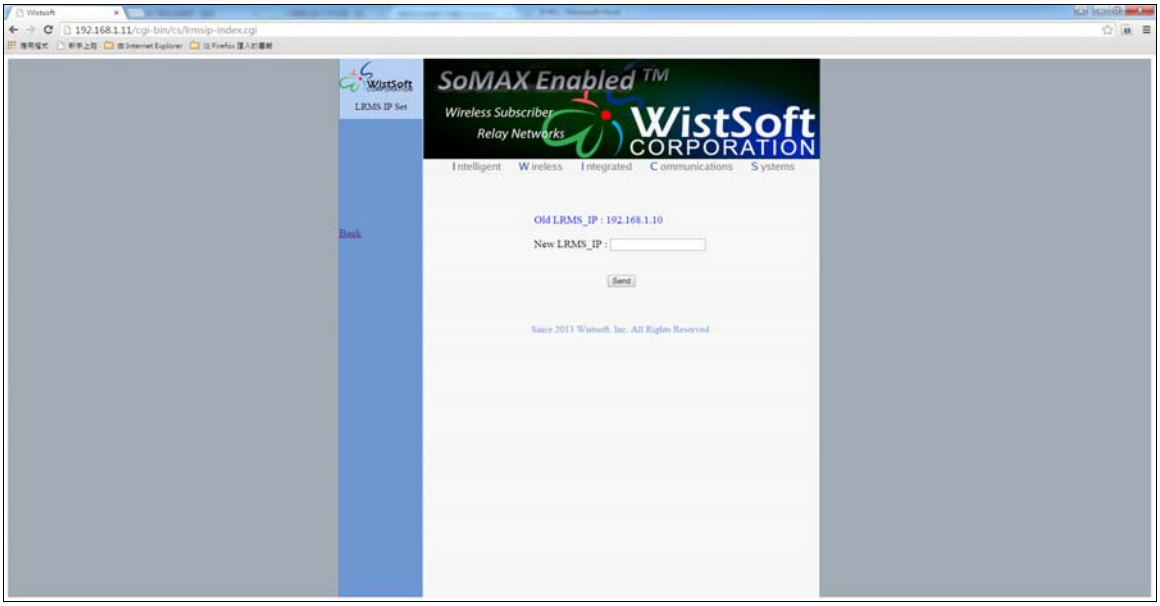
Picture 4

Firmware Version

Picture 5

3. LRMS set up

Configuration of LRMS，Set up the LRMS_IP : 192.168.1.10
(Follow the Figure 1. Mesh WiFi network structure)



Picture 6

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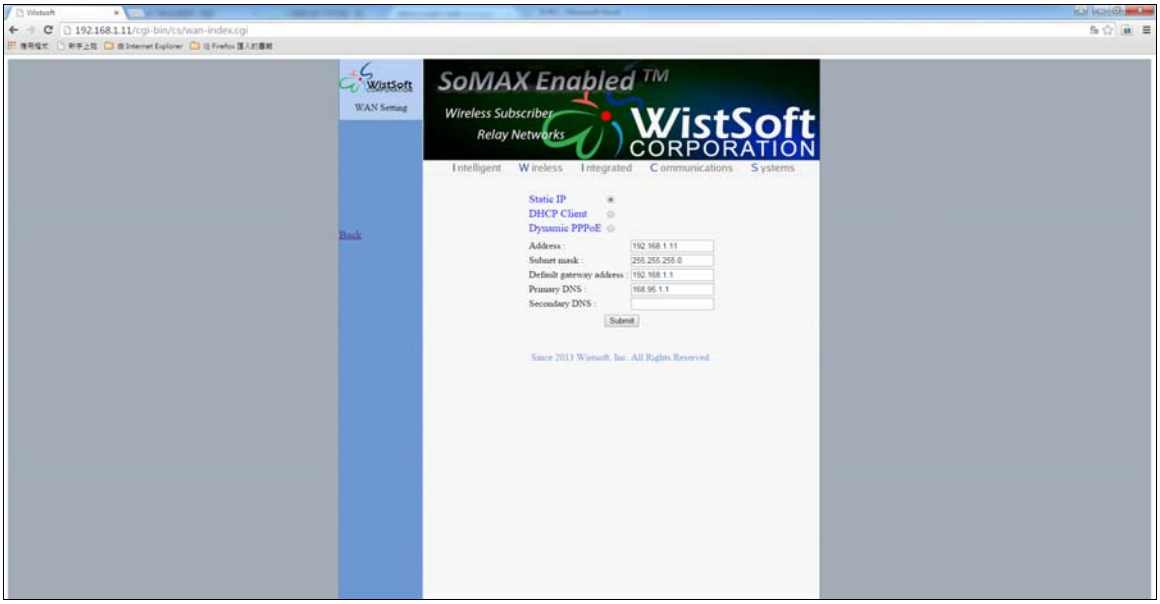
4. WAN Setting

Wan setting (Follow the Figure 1. Mesh WiFi network structure.)



Picture 7

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5. ODMA Status

System Status→ODMA Ststus

Picture 8

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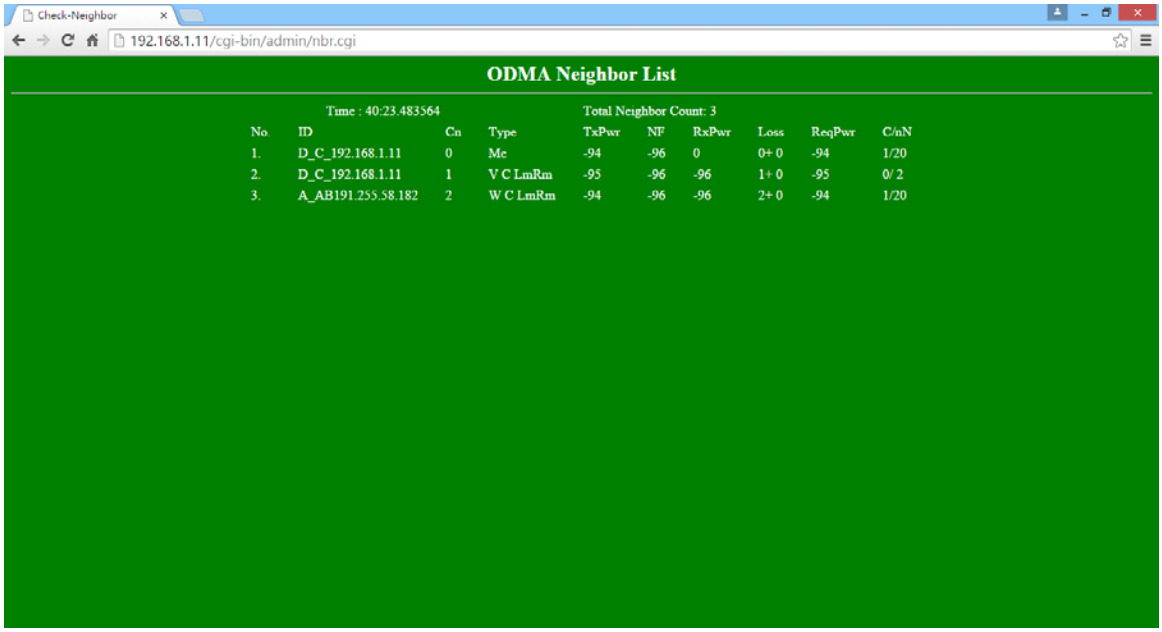
6. Neighbor Gathering Status-wire

Tools→Neighbor Gathering Status-wire，As illustrated on Picture 9



Picture 9

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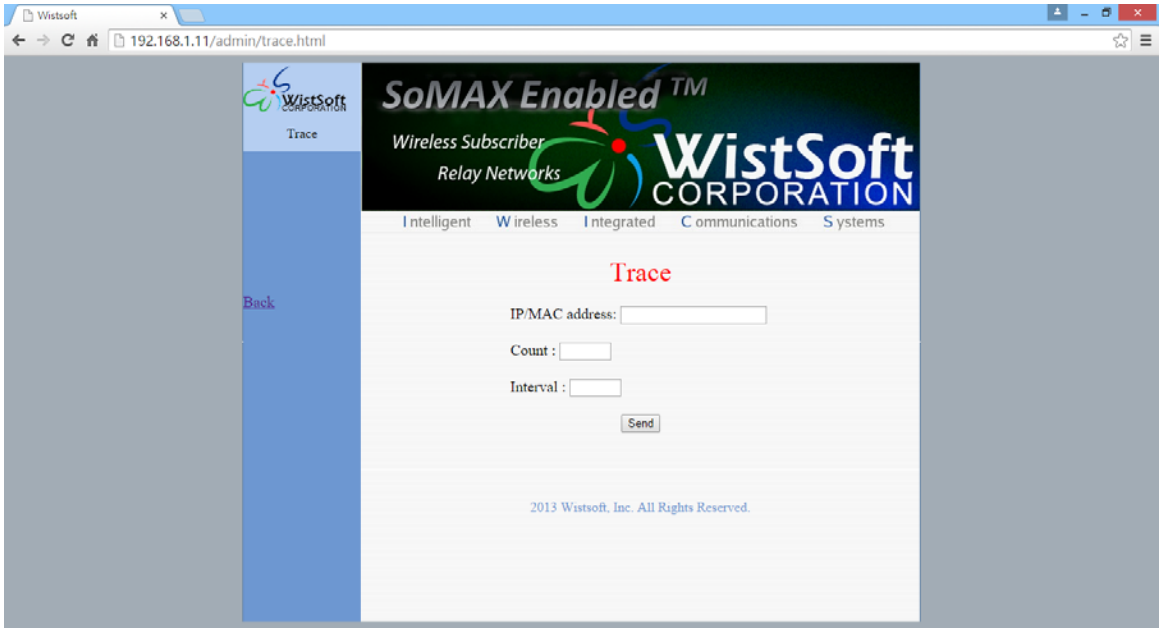
7. Trace

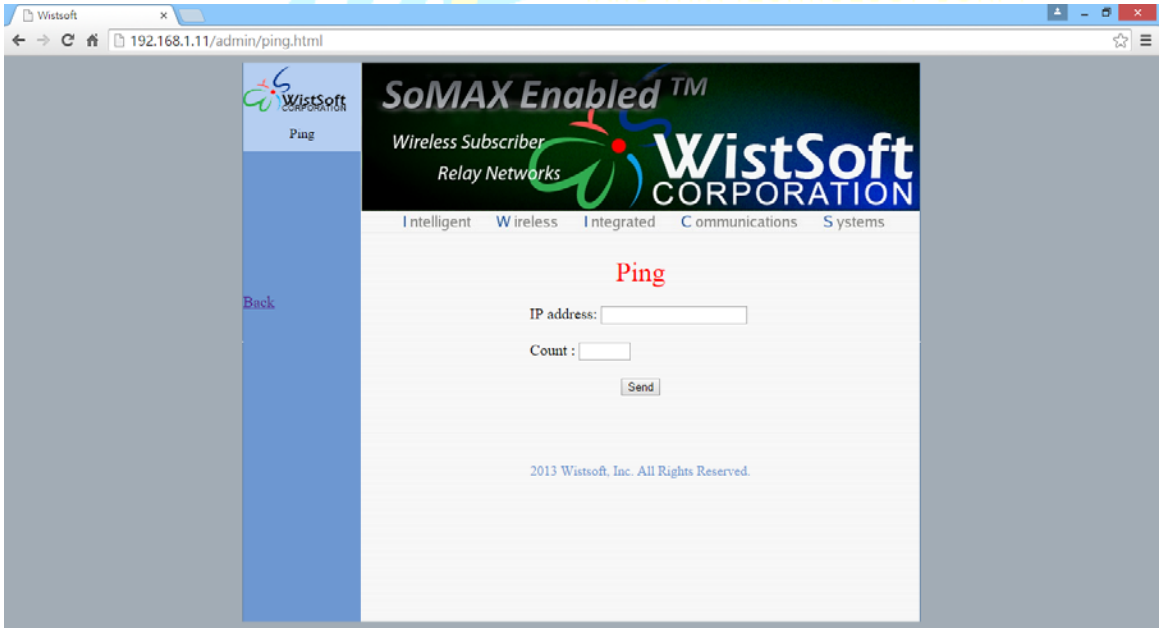
Tools→Trace



Picture 10

8. Ping

Tools→Ping



Picture 11

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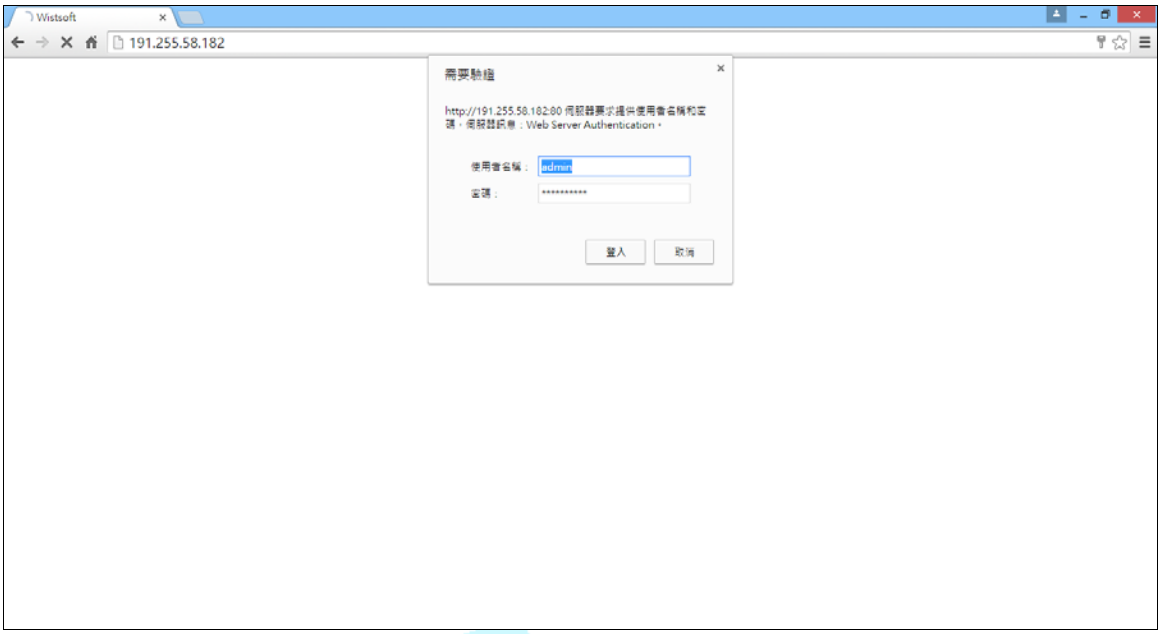
2. AB Station :

1. AB station system login

   IP: Shown on the label on the device

   http://xxx.xxx.xxx.xxx，As illustrated on Picture 12



Picture 12

Picture 13

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2. AB station Firmware Version

System Status→Firmware Version

Picture 14

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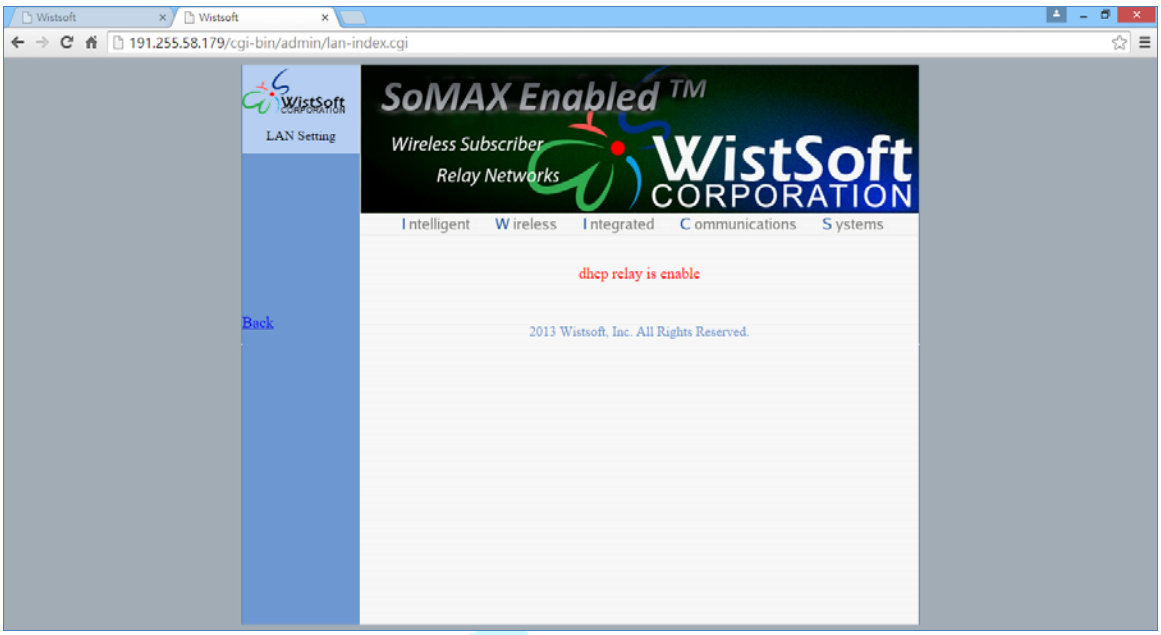
3. LAN setting

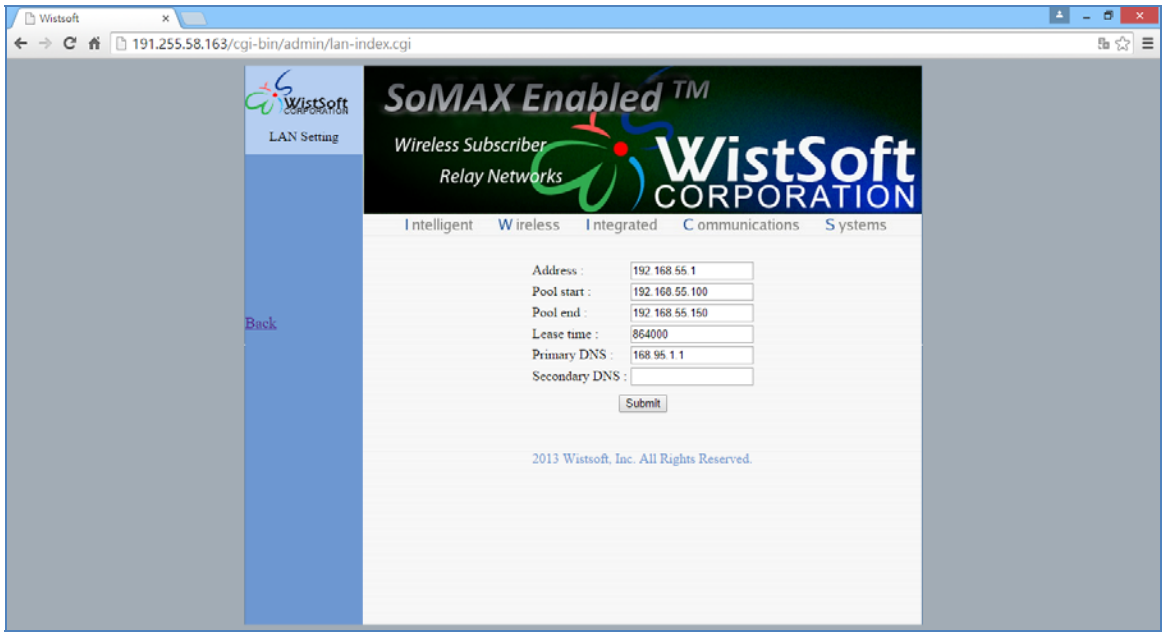
Depend on LRMS Delivery mode →As illustrated on Picture 32

Dynamic : As illustrated on Picture 15



Picture 15

Static : As illustrated on Picture 16



Picture 16

4. ODMA Status

System Status→ODMA Ststus

Picture 17

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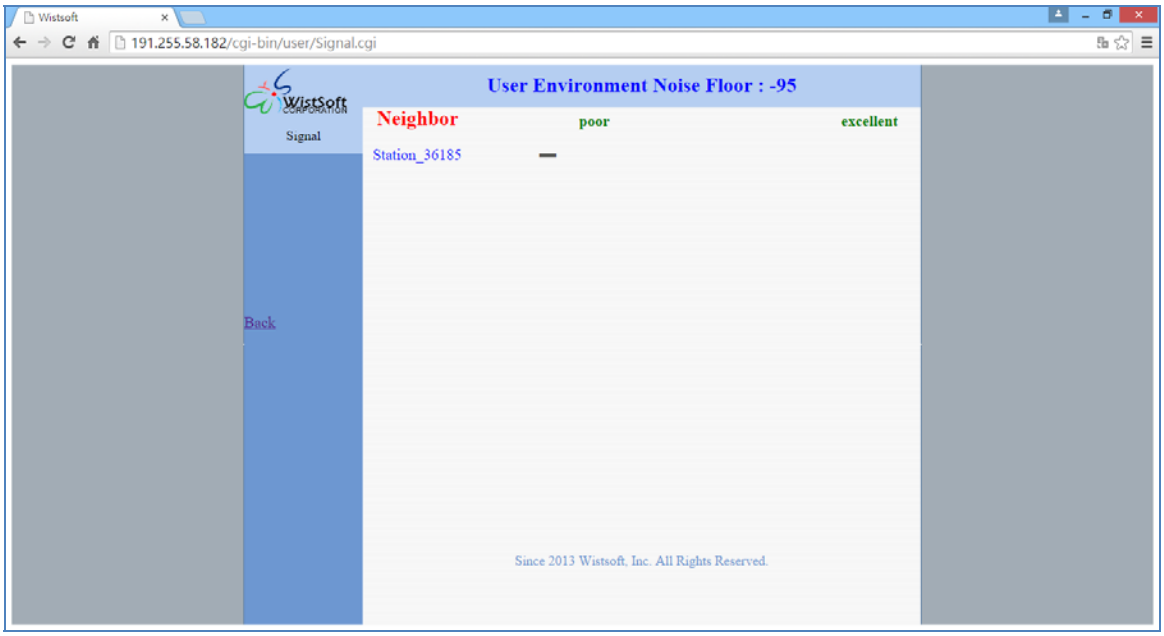
5. Signal strength

Signal strength



Picture 18

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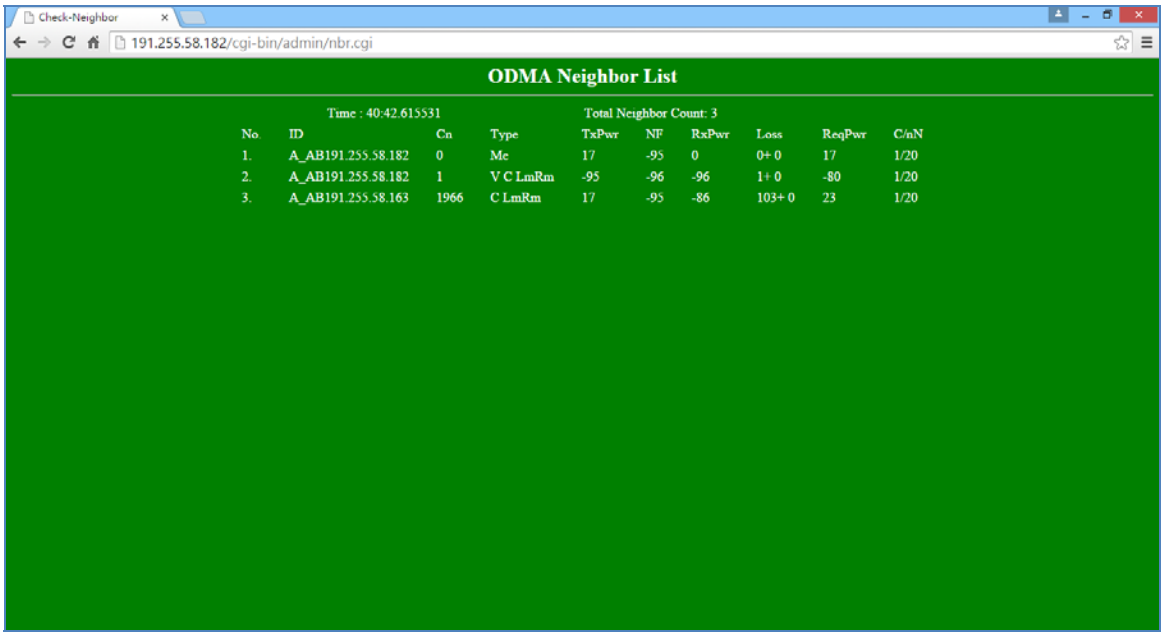
YANG HWA TECHNOLOGY CORP

6. Neighbor Gathering Status

Tools→Neighbor Gathering Status



Picture 19

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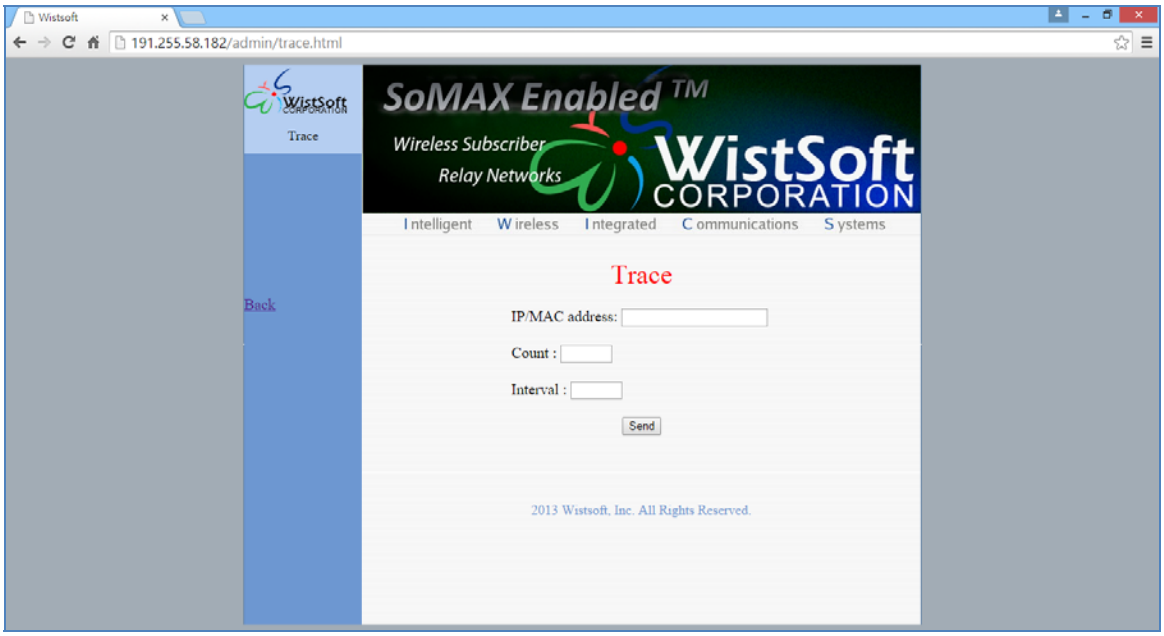
YANG HWA TECHNOLOGY CORP

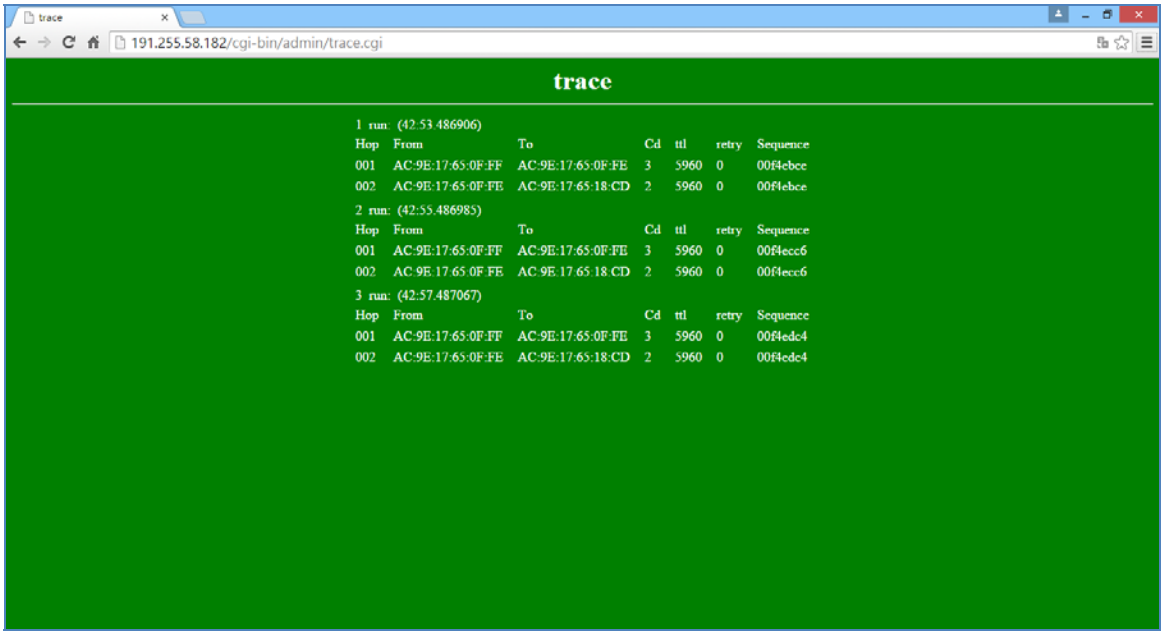
7. Trace

Tools→Trace



Picture 20

Picture 21 for reference.



Picture 21

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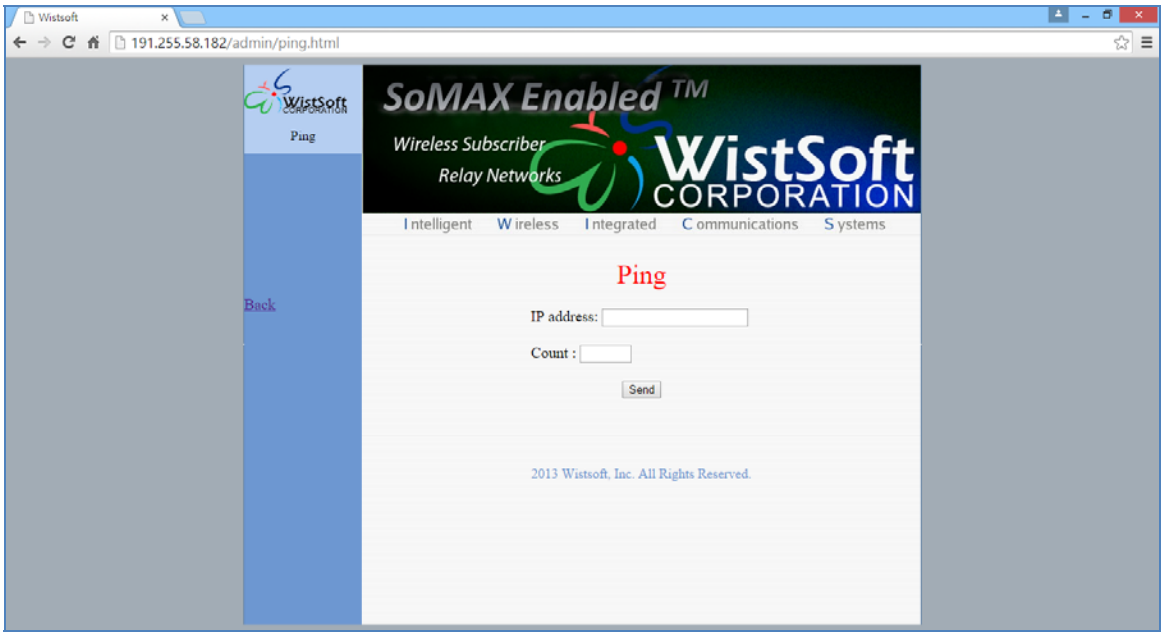
YANG HWA TECHNOLOGY CORP

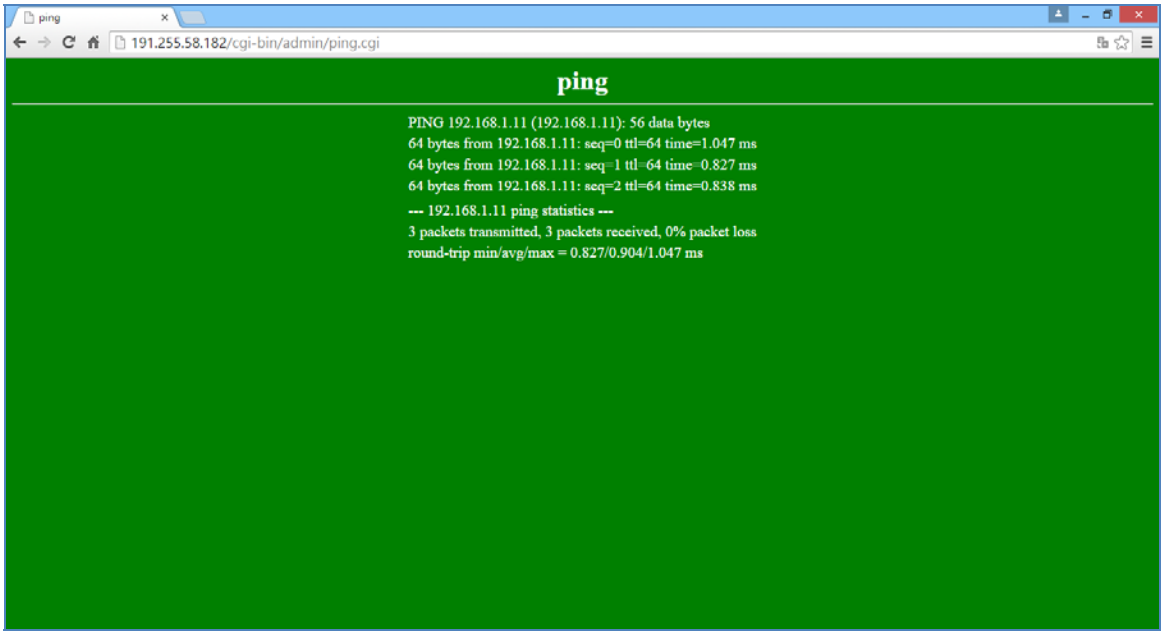
8. Pin

Tools→Ping



Picture 22

Picture 23 for reference



Picture 23

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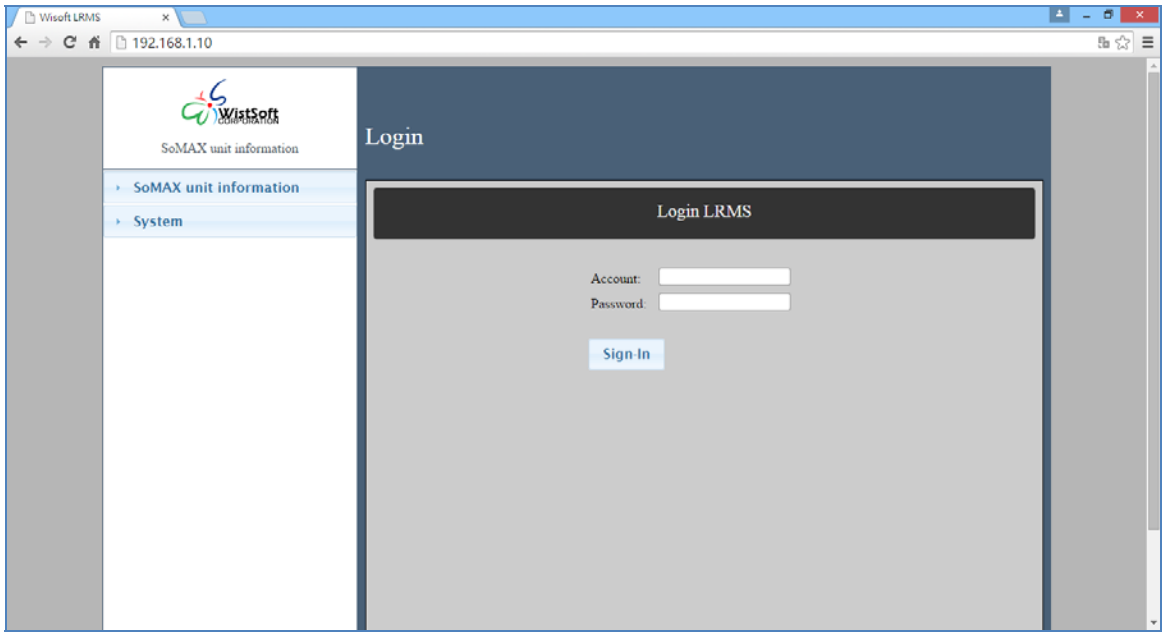
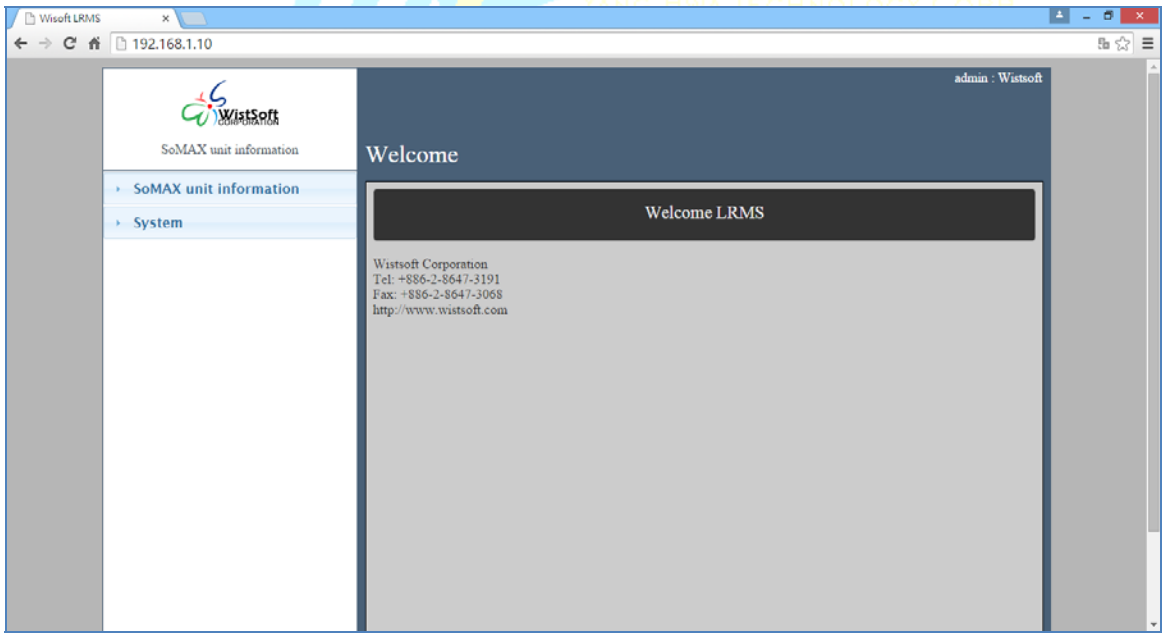
3. LRMS Set Up :

1. LRMS login

Account : Wistsoft、Password : wistsoft



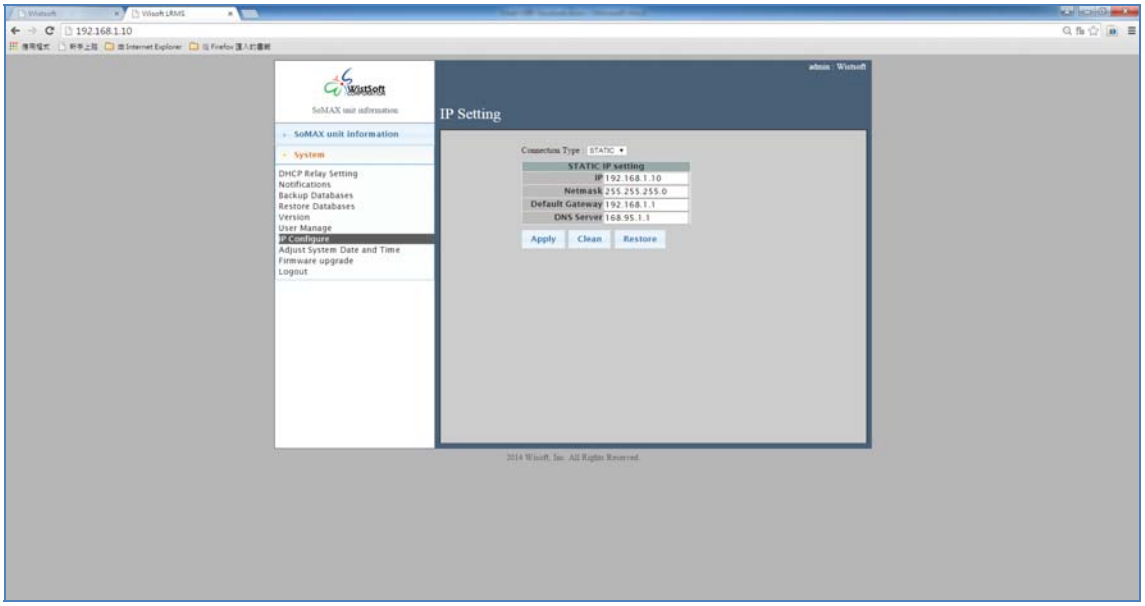
Picture 24



Picture 25

2. LRMS IP Setting

IP Configure，When finish the set up, reboot the LRMS



Picture 26

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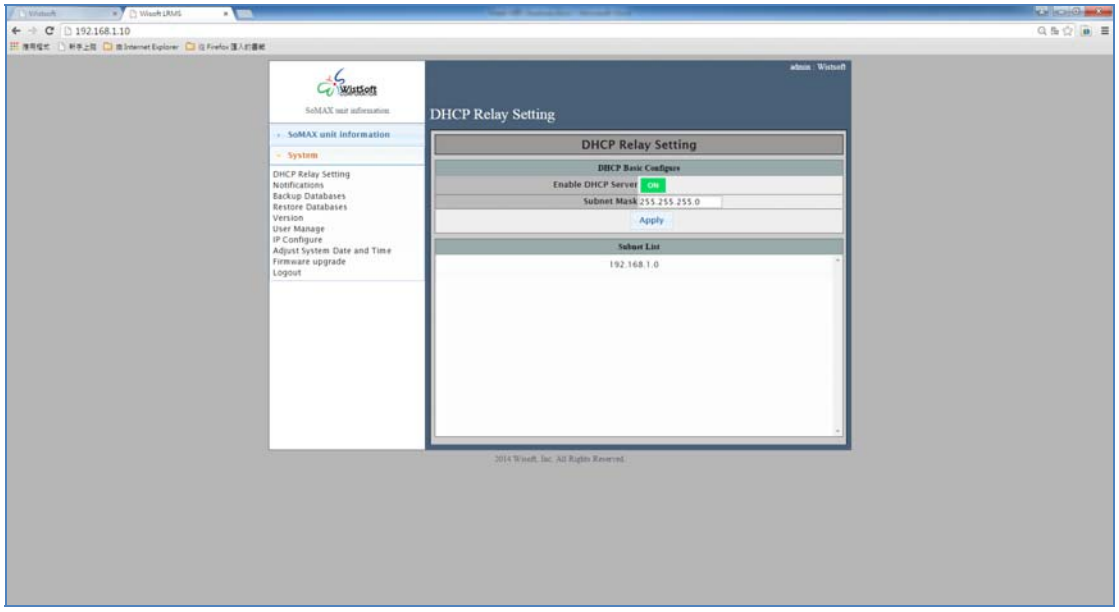
3. DHCP Relay setting

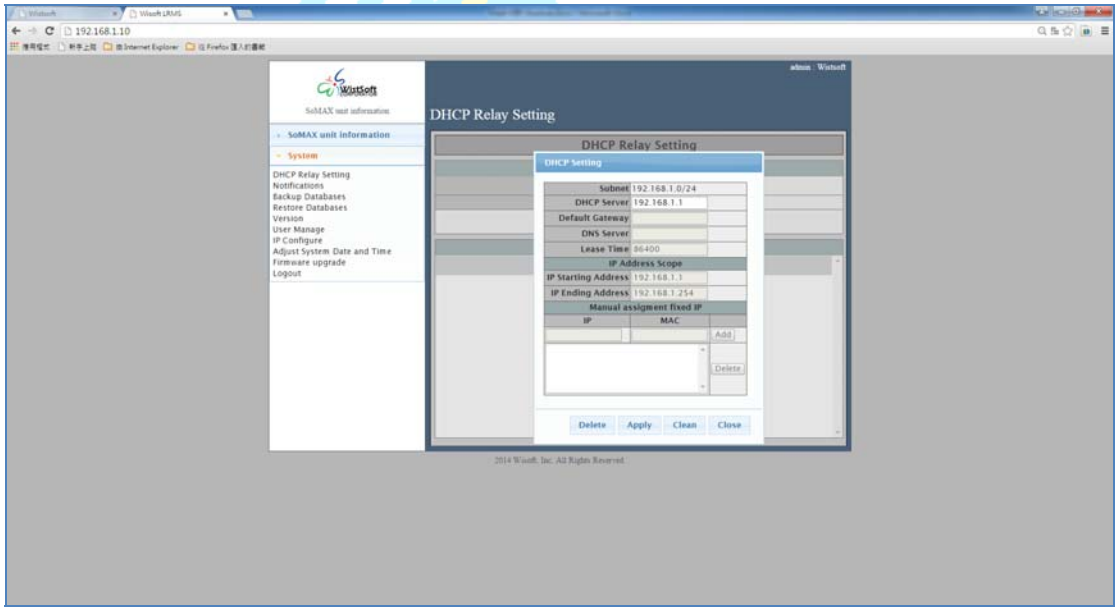
System→ DHCP Relay setting



Picture 27

Subnet List : Click 192.168.1.0 → Enter into DHCP Setting

DHCP Server : 192.168.1.1

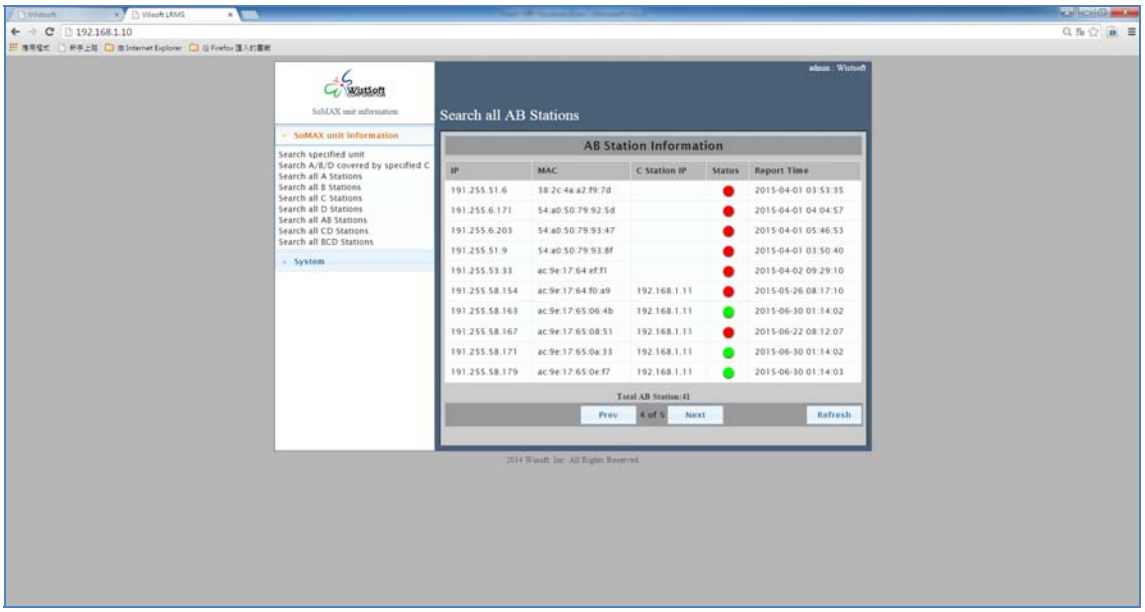


Picture 28

4. Monitor Mesh WiFi AB/CD Stations status

SoMAX unit information→search all AB Stations / search all CD Stations， Status red light : Abnormal

Status green light : Normal



Picture 29

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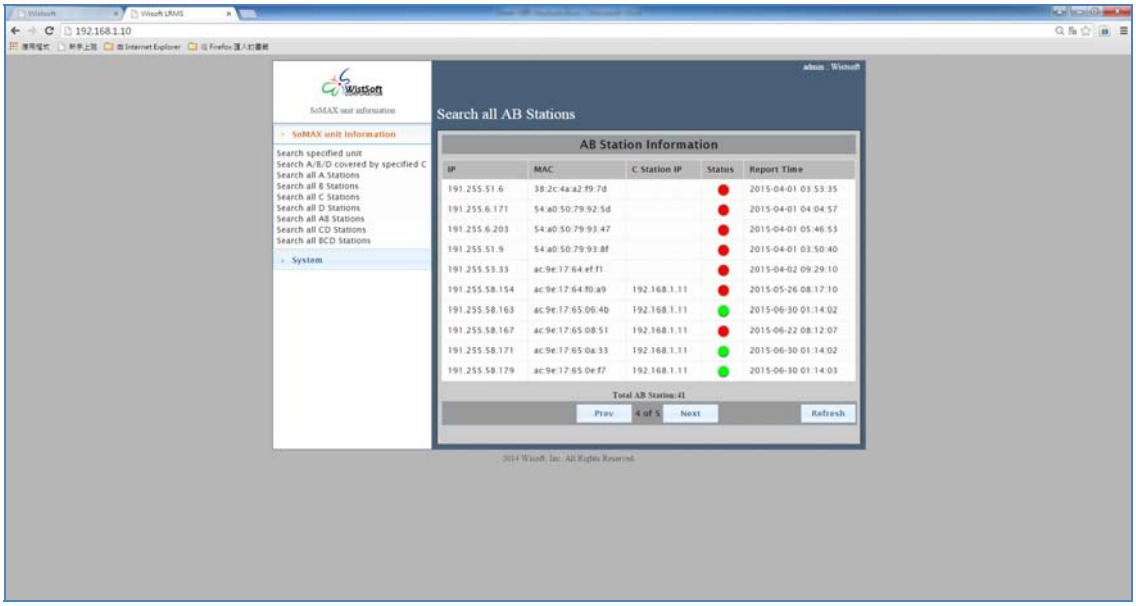
5. Mesh WiFi IP Delivery Mode

SoMAX unit information→search all AB Stations



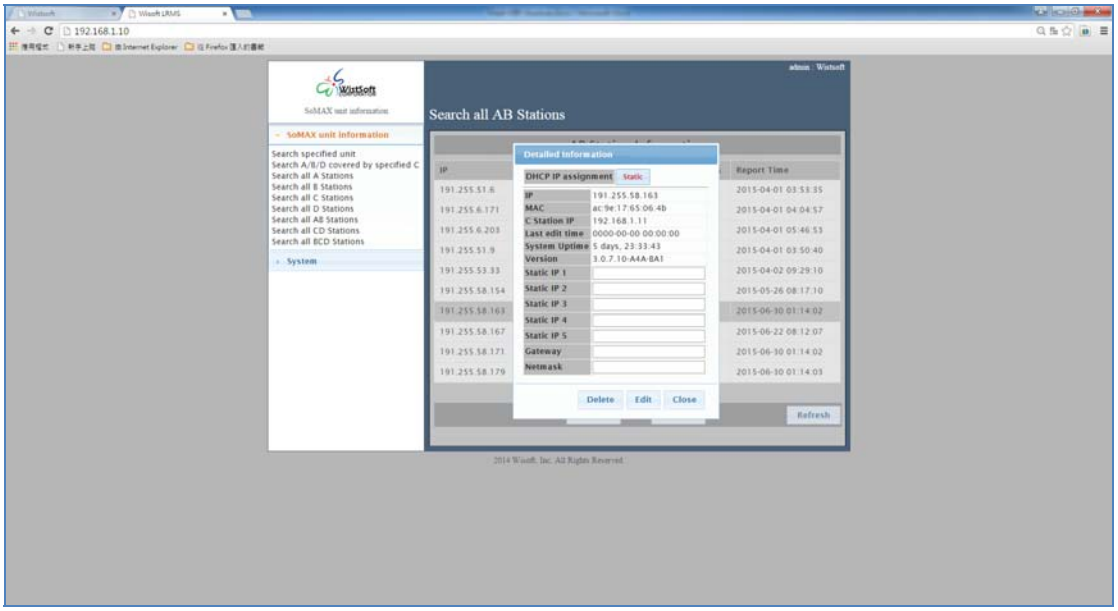
Picture 30

Click the record 191.255.58.163

Static : AB Stations DHCP Server → Picture 16

Dynamic : Follow the DHCP Server setting

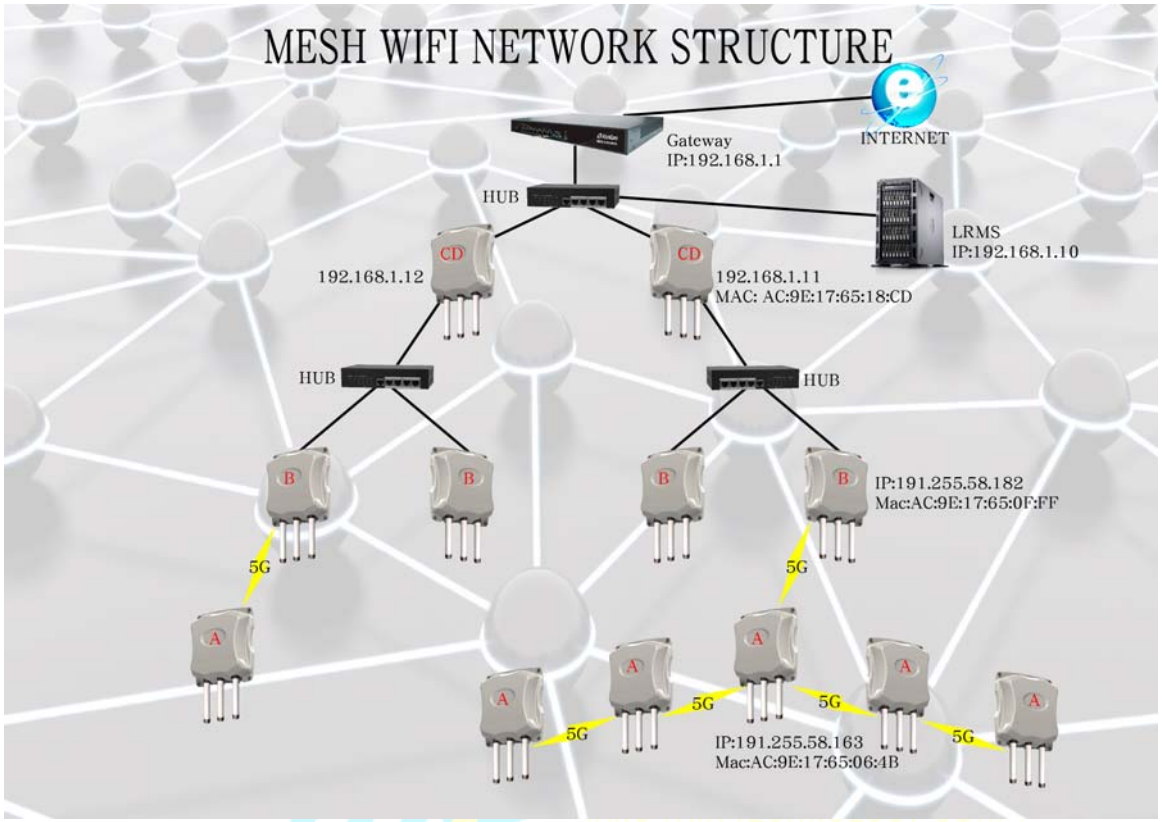
Exchange Static to Dynamic → Click Static → Click Edit



Picture 31

4. Final Test :

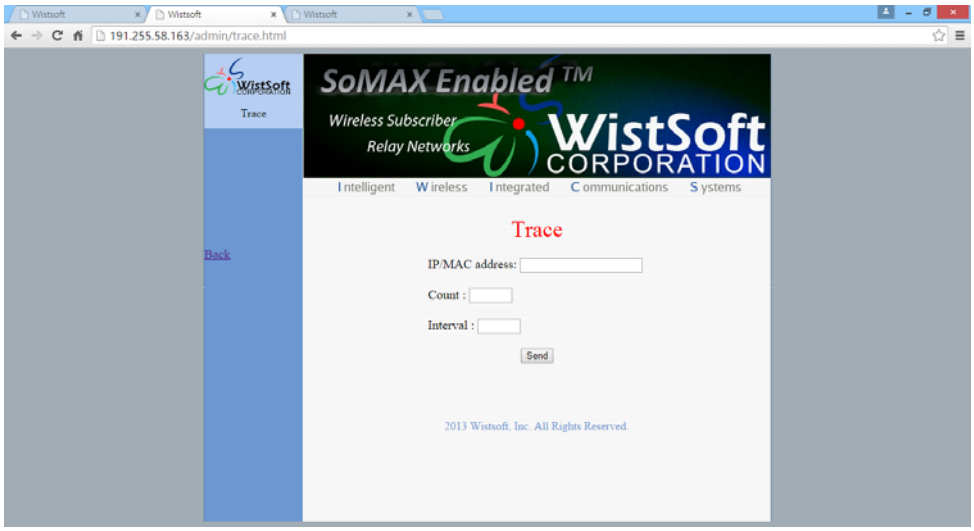
1. Device Architecture IP/MAC information



Picture 32

2. Trace route monitor

Login A Station:191.255.58.163→Tools→Trace

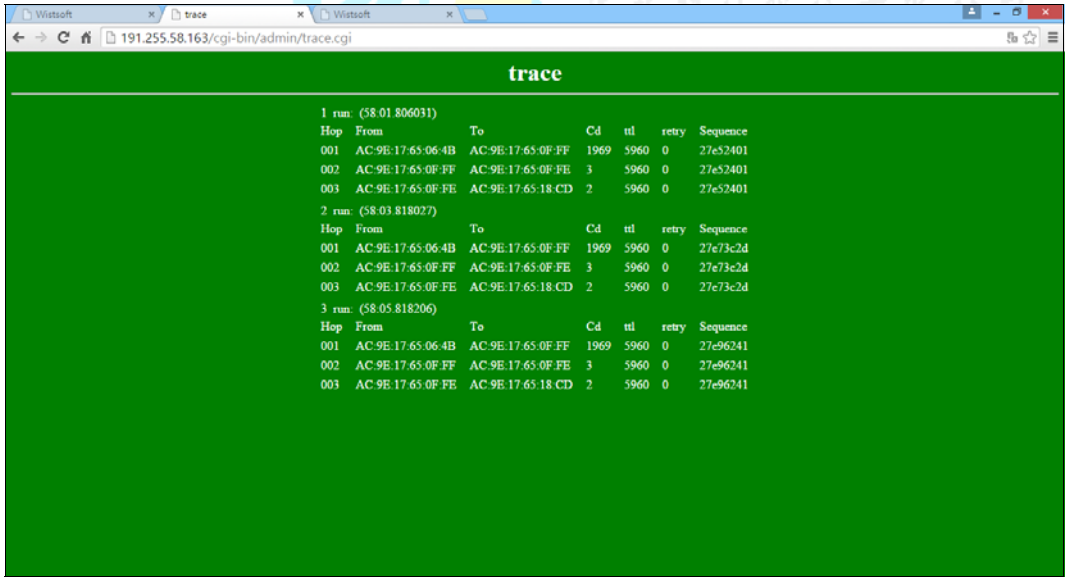


Picture 33

IP/MAC address:192.168.1.11 (CD Station IP)

Count : 3

Interval : 2



Picture 34

AC:9E:17:65:06:4B(A Station MAC)

AC:9E:17:65:0F:FF(B Station LAN MAC)

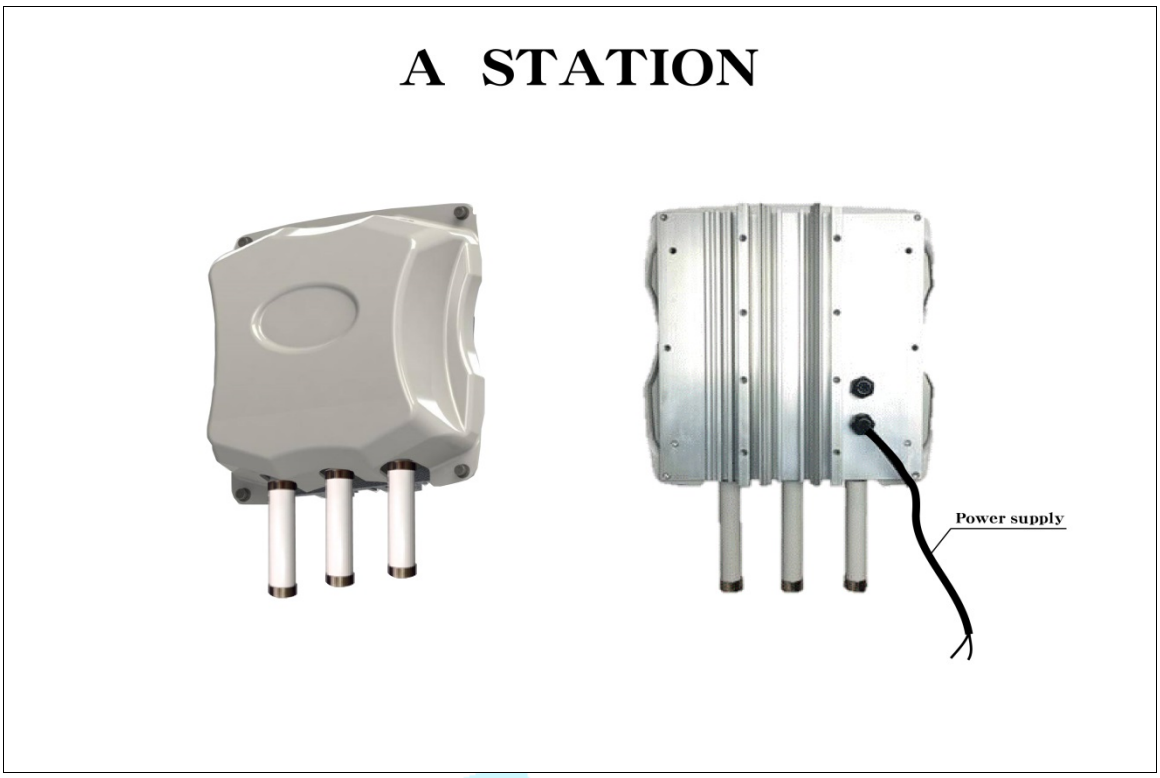
AC:9E:17:65:0F:FE(B Station WAN MAC)

AC:9E:17:65:18:CD(CD Station MAC)

Path As illustrated on Picture 32

Chapter 3 : Mesh WiFi Device Wiring explanation

1. A Station :



Picture 35

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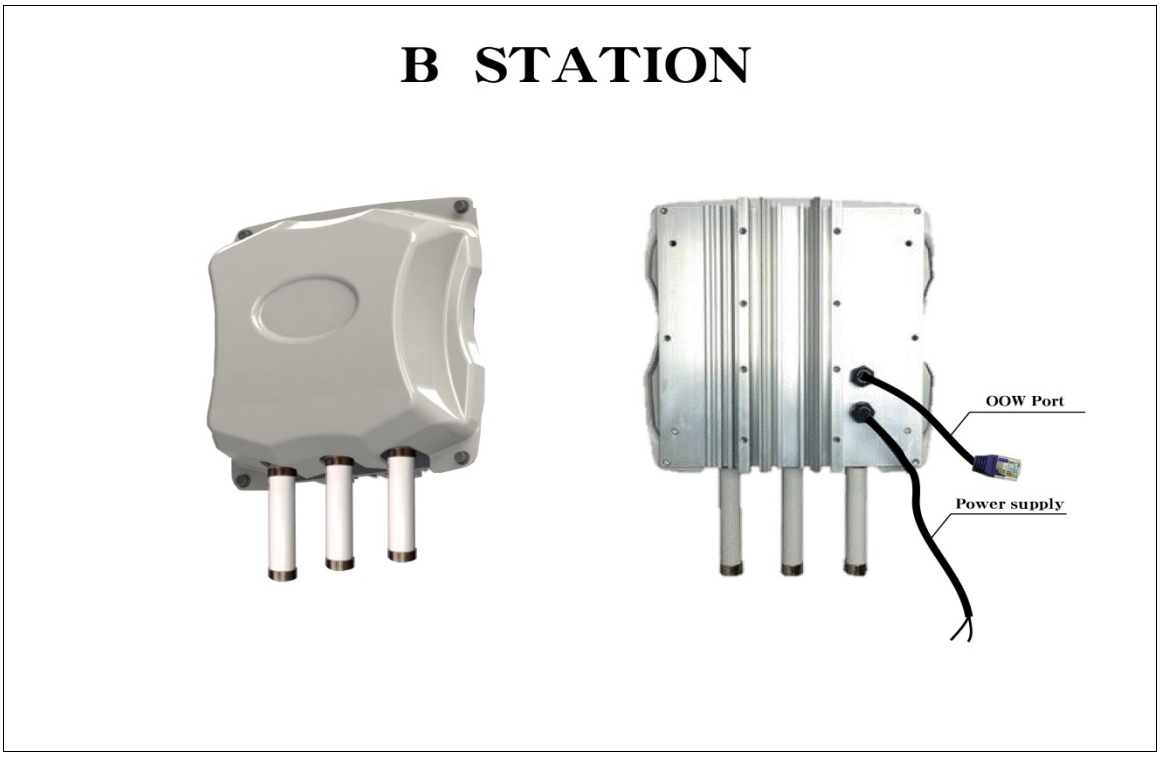
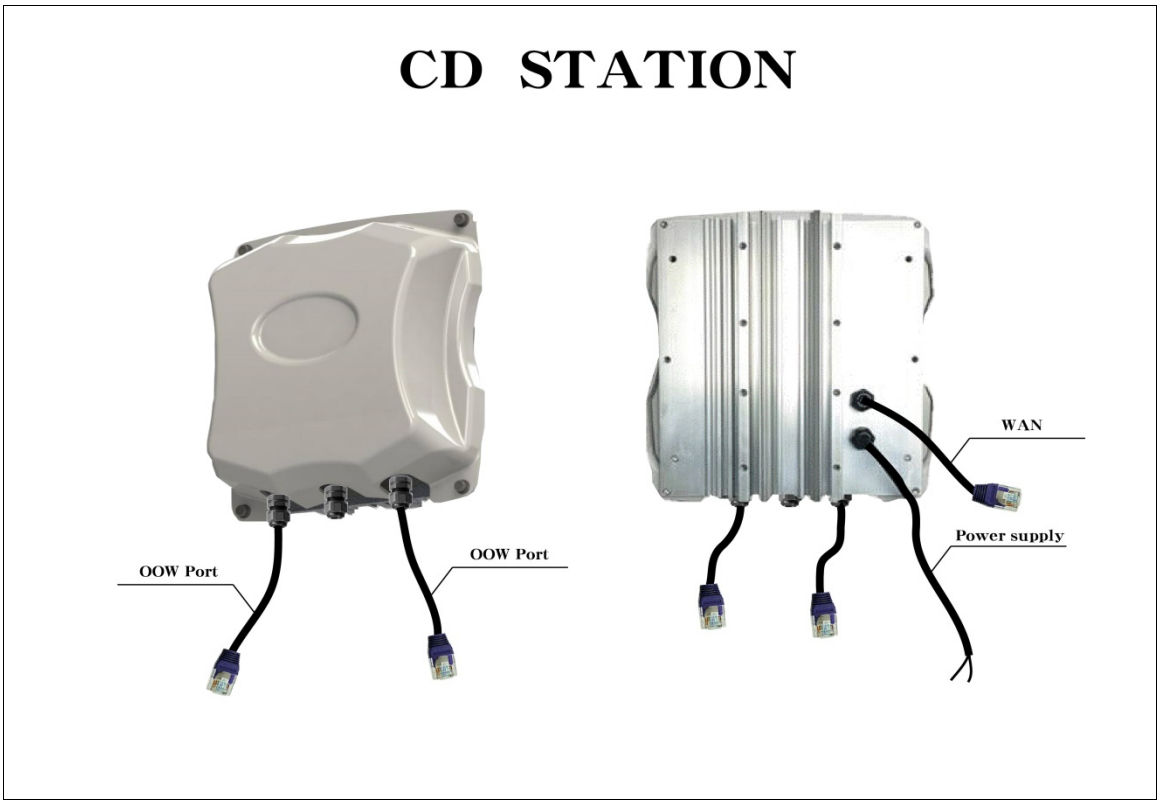
2. B Station :



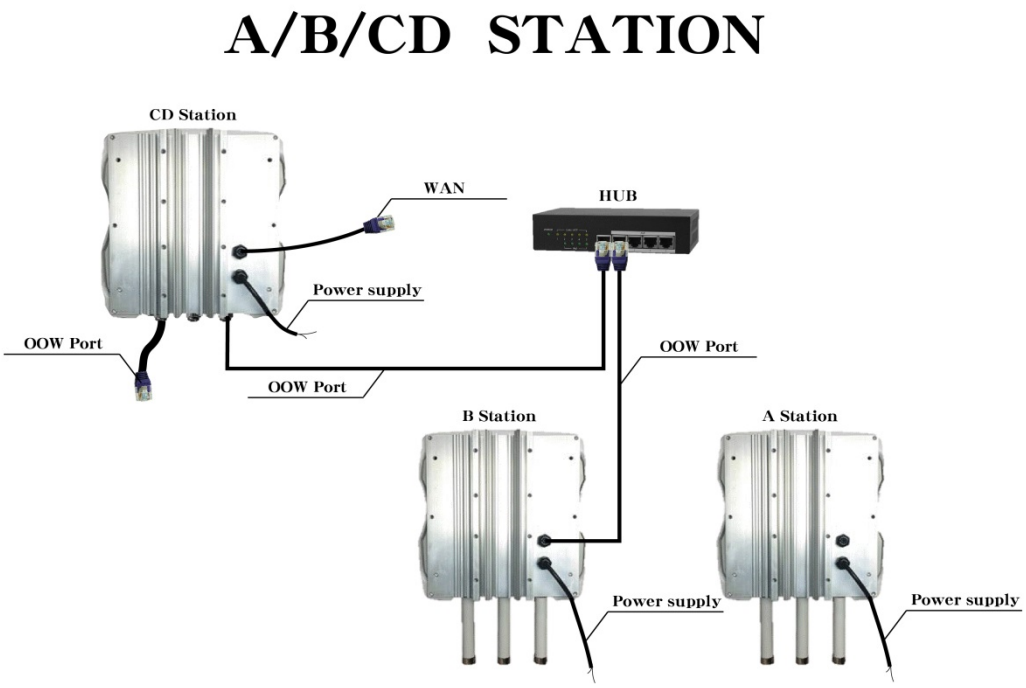
Picture 36

3. CD Station :



Picture 37

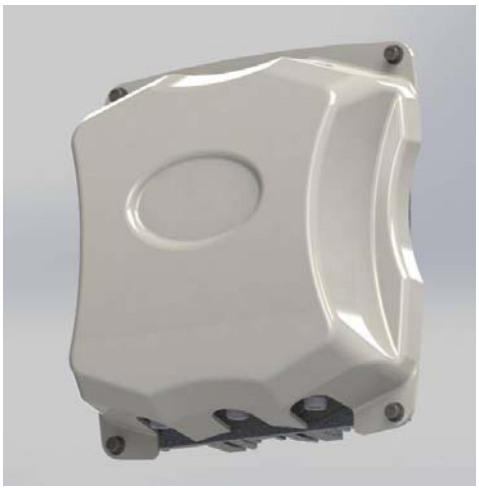
4. A/B/CD Station :



Picture

Chapter 4 : Product Specification

Mesh WiFi　AP-562O SPEC



1. Wireless radio specifications :

- Dual radio, 5 GHz and 2.4 GHz 802.11n
- Software-configurable dual radio supports 5 GHz Mesh wifi and 2.4 GHz normal Wi-Fi
- Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements):
  - ✧ 2.4 GHz band: +20 dBm
  - ✧ 5 GHz band: +20 dBm
- Supported data rates (Mbps):
  - ✧ 802.11b: 1, 2, 5.5, 11
  - ✧ 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
  - ✧ 802.11n: 6.5 to 300 (MCS0 to MCS23)

Antenna

- External dBi antenna x 3 (3 dBi gain for 5 GHz and 2.4 GHz)

Power

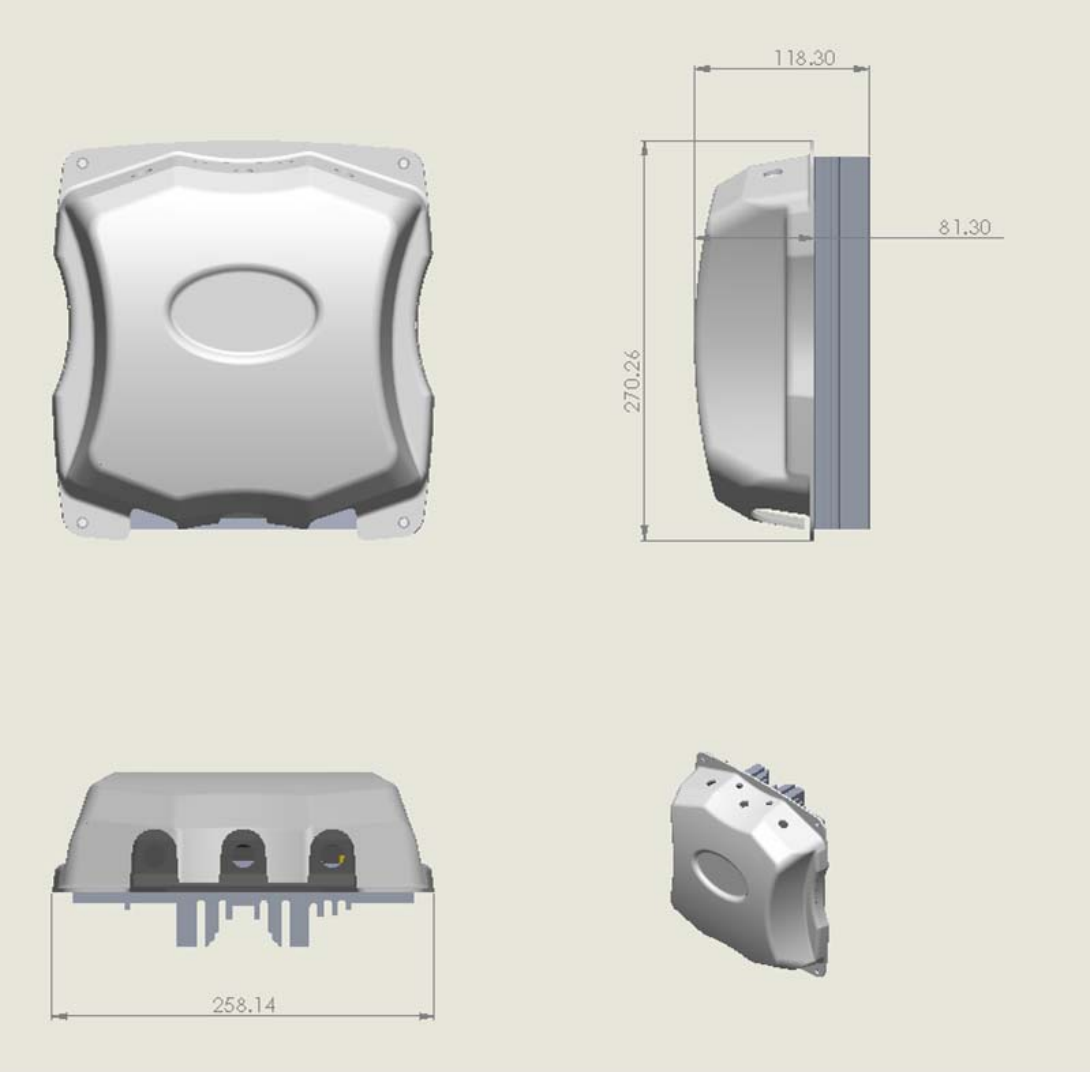
- AC Input : 100V-240V(50~60Hz)
- 36W LiFePO4 battery pack.
- Used Max. 12W , normal 5W.

Network interfaces

- 1 x 10/100/1000BASE-T Ethernet network interfaces (RJ-45)
  - ✧ Auto-sensing link speed

Mechanical

- Housing Dimensions (mm)



Regulatory

- o FCC/CE

FCC Notices

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.

CAUTION: Change or modification not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

CAUTION:
Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

RF exposure warning
This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter 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 transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance."