



HYC-ATHN1051C-50



ATHN2051C-27



ATHN2052C-27



ATHN2053C-27

HYC-ATHN1000 / 2000 Series

Multi-MIMO HT-OFDM Outdoor Radio

Up to 6x6 MIMO for Multi-hops repeat

Features:

- **PTP/ PTMP Ethernet backhaul**
- **4.920~6.075 GHz Operating Frequency**
- **MIMO HT-OFDM Modulation**
- **Integrated Multi-Radio Interfaces**
- **±2 ppm Frequency Stability for Mobility & NLOS**
- **Fast Data Switching Technology**
- **14 Channel BW (2.5 / 3 / 3.5 / 4 / 5 / 6 / 7 / 8 / 10 / 15 / 20 / 30 / 40 / 52 MHz)**
- **Up to 268 Mbps Real TCP Throughput**
- **GPS Coordinates and Internet map database**
- **5.2 bits/s/Hz amazing spectral efficiency**
- **Multi-hops repeating & Built-in NMS**
- **Real Aggregate TCP Throughput ≥ 320 Mbps @ 4x4 & 6x6 Base Station**
- **High Efficiency in Multi-hops Repeating**
 - **Low Throughput dropped @ 40MHz Ch BW (≥ 170 Mbps @ 20 hops)**
 - **Short Latency increased @ 40MHz Ch BW (≤ 35 ms @ 20 hops)**
- **IP-68 Water & Dust Resistant**
- **IEC61000-4-5 Surge Protection**
- **Outstanding MTBF**

Multi-Hops Repeater in SkyMesh-MIMO PTP/PTMP Series offers customers a great solution for PTP / PTMP / Hot zone applications by integrated multi-radios interfaces (up to 3* Radio modules) and Fast Data Switching technology from Hyperzable. This series shows incredible efficiency on multi-hops repeating – truly throughput ≥ 170 Mbps and only ≤ 35 ms total latency after 20 extended hops. Much different from the traditional Wi-fi that dropped 50% throughput per each extended hop and can't get reply from remote device after 5~6 hops for too long latency.

There are 14 channels bandwidth options can be selected easily by software (2.5 / 3 / 3.5 / 4 / 5 / 6 / 7 / 8 / 10 / 15 / 20 / 30 / 40 / 52 MHz). This feature provides the flexibility of deployment channel plan in crowded city area or high capacity backhaul -- throughput up to 268Mbps.

With MIMO HT-OFDM (High Throughput OFDM) technology, this radio is a high capacity PTP / PTMP backhaul for 5GHz ISM band wireless deployment. It utilizes coordinate and built-in NMS with internet map database to show the environment and status of the link. Customers can easily figure out the linking situation of the deployed radios.

Product Highlights

- **Integrated Multi-radios interfaces on Athena-MIMO platform.**
Multiple radios interfaces were integrated by "Fast Data Switching" technology from Azuretec inside the Athena-MIMO series platform. There are 3 type of radios for options: ATHN1051C / ATHN2051C (1*radio) / ATHN2052C (2*radios) / ATHN2053C (3*radios) and each radio interface can be configured independently to run different wireless connectivity missions.
- **High efficiency transmission in multi-hops repeating (Ex: @ 40MHz Ch BW)**
The backbone throughput will remain in a high level even after several hops repeating. (≥ 170 Mbps @ 20 hops), and the total latency is short as well (≤ 35 ms @ 20 hops).
- **Effective spectrum utility/variable capacities with 14 channel Bandwidths**
This radio has 14 channels bandwidth (2.5 / 3 / 3.5 / 4 / 5 / 6 / 7 / 8 / 10 / 15 / 20 / 30 / 40 / 52 MHz) for optional, which is adjustable via software. This function provides flexibilities of channel plan in crowded urban environment and variable capacities for different applications.
- **MIMO HT-OFDM technology provides amazing spectral efficiency**
Up to 5.2 bits/s/Hz amazing spectral efficiency for all channel bandwidth provided by the MIMO HT-OFDM technology. Work with the variable channel bandwidth options, these two combination features provides great benefits for both crowded urban area and rural area with less interference.

■ TCP throughput at different channel BW¹⁾

| Channel BW (MHz) | 2.5 | 3 | 3.5 | 4 | 5 | 6 | 7 | 8 | 10 | 15 | 20 | 30 | 40 | 52 |
|----------------------------|-------------------|----|-----|---------------|----|----|----|----|----|-------|-----|-----|-----|-----|
| Real TCP throughput (Mbps) | 12 | 14 | 17 | 20 | 25 | 30 | 35 | 40 | 51 | 77 | 104 | 158 | 215 | 268 |
| Application area | Valuable spectrum | | | Crowded urban | | | | | | Rural | | | | |

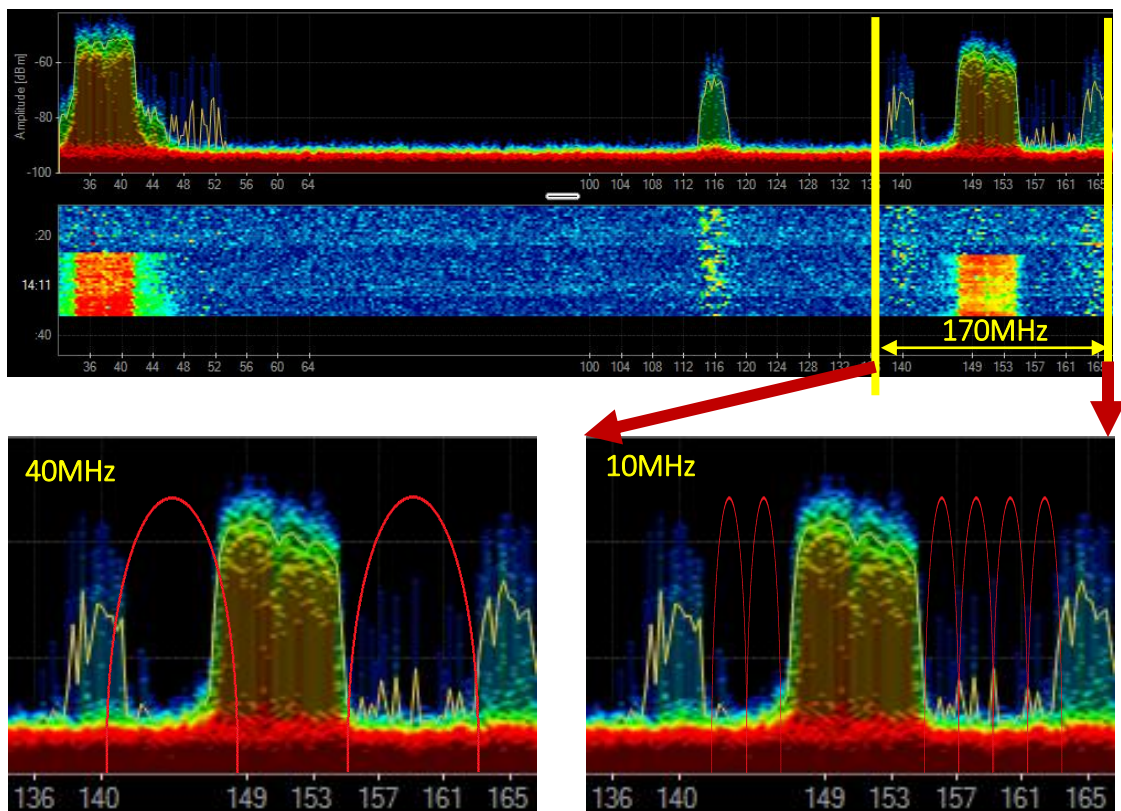
Specifications

| RADIO SPECIFICATIONS | | | | | | | | |
|---|--|----------|--|---|------------------|----------|-----------------------|---|
| Frequency range | | | 4.920 ~ 6.075 GHz Optional | | | | | |
| Channel Band Width | | | 2.5 / 3 / 3.5 / 4 / 5 / 6 / 7 / 8 / 10 / 15 / 20 / 30 / 40 / 52 MHz | | | | | |
| Frequency Stability | | | ± 2 ppm | | | | | |
| Modulation | | | MIMO HT-OFDM | | | | | |
| MCS Index | MIMO-OFDM / HT20 | | | | MIMO-OFDM / HT40 | | | |
| | Data Rate (Mbps) | | Tx Output Power (dBm) | Rx Sensitivity (BER 1 ^E 10 ⁻⁶) | Data Rate (Mbps) | | Tx Output Power (dBm) | Rx Sensitivity (BER 1 ^E 10 ⁻⁶) |
| | GI=800ns | GI=400ns | | | GI=800ns | GI=400ns | | |
| MCS8 | 6.5/13 | N/A | 27(±1.5) | -94/-92 dBm | 13.5/27 | 15/30 | 27(±1.5) | -92/-90 dBm |
| MCS9 | 13/26 | N/A | 26(±1.5) | -92/-90 dBm | 27/54 | 30/60 | 26(±1.5) | -89/-87 dBm |
| MCS10 | 19.5/39 | N/A | 26(±1.5) | -90/-87 dBm | 40.5/81 | 45/90 | 26(±1.5) | -87/-83 dBm |
| MCS11 | 26/52 | N/A | 25(±1.5) | -87/-84 dBm | 54/108 | 60/120 | 25(±1.5) | -84/-81 dBm |
| MCS12 | 39/78 | N/A | 24(±1.5) | -84/-81 dBm | 81/162 | 90/180 | 24(±1.5) | -81/-79 dBm |
| MCS13 | 52/104 | N/A | 23(±1.5) | -80/-77 dBm | 108/216 | 120/240 | 23(±1.5) | -78/-75 dBm |
| MCS14 | 58.5/117 | N/A | 23(±1.5) | -78/-75 dBm | 121/242 | 135/270 | 23(±1.5) | -76/-73 dBm |
| MCS15 | 65/130 | N/A | 23(±1.5) | -76/-73 dBm | 135/270 | 150/300 | 23(±1.5) | -74/-72 dBm |
| INTERFACES | | | | | | | | |
| Wireless Interface : 2 x N-type Female Connectors / 4 x N-type Female Connectors / 6 x N-type Female Connectors | | | | | | | | |
| 10/100/1000 Base-T RJ-45 port with M25 Calbe Gland | | | | | | | | |
| MANAGEABILITY | | | | | | | | |
| Management and Setup | | | Web-based (Chrome / IE 9.0 or later) | | | | | |
| SNMP agents | | | MIB II | | | | | |
| Protocol | | | TCP/IP, IPX/SPX, NetBEUI | | | | | |
| Network Architecture | | | PTP (1+0 / 2+0) / Multi-hops Repeating / PTMP | | | | | |
| Antenna Alignment | | | WEB GUI Local / Remote Information | | | | | |
| Built-in NMS | | | Live linking status of the network by GPS coordinates and internet map database | | | | | |
| Security | | | | | | | | |
| Data Encryption | | | WPA-PSK / WPA2-PSK | | | | | |
| Advanced Security | | | MAC access control / Disable SSID / Proprietary protocol | | | | | |
| ENVIRONMENT | | | | | | | | |
| Operating Temperature | | | -30~60 °C | | | | | |
| Storage Temperature | | | -30~70 °C | | | | | |
| Humidity | | | 95% non-condensing | | | | | |
| POWER SUPPLY & CONSUMPTION | | | | | | | | |
| Power Supply : AC 100-264V, 50-60Hz convert to DC 48V Adapter (Max. 45Watts) with 48VDC POE | | | | | | | | |
| Power Consumption : | | | | | | | | |
| ATHN1051C-50 : 10Watts (typical) / 12 Watts (Max.) @ DC 48V | | | | | | | | |
| ATHN2051C-27 : 10Watts (typical) / 12 Watts (Max.) @ DC 48V | | | | | | | | |
| ATHN2052C-27 : 16Watts (typical) / 19 Watts (Max.) @ DC 48V | | | | | | | | |
| ATHN2053C-27 : 22Watts (typical) / 26 Watts (Max.) @ DC 48V | | | | | | | | |
| PHYSICAL | | | | | | | | |
| Dimension | | | 259 (L) * 250 (W) * 75 (H) ; mm (External Model) 385 (L) * 385 (W) * 98 (H) ; mm (Integrated Model) | | | | | |
| Weight | | | 1.8Kg (External Model) 3.2Kg (Integrated Model) | | | | | |
| WARRANTY | | | | | | | | |
| 1 YEAR | | | | | | | | |
| ORDERING INFORMATION | | | | | | | | |
| ATHN1051C-50 | 4.920~6.075 GHz 0.5 W Outdoor 2x2 MIMO HT-OFDM PTP/PTMP Ethernet Backhaul with 23dBi Integrated Panel Antenna, 14 software selectable channel bandwidth. | | | | | | | |
| ATHN2051C-27 | 4.920~6.075 GHz 0.5 W Outdoor 2x2 MIMO HT-OFDM PTP/PTMP Ethernet Backhaul, 14 software selectable channel bandwidth. | | | | | | | |
| ATHN2052C-27 | 4.920~6.075 GHz 0.5 W Outdoor 4x4 MIMO HT-OFDM PTP/PTMP Ethernet Backhaul, 14 software selectable channel bandwidth. | | | | | | | |
| ATHN2053C-27 | 4.920~6.075 GHz 0.5 W Outdoor 6x6 MIMO HT-OFDM PTP/PTMP Ethernet Backhaul, 14 software selectable channel bandwidth. | | | | | | | |

■ True Value of narrow bandwidth with high spectral efficiency

1. More effective non-overlapping channels for flexible channel Plan
2. More total assumption capacity due to more effective narrow band channels in limited clear band without interferences.

Example: In a 170MHz available range with other interference source



40 MHz channel BW: **1 x effective channel** without interference only, total throughput < 300Mbps.

10 MHz channel BW: **6 x effective channels** without interferences, each channel offers 50Mbps TCP throughput. Total throughput about 300Mbps

2.5 MHz channel BW: **24 x effective channels** without interferences, each channel offers 12Mbps TCP throughput. Total throughput about 300Mbps.

| Channel BW (MHz) | 2.5 | 3 | 3.5 | 4 | 5 | 6 | 7 | 8 | 10 | 15 | 20 | 30 | 40 | 52 |
|----------------------------|-------------------|----|-----|----|---------------|----|----|----|----|----|-------|-----|-----|-----|
| Real TCP throughput (Mbps) | 12 | 14 | 17 | 20 | 25 | 30 | 35 | 40 | 51 | 77 | 104 | 158 | 215 | 268 |
| Application area | Valuable spectrum | | | | Crowded urban | | | | | | Rural | | | |

Channel Bandwidth & TCP Throughput list table

Built-in NMS function --- GPS Coordinates Input setting page

Information

Status

MAP

System

Basic Settings

IP Settings

STP Settings

Time Settings

Wireless 1

Wireless 2

Management

Logout

System > Basic Setting

Device Settings

Device Name:

Ethernet 1

Data Rate:

VLAN(802.1Q): ☐ Enable ☒ Disable

Management VLAN ID:

Ethernet 2

Data Rate:

VLAN(802.1Q): ☐ Enable ☒ Disable

Management VLAN ID:

GPS Coordinates

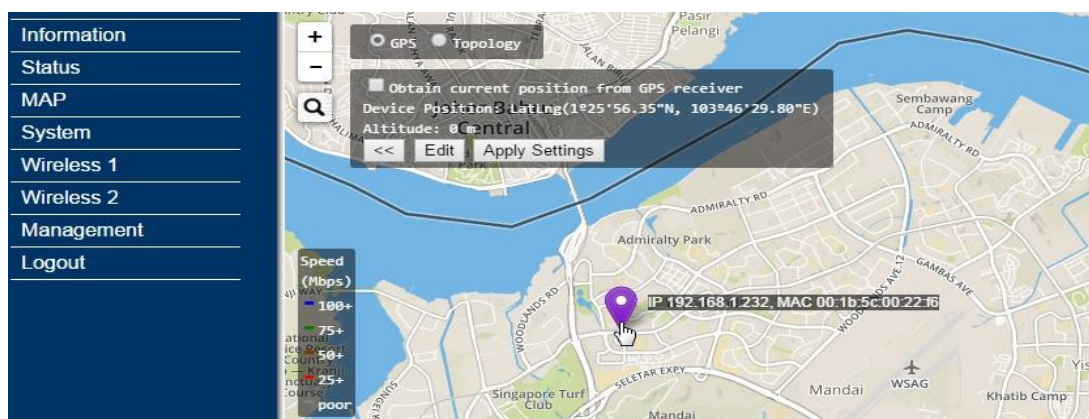
☐ Obtain current position from GPS receiver

Latitude:

Longitude:

Altitude: m

Local Site info -- Device name / MAC address



Remote Site info – IP address / MAC / Operation Mode / RSSI / Data Rate / Distance

