With MIMO High Throughput OFDM (HT-OFDM) and Dual Channels x Dual Polarization Mobile Mesh Network technology, this radio is a high capacity Mobile Mesh node for 5GHz ISM band wireless deployment as Mesh Network. There are 14 channel BWs: (2.5/3.5/4/5/6/7/8/10/15/20/30/40/52 MHz) can be selected easily by software. This feature provides the flexibility of deployment channel plan in high density city area.

Compare to the traditional Single Channel Mesh Network, the Dual Channels Mobile Mesh Network design makes the Mesh Network working better and more efficiency because of below advantages.

1. Reduce the Co-channel interference,
3. Shorter latency for the Mesh Network.
4. More possibilities of the deployment plan with different antenna design for different applications and environments.

It's also an excellent solution for mining, transportation, disaster response operations and military operation in harsh outdoor environments.

**Product Highlights**

- **4x4 MIMO HT-OFDM with dual channels Mobile Mesh**
  Radios implement 4x4 MIMO HT-OFDM with two independent channels and the unique mesh network algorithm. That can makes the radios switching fast between the dual channels and keep finding the best path for data transmission, to realize the seamless Mobile Mesh roaming with high efficiency -- higher capacity and shorter latency.

- **Self-healing & self-forming Mesh Protocol**
  Automatic configuration and routing enables the mesh networks to be self-forming and self-healing.

- **Pure and Simple Mobile Mesh Network**
  ATHN(V)3011-27 supports a pure and simple Mesh network, each mesh node in the Mobile Mesh network is equal to each other. One mesh node operation mode for easy configuration

- **Frequency Redundant for P-T-P link**
  When the 4x4 Mesh radio deployed as PTP link, RF2 and RF1 can worked as Frequency redundant. When RF1 getting worse or failed, RF2 can replace the RF1 for data transmission.

**Features:**

- 4X4 MIMO HT-OFDM Mesh Radio
- Self-healing & Self-forming Mesh
- Dual Channels x Mobile Mesh Network
- High Efficiency in Multi-hops Repeat
  - Low Throughput dropped
    (≦100 Mbps @ 10 hops)
  - Short Latency increased
    (≦15 ms @ 10 hops)
- Network Architecture:
  P-T-P: 1+0 / 2+0 / 1+1
  P-T-MP
  Ring (Redundant)
  Mobile MESH
- Fast Seamless Roaming
- High Speed up to 180km/hr
- IEC61000-4-5 Surge Protection
- IP-68 Water & Dust Resistant
Applications

For rapid deployment, temporary networks or resilient fixed infrastructures, no more power supply constraint!

Dual channels Mobile Mesh Network for the military vehicles team
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.

<table>
<thead>
<tr>
<th>Channel BW (MHz)</th>
<th>2.5</th>
<th>3</th>
<th>3.5</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real TCP throughput (Mbps)</td>
<td>12</td>
<td>14</td>
<td>17</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>51</td>
<td>77</td>
<td>104</td>
<td>158</td>
<td>215</td>
<td>268</td>
</tr>
<tr>
<td>Application area</td>
<td>Valuable spectrum</td>
<td></td>
<td></td>
<td>Crowd</td>
<td>ed urban</td>
<td></td>
<td></td>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Channel BW & TCP throughput list table.
Embedded NMS

Map of Wireless 1 (Channel A) – includes IP / MAC address and RSSI info of each node

Map of Wireless 1 (Channel A) – includes IP / MAC address and RSSI info of each node

Map of the whole Mesh Topology – includes IP / MAC address and data rate info of the live link
Specifications

RADIO SPECIFICATIONS

<table>
<thead>
<tr>
<th>Frequency range</th>
<th>4.920 – 6.075 GHz</th>
<th>Optional : 4.800 – 5.000 GHz and WiFi AP2.4 GHz embedded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Band Width</td>
<td>2.5 / 3 / 3.5 / 4 / 5 / 6 / 7 / 8 / 10 / 15 / 20 / 30 / 40 / 52 MHz</td>
<td></td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>± 2 ppm</td>
<td></td>
</tr>
<tr>
<td>Modulation</td>
<td>MIMO HT-OFDM</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MCS Index</th>
<th>IEEE 802.11an / HT20</th>
<th>IEEE 802.11an / HT40</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data Rate (Mbps)</td>
<td>Rx Sensitivity (BER 1 * 10^-6)</td>
</tr>
<tr>
<td></td>
<td>Gl=800ns Gl=400ns</td>
<td>Tx Output Power (dBm)</td>
</tr>
<tr>
<td>MCS8</td>
<td>6.5/13 N/A</td>
<td>-94/-92 dBm</td>
</tr>
<tr>
<td>MCS9</td>
<td>13/26 N/A</td>
<td>-92/-90 dBm</td>
</tr>
<tr>
<td>MCS10</td>
<td>19.5/39 N/A</td>
<td>-90/-87 dBm</td>
</tr>
<tr>
<td>MCS11</td>
<td>26/52 N/A</td>
<td>-87/-84 dBm</td>
</tr>
<tr>
<td>MCS12</td>
<td>39/78 N/A</td>
<td>-84/-81 dBm</td>
</tr>
<tr>
<td>MCS13</td>
<td>52/104 N/A</td>
<td>-80/-77 dBm</td>
</tr>
<tr>
<td>MCS14</td>
<td>58.5/117 N/A</td>
<td>-78/-75 dBm</td>
</tr>
<tr>
<td>MCS15</td>
<td>65/130 N/A</td>
<td>-76/-73 dBm</td>
</tr>
</tbody>
</table>

INTERFACES

Wireless Interface : 4 x N-type Female Connectors
10/100/1000 Base-T RJ-45 port with M25 Cable 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 / 1+1) / PTMP / Ring / Mesh |
Antenna Alignment | WEB GUI Local / Remote Information |
Radio Locator | 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. 45 Watts) with 48VDC POE
Power Consumption : 16 Watts (typical) / 19 Watts (Max.) @ DC 48V
DC 10~30V optional for vehicle radio version

PHYSICAL

Dimension | 259 (L) * 250 (W) * 75 (H) ; mm |
Weight | 1.8 Kg |

WARRANTY

1 YEAR

ORDERING INFORMATION

| LRHN3011-27 | 4.920~6.075 GHz 0.5 W Outdoor 4x4 MIMO HT-OFDM Mobile Mesh radio, 14 software selectable channel BW. |
| LRHNV3011-27 | 4.920~6.075 GHz 0.5 W Outdoor 4x4 MIMO HT-OFDM Mobile Mesh Vehicle radio, 14 software selectable channel BW |
| LRHN3011-35 | 4.920~6.075 GHz 3 W Outdoor 4x4 MIMO HT-OFDM Mobile Mesh radio, 14 software selectable channel BW |
| LRHN3011S-25 | 4.920~6.075 GHz 0.3 W Integrated 4x4 MIMO HT-OFDM Mobile Mesh radio, 14 software selectable channel BW. |
| LRHNV3011S-25 | 4.920~6.075 GHz 0.3 W Integrated 4x4 MIMO HT-OFDM Mobile Mesh Vehicle radio, 14 software selectable channel BW. |
| LRPW3011S-117 | 4.920~6.075 GHz 0.3 W Integrated 4x4 MIMO HT-OFDM Mobile Mesh PWS ; 14.8V / 17.5AH Li-ion Battry integrated |

V1.0.2 / Oct / 2015
SkyMesh Mobile Series

Wireless Base Station and CPE
For Sky and Land Mesh 4x4 Ethernet link

SkyMesh 4x4 PCB

Xtreme Robustness

802.11 a/n 28dBm 5GHz Military Grade

SkyMesh PRO is a high powered 4 x 28 dBm (600mW) 802.11a/n MIMO 4x4 integrated Lightning & ESD* protected band device with robust surge protection capabilities built-in by default. It employs a patent architecture that integrates the protection for the Radio Frequency (RF) antenna port. Power is also be protected with the SafeSurge PRO. Output power and best in class receive sensitivity and gain are designed wfh long distance outdoor wireless networks in mind (PtP and PtMP). Skymesh PRO card is also FCC and CE approved for the 5GHz band.

Product Highlights

- Proprietary design
  SkyMesh uses proprietary design, With MIMO High Throughput OFDM (HT-OFDM) and Dual Channels Mobile Mesh Network technology, this radio is a high capacity Mobile Mesh node for 5GHz ISM band wireless deployment. Compare to the traditional Single Channel Mesh Network, the Dual Channels Mobile Mesh Network design makes the Mesh Network working better and more efficiency.

- RF Port “Lightning” Protection (Built-in)
  ESD Handling Over 14kV*
  Surge Handling 8/20us (10kA)*
  The mini PCI card should be properly grounded with the supplied cable to achieve this level of protection.

- Proprietary Antennas
  SkyMesh uses special base station antennas design with polarization RHCP & LHCP + Brewster angle and 16 -19 -22 dB gain, panel antenna choice for LanRake design. For Hybrid use with SkyMesh, Drones Mobile CPE for Sky and Land use Omnidirectional Diversity antenna 10 dB gain with V and H polarization and 3 dB gain dual polarization RHCP and LHCP.

FEATURES

Transmitter Characteristics (Tx)
Data Rate: MCS0, MCS3, MCS7, MCS15
802.11 a/n: 28 dBm, 25 dBm, 20 dBm, 20 dB

Receiver Characteristics (Rx)
Data Rate : MCS0, MCS3, MCS7, MCS15
802.11 a/n : -96 dBm, -91 dBm, -77 dBm, -77 dBm

Specification
RF connector : 4 MMCX Plug
Dimensions - Weight : 6 cm X 5.4 cm x 0.73 cm
Operating Frequencies : 4.9-6GHz a/n
Operational Temperature : -40C to +70C
Power Consumption : 20 Watts (Peak)
Power supply : 10/18 VDC
Humidity : 0% to 95% (non-condensing)
MAC Chipset Atheros : AR9220
OS Compatibility : MobiRake
Included Accessories : 15cm ground wire, 2 screw (3mm length), power cable 20cm.
Bandwidth control : 2.5/3/3.5/4/5/6/7/8/10/15/20/30/40/52 MHz
Power offset : 5 dBm
Warranty : Limited Lifetime Warranty

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