



## Package Solution

# MIMOfunior MMJ543

WIRELESS 54/108/300Mbps OUTDOOR Access Point  
Built in 13dBi 5GHz DUAL POLARIZATION ANTENNA  
or 8dBi 2.4GHz DUAL POLARIZATION ANTENNA



## Features

- MIPS 24K-family 300MHz network processor
- Atheros xSPAN technology
- Support CompeX WLM200 series Mini-PCI Radio
- IEEE 802.11n/a/b/g
- Built in dual-polarization antenna, Either 8dBi 2.4GHz or 13dBi 5GHz
- Supported Power-over-Ethernet(PoE passive)
- Supported 64/128-bit WEP, TKIP, AES, IEEE802.1x authentication
- Embedded NOR flash, and support NAND flash memory expansion
- Antenna Alignment
- Built in Ground Terminal Point
- Weatherproof casing

## TECHNICAL SPECIFICATIONS

SYSTEM INFORMATION	
Processing Specifications	Atheros AR7130/300MHz
Memory Size	32MB DDR SDRAM
NOR Flash	4MB ( up to 16MB max)
NAND Flash	Optional ( From 32MB to 128 MB max)
WAN Interface	-
LAN Interface	1 x 10/100 BASE-T Ethernet Port
Antenna	Integrated directional dual-polarization antenna, Either 8dBi 2.4GHz or 13dBi 5GHz
Max power consumption	4 Watts(bare board only)
Power method	Passive Power over Ethernet
Certification	FCC, CE certified
ROHS Compliant	Yes
Weight	420grams
Operating Temperature	-20°C to 70°C
Dimension	223 x 123 x 60 (mm)

WLM200N2 MIMO MINIPCI CARD OPERATING FREQUENCY 2.4GHz							
TX SPECIFICATIONS				TX SPECIFICATIONS			
	DataRate	TX Power	Tolerance		DataRate	TX Power	Tolerance
802.11b	11Mbps	20dBm	±2dB	802.11g	6-24Mbps	20dBm	±2dB
	5.5Mbps	20dBm	±2dB		36Mbps	19.5dBm	±2dB
	2Mbps	20dBm	±2dB		48Mbps	18.5dBm	±2dB
	1Mbps	20dBm	±2dB		54Mbps	17dBm	±2dB
RX SPECIFICATIONS				RX SPECIFICATIONS			
	DataRate	Sensitivity (Maximum/Typical 2Rx)	Tolerance		DataRate	Sensitivity (Maximum/Typical 2Rx)	Tolerance
802.11g	6 Mbps	-96/-92dBm	±2dB	802.11b	1 Mbps	-96/-92dBm	±2dB
	9 Mbps	-96/-92dBm	±2dB		5.5Mbps	-94/-90dBm	±2dB
	12 Mbps	-96/-92dBm	±2dB		11 Mbps	-91/-87dBm	±2dB
	18 Mbps	-95/-91dBm	±2dB				
	24Mbps	-92/-88dBm	±2dB				
	36Mbps	-89/-85dBm	±2dB				
	48Mbps	-85/-81dBm	±2dB				
	54Mbps	-83/-79dBm	±2dB				

WLM 200NX MIMO MINIPCI CARD OPERATING FREQUENCY 5GHz								
TX SPECIFICATIONS								
	DataRate		TX Power		Tolerance			
802.11a	6-24Mbps		18dBm		±2dB			
	36Mbps		18dBm		±2dB			
	48Mbps		17dBm		±2dB			
	54Mbps		16dBm		±2dB			
11n HT20 5 GHz	MCS 0	18dBm	±2dB		11n HT40 5 GHz	MCS 0	16.5dBm	±2dB
	MCS 1	18dBm	±2dB			MCS 1	16.5dBm	±2dB
	MCS 2	17.5dBm	±2dB			MCS 2	16.5dBm	±2dB
	MCS 3	17.5dBm	±2dB			MCS 3	16.5dBm	±2dB
	MCS 4	16.5dBm	±2dB			MCS 4	16.5dBm	±2dB
	MCS 5	16dBm	±2dB			MCS 5	14.5dBm	±2dB
	MCS 6	15dBm	±2dB			MCS 6	14dBm	±2dB
	MCS 7	12dBm	±2dB			MCS 7	9dBm	±2dB
	MCS 8	18dBm	±2dB			MCS 8	16.5dBm	±2dB
	MCS 9	18dBm	±2dB			MCS 9	16.5dBm	±2dB
	MCS 10	17.5dBm	±2dB			MCS 10	16.5dBm	±2dB
	MCS 11	17.5dBm	±2dB			MCS 11	16.5dBm	±2dB
	MCS 12	16.5dBm	±2dB			MCS 12	16.5dBm	±2dB
	MCS 13	16dBm	±2dB			MCS 13	14.5dBm	±2dB
	MCS 14	15dBm	±2dB			MCS 14	14dBm	±2dB
	MCS 15	12dBm	±2dB			MCS 15	9dBm	±2dB

WLM 200NX MIMO MINIPCI CARD OPERATING FREQUENCY 5GHz									
RX SPECIFICATIONS									
	Data Rate		Sensitivity <small>(Maximum/Typical 2Rx)</small>		Tolerance				
802.11a	6M		-95/-91dBm		±2dB				
	9M		-95/-91dBm		±2dB				
	12M		-95/-91dBm		±2dB				
	18M		-94/-90dBm		±2dB				
	24M		-90/-86dBm		±2dB				
	36M		-87/-83dBm		±2dB				
	48M		-83/-79dBm		±2dB				
	54M		-82/-78dBm		±2dB				
RX SPECIFICATIONS(802.11n)				RX SPECIFICATIONS (802.11n)					
	Data Rate	Sensitivity <small>(Maximum/Typical 2Rx)</small>		Tolerance		Data Rate	Sensitivity <small>(Maximum/Typical 2Rx)</small>		Tolerance
11n HT20 5GHz	MCS0	-95/-91dBm		±2dB	11n HT40 5GHz	MCS0	-91/-87dBm		±2dB
	MCS1	-94/-90dBm		±2dB		MCS1	-90/-86dBm		±2dB
	MCS2	-92/-88dBm		±2dB		MCS2	-88/-84dBm		±2dB
	MCS3	-88/-84dBm		±2dB		MCS3	-85/-81dBm		±2dB
	MCS4	-85/-81dBm		±2dB		MCS4	-82/-78dBm		±2dB
	MCS5	-81/-77dBm		±2dB		MCS5	-78/-74dBm		±2dB
	MCS6	-80/-76dBm		±2dB		MCS6	-77/-73dBm		±2dB
	MCS7	-77/-73dBm		±2dB		MCS7	-74/-70dBm		±2dB
	MCS8	-94/-90dBm		±2dB		MCS8	-91/-87dBm		±2dB
	MCS9	-92/-87dBm		±2dB		MCS9	-88/-84dBm		±2dB
	MCS10	-89/-85dBm		±2dB		MCS10	-86/-82dBm		±2dB
	MCS11	-86/-82dBm		±2dB		MCS11	-83/-79dBm		±2dB
	MCS12	-83/-79dBm		±2dB		MCS12	-80/-76dBm		±2dB
	MCS13	-78/-74dBm		±2dB		MCS13	-75/-71dBm		±2dB
	MCS14	-77/-73dBm		±2dB		MCS14	-73/-69dBm		±2dB
MCS15	-74/-69dBm		±2dB	MCS15	-70/-66dBm		±2dB		

## Firmware Information (11n Modules)

### Multiple SSID

- Supports up to 4 virtual access points (VAP) per radio, with unique BSSID. Traffic from each VAP can be tagged with a unique VLAN and channeled down to the Ethernet port. The tagged packets from Ethernet port are then channeled back to the respective VAP with the tag removed. Each VAP will be able to configure their own security (WEP, TKIP, and AES).

### Long Range Support

- Suitable for long-range wireless deployment with Proprietary Long Distance Algorithm for ACK and CTS timeout adjustment support.
- Provides recommended values for the parameters and at the same time allow for manual fine-tuning for optimal performance.

### Antenna Alignment

- Antenna Alignment feature allows the system integrator to align the antenna for best signal strength.

FIRMWARE INFORMATION	
<b>Operating Modes</b>	<ul style="list-style-type: none"><li>• Access Points</li><li>• Client</li><li>• RootAP / Transparent Client</li><li>• Repeater</li><li>• Wireless Adapter</li><li>• Wireless Routing Client</li><li>• Gateway</li></ul>
<b>WAN Type</b>	<ul style="list-style-type: none"><li>• Static IP</li><li>• Dynamic IP</li><li>• PPPoE</li><li>• PPTP</li><li>• L2TP</li></ul>
<b>Device Management</b>	<ul style="list-style-type: none"><li>• HTTP / HTTPs Web Server</li><li>• SNMP V2c</li><li>• Telnet / Secure Shell (SSH)</li></ul>
<b>Data Capture &amp; Notification</b>	<ul style="list-style-type: none"><li>• Event Login (Syslog)</li><li>• Detailed Statistics per Client</li></ul>
<b>Virtual Access Point (VAP)</b>	<ul style="list-style-type: none"><li>• Up to 16 SSIDs with unique MAC Addresses (BSSID)</li><li>• 802.1q VLAN tag per VAP bridging with Ethernet</li><li>• Configurable Security (WEP, TKIP, AES, MAC Filtering) per VAP</li></ul>
<b>Advanced Features</b>	<ul style="list-style-type: none"><li>• Built-in DHCP server</li><li>• Transmission Power Control (One dB per step)</li><li>• Closed System (Suppress SSID)</li><li>• Transmission Rate Control</li><li>• Spanning Tree Protocol</li></ul>

OTHER PROMINENT FEATURES	DESCRIPTION
Long Range Parameter Settings	Suitable for Long Range wireless deployment with high receiver sensitivity.
CPE Point-to-Point (PtP)	Ideal as CPE device connecting PtP with a central AP
Power with Passive PoE	Device power from PoE through ethernet cable provide flexible installation.
IEEE 802.11h (DFS & TPC)	Enables worldwide operation through support for standards-based Dynamic Frequency Selection (DFS) and Transmission Power Control (TPC)
SNMP Trap	SNMP Traps enable an agent to notify the management station of significant events by way of an unsolicited event.
Antenna Alignment	Allows user to adjust their external antenna to receive the optimum throughput.
DHCP Relay (Only in Gateway or Wireless Routing Client Mode)	Allows DHCP Clients on different subnets to get IP address from central DHCP server.
Remote Upgrade of Firmware	Allows user to upgrade their firmware through Telnet/SSH
Parallel Bandwidth I(Only in Routing Mode)	Provide scalable Internet bandwidth with Load Balancing and Fail-Over Redundancy.
RIP 1 / 2 (Only in Gateway or Wireless Routing Client Mode)	Routing Information Protocol Version 1 / 2

## Customizable Features<sup>②</sup>

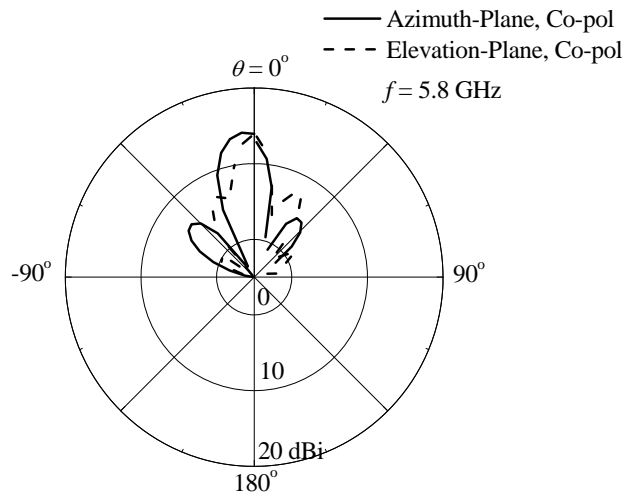
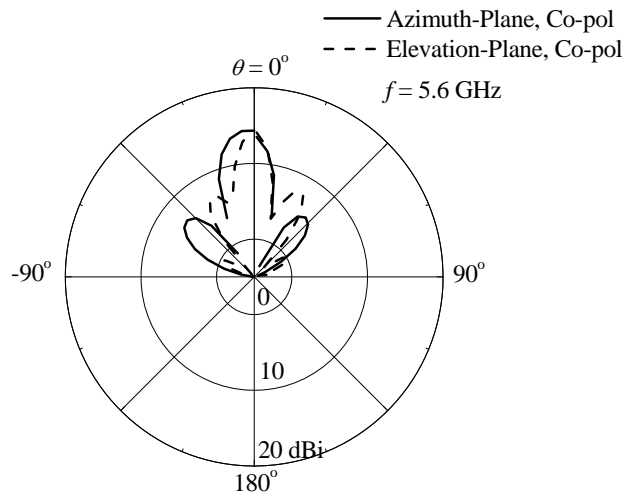
CUSTOMIZABLE FEATURES	DESCRIPTION
Web Page Customization	Customize webpage for OEM customers.

## Specification for 8dBi 2.4GHz Antenna

Antenna Specifications	
Gain	8dBi
Radiation	Directional
Frequency Range	2.4-2.5 GHz
Polarization	Dual – Polarization
Horizontal -3dB Beamwidth	60°
Vertical -3dB Beamwidth	60°
Front-to-Back Ratio	>25 dB
Return Loss & Isolation	<p style="text-align: center;"> <span style="display: inline-block; width: 10px; height: 10px; background-color: black; margin-right: 5px;"></span> Return Loss, <math> S_{11} </math>  <span style="display: inline-block; width: 10px; height: 10px; background-color: black; border-radius: 50%; margin-right: 5px;"></span> Return Loss, <math> S_{22} </math>  <span style="display: inline-block; width: 10px; height: 10px; background-color: black; border-left: 1px solid black; border-right: 1px solid black; margin-right: 5px;"></span> Isolation, <math> S_{21} </math>  <span style="display: inline-block; width: 10px; height: 10px; background-color: black; border-top: 1px solid black; border-bottom: 1px solid black; margin-right: 5px;"></span> Isolation, <math> S_{12} </math> </p>
Radiation Patterns	<p style="text-align: center;"> <span style="display: inline-block; width: 20px; border-bottom: 1px solid black; margin-right: 5px;"></span> Azimuth-Plane, Co-pol  <span style="display: inline-block; width: 20px; border-bottom: 1px dashed black; margin-right: 5px;"></span> Elevation-Plane, Co-pol  <i>f</i> = 2.45 GHz         </p>

### Specification for 13dBi 5GHz Antenna

Antenna Specifications	
Gain	13dBi
Radiation	Directional
Frequency Range	5.45-5.85 GHz
Polarization	Dual – Polarization
Horizontal -3dB Beamwidth	30°
Vertical -3dB Beamwidth	20°
Front-to-Back Ratio	>25 dB
Return Loss & Isolation	<p style="text-align: center;"> <span style="display: inline-block; width: 15px; height: 10px; background-color: black; border: 1px solid black; margin-right: 5px;"></span> Return Loss, <math> S_{11} </math>  <span style="display: inline-block; width: 15px; height: 10px; background-color: black; border: 1px solid black; border-radius: 50%; margin-right: 5px;"></span> Return Loss, <math> S_{22} </math>  <span style="display: inline-block; width: 15px; height: 10px; background-color: black; border: 1px solid black; transform: rotate(45deg); margin-right: 5px;"></span> Isolation, <math> S_{21} </math>  <span style="display: inline-block; width: 15px; height: 10px; background-color: black; border: 1px solid black; transform: rotate(-45deg); margin-right: 5px;"></span> Isolation, <math> S_{12} </math> </p>
Radiation Patterns	<p style="text-align: center;"> <span style="display: inline-block; width: 20px; border-bottom: 1px solid black; margin-right: 5px;"></span> Azimuth-Plane, Co-pol  <span style="display: inline-block; width: 20px; border-bottom: 1px dashed black; margin-right: 5px;"></span> Elevation-Plane, Co-pol  <i>f</i> = 5.4 GHz         </p>



### Product Information <sup>③</sup>

MODE NAME	SUPPORTED PoE TYPE	POWER REQUIREMENT	RADIO CARD	ANTENNA(DIRECTIONAL)
MMJ543 N2-20	Passive PoE / Compex PoE+	24VDC (input range 10V to 24V DC)	WLM200N2	8dBi 2.4GHz
MMJ543 N2-26	Passive PoE / Compex PoE+	24VDC (input range 10V to 24V DC)	WLM200N2-26	8dBi 2.4GHz
MMJ543 NX-18	Passive PoE / Compex PoE+	24VDC (input range 10V to 24V DC)	WLM200NX	13dBi 5GHz
MMJ543 N5-24	Passive PoE / Compex PoE+	24VDC (input range 10V to 24V DC)	WLM200N5-24	13dBi 5GHz

### Ordering Configurations

CODES	INTEGRATED ANTENNA	RADIO CARD	RADIO OUTPUT POWER	CARTON DIMENSIONS
MMJ543 N2-20	2.4GHz	WLM200N2	20dBm	For 10pcs (pcs/ctn), 0.78m*0.38m*0.25m/0.006=12.35KG
MMJ543 N2-26	2.4GHz	WLM200N2	26dBm	
MMJ543 NX-18	5GHz	WLM200N5	18dBm	
MMJ543 N5-24	5GHz	WLM200N5	24dBm	

- ① Depends on Order Configuration
- ② Features are not available on the Firmware. Please contact salesperson for customization and subjected to approve.
- ③ Configurations are subjected to change without notice

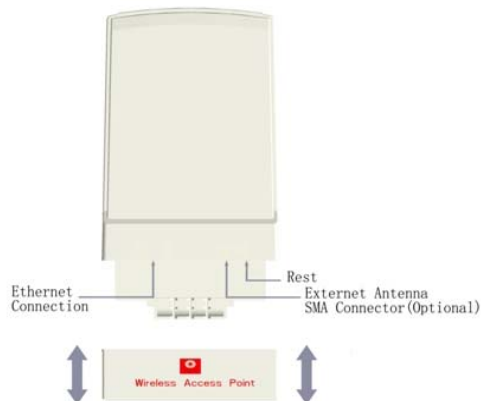
## Mounting Options

### Mounting Options

#### 1. Pole Mount (Standard)



#### 2. Wall Mount (Optional)



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