

## Package Solution

# MIMOJunior MMJ543

WIRELESS 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
- \*2 RP-SMA Male Connector for External Antenna(Optional) <sup>①</sup>
- Supported Power-over-Ethernet(PoE passive)
- Supported IEEE802.11i , IEEE802.1x authentication
- Embedded NOR flash
- With Grounding Terminal
- Weatherproof casing

## TECHNICAL SPECIFICATIONS

SYSTEM INFORMATION	
<b>Processing Specifications</b>	Atheros AR7130/300MHz
<b>Memory Size</b>	32MB DDR SDRAM
<b>NOR Flash</b>	4MB ( up to 16MB max)
<b>LAN Interface</b>	1 x 10/100 BASE-T Ethernet Port
<b>Antenna</b>	Integrated directional dual-polarization antenna, Either 8dBi 2.4GHz or 13dBi 5GHz
<b>Max power consumption</b>	4 Watts(bare board only)
<b>Power method</b>	Passive Power over Ethernet
<b>External Antenna Connection</b>	2 x RP-SMA male socket(Optional) <sup>①</sup>
<b>Certification</b>	FCC, CE certified
<b>ROHS Compliant</b>	Yes
<b>Weight</b>	420grams
<b>Humidity</b>	5% to 95% (non-condensing)
<b>Temperature Range</b>	Operating: -20°C to 70°C Storage: -40°C to 90°C
<b>Dimension</b>	223 x 123 x 60 (mm)

WLM200N5-26dBm MIMO MINIPCI CARD RADIO							
TX SPECIFICATIONS							
	DataRate		TX Power		Tolerance		
<b>802.11a</b>	6-24Mbps		26dBm		±2dB		
	36Mbps		25dBm		±2dB		
	48Mbps		24dBm		±2dB		
	54Mbps		22dBm		±2dB		
	DataRate	TX Power	Tolerance		DataRate	TX Power	Tolerance
<b>5Ghz 11n HT 20</b>	MCS 0	24dBm	±2dB	<b>5Ghz 11n HT 40</b>	MCS 0	24dBm	±2dB
	MCS 1	24dBm	±2dB		MCS 1	24dBm	±2dB
	MCS 2	24dBm	±2dB		MCS 2	24dBm	±2dB
	MCS 3	24dBm	±2dB		MCS 3	24dBm	±2dB
	MCS 4	22dBm	±2dB		MCS 4	22dBm	±2dB
	MCS 5	20.5dBm	±2dB		MCS 5	20.5dBm	±2dB
	MCS 6	20.5dBm	±2dB		MCS 6	20.5dBm	±2dB
	MCS 7	17.5dBm	±2dB		MCS 7	17.5dBm	±2dB
	MCS 8	24dBm	±2dB		MCS 8	24dBm	±2dB
	MCS 9	24dBm	±2dB		MCS 9	24dBm	±2dB
	MCS 10	24dBm	±2dB		MCS 10	24dBm	±2dB
	MCS 11	24dBm	±2dB		MCS 11	24dBm	±2dB
	MCS 12	22dBm	±2dB		MCS 12	22dBm	±2dB
	MCS 13	20.5dBm	±2dB		MCS 13	20.5dBm	±2dB
	MCS 14	20.5dBm	±2dB		MCS 14	20.5dBm	±2dB
MCS 15	17.5dBm	±2dB	MCS 15	17.5dBm	±2dB		
RX SPECIFICATIONS							
	Data Rate	Sensitivity (Maximum/Typical 2Rx)	Tolerance		Data Rate	Sensitivity (Maximum/Typical 2Rx)	Tolerance
<b>802.11a</b>	6M	-95/-91dBm	±2dB	<b>802.11a</b>	24M	-90/-86dBm	±2dB
	9M	-95/-91dBm	±2dB		36M	-87/-83dBm	±2dB
	12M	-95/-91dBm	±2dB		48M	-83/-79dBm	±2dB
	18M	-94/-90dBm	±2dB		54M	-82/-78dBm	±2dB
<b>5Ghz 11n HT 20</b>	MCS0	-95/-91dBm	±2dB	<b>5Ghz 11n HT 40</b>	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		

**WLM200N2-26 MIMO MINIPCI CARD RADIO**

**TX SPECIFICATIONS**

	DataRate	TX Power	Tolerance		DataRate	TX Power	Tolerance
<b>802.11b</b>	11Mbps	26dBm	±2dB	<b>802.11g</b>	6-24Mbps	26dBm	±2dB
	5.5Mbps	26dBm	±2dB		36Mbps	26dBm	±2dB
	2Mbps	26dBm	±2dB		48Mbps	22dBm	±2dB
	1Mbps	26dBm	±2dB		54Mbps	21dBm	±2dB
<b>2.4Ghz 11n HT20</b>	MCS 0	23dBm	±2dB	<b>2.4Ghz 11n HT40</b>	MCS 0	22dBm	±2dB
	MCS 1	23dBm	±2dB		MCS 1	22dBm	±2dB
	MCS 2	23dBm	±2dB		MCS 2	22dBm	±2dB
	MCS 3	23dBm	±2dB		MCS 3	22dBm	±2dB
	MCS 4	23dBm	±2dB		MCS 4	22dBm	±2dB
	MCS 5	22dBm	±2dB		MCS 5	22dBm	±2dB
	MCS 6	21dBm	±2dB		MCS 6	21dBm	±2dB
	MCS 7	20dBm	±2dB		MCS 7	20dBm	±2dB
	MCS 8	23dBm	±2dB		MCS 8	22dBm	±2dB
	MCS 9	23dBm	±2dB		MCS 9	22dBm	±2dB
	MCS 10	23dBm	±2dB		MCS 10	22dBm	±2dB
	MCS 11	23dBm	±2dB		MCS 11	22dBm	±2dB
	MCS 12	23dBm	±2dB		MCS 12	22dBm	±2dB
	MCS 13	22dBm	±2dB		MCS 13	22dBm	±2dB
	MCS 14	21dBm	±2dB		MCS 14	21dBm	±2dB
MCS 15	20dBm	±2dB	MCS 15	20dBm	±2dB		

**RX SPECIFICATIONS**

	DataRate	Sensitivity (Maximum/Typical 2Rx)	Tolerance		DataRate	Sensitivity (Maximum/Typical 2Rx)	Tolerance
<b>802.11g</b>	6 Mbps	-96/-92dBm	±2dB	<b>802.11b</b>	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				
	38Mbps	-89/-85dBm	±2dB				
	48Mbps	-85/-81dBm	±2dB				
54Mbps	-83/-79dBm	±2dB					
<b>2.4Ghz 11n HT20</b>	MCS0	-96/-92dBm	±2dB	<b>2.4Ghz 11n HT40</b>	MCS0	-90/-86dBm	±2dB
	MCS1	-95/-91dBm	±2dB		MCS1	-90/-86dBm	±2dB
	MCS2	-93/-89dBm	±2dB		MCS2	-89/-85dBm	±2dB
	MCS3	-90/-86dBm	±2dB		MCS3	-87/-82dBm	±2dB
	MCS4	-87/-81dBm	±2dB		MCS4	-84/-79dBm	±2dB
	MCS5	-83/-76dBm	±2dB		MCS5	-79/-75dBm	±2dB
	MCS6	-81/-76dBm	±2dB		MCS6	-78/-74dBm	±2dB
	MCS7	-79/-73dBm	±2dB		MCS7	-75/-71dBm	±2dB
	MCS8	-95/-91dBm	±2dB		MCS8	-90/-86dBm	±2dB
	MCS9	-93/-89dBm	±2dB		MCS9	-89/-85dBm	±2dB
	MCS10	-90/-86dBm	±2dB		MCS10	-87/-83dBm	±2dB
	MCS11	-87/-83dBm	±2dB		MCS11	-84/-80dBm	±2dB
	MCS12	-84/-80dBm	±2dB		MCS12	-81/-77dBm	±2dB
	MCS13	-79/-75dBm	±2dB		MCS13	-76/-72dBm	±2dB
	MCS14	-77/-73dBm	±2dB		MCS14	-74/-68dBm	±2dB
MCS15	-75/-71dBm	±2dB	MCS15	-71/-67dBm	±2dB		

## Firmware Information

### Multiple SSID

- Supports up to 4 virtual access points (VAP) per radio, with unique BSSID. Each VAP can configure their own security

### 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.

### Signal Strength Indicators

- Adjustable signal strength range to display at 4 different levels.

FIRMWARE INFORMATION	
<b>Operating Modes</b>	<ul style="list-style-type: none"> <li>• Access Points</li> <li>• Station</li> <li>• Station WDS</li> <li>• Repeater WDS</li> <li>• Wireless Adapter</li> <li>• Station + Router</li> <li>• Access Point + Router</li> </ul>
<b>WAN Type</b>	<ul style="list-style-type: none"> <li>• Static IP</li> <li>• Dynamic IP</li> <li>• PPPoE</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 4 SSIDs with unique MAC Addresses (BSSID)</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
<b>Long Range Parameter Settings</b>	Suitable for Long Range wireless deployment with high receiver sensitivity.
<b>CPE Point-to-Point (PtP)</b>	Ideal as CPE device connecting PtP with a central AP
<b>Power with Passive PoE</b>	Device power from PoE through ethernet cable provide flexible installation.
<b>IEEE 802.11h (DFS &amp; TPC)</b>	Enables worldwide operation through support for standards-based Dynamic Frequency Selection (DFS) and Transmission Power Control (TPC)
<b>SNMP Trap</b>	SNMP Traps enable an agent to notify the management station of significant events by way of an unsolicited event.
<b>Signal Strength LEDs Indicators</b>	Adjustable signal strength range to display at 4 different levels
<b>DHCP Relay (Only in Gateway or Wireless Routing Client Mode)</b>	Allows DHCP Clients on different subnets to get IP address from central DHCP server.
<b>Remote Upgrade of Firmware</b>	Allows user to upgrade their firmware through Telnet/SSH
<b>RIP 1 / 2 (Only in Gateway or Wireless Routing Client Mode)</b>	Routing Information Protocol Version 1 / 2

## Customizable Features<sup>②</sup>

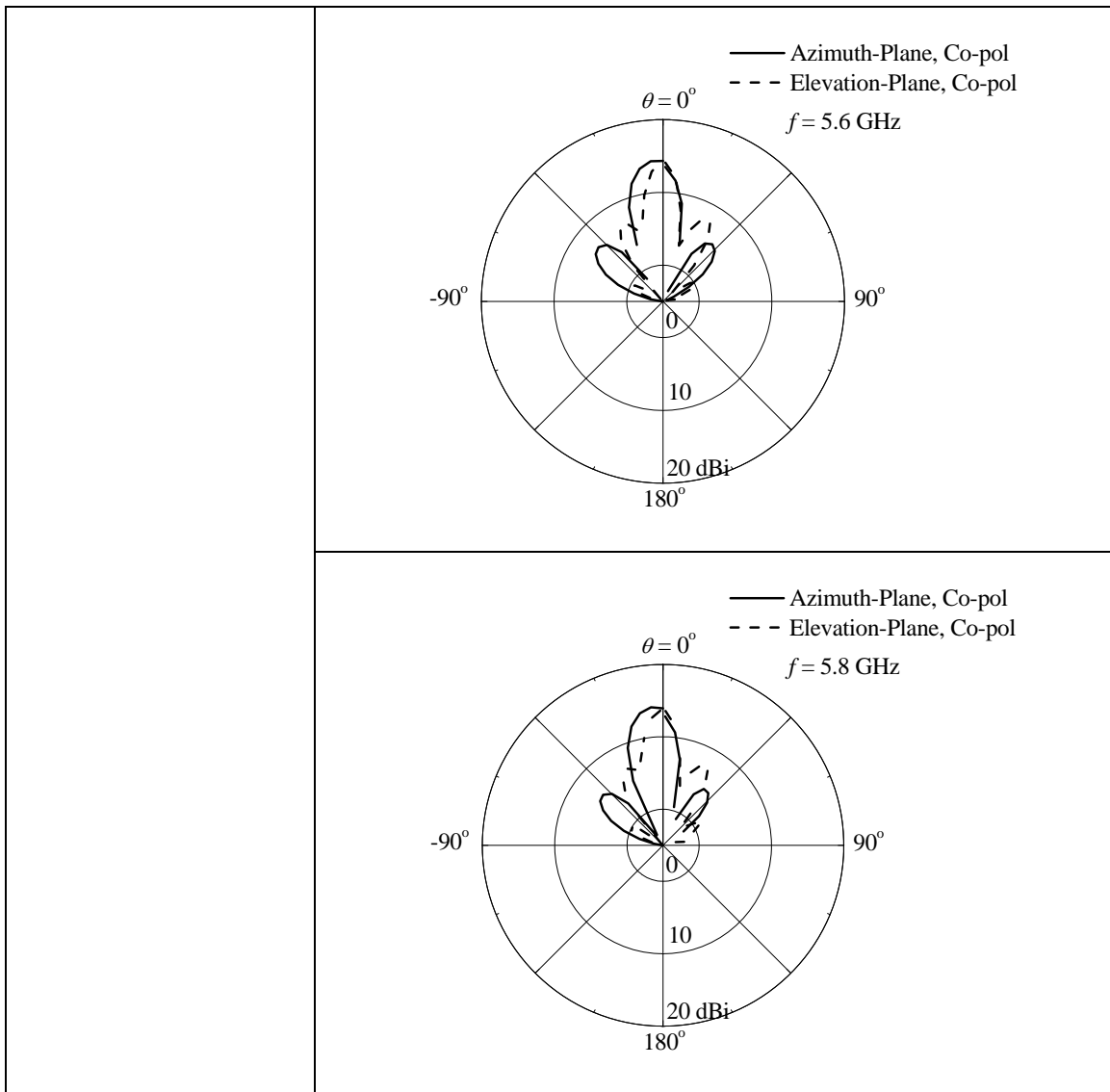
CUSTOMIZABLE FEATURES	DESCRIPTION
<b>Web Page Customization</b>	Customize webpage for OEM customers.

## Specification for 8dBi 2.4GHz Antenna

Antenna Specifications	
<b>Gain</b>	<b>8dBi</b>
<b>Radiation</b>	<b>Directional</b>
<b>Frequency Range</b>	<b>2.4-2.5 GHz</b>
<b>Polarization</b>	<b>Dual – Polarization</b>
<b>Horizontal -3dB Beamwidth</b>	<b>60 degrees</b>
<b>Vertical -3dB Beamwidth</b>	<b>60 degrees</b>
<b>Front-to-Back Ratio</b>	<b>&gt;25 dB</b>
<b>VSWR</b>	$\geq 1.12:1$
<b>Return Loss</b>	$\geq 17\text{dB}$
<b>Port to Port Isolation</b>	$\geq 10\text{dB}$
<b>Return Loss &amp; Isolation Plot</b>	<p><b>2.2Ghz to 2.8Ghz Range Plot</b></p> <p>The graph plots S Parameters in dB against Frequency in GHz. The y-axis ranges from 0 to -40 dB, and the x-axis ranges from 2.2 to 2.8 GHz. Four data series are shown: Return Loss <math> S_{11} </math> (squares), Return Loss <math> S_{22} </math> (circles), Isolation <math> S_{21} </math> (triangles), and Isolation <math> S_{12} </math> (diamonds). All series show a resonance dip around 2.45 GHz. Three points are marked with red circles and numbers 1, 2, and 3.</p>
<b>Radiation Patterns</b>	<p>The radiation pattern is shown as a polar plot at <math>f = 2.45\text{ GHz}</math>. The plot shows the Azimuth-Plane, Co-pol (solid line) and Elevation-Plane, Co-pol (dashed line). The main lobe is centered at <math>\theta = 0^\circ</math> with a peak gain of 10 dBi. The plot is marked with <math>-90^\circ</math>, <math>90^\circ</math>, and <math>180^\circ</math>.</p>

## Specification for 13dBi 5GHz Antenna

Antenna Specifications	
<b>Gain</b>	<b>13dBi</b>
<b>Radiation</b>	<b>Directional</b>
<b>Frequency Range</b>	<b>5.45-5.85 GHz</b>
<b>Polarization</b>	<b>Dual – Polarization</b>
<b>Horizontal -3dB Beamwidth</b>	<b>30 degrees</b>
<b>Vertical -3dB Beamwidth</b>	<b>20 degrees</b>
<b>Front-to-Back Ratio</b>	<b>&gt;25 dB</b>
<b>VWSR</b>	$\geq 1.15:1$
<b>Return Loss</b>	$\geq 14\text{dB}$
<b>Point to Point Isolation</b>	$\geq 12\text{dB}$
<b>Return Loss &amp; Isolation Plot</b>	<p><b>5Ghz to 6Ghz Range Plot</b></p> <p>Legend:</p> <ul style="list-style-type: none"> <li>■ Return Loss, <math> S_{11} </math></li> <li>● Return Loss, <math> S_{22} </math></li> <li>▲ Isolation, <math> S_{21} </math></li> <li>◆ Isolation, <math> S_{12} </math></li> </ul>
<b>Radiation Patterns</b>	<p>— Azimuth-Plane, Co-pol            - - - Elevation-Plane, Co-pol  <math>f = 5.4 \text{ GHz}</math></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 12V to 24V DC)	WLM200N2	8dBi 2.4GHz
MMJ543 N2-26	Passive PoE / Compex PoE+	24VDC (input range 12V to 24V DC)	WLM200N2-26	8dBi 2.4GHz
MMJ543 NX-18	Passive PoE / Compex PoE+	24VDC (input range 12V to 24V DC)	WLM200NX	13dBi 5GHz
MMJ543 N5-26	Passive PoE / Compex PoE+	24VDC (input range 12V to 24V DC)	WLM200N5-26	13dBi 5GHz

### Ordering Configurations

CODES	Power Supply Version	External Connector	CARTON DIMENSIONS
MMJ543LVx 7A13EUxx	EU version	-	For 10pcs (pcs/ctn), 0.78m*0.38m*0.25m/0.006=12.35KG
MMJ543LVx 7A11USxx	US version	-	
MMJ543LVx 7A13EUxx-C	EU version	1	
MMJ543LVx 7A11USxx-C	US version	1	
MMJ543LVx 7A13EUxx-2C	EU version	2	
MMJ543LVx 7A11USxx-2C	US version	2	

- 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

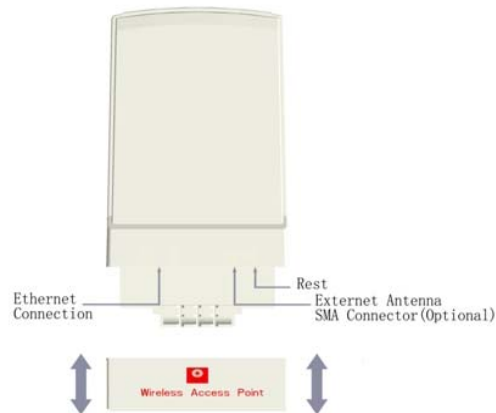
# Mounting Options

## Mounting Options

### 1. Pole Mount (Standard)



### 2. Wall Mount (Optional)



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