

# MR52

Dual-band 802.11ac Wave 2 access point with separate radios dedicated to security, RF management, and Bluetooth



## High performance 802.11ac Wave 2 wireless

The Cisco Meraki MR52 is a cloud-managed 4x4:4 802.11ac Wave 2 access point with 160 MHz channels and MU-MIMO support. Designed for next-generation deployments in offices, schools, hospitals, shops, and hotels, the MR52 offers high performance, enterprise-grade security, and simple management.

The MR52 provides a maximum of 2.5 Gbps\* aggregate frame rate with concurrent 2.4 GHz and 5 GHz radios. A dedicated third radio provides real-time WIDS/WIPS with automated RF optimization, and a fourth integrated radio delivers Bluetooth Low Energy (BLE) scanning and Beacons.

With the combination of cloud management, high performance hardware, multiple radios, and advanced software features, the MR52 makes an outstanding platform for the most demanding of uses - including high-density deployments and bandwidth or performance-intensive applications like voice and high-definition video.

## MR52 and Meraki cloud management: A powerful combo

Management of the MR52 is through the Meraki cloud, with an intuitive browser-based interface that enables rapid deployment without time-consuming training or costly certifications. Since the MR52 is self-configuring and managed over the web, it can be deployed at a remote location in a matter of minutes, even without on-site IT staff.

24x7 monitoring via the Meraki cloud delivers real-time alerts if the network encounters problems. Remote diagnostic tools enable immediate troubleshooting over the web so that distributed networks can be managed with a minimum of hassle.

The MR52's firmware is automatically kept up to date via the cloud. New features, bug fixes, and enhancements are delivered seamlessly over the web. This means no manual software updates to download or missing security patches to worry about.

### Product Highlights

- 4x4 160 MHz MU-MIMO 802.11ac Wave 2
- 2.5 Gbps dual-radio aggregate frame rate
- 24x7 real-time WIDS/WIPS and spectrum analytics via dedicated third radio
- Integrated Bluetooth Low Energy Beacon and scanning radio
- Enhanced transmit power and receive sensitivity
- Full-time WiFi location tracking via dedicated 3rd radio
- Integrated enterprise security and guest access
- Application-aware traffic shaping
- Optimized for voice and video
- Self-configuring, plug-and-play deployment
- Sleek, low-profile design blends into office environments

# Features

## Dual-radio aggregate frame rate of up to 2.5 Gbps\*

A 5 GHz 4x4:4 radio supporting 160 MHz channel widths and a 2.4 GHz 4x4:4 radio supporting 40 MHz channel widths offer a combined dual-radio aggregate frame rate of 2.5 Gbps\*, with up to 1,733 Mbps in the 5 GHz band thanks to 802.11ac Wave 2 and 800 Mbps in the 2.4 GHz band. Technologies like transmit beamforming and enhanced receive sensitivity allow the MR52 to support a higher client density than typical enterprise-class access points, resulting in fewer APs for a given deployment.

## Multi User Multiple Input Multiple Output (MU-MIMO)

With support for the 802.11ac Wave 2 standard, the MR52 offers MU-MIMO for more efficient transmission to multiple clients. Especially suited for environments with numerous mobile devices, MU-MIMO enables multiple clients to receive data simultaneously. This increases the total network performance and improves the end user experience.

## Link Aggregation

The two Ethernet uplinks on the MR52 can be configured for link aggregation, which relieves any existing uplink bottlenecks created by 802.11ac Wave 2.

## Bluetooth Low Energy Beacon and scanning radio

An integrated fourth radio for Bluetooth Low Energy (BLE) provides seamless deployment of BLE Beacon functionality and effortless visibility of BLE devices. The MR52 enables the next generation of location-aware applications while futureproofing your deployment, ensuring it's ready for any new customer engagement strategies.

## Automatic cloud-based RF optimization

The MR52's sophisticated and automated RF optimization means that there is no need for the dedicated hardware and RF expertise typically required to tune a wireless network. The RF data collected by the dedicated third radio is continuously fed back to the Meraki cloud. This data is then used to automatically tune the channel selection, transmit power, and client connection settings for optimal performance under even the most challenging RF conditions.

## Integrated enterprise security and guest access

The MR52 features integrated, easy-to-use security technologies to provide secure connectivity for employees and guests alike. Advanced security features such as AES hardware-based encryption and WPA2-Enterprise authentication with 802.1X and Active Directory integration provide wire-like security while still being easy to configure. One-click guest isolation provides secure, Internet-only access for visitors. PCI compliance reports check network settings against PCI requirements to simplify secure retail deployments.

## Third radio delivers 24x7 wireless security and RF analytics

The MR52's dedicated dual-band scanning and security radio continually assesses the environment, characterizing RF interference and containing wireless threats like rogue access points. There's no need to choose between wireless security, advanced RF analysis, and serving client data - a dedicated third radio means that all functions occur in real-time, without any impact to client traffic or AP throughput.

## Enterprise Mobility Management (EMM) & Mobile Device Management (MDM) integration

Meraki Systems Manager natively integrates with the MR52 to offer automatic, context-aware security. You can use Systems Manager's self-service enrollment to rapidly deploy MDM without installing additional equipment, and then dynamically tie firewall and traffic shaping policies to client posture.

## Application-aware traffic shaping

The MR52 includes an integrated layer 7 packet inspection, classification, and control engine, enabling you to set QoS policies based on traffic type. Prioritize your mission critical applications while setting limits on recreational traffic like peer-to-peer and video streaming. Policies can be implemented per network, per SSID, per usergroup, or per individual user for maximum flexibility and control.

## Voice and video optimizations

Industry standard QoS features are built in and easy to configure. Wireless Multi Media (WMM) access categories, 802.1p, and DSCP standards support all ensure important applications get prioritized correctly, not only on the MR52, but on other devices in your network. Unscheduled Automatic Power Save Delivery (U-APSD) ensures minimal battery drain on wireless VoIP phones.

## Self-configuring, self-maintaining, always up-to-date

When plugged in, the MR52 automatically connects to the Meraki cloud, downloads its configuration, and joins the appropriate network. If new firmware is required, this is retrieved by the AP and updated automatically. This ensures the network is kept up-to-date with bug fixes, security updates, and new features.

## Advanced analytics

Drill down into the details of your network usage with highly granular traffic analytics. Extend your visibility into the physical world with journey tracking through location analytics. View visitor numbers, dwell time, repeat visit rates, and track trends. Fully customize your analysis with raw data available via simple APIs.

\* Refers to maximum over-the-air data frame rate capability of the radio chipset, and may exceed data rates allowed by IEEE 802.11ac-compliant operation.

# Specifications

## Radios

2.4 GHz 802.11b/g/n client access radio

5 GHz 802.11a/n/ac client access radio

2.4 GHz & 5 GHz dual-band WIDS/WIPS, spectrum analysis, & location analytics radio

2.4 GHz Bluetooth Low Energy (BLE) radio with Beacon and BLE scanning support

Concurrent operation of all four radios

Supported frequency bands (country-specific restrictions apply):

2.412-2.484 GHz

5.150-5.250 GHz (UNII-1)

5.250-5.350 GHz (UNII-2)

5.470-5.600, 5.660-5.725 GHz (UNII-2e)

5.725 -5.825 GHz (UNII-3)

## Antenna

Integrated omni-directional antennas (5.5 dBi gain @ 2.4 GHz, 6.2 dBi gain @ 5 GHz)

Individual antenna elements for each radio

## 802.11ac Wave 2 and 802.11n Capabilities

4 x 4 multiple input, multiple output (MIMO) with four spatial streams

SU-MIMO and MU-MIMO support

Maximal ratio combining (MRC) & beamforming

20 and 40 MHz channels (802.11n); 20, 40, 80, and 160 MHz channels (802.11ac)

Up to 256-QAM on both 2.4 GHz & 5 GHz bands

Packet aggregation

Cyclic Shift Diversity (CSD) for improved downlink wireless performance

Space-time block coding (STBC) for increased range and improved reception

Aggregate MAC Protocol Data Unit (A-MPDU) and Aggregate MAC Service Data Unit (A-MSDU) for frame aggregation

## Additional Wireless Features

Dynamic frequency selection (DFS) optimizes the use of available RF spectrum

## Power

Power over Ethernet: 37 - 57 V (802.3at required; functionality-restricted 802.3af mode supported)

Alternative 12 V DC input

Power consumption: 21W max (802.3at)

Power over Ethernet injector and DC adapter sold separately

## Interfaces

2x 10/100/1000 BASE-T Ethernet (RJ45)

1x DC power connector (5.5 mm x 2.5 mm, center positive)

## Mounting

All standard mounting hardware included

Desktop, ceiling, and wall mount capable

Ceiling tile rail (9/16, 15/16 or 1 1/2" flush or recessed rails), assorted cable junction boxes

Bubble level on mounting cradle for accurate horizontal wall mounting

## Physical Security

Two security screw options (included)

Kensington lock hard point

Concealed mount plate with anti-tamper cable bay

## Environment

Operating temperature: 32 °F to 104 °F (0 °C to 40 °C)

Humidity: 5 to 95% non-condensing

## Physical Dimensions

10.56" x 6.38" x 1.58" (268.2 mm x 162.0 mm x 38.8 mm), not including deskmount feet or mount plate

Weight: 28.9 oz (820g)

## Security

Integrated Layer 7 firewall with mobile device policy management

Real-time WIDS/WIPS with alerting and automatic rogue AP containment with Air Marshal

Flexible guest access with device isolation

VLAN tagging (802.1q) and tunneling with IPsec VPN

PCI compliance reporting

WEP, WPA, WPA2-PSK, WPA2-Enterprise with 802.1X

EAP-TLS, EAP-TTLS, EAP-MSCHAPv2, EAP-SIM

TKIP and AES encryption

Enterprise Mobility Management (EMM) & Mobile Device Management (MDM) integration

Cisco ISE integration for Guest access and BYOD Posturing

## Quality of Service

Advanced Power Save (U-APSD)

WMM Access Categories with DSCP and 802.1p support

Layer 7 application traffic identification and shaping

## Mobility

PMK, OKC, & 802.11r for fast Layer 2 roaming

Distributed or centralized layer 3 roaming

## Analytics

Embedded location analytics reporting and device tracking

Global L7 traffic analytics reporting per network, per device, & per application

## Warranty

Lifetime hardware warranty with advanced replacement included

## Ordering Information

MR52-HW: Meraki MR52 Cloud Managed 802.11ac AP

MA-PWR-30W-XX: Meraki AC Adapter for MR Series (XX = US/EU/UK/AU)

MA-INJ-4-XX: Meraki 802.3at Power over Ethernet Injector (XX = US/EU/UK/AU)

Note: Meraki access point license required.

# Compliance & Standards

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## IEEE Standards

802.11b

802.11g

802.11a

802.11n

802.11ac

802.11h

802.11i

802.11e

802.11k

802.11r

802.11u

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## Safety Approvals

UL 60950-1

CAN/CSA-C22.2 No. 60950-1

IEC 60950-1

EN 60950-1

UL 2043 (Plenum Rating)

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## Radio Approvals

FCC Part 15C, 15E

RSS-247 (Canada)

EN 300 328, EN 301 893 (Europe)

AS/NZS 4268 (Australia/NZ)

NOM-121 (Mexico)

NCC LP0002 (Taiwan)

For additional country-specific regulatory information, please contact Meraki sales

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## EMI Approvals (Class B)

FCC Part 15B

ICES-003 (Canada)

EN 301 489-1-17, EN 55032, EN 55024 (Europe)

CISPR 22 (Australia/NZ)

VCCI (Japan)

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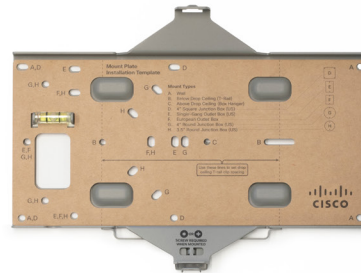
## Exposure Approvals

FCC Part 2

RSS-102 (Canada)

EN 50385, EN 62311, EN 62479 (Europe)

AS/NZS 2772 (Australia/NZ)



## RF Performance Table

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
2.4 GHz	802.11b	1 Mb/s	19 dBm	-98 dBm
		2 Mb/s	19 dBm	-93 dBm
		5.5 Mb/s	19 dBm	-92 dBm
		11 Mb/s	19 dBm	-87 dBm
2.4 GHz	802.11g	6 Mb/s	19 dBm	-92 dBm
		9 Mb/s	19 dBm	-91 dBm
		12 Mb/s	18 dBm	-90 dBm
		18 Mb/s	18 dBm	-88 dBm
		24 Mb/s	18 dBm	-85 dBm
		36 Mb/s	18 dBm	-82 dBm
		48 Mb/s	17 dBm	-76 dBm
		54 Mb/s	17 dBm	-75 dBm
2.4 GHz	802.11n (HT20)	MCS0/8/16	19/22/23/27 dBm	-92/-95/-96/-98 dBm
		MCS1/9/17	18/21/22/24 dBm	-88/-91/-92/-94 dBm
		MCS2/10/18	18/21/22/24 dBm	-86/-89/-90/-92 dBm
		MCS3/11/19	17/20/21/23 dBm	-82/-85/-86/-88 dBm
		MCS4/12/20	17/20/21/23 dbm	-80/-83/-84/-86 dBm
		MCS5/13/21	16/19/20/25 dBm	-75/-78/-79/-81 dBm
		MCS6/14/22	15/18/19/21 dBm	-73/-76/-77/-79 dBm
		MCS7/15/23	15/18/19/21 dBm	-72/-75/-76/-78 dBm

## RF Performance Table

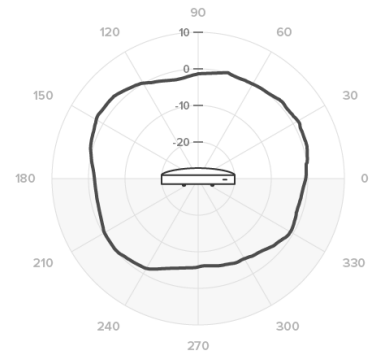
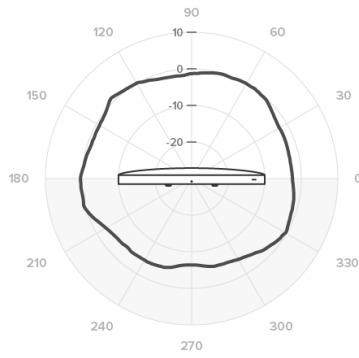
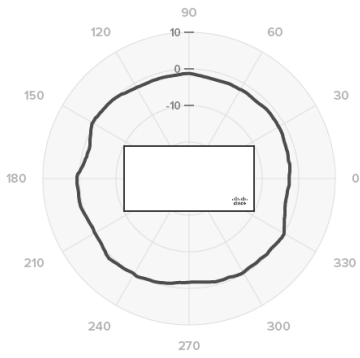
Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
5 GHz	802.11a	6 Mb/s	20 dBm	-91 dBm
		9 Mb/s	20 dBm	-90 dbm
		12 Mb/s	20 dBm	-89 dbm
		18 Mb/s	20 dBm	-87 dBm
		24 Mb/s	19 dBm	-80 dBm
		36 Mb/s	19 dBm	-77 dBm
		48 Mb/s	18 dBm	-75 dBm
		54 Mb/s	18 dBm	-74 dBm
5 GHz	802.11n (HT20)	MCS0/8/16	20/23/24 dBm	-91/-94/-95 dBm
		MCS1/9/17	20/23/24 dBm	-88/-91/-92 dBm
		MCS2/10/18	20/23/24 dBm	-85/-88/-89 dBm
		MCS3/11/19	20/23/24 dBm	-82/-85/-86 dBm
		MCS4/12/20	19/22/23 dBm	-78/-81/-82 dBm
		MCS5/13/21	19/22/23 dBm	-74/-77/-78 dBm
		MCS6/14/22	18/21/22 dBm	-71/-74/-75 dBm
		MCS7/15/23	17/20/21 dBm	-72/-75/-76 dBm
5 GHz	802.11n (HT40)	MCS0/8/16	20/23/24 dBm	-88/-91/-92 dBm
		MCS1/9/17	20/23/24 dBm	-85/-88/-89 dBm
		MCS2/10/18	20/23/24 dBm	-83/-86/-87 dBm
		MCS3/11/19	20/23/24 dBm	-79/-82/-83 dBm
		MCS4/12/20	19/22/23 dBm	-76/-79/-80 dBm
		MCS5/13/21	19/22/23 dBm	-73/-76/-77 dBm
		MCS6/14/22	18/21/22 dBm	-72/-75/-76 dBm
		MCS7/15/23	17/20/21 dBm	-70/-73/-74 dBm

## RF Performance Table

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
5 GHz	802.11ac (VHT20)	MCS0/0/0/0	20/23/24/26 dBm	-91/-94/-95/-97 dBm
		MCS1/1/1/1	20/23/24/26 dBm	-88/-91/-92/-94 dBm
		MCS2/2/2/2	20/23/24/26 dBm	-85/-88/-89/-91 dBm
		MCS3/3/3/3	20/23/24/26 dBm	-82/-85/-86/-88 dBm
		MCS4/4/4/4	19/22/23/25 dBm	-78/-81/-82/-84 dBm
		MCS5/5/5/5	19/22/23/25 dBm	-74/-77/-78/-80 dBm
		MCS6/6/6/6	18/21/22/24 dBm	-71/-74/-75/-77 dBm
		MCS7/7/7/7	17/20/21/23 dBm	-72/-75/-76/-78 dBm
		MCS8/8/8/8	16/19/20/22 dBm	-66/-69/-70/-72 dBm
		MCS9/9/9/9	15/18/19/21 dBm	-62/-65/-66/-68 dBm
5 GHz	802.11ac (VHT40)	MCS0/0/0/0	20/23/24/26 dBm	-88/-91/-92/-94 dBm
		MCS1/1/1/1	20/23/24/26 dBm	-85/-88/-89/-91 dBm
		MCS2/2/2/2	20/23/24/26 dBm	-83/-86/-87/-89 dBm
		MCS3/3/3/3	20/23/24/26 dBm	-79/-82/-83/-85 dBm
		MCS4/4/4/4	19/22/23/25 dBm	-76/-79/-80/-82 dBm
		MCS5/5/5/5	19/22/23/25 dBm	-73/-76/-77/-79 dBm
		MCS6/6/6/6	18/21/22/24 dBm	-72/-75/-76/-78 dBm
		MCS7/7/7/7	17/20/21/23 dBm	-70/-73/-74/-76 dBm
		MCS8/8/8/8	16/19/20/22 dBm	-63/-66/-67/-69 dBm
		MCS9/9/9/9	15/18/19/21 dBm	-60/-63/-64/-66 dBm
5 GHz	802.11ac (VHT80)	MCS0/0/0/0	20/23/24/26 dBm	-85/-88/-89/-91 dBm
		MCS1/1/1/1	20/23/24/26 dBm	-81/-84/-85/-87 dBm
		MCS2/2/2/2	20/23/24/26 dBm	-79/-82/-83/-85 dBm
		MCS3/3/3/3	20/23/24/26 dBm	-76/-79/-80/-82 dBm
		MCS4/4/4/4	19/22/23/25 dBm	-72/-75/-76/-78 dBm
		MCS5/5/5/5	19/22/23/25 dBm	-68/-71/-72/-74 dBm
		MCS6/6/6/6	18/21/22/24 dBm	-66/-69/-70/-72 dBm
		MCS7/7/7/7	17/20/21/23 dBm	-65/-68/-69/-71 dBm
		MCS8/8/8/8	16/19/20/22 dBm	-61/-64/-65/-67 dBm
		MCS9/9/9/9	15/18/19/21 dBm	-59/-62/-63/-65 dBm
5 GHz	802.11ac (VHT80P80/VHT160)	MCS0	20 dBm	-82 dBm
		MCS1	20 dBm	-78 dBm
		MCS2	19 dBm	-76 dBm
		MCS3	19 dBm	-73 dbm
		MCS4	19 dBm	-69 dBm
		MCS5	19 dBm	-65 dBm
		MCS6	18 dBm	-63 dBm
		MCS7	17 dbm	-62 dBm
		MCS8	16 dBm	-58 dBm
		MCS9	15 dBm	-56 dbm

# Signal Coverage Patterns

## Radiation Pattern for 2.4GHz Antennas



## Radiation Pattern for 5GHz Antennas

