

# MR53E

Dual-band, 802.11ac Wave 2 access point with external antenna connectors for challenging RF and high-density deployments



## High performance 802.11ac Wave 2 wireless

The Cisco Meraki MR53E is a cloud-managed 4x4:4 802.11ac Wave 2 access point with 80 MHz channels and MU-MIMO support. Designed for demanding next-generation deployments in busy offices, schools, hospitals, stadiums, factories, warehouses, and other venues, the MR53E offers high performance, enterprise-grade security, and simple management. The MR53E 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.

The MR53E supports a variety of smart, auto-detectable external antenna that can deliver both focused, targeted coverage in challenging RF scenarios as well as broader coverage in a variety of environments, including those with very high ceilings. These antenna include panel and panel downtilt omnidirectionals, wide patch, and narrow patch options.

With the combination of cloud management, best-in-class hardware, multiple radios, and advanced software features that leverage the intelligence and power of the Meraki cloud, the MR53E makes an outstanding platform for the most challenging use cases — including high-density deployments and bandwidth or performance-critical applications like voice and high-definition video.

## MR53E and Meraki cloud management: a powerful combination

Management of the MR53E is handled through the Meraki dashboard, an intuitive browser-based interface that enables rapid deployment across multiple sites without the need for time-consuming training or costly certifications.

Since the MR53E 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 so that distributed networks can be managed with a minimum of hassle.

The MR53E'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

- External antenna connectors
- 4 x 4 80 MHz MU-MIMO 802.11ac Wave 2
- 2.5 Gbps dual-radio aggregate frame rate
- Multigigabit ethernet
- 24 x 7 real-time WIPS/WIDS 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
- Self-configuring, plug-and-play deployment
- Sleek, low-profile design blends into office environments
- Optimized for voice and video

## Features

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

A 5 GHz 4x4:4 radio supporting 80 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 MR53E 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)

The MR53E's sophisticated, dedicated dual-band third radio scans the environment continuously, characterizing RF interference and containing wireless threats like rogue access points. No more need to choose between wireless security, advanced RF analysis, and serving client data: a dedicated third radio means that all three occur in real-time, without any impact to client traffic or AP throughput.

### Multi-gigabit and Link Aggregation uplink options

The MR53E's integrated multi-gigabit uplink ensures maximum capacity for this high performance 802.11ac Wave 2 hardware configuration. The MR53E's two Ethernet uplinks can be configured for link aggregation if switch infrastructure does not yet support multigigabit. The second Ethernet port can be used to connect wired client devices, like a security camera, when not used for link aggregation.

### 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 MR53E enables the next generation of location-aware applications while future-proofing your deployment, ensuring it's ready for any new customer engagement strategies.

### Automatic cloud-based RF optimization

The MR53E'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 MR53E 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.

### 3rd radio delivers 24x7 wireless security and RF analytics

The MR53E'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 MR53E 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.

\* 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.

## Features (cont'd)

### **Application-aware traffic shaping**

The MR53E 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 user group, or per individual user for maximum flexibility and control.

### **Voice and video optimization**

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 MR53E, 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 MR53E 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. View real-time, per-radio spectrum analytics to troubleshoot nearby interference. Analyze AP events, client utilization, and bandwidth usage on a per-radio basis. Fully customize your analysis with raw data available via simple APIs.

## MR53E Tx / Rx Tables | 2.4 GHz

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
2.4 GHz	802.11b	1 Mb/s	19 dBm	-96.5 dBm
		2 Mb/s	19 dBm	-91.5 dBm
		5.5 Mb/s	19 dBm	-90.5 dBm
		11 Mb/s	19 dBm	-85.5 dBm
2.4 GHz	802.11g	6 Mb/s	19 dBm	-90.5 dBm
		9 Mb/s	19 dBm	-89.5 dBm
		12 Mb/s	18 dBm	-88.5 dBm
		18 Mb/s	18 dBm	-86.5 dBm
		24 Mb/s	18 dBm	-83.5 dBm
		36 Mb/s	18 dBm	-80.5 dBm
		48 Mb/s	17 dBm	-74.5 dBm
		54 Mb/s	17 dBm	-73.5 dBm
2.4 GHz	802.11n (HT20)	MCS0/8/16/24	19/22/23/27 dBm	-90.5/-93.5/-94.5/-96.5 dBm
		MCS1/9/17/25	18/21/22/24 dBm	-86.5/-89.5/-90.5/-92.5 dBm
		MCS2/10/18/26	18/21/22/24 dBm	-84.5/-87.5/-88.5/-90.5 dBm
		MCS3/11/19/27	17/20/21/23 dBm	-80.5/-83.5/-84.5/85.5 dBm
		MCS4/12/20/28	17/20/21/23 dBm	-78.5/-81.5/-82.5/-84.5 dBm
		MCS5/13/21/29	16/19/20/25 dBm	-73.5/-76.5/-77.5/-79.5 dBm
		MCS6/14/22/30	15/18/19/21 dBm	-71.5/-74.5/-75.5/-77.5 dBm
		MCS7/15/23/31	15/18/19/21 dBm	-70.5/-73.5/-74.5/-76.5 dBm

## MR53E Tx / Rx Tables | 5 GHz

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
5 GHz	802.11a	6 Mb/s	20 dBm	-89.5 dBm
		9 Mb/s	20 dBm	-88.5 dBm
		12 Mb/s	20 dBm	-87.5 dBm
		18 Mb/s	20 dBm	-85.5 dBm
		24 Mb/s	19 dBm	-78.5 dBm
		36 Mb/s	19 dBm	-75.5 dBm
		48 Mb/s	18 dBm	-73.5 dBm
		54 Mb/s	18 dBm	-72.5 dBm
5 GHz	802.11n (HT20)	MCS0/8/16/24	20/23/24/26 dBm	-89.5/-92.5/-93.5/-95.5 dBm
		MCS1/9/17/25	20/23/24/26 dBm	-86.5/-89.5/-90.5/-92.5 dBm
		MCS2/10/18/26	20/23/24/26 dBm	-83.5/-86.5/-87.5/-89.5 dBm
		MCS3/11/19/27	20/23/24/26 dBm	-80.5/-83.5/-84.5/-86.5 dBm
		MCS4/12/20/28	19/22/23/25 dBm	-76.5/-79.5/-80.5/-82.5 dBm
		MCS5/13/21/29	19/22/23/25 dBm	-72.5/-75.5/-76.5/-78.5 dBm
		MCS6/14/22/30	18/21/22/24 dBm	-69.5/-72.5/-73.5/-75.5 dBm
		MCS7/15/23/31	17/20/21/23 dBm	-70.5/-73.5/-74.5/-76.5 dBm
5 GHz	802.11n (HT40)	MCS0/8/16/24	20/23/24/26 dBm	-86.5/-89.5/-90.5/-92.5 dBm
		MCS1/9/17/25	20/23/24/26 dBm	-83.5/-86.5/-87.5/-89.5 dBm
		MCS2/10/18/26	20/23/24/26 dBm	-80.5/-83.5/-84.5/-86.5 dBm
		MCS3/11/19/27	20/23/24/26 dBm	-77.5/-80.5/-81.5/-83.5 dBm
		MCS4/12/20/28	19/22/23/25 dBm	-74.5/-77.5/-78.5/-80.5 dBm
		MCS5/13/21/29	19/22/23/25 dBm	-71.5/-74.5/-75.5/-77.5 dBm
		MCS6/14/22/30	18/21/22/24 dBm	-70.5/-73.5/-74.5/-76.5 dBm
		MCS7/15/23/31	17/20/21/23 dBm	-68.5/-71.5/-72.5/-74.5 dBm

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
5 GHz	802.11ac (VHT20)	MCS0/0/0/0	20/23/24/26 dBm	-89.5/-92.5/-93.5/-95.5 dBm
		MCS1/1/1/1	20/23/24/26 dBm	-86.5/-89.5/-90.5/-92.5 dBm
		MCS2/2/2/2	20/23/24/26 dBm	-83.5/-86.5/-87.5/-89.5 dBm
		MCS3/3/3/3	20/23/24/26 dBm	-80.5/-83.5/-84.5/-86.5 dBm
		MCS4/4/4/4	19/22/23/25 dBm	-76.5/-79.5/-80.5/-82.5 dBm
		MCS5/5/5/5	19/22/23/25 dBm	-72.5/-75.5/-76.5/-78.5 dBm
		MCS6/6/6/6	18/21/22/24 dBm	-69.5/-72.5/-73.5/-75.5 dBm
		MCS7/7/7/7	17/20/21/23 dBm	-70.5/-73.5/-74.5/-76.5 dBm
		MCS8/8/8/8	16/19/20/22 dBm	-64.5/-67.5/-68.5/-70.5 dBm
		MCS9/9/9/9	15/18/19/21 dBm	-60.5/-63.5/-64.5/-66.5 dBm
5 GHz	802.11ac (VHT40)	MCS0/0/0/0	20/23/24/26 dBm	-86.5/-89.5/-90.5/-92.5 dBm
		MCS1/1/1/1	20/23/24/26 dBm	-83.5/-86.5/-87.5/-89.5 dBm
		MCS2/2/2/2	20/23/24/26 dBm	-81.5/-84.5/-85.5/-87.5 dBm
		MCS3/3/3/3	20/23/24/26 dBm	-77.5/-80.5/-81.5/-83.5 dBm
		MCS4/4/4/4	19/22/23/25 dBm	-74.5/-77.5/-78.5/-80.5 dBm
		MCS5/5/5/5	19/22/23/25 dBm	-71.5/-74.5/-75.5/-77.5 dBm
		MCS6/6/6/6	18/21/22/24 dBm	-70.5/-73.5/-74.5/-76.5 dBm
		MCS7/7/7/7	17/20/21/23 dBm	-68.5/-71.5/-72.5/-74.5 dBm
		MCS8/8/8/8	16/19/20/22 dBm	-61.5/-64.5/-65.5/-67.5 dBm
		MCS9/9/9/9	15/18/19/21 dBm	-58.5/-61.5/-62.5/-64.5 dBm
5 GHz	802.11ac (VHT80)	MCS0/0/0	20/23/24/26 dBm	-83.5/-86.5/-87.5/-89.5 dBm
		MCS1/1/1	20/23/24/26 dBm	-79.5/-82.5/-83.5/-85.5 dBm
		MCS2/2/2	20/23/24/26 dBm	-77.5/-80.5/-81.5/-83.5 dBm
		MCS3/3/3	20/23/24/26 dBm	-74.5/-77.5/-78.5/-80.5 dBm
		MCS4/4/4	19/22/23/25 dBm	-70.5/-73.5/-74.5/-76.5 dBm
		MCS5/5/5	19/22/23/25 dBm	-66.5/-69.5/-70.5/-72.5 dBm
		MCS6/6/6	18/21/22/24 dBm	-64.5/-67.5/-68.5/-70.5 dBm
		MCS7/7/7	17/20/21/23 dBm	-63.5/-66.5/-67.5/-69.5 dBm
		MCS8/8/8	16/19/20/22 dBm	-59.5/-62.5/-63.5/-65.5 dBm
		MCS9/9/9	15/18/19/21 dBm	-57.5/-60.5/-61.5/-63.5 dBm

# Specifications

## Radios

2.4 GHz 802.11b/g/n/ac client access radio  
5 GHz 802.11a/n/ac Wave 2 client access radio  
2.4 GHz & 5 GHz dual-band WIDS/WIPS, spectrum analysis, and location analytics radio  
2.4 GHz Bluetooth Low Energy (BLE) radio with Beacon and BLE scanning support  
Concurrent operation of all three 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)
- 5.1725-5.825 GHz (UNII-3)

## Antenna

List of compatible antennas: MA-ANT-3-A5/B5/C5/D5/E5/F5

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) and beamforming  
20 and 40 MHz channels (802.11n), 20, 40, and 80 MHz channels (802.11ac)  
Up to 256-QAM on both 2.4 GHz & 5 GHz bands  
Packet aggregation

## Power

Power over Ethernet: 37-57 V  
(802.3at required; functionality-restricted 802.3af mode supported)  
Alternative 12 V DC input  
Power consumption: 20 W max (802.3at)  
Power over Ethernet injector and DC adapter sold separately

## Interfaces

1x 100/1000/2.5G BASE-T Ethernet  
1x 10/100/1000 BASE-T Ethernet (RJ45)  
1x DC power connector (5.5 mm x 2.5 mm, center positive)  
Six external RP-TNC antenna connectors

## 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%

## Physical Dimensions

10.59" x 6.3" x 1.06" (269 mm x 160 mm x 27 mm), not including deskmount feet or mount plate  
Weight: 41.27 oz (1.17 kg)

## 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, and 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, and per application

## LED Indicators

1 power/booting/firmware upgrade status

## Regulatory

RoHS  
For additional country-specific regulatory information, please contact Meraki Sales

## Warranty

Lifetime hardware warranty with advanced replacement included

## Compliance

EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC

## Ordering Information

MR53E-HW: Meraki MR53E Cloud Managed 802.11ac Wave 2 AP  
MA-PWR-30W-XX: Meraki AC Adapter for MR Series (XX = US/EU/UK/AU)  
MA-INJ-5-XX: Meraki Multigigabit 802.3at Power over Ethernet Injector (XX = US/EU/UK/AU)  
MA-ANT-3-A6: Meraki Dipole Antenna (3.8/5.5 dBi)  
MA-ANT-3-B6: Meraki Dipole Antenna (3/5.7 dBi)  
MA-ANT-3-C6: Meraki Panel Omni Antenna  
MA-ANT-3-D6: Meraki Downtilt Panel Omni Antenna  
MA-ANT-3-E6: Meraki Wide Patch Antenna  
MA-ANT-3-F6: Meraki Narrow Patch Antenna  
Note: Meraki access point license required

## Compliance and Standards

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### IEEE Standards

802.11ac Wave 2  
802.11a  
802.11b  
802.11e  
802.11g  
802.11h  
802.11i  
802.11k  
802.11n  
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  
Conforms to UL 2043 (Plenum Rating)

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### Radio Approvals

Canada: FCC Part 15C, 15E, RSS-247  
Europe: EN 300 328, EN 301 893  
Australia/NZ: AS/NZS 4268  
Mexico: NOM-121  
Taiwan: NCC LP0002  
For additional country-specific regulatory information, please contact Meraki Sales

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### EMI Approvals (Class B)

Canada: FCC Part 15B, ICES-003  
Europe: EN 301 489-1-17, EN 55032, EN 55024  
Australia/NZ: CISPR 22  
Japan: VCCI

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### Exposure Approvals

Canada: FCC Part 2, RSS-102  
Europe: EN 50385, EN 62311, EN 62479  
Australia/NZ: AS/NZS 2772

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### Wi-Fi Alliance Product Certification

MR53E-HW Cert ID: WFA75884

