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 160 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 Beaconing.

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 4 160 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 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 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

Operating Band	Operating Mode	Data Rate	TX Power	RX Sensitivity
5 GHz	802.11ac (VHT8P80/VHT160)	MCS0	20 dBm	-80.5 dBm
		MCS1	20 dBm	-76.5 dBm
		MS2	19 dBm	-74.5 dBm
		MCS3	19 dBm	-71.5 dBm
		MCS4	19 dBm	-67.5 dBm
		MCS5	19 dBm	-63.5 dBm
		MCS6	18 dBm	-61.5 dBm
		MCS7	17 dBm	-60.5 dBm
		MCS8	16 dBm	-56.5 dBm
		MCS9	15 dBm	-54.5 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 Bluetoth 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, 80, and 160 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

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

Safety Approvals
UL 60950-1
CAN/CSA-C22.2 No. 60950-1
IEC 60950-1
EN 60950-1
Conforms to UL 2043 (Plenum Rating)

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

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

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

Wi-Fi Alliance Product Certification
MR53E-HW Cert ID: WFA75884