

DATA SHEET

AP 650X

Enterprise-grade 4x4, 4-stream, 802.11ax Access Point with External Antennas





The AP650X is designed for high performance environments – combining the latest in Wi-Fi standards (IEEE 802.11ax technology), the latest in Ethernet standards (2.5 mGig), and Aerohive’s software-defined dual 5 GHz radios for indoor and industrial environments. AP650X has integrated BLE and USB connectivity for enhanced location-driven services and the ability to provide additional wireless access options for IoT and other devices.

Powered by HiveOS and the innovative distributed Cooperative Control architecture, **AP650X** brings the best of capacity and advanced high-efficiency 802.11ax technology. In addition, the integrated BLE and ZigBee radios, plus a USB interface in the access point opens up a multitude of deployment use-cases in IoT and proximity/location-oriented services.

The AP650X benefits from an AI-driven Wi-Fi architecture capable of self-organizing, self-learning, self-healing and self-optimizing in the most challenging environments. Cooperative Control eliminates single points of failure and bottlenecks, delivering stability and unbridled performance, complimenting the capabilities of HiveOS - a stateful L2-L7 DPI firewall for context-based access security, advanced and customizable QoS for traffic optimization, intelligent meshing algorithms, Private Pre-Shared Key (PPSK) and much more.

All Aerohive APs can be centrally managed using Aerohive’s out-of-band cloud network management system - *HiveManager*. HiveManager is an industry-leading and visionary approach to cloud-managed networking, built from the ground up to take full advantage of the SD-LAN solution from Aerohive. Working in tandem with Aerohive’s HiveOS, HiveManager leverages state-of-the-art cloud technology. Benefit from unified, full-stack management of Wi-Fi, switching and routing, centralized monitoring and configuration, real-time and historical reporting, simplified troubleshooting, integrated RF planner tools and much more.

HiveManager is available in two editions: *Connect* and *Select*. The *Connect* solution is bundled with Aerohive access points and switches and is free for the lifetime of the device. *Connect* is the perfect solution for those looking to provide robust, yet enterprise-grade connectivity, without having to invest in the full suite of management features. The optional upgrade to *Select* unlocks a multitude of advanced features and capabilities that enhance network management, security and visibility.

Radio Specifications

Wireless Frequency Range

- USA: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz, 5.725 ~ 5.85 GHz
- Europe: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz
- Japan: 2.400 ~ 2.497 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz
- China: 2.400 ~ 2.483 GHz, 5.725 ~ 5.85 GHz

Modes

- IEEE802.11a 5 GHz OFDM
- IEEE802.11n 2.4 GHz/5 GHz OFDM
- IEEE802.11b 2.4 GHz DSSS/CCK
- IEEE802.11ac OFDM
- IEEE802.11g 2.4 GHz OFDM
- IEEE802.11ax OFDMA

Channel Support

802.11 b/g/n/ax

- US/Canada: 11 (1 ~ 11)
- Europe: 13 (1 ~ 13)
- Japan: 11b: 14 (1~13 or 14th), 11g: 13 (1 ~ 13)
- China: 13 (1 ~ 13)

802.11 a/n/ac/ax

- US/Canada: 24 non-overlapping channels (36,40,44,48,52,56,60,64;100,104,108,112,116,120,124,128,132,136,140; 149,153,157,161,165)
- Europe: 19 non-overlapping channel (36,40,44,48,52,56,60,64;100,104,108,112,116,120,124,128,132,136,140)
- Japan: 19 non-overlapping channels (36,40,44,48,52,56,60,64;100,104,108,112,116,120,124,128,132,136,140)
- China: 5 non-overlapping channels (149,153,157,161,165)

Modulation Technology

802.11 Legacy a/b/g

- DSSS (DBPSK, DQPSK, CCK) OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- DSSS (Direct Sequence Spread Spectrum) with DBPSK (Differential Binary Phase Shift Keying 1 Mbps), DQPSK (Differential Quaternary Phase Shift Keying 2 Mbps), and CCK (Complementary Code Keying 5.5 & 11 Mbps), and OFDM (Orthogonal Frequency Division Multiplexing with BPSK for 6, 9 Mbps. QPSK for 12, 18 Mbps, 16QAM for 24, 36 Mbps, 64QAM for 48, 54 Mbps)

802.11n

- OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

802.11ac

- OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)

802.11ax

- OFDMA (1024-QAM)

Interfaces

- 1x 10/100/1000 Gigabit Ethernet
- 1x 2.5 mGig
- RJ-45 Console Port
- USB Interface
- 802.3az supported
- Redundant PoE Capable

Radios

- Dual Radio AP, 2.4 GHz/5GHz and 5GHz radios supporting dual band or dual 5GHz operation
- 2.4 GHz/ 5 GHz, 802.11b/g/n/ax, 4x4
- 5 GHz, 802.11 a/n/ac/ax, 4x4
- 160MHz, 1024-QAM supported
- 1x Bluetooth/Zigbee radio

Power Consumption

- DC Power: Typical 18.78 W, Max 20.65 W
- 802.3at PoE Power: Typical 15.72 W, Max 19.92 W

Environmental

- Operating Temperature: -20 to 55 °C
- Storage Temperature: -40 to 70 °C
- Humidity: 10 to 95%

Physical

- Dimensions: 225mm x 225mm x 37.5mm
- Weight: 2.8lb (1.27kg)
- Wall or ceiling mountable
- MTBF: >500,000 Hours @ 25 °C (*estimate*)
- RoHS: -2 Compliant

Antenna

- 4x 2.4 GHz/5 GHz, RPSMA Connectors
- 4x 5 GHz, RPSMA Connectors
- 1x internal Bluetooth/ZigBee antenna

Peak Antenna Gain:

- 2.4 GHz omnidirectional, gain 4.6 dBi
- 5 GHz omnidirectional, gain 5.7 dBi
- Bluetooth omnidirectional, gain 5.2 dBi

Power - 2.4 GHz

CHANNEL	DATA RATE	POWER (dBm)
11b	1,2,5,5,11 Mbps	21
	6 Mbps	15
11g	36 Mbps	16
	48 Mbps	17
	54 Mbps	18
	MCS0,1,2,3,4	20
11n HT20	MCS5,13,21	18
	MCS6,14,22	17
	MCS7,15,23	16
	MCS8,9,10,11,12	20
	MCS16,17,18,19,20	20
11n HT40	MCS0,1,2,3,4,8	20
	MCS5,13,21	18
	MCS6,14,22	17
	MCS7,15,23	16
	MCS9,10,11,12,16	20
	MCS17,18,19,20	20

Receive Sensitivity - 2.4 GHz

CHANNEL	DATA RATE	SENSITIVITY
11b	1 Mbps	-100
	11 Mbps	-93
11g	6 Mbps	-95
	36 Mbps	-86
	48 Mbps	-82
	54 Mbps	-80
11n HT20	MCS0,8,16	-95
	MCS5,13,21	-81
	MCS6,14,22	-79
	MCS7,15,23	-77
11n HT40	MCS0,8,16	-92
	MCS5,13,21	-78
	MCS6,14,22	-76
	MCS7,15,23	-74

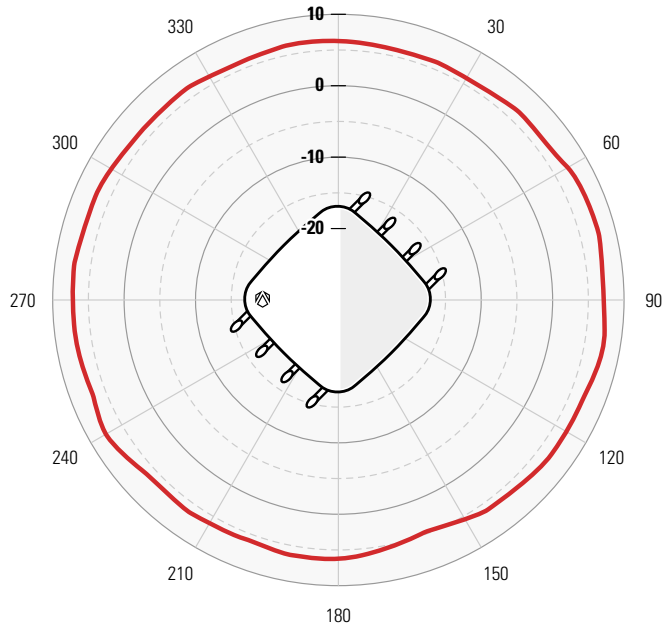
Power and Receive Sensitivity Tables (5 GHz)
Power - 5 GHz

CHANNEL	DATA RATE	POWER (dBm)
11a	6 Mbps	19
	36 Mbps	18
	48 Mbps	16
	54 Mbps	15
11n HT20	MCS0,1,2,3,4,8,9,10,11	19
	MCS5,13,21	18
	MCS6,14,22	16
	MCS7,15,23	15
	MCS12,16,17,18,19,20	19
11n HT40	MCS0,1,2,3,4,8	19
	MCS5,13,21	18
	MCS6,14,22	16
	MCS7,15,23	14
	MCS9,10,11,12,16	19
	MCS17,18,19,20	19
11ac HT	256QAM @ 3/4 Code Rate	12
	256QAM @ 5/6 Code Rate	11

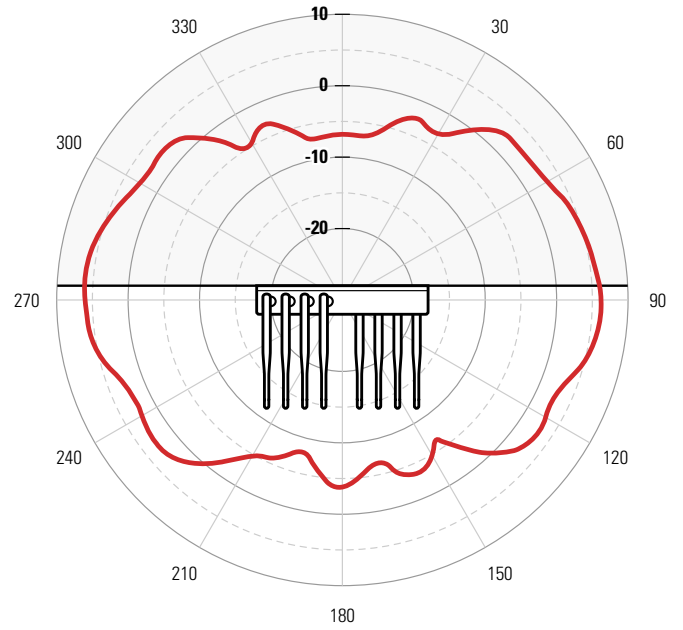
Receive Sensitivity - 5 GHz

CHANNEL	DATA RATE	SENSITIVITY
11a	6 Mbps	-95
	36 Mbps	-86
	48 Mbps	-81
	54 Mbps	-80
11n HT20	MCS0,8,16	-91
	MCS5,13,21	-78
	MCS6,14,22	-76
	MCS7,15,23	-74
	MCS12,16,17,18,19,20	-88
11n HT40	MCS0,8,16	-88
	MCS5,13,21	-75
	MCS6,14,22	-73
	MCS7,15,23	-71
11ac HT20	3/4	-65
	5/6	-63
11ac HT40	3/4	-62
	5/6	-60
11ac HT80	3/4	-59
	5/6	-57
11ac HT160	3/4	-56
	5/6	-54

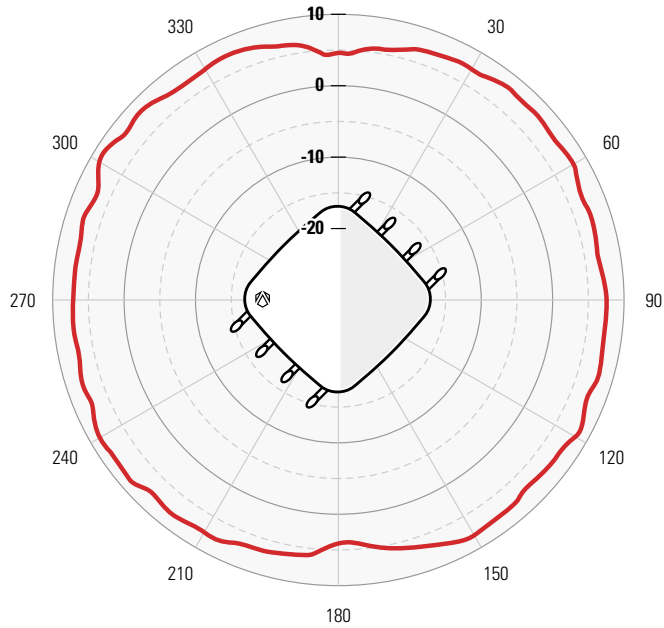
Azimuth - 2.4 GHz



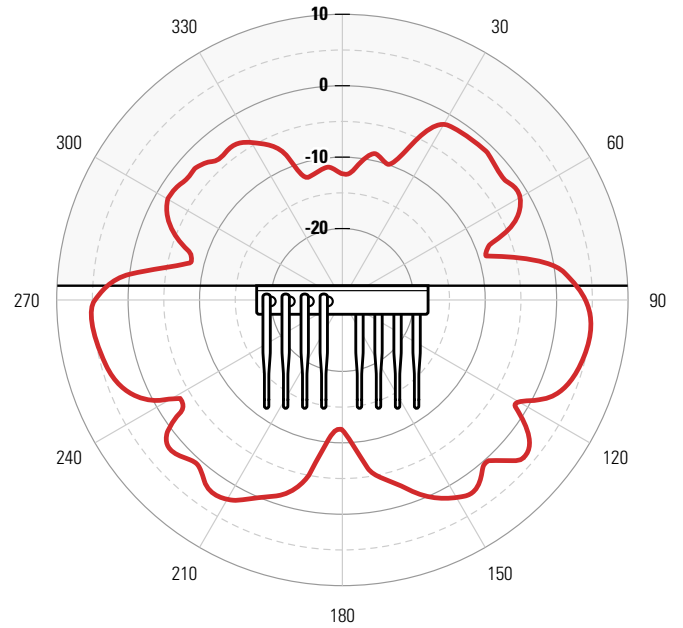
Elevation - 2.4 GHz



Azimuth - 5 GHz



Elevation - 5 GHz



AP650X - SKUs

SKU	DESCRIPTION
AH-AP-650X-AX-XX	AP650X Indoor plenum rated AP, dual 5 GHz 4x4:4 802.11ac/ax, 1x NBASE-T™ Ethernet and 1x GE, supports external antennas and extended temp range. Antennas sold separately. Includes HiveManager Connect and HiveCare Community. (Regulatory Domains available: FCC, CE, W (World), CAN (Canada))

AP650X - MISCELLANEOUS SKUs

SKU	DESCRIPTION
AH-ACC-INJ-30W-UK	30W PoE power injector with UK power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
AH-ACC-INJ-30W-US	30W PoE power injector with US power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
AH-ACC-INJ-30W-AU	30W PoE power injector with Australia/New Zealand power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X
AH-ACC-INJ-30W-EU	30W PoE power injector with EU power cord for AP122,AP122X,AP130, AP200 series,AP550,AP630,AP650 and AP650X

