



ORiNOCO AP-4000M

Technical Specifications



APPLICATIONS

- Fixed Edge Access**
 Provides non-line of site Wi-Fi coverage by automatically routing traffic through the mesh backbone.
- Mobile Edge Access**
 Enables Wi-Fi coverage in automobiles, busses, and trains.
- Enterprise**
 Lowers infrastructure costs by not requiring Ethernet cabling to every access point.

RADIO	Dual Radio Access Point with integrated radios: 802.11a + 802.11b/g							
DATA RATES SUPPORTED	802.11b	1, 2, 5.5, 11						
	802.11g	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps						
	802.11a	6, 9, 12, 18, 24, 36, 48, 54 Mbps						
NETWORK STANDARD	IEEE 802.11a IEEE 802.11b or IEEE 802.11g							
UPLINK	Autosensing 802.3 10/100BASE-T Ethernet							
FREQUENCY BAND	802.11b/g	2.412 to 2.462 GHz (FCC) 2.412 to 2.472 GHz (ETSI) 2.412 to 2.484 GHz (TELEC) 2.412 to 2.462 GHz (Taiwan) 2.412 to 2.462 GHz (Singapore) 2.412 to 2.462 GHz (S. Korea)						
	802.11a	5.15 to 5.35 GHz (FCC UNII 1 and UNII 2), 5.725 to 5.85 GHz (FCC UNII 3/ISM) 5.15 to 5.35 GHz and 5.47 to 5.725 GHz (ETSI) 5.15 to 5.25 GHz (TELEC) 5.15 to 5.25 GHz and 5.725 to 5.825 GHz (Singapore) 5.25 to 5.35 GHz and 5.725 to 5.85GHz (Taiwan) 5.725 to 5.825 GHz (S. Korea)						
NETWORK ARCHITECTURE TYPE	Infrastructure							
WIRELESS MEDIUM	802.11b or 802.11g	Direct sequence spread spectrum (DSSS); Orthogonal Frequency Division Multiplexing (OFDM)						
	802.11a	Orthogonal Frequency Division Multiplexing (OFDM)						
MEDIA ACCESS PROTOCOL	Carrier sense multiple access with collision avoidance (CSMA/CA)							
MODULATION	OFDM	BPSK @ 6 and 9 Mbps QPSK @ 12 and 18 Mbps 16-QAM @ 24 and 36 Mbps 64-QAM @ 48 and 54 Mbps						
	DSSS	DBPSK @ 1 Mbps DQPSK @ 2 Mbps CCK @ 5.5 and 11 Mbps						
OPERATING CHANNEL	2.4 GHz Band	802.11b: ETSI: 13; Americas: 11; TELEC (Japan): 14 802.11g: ETSI: 13; Americas: 11; Japan (TELEC): 14 CCK, 13 OFDM						
	5 GHz Band	FCC: 12 ETSI: 19 Japan (TELEC): 4 Singapore: 9 Taiwan: 8 S. Korea: 4						
NON-OVERLAPPING CHANNELS	Fifteen (FCC only)							
RADIO SPECIFICATIONS	The following tables show typical RF performance values for FCC-certified products (values may differ for products certified in other regulatory domains)							
	802.11a RF Performance							
802.11a Data Rates (Mbps)	54	48	36	24	18	12	9	6
Tx Power (dBm)	16	17	18	18	18	18	18	18
Receiver Sensitivity (dBm)	-70	-73	-78	-82	-84	-85	-86	-87
Antenna Gain (dBi)	0 (integrated diversity antennas; 5.15–5.85 GHz)							

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RADIO SPECIFICATIONS RF PERFORMANCE	802.11b/g RF Performance												
		G-only Rates								B-only Rates			
	802.11b/g Data Rates (Mbps)	54	48	36	24	18	12	9	6	11	5.5	2	1
	Tx Power (dBm)	17	18	18	18	18	18	18	18	20	20	20	20
	Receiver Sensitivity (dBm)	-70	-73	-79	-82	-85	-88	-90	-91	-89	-91	-92	-93
Antenna Gain (dBi)	1 (integrated diversity antenna module; 2.4–2.5 GHz)												
COMPLIANCE STANDARDS	Safety	UL 60950 CSA 22.2 No. 60950-00 IEC 60950 3rd Ed (1999)											
	Radio Approvals	FCC Part 15.401-15.407 RSS-210 (Canada)											
	Antenna Approvals	EN301.893 EN300.328 EN301.489-1 EN301.489-17 EN50371 ARIB STD-T71, ARIB-STD 33, ARIB-STD 66 FCC 15.247 RSS-210											
	EMI and Susceptibility (Class B)	FCC Part 15.107 ICES-003 (Canada)											
	Security	802.1X and TKIP WPA AES and 802.11i ready											
	Network Standard	IEEE 802.11b IEEE 802.11g IEEE 802.11a											
	Other	FCC Bulletin OET-65C Wi-Fi Alliance Certification RSS-102 IEEE 802.3af											
SNMP COMPLIANCE	ORiNOCO; rfc1213; rfc1643; SNMPv2c; 802.11i-D3; IANAifType-MIB; MIB802												
ANTENNA	2.4 GHz												
	Dual on-board antennas to support antenna and polarization diversity:												
		One 3dBi vertically polarized omni antenna, 360° horizontal and 40° vertical beamwidths One 2dBi horizontally polarized omni antenna, 360° horizontal and 30° vertical beamwidths											
	Certified with	1086-REA 1086-DA24-4 1086-OA24-5 1086-PA24-8.5 1086-PA24-9.5											
	5 GHz												
Dual on-board antennas to support antenna and polarization diversity:													
	One 3dBi vertically polarized omni antenna, 360° horizontal and 40° vertical beamwidths One 2dBi horizontally polarized omni antenna, 360° horizontal and 30° vertical beamwidths												
Certified with	1086-REA 1086-PA50-7												
	2.4 and 5 GHz												
Dual band (2.4 and 5GHz) external Range Extender Antenna for optimum antenna placement, 1086-REA													
SECURITY ARCHITECTURE CLIENT AUTHENTICATION	Authentication	802.1X support including PEAP, EAP-TLS, EAP-TTLS EAP-SIM, and other EAP methods that conform to RFC 3748 to yield mutual authentication and dynamic per-user, per-session encryption keys RADIUS-based MAC address MAC address control list											
	Encryption	802.11i support for CCMP/AES keys of 128 bits (WPA2) TKIP encryption enhancements (for WEP) with key hashing (per-packet keying) and broadcast key rotation (WPA) Support for WEP keys of 64 and 128 bits											
	Message Authentication:	802.11i AES message authentication with 128 bit keys TKIP with 128 bit Michael Message Integrity Check											

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INTRUSION DETECTION	Rogue AP and client detection Detect switch port of rogue access point when used in conjunction with Wavelink Mobile Manager Detect MIC intrusion attacks																														
STATUS LEDS	Four indicators on the top panel indicate power, wireless traffic, Ethernet traffic, and error conditions																														
REMOTE CONFIGURATION SUPPORT	DHCP, Telnet, HTTP, TFTP, Boot P, and SNMP																														
LOCAL CONFIGURATION	RS-232 Serial port, DB9 Female																														
DIMENSIONS	Packaged 11.375 x 9.25 x 2.75 inches (289 mm x 235 mm x 70 mm) Unpackaged 7.8 x 4.75 x 1 inches (198 mm x 121 mm x 25 mm)																														
WEIGHT	Packaged weight 2.05 lbs (.92 kg) Unpackaged weight .65 lbs (.29 kg) AP-only, .45 lbs (.20 kg) for power supply																														
ENVIRONMENTAL	Operating 0° to 55°C, 5-95% humidity non-condensing @ 5° to 55°C Storage -20° to 85°C, 5-95% humidity non-condensing @ 5° to 85°C																														
PROCESSOR	220MHz MIPS 4000 processor																														
SYSTEM MEMORY	16 Mbytes RAM 8 Mbytes FLASH																														
INPUT POWER REQUIREMENTS	90 to 240 VAC ±10% (power supply) 48 VDC ±10% (device)																														
POWER DRAW	10 watts, RMS																														
WARRANTY	One year																														
WI-FI CERTIFICATION	View Wi-Fi Interoperability Certificate for ORiNOCO AP-4000																														
PART NUMBERS	<table border="0"> <tr> <td>8670M-US</td> <td>Meshing access point – ORiNOCO AP-4000 US FCC-MU; with Middle and Upper Bands only for 802.11a, includes external antenna connectors for 802.11a and 802.11b/g for FCC countries</td> </tr> <tr> <td>8670M-US2</td> <td>Meshing access point – ORiNOCO AP-4000 US FCC-LMU; with Lower, Middle and Upper Bands for 802.11a (no antenna connector for 802.11a) for FCC countries</td> </tr> <tr> <td>8670M-AU</td> <td>Meshing access point – ORiNOCO AP-4000 AU FCC-LMU; certified for Australia; Lower, Middle and Upper Bands for 802.11a; includes external antenna connectors for 802.11b/g</td> </tr> <tr> <td>8670M-AU2</td> <td>Meshing access point – ORiNOCO AP-4000 AU FCC-LMU; certified for Australia; Middle and Upper Bands for 802.11a; includes external antenna connectors for 802.11a and 802.11b/g</td> </tr> <tr> <td>8670M-BR</td> <td>Meshing access point – ORiNOCO AP-4000 BRAZIL-L; certified for Brazil; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-JP</td> <td>Meshing access point – ORiNOCO AP-4000 JP; certified for Japan J52 band 5.15-5.25 GHz; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-JP2</td> <td>Meshing access point – ORiNOCO AP-4000 JP2; Adds support for the Japan W52 and 53 bands 5.15-5.35 GHz; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-HK</td> <td>Meshing access point – ORiNOCO AP-4000 HK ASIA; certified for Hong Kong; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-SG</td> <td>Meshing access point – ORiNOCO AP-4000 UK SG-LU; certified for Singapore; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-CN</td> <td>Meshing access point – ORiNOCO AP-4000 CN ASIA; certified for China; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-SK</td> <td>Meshing access point – ORiNOCO AP-4000 SK ASIA; certified for South Korea; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-TW</td> <td>Meshing access point – ORiNOCO AP-4000 TW ASIA; certified for Taiwan; includes external antenna connectors for 802.11b/g and 802.11a</td> </tr> <tr> <td>8670M-EU</td> <td>Meshing access point – ORiNOCO AP-4000 EU ETS-L; with Lower Band only for 802.11a, includes external antenna connectors for 802.11a and 802.11b/g</td> </tr> <tr> <td>8670M-EU2</td> <td>Meshing access point – ORiNOCO AP-4000 EU ETS; with Lower and Middle Bands for 802.11a, includes external antenna connectors for 802.11b/g and 802.11a; certified for Finland, Germany and Netherlands only</td> </tr> <tr> <td>8670-UK</td> <td>Meshing access point – ORiNOCO AP-4000 UK ETS-LM; with Lower and Middle bands, includes external</td> </tr> </table> <p>Customers are responsible for verifying approval for use in their country. 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¹ To achieve 802.11i security, the EAP method that is used must conform to both RFC 3748 and IETF draft-walker-ieee802-req-07 (Submitted as an Informational RFC). In RFC 3748, EAP- MD5-Challenge (Section 5.4), One-Time Password (Section 5.5) and Generic Token Card (Section 5.6), are non-compliant with the requirements specified in IETF draft-walker-ieee802-req-07 and thus do not support the 802.11i security claims when used with 802.11i.