



Tsunami MP.11 5054-R-LR Model

APPLICATIONS

- *Emergency First Responders*

Critical information delivery such as medical data and video feeds during in-progress events

- *Enterprise Campus Connectivity*

Extend main network to remote branch offices, warehouses or other out buildings without leased line

- *Mobile Hot Spot*

On-demand entertainment and broadband access solutions for ferry, transit busses and railway system commuters

- *Security and Surveillance*

Wireless solutions for bandwidth-intensive and high-definition IP-surveillance cameras located at important city and transportation infrastructure such as airports, bridges and trains

- *Business and Residential Last Mile Access*

Competitive broadband service alternative to DSL or cable modems for residences and T1 or Ethernet for businesses

- *Metropolitan Area Networks*

Secure and reliable connectivity between city buildings

Part Numbers	NORTH AMERICA REGION	
	Base Station Units	
5054-BSUR-LR-US		Tsunami MP.11 Model 5054-R-LR High Power Base Station Unit for extended range with Type-N Connector – US PSU
Subscriber Unit		
5054-SUA-LR-US		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Type-N Connector – US PSU
5054-SUR-LR-US		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Integrated 23-dBi Antenna – US PSU
EUROPE AND MIDDLE EAST REGIONS		
Base Station Unit		
5054-BSUR-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Base Station Unit for extended range with Type-N Connector- US/UK/EU PSU- WORLD version
Subscriber Unit		
5054-SUA-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Type-N Connector- US/UK/EU PSU- WORLD version
5054-SUR-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Integrated 23 dBi antenna- US/UK/EU PSU- WORLD version
ASIA PACIFIC REGION		
Base Station Unit		
5054-BSUR-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Base Station Unit for extended range with Type-N Connector- US/UK/EU PSU- WORLD version
Subscriber Unit		
5054-SUA-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Type-N Connector- US/UK/EU PSU- WORLD version
5054-SUR-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Integrated 23 dBi antenna- US/UK/EU PSU- WORLD version
CARIBBEAN AND LATIN AMERICA REGION		
Base Station Unit		
5054-BSUR-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Base Station Unit for extended range with Type-N Connector- US/UK/EU PSU- WORLD version
Subscriber Unit		
5054-SUA-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Type-N Connector- US/UK/EU PSU- WORLD version
5054-SUR-LR-WD		Tsunami MP.11 Model 5054-R-LR High Power Subscriber Unit for extended range with Integrated 23 dBi antenna- US/UK/EU PSU- WORLD version

Part Numbers (cont'd)	UNIVERSAL						
	Accessories						
	5054-SURGE	Surge Arrestor 5 GHz - Standard-N Female to Female					
	848-274-171	20 ft Low Loss Antenna Cable St-N - Male-Male LMR 200					
	848-332-789,	20 ft Low Loss Antenna Cable St-N - Male-Male LMR 400					
	5054-ULA400-5,0	50 ft Low Loss Antenna Cable St-N - Male-Male LMR 400					
	848-274-205	75 ft Low Loss Antenna Cable St-N - Male-Male LMR 400					
	69828	6 ft Low Loss Antenna Cable St-N - Male-Male LMR 600					
	5054-LMR600-50	50 ft Low Loss Antenna Cable St-N - Male-Male LMR 600					
	70251	PoE (Power over Ethernet) Surge Arrestor for Tsunami MP.11 and QuickBridge.11					
	73944	PoE (Power Over Ethernet) Surge Arrestor for Tsunami MP.11 and QuickBridge.11 (R models) and AP4000MR/AP4900MR					
	Outdoor Ethernet Cables						
	69819	25m outdoor, terminated CAT5 cable for Tsunami MP.11 or QB.11 with three RJ-45 and one weather-proof Ethernet port cap					
	69820	50m outdoor, terminated CAT5 cable for Tsunami MP.11 or QB.11 with three RJ-45 and one weather-proof Ethernet port cap					
	69821	75m outdoor, terminated CAT5 cable for Tsunami MP.11 or QB.11 with three RJ-45 and one weather-proof Ethernet port cap					
	Power Injector						
	69823	Spare Power DC Injector for Tsunami MP.11 or QB.11 (-R model ONLY)					
	5 GHz Antennas						
	5054-PA-18	18 dBi Panel Antenna - St-N Female - 5.25 - 5.875 GHz					
	5054-PA-23	23 dBi Panel Antenna - St-N Female - 5.725 - 5.875 GHz					
	5054-OA-8	8 dBi Omni Directional Antenna - St-N Female - 5.47-5.850 GHz					
	5054-OA-10	10 dBi Omni Directional Antenna - St-N Female - 5.47-5.850 GHz					
	5054-SA120-14	14 dBi Sector Antenna - St-N Female - 5.25-5.850 GHz - 120 degrees					
5054-SA60-17	17 dBi Sector Antenna - St-N Female - 5.25-5.850 GHz - 60 degrees						
1086-PA24-14	14 dBi Panel Antenna - St-N Female						
Approvals and Frequency Ranges for 5054-R-LR¹	Region/Country	Country	GHz	Number of Channels			Certification
				5 MHz	10 MHz	20 MHz	
	North America	USA	5.725 – 5.850	Up to 21	Up to 11	Up to 5	Yes
		Canada	5.735 – 5.835	Up to 15	Up to 7	Up to 3	
		Mexico	5.725 – 5.850	Up to 21	Up to 11	Up to 5	Yes

Approvals and Frequency Ranges for 5054-R-LR¹ (Cont'd)	Region/ Country	Country	GHZ	Number of Channels			Certification
				5 MHz	10 MHz	20 MHz	
		Russia	5.15 – 6.08	Up to 185	Up to 93	Up to 47	Yes
Integrated Antenna Specifications	<ul style="list-style-type: none"> Gain 23 dBi Frequency range 5250 - 5875 MHz Nominal Impedance 50 ohms Front-to-Back Ratio 35 dB HPBW/vertical 9 degrees HPBW/horizontal 9 degrees Cross Polarization 23 dB Power handling 1 W (cw) VSWR 2.0 : 1 Max 						
RF Modulation & Over-The-Air Rates	OFDM (Orthogonal Frequency Division Multiplexing)						
		20 MHz		10 MHz		5 MHz	
	BPSK	6 and 9 Mbps		3 and 4.5 Mbps		1.5 and 2.25 Mbps	
	QPSK	12 and 18 Mbps		6 and 9 Mbps		3 and 4.5 Mbps	
	16-QAM	24 and 36 Mbps		12 and 18 Mbps		6 and 9 Mbps	
64-QAM	48 and 54 Mbps		24 and 27 Mbps		12 and 13.5 Mbps		
Max Packet Size	1536 Bytes						
Wireless Protocol	<ul style="list-style-type: none"> WORP (Wireless Outdoor Router Protocol) 						
Device Interface Ethernet	<ul style="list-style-type: none"> Auto-sensing 10/100BASE-TX Ethernet 						
Antenna Connector for BSU & SU with Type-N Connector	<ul style="list-style-type: none"> Standard Type-N Female Connector 						
Network Architecture Type	<ul style="list-style-type: none"> Infrastructure 						
Receive Sensitivity (BER=10⁻⁶)	Modulation	40 MHz Channels Turbo Mode	20 MHz Channels Standard Mode	10 MHz Channels Standard Mode	5 MHz Channels Standard Mode		
	64 QAM ^{3/4}	-70 dBm @ 108 Mbps	-73 dBm @ 54 Mbps	-76 dBm @ 27 Mbps	-79 dBm @ 13.5 Mbps		
	64 QAM ^{2/3}	-73 dBm @ 96 Mbps	-76 dBm @ 48 Mbps	-79 dBm @ 24 Mbps	-82dBm @ 12 Mbps		
	16 QAM ^{3/4}	-79 dBm @ 72 Mbps	-82 dBm @ 36 Mbps	-85 dBm @ 18 Mbps	-88 dBm @ 9 Mbps		
	16 QAM ^{1/2}	-82 dBm @ 48 Mbps	-85 dBm @ 24 Mbps	-88 dBm @ 12 Mbps	-91 dBm @ 6 Mbps		
	QPSK ^{3/4}	-86 dBm @ 36 Mbps	-89 dBm @ 18 Mbps	-92 dBm @ 9 Mbps	-95 dBm @ 4.5 Mbps		
	QPSK ^{1/2}	-87 dBm @ 24 Mbps	-90dBm @ 12 Mbps	-93 dBm @ 6 Mbps	-96 dBm @ 3 Mbps		
	BPSK ^{3/4}	-89 dBm @ 18 Mbps	-92dBm @ 9 Mbps	-95 dBm @ 4.5 Mbps	-98 dBm @ 2.25 Mbps		
	BPSK ^{1/2}	-90 dBm @ 12 Mbps	-93 dBm @ 6 Mbps	-96 dBm @ 3 Mbps	-99 dBm @ 1.5 Mbps		

Maximum Throughput (Mbps)	Data rate	40 MHz Channels Turbo Mode	20 MHz Channels Standard Mode	10 MHz Channels Standard Mode	5 MHz Channels Standard Mode
	108Mbps Turbo 54	35 Mbps			
	96Mbps Turbo 48	35 Mbps			
	108Mbps Turbo 54	35 Mbps			
	96Mbps Turbo 48	35 Mbps			
	72Mbps Turbo 36	35 Mbps			
	48Mbps Turbo 24	27 Mbps			
	36Mbps Turbo 18	22 Mbps			
	24Mbps Turbo 12	16 Mbps			
	54Mbps		29 Mbps		
	48Mbps		27 Mbps		
	36Mbps		22 Mbps		
	24Mbps		16 Mbps	16 Mbps	
	18Mbps		13 Mbps	13 Mbps	
	12Mbps		9 Mbps	9 Mbps	
	9Mbps		7 Mbps	7 Mbps	7 Mbps
	6Mbps		5 Mbps	5 Mbps	4.7 Mbps
	4.5Mbps			3.6 Mbps	3.8 Mbps
	3Mbps			2.4 Mbps	2.7 Mbps
	2.25Mbps				2 Mbps
	1.5Mbps				1.2 Mbps
*Maximum-throughput data with release 4.0, as measured with test equipment under controlled lab conditions and best performing packet size. In some instances, data compression yields throughput equal to the configured data rate. Actual throughput performance in the field may vary.					
Latency	<10 ms typical at maximum throughput under throughput test conditions indicated above				
Transmit Power Settings		6-24 Mbps @ 20 MHz 16 QAM ½, QPSK ¾, QPSK ½, BPSK ¾, BPSK ½	36 Mbps @ 20 MHz 16 QAM ¾	48 Mbps @ 20 MHz 64 QAM ^{2/3}	54 Mbps @ 20 MHz 64 QAM ¾
	5.15-5.35* GHz	20 dBm	20 dBm	20 dBm	20 dBm
	5.725-5.850 GHz	25 dBm	23 dBm	22 dBm	20 dBm
	5.875-5.975 GHz	24 dBm	22 dBm	21 dBm	19 dBm
	6.00-6.08 GHz	23 dBm	21 dBm	20 dBm	18 dBm
	Output Power Attenuation: 0 -18 dB, in 3 dB steps				
	Output Power Values will have a tolerance of +-1dB				
	*For the 5.35-5.725 GHz frequency range the transmit power is expected to be similar to the 5.725 GHz frequency.				

Range Information for 5054-R-LR	Integrated Antenna			
		54 Mbps – Line of Sight	36 Mbps – Line of Sight	6 Mbps Line of Sight
	5.15-5.35 GHz (US)	5mi/8.05km	6mi/9.6km	12mi/19.2 km
	5.725-5.850 GHz (US)	5mi/8.05km	10mi/16.1km	20mi/32.2km
	5.85-6.08 GHz (Russia)	4mi/6.4km	8mi/12.8km	16mi/25.6km
<i>Minimum fade margin; 99.995% or better availability; average terrain/climate; no unusual multipath; proper path clearance (0.6F1). Distance calculations assume base station sector antenna with 16 dBi gain and 23 dBi client antenna.</i>				
System Processor And Memory	<ul style="list-style-type: none"> • 166MHz Motorola 8241 processor • 16 Mbytes RAM • 8 Mbytes FLASH 			
Software Specification	Base Station and Subscriber Units			
	Key Features	<ul style="list-style-type: none"> • WOPR protocol • Dynamic Data Rate Selection • Transmit Power Control • Antenna Alignment • Integrity Check for Software Upload • 5, 10, and 20MHz channels • Mobility with auto-scanning, 40 ms handoff times • QoS Support; up to 8 classes of service, up to 8 service flows per class 		
	Satellite Density	<ul style="list-style-type: none"> • Large • Medium • Small • Mini • Micro 		
	Redundancy	<ul style="list-style-type: none"> • Spanning Tree (802.1D) 		
	Bridging and Routing	<ul style="list-style-type: none"> • Bridge (802.1d) • IP/ RIPv1 (RFC 1058) • IP/ RIPv2 (RFC 1388) • CIDR (RFC 1519) • ICMP (RFC 792) • IP (RFC 791) • ARP (RFC 826) 		
	Filtering	<ul style="list-style-type: none"> • Ethernet protocol (Ethertype) • Static MAC • Storm threshold • IP address • Broadcast protocol 		
	Services	<ul style="list-style-type: none"> • DHCP Server (RFC 2131) • DHCP Client (RFC 2131) • Bi-Directional Bandwidth Control 		
	VLAN	<ul style="list-style-type: none"> • 802.1Q 		
	Security Features	<ul style="list-style-type: none"> • MAC Authentication • Radius MAC Access Control • WEP/AES-OCB encryption • RADIUS (RFC 2138) 		
	Mobility	<ul style="list-style-type: none"> • Subscriber Unit Roaming 		

Software Specification (cont'd)	Base Station Unit	
	Filtering	<ul style="list-style-type: none"> Intra Cell Blocking
	Subscriber Unit	
	Services	<ul style="list-style-type: none"> NAT (RFC 3022) DHCP Relay (RFC 2131)
Security	<ul style="list-style-type: none"> WORP provides critical feature support for secure long-range wireless deployments in unlicensed frequency spectrum. MD5 (embedded in WORP) authentication between BSU and SU. Filter based on packet information such as unicast/multicast/broadcast MAC or IP. Secure "over the air encryption" with WEP, WEP+, and AES, and AES-CCB. Authentication via Radius Intracell blocking allows the BSU to act as the central policy enforcer for SU to SU communications. 	
Management	<ul style="list-style-type: none"> Link Test Temperature logging SNMPv1/v2 RFC 1157 SNMP v2c RFC 1907 HTTP Server RFC 2616 Telnet RFC 855 TFTP client RFC 783 CLI MIB-II RFC 1213 Ethernet-like MIB RFC 1643 Bridge MIB RFC 1493 802.3MAU RFC 2668 802.11 MIB Remote reboot (reload) or reset to factory default via power injector Private MIB Orinoco MIB 	
Antenna Alignment Tools	<ul style="list-style-type: none"> Audible Tone CLI output 	
Status LEDs	<ul style="list-style-type: none"> Two indicators on the RJ-45 connector to indicate power, wireless traffic, and Ethernet traffic 	
Local Configuration Support	RS-232 Serial port	
	<ul style="list-style-type: none"> RJ11 port built-into the unit DB9 Female via a converter (included) 	
Compliance And Standards	Safety	<ul style="list-style-type: none"> IEC 60950 3rd Ed (1999)
	Radio Approvals	<ul style="list-style-type: none"> USA FCC 15.107,15-109; 15-203-15.205, 15.207, 15.209; 15.247; 15.401 – 15.407 Canada RSS-102; RSS-210; ICES-003
	EMI and Susceptibility (Class B)	<ul style="list-style-type: none"> USA FCC Part 15.107 Canada ICES-003
	Water and Dust Proof	<ul style="list-style-type: none"> NEMA4/IP67

Electrical	5054-R-LR POE Power Injector	<ul style="list-style-type: none"> • Custom Power over Ethernet (802.3af compatible) • Input: Voltage 110 to 250 VAC (47-63Hz) • Output: 48V @ 420mA MAX (injected into the Cat-5 Cable) • Pin for Remote reboot (reload) or reset to factory default
	5054-R-LR Outdoor Radio Unit	<ul style="list-style-type: none"> • Power Consumption: 7.5W typical. Up to 20 Watts across full operating temperature range. • Input: Voltage 42 to 60 VDC
Dimensions	Base Station and Subscriber Unit	<ul style="list-style-type: none"> • Packaged: 14.57 in x 13.70 in x 8.19 in (370 mm x 348 mm x 208 mm)
	Base Station and Subscriber Unit with Type-N Connector	<ul style="list-style-type: none"> • Unpackaged: 10.5 in x 10.5 in x 3.25 in (267 mm x 267 mm x 83 mm)
	Subscriber Unit with Integrated 23-dBi Antenna	<ul style="list-style-type: none"> • Unpackaged: 12.60 in x 12.60 in x 3.50 in (320 mm x 320 mm x 89 mm)
Weight	Base Station and Subscriber Unit with Type-N Connector	<ul style="list-style-type: none"> • Packaged weight: 9.2 lbs (4.2 kg) • Unpackaged weight: 5.5 lbs (2.49 kg) Unit-only, .45 lbs (.20 kg) for power supply
	Subscriber Unit with Integrated 23-dBi or 18-dBi Antenna	<ul style="list-style-type: none"> • Packaged weight: 10.1 lbs (4.6 kg) • Unpackaged weight: 6.0 lbs (2.72 kg) Unit-only, .45 lbs (.20 kg) for power supply
Environmental	Operating	<ul style="list-style-type: none"> • -33° to 60°C (-27.5° to 140° Fahrenheit) • 100% humidity • Wind loading: 125mph
	Storage	<ul style="list-style-type: none"> • -55° to 80°C (-41° to 176° Fahrenheit) • 100% humidity
Packaging Contents	Base Station or Subscriber Unit	<ul style="list-style-type: none"> • One Tsunami MP.11 Model 5054-r-LR Base Station or Subscriber Unit • One wall/ pole mounting bracket • One Power-Over-Ethernet injector • One country specific power cord • One Ethernet cable weather-proof plug • One Documentation and Software CD-ROM
MTBF	100,000 hrs	
Warranty	One Year	

¹Check with the local regulatory agency for certain restrictions

For detailed technical specifications, please go to http://www.proxim.com/products/mp11_bs/index.html



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