



# Tsunami QuickBridge.11

## Model 2454-R and 5054-R

### Technical Specifications

#### APPLICATIONS

- **Backhaul to a Central POP**  
Avoid expensive installation and recurring charge of a second wireline backhaul to a remote virtual POP
- **Leased Line Redundancy**  
Eliminate recurring DS-3 leased line charges with one time installation charge of a QuickBridge.11 link
- **Repeater**  
Extend distance or overcome path blockage by adding point to point hops
- **High-bandwidth Last Mile Access**  
Use QuickBridge.11s to deliver TLS (Transparent LAN Services) to corporate parks
- **Inter-POP Redundancy**  
Avoid downtimes caused by a wireline backhaul failure by adding a QuickBridge.11 link as inter-POP redundancy

<p><b>Part Numbers</b>  <b>(North America region)</b></p>	<p><b><u>Model 2454-R</u></b> • 2454-QB-US-WORLD Tsunami QuickBridge.11 Model 2454-R Bundle - US/CAN PSU - WORLD</p> <p><b><u>Model 5054-R</u></b> • 5054-QB-US Tsunami QuickBridge.11 Model 5054-R Bundle - US/CAN PSU</p>
<p><b>Part Numbers</b>  <b>(Europe and Middle East regions)</b></p>	<p><b><u>Model 2454-R</u></b> • 2454-QB-EU Tsunami QuickBridge.11 Model 2454-R Bundle - Europe PSU • 2454-QB-UK Tsunami QuickBridge.11 Model 2454-R Bundle - UK PSU</p> <p><b><u>Model 5054-R</u></b> • 5054-QB-EU Tsunami QuickBridge.11 Model 5054-R Bundle - Europe PSU • 5054-QB-UK Tsunami QuickBridge.11 Model 5054-R Bundle - UK PSU</p>
<p><b>Part Numbers</b>  <b>(Asia Pacific region)</b></p>	<p><b><u>Model 2454-R</u></b> • 2454-QB-US-WORLD Tsunami QuickBridge.11 Model 2454-R Bundle - US/CAN PSU - WORLD • 2454-QB-EU Tsunami QuickBridge.11 Model 2454-R Bundle - Europe PSU • 2454-QB-UK Tsunami QuickBridge.11 Model 2454-R Bundle - UK PSU • 2454-QB-AU Tsunami QuickBridge.11 Model 2454-R Bundle - Australia PSU • 2454-QB-CN Tsunami QuickBridge.11 Model 2454-R Bundle - China PSU • 2454-QB-SK Tsunami QuickBridge.11 Model 2454-R Bundle - South Korea PSU</p> <p><b><u>Model 5054-R</u></b> • 5054-QB-US Tsunami QuickBridge.11 Model 5054-R Bundle - US/CAN PSU • 5054-QB-EU Tsunami QuickBridge.11 Model 5054-R Bundle - Europe PSU • 5054-QB-UK Tsunami QuickBridge.11 Model 5054-R Bundle - UK PSU • 5054-QB-AU Tsunami QuickBridge.11 Model 5054-R Bundle - Australia PSU • 5054-QB-CN Tsunami QuickBridge.11 Model 5054-R Bundle - China PSU • 5054-QB-SK Tsunami QuickBridge.11 Model 5054-R Bundle - South Korea PSU</p>
<p><b>Part Numbers</b>  <b>(Caribbean and Latin America region)</b></p>	<p><b><u>Model 2454-R</u></b> • 2454-QB-US-WORLD Tsunami QuickBridge.11 Model 2454-R Bundle - US/CAN PSU - WORLD • 2454-QB-BR Tsunami QuickBridge.11 Model 2454-R Bundle - Brazil PSU</p> <p><b><u>Model 5054-R</u></b> • 5054-QB-US Tsunami QuickBridge.11 Model 5054-R Bundle - US/CAN PSU • 5054-QB-BR Tsunami QuickBridge.11 Model 5054-R Bundle - Brazil PSU</p>

# Tsunami QuickBridge.11 Model 2454-R and 5054-R Technical Specifications

<b>Part Numbers (Universal)</b>	<p><b><u>Accessories</u></b></p> <ul style="list-style-type: none"> <li>70251 PoE (Power Over Ethernet) Surge Arrestor for Tsunami MP.11 and QuickBridge.11</li> </ul> <p><b><u>Outdoor Ethernet Cables</u></b></p> <ul style="list-style-type: none"> <li>69819 25m outdoor, terminated CAT5 cable for Tsunami MP.11 or QB.11 with three RJ-45 and one weather-proof Ethernet port cap</li> <li>69820 50m outdoor, terminated CAT5 cable for Tsunami MP.11 or QB.11 with three RJ-45 and one weather-proof Ethernet port cap</li> <li>69821 75m outdoor, terminated CAT5 cable for Tsunami MP.11 or QB.11 with three RJ-45 and one weather-proof Ethernet port cap</li> </ul> <p><b><u>Power Injector</u></b></p> <ul style="list-style-type: none"> <li>69823 Spare Power DC Injector for Tsunami MP.11 or QB.11 (-R model ONLY)</li> </ul>																																																																																																																																																																																																													
<b>Regulatory Approvals and Frequency Ranges for 2454-R<sup>1</sup></b>	<p><b>Model 2454-R</b></p> <table border="1"> <thead> <tr> <th>Country</th> <th>Frequency Range (GHz)</th> <th colspan="3">Number of Channels</th> <th>Certification</th> </tr> </thead> <tbody> <tr> <td colspan="6"><b>North America</b></td> </tr> <tr> <td>USA</td> <td></td> <td>5MHz</td> <td>10MHz</td> <td>20MHz</td> <td rowspan="3">Yes</td> </tr> <tr> <td>Canada</td> <td>2.40-2.462</td> <td>11</td> <td>Up to 11</td> <td>Up to 11</td> </tr> <tr> <td>Mexico</td> <td>2.40 - 2.472</td> <td>13</td> <td>Up to 13</td> <td>Up to 13</td> </tr> <tr> <td colspan="6"><b>EU Countries</b></td> </tr> <tr> <td>Austria</td> <td></td> <td></td> <td></td> <td></td> <td rowspan="20">Yes</td> </tr> <tr> <td>Belgium</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cyprus</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Czech Republic</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Denmark</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Estonia</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Finland</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>France</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Germany</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Greece</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Hungary</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ireland</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Italy</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Latvia</td> <td></td> <td>5MHz</td> <td>10MHz</td> <td>20MHz</td> </tr> <tr> <td>Luxemburg</td> <td>2.40 - 2.4835</td> <td>13</td> <td>Up to 13</td> <td>Up to 13</td> </tr> <tr> <td>Lithuania</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Malta</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Netherlands</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Poland</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Portugal</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Spain</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sweden</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Slovakia</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Slovenia</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>United Kingdom</td> <td></td> <td></td> <td></td> <td></td> <td>Yes</td> </tr> <tr> <td colspan="6"><b>Other European Countries</b></td> </tr> <tr> <td>Iceland</td> <td></td> <td></td> <td></td> <td></td> <td rowspan="4">Yes</td> </tr> <tr> <td>Liechtenstein</td> <td></td> <td>5MHz</td> <td>10MHz</td> <td>20MHz</td> </tr> <tr> <td>Norway</td> <td>2.40 - 2.4835</td> <td>13</td> <td>Up to 13</td> <td>Up to 13</td> </tr> <tr> <td>Switzerland</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="6"><b>South America</b></td> </tr> <tr> <td>Brazil</td> <td></td> <td>5MHz</td> <td>10MHz</td> <td>20MHz</td> <td rowspan="2">In Process</td> </tr> <tr> <td></td> <td>2.40 - 2.4835</td> <td>13</td> <td>Up to 13</td> <td>Up to 13</td> </tr> </tbody> </table>	Country	Frequency Range (GHz)	Number of Channels			Certification	<b>North America</b>						USA		5MHz	10MHz	20MHz	Yes	Canada	2.40-2.462	11	Up to 11	Up to 11	Mexico	2.40 - 2.472	13	Up to 13	Up to 13	<b>EU Countries</b>						Austria					Yes	Belgium					Cyprus					Czech Republic					Denmark					Estonia					Finland					France					Germany					Greece					Hungary					Ireland					Italy					Latvia		5MHz	10MHz	20MHz	Luxemburg	2.40 - 2.4835	13	Up to 13	Up to 13	Lithuania					Malta					Netherlands					Poland					Portugal					Spain					Sweden					Slovakia					Slovenia					United Kingdom					Yes	<b>Other European Countries</b>						Iceland					Yes	Liechtenstein		5MHz	10MHz	20MHz	Norway	2.40 - 2.4835	13	Up to 13	Up to 13	Switzerland					<b>South America</b>						Brazil		5MHz	10MHz	20MHz	In Process		2.40 - 2.4835	13	Up to 13	Up to 13
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	<b>APAC</b>					Yes
	Australia					
	New Zealand					
	Japan					
	Hong Kong	2.40 - 2.4835	5MHz 13	10MHz Up to 13	20MHz Up to 13	
	S. Korea					
	China					
	Taiwan					
<b>Regulatory Approvals and Frequency Ranges for 5054-R<sup>1</sup></b>	<b>Model 5054-R</b>					
	<b>Country</b>	<b>Frequency Range (GHz)</b>	<b>Number of Channels</b>			<b>Certification</b>
	<b>North America</b>					
	USA		5MHz	10MHz	20MHz	Yes
	Canada	5.25 - 5.35	Up to 15	Up to 7	Up to 4	
	Mexico	5.725 - 5.85	Up to 21	Up to 11	Up to 5	
	<b>EU Countries</b>					
	Austria					Yes
	Belgium					
	Cyprus					
	Czech Republic					
	Denmark					
	Estonia					
	Finland					
	France					
	Germany					
	Greece					
	Hungary					
	Ireland		5MHz	10MHz	20MHz	
	Italy	5.47 - 5.70	Up to 46	Up to 23	Up to 11	
	Latvia					
	Luxemburg					
	Lithuania					
	Malta					
	Netherlands					
	Poland					
	Portugal					
	Spain					
	Sweden					
	Slovakia					
	Slovenia					
	United Kingdom		5MHz	10MHz	20MHz	Yes
		5.47 - 5.70	Up to 46	Up to 23	Up to 11	
		5.725 - 5.85	Up to 21	Up to 11	Up to 5	
	<b>Other European Countries</b>					
	Iceland					Yes
	Liechtenstein		5MHz	10MHz	20MHz	
	Norway	5.47 - 5.70	Up to 46	Up to 23	Up to 11	
	Switzerland					
	<b>South America</b>					
	Brazil		5MHz	10MHz	20MHz	Yes
5.25 - 5.35		Up to 15	Up to 7	Up to 4		
5.47 - 5.70		Up to 46	Up to 23	Up to 11		
5.725 - 5.85		Up to 21	Up to 11	Up to 5		

# Tsunami QuickBridge.11 Model 2454-R and 5054-R Technical Specifications

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<b>Integrated Antenna Specification</b>	<p><b>Model 2454-R</b></p> <ul style="list-style-type: none"> <li>Part Number: 2454-QB-xx</li> <li>Frequency range: 2.4 to 2.5 GHz</li> <li>Nominal Impedance: 50 Ohms</li> <li>Gain: 18 dBi</li> <li>Front-to-Back Ratio: 25 dB</li> <li>HPBW/vertical: 25 degrees</li> <li>HPBW/horizontal: 25 degrees</li> <li>Cross Polarization: 20 dB</li> <li>Power handling: 1 W</li> <li>VSWR: 1.5 : 1 Max</li> </ul> <p><b>Model 5054-R</b></p> <ul style="list-style-type: none"> <li>Part Number: 5054-QB-xx</li> <li>Frequency range: 5250 - 5875 MHz</li> <li>Nominal Impedance: 50 ohms</li> <li>Gain: 23 dBi</li> <li>Front-to-Back Ratio: 35 dB</li> <li>HPBW/vertical: 9 degrees</li> <li>HPBW/horizontal: 9 degrees</li> <li>Cross Polarization: 24 dB</li> <li>Power handling: 1 W (cw)</li> <li>VSWR: 2.0 : 1 Max</li> </ul>																																									
<b>RF Modulation and Data Rates</b>	<p><b>Model 2454-R and 5054-R</b> <b>OFDM (Orthogonal Frequency Division Multiplexing)</b></p> <table border="1"> <thead> <tr> <th></th> <th><u>20 MHz Channels</u></th> <th><u>10 MHz Channels</u></th> <th><u>5 MHz Channels</u></th> </tr> </thead> <tbody> <tr> <td>• BPSK</td> <td>6 and 9 Mbps</td> <td>3 and 4.5 Mbps</td> <td>2.25 and 1.5 Mbps</td> </tr> <tr> <td>• QPSK</td> <td>12 and 18 Mbps</td> <td>6 and 9 Mbps</td> <td>3 and 4.5 Mbps</td> </tr> <tr> <td>• 16-QAM</td> <td>24 and 36 Mbps</td> <td>12 and 18 Mbps</td> <td>6 and 9 Mbps</td> </tr> <tr> <td>• 64 QAM ½</td> <td>48 Mbps</td> <td>24 Mbps</td> <td>12 Mbps</td> </tr> <tr> <td>• 64 QAM ¼</td> <td>54 Mbps</td> <td>36 Mbps</td> <td>18Mbps</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Maximum Packet Size: 1522 Bytes</li> </ul>					<u>20 MHz Channels</u>	<u>10 MHz Channels</u>	<u>5 MHz Channels</u>	• BPSK	6 and 9 Mbps	3 and 4.5 Mbps	2.25 and 1.5 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 ½	48 Mbps	24 Mbps	12 Mbps	• 64 QAM ¼	54 Mbps	36 Mbps	18Mbps														
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<b>Wireless Protocol</b>	<ul style="list-style-type: none"> <li>WORP (Wireless Outdoor Router Protocol)</li> </ul>																																									
<b>Device Interface</b>	<p><b>Ethernet</b></p> <ul style="list-style-type: none"> <li>Auto-sensing 10/100BASE-TX Ethernet</li> </ul>																																									

# Tsunami QuickBridge.11 Model 2454-R and 5054-R

## Technical Specifications

<b>Receive Sensitivity (BER=10<sup>-6</sup>):</b>	<b>Model 2454-R</b>				
	Modulation	40 MHz Channels Turbo Mode (US Only)	20 MHz Channels Standard Mode	10 MHz Channels Standard Mode	5 MHz Channels Standard Mode
	64QAM 3/4 64QAM 1/2 16QAM 3/4 16QAM 1/2 QPSK 3/4 QPSK 1/2 BPSK 3/4 BPSK 1/2	N/A	-71 dBm @54Mbps -74 dBm @48Mbps -79 dBm @36Mbps -84 dBm @24Mbps -87 dBm @18Mbps -89 dBm @12Mbps -91 dBm @9Mbps -91 dBm @6Mbps	-74 dBm @36Mbps -77 dBm @24Mbps -82 dBm @18Mbps -87 dBm @12Mbps -90 dBm @9Mbps -92 dBm @6Mbps -94 dBm @4.5Mbps -94 dBm @3Mbps	-77 dBm @18Mbps -80 dBm @12Mbps -85 dBm @9Mbps -90 dBm @6Mbps -93 dBm @4.5Mbps -95 dBm @3Mbps -97 dBm @2.25Mbps -97 dBm @1.5Mbps
	<b>Model 5054-R</b>				
	Modulation	40 MHz Channels Turbo Mode (US only)	20 MHz Channels Standard Mode	10 MHz Channels Standard Mode	5 MHz Channels Standard Mode
	64QAM 3/4 64QAM 1/2 16QAM 3/4 16QAM 1/2 QPSK 3/4 QPSK 1/2 BPSK 3/4 BPSK 1/2	-66dBm @108Mbps -68 dBm @96Mbps -75dBm @72Mbps -78dBm @48Mbps -81dBm @36Mbps -83 dBm @24Mbps -84 dBm @18Mbps -85 dBm @12Mbps	-69 dBm @54Mbps -72 dBm @48Mbps -77 dBm @36Mbps -80 dBm @24Mbps -83 dBm @18Mbps -86 dBm @12Mbps -87 dBm @9Mbps -88 dBm @6Mbps	-72 dBm @36Mbps -75 dBm @24Mbps -80 dBm @18Mbps -83 dBm @12Mbps -86 dBm @9Mbps -89 dBm @6Mbps -90 dBm @4.5Mbps -91 dBm @3Mbps	-75 dBm @18Mbps -78 dBm @12Mbps -83 dBm @9Mbps -86 dBm @6Mbps -89 dBm @4.5Mbps -92 dBm @3Mbps -93dBm @2.25Mbps -94 dBm @1.5Mbps
<b>Transmit Power Settings</b>	<b>Model 2454-R</b>				
		<b>6-24 Mbps @ 20 MHz</b> 16QAM 1/2 QPSK 3/4 QPSK 1/2 BPSK 3/4 BPSK 1/2	<b>36 Mbps @ 20 MHz</b> 16QAM 3/4	<b>48 Mbps @ 20 MHz</b> 64QAM 1/2	<b>54 Mbps @ 20 MHz</b> 64QAM 3/4
	2.400-2.483 GHz	16 dBm	16 dBm	14 dBm	13 dBm
	Output Power Attenuation: 0 - 18dB, in 3dB steps Output Power Values will have a tolerance of +/- 1.5 dB				
	<b>Model 5054-R</b>				
		<b>6-24 Mbps @ 20 MHz</b> 16QAM 1/2 QPSK 3/4 QPSK 1/2 BPSK 3/4 BPSK 1/2	<b>36 Mbps @ 20 MHz</b> 16QAM 3/4	<b>48 Mbps @ 20 MHz</b> 64QAM 1/2	<b>54 Mbps @ 20 MHz</b> 64QAM 3/4
	5.25-5.35 GHz 5.47-5.725 GHz 5.725-5.850 GHz	• 15 dBm • 16 dBm • 16 dBm	• 13 dBm • 13 dBm • 13 dBm	• 12 dBm	• 11 dBm
	Output Power Attenuation: 0 - 18dB, in 3dB steps Output Power Values will have a tolerance of +/- 1.5 dB				
<b>Range Information for 5054-R<sup>2</sup></b>		54 Mbps	36 Mbps	6 Mbps	
	5.25-5.35 GHz (US)	1.0 mi	2.4 mi	5.2 mi	
	5.47-5.7GHz (ETSI)	1.0 mi	2.4 mi	5.2 mi	
	5.725-5.850 (US)	1.6 mi	3.5 mi	9.7 mi	

# Tsunami QuickBridge.11 Model 2454-R and 5054-R Technical Specifications

<b>Range information for 2454-R<sup>2</sup></b>		54 Mbps	36 Mbps	6 Mbps
	2.4-2.4835GHz (US)	1.2 mi	3.2 mi	9.8 mi
	2.4-2.8 GHz (ETSI)	0.4 mi	1.0 mi	3.2 mi
<b>System Processor and Memory</b>	<ul style="list-style-type: none"> <li>• 166MHz Motorola 8241 processor</li> <li>• 16 Mbytes RAM</li> <li>• 8 Mbytes FLASH</li> </ul>			
<b>Software Specification</b>	<ul style="list-style-type: none"> <li>• Miscellaneous <ul style="list-style-type: none"> <li>• Dynamic Data Rate Selection</li> <li>• Transmit Power Control</li> <li>• Antenna Alignment</li> <li>• Integrity Check for Software Upload</li> <li>• 5, 10, and 20MHz channels</li> </ul> </li> <li>• Bridging and Routing <ul style="list-style-type: none"> <li>• Bridge (802.1d)</li> <li>• IP/ RIPv1 (RFC 1058)</li> <li>• IP/ RIPv2 (RFC 1388)</li> <li>• CIDR (RFC 1519)</li> <li>• ICMP (RFC 792)</li> <li>• IP (RFC 791)</li> <li>• ARP (RFC 826)</li> </ul> </li> <li>• Filtering <ul style="list-style-type: none"> <li>• Ethernet protocol (Ethertype)</li> <li>• Static MAC</li> <li>• Storm threshold</li> <li>• IP address</li> <li>• Broadcast protocol</li> </ul> </li> <li>• Services <ul style="list-style-type: none"> <li>• DHCP Server (RFC 2131)</li> <li>• DHCP Client (RFC 2131)</li> <li>• Bi-Directional Bandwidth Control</li> <li>•</li> </ul> </li> <li>• Security Features <ul style="list-style-type: none"> <li>• MAC Authentication</li> <li>• Radius MAC Access Control</li> <li>• WEP/AES-OCB encryption</li> <li>• RADIUS (RFC 2138)</li> </ul> </li> </ul>			
<b>Security</b>	<ul style="list-style-type: none"> <li>• Filter based on packet information such as unicast/multicast/ broadcast MAC or IP.</li> <li>• Secure "over the air encryption" with WEP, WEP+, and AES, and AES-CCB).</li> <li>• Authentication via Radius</li> </ul>			

# Tsunami QuickBridge.11 Model 2454-R and 5054-R Technical Specifications

<b>Management</b>	<ul style="list-style-type: none"> <li>• SU/BSU statistics</li> <li>• Link Test</li> <li>• Temperature logging</li> <li>• Remote reboot (reload) or reset to factory default via power injector</li> </ul> <ul style="list-style-type: none"> <li>• SNMPv1           RFC 1157</li> <li>• SNMP v2c       RFC 1907</li> <li>• HTTP Server     RFC 2616</li> <li>• Telnet           RFC 855</li> <li>• TFTP client      RFC 783</li> <li>• CLI</li> </ul> <ul style="list-style-type: none"> <li>• MIB-II           RFC 1213</li> <li>• Ethernet-like MIB   RFC 1643</li> <li>• Bridge MIB      RFC 1493</li> <li>• 802.3MAU       RFC 2668</li> <li>• 802.11 MIB</li> <li>• Private MIB</li> <li>• Orinoco MIB</li> </ul>
<b>Antenna Alignment Tools</b>	<ul style="list-style-type: none"> <li>• Audible Tone</li> <li>• CLI output</li> </ul>
<b>Status LEDs</b>	<ul style="list-style-type: none"> <li>• Two indicators on the RJ-45 connector to indicate power, wireless traffic, and Ethernet traffic</li> </ul>
<b>Local Configuration Support</b>	<b><u>RS-232 Serial port</u></b> <ul style="list-style-type: none"> <li>• RJ11 port built-into the unit</li> <li>• DB9 Female via a converter (included)</li> </ul>
<b>Compliance and Standards</b>	<b><u>Safety</u></b> <ul style="list-style-type: none"> <li>• UL               60950, UL50 (radio units, except CAT-5 cable)</li> <li>• CSA             22.2 No. 60950-00</li> <li>• IEC             60950 3rd Ed (1999)</li> </ul> <b><u>Radio Approvals</u></b> <ul style="list-style-type: none"> <li>• USA             FCC 15.107, 15-109; 15-203-15.205, 15.207, 15.209; 15.247; 15.401-15.407</li> <li>• Canada         RSS-102; RSS-210; ICES-003</li> <li>• Europe (ETSI)   EN 301.893; EN 300.328; EN 301.489-1; EN 301.489-17; EN 300-440; EN50371</li> <li>• ARIB           STD-T71, STD 33, STD 66</li> </ul> <b><u>EMI and Susceptibility (Class B)</u></b> <ul style="list-style-type: none"> <li>• USA             FCC Part 15.107</li> <li>• Canada         ICES-003</li> </ul> <b><u>Water and Dust Proof</u></b> <ul style="list-style-type: none"> <li>• IP65</li> </ul>

# Tsunami QuickBridge.11 Model 2454-R and 5054-R Technical Specifications

<b>Electrical</b>	<p><b><u>5054-R / 2454-R POE Power Injector</u></b></p> <ul style="list-style-type: none"> <li>• Custom Power over Ethernet for Tsunami MP.11 Model 5054-R only</li> <li>• Input: Voltage 110 to 250 VAC (47-63Hz)</li> <li>• Output: Current 420mA at 48V (injected into the Cat-5 Cable)</li> <li>• Pin for Remote reboot (reload) or reset to factory default</li> </ul> <p><b><u>5054-R / 2454-R Outdoor Radio Unit</u></b></p> <ul style="list-style-type: none"> <li>• Power Consumption: 7.5W typical.. Up to 20 Watts across full operating temperature range.</li> <li>• Input: Voltage 42 to 60 VDC</li> <li>• Pin for Remote reboot or reset to factory default</li> </ul>
<b>Dimensions</b>	Packaged: 22.5 x 15.5 x 14.75 (inches) (571mm x 394mm x 375mm)
<b>Weight</b>	Packaged: 35 lbs (15.9kg)
<b>Environmental</b>	<p><b><u>Operating</u></b></p> <ul style="list-style-type: none"> <li>• -33° to 60°C (-27.5° to 140° Fahrenheit)</li> <li>• 100% humidity</li> <li>• Wind loading: 125mph</li> </ul> <p><b><u>Storage</u></b></p> <ul style="list-style-type: none"> <li>• -55° to 80°C (-41° to 176° Fahrenheit)</li> <li>• 100% humidity</li> </ul>
<b>Packaging Contents</b>	<ul style="list-style-type: none"> <li>• Two 50 Meter POE Outdoor Rated CAT 5 Cables with connectors</li> <li>• Two Ethernet cable weatherproof plugs</li> <li>• Two Tsunami QuickBridge.11 5054-R or Tsunami QuickBridge.11 2454-R radios w/integrated antenna</li> <li>• Two Pole Mounting Brackets</li> <li>• One CD-ROM with user documentation and software</li> <li>• Two Power-Over-Ethernet injector for Models 2454-R or 5054-R</li> <li>• Two country specific power cord</li> <li>• One Quick Install Guide</li> </ul>
<b>MTBF</b>	<ul style="list-style-type: none"> <li>• 100,000 hrs</li> </ul>
<b>Warranty</b>	<ul style="list-style-type: none"> <li>• One year</li> </ul>

1 Check with the local regulatory agency for certain restrictions

- 2
- PMP configuration using USA regulations for L and U bands, ETSI regulations for M bands
  - Clear LOS
  - 99.995% availability
  - Sector antenna (17dBi, 60-degrees) at BSU with short 1dB jumper cable
  - Fade margin minimum of 10dB to 2 miles, 0.2dB additional fade margin for every 0.1 mile to 15dB
  - Predicted availability >99.990% (one-way) for all configurations
  - Note: Distance calculations for 5 and 10 MHz channels are comparable for ETSI regulatory domains. Proper TPC settings (3 and 6dB) respectively, should be set to meet power density rules. Increased distances are possible in the US with proper link engineering.