



## CRITICAL COMMUNICATION NETWORKS

Reliable Performance – From The Tower To The Core

# PRODUCT CAPABILITIES

	PRODUCT	DESCRIPTION	FEATURES	OPTIONS
RF FILTERING	Tower Mounted Amplifiers	<ul style="list-style-type: none"> <li>Single band and dual band TMA's for full AISG and CWA operation</li> </ul>	<ul style="list-style-type: none"> <li>Uplink gain improves system noise performance</li> <li>Integrated filters remove unwanted interference while amplifying the uplink path</li> </ul>	<ul style="list-style-type: none"> <li>Full range of single or dual band TMA's with or without bypass</li> </ul>
	RF Combiners	<ul style="list-style-type: none"> <li>Customized for combining or splitting frequency bands onto feeder systems</li> <li>Multi-band combiners save CAPEX by minimizing hardware components during installation</li> </ul>	<ul style="list-style-type: none"> <li>Combine specific frequency spectra without incurring high insertion loss</li> <li>Allows operators to integrate frequencies into a common antenna system</li> </ul>	<ul style="list-style-type: none"> <li>Configurations for in-band, dual band, triple band, quad band, and five-band</li> </ul>
	RF Filters	<ul style="list-style-type: none"> <li>Compact interference mitigation products provide rejection in the uplink frequency band</li> <li>Improves network performance in congested RF spectrum locations</li> </ul>	<ul style="list-style-type: none"> <li>RX blocking from unwanted RF interference</li> <li>Removes TX spurious from the down link when interfering with other systems</li> </ul>	<ul style="list-style-type: none"> <li>Dual duplex, band stop, and band pass filter configurations</li> </ul>
TEST & MEASURE	PIM Analyzers	<ul style="list-style-type: none"> <li>Full line of portable and bench PIM testing analyzers for cell site certification, as well as compliance and manufacturing testing</li> </ul>	<ul style="list-style-type: none"> <li>Spectrum monitor, frequency sweep and time trace modes</li> <li>Fully compliant with IEC PIM test recommendations</li> <li>Extensive reporting capabilities</li> </ul>	<ul style="list-style-type: none"> <li>Supports global wireless telecom bands</li> <li>E-Series (bench)</li> <li>iPA Series (portable)</li> <li>iTA (portable twin band)</li> </ul>
	Cable & Antenna Analyzer	<ul style="list-style-type: none"> <li>Rugged portable sweep testing analyzer for frequency range of operation between 600 MHz to 2750 MHz</li> </ul>	<ul style="list-style-type: none"> <li>Return loss, VSWR, cable loss, Distance-to-Fault, and spectrum monitoring</li> </ul>	<ul style="list-style-type: none"> <li>iVA battery operated</li> <li>Bluetooth enabled</li> </ul>
SURGE PROTECTION	AC Protectors	<ul style="list-style-type: none"> <li>Comprehensive AC product portfolio to address surge protection of critical applications</li> </ul>	<ul style="list-style-type: none"> <li>The right technology for the right application – silicon (SASD), MOV and hybrid</li> </ul>	<ul style="list-style-type: none"> <li>Multiple AC voltage configurations</li> <li>Various mounting options</li> <li>Status indication</li> </ul>
	DC Protectors	<ul style="list-style-type: none"> <li>Wide range of DC surge protection products for low-to-high voltage applications</li> </ul>	<ul style="list-style-type: none"> <li>Silicon (SASD) technology offers quick response and reliable voltage protection for sensitive equipment</li> <li>Large surge capacity MOV technology for high exposure applications</li> </ul>	<ul style="list-style-type: none"> <li>Flexible mounting options</li> <li>Indoor and outdoor</li> <li>Status indication</li> </ul>
	Dataline Protectors	<ul style="list-style-type: none"> <li>Surge protection devices optimized for high-speed gigabit to 4/20 mA analog signals</li> </ul>	<ul style="list-style-type: none"> <li>Ethernet, GbE, GbE PoE+ and GbE PoE++ applications</li> </ul>	<ul style="list-style-type: none"> <li>Indoor and outdoor</li> <li>Various mounting types and space saving enclosure sizes</li> </ul>
	Coaxial RF Protectors	<ul style="list-style-type: none"> <li>Extensive range of industry-leading, low-voltage let-through protectors for coaxial RF applications</li> </ul>	<ul style="list-style-type: none"> <li>Low throughput energy</li> <li>High surge handling capacity</li> <li>Low insertion loss</li> </ul>	<ul style="list-style-type: none"> <li>Ultra-low PIM protectors</li> <li>DC pass protectors</li> <li>DC block filters</li> <li>Protected Bias-T</li> <li>Grounding solutions</li> </ul>
	Integrated Cabinets	<ul style="list-style-type: none"> <li>Integrated Power Protection Cabinets (PPC) provide full functionality for quick site set up</li> </ul>	<ul style="list-style-type: none"> <li>AC, DC and dataline surge options for indoor and outdoor site applications</li> </ul>	<ul style="list-style-type: none"> <li>Power Protection Cabinets (PPC)</li> <li>ATS and MTS</li> <li>Set-up accessories</li> </ul>
MICROWAVE ANTENNAS	Backhaul Antennas	<ul style="list-style-type: none"> <li>Diverse rugged antenna portfolio from 1.3 GHz to 86 GHz</li> </ul>	<ul style="list-style-type: none"> <li>1 ft. to 8 ft. diameter solutions</li> <li>Rapid on-site assembly</li> <li>7-year warranty</li> </ul>	<ul style="list-style-type: none"> <li>Wide selection including parabolic, sectors, and flat panel antennas</li> </ul>

### RF Protection - TSX Series

Ultra low PIM protectors for 698 MHz to 2.5 GHz, available in DC Block and DC Pass configuration



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iPolyPhaser

### Tower Mounted Amplifiers - TMA2104

2300 MHz twin TMA with 700-850 bypass, AISG 2.0



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kAelus

### Data Protection - ALPU Fit

Protects GbE, PoE+ and GbE PoE++ networks for indoor and outdoor applications



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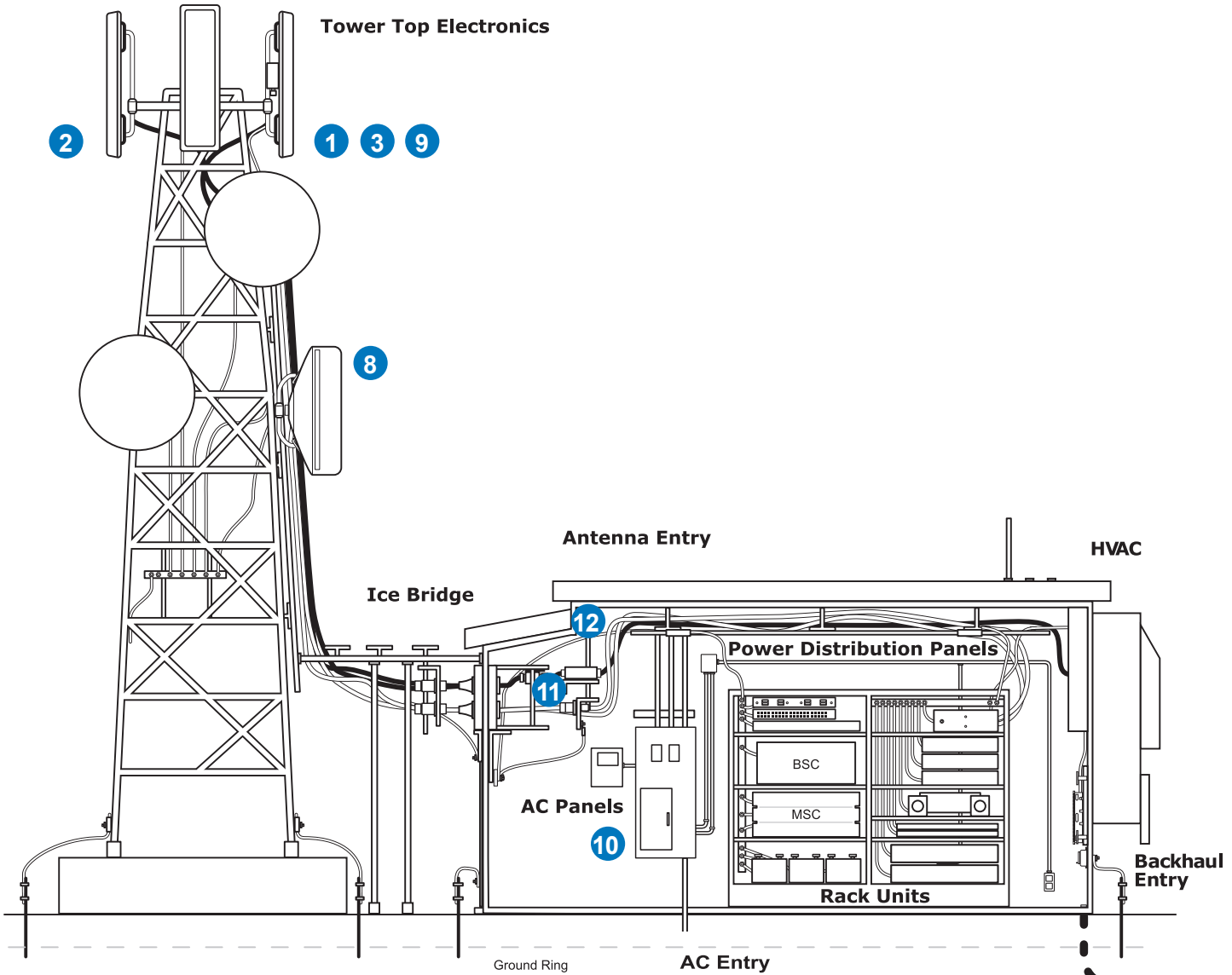
TRANSECTOR

### RF Protection - G

DC Pass filter protectors ideal for RF applications where DC is required

iPolyPhaser

### Tower Top Electronics



### Backhaul Antenna's - Parabolic

Terrestrial microwave point-to-point applications. Variety of performance solutions including SP, HP and SHP



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radiowaves

### DC Protection - DCOD Series

Outdoor, non-degrading silicon protection for DC power supplies up to 25 A



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### AC Protection - SP Series

Reliable MOV technology for a variety of voltages from 120 Vac to 600 Vac



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### Multi-Band Comb

Dual band combiner ideal for 700/850/900 and AWS/PCS applications. Available in single or twin unit configurations

kAelus

### K Series



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### Data Protection - CPX Series

Modular, Ethernet and GbE surge protector, scalable up to 16 ports



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### AC Protection - APEX IMAX

Modular, outdoor, hybrid AC panel protector with remote and visual status monitoring



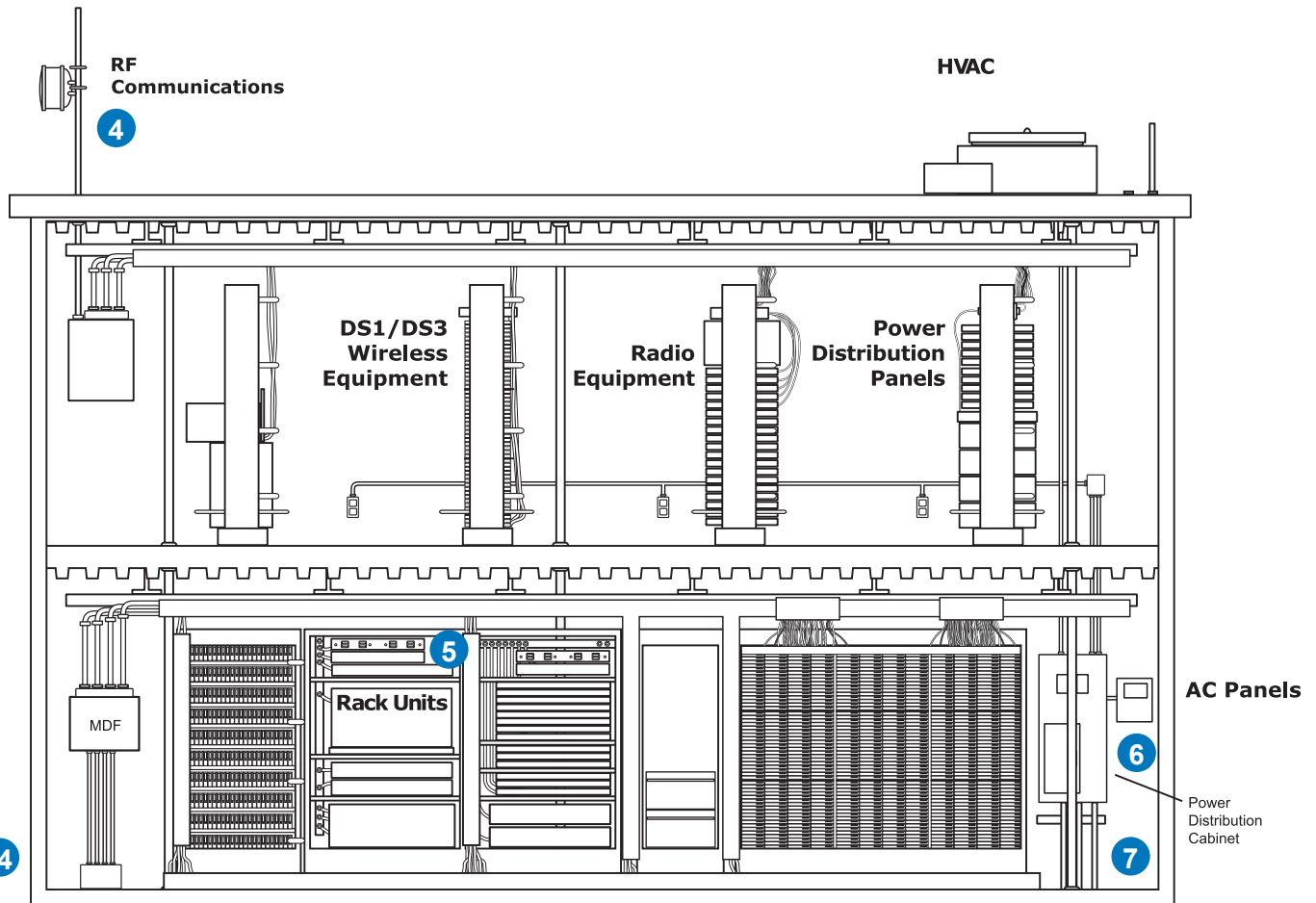
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### Integrated Cabinets - PPC

Manage AC power through smart source selection, robust surge protection, and ruggedized connector design



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### inners - DBC Series



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### RF Filters - TX/RX

Diplexers designed for cost effective antenna sharing between uplink and downlink signals



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### PIM Analyzers - iPA Series

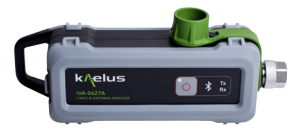
Portable PIM analyzer designed to test tower top, tower base, roof top, and in-building DAS systems



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### Cable & Antenna Analyzer - iVA Series

Rugged RF sweep testing analyzer provides accurate measure of VSWR/return loss and VSWR/return loss fault locations



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# BRANDS YOU TRUST. RELIABILITY YOU COUNT ON.

Kaelus, PolyPhaser, Transtector and RadioWaves invite you to view our new combined range of products and services engineered to ensure reliable signal performance from the tower to the network core. Our essential product solutions support network administrators in crucial efforts to minimize downtime, maintain reliable service and eliminate the loss of revenue due to problems with information delivery.

Each of these well established brands provides a unique set of capabilities and product offerings deployed in critical communications networks worldwide, while also setting global standards through innovation and customer service.





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