



Smart Technology. Delivered.

Telecom-Backhaul Antenna Solutions

Laird designs and manufactures customized, performance-critical products for wireless and other advanced electronics applications.





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About Laird

Laird is a global technology business focused on enabling wireless communication and smart systems, and providing components and systems that protect electronics. Laird operates through two divisions, Wireless Systems and Performance Materials. Wireless Systems solutions include antenna systems, embedded wireless modules, telematics products and wireless automation and control solutions. Performance Materials solutions include electromagnetic interference shielding, thermal management and signal integrity products. As a leader in the design, supply and support of innovative technology, our products allow people, organisations, machines and applications to connect effectively, helping to build a world where smart technology transforms the way of life. Custom products are supplied to major sectors of the electronics industry including the handset, telecommunications, IT, automotive, public safety, consumer, medical, rail, mining and industrial markets. Providing value and differentiation to our customers through innovation, reliable fulfilment and speed, Laird PLC is listed and headquartered in London, and employs over 9,000 people in more than 58 facilities located in 18 countries.

A Brief Introduction to Backhaul

Backhaul consists of carriers, or companies, who set up wireless Internet systems. These systems offer a central hotspot that allows subscribers within a limited coverage area to connect to the hotspot through a wireless connection. Backhaul comprises of a wireless network that covers protocols such as WLAN, WiMAX, Base Station and Point-to-Point. Backhaul antennas are typically used for fixed point wireless at a location.

Depend on Laird

Laird’s Backhaul antennas meet stringent compliance standards and are competitively priced. Its worldwide engineering teams, using proprietary artificial intelligence antenna design software, create antenna designs with the tightest patterns and highest gain in the most compact package. With Laird’s proven expertise in high-capacity manufacturing operations, its Backhaul product line exhibits a good value/performance ratio.

Benefits of Backhaul Technology

Some benefits of using Laird’s Backhaul antennas include:

- Instant Internet connection anywhere around a hotspot
- Quick deployment
- Cost-effective solutions
- Variety of VPOL and HPOL configurations
- Wideband performance
- Well suited for point-to-point or point-to-multipoint applications

WiMAX Internal Antennas

Laird’s internal wireless device antennas feature wide bandwidth to enhance the performance and application of portable wireless devices based on standards such as 802.11 and Bluetooth. The antennas are specifically designed to be embedded inside devices for aesthetically pleasing integration with high durability.

| PART NUMBER | FREQUENCY (MHz) | ANTENNA TYPE | PATTERN TYPE | VSWR | GAIN (dBi) | POLARIZATION | DIMENSIONS (mm) | | CONNECTOR TYPES | MOUNT STYLE | INDOOR/OUTDOOR |
|-----------------|-----------------|--------------|-----------------|------|--|--------------|-----------------|-------|-----------------|---------------|----------------|
| | | | | | | | LENGTH | WIDTH | | | |
| EMX2360A1-10UFL | 2300-6000 | Embedded | Omnidirectional | 2 | 4 dBi (2.3-2.7 GHz), 2.1 dBi (3.3 GHz) and 4 dBi (4.9-5.875 GHz) | Vertical | 2 | 0.65 | IPEX MHF | Surface Mount | Indoor |
| EMX2360A1-15UFL | 2300-6000 | Embedded | Omnidirectional | 2 | | Vertical | 2 | 0.65 | IPEX MHF | Surface Mount | Indoor |
| EMX2360A1-20UFL | 2300-6000 | Embedded | Omnidirectional | 2 | | Vertical | 2 | 0.65 | IPEX MHF | Surface Mount | Indoor |
| EMX2360A1-25UFL | 2300-6000 | Embedded | Omnidirectional | 2 | | Vertical | 2 | 0.65 | IPEX MHF | Surface Mount | Indoor |

Telecom - Backhaul Antennas

General

• CP24-12



• ES24-14-echo



General antennas, otherwise known as Client Antennas, are used at a client site. They are typically directional antennas with gains from 5 dBi to 17 dBi. Due to typically poor site infrastructure at the client locations, these antennas need to be low wind loading. These antennas have either have VPOL or HPOL capability, contributing to balanced performance in each polarity.

| PART NUMBER | FREQUENCY (MHz) | ANTENNA TYPE | PATTERN TYPE | VSWR | GAIN (dBi) | BEAM WIDTH (DEG) | | POLARIZATION | DIMENSIONS (mm) | | | DIA | CONNECTOR TYPES | MOUNT STYLE | INDOOR/OUTDOOR |
|------------------|-----------------|--------------------|------------------|------|------------|------------------|-----|--------------|-----------------|-------|------|-------|---|-------------|----------------|
| | | | | | | EL | AZ | | LENGTH | WIDTH | HT | | | | |
| CP24-12 | 2400-2485 | Circular Polarized | Directional | 1.5 | 12 | 37 | 37 | Circular | 8.5 | - | - | 8 | Type N(f) | Mast | Outdoor |
| ES24-14 | 2400-2485 | Echo (Backfire) | Directional | 1.5 | 14 | 26 | 26 | H/V | - | - | - | 10.24 | Type N(f) | Mast | Outdoor |
| ES58-17 | 5725-5850 | Echo (Backfire) | Directional | 1.5 | 17 | 25 | 25 | H/V | - | 2.5 | - | 10 | Type N(f) | Mast | Outdoor |
| IN5RD Series | 5150-5850 | Indoor | Omni-directional | 1.5 | 5 | 50 | 360 | Vertical | - | - | - | - | Type RSMA, RTNC | Rubber Duck | Outdoor |
| IN7-3RD Series | 698-806 | Indoor | Omni-directional | 1.5 | 3 | 50 | 360 | Vertical | 6.2 | 0.6 | - | - | Type SMA, RSMA | Rubber Duck | Outdoor |
| RD2458-5-NM | 2400/5000 | Dipole | Omni-directional | 2 | 2 | 90 | 360 | Vertical | 7.6 | 0.05 | - | - | Type N(m), RSMA, RTNC, RTNC-W, SMA, TNC | Rubber Duck | Indoor |
| RD2458-5-OTDR-NM | 2400/5000 | Dipole | Omni-directional | 2 | 2 | 90 | 360 | Vertical | 7.6 | 0.05 | - | - | Type N(m), RTNC | Rubber Duck | Outdoor |
| IN800/2700-5 | 806/2700 | Indoor | Omni-directional | 1.5 | 3 | - | 360 | Vertical | - | 3.4 | - | 7.32 | Type N(f) | Surface | Indoor |
| IN800/5900-5 | 800/5900 | Indoor | Omni-directional | 1.5 | 2.2 | - | 360 | Vertical | - | 4.25 | - | 7.25 | Type N(f) | Surface | Indoor |
| LP800-2500-9-NF | 800/2400 | LP | Directional | 1.5 | 9 | 55 | 90 | Vertical | 15.5 | 10.5 | 2.75 | - | Type N(f) | Mast | Outdoor |
| MD24-12 | 2400-2485 | Mini-Directional | Directional | 1.5 | - | - | - | Vertical | - | - | - | - | Type N(f) | Mast | Outdoor |
| MK24 Series | 2400-2485 | Mesh Kit | Omni-directional | 1.5 | 5,7,9 | - | - | Vertical | - | - | - | - | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL | Mast | Outdoor |



Die Cast Enclosure

The Die-Cast Enclosure (DCE) series offers a directional VPOL panel antenna that is contained within a die-cast aluminum enclosure. The enclosure adds to the long life of the antenna in outdoor environments. The powder coat paint over aluminum construction offers unsurpassed resistance to corrosion. The die-cast enclosure has extra heavy duty mounting flanges for reliable mounting to poles or surface mounting to walls along with the inclusion of seven engineered hole knockouts which allow for many different configurations of connectors and feedthrus without the need for drilling holes.



• DCE 7x6x2

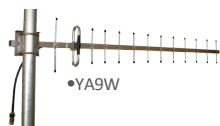
| PART NUMBER | FREQUENCY (MHz) | VSWR | GAIN (dBi) | DIMENSIONS (mm) | | | CONNECTOR TYPES |
|-------------------|-----------------|------|------------|-----------------|-------|----|--|
| | | | | LENGTH | WIDTH | HT | |
| DCE10D-2419-NF | 2400/2500 | 1.5 | 19 | 10 | 2 | 10 | Type N(f) |
| DCE10D-4924-NF | 4940-5850 | 1.5 | 24 | 10 | 2 | 10 | Type N(f) |
| DCE10D-912-NF | 902-928 | 1.5 | 12 | 10 | 2 | 10 | Type N(f) |
| DCE10I-2416-FSMF | 2400/2500 | 1.5 | 16 | 10 | 2 | 10 | Type FSMF, MCM, MMCXP, RMMXP, RSMAM, RTNM, SSMB, UFL |
| DCE10I-2451-FSMF | 2400/5000 | 2 | 12 | 10 | 2 | 10 | Type FSMF, MCM, MMCXP, RMMXP, RSMAM, RTNM, SSMB, UFL |
| DCE10I-4919-FSMF | 4940-5850 | 1.7 | 19 | 10 | 2 | 10 | Type FSMF, MCM, MMCXP, RMMXP, RSMAM, RTNM, SSMB, UFL |
| DCE10I-985-FSMF | 902-928 | 1.5 | 8 | 10 | 2 | 10 | Type FSMF, MCM, MMCXP, RMMXP, RSMAM, RTNM, SSMB, UFL |
| DCE-ANT2314 | 2300/2500 | 1.5 | 14 | 7 | 2 | 6 | Type MC, MMCX, RMMCX, RSMA, RTNC, SSMB, UFL |
| DCE-ANT2412-MC | 2400/2500 | 1.5 | 12 | 7 | 2 | 6 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| DCE-ANT2458-MC | 2400/5000 | 1.5 | 12,15 | 7 | 2 | 6 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| DCE-ANT24KIT-MMCX | 2400/2500 | 1.5 | 12 | 7 | 2 | 6 | Type MMCX, RMMCX, RSMA, RTNC, UFL |
| DCE-ANT3516 | 3300/3500 | 1.5 | 16 | 7 | 2 | 6 | Type MC, MMCX, RMMCX, RSMA, RTNC, SSMB, UFL |
| DCE-ANT5819-7x6x2 | 4940-5850 | 1.5 | 19 | 7 | 2 | 6 | - |
| DCE-ANT5819-MC | 4940-5850 | 1.5 | 19 | 7 | 2 | 6 | Type MC, MMCX, RMMCX, RSMA, RTNC, SSMB, UFL |

Vagi®/Yagi Series

The Vagi/Yagi Series are rugged, easy-to-install, high-gain directional antennas used in a wide variety of wireless systems where low cost, good performance and low wind loading are important factors. They include either a VPOL or HPOL configuration, along with a 1.5 VSWR as well. These antennas can be pole mounted in outdoor environments.



• Vagi VA25-16



• YA9W

| PART NUMBER | FREQUENCY (MHz) | GAIN (dBi) | BANDWIDTH (DEG) | DIMENSIONS (mm) | | CONNECTOR TYPES |
|-------------|-----------------|------------|------------------|-----------------|--|------------------------|
| | | | AZ | LENGTH | | |
| VA24-16F | 2400-2485 | 16 | 25 (E) / 30 (AZ) | 22 | | Type N(f), N (m), RTNC |
| VA25-16F | 2500-2700 | 16 | 25 (E) / 30 (AZ) | 22 | | Type N(f), N (m) |
| YA9 Series | 860-960 | 9,11,13 | 53, 50,30 | 19.7 | | Type N(f), RTNC |
| YA9W Series | 860-960 | 11,13 | 45,35 | 33.5,46 | | Type N(f) |

Point-to-Point

Point-to-Point antennas are outdoor directional antennas that are used to connect two fixed points with a high bandwidth connection. Typically offering 900 MHz, 2.5 GHz, 3.5 GHz, or 5 GHz links, typically from less than one mile to over 30 miles. The antenna provides both single and dual polarity with high gain and tight beamwidths that prevent interference and allow for longer distance links. Wide band performance offers higher bandwidths in wide band multichannel systems.

| PART NUMBER | FREQUENCY (MHz) | ANTENNA TYPE | VSWR | GAIN (dBi) | BEAM WIDTH (DEG) | | POLARIZATION | DIMENSIONS (mm) | | DIA | CONNECTOR TYPES |
|-------------------|-----------------|----------------|------|------------|------------------|----------|--------------|-----------------|----------------|------|-----------------------------|
| | | | | | EL | AZ | | LENGTH | WIDTH | | |
| DC23HDPF23-PF | 2050-2300 | Grid | 1.5 | 23 | - | - | Vertical | - | - | - | Type N(f) |
| DC24-24NF | 2400-2485 | Grid | 1.5 | 24 | 8 | 8 | Vertical | 42 | 24 | - | Type N(f) |
| DC24BP-23P Series | 2400-2485 | Grid | 1.5 | 23 | 8 | 8 | Vertical | 42 | 24 | - | Type N(f) |
| DC24HDPF1P | 2400-2485 | Grid | 1.5 | 24 | 8 | 8 | Vertical | 42 | 24 | - | Type N(m), N(f), RSMA, RTNC |
| DC25HDPF2P | 2500-2700 | Grid | 1.5 | 24 | 8 | 8 | H or V | 42 | 24 | - | Type N(m), N(f) |
| DC35-26P-NF | 3300/3500 | Grid | 1.5 | 26 | - | - | Vertical | - | - | - | Type N(m), N(f) |
| DC57-28 | 5470-5725 | Grid | 1.5 | 28 | - | - | Vertical | - | - | - | Type N(f) |
| DC58-29 | 5725-5850 | Grid | 1.5 | 29 | - | - | Vertical | - | - | - | Type N(f) |
| GD24 Series | 2400-2485 | Grid | 1.5 | 15,19,24 | 17,11,8 | 21,17,10 | Vertical | 16,24,36 | 12,16.5,28.5 | - | Type N(m), N(f), RSMA, RTNC |
| GD24BP Series | 2400-2485 | Grid | 1.5 | 14,18,23 | 17,11,8 | 21,17,10 | Vertical | 16,24,36 | 12,16.5,28.5 | - | Type N(f) |
| GD25 Series | 2500-2700 | Grid | 1.5 | 15,19,24 | 17,11,8 | 21,17,10 | Vertical | 16,24,36 | 12,16.5,28.5 | - | Type N(m), N(f) |
| GD35 Series | 3300/3500 | Grid | 1.5 | 17,20,25 | 13,8,6 | 16,12,7 | Vertical | 16,24,36 | 12,16.5,28.5 | - | Type N(m), N(f) |
| GD53 Series | 5150-5350 | Grid | 1.5 | 21,25,28 | 11 | 10 | Vertical | 15.7,24,36 | 11.8,16.8,28.5 | - | Type N(f) |
| GD57 Series | 5470-5725 | Grid | 1.5 | 21,25,28 | 6 | 6 | Vertical | 15.7,24,36 | 11.8,16.8,28.5 | - | Type N(f) |
| GD58 Series | 5725-5850 | Grid | 1.5 | 22,26,29 | 6 | 4 | Vertical | 15.7,24,36 | 11.8,16.8,28.5 | - | Type N(f) |
| GD5W Series | 4900-5850 | Grid | 1.5 | 21,25,28 | - | - | Vertical | 15.7,24,36 | 11.8,16.8,28.5 | - | Type N(f) |
| GD9 Series | 900-928 | Grid | 1.5 | 15,18 | 22,16.5 | 31 | Vertical | - | - | 4 | Type N(f) |
| GD9-DC15-NF | 900-928 | Grid | 1.5 | 15 | 22 | 31 | Vertical | 42 | 24 | - | Type N(f), N(m) |
| HDDA3W-25-SP | 3300-3800 | Parabolic Dish | 1.5 | 25 | 8.5 | 8.5 | Vertical | - | - | 25.5 | Type N(f) |
| HDDA3W-25-DP | 3300-3800 | Parabolic Dish | 1.8 | 25 | 8.5 | 8.5 | H/V | - | - | 25.5 | Type N(f) |
| HDDA3W-29-SP | 3300-3800 | Parabolic Dish | 1.5 | 29 | 6 | 6 | Vertical | - | - | 36.5 | Type N(f) |
| HDDA3W-29-DP | 3300-3800 | Parabolic Dish | 1.8 | 29 | 6 | 6 | H/V | - | - | 36.5 | Type N(f) |
| HDDA5W-29-SP | 4900-5875 | Parabolic Dish | 1.5 | 29 | 6 | 6 | Vertical | - | - | 25.5 | Type N(f) |
| HDDA5W-29-DP2 | 4940-5850 | Parabolic Dish | 1.8 | 29 | 6 | 6 | H/V | - | - | 25.5 | Type N(f) |
| HDDA5W-32-SP | 4900-5875 | Parabolic Dish | 1.5 | 32 | 4 | 4 | Vertical | - | - | 36.5 | Type N(f) |
| HDDA5W-32-DP2 | 4940-5850 | Parabolic Dish | 1.8 | 32 | 4 | 4 | H/V | - | - | 36.5 | Type N(f) |



•HDDA5W



•HDDA3W-29



•GD5W

Omnidirectional

Omnidirectional antennas are outdoor collinear (stick) antennas that service a large, 360 degree area through the means of an omnidirectional pattern with a 1.5 VSWR. They are the most economical solution for access point or for covering sparsely populated areas. Ranges are typically from five to a maximum of eight miles.

| PART NUMBER | FREQUENCY (MHz) | GAIN (dBi) | BEAM WIDTH (DEG) | | POLARIZATION | DIMENSIONS (mm) | | | CONNECTOR TYPES |
|----------------------|-----------------|------------|------------------|------------------|--------------|-----------------|-------|-----|-----------------------|
| | | | EL | AZ | | LENGTH | WIDTH | HT | |
| OD24 Series | 2400-2485 | 5,9,12 | 14,7 | 360 | Vertical | 27,48 | - | - | Type N(f), N(m) |
| OD24-Downtilt Series | 2400-2485 | 7,9 | 18,14 | 360 | Vertical | 21 | - | - | Type N(f), N(m) |
| OD24-7D5 | 2400-2485 | 7 | 18 | 360 | Vertical | 21 | - | - | Type N(f), N(m) |
| OD24-9D7 | 2400-2485 | 9 | 14 | 360 | Vertical | 27 | - | - | Type N(f) |
| OD24-9-WB | 2400/2500 | 9 | 14 | 360 | Vertical | 27 | - | - | Type N(f) |
| OD24M Series | 2400-2485 | 5,7,9,12 | - | 360 | Vertical | - | 0.6 | - | Type N(f) |
| OD49-11D1 | 4940-4990 | 11 | - | 360 | Vertical | - | - | - | Type N(f) |
| OD49M-11D1 | 4940-4990 | 11 | 5 | 360 | Vertical | 31 | 0.6 | - | Type N(f) |
| OD49M-6 | 4940-4990 | 6 | 8.5 | 360 | Vertical | 7 | 0.5 | - | Type N(f) |
| OD58-12 | 5470-5850 | 12 | - | 360 | Vertical | - | - | - | Type N(f) |
| OD58M-12 | 5470-5850 | 12 | 7 | 360 | Vertical | 27.5 | 0.6 | - | Type N(f) |
| OD5W-11 | 4900-5850 | 11 | - | 360 | Vertical | - | - | - | Type N(f), N(m) |
| OD5WM Series | 5150-5850 | 6,8 | 8.5 | 360 | Vertical | 19 | 0.6 | - | Type N(f) |
| OD9-11D1 | 860-960 | 11 | 7 | 360 | Vertical | - | - | - | Type N(f) |
| OD9 Series | 860-960 | 5,6,8,11 | - | 360 | Vertical | - | - | - | Type N(f), N(m), RTNC |
| ODH24 Series | 2400-2485 | 9,13 | 20,7 | 360 | Horizontal | 49,27 | 4 | 1 | Type N(f) |
| ODH9-9 | 900-928 | 9 | 18 | 360 | Horizontal | 62 | 8 | 2 | Type N(f) |
| S3307BPNF | 3300/3500 | 9.0 | 8 | Omni-directional | Vertical | 28.2 | - | 1.7 | Type N(f) |
| OF365013D3-FNF | 3650-3700 | 13.0 | 4.8 | Omni-directional | Vertical | 43.1 | - | 1.3 | Type N(f) |
| WTS2333C-FRSMM | 3300-3900 | 2.7 | 90 | 360 | Vertical | 3.78 | 0.37 | - | Type RPSMA |



•OD24-9

•s24517pth

•OD58-12

•OF365013D4-FNF_BW

•OD24-7

Sector

Sector antennas are used to sectorize the coverage area in 60, 90, or 120 degree bandwidths, with tighter and wider coverage available. They are typically higher gain and are less prone to interference, and provide a directional pattern with 1.5 VSWR. These antennas include a Type N (female) connector and can be pole mounted in outdoor environments.

| PART NUMBER | FREQUENCY (MHz) | GAIN (dBi) | BEAMWIDTH (DEG) | | POLARIZATION | DIMENSIONS (mm) | | |
|-------------------|-----------------|------------|-----------------|--------------|------------------------|-----------------|-----------|--------|
| | | | EL | AZ | | LENGTH | WIDTH | HEIGHT |
| SA24 Series | 2400-2485 | 9,12,14 | 30,10 | 90/120/180 | Vertical | 10,40 | 6.5,10.25 | 2.5,7 |
| SA24-WB Series | 2300/2500 | 16,17, 20 | 7,8,9 | 45,60,90,120 | Vertical | 33.5,34 | 6.5,7 | 2.5 |
| SA9-120-13 | 860-960 | 12 | 16 | 120 | Vertical | 5.3 | 11 | 5 |
| SAH24 Series | 2400-2485 | 12,16 | 18,7 | 120 | Horizontal | 23 | 4 | 1 |
| SAH35-90-16 | 3300/3500 | 17 | 6.5 | 90 | Horizontal | 35.5 | 4.7 | 2.4 |
| SAH58-120-16-WB | 5470-5850 | 16,17 | 6 | 90,120 | Horizontal | 22 | 5 | 8 |
| SAH9-120-12 | 900-928 | 12 | 15 | 120 | Horizontal | 62 | 8 | 2 |
| SO24-120x3-15 | 2400-2485 | 15 | 2 | 360 | Vertical | 40 | 6.5 | - |
| J23014V00-120N | 2300/2500 | 15.5 | 7 | 120 | Vertical | 39.9 | 4.3 | 8 |
| J23016500-90N | 2300/2500 | 16.5 | 7 | 90 | Dual Slant 45 | 40 | 8.2 | 4.5 |
| J23017500-65N | 2300/2500 | 18.0 | 7 | 65 | Dual Slant 45 | 40.1 | 6.3 | 4 |
| SKS230065-18N-001 | 2300-2700 | 18 | 5.5-6.5 | 65 | +45° and -45° | 44.9 | 6.5 | 2.9 |
| SKS230090-16N-001 | 2300-2700 | 16.5 | 5.5-6.5 | 90 | +45° and -45° | 44.9 | 6.5 | 2.9 |
| J34014V01-90N | 3300/3500 | 16.5 | 7 | 90 | Vertical | 30.2 | 5.9 | 3.4 |
| J33017500-90N | 3300/3500 | 16.5 | 7 | 90 | Dual Slant 45 | 28.2 | 6.3 | 11.3 |
| J33017500-65N | 3300/3500 | 17.0 | 7 | 65 | Dual Slant 45 | 28.2 | 4.8 | 2.7 |
| J34016V01-60N | 3300/3500 | 17.5 | 7 | 60 | Vertical | 30.2 | 5.9 | 3.4 |
| J51014V00-120N | 4900-5900 | 15.0 | 7 | 120 | Vertical | 18.2 | 4.7 | 2.9 |
| J51016V00-90N | 4900-5900 | 16.0 | 7 | 90 | Vertical | 18.2 | 4.7 | 3.1 |
| J51017V00-60N | 4900-5900 | 17.5 | 7 | 60 | Vertical | 18.2 | 4.7 | 2.8 |
| S49016120PNF | 4900-5850 | 15.5 | 5.5 | 15 | Vertical | 24.6 | 2 | 2.7 |
| S4901790PNF | 4900-5850 | 16.5 | 5.5 | 7 | Vertical | 24.6 | 2 | 2.7 |
| SJS515090-16 | 5150-5850 | 16.25 | 6.5 | 90 | Dual Linear, +45°/-45° | 21.9 | 2.6 | 5.7 |



RooTenna®

RooTenna® panel antennas are designed to allow integration of customers' radio equipment inside a weatherproof compartment. The radio compartment is big enough to house transceivers, amplifiers, and other electronic equipment. The antennas themselves offer a directional pattern with 1.5 VSWR, and can be either surface or wall mounted in outdoor environments.

| PART NUMBER | FREQUENCY (MHz) | GAIN (dBi) | BEAMWIDTH (DEG) | | POLARIZATION | DIMENSIONS (mm) | | | CONNECTOR TYPES |
|-------------|-----------------|------------|-----------------|-------|--------------|-----------------|-------|--------|--|
| | | | EL | AZ | | LENGTH | WIDTH | HEIGHT | |
| R2T24-19 | 2400/2500 | 19 | 19 | 16 | H or V | 18.5 | 2.5 | 16.8 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T2458LW | 2400/5000 | 12 | 43/22 | 43/22 | H or V | 10.75 | 2.6 | 10.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T2458W | 2400/5000 | 12 | 43/22 | 43/22 | H or V | 10.75 | 3.5 | 10.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T24LW-15 | 2300/2500 | 15 | 30 | 30 | H or V | 10.75 | 3.5 | 10.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T24W-15 | 2300/2500 | 15 | 30 | 30 | H or V | 10.75 | 3.5 | 10.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T58-24 | 4940-5850 | 24 | 9 | 9 | H or V | 16.25 | 1.0 | 14.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T58LW-19 | 4940-5850 | 19 | 15 | 15 | H or V | 10.75 | 2.6 | 10.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL, NHP |
| R2T58W-19 | 4940-5850 | 19 | 15 | 15 | H or V | 10.75 | 3.5 | 10.75 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |
| R2T9-12 | 900-928 | 12 | 50 | 45 | H or V | 18.5 | 2.5 | 16.8 | Type MC, MMCX, RMMCX, RSMA, RTNC, UFL |



Panel

Flat panel directional antennas offer high gain with a 1.5 VSWR in a thin low profile package. The antennas are constructed of a gray color UV resistant ABS plastic radome with an aluminum backplate. The antenna can be used in horizontal or vertical polarization, and can be surface, pole, or wall mounted.

| PART NUMBER | FREQUENCY (MHz) | GAIN (dBi) | BEAMWIDTH (DEG) | | DIMENSIONS (mm) | | |
|--------------|-----------------|------------|-----------------|--------------|-----------------|-------|---------------|
| | | | EL | AZ | LENGTH | WIDTH | HEIGHT |
| PA24 Series | 2400-2485 | 13,16,19 | 35, 26, 17.5 | 35, 26, 17.5 | 7.5, 11, 15.3 | 0.8 | 7.5, 11, 14.6 |
| PA35-13 | 3300/3500 | 13 | 35 | 35 | 7.5 | 0.8 | 7.5 |
| PA58 Series | 5150-5850 | 19,24 | 16,8 | 16,8 | 7.5,15.4 | 0.8 | 7.5,14.6 |
| PA9-12 | 900-928 | 12 | 40 | 55 | 16.2 | 1.4 | 14.7 |
| S25015PT | 2400-2700 | 14,15 | 25 | 25 | 10.2 | 1.3 | 10.2 |
| S34018PT12NF | 3400-3600 | 18 | 19 | 20 | 10.2 | 1.3 | 10.2 |



Telecom - Backhaul Accessories

Adapters

| PART NUMBER | DESCRIPTION |
|---------------|--|
| AD-MCX-RPSMAF | RPSMA Female to MCX Adapter. Gold Plated Contacts. For Apple Airport |
| AD-NF-NF | N Female to N Female Barrel Adapter |
| AD-NF-RPSMAF | RPSMA Female to N Female Adapter. Gold Plated Contacts |
| AD-NF-RPSMAM | RPSMA Male to N Female Adapter. Gold Plated Contacts |
| AD-NF-RPTNCM | RPTNC Male to N Female Adapter. Gold Plated Contacts |
| AD-NFB-SMAF | N Female Bulkhead to SMA Female Adapter, For DCE Products/Mesh. |
| AD-NM-NM | N Male to N Male Coupler |
| AD-NM-RPSMAF | RPSMA Female to N Male Adapter. Gold Plated Contacts. |
| AD-NM-RPSMAM | RPSMA Male to N Male Adapter. Gold Plated Contacts. |
| AD-NM-RPTNCF | RPTNC Female to N Male Adapter. Gold Plated Contacts. |
| AD-NM-RPTNCM | RPTNC Male to N Male Adapter. Gold Plated Contacts |
| AD-NM-SMAF | SMA Female to N Male Adapter. Gold Plated Contacts. |
| AD-RSMAF-RTNC | RPSMA Female to RPTNC Male Adapter. Gold Plated Contacts. |
| C195-NM | N Male to RG58, LMR195 Crimp |
| C400-NF | N Female to RG8/U, LMR400 Crimp |
| C400-NM | N Male to RG8/U, LMR400 Crimp |

Cable Assemblies

| PART NUMBER | DESCRIPTION |
|--------------------|---|
| CA100-MCX-NC-125 | Cassy, Coax, 125 mm, MCXM NC, LMR100 |
| CA100-NFB-MC-12 | Cassy, Coax, 12 in, NFB, MCM, LMR100 |
| CA100-NFB-MCX-200 | Cassy, Coax, 200 mm, NFB, MCXM, LMR100, RA |
| CA100-NFB-MCXRA-4 | Cassy, Coax, 200 mm, NF, MCXM, LMR100, RA |
| CA100-NFB-MCXRA375 | Cassy, Coax, 375 mm, NFB |
| CA100-NFB-MMCX-12 | Cassy, Coax, 12 in, NFB, MMCXP, LMR100, RA |
| CA100-NFB-MMCXS-18 | Cassy, Coax, 18 in, NFB, MMCXP, LMR100, STR |
| CA100-NFB-RMMCX-12 | Cassy, Coax, 12 in, NFB, RMMCXP, RG316, RA |
| CA100-NFB-RSMAM-12 | Cassy, Coax, 12 in, NFB, RSMAM, LMR100 |
| CA100-NFB-RTNCM-12 | Cassy, Coax, 12 in, NFB, RTNM, LMR100 |
| CA100-NFB-SMAM-12 | Cassy, Coax, 12 in, NFB, SMAM, LMR100 |
| CA100-NFB-SMAM-8 | Cassy, Coax, 8 in, NFB, SMAM, LMR100 |
| CA100-NM-MC-12 | Cassy, Coax, 12 in, NM, MCM, LMR100 |
| CA100-NM-MMCX-12 | Cassy, Coax, 12 in, NM, MMCXP, LMR100, RA |
| CA100-NM-MMCX-8 | Cassy, Coax, 8 in, NM, MMCXP, LMR100, RA |
| CA100-NM-RASMAM-12 | Cassy, Coax, 12 in, NM, SMAM, LMR100, RA |
| CA100-NM-RSMAM-12 | Cassy, Coax, 12 in, NM, RSMAM, RG316, RA |
| CA100-NM-RSMAM-6 | Cassy, Coax, 6 in, NM, RSMAM, LMR100 |
| CA100-NM-RSMAM-8 | Cassy, Coax, 8 in, NM, RSMAM, LMR100 |
| CA100-NM-RTNCM-12 | Cassy, Coax, 12 in, NM, RTNM, LMR100 |
| CA100-NM-SMAM-12 | Cassy, Coax, 12 in, NM, SMAM, LMR100 |
| CA100-RPTNCF-NC-6 | Cassy, Coax, 6 in, RTNF, NC, LMR100 |
| CA100-RSMAM-RPSMA | Cassy, 12 in, RSMAM, RSMAF, RG-316, LMR100 |
| CA100-SMAF-RAMCX-3 | Cassy, Coax, 3 in, SMAF, MCXM, LMR100, RA |
| CA100-SMAM-RSMAM-8 | Cassy, Coax, 8 in, SMAM, RSMAM, LMR100 |
| CA100-SMAM-SMAM-12 | Cassy, Coax, 12 in, SMAM, SMAM, LMR100 |
| CA100-SMAM-SMAM-18 | Cassy, Coax, 18 in, SMAM, SMAM, LMR100 |
| CA100-SMAM-SMAM-8 | Cassy, Coax, 8 in, SMAM, SMAM, LMR100 |
| CA100-TNCF-NC-6 | Cassy, Coax, 6 in, TNCF, NC, LMR100, WHT |
| CA100MCXRA-SMBRA11 | Cassy, Coax, 11 in, MCXM, SMBM, LMR100, RA |
| CA100NFB-MCXRA200 | Cassy, Coax, 200 mm, NF, MCXM, LMR100, RA |
| CA100NFB-RASMAM12 | Cassy, Coax, 12 in, NFB, SMAM, LMR100, RA |

Cable Assemblies (cont'd)

| PART NUMBER | DESCRIPTION |
|--------------------|---|
| CA100RSMAM-RASMA12 | Cassy, Coax, 12 in, RSMAM, SMAM, LMR100, RA |
| CA100RTNCM-RASMA12 | Cassy, Coax, 12 in, RTNM, SMAM, LMR100, RA |
| CA100SMAF-RPSMAM3 | Cassy, Coax, 3 in, SMAF, RSMAM, LMR100 |
| CA100SMAM-RSMAM12 | Cassy, Coax, 12 in, SMAM, RSMAM, LMR100 |
| CA100SMAM-SMAFB12 | Cassy, Coax, 12 in, SMAM, SMAF, LMR100, BULKHEAD |
| CA178-NFB-UFL-12 | Cassy, Coax, 12 in, NFB, UFL, RG178 |
| CA178-NFB-UFL-5 | Cassy, Coax, 5 in, NFB, UFL, RG178 |
| CA178-NFB-UFL-8 | Cassy, Coax, 8 in, NFB, UFL, RG178 |
| CA178-NM-UFL-12 | Cassy, Coax, 12 in, NM, UFL, RG178 |
| CA178-NM-UFL-6 | Cassy, Coax, 6 in, NM, UFL, RG178 |
| CA178-NM-UFL-8 | Cassy, Coax, 8 in, NM, UFL, RG178 |
| CA178-RTNCB-MMCX-6 | Cassy, Coax, 6 in, RTNF, MMCXP, RG178, RA, BH |
| CA178-RTNCB-UFL-6 | Cassy, Coax, 6 in, RTNF, UFL, RG178 |
| CA178-SMAM-UFL-4 | Cassy, Coax, 4 in, SMAM, UFL, RG178 |
| CA178-TNCFB-UFL-5 | Cassy, Coax, 5 in, TNCF, UFL, RG178, BH |
| CA178RSMAMF-UFL12 | Cassy, Coax, 12 in, RSMAF, UFL, RG178, BULKHEAD |
| CA178RTNCB-MMCX150 | Cassy, Coax, 150 mm, RTNF, MMCXP, RG178, RA, BH |
| CA178RTNCBRA-MMCX4 | Cassy, Coax, 6 in, RTNF, MMCXP, RG178, RA, BH |
| CA195-NM-NM-12 | Cassy, Coax, 12 in, NM NM, LMR195 |
| CA195-NM-RSMAM-36 | Cassy, Coax, 36 in, NM RSMAM, LMR195 |
| CA195-NM-SMAM-3 | Cassy, Coax, 36 in, NM, SMAM |
| CA195-NM-SMAM-6 | Cassy, Coax, 72 in, NM, SMAM |
| CA195-SMAM-SMAM-38 | Cassy, Coax, 38 in, SMAM SMAM, LMR195, WHT |
| CA195SMAM-RSMAM24 | Cassy, Coax, 24 in, SMAM RSMAM, LMR195 |
| CA400-NM-NM-48 | N Male to N Male Jumper, LMR400, 48 in |
| CA400-NM-RPSMAM-72 | Cassy, Coax, 72 in, NM RSMAM, LMR400 |
| CA405-NFB-RASMA-3 | Cassy, Coax, 3.5 in, NFB SMAM, TFLEX405, RA |
| CA405-SMA-MMCX-117 | Cassy, Coax, 117 mm, SMAF MMCXP, TFLEX405, RA, BH |
| CA405RTNCB-MMCX150 | Cassy, Coax, 150 mm, RTNF MMCXP, TFLEX405, RA, BH |
| CA405RTNCB-MMCX228 | Cassy, Coax, 228 mm, RTNF MMCXP, TFLEX405, RA, BH |
| CA405RTNCB-MMCX250 | Cassy, Coax, 250 mm, RTNF MMCXP, TFLEX405, RA, BH |

DC to DC Converter

| PART NUMBER | DESCRIPTION |
|----------------|---|
| DCDC-1032-5 | DC-DC Conv, 10V-32VDC INP 3A MAX LD, 15W MAX |
| DCDC-1532-5/12 | DC-DC Conv, 15V-32VDC IN 3A/1.25A MAX LD, 15W MAX |
| DCDC-1632-12 | DC-DC Conv, 16V-32VDC INP 1.25A MAX LD, 15W MAX |

Die Cast Enclosures

| PART NUMBER | DESCRIPTION |
|---------------|---|
| DCE-7x6x2 | Die Cast Aluminum Enclosure with 7 engineered knockouts - Nema 6 Rated - with pole mount bracket |
| DCE-H-10x10x2 | 10x10x2 Hinged Die Cast Aluminum Enclosure with 7 Engineered knockouts - Nema 6 Rated - with pole mount bracket |
| DCE-H-7x6x2 | 7x6x2 Hinged Die Cast Aluminum Enclosure with 7 Engineered knockouts - Nema 6 Rated - with pole mount bracket |

Telecom - Backhaul Accessories

Mounts

| PART NUMBER | DESCRIPTION |
|-----------------------|--|
| MM-110N, -RTNC, -SMAM | Vehicle Magnetic Mount - Large (4" dia, 10' LMR195, N Female, RTNC, or SMAM Connector) |
| MM-90N | Vehicle Magnetic Mount - Small (3.5" dia, 10' LMR195, N Female Connector) |
| MM-RD-RSMA, -SMAF | Mount, Mag, 195-5'-RSMAM, -SMAF RSMAF Mag Mount |
| MM-SM-LP-NF-26 | Mount, SMLP, RG58-26.6 in, N VEHICLE MOUNT |
| MM-SM-LPN | Mount, SMLP, 240-10', NF NF Vehicle Mount |
| MM-SMN, -RPTNC, -SMAM | Mount, SM, 240-10' or 240-15', NF, or RTNM, or SMAM NF Vehicle Mount |
| MM-TMN | Mount, TM, 240-10', NF NF Vehicle Mount |

POE-Power Over Ethernet

| PART NUMBER | DESCRIPTION |
|---------------------|---|
| POE-12i | POE Power Supply/Inserter Input 90-264VAC, Output 12VDC at 1A 12W |
| POE-12s-afi | POE Splitter 802.3af, Output 12VDC at 1A 12W |
| POE-18i4s POE-4x12i | Four Port POE Power Supply/Inserter Input 100-240VAC, Output 12VDC at .7A 12W Non 802.3af |
| POE-18i | POE Power Supply/Inserter Input 90-264VAC, Output 18VDC at .7A 12W |
| POE-18i-EU | POE Power Supply/Inserter Input 90-264VAC, Output 18VDC at .7A 12W (Europe Power Cord) |
| POE-18i-NC | POE Power Supply/Inserter Input 90-264VAC, Output 18VDC at .7A 12W (No Power Cord) |
| POE-4x18i | Four Port POE Power Supply/Inserter Input 90-264VAC, Output 18VDC at .7A 12W |
| POE-24i | POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at .5A 12W |
| POE-24i-CI | POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at .5A 12W, Current Detection Indicator |
| POE-24i-EU | POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at .5A 12W (Europe Power Cord) |
| POE-4x24i | Four Port POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at .5A 12W |
| POE-24iR | POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at .5A 12W, pin 4,5 (-), pin 7,8 (+) |
| POE-24iR-CI | POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at .5A 12W,, Current Detection Indicator |
| POE-24s-afi | POE Splitter 802.3af, Output 24VDC at .5A 12W |
| POE-48i | POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs |
| POE-48i-CI | POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs, Current Detection Indicator |
| POE-48i-CI-EU | POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs, Current Detection Indicator (Europe Power Cord) |
| POE-48i-EU | POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs (Europe Power Cord) |
| POE-48i-NC | POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs (No Power Cord) |
| POE-48i12s | POE System - Input 90-264VAC, Output 12VDC 1A |
| POE-48i12s-afi | POE System - Input 90-264VAC, Output 12VDC 1A, AFI |
| POE-4x48i | Four Port POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs |
| POE-4x48i-afi | Four Port POE Power Supply/Inserter Input 90-264VAC, Output 48VDC at 0.35A 16.8W, Lightning/Surge protection on Ethernet pairs -AFI |
| POE-48i5s | POE System - Input 90-264VAC, Output 5VDC 2.4A |
| POE-48i5s-afi | POE System - Input 90-264VAC, Output 5VDC 2.4A, AFI |
| POE-48iD | POE Power Supply/Inserter, Midspan Intelligent Detect, 48VDC output @ 0.35A, 16.8W, Lightning/Surge protection on Ethernet pairs |

POE-Power Over Ethernet (cont'd)

| PART NUMBER | DESCRIPTION |
|----------------|--|
| POE-48iD-EU | POE Power Supply/Inserter, Midspan Intelligent Detect, 48VDC output @ 0.35A, 16.8W, Lightning/Surge protection on Ethernet pairs - (Europe Power Cord) |
| POE-48iD-NC | POE Power Supply/Inserter, Midspan Intelligent Detect, 48VDC output @ 0.35A, 16.8W, Lightning/Surge protection on Ethernet pairs (No Power Cord) |
| POE-55i4sG-AFI | POE, AF Inj, 55VDC, 30W, 100-240VAC, GBIT, 802.3af |
| POE-5s-afi | POE Splitter 802.3af, Output 5VDC at 2.4A 12W |
| POE-9s-afi | POE Splitter 802.3af, Output 9VDC at .75A 12W |
| POE-HP-24i | POE Power Supply/Inserter Input 90-264VAC, Output 24VDC at 2A 50W |
| POE-HP-50i | POE Power Supply/Inserter Input 90-264VAC, Output 50VDC at 1A 50W Lightning/Surge protection on Ethernet pairs |
| POE-PS-150-001 | POE, Psplit, 150 mm, RJ45 TO RJ45/DC, NON 802.3af |
| ESP-100-POE | Network Lightning/Surge Protector, 100Mbps Data Rate, LAN/POE 7.5V/70V Clamp Voltage, 10KA Surge |

RJ45

| PART NUMBER | DESCRIPTION |
|-------------|---|
| RJ45-ECS | RJ45 Field Replaceable Ethernet Connector System. Passes RJ45 Plug and seals cable to IP68. Also available in 4 & 6 in. |
| RJ45-ECS-NR | RJ45 Field Replaceable Ethernet Connector System. Passes RJ45 Plug and seals cable to IP68. No Relief |
| RJ45-FT | RJ45 Field Installable Feedthru Adapter. Passes RJ45 Plug and seals cable to IP68. 10 pack |

Surge Protectors

| PART NUMBER | DESCRIPTION |
|--------------------|--|
| SP3-90-6-BFF, -BFM | Surge Protector – 90V – 100MHz to 3GHz, N Fem to N Fem, .4dB IL, 6KA Discharge |
| SP6-230-BFF, -BFM | Surge Protector – 230V – DC to 6GHz, N Fem to N Fem, .2dB IL@3GHz, .4dB IL@5GHz |
| SP6-230RSMAM-RSMAF | Surge Protector – 230V – DC to 6GHz, RSMAM to RSMAF, |
| SP6DC-BFF | Surge Protector- 1/4 Wave DC GROUND, 2300-6000MHz, .3dB IL, N Fem to N Fem |
| ESP-100-POE | Network Lightning/Surge Protector, 100Mbps Data Rate, LAN/POE 7.5V/70V Clamp Voltage, 10KA Surge |

Brackets

| PART NUMBER | DESCRIPTION |
|----------------|--|
| UM, UM-UB, UML | Universal Mount, Ubolt Kit for pole mounting, Universal Mount - Long |
| WMB-HD | HD Series Wall Mount Bracket - For mounting a pole mount antenna to a wall. 8"standoff from wall, 2" diameter mounting tube. |
| WMB8 | Wall Mount Bracket - For mounting a pole mount antenna to a wall. 8"standoff from wall, 1.25" diameter mounting tube. |



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