



# ANTENNAS FOR CELLULAR NETWORKS



**Across the world. Around the corner.**

# Your wireless communication network partner



Amphenol Antenna Solutions is a premium **antenna solution provider** dedicated to the single objective of designing and manufacturing high performance antennas.

We are a customer-centric antenna company that **partner** with our customers to develop **innovative and tailored** solutions, that secures optimal coverage and capacity under all circumstances.

We are **independant** from any RAN vendor, but work with them all including vRAN vendors to create customized antenna solutions - this gives us a unique position in the preparation for ORAN future.

With manufacturing and R&D team in Europe, Asia and America we offer local support to our customers - **Across the world. Around the corner.**



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Small and/or concealed in street furniture, these antennas with several options are easy to install; Perfect to increase the capacity of your network.

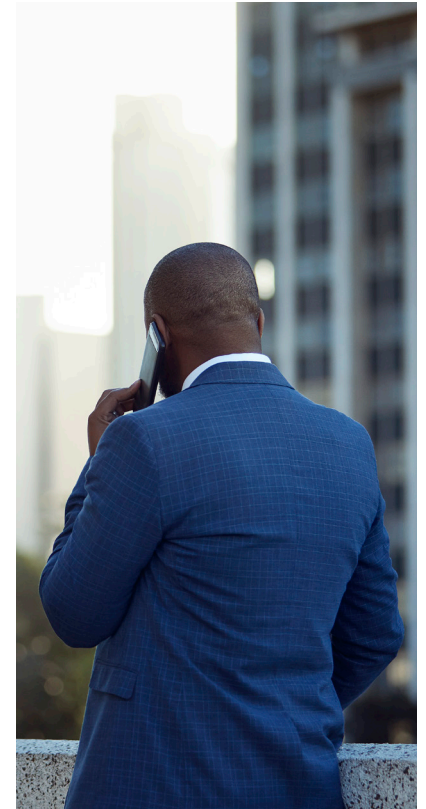
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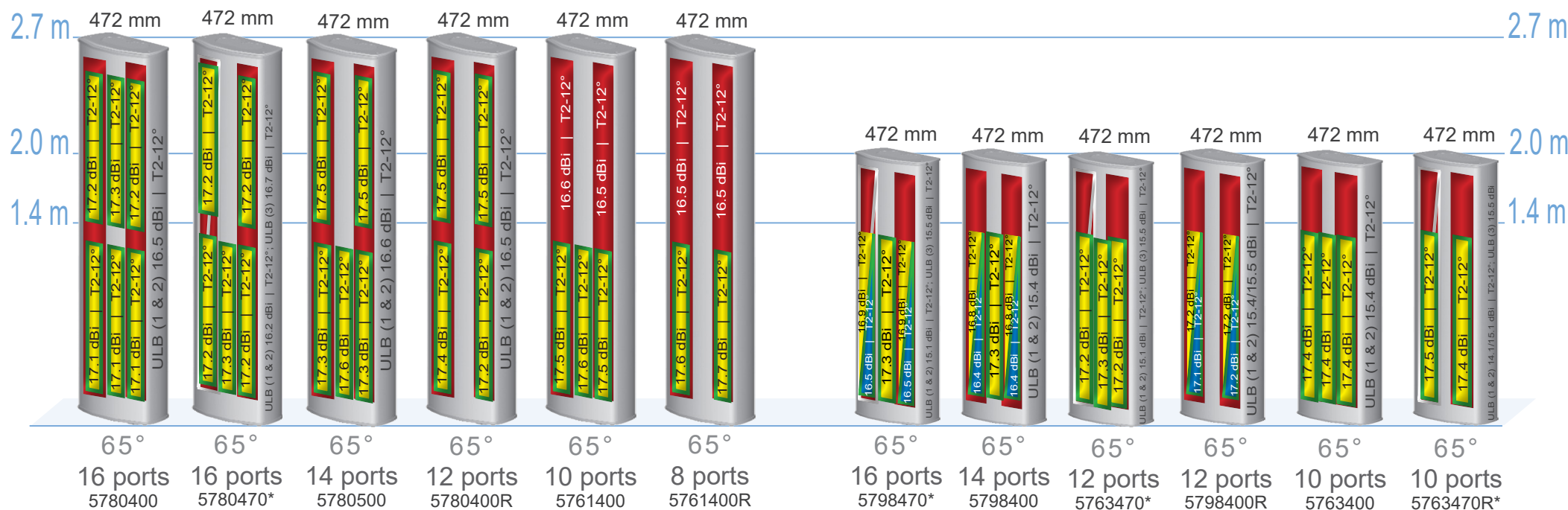





# NodeLine Panel Antennas


Evolution of TwinLine, with even more connectivity and enabler for smooth upgrade to active and passive 5G.

- Innovative top section to give you **flexibility**
- **Easy** and **aesthetic 5G** (active and passive) **upgrade** via slide-in functionality
- Covering the **1400 MHz**
- World class **wind load** inherited from years of experience




 Ultra Low Band (ULB)  
698-960 MHz

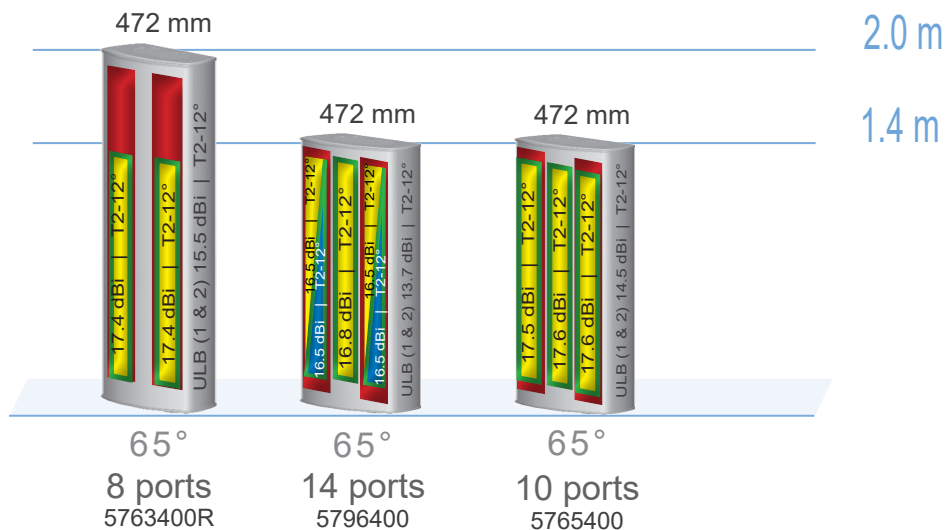
 Ultra Wide Band Array (UWB)  
1695-2690 MHz

 Mega Wide Band Array (MWB)  
1427-2690 MHz

 \*Filtered Ultra Low Band (ULB)  
2 Ports 698-803 MHz  
2 Ports 880-960 MHz

 Filtered Array Mega Wide Band (MWB)  
2 Ports 1427-2180 MHz  
2 Ports 2490-2690 MHz

# NodeLine Panel Antennas



- Ultra Low Band (ULB)  
698-960 MHz
- Filtered Array Mega Wide Band (MWB)  
2 Ports 1427-2180 MHz  
2 Ports 2490-2690 MHz
- Mega Wide Band Array (MWB)  
1427-2690 MHz

# NodeLine - the 5G enabler

All NodeLine enables you to upgrade 4G with 5G when needed thanks to its special top section. Integrating legacy & 5G in one antenna have many advantages : save space on towers, easy installation via slide-in solution and aesthetic solution.

## Hybrid Kit

1.0 meter length accessory tailored to host 5G mMIMO active antennas.

Reserve space on existing sites if legacy passive technologies need upgrade at a later date or directly install the mMIMO kit with radio.



Nokia radio into the Hybrid Kit



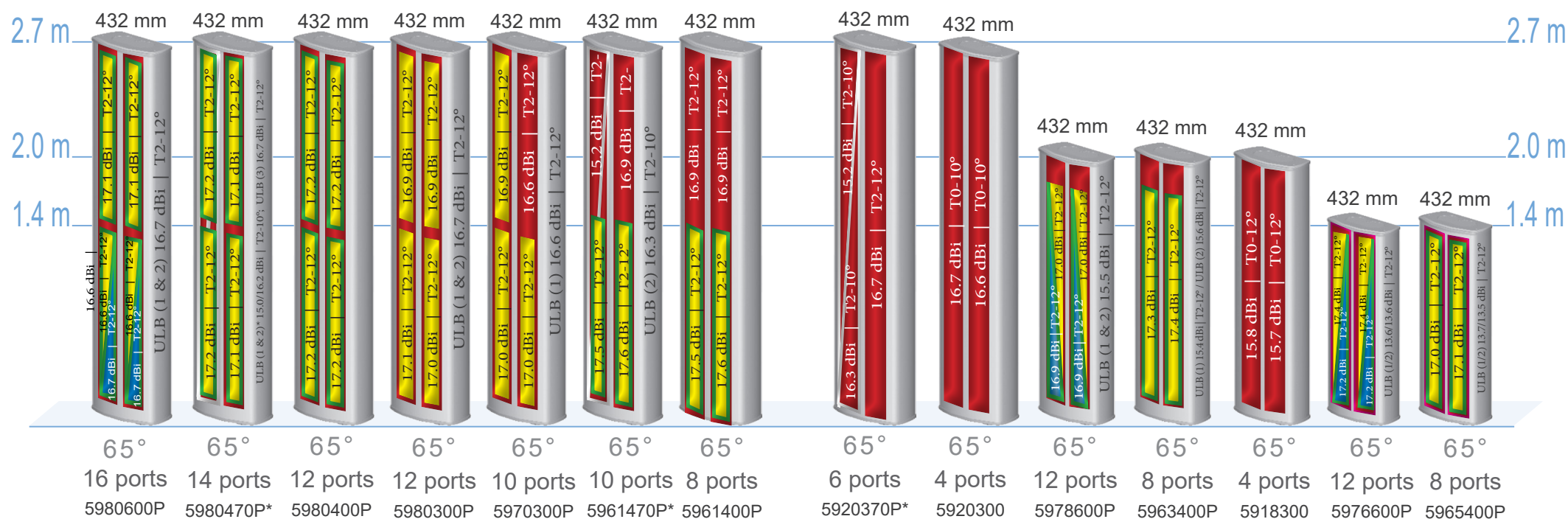
Hybrid Kit on the top of NodeLine

This solution is tailored to host radio from any RAN vendors. We work with the main RAN suppliers to be officially approved for radio integration. This solution have been designed to be future proof as we will evolve to host any O-RAN player.

# TwinLine Panel Antennas

World-class wind loading profile and enhanced width, ideal for site sharing and MIMO 4x4 operations

- 2 multiband arrays housed in an optimally designed package
- World 1st antenna made for **antenna/site sharing** use
- World class **windload**
- MIMO 4x4 operations



Ultra Low Band (ULB)  
698-960 MHz

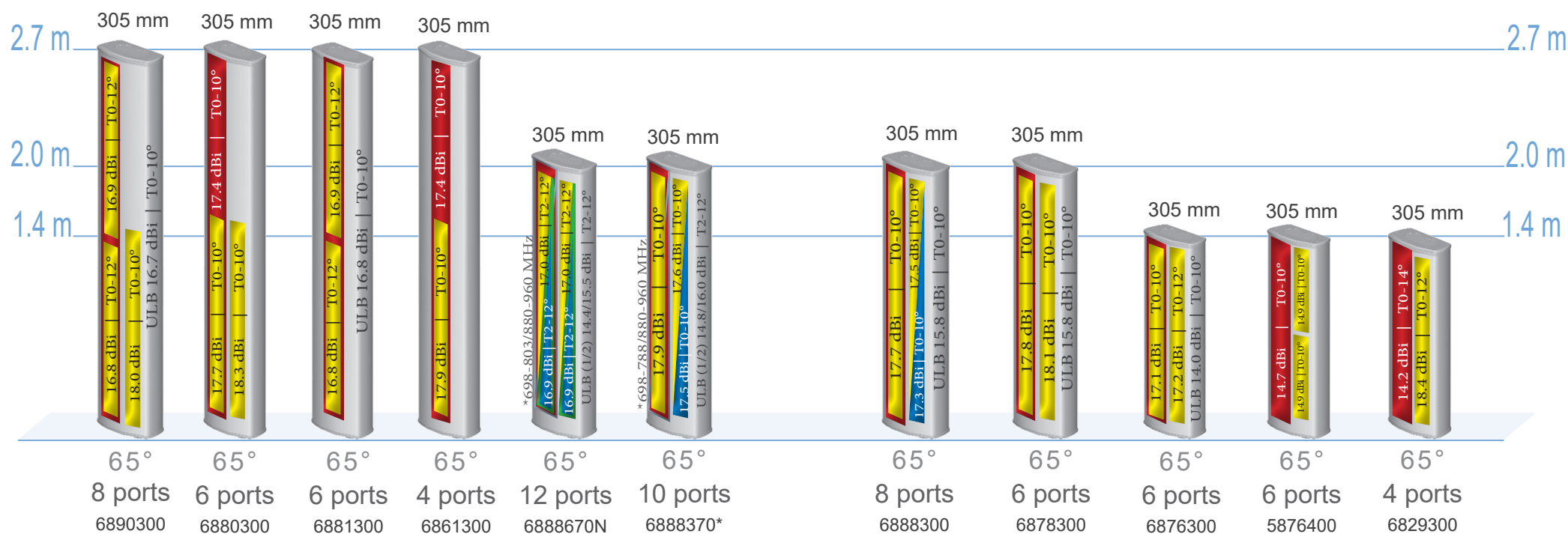
\*Filtered Ultra Low Band (ULB)  
2 Ports 698-803 or 698-788 MHz  
2 Ports 880-960 MHz

Mega Wide Band Array (MWB)  
1427-2690 MHz

Filtered Mega Wide Band (MWB)  
2 Ports 1427-2180 MHz  
2 Ports 2490-2690 MHz

# UltraLine Panel Antennas

- Configuration that can allow up to five different bands
- Housed in a **compact** arrangement



**Ultra Low Band (ULB)**  
698-960 MHz

**Mega Wide Band Array (MWB)**  
1427-2690 MHz

**Wide Band Array (WB)**  
1695-2180 MHz

**Ultra Wide Band Array (UWB)**  
1695-2690 MHz

**Filtered Ultra Wide Band (UWB)**  
2 Ports 1695-2180 MHz  
2 Ports 2490-2690 MHz

**\*Filtered Ultra Low Band (ULB)**  
2 Ports 698-803 or 698-788 MHz  
2 Ports 880-960 MHz

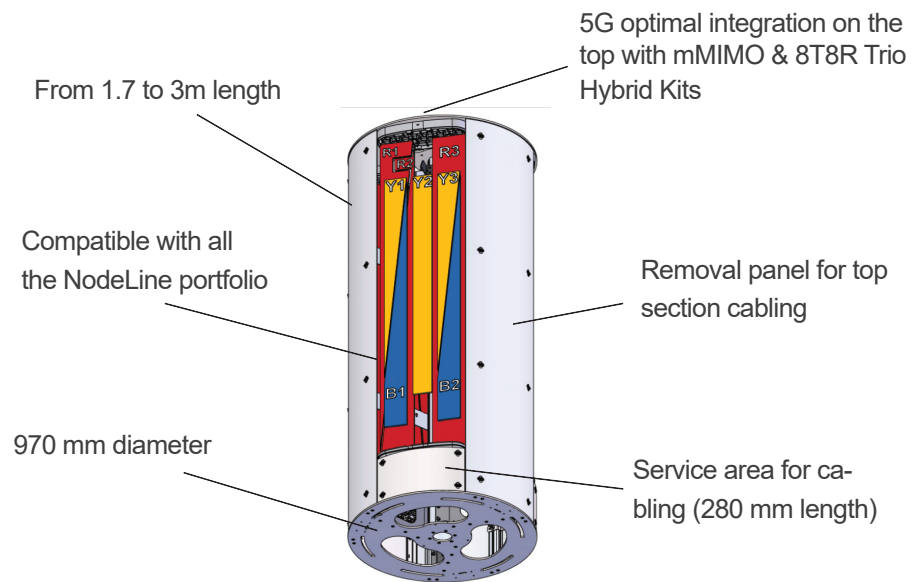
**Filtered Mega Wide Band (MWB)**  
2 Ports 1427-2180 MHz  
2 Ports 2490-2690 MHz

# Trio NodeLine

Up to three NodeLine antennas inside a low visual impact cylindrical enclosure.  
Discretely deployed as mast head, roof-top vents, ...

## Innovative features

All the NodeLine (1.4 m, 2 m & 2.7 m) can integrate a Trio structure :



# Trio TwinLine

Up to three-sector TwinLine antennas inside a small, low visual impact cylindrical enclosure.  
Discretely deployed as flag poles, roof-top vents, street lamps or telephone poles.

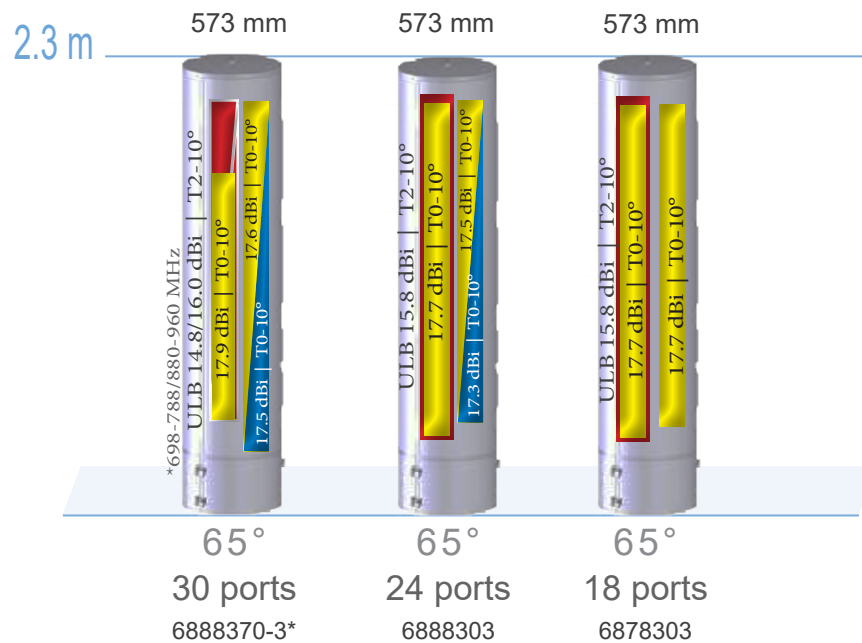
## Features

2m and 2.7m TwinLine can be integrated into this Trio structure :



# Trio UltraLine

Up to three-sector UltraLine antennas inside a small, low visual impact cylindrical enclosure.  
Discretely deployed as flag poles, roof-top vents, street lamps or telephone poles.



Ultra Low Band (ULB)

\*Filtered Ultra Low Band (ULB)  
2 Ports 698-788 MHz  
2 Ports 880-960 MHz

Ultra Wide Band Array (UWB)

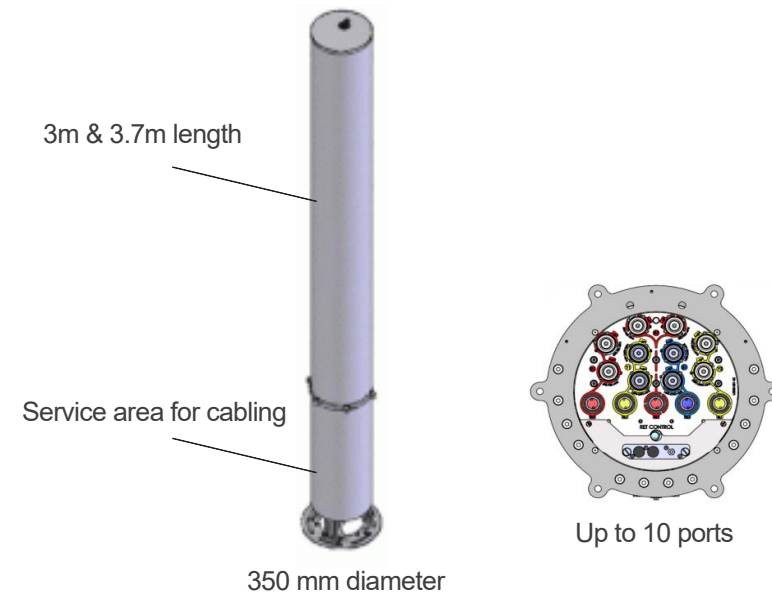
Filtered Array Ultra Wide Band (UWB)  
2 Ports 1695-2180 MHz  
2 Ports 2490-2690 MHz

# CylLine Antennas

Single sector UltraLine inside a cylindrical, low visual impact enclosure.  
Discretely deployed as flag poles, roof-top vents, street lamps or telephone poles.

## Features

2m and 2.7m UltraLine can be integrated into this CylLine structure :





# Small Cell Canisters

Extensive range of small cell canister antennas capable of covering any need for adding capacity to your macro site network. Our quality portfolio covers anything from simple short range 2 port canisters, up to 32 ports / xx km range antennas.

## A comprehensive range :

- Size : 0.6 and 1.2m length, Ø 371 mm
- From 2 to 32 connectors
- Up to 6 different radiation pattern profiles
- Multiband from 700 to 4200 MHz
- Diplexed & non-diplexed ports



Available  
Radome Colors:

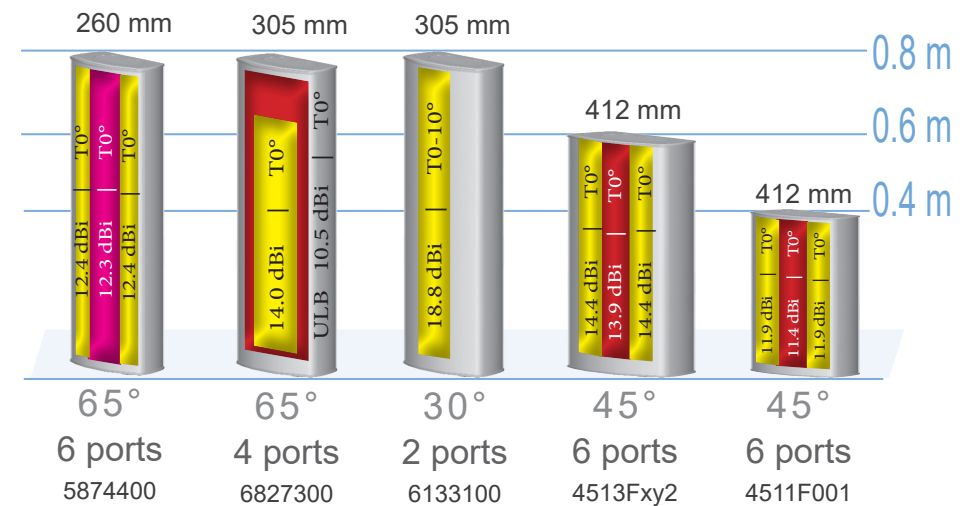
Grey

Black

Brown

# Small Cell Panel Antennas

Innovative wide band, dual band and tri band antenna configurations allow one distributed antenna system to serve multiple service providers with minimum visual impact.



Extended Low Band (ELB)  
790-960 MHz

Ultra Low Band (ULB)  
698-960 MHz

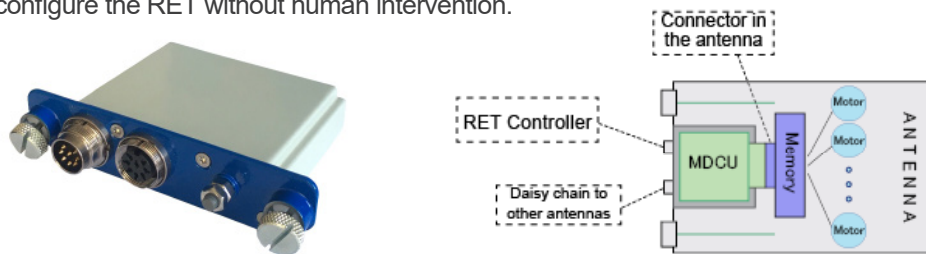
Ultra Wide Band Array (UWB)  
1695-2690 MHz

# RET Control Systems

Amphenol offers patented fully integrated RET control units. The RET control units add no additional length to the antenna and are field replaceable. No calibration is required. Each RET is configured for the antenna and pre-commissioned at the factory. The electrical downtilt indicator is always visible and manual control is always possible. AISG v2.0 / 3GPP and Ericsson protocols. Compatible with most BTS vendors.

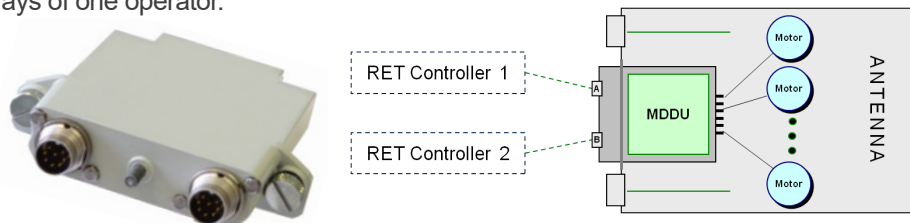
## MDCU

One module control the electrical downtilt of all the arrays of an antenna. In 2020, the newly manufactured antennas will be equipped with memory, allowing to configure the RET without human intervention.



## MDDU

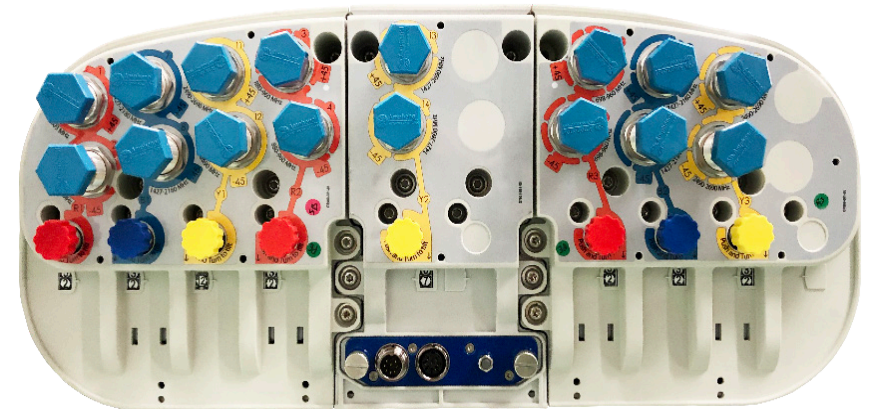
Intended for site sharing. One module has two separate inputs, each controlling the electrical downtilt of the arrays of one operator.



# New 4th Generation Integrated RET featuring new Memory system integrated in the antennas

The last generation RET/VET system was designed with the objective of more efficiently using the available space, while also making it more durable and easier for field operations. For the new generation, we keep all the benefits of the 3rd generation, with previously unseen innovation : the RET is able to recognize an antenna and automatically reconfigure itself. In the new antennas delivered with smart multiplexing, a memory is included that matches with the antenna identity. When an MDCU is inserted, it will automatically take the configuration of the antenna without human intervention.

To make the most of the new RET generation, we will change the software to the A2-5.0X version. This new architecture with memory is a good way to prepare for the arrival of AISG3.0.



RET Control Systems

# Site Solutions

Amphenol Antenna Solutions is a single source for wireless infrastructure offering not only quality base station and Small Cell antennas, but also transmission line products like feeder cable, hybrid fiber, surge arrestors and connectors as well as RF peripherals like TMAs, combiners, couplers and splitters.

The company provides a comprehensive suite of solutions for virtually all applications and global frequencies, with product available from the top of the tower to the base station.

## Feeder Cable



Whether it's a connection to a single component or a fully integrated RF transmission line system, Amphenol can supply your RF Feeder Cable. Select from flexible or superflexible, copper or aluminum with standard or fire retardant jackets in 1/4", 3/8", 1/2", 7/8", 1-1/4" or 1-5/8".

## Jumper Cable Assemblies



Amphenol's premium Jumper Cable options are designed for outdoor applications under extreme conditions with high flexibility and small bending diameters. Cable assemblies are available in a variety of lengths and connector combinations and are waterproof per the IP68 water immersion testing standard.

## Tower Mounted Amplifiers



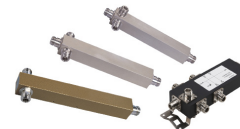
Operators know that a cost-effective solution to maximizing site coverage and boosting call quality is through the use of Tower Mounted Amplifiers (TMAs). Amphenol offers a global portfolio of single-band, multi-band and integrated filter designs to provide uplink amplification and support. Compatible power distribution units and Bias-Ts complete the solution.

## Connectors & Adaptors



Amphenol has been a leading global interconnect solutions provider since 1932 and offers a multitude of products for wireless infrastructure. Our fast fitting, precision grade RF Connectors & Adaptors are available in 4.3/10, 7/16-DIN and N-Type with male and female interfaces. All are suitable for both copper and aluminum cable assemblies.

## Splitters & Couplers



Amphenol offers Splitters & Couplers covering all wireless service bands. Products feature broadband characteristics with outstanding RF performance, high isolation, low insertion loss and low VSWR. Power splitters and couplers are available with 4.3/10, 7/16-DIN and N-Type connectors and are fully weatherproofed to satisfy class IP67 standards.

## Combiners



Amphenol's Combiners allow operators to combine multiple frequencies onto a single run of coax reducing overall costs, wind loads and weight in a streamlined arrangement. Diplexers, triplexers and quadruplexers are available for 2G, 3G and LTE systems and are designed for low insertion loss to ensure minimal impact on the overall system.

## Hybrid Fiber Cable



Save installation time and costs with Amphenol's Hybrid Cables. Hybrid Cables simplify tower cabling by providing power and optical connectivity in a single cable. For even faster installation, request factory-terminated assemblies with Amphenol connectors. Custom configurations of conductor counts, cable types or shielding are available with fast-turn delivery.

## Accessories & Tools



All you need to get the job done - Feeder Clamps, Grounding Kits, Grounding Bars, Wall Entry Glands, Hangers and more.

# Amphenol Antenna Solutions

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