



ESN

Antenna Guide

PRODUCT CATALOGUE

Over 70 Years of Experience

Panorama Antennas is a privately owned family business, now in its third generation, and is a leading designer and manufacturer of antennas for wireless communication. Established in London in 1947, Panorama started life as a manufacturer of consumer products and buoyed by huge demand in 1952, began manufacturing TV components and antennas. With the transistor radio trend of the 1960s, Panorama's expert knowledge swiftly led us into the manufacturing of communication antennas.

Throughout the 70s and 80s, Panorama evolved to become the first specialized communication antenna manufacturer in the UK, developing a range of cellular antennas to coincide with the launch of the mobile phone network in Britain. 1990 was a year of huge change as Panorama found itself revolutionizing cellular glass mount antenna technology, filing a patent application for the first ever solid state coupling circuit. Through creating a new benchmark for quality in the production of components and leading technology development, Panorama has grown side by side with the cellular telecommunications industry.

Today Panorama produces antennas for the world's leading communication companies and has grown to include over 100 staff in 5 international sales offices, as well as operating 4 fully owned subsidiaries. Manufacturing, design and development are located in London less than a mile from the original factory. Our network of international sales representatives means that all customers get the attention and advice they require, providing local support on a global scale.

Antennas For Next Generation

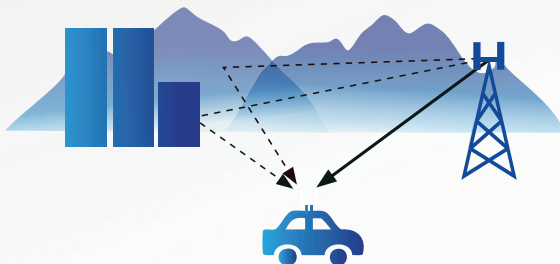
Panorama's constant cutting-edge research ensures that our antennas meet the demands of the very latest technology. With over 70 years' experience in delivering world-class antenna products, Panorama's current product range reflects our unparalleled expertise in providing high-quality performance antennas.



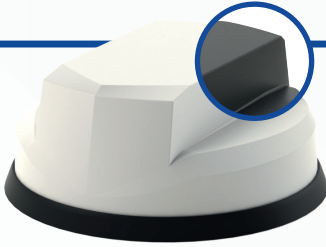
Ready for ESN

Panorama Antennas is the leading antenna supplier to public safety organisations around the world. Our success is built on understanding the evolving needs of the public safety sector, which is driven by the increasing requirement for communication systems in vehicles, whilst at the same time, reducing installation costs and improving vehicle residual value at end of service life. Panorama's products have already been extensively proven in providing voice and data communications for public safety in the UK and beyond. Our GPSK series; GPS/GNSS combination antenna is a popular product, which has been adopted as the 'de facto' antenna solution across Airwave user organisations and provides an efficient TETRA and high performance GPS/GNSS antenna in a compact single hole mounting. With the requirement for additional connected devices in vehicles, Panorama developed the GPSB "Sharkee" antenna which incorporates GPS/GNSS, Multi-Band Cellular, Dual Band WiFi and a TETRA whip in a rugged OEM style shark fin housing.

ESN operates on EE's 4G network which uses LTE technology over three frequency bands, to provide a mobile broadband bearer for both data and mission critical voice services. In order to achieve the optimum 4G broadband performance, the antenna system is a critical part of an ESN vehicle installation. A key feature of LTE is that it uses MiMo to provide a high speed broadband connection - usually 2x2 which requires the use of two antennas at the client terminus. However, with the introduction of LTE Advance Pro, (Cat 18/20) a 4x4 MiMo antenna will be required. MiMo functionality leverages on multi-path signal propagation to provide multiple signal paths, which increases the channel capacity, as shown in the image below for a 2x2 system. A MiMo system requires the antennas to have a defined level of isolation and a low correlation factor, which Panorama has designed into its' "all in one" solutions. Panorama has a complete range of MiMo multi-function antenna solutions, which are easy to install and provide pre-defined effective MiMo performance. In addition, we have a range of single (SiSo) multi-band cellular antennas as a second antenna to provide MiMo function in conjunction with an existing antenna, where required. Panorama continues to develop new products for 4G/LTE & 5G to ensure that we are able to offer high performance, cost effective solutions for public safety users.



**IP69K
RATED**



Great White® 5G MiMo Antenna

FEATURES

- 2x2 MiMo 5G/4G LTE
- 617-960 / 1710-6000MHz
- Optional Integrated GPS/GNSS
- Up to 6x6 MiMo WiFi 2.4/5.0GHz
- ECE 118.03 Compliant Cables
- IK10 Rated

ESN Ready Antenna

The LPMM/LGMM range provides effective 2x2 MiMo LTE operation with excellent isolation and low correlation coefficient. Available in Black or White. Optional GPS/GNSS module incorporates advanced filtering.

Part no.	MiMo LTE	GPS/ GNSS	MiMo WiFi
LPMM-6-60	2x2		
LGMM-6-60	2x2	•	
LGMDM-6-60-24-58	2x2	•	2x2
LGMTM-6-60-24-58	2x2	•	3x3
LGMQM-6-60-24-58	2x2	•	4x4
LGMHM-6-60-24-58	2x2	•	6x6

*Part numbers refer to the white version only
 ** Part number represents antenna only. Please contact your local sales representative for kit part numbers with full cable assemblies supplied

Mobility

MAKO® 5G MiMo Antenna

FEATURES

- 4x4 MiMo 5G/4G LTE
- 617-960 / 1710-6000MHz
- Optional Integrated GPS/GNSS
- Up to 6x6 MiMo WiFi 2.4/5.0GHz
- ECE 118.03 Compliant Cables
- IK10 Rated

ESN Ready Antenna

The LPMM4/LGMM4 enables multiple antenna functions to be fitted using a single hole mount. Designed for use with Advance Pro routers that require a 4x4 5G/4G LTE MiMo antenna system. Available in Black or White. Optional GPS/GNSS module incorporates advanced filtering.

**IP69K
RATED**



Part no.	MiMo LTE	GPS/ GNSS	MiMo WiFi
LPMM4-6-60	4x4		
LGMM4-6-60	4x4	•	
LGMDM4-6-60-24-58	4x4	•	2x2
LGMTM4-6-60-24-58	4x4	•	3x3
LGMQM4-6-60-24-58	4x4	•	4x4
LGMHM4-6-60-24-58	4x4	•	6x6

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Mobility

MiMo Sharkee® 5G

FEATURES

617-960 / 1710-6000MHz
 Optional Integrated GPS/GNSS
 Up to 4x4 MiMo WiFi 2.4/5GHz
 ECE 118.03 Compliant Cables

ESN Ready Antenna

The SHKG Sharkee® range has become a byword for industry leading technology in a discrete OEM sharfin housing. The 6-60 brings 5G capability to the Sharkee® family.

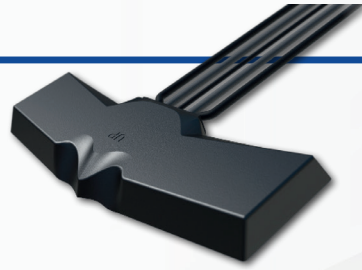
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RATED**



Part no.	MiMo LTE	GPS/ GNSS	MiMo WiFi	External Whip
GPSD-6-60	2x2	•		•
GPSD-6-60-DW	2x2	•	2x2	•
GPSD-6-60-TW	2x2	•	3x3	•
GPSD-6-60-QW	2x2	•	4x4	•

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Mobility



Covert MiMo Antenna

FEATURES

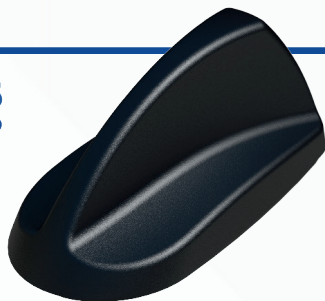
2x2 MiMo 5G/4G LTE
 617-960 / 1710-6000MHz
 Optional Integrated GPS/GNSS
 Optional SiSo or 2x2 MiMo WiFi 2.4/5GHz
 Compliant with ECE R118.03 fire safety

The Panorama BAT range is an ideal 2x2 MiMo 4G/5G antenna for Covert installations with fall back capability to 3G/2G. It can also incorporate a GPS/GNSS antenna and Single or 2x2 MiMo dual band WiFi antenna(s).

Part no.	MiMo LTE	GPS/ GNSS	MiMo WiFi
BATM-7-60	2x2		
BATGM-7-60	2x2	•	
BATGM-7-60-S24-58	2x2	•	•
BATGM-7-60-24-58	2x2	•	2x2

Mobility

**IP66
RATED**



GPSB Sharkee®

FEATURES

4G/3G/2G LTE

Dualband 2.4/4.9-6GHz WiFi

Integrated GPS/GNSS

Optional Airwave antenna

The GPSB 'Sharkee' is an automotive multi-function antenna, which has a mounting stud for a whip antenna. A wide range of whips (single, dual or tri-band) are available for VHF/UHF and 700/800MHz band operation.

The GPSB reduces visual impact and only requires a single 19mm (3/4") hole, which results in reduced installation time/cost whilst helping to maintain vehicle resale value.

Part no.	LTE	GPS/ GNSS	WiFi
GPSB	•	•	•

Mobility

GPS/GNSS & Whip Combination

FEATURES

Flexible UHF, cellular or WiFi whip

Integrated GPS/GNSS

Single 15mm hole mount

Whip mounting stud

The GPSK antenna is a rugged combination base with a whip mounting stud. A wide range of antenna whips are available to fit the GPSK, including UHF, Cellular and WiFi types.

The GPSK is an ideal solution for vehicle mounted terminals and Mobile Data equipment. It can also be supplied as a complete 'plug and play' kit.



**IP65
RATED**

Part no.	Whip
GPSK-TET	380-430MHz
GPSK-C3G	900, 1800, 1900, 2100MHz
GPSK-W24	2400MHz

Multifunction Antenna

Panel Mount SiSo Antenna

FEATURES

- Covers 5G/4G/3G/2G LTE
600-6000MHz
- Low Profile, compact design
- High impact resistant housing

The Panorama LPB low profile antenna range has been designed to perform in harsh environments with a robust high impact radome only 82mm (3.2") high. When installed on a 400 x 400mm (15.7" x 15.7") ground plane, the LPB covers global LTE and cellular frequencies in the range 600-6000MHz making it an extremely versatile product.

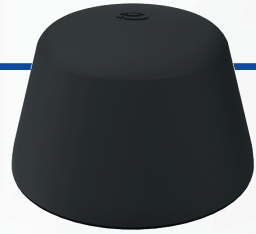


**IP65
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Part no.	Termination	Cable Length
LPB-6-60-05SP	SMA Male	0.5m (1.6')
LPB-6-60-2SP	SMA Male	2m (6.6')
LPB-6-60-2F	FME Male	2m (6.6')
LPB-6-60-5SP	FME Female	5m (16.4')
LPB-6-60-5F	FME Female	5m (16.4')

IoT

**IP66
RATED**



The Fez LTE Antenna

FEATURES

- 4G/3G/2G LTE
698-2700MHz
- Optional 1x or 2x2 MiMo WiFi 2.4 / 5.0GHz
- Optional integrated GPS/GNSS
- Ground plane independent

The Fez antenna series is a range of low profile antennas incorporating a combination of wideband cellular element covering 700-2700MHz frequencies along with an active GPS/GNSS antenna and a single or dual band WiFi element all in a robust compact housing.

Part no.	LTE	GPS/ GNSS	WiFi	MiMo WiFi
LPB-7-27	•			
LGE-7-27	•	•		
LGE-7-27-24-58	•	•	•	
LGEM-7-27-24-58	•	•		2x2

IoT

On-Glass LTE Antenna

FEATURES

- 4G/3G/2G LTE
- 698-2700MHz
- Simple adhesive pad fitment
- Can be fitted on glass or plastic panel

The EF-BC3G-26 antenna is a low cost single 4G/3G/2G product that can be fitted on any non-conductive surface. It is typically fitted on a window and with correct spacing, a pair can be installed to provide a covert 2x2 MiMo antenna system.

Part no.	Termination
EF-BC3G-26-3SP	SMA Male

Cellular

On-Glass WiFi Antenna

FEATURES

- Dual Band WiFi
- 2.4 / 5.0GHz frequencies
- Simple adhesive pad fitment
- Can be fitted to glass or plastic panel

EF-24-58 is a range of highly efficient and easy to install antennas for providing WiFi coverage. These compact paddle style antennas are easily positioned on a device housing or vehicle windscreen using the supplied automotive industry grade adhesive pad.



Part no.	Termination
EF-24-58-3SP	SMA Male
EF-24-58-3RPSP	Rev Pol SMA Plug

Cellular

Low Profile Internal MiMo WiFi

FEATURES

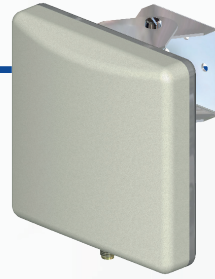
Up to 4x4 MiMo WiFi 2.4/5.0GHz
 Ceiling mount
 Low profile, robust housing
 EN50155, EN45545-2 & UN ECE 118.01

The CM(x)-24-58 range provides a compact, robust internal WiFi antenna with up to 4x4 MiMo function. It is ground plane independent and has integral ultra-low loss coax cables with pre-fitted connectors. The antenna compliance ensures that it is suitable for use in buildings, railway rolling stock and other transportation modes.



Part no.	MiMo WiFi
CM2-24-58	2x2
CM3-24-58	3x3
CM4-24-58	4x4

In-Building | Transportation



SiSo WiFi Panel Antenna

FEATURES

Covers 2.4 & 5GHz for WiFi
 High gain directional antenna
 Ideal WiFi coverage extender

The W24-58-CP-9 is a dual band WiFi antenna covering 2.4 & 5GHz bands. The antenna can be used internally or externally and has 60° beam width in both azimuth and elevation planes.

Part no.	WiFi
W24-58-CP-9	•

In-Building | Transportation



Directional 4x4 MiMo 4G/5G Antenna

FEATURES

- 4x4 MiMo High Gain Directional Antenna for 4G/5G LTE
- 617-960 / 1710-6000MHz
- Supports New Generation CAT18/20 Devices
- Optional Integrated GPS/GNSS
- Suitable for wall or mast mounting

The WMM4G-6-60 is a high gain directional 4x4 MiMo antenna for 4G and 5G networks. It incorporates four pairs of wideband element assemblies in a single housing and is designed to support fixed site CAT18/20 client devices. It offers 6dBi peak gain for 617- 960MHz and 9dBi peak gain for 1710-6000MHz.

Part no.	Termination	Cable Length
WMM4G-6-60-05NJ	4x N Socket (f)	0.5m (1.6')
WMM4G-6-60-5SP	4x SMA (m)	5m (17')

Fixed Site

MiMo Directional Antenna

FEATURES

- Supports MiMo & diversity across 3G,4G & 5G
- Two wideband elements with gain
- Durable wall mount housing
- Suitable for mast, wall and desk mounting

The WMM8G-7-38 antenna is a high directional gain 2x2 MiMo signal boosting antenna for 2G, 3G,4G and many 5G networks. Incorporating two separately fed wideband elements in a single housing the WMM8G-7-38 is equipped to provide client side MiMo and diversity support for 2G, 3G, 4G and many 5G networks.



Part no.	Termination	Cable Length
WMM8G-7-38-03NJ	2x N Socket (f)	0.3m (1')
WMM8G-7-38-5SP	2x SMA (m)	5m (17')

Fixed Site

GPS Splitter

FEATURES

- Reduce installation costs
- Run two GPS receivers from a single antenna
- DC block on one port

The Panorama DPD-GPS allows you to run two GPS receivers from a single antenna. The DPD-GPS splits the received signal from the antenna to two receivers while only allowing one of the receivers to feed voltage to the antenna, ensuring that the antenna is able to function correctly.

The DPD-GPS allows both GPS receivers to use an optimally located antenna, thereby reducing clutter and installation costs.



Part no.	Frequencies (MHz)
DPD-GPS	1562-1614



Wideband Cellular Combiner

FEATURES

- Connect two cellular devices into one antenna or connect two antennas to one cellular device

The DBLC-C3G-2N is a low cost, compact, 2 port, 3dB combiner with low insertion loss. It provides around 20dB isolation between the split ports, designed to allow two cellular devices to use a single antenna.

Part no.	Termination
DBLC-C3G-2N	N Sockets

Cables

Cable type. RG174

GPS/GNSS
XLPE low loss RG174



Cable type. CS23

VHF-UHF
Low loss RG58 C/U



Cable type. CS29

Cellular 2G/3G/4G
Double shielded - Stranded core
Ultra low loss cable*



Cable type. CS32

Cellular 5G / WiFi
Double shielded - Solid core
Flame retardant jacket
Ultra low loss cable*



Cable type. CS240

Cellular / WiFi
Double shielded solid core 6mm Ø cable
Longer cable runs*



*Various Lengths & Connectors available

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