



FirstNet 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.

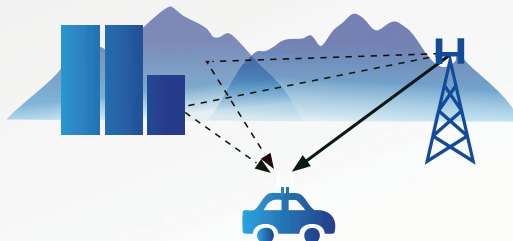


Ready for FirstNet

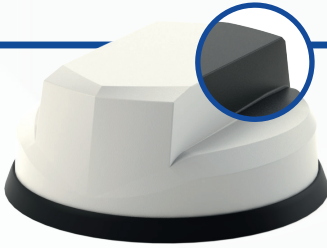
Panorama Antennas is the leading antenna supplier to public safety organisations around the world. Our success is built on understanding the evolving needs of the public safety sector, which is driven by the increasing demand for ever more complex communication systems in vehicles, whilst at the same time, the need to reduce installation costs and improve 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 US and beyond. FirstNet uses the AT&T 4G network, which operates on Band 14 and other bands to provide a prioritized and resilient mobile broadband bearer for mission critical data and voice services. The antenna is a critical part of a FirstNet vehicle installation in order to achieve the optimum 4G broadband performance. A key feature of LTE is that it uses MiMo (Multiple Input, Multiple Output) technology to enable a high speed broadband connection. Standard LTE uses a 2x2 system, with two antennas at the client terminal, but Cat 18/20 Advance Pro devices require a 4x4 MiMo antenna. MiMo function utilises multi-path signal propagation to increase the channel capacity, providing faster download/upload speeds. A MiMo system requires the antennas to have a defined level of isolation and a low correlation factor, which Panorama provides in its' "all in one" solutions.

Panorama has a new range of 5G antennas, which include the 5G Great White (2x2) 5G Mako (4x4) and the new generation 5G Sharkee (2x2) – all of these antennas are suitable for use with FirstNet MegaRange™ Class 1 HPUE devices and cover the 4G/5G Low and Mid Band (sub 6GHz) range. They also feature a new GPS/GNSS antenna module which incorporates enhanced filtering for resilient operation alongside Band 13/14 use.

The 5G Sharkee® builds on the success of the original MiMo Sharkee, with a rugged OEM style shark fin housing with single hole mounting and narrow footprint to enable fitment on SUV ribbed roofs. It features internal antennas for GPS/GNSS, 2x2 MiMo for 4G/5G and 2x2, 3x3 or 4x4 MiMo dual band WiFi antennas and with the GPSD version, a comms whip can be fitted. Panorama has a complete range of MiMo multi-function antenna solutions, which are easy to install whilst providing pre-defined MiMo performance. In addition, we have a range of single (SiSo) multi-band cellular antennas suitable for 4G/LTE, which could be used where required. Panorama continues to develop new products for 4G/5G to ensure that we are at the front in being 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

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
LP-IN2455**	2x2		
LG-IN2456**	2x2	●	
LG-IN2457**	2x2	●	2x2
LG-IN2532**	2x2	●	3x3
LG-IN2458**	2x2	●	4x4
LG-IN2448**	2x2	●	6x6

*Part numbers refer to the black version only
 ** Antenna kit supplied with 5m / 17ft of cable assembly with SMA male (cellular & GNSS) and reverse polarity SMA male (WiFi).
 ***Other lengths cables and connectors available upon request.

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

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.

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Part no.	MiMo LTE	GPS/ GNSS	MiMo WiFi
LP-IN2443**	4x4		
LG-IN2444**	4x4	●	
LG-IN2445**	4x4	●	2x2
LG-IN2446**	4x4	●	4x4
LG-IN2447**	4x4	●	6x6

*Part numbers refer to the black version only
 ** Antenna kit supplied with 5m / 17ft of cable assembly with SMA male (cellular & GNSS) and reverse polarity SMA male (WiFi).
 ***Other lengths cables and connectors available upon request.

Mobility

MiMo Sharkee® 5G

FEATURES

2x2 MiMo 5G/4G LTE
617-960 / 1710-6000MHz
Optional Integrated GPS/GNSS
Up to 4x4 MiMo WiFi 2.4/5GHz
ECE 118.03 Compliant Cables

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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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	•
SH-IN2616**	2x2	•		
SH-IN2617**	2x2	•	2x2	
SH-IN2618**	2x2	•	3x3	
SH-IN2619**	2x2	•	4x4	

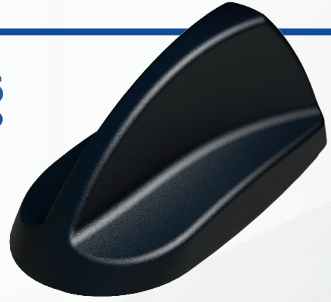
*Part numbers refer to the black version only

** Antenna kit supplied with 5m / 17ft of cable assembly with SMA male (cellular & GNSS) and reverse polarity SMA male (WiFi).

***Other lengths cables and connectors available upon request.

Mobility

**IP66
RATED**



GPSB Sharkee®

FEATURES

4G/3G/2G LTE
698-960 / 1710-2700MHz
Dualband 2.4/4.9-6GHz WiFi
Integrated GPS/GNSS
Optional P25 Antenna Whip

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



MiMo Transit Antenna

FEATURES

- 2x2 MiMo 5G/4G LTE
- 698-960 / 1710-6000MHz
- Optional Integrated GPS / GNSS
- Fully Rail Industry Certified

The TRNM(G) MiMo antenna series is designed specifically for use on trains, trams and buses underground or over ground. Incorporating two elements operating wideband across all frequencies from 698MHz to 6000MHz the TRNM(G) range is versatile and future proof.

The TRNM(G) series covers GSM-R, 700MHz LTE, 800MHz TETRA and trunking bands along with all Cellular and GSM frequencies, 2.4 & 5.8GHz WLAN, 2.6 GHz LTE and WIMAX all in one housing.

Part no.	MiMo LTE	GPS/ GNSS
TRNM-7-60-NJ	2x2	
TRNMG-7-60-NJ	2x2	•

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	WiFi	MiMo WiFi
BATM-7-60	2x2			
BATGM-7-60	2x2	•		
BATGM-7-60-S24-58	2x2	•	•	
BATGM-7-60-24-58	2x2	•		2x2

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')
WM-IN2582-10	4x N Socket (f)	10m (33')
WM-IN2582-15	4x N Socket (f)	15m (50')

*Extension cables available upon request.

Branch



Directional 2x2 MiMo 4G/5G Antenna

FEATURES

2x2 MiMo High Gain Directional Antenna for 4G/5G LTE

617-960 / 1710-6000MHz

Optional Integrated GPS/GNSS

Suitable for wall or mast mounting

The WMM2G-6-60 is a high gain directional 2x2 MiMo antenna for 4G and 5G networks. It incorporates two wideband element assemblies in a single housing and is designed to support fixed site client devices. It offers 6dBi peak gain for 617-960MHz and 9dBi peak gain for 1710-6000MHz.

Part no.	Termination	Cable Length
WMM2G-6-60-05NJ	2x N Socket (f)	0.5m (1.6')
WMM2G-6-60-5SP	2x SMA (f)	5m (17')

*Extension cables available upon request.

Branch

**IP65
RATED**



External Mount 4G/5G MiMo Antenna

FEATURES

- 698-960 / 1710-3800MHz
- Optional Integrated GPS / GNSS
- Supports MiMo & Diversity across 4G/5G
- Two wideband elements with gain
- Durable wall mount housing
- Suitable for mast, wall and desk mounting

The WMMG antenna provides an innovative and future proof solution for 3G/4G and 3.8GHz 5G networks. Incorporating two separately fed ultra wideband elements in a single housing the WMMG is equipped to provide client side MiMo and diversity support for the networks of today and tomorrow.

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

*Extension cables available upon request.

Branch

Low Profile Panel Antenna

FEATURES

- Cost effective 2G/3G/4G/5G coverage
617-960 / 1710-6000MHz
- Integrated low loss cable
- Robust but subtle design

The LPB-6-60 is supplied with integrated 5mm / 0.2" double shielded CS29 coaxial cable and is available with a wide variety of connectors fitted. This Antenna is an ideal solution for use in industrial and domestic environments with cellular modems/routers and Machine to Machine (M2M) wireless connectivity applications.

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Part no.	Termination	Cable Length
LPB-6-60-05SP	SMA Plug	0.5m (1.6')
LPB-6-60-2SP	SMA Plug	2m (6.6')
LPB-6-60-5SP	SMA Plug	5m (17')

IoT

4G/5G Bracket Mount Antenna

FEATURES

Cost Effective 2G/3G/4G/5G coverage
 617-960 / 1710-6000MHz
 Wall, mast or panel mount
 Integrated low loss cable

The B4BE antenna is a cost effective omni-directional broad band antenna for 5G/4G/3G and 2G devices from 617-960/1710-6000MHz and is suitable for external or internal installation. The omni-directional radiation pattern allows easy placement of the antenna in an elevated position.

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Part no.	Termination	Cable Length
B4BE-6-60-05SP	SMA Plug	0.5m (1.6')
B4BE-6-60-2SP	SMA Plug	2m (6.6')
B4BE-6-60-5SP	SMA Plug	5m (17')

IoT



4G/5G Desk Mount MiMo Antenna

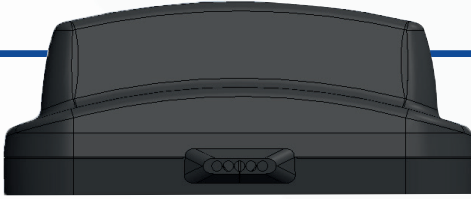
FEATURES

2x2 MiMo for 4G/5G
 617-960 / 1710-6000MHz
 Desk, window or wall mount
 Integrated twin cable with a range of connectors

The DMM antenna provides an innovative and future proof solution for 2G/3G/4G and 5G networks. Incorporating two separately fed ultra wideband elements in a single housing the DMM is equipped to provide portable MiMo and diversity support for frequencies from 617-960/1710-6000MHz.

Part no.	Termination	Cable Length
DMM-6-60-2SP	2x SMA Male	2m (6.6')
DMM-6-60-2TS9	2x TS9 Male	2m (6.6')

IoT



4G/5G MiMo Low Profile Antenna

FEATURES

2x2 MiMo 4G/5G LTE Solution
698-960 / 1710-3800MHZ
Panel or Magnetic Mount
Cost Effective IoT Solution

The 4G/5G MiMo Low Profile Antenna range has been designed to provide MiMo LTE antenna function for IoT and M2M applications. The compact, robust low-profile housing is weatherproof and contains two antenna elements with effective isolation and correlation alongside optional GNSS.

Part no.	GPS/ LTE GNSS	Cable & Connector
LPAM-BC3G-26	2x2	1m (3') SMA Male
LPAM-BC3G-26-ISP	2x2 •	1m (3') SMA Male
LPAMM-BC3G-26-ISP*	2x2	1m (3') SMA Male
LGAMM-BC3G-26-ISP*	2x2 •	1m (3') SMA Male

* Magnetic version

IoT

Low Profile Magnetic Antenna

FEATURES

Cost effective 2G/3G/4G/5G coverage
617-960 / 1710-600MHZ
Magnetic Mount
Low Profile Design

The Panorama LPBEM-6-60 is a range of low cost high performance magnetic mount antennas for temporary fit applications. At only 95mm (3.7") high and protected by a robust high impact radome the antenna is almost impervious to daily wear and tear.



Part no.	Termination	Cable Length
LPBEM-6-60-2SP	SMA Plug	2m (6.6')
LPBEM-6-60-5SP	SMA Plug	5m (17')

IoT

2G/3G/4G Easy-Fit Antenna

FEATURES

2G/3G/4G LTE

698-960 / 1710-2700MHz

Discreet adhesive pad fitment

Suitable for mounting to plastic or glass

EF-BC3G-26 is a range of highly efficient and portable antennas for 2G/3G/4G modems and datacards. These 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-BC3G-26-3FAKRAD	FAKRA D Jack
EF-BC3G-26-3SP	SMA Plug
EF-IN2309	2x TS9

IoT



2G/3G/4G/5G Paddle Antenna

FEATURES

Cost Effective 2G/3G/4G/5G coverage

617-960 / 1710-3800MHz

Suitable for routers and terminals

Articulated SMA connector

The PWB-BC3G-38 antenna is a ground plane independent antenna covering global 2G/3G /4G and 3.8GHz 5G frequencies from 698-960/1710-2170/2396-2700 and 3400-3800MHz.

Designed for terminals and routers the PWB-BC3G-38-RSMAP offers an articulated SMA connector for flexible positioning and a sleek profile for low visual impact.

Part no.	Termination
PWB-BC3G-38-RSMAP	SMA Connector
PWB-BC3G-38-RFDJ	FAKRA D Connector

IoT

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