



**Product Catalogue**  
PMR &  
Critical Communications

PANORAMA  ANTENNAS

## Almost 70 Years of Experience

Panorama Antennas is A family business now in its third generation and a leading designer and manufacturer of antennas for radio communication. Established in London in 1947, Panorama started life as a company manufacturing consumer products. In 1952, buoyed by huge demand for TVs in the UK, Panorama began manufacturing components for televisions, including antennas. With the transistor radio trend of the 1960s, Panorama's expert knowledge of television antennas was put to the manufacture of communication antennas for radio.

Throughout the 70s and 80s, Panorama evolved to become the first specialised communication antenna manufacturer in the UK, developing a range of cellular antennas to coincide with the launch of the mobile phone network in Britain. In 1990, Panorama filed a patent application for the first ever solid state coupling circuit, revolutionising cellular glass mount antenna technology and creating a new benchmark for quality in the production of components. As the cellular telecommunications industry has grown worldwide, so has Panorama.

Today Panorama produces antennas for the world's leading communication companies. While Panorama has grown to include 8 international offices, 2 subsidiaries, and over 70 staff; manufacturing, design and development are retained 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 global scale.

## Antennas For Next Generation Technology

Panorama's constant cutting-edge research ensures that our antennas meet the demands of the very latest public safety communications technology. Trusted by thousands of professionals the world over, our antennas are depended on to provide critical communications even in the most challenging conditions.

With nearly 70 years experience in delivering world-class antenna products, Panorama's current product range reflects our unparalleled expertise in providing high-quality performance antennas.



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### Catalogue Key

Products within this catalogue feature symbols to identify their potential uses and particular attributes. This guide will assist in identifying each symbol, and help clarify a product's full specification.



#### iBwave

Products with this icon are profiled in the iBwave component database for wireless network planning.



#### PIMGuard

PIMGuard products have been designed to give protection from passive intermodulation, thereby increasing network efficiency.



#### SAR Approved

SAR approved antennas have been tested by an approved test house according to EN 50385:2002 and test data is available for input power levels meeting Specific Absorption Rate requirements.



#### GPS Satellite Navigation

Our GPS antennas feature a high-performance GPS element that provides reliable signal.



#### InBuilding

These antennas are designed to be used on or inside buildings in order to provide network coverage.



#### Public Safety

Ideal for use in critical communication environment, these antennas are available for a range of frequencies and applications.



#### Transport

These specialist antennas are developed to exacting standards in order to withstand the toughest conditions on or in a vehicle.



#### Utility

For creating and extending a network service in challenging environments, these utility antennas are reliable and high-performance.



# Quality As Standard

## Quality Assurance

In 1989, Panorama Antennas became the first antenna manufacturer in Europe to gain ISO 9000 certification. Panorama currently holds the ISO 9001-2008 certificate for quality assurance.

## Patents

Panorama Antennas currently holds several patents and registered designs both in Europe and worldwide.

## RoHS Compliance

All of the products that Panorama Antennas manufactures are 100% RoHS compliant. This is in line with European legislation which came into force on the 1st July 2006. Investment in advanced technology enables Panorama to test materials supplied to us as soon as they arrive at the factory, ensuring that noncompliant material is not passed on to the customer.

## REACH

REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals, EC 1907/2007) is the European Union's chemical regulation that came into force on 1 June 2007 and will be phased in over an 11 year period (until 2018). Panorama Antennas wholeheartedly supports the objective of REACH to enhance public health and safety and the protection of the environment. Panorama is committed to meeting REACH requirements and can provide information about substances in accordance with the requirements.

## Associations

Panorama Antennas is currently a member of the following professional associations:

-  *Federation of Communication Services*
-  *TCCA TETRA Association*
-  *British Safety Council*
-  *British APCO*



# Multifunction Antennas

## PMR & Critical Communications

### 'The Sharkee®' Combination Antenna

All 2G, 3G & 4G cellular bands  
Integrated GPS and 2.4/4.9-6GHz WIFI & WLAN  
Optional detachable whip element

The GPSB provides antenna coverage for multiple technologies within one antenna housing. Trusted by public safety organisations, utilities and transportation companies all over the world, the GPSB sets the industry standard in functionality.

The GPSB offers three internal antenna systems, GPS, 4G/3G/2G cellular, dual-band WiFi/WiMAX as well as an optional external whip.

Requiring only a single hole fixing, the GPSB reduces vehicle damage, visual impact and cost of installation, whilst protecting vehicle resale value.



## Standard Data

Part No.		GPSB (configure whip separately)
Frequency Range (MHz)		698-960, 1710-2170, 2500-2700 (Cellular), 2400, 4900-6000 (WLAN / WiFi) + Optional Whip 1575 (GPS)
		1dBi (Cellular), 2dBi (WLAN/WiFi) 26dB (GPS)
Peak gain: Isotropic		
Pattern		Omnidirectional
Mechanical Data		
Dimensions (mm)	Height	50 (2" in)
	Length	120 (4.72" in)
	Width	58 (2.3" in)
Ingress Protection		IP66 (EN 60529:1992)



### Configure Your Whip & Cable

Turn to page 52 to select a cable set and connectors for this product. To select a whip suitable for this combination base, please turn to pages 39-42.



# 'The Fez' Combination Antenna

Ground plane independent

Wideband LTE/cellular element

2.4 & 4.9-6 GHz WiFi/WiMAX element (Optional)

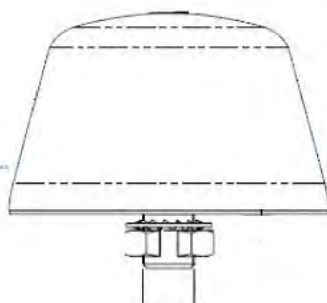
Integrated GPS antenna (Optional)

The LG[P]E antenna series is a range of low profile antennas incorporating a combination of wideband cellular element covering 2G, 3G and 4G frequencies along with an active GPS patch with 26dB LNA gain and a dual band WiFi element all in a robust compact housing.

Designed to be tough yet cost effective, the antennas are completely enclosed in a moulded housing made from weather and impact resistant plastic. The range is supplied with short fly leads and can be kitted with Panorama Antennas' low loss extension cables in various lengths.

## Ground Plane Independent

This antenna does not require a ground plane, and maintains a high level of performance even when mounted on a non-metallic surface



## Standard Data

Part No.	LGE/LPE
Frequency Range (MHz)	698-960, 1700-2700 (Cellular), 2300-2500, 4900-6000 GHz (WiFi), 1575 (GPS)
Operational Bands	GPS / LTE / Cellular, WiFi / WiMAX
Peak Gain: Isotropic	2dBi
Max input power	50 watts
<b>Mechanical Data</b>	
Dimensions (mm)	Height 70 (2.8" in)
	Diameter 111 (4.4" in)
Material	ASA
Mounting type	Panel mount

	GPS	LTE	WLAN	MIMO WLAN (2x2)
LPE-7-27		•		
LGE-7-27	•	•		
LGE-7-27-24-58	•	•	•	
LGEM-7-27-24-58	•	•		•



## Select Your Cables

Turn to page 52 to select a cable set and connectors for this product. Panorama's wide range of adaptor cables means that it's simple to get the right termination for any antenna application.

### The 'Great White' Range



- 2 x Wideband LTE/cellular elements
- Optional integrated GPS antenna (LGMM[B] range)
- Up to 3 x 2.4 & 4.9-6GHz WiFi/WiMAX elements
- Magnetic version available



GPS



Public Safety



Transport



Utility



#### Ground Plane Independent

This antenna does not require a ground plane, and maintains a high level of performance even when mounted on a non-metallic surface

The Panorama LGMM[B] and LPMM[B] low profile MiMo antenna range has been designed to support the new generation of vehicular LTE routers.

The antenna enclosure contains up to five isolated high performance antenna elements; two ultra-wideband elements covering 698-2700MHz and supporting MiMo/diversity at cellular/LTE frequencies, or three optional dual band elements covering 2.4 & 4.9-6GHz supporting MiMo/diversity operation for WiFi and WiMAX. The LGMM[B] range also contains a GPS antenna with an integrated 26dB gain LNA with high performance filtering.

### Standard Data

Electrical Data		
Frequency Range (MHz)	698-960, 1700-2700 (Cellular) 2400, 4900-6000 (WiFi / WLAN), 1575 (GPS)	
Peak Gain: Isotropic	2.3dBi (698-960), 5dBi (1700-2700), 2dBi (2400/4900-6000)	
Typical VSWR	< 2.5:1 (Cellular) < 2:1 (WiFi/WLAN)	
Mechanical Data		
Dimensions (mm)	Height	62 (2.4" in)
	Diameter	176 (6.7" in)
Material	ASA & diecast aluminium	
Mounting type	Panel Mount (standard) <i>Panel Extension Kit (LGMM-EXT), Magnetic Mount (LGMMM), Trunk Mount Kit (SAB-207)</i>	
Ingress Protection	IP66 (EN 60529:1992)	

Variants

	GPS	MiMo LTE (2x2)	MiMo WLAN (2x2)	MiMo WLAN (3x3)
LPMM-7-27		•		
LPMM-7-27-24-58		•	•	
LGMM-7-27	•	•		
LGMM-7-27-24-58	•	•	•	
LGMM-7-27-24-58	•	•		•

#### Available Colours:

- Black
- White



### Configure Your Whip & Cable

Turn to page 52 to select a cable set and connectors for this product. Panorama's wide range of adaptor cables means that it's simple to get the right termination for any antenna application.



## Combination GPS/Whip

Combined GPS and whip

Integrated GPS antenna

Best seller

Can be used with various VHF, UHF & cellular whips

The GPSK & GPSGK antenna ranges are dual function high performance TETRA antennas with an active GPS element. The GPSGK is compatible with GPS, GLONASS and Beidou navigation systems

The GPSK & GPSGK bases are compatible with a range of Panorama whips depending on the application. With the ability to mount on a roof up to 6mm thick using only a single 14mm hole. The dual functionality of the Panorama GPSK & GPSGK range makes them a popular choice for police, buses, taxis and other public service and utility vehicles.

This antenna can be provided as a 'plug & play' kit for all TETRA and DMR terminals.

### GLONASS

All GPSK models are available in GLONASS compatible versions upon request



Variants	Part No.	Frequency (MHz)	Mount Type	Certification
	GPSK-FF	1575	Panel Mount	E11 'E-Mark'
	GPSGK-FF	1575-1610 (GLONASS)	Panel Mount	-
	GPSKM	1575	Magnetic Mount	E11 'E-Mark'

## Standard Data

### Electrical data

Peak Gain: LNA	26dB
Operating Voltage	3 - 5V DC (fed via coax)
Current	Typical 15mA

### Mechanical

Dimensions (mm)	Base Width	50mm (2.0")
	Base Height	18.5mm (0.7")
Operating Temp (°C)	-40°/+80°C (-40°/+176°F)	
Material	High Impact U.V. Stable A.B.S	



## Configure Your Whip & Cable

Turn to page 52 to select a cable set and connectors for this product. To select a whip suitable for this combination base, please turn to pages 39-42.

## GPS Antennas



GPSP



GPSME



GPSSV

Excellent performance  
Active GPS element  
Easy installation

Knowing the position of a vehicle is vital for fleet management and logistics planning. With a GPS antenna you can identify the position of a vehicle at any time.

The GPSP offers a permanent, panel mounted option, While the GPSME provides the convenience and flexibility of a temporary, no holes solution with a tough magnetic fixing.

The GPSSV is a unique velcro/sticky pad solution for temporary or covert installs.



### GLONASS

GPSME, GPSP and GPSSV models are available in GLONASS compatible versions upon request

## Standard Data

Part No.		GPSME	GPSP	GPSSV
Frequency Range (MHz)			1575	
VSWR			<1.5:1 @ 1575MHz ± 4MHz	
LNA Peak Gain			26dB	
Operating Voltage			3 - 5V DC (fed via coax)	
Current (Typical)			15mA	
Impedance			50Ω	
Mechanical Data				
Dimensions (mm)	Length	48.6 (1.9")	60 (2.4")	34.6 (1.36")
	Width	39.2 (1.5")	50 (2.0")	34.6 (1.36")
	Height	15.6 (0.6")	18.5 (0.7")	13.2 (0.5")
Fixing		Magnetic Mount	Panel Mount	Adhesive pad/hook & loop
Mounting Hole Diameter (mm)		-	15 (0.6")	-
Certification		-	E11 'E-Mark' Approved	E11 'E-Mark' Approved
Termination Data				
Type			RG174	
Terminations Available			FME/MCX/MMCX/SMA/SMB/SMC	

## Low Profile Antenna

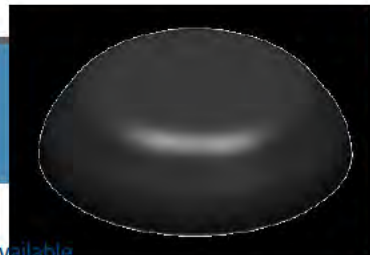
Rugged design for heavy duty applications  
Easy Installation  
Ground plane Independent

The Panorama low profile antenna range has been designed to perform under extreme pressure. The outer housing is designed to withstand high impacts while maintaining its functionality.

An excellent solution for demanding applications in transportation.

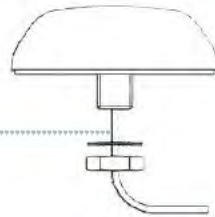
### Ground Plane Independent

This antenna does not require a ground plane, and maintains a high level of performance even when mounted on a non-metallic surface



Available Colours:

- Black
- White



## Standard Data

Variants	Part No.	Frequency	Electrical Data	
	LP390	380-400	Peak Gain	0dBi
	LP420	410-430	Impedance	50Ω
	LP440	430-450	Max Input Power (W)	20
	LP460	450-470	GPS Data	
	LPL-S5	806-870	Frequency (MHz)	1575
GPS Variants			Gain: LNA	26dBi
			Operating Voltage	3-5V DC (fed via coax)
	LG390	380-400	Mechanical Data	
	LG420	410-430	Certification	E11 'E-Mark' Approved
	LG440	430-450	Operating Temp (°C)	-40°/+80°C (-40°/176°F)
	LG460	450-470	Material	ASA
GPS Variants	LG-S5	806-870		



## Configure Your Cable

Turn to page 52 to select a cable set and connectors for this product. Panorama's wide range of adaptor cables means that it's simple to get the right termination for any antenna application.



## Glass Mount Antenna

- Excellent performance
- Solid state coupling
- No hole installation

The Panorama Glass Mount Antenna can be quickly and easily installed on a windscreen or rear window without making any holes or using any tools. The installed antenna will have a typical VSWR of 1:5:1.

The antenna couples capacitatively through glass and its high positioning gives it the high performance and near omni-directional radiating pattern of a roof-mounted  $\frac{1}{4}$  wave.

This antenna can be easily removed for the car wash and if you wish to transfer the assembly to another vehicle, the coupling box and mounting foot can be removed without damage, leaving the glass in its original state.



## Standard Data

Variants	Part No.	Frequency (MHz)	Electrical Data	
	AOG143	138-148	Peak Gain: Isotropic	2dBi
	AOG151	142-160	Max Input Power (W)	20
	AOG161	156-174	Mounting Data	
	GM-390	380-400	Fixing	External glass mount
	GM420	410-430	Mounting Foot Dimensions	Length (mm) 50.4 (2")
	GM455	445-470		Width (mm) 51.4 (2.1")
	GM435	425-455	Cable Data	
	GMG-S5	806-870	Cable Type	CS23
			Diameter (mm)	5 (0.2")
Please contact a member of the Panorama sales team for information on high gain versions of this antenna.			Length (m)	5 (15')

## Re-Installation Kit - KRV393

Use the KRV393 Re-Installation Kit to apply our glass mount antennas on to a new surface. This extends the life of the antenna to be used on multiple vehicles.



## ½ Wave Ground Plane Independent Antenna

Ground plane independent antenna

Flexible whip

Moulded coaxial cable

Suitable for vehicles or fixed site applications

The HM range of antennas are ground plane independent and can therefore be mounted on any surface. The antenna is ideal for motorcycles but can also be used on other vehicles, boats or fixed sites.

The HM antenna range has a rugged design with a flexible nylon covered whip. The base features a moulded cable entry and an M14 mounting bolt.

### HM Whip

This antenna can be purchased without the base - please ask for more details



Public Safety  
Transport  
Utility

Variants	Part No.	Frequency (MHz)	Part No.	Frequency (MHz)
	HM-S1	380-400	HM-S4	450-470
	HM-S2	410-430	HM-480	470-490
	HM-TET	380-430	HM-495	480-510
	HM-433	430-440	HM-S5	806-870
	HM-451	438-472	HM-D	896-960

### Electrical Data

Peak Gain: Isotropic	4dBi
Impedance	50Ω
Max Input Power (W)	5 (20 for some variants)

### Mechanical Data

Material	Nylon
Base Diameter (mm)	35 (1.4")
Fixing	Panel mount
Mounting hole diameter	15 (0.6")

### Cable Data

Cable	CS23 (RG58 C/U)
Terminations Available	BNC / TNC / FME / Bare End

## UHF Marine Antenna

Ratchet or deck mount option  
Various UHF frequencies  
Constructed from marine grade materials  
Optional GPS

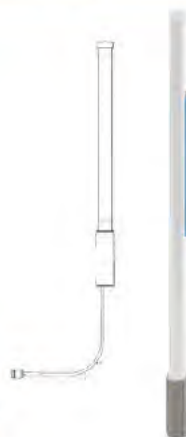
Panorama has developed a range of marine antennas to meet the increasing demand for coverage at sea.

This antenna can be supplied as a stand alone UHF antenna or a GPS/UHF combination type with a 26dB gain low noise GPS antenna, offering a simpler and quicker installation for the customer.

This antenna will fit the standard 1"x14TPI marine mounting systems, Panorama offers both deck and ratchet mount solutions. We can also supply custom extension coaxial cable sets to meet the customer's specific installation requirements

### Ratchet Mount - NDRS-SL

Constructed from polished stainless steel, Panorama's NDRS-SL Ratchet Mount is designed to endure the harshest marine environments



GPS Variants	Part No.	Frequency (MHz)
	NA-S1-GPS	380-400
	NA-S2-GPS	410-430
	NA-440-GPS	430-450
	NA-S4-GPS	450-470
	NA-S5-GPS	806-870

Variants	Part No.	Frequency (MHz)
	NA-S1	380-400
	NA-S2	410-430
	NA-440	430-450
	NA-S4	450-470
	NA-S5	806-870

Electrical Data		
Peak Gain: Isotropic		5dBi
Pattern		Omni-directional
Max Input Power (W)		25
Mechanical Data		
Dimensions (mm)	Length	620 (24.4")
	Diameter	30 (1.2")
Material		Fibre glass & stainless steel
GPS Data		
Frequency Range (MHz)		1575
GPS Gain		26dB



## Heavy Duty Rail

Standard four hole rail fixing  
Suitable for overground & underground trains  
N connector (comms)  
UHF or cellular frequencies



The TRNB(G) antenna series is designed specifically for use on trains, trams and buses underground or over ground. The TRNB(G) series is available for UHF bands or as a broadband version for 698MHz to 6GHz.

The TRNB(G) has a DC grounded radiating element and in versions with a GPS module it is protected by a gas discharge surge arrester. Housed in a high impact, flame retardant LEXAN housing, the TRNB(G) series is weatherproof, ensuring that the antenna's performance is never compromised.

### Rail Certified

The TRNB(G) is rail certified and conforms to EN 50155:2007, EN 61373:1999 and EN 50121



## Standard Data

Variants	Part No.	Frequency (MHz)	Electrical Data		
	TRNB-S1	380-400	Peak gain: Isotropic	5dBi	
	TRNB-S2	410-430	Pattern	Omnidirectional	
	TRNB-TET	380-430	Max Input Power (W)	60	
	TRNB-S4	450-470	Mechanical Data		
	TRNB-7-27	698-6000	Dimensions (mm)	Height	98 (3.86")
				Width	102 (4.01")
			Length	242 (9.52")	
		Radome Material	LEXAN EXL9330		
GPS Variants	Part No.	Frequency (MHz)	Base Material	Cast Aluminium - Alocrom 1000	
	TRNBG-S1	380-400	Mounting Type	4 x mounting holes to suit M12 bolts	
	TRNBG-S2	410-430	Operating Temperature (°C)	-40 / +80°C ( -40° / +176°F )	
	TRNBG-TET	380-430	Radome Flame Retardance	V0 (UL94)	
	TRNBG-S4	450-470	Radome Outdoor Use Rating	f1 (UL 746c)	
				Termination Data	
	TRNBG-7-27	698-6000	Comms	N (female) - DC grounded	
			GPS	SMA (female) - surge protected	

## Magnetic Antenna



Temporary fit  
Easy removal  
Strong magnetic retention

The MD range of antennas is a popular choice for public safety vehicles that require a temporarily fixed antenna. It is also ideal for leased vehicles.

The tough magnetic base will grip the antenna to the roof or boot but will leave no evidence that it was ever there once repositioned or removed.

Available in all standard UHF bands and also to customer-specific frequencies.



## Standard Data

Variants	Part No.	Frequency	Electrical Data	
	MD146-5	141-151	Peak Gain: Isotropic	2dBi
	MD-161-5	156-164	Compared to ¼ wave	0dB
	MD168-5	162-174	Bandwidth @ 2:1 VSWR	10%
	MD390-5	380-400	Polarisation	Vertical
	MD420-5	410-430	Pattern	Omni-directional
	MD-TET-5	380-430	Impedance	50Ω
	MD-451-5	430-472	Max Input Power (W)	50
	MD-S5-5	806-870	Mechanical Data	
			Operating Temp (°C)	-40° / +80°C (-40° / 176°F)
			Colour	Black

## Base Station Antenna

Mast mount

VHF, UHF and multiband versions

Ideal for fixed radio terminal applications

Quick assembly



UHF	Part No.	Frequency (MHz)	Peak Gain: Isotropic
	BSU-TET	380-430	2dBi
	BSU-TETG5	380-430	5dBi
	BSU-UT	406-472	2dBi
	BSU-U	430-472	2dBi
	BSU-S4	450-470	2dBi
	BSU-W	470-512	2dBi
	BS800	804-870	5dBi

Tri-Band	Part No.	Frequency (MHz)	Peak Gain: Isotropic
	BSV-155-S4-821	145-174/420-480/764-894	2dBi
	BSV-155-U1-B1	150-160/410-470/746-806	2dBi
	BSV-155-U1-S1	150-160/410-470/806-870	2dBi

VHF	Part No.	Frequency (MHz)	Peak Gain: Isotropic	Part No.	Frequency (MHz)	Peak Gain: Isotropic
	BSV-E3	67-74	2dBi	BSV-H4	141-151	2dBi
	BSV-E4	74-81	2dBi	BSV-H5	149-159	2dBi
	BSV-E5	81-88	2dBi	BSV-H6	156-162	2dBi
	BSV-H3	132-143	2dBi	BSV-H7	162-174	2dBi

### Electrical Data

Peak Gain: Isotropic

2dBi

Pattern

Omni-directional

Max Input Power (W)

100

### Mounting Data

Max mast diameter (mm)

50 (1.97")

Connector

'N' Socket

\*Some variants listed



## Rapid Deployment Clip Dipole (CDV/CDU Series)

Rugged construction  
Fast installation  
Moulded in coaxial cable



The 'Clip Dipole' range is designed for quick and easy assembly and installation on remote sites. It is used by the police and ambulance services when operating from remote venues, such as a public event or sports event.

Electrical Data	
Peak Gain: Isotropic	2dBi
Compared to ¼ wave	0dB
VSWR	<2.2:1
Polarisation	Vertical
Pattern	Omni-directional
Impedance	50Ω
Max Input Power (W)	50
Mechanical Data	
Operating Temp (°C)	-40°/+80°C (-40°/176°F)
Colour	Black

Part No.	Frequency
CDV-E3	67-74
CDV-E4	74-81
CDV-E5	81-88
CDV-H3	132-143
CDV-H4	141-151
CDV-H5	149-159
CDV-H6	156-162
CDV-H7	162-174
CDV-JRC	139-157
CDV-K5	174-192
CDV-K6	192-208
CDV-K7	208-225
CDV-M	245-275
CDV-N	270-300
CDV-P	300-336
CDV-R	330-366
CDU-S1	380-400
CDU-S2	410-430
CDU-TET	380-430
CDU-U1	410-470
CDU-U2	450-512
CDU-U	430-472
CDU-T2	420-456

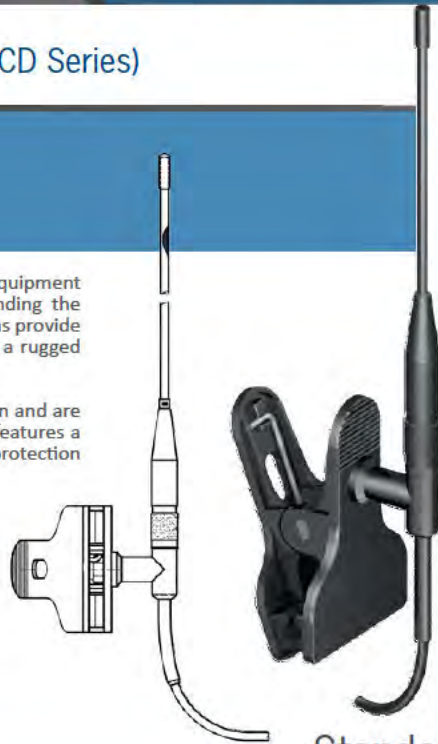
Variants

## Rapid Deployment Clip Dipole (CD Series)

Groundplane Independent antenna  
Fast 'clip on' installation  
Moulded coaxial cable

The performance and scope of portable equipment can often be considerably improved by extending the antenna to a more efficient height. Clip antennas provide an easy way to do this. The CD series features a rugged single end fed  $\frac{1}{2}$  wave element.

The jaws of the spring clip are moulded in nylon and are fully adjustable for any angle. The clip mount features a fully moulded coaxial connection for weather protection and resilience.



### Standard Data

#### Electrical Data

Peak Gain: Isotropic	3dBi
Compared to $\frac{1}{4}$ wave	1dB
VSWR	<2.2:1
Polarisation	Vertical
Pattern	Omni-directional
Impedance	50 $\Omega$
Max Input Power (W)	20

#### Mechanical Data

Operating Temp (°C)	-40° / +80°C (-40° / 176°F)
Colour	Black

Variants

Part No.	Frequency
CD390	380-400
CD420	410-430
CD433	430-450
CD458	445-470
CD800	806-870
CD900	870-960

## Low Profile Cellular LTE



- Improves range
- Easy installation
- Lightweight solution

The Panorama LPB low profile antenna range has been designed to perform in any environment. At only 82mm (3.22") high and in a robust high impact radome, the antenna is almost impervious to daily wear, tear and impact.

The LPB offers excellent performance across a wide bandwidth. Mounted on a 400 x 400mm (15.75" x 15.75") ground plane, the LPB covers LTE frequencies as well as all global cellular frequencies from 698-960 MHz and 1710-2700MHz, making it an extremely versatile product.



## Standard Data

Part No.		LPB-7-27-05SP	LPB-7-27-5SP	LPB-7-27-5F
Frequency (MHz)		698-960 / 1710-2170		
Peak Gain: Isotropic		3dBi (700/800) 4dBi (900/1800) 5dBi (1900/2100/2400/2600)		
Pattern		Omnidirectional		
Mechanical Data				
Dimensions (mm)	Height	82 (3.2')		
	Width	48 (1.9')		
Material		High-impact UV stable ABS		
Mounting Type		Automotive industry grade adhesive pad		
Cable Data				
Length (m)		0.5 (19.6")	5 (16'5")	5 (16'5")
Connector		SMA Plug	SMA Plug	FME Jack



## On Glass Cellular LTE

700 MHz LTE, Quadband Cellular, 3G UMTS, AWS  
LTE / WiMAX 2.6 GHz  
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 data-cards. These paddle antennas are easily positioned on a device housing or vehicle windscreen using the supplied automotive industry grade adhesive pad.

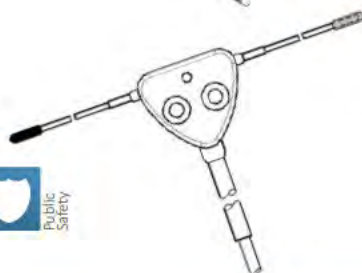
The antenna is ultra-wideband and ground plane independent making it ideal for machine-to-machine and mobile data applications. Covering 698-960 / 1710-2170 / 2396-2700 MHz, the EF-BC3G-26 is designed to support the full range of 2G / 3G and 4G frequencies globally.



## Standard Data

Part No.		EF-BC3G-26-3FAKRAD	EF-BC3G-26-3SP
Frequency (MHz)		698-960 / 1710-2170 / 2396-2700	
Operational Bands		LTE 700, GSM 850, CDMA 850, GSM 900, GSM 1800, PCS 1900, 3G UMTS, AWS, LTE / WiMAX	
Peak Gain: Isotropic		2dBi	
Max Input Power (W)		25	
Mechanical Data			
Dimensions (mm)	Height	131 (5.2")	
	Width	21.7 (0.9")	
Material		ASA	
Mounting Type		Automotive industry grade adhesive pad	
Cable Data			
Type		RG174	
Length (m)		3 (10')	
Diameter (mm)		5 (0.2')	
Connector		FAKRA D Jack	SMA Plug

## Dipole Antenna



The covert vehicle dipole antenna is specifically designed for installations where the presence of an antenna must be undetectable.

This specialist antenna is available in versions for VHF or UHF bands and requires tuning during installation to achieve optimal VSWR match. The antenna feed incorporates a 'Bazooka' balun to improve the frequency stability.



Part No.	Frequency (MHz)
VCD-VL-5F	68-88
VCD-VH-5F	130-175
VCD-S1-5F	380-400
VCD-S2-5F	410-430
VCD-S4-5F	450-470

Public Safety

### Electrical Data

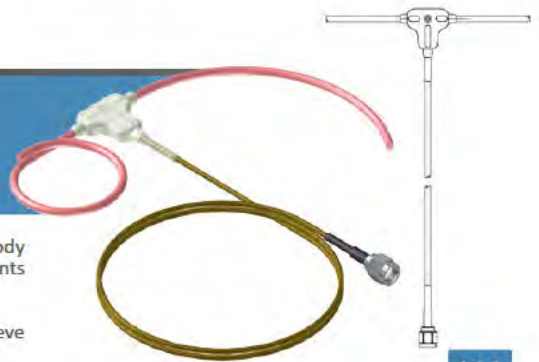
Peak Gain	2dBi
Compared to $\frac{1}{4}$ wave	0dB
Ground plane	Not required
Impedance	50 $\Omega$
Max Input Power (W)	100

## Bodyworn Dipole

- Dipole antenna
- Tuning optimised to individuals body
- Flexible wire elements
- Features fully molded T-piece

This antenna can be incorporated in clothing or body armour/stab vests and should be oriented with elements on a vertical plane.

Once in position, the antenna can be tuned to achieve the optimum VSWR/match.



Variants	Part No.	Frequency (MHz)	Part No.	Frequency (MHz)
	BWDT-H3	132-143	BWDT-T2	420-450
	BWDT-H4	141-151	BWDT-S4	450-470
	BWDT-H5	149-159	BWDT-495	470-520
	BWDT-H6	156-162	BWDT-815	806-870
	BWDT-H7	162-174	BWDT-24	2400
	BWDT-TET	380-430	Note: This antenna needs to be tuned whilst on a person's body.	

### Electrical Data

Peak Gain	2dBi
Impedance	50Ω
Max Input Power (W)	10

### Mechanical Data

Operating Temp (°C)	-40°/+80°C (-40°/176°F)
Material	Grey TPE
Colour	Grey

### Antenna Elements

Type	Multistrand copper wires
Colour	Pink

### Termination Data

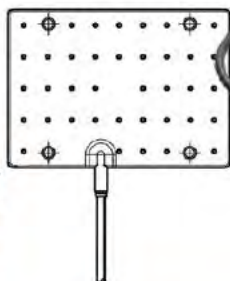
Connector	Various available on request
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## Bumper Antenna



- Fully covert application
- Mounted behind plastic bumper
- Flexible construction
- Does not require any tuning



The Panorama Bumper Mount Antenna is designed for covert operations and other applications which require a vehicle antenna that is effectively invisible.

Mounted in the vehicle's bumper, installation requires no drilling and is invisible from the outside of the car.

For optimum performance two bumper antennas can be used, one at the front of the vehicle and one at the rear, to help create a more omni-directional pattern around the vehicle and enable better network coverage. The BMP2 kits come complete with a power divider and 2 bumper mount antennas.

Variants	Part No.	Frequency (MHz)	Electrical Data	
	BMP1-S1	380-400	Peak Gain: Isotropic	Vary on installation
	BMP1-S2	410-430	Bandwidth @ 2:1 VSWR	10%
	BMP1-U	430-472	Pattern	Omni-directional
	BMP1-S4	450-470	Max Input Power (W)	25 (5 for BMP2)
	BMP1-7-27	700-2700	Mechanical Data	
			Operating Temp (°C)	-40°/+80°C (-40°/+175°F)
			Material	TPE
Dual Version	Part No.	Frequency (MHz)	Dimensions (mm)	
	BMP2-S1-DPD	380-400	Length	140 (5.5")
	BMP2-S2-DPD	410-430	Width	100 (3.9")
			Diameter	4 (0.1") (including adhesive pad)
	BMP2-S4-DPD	450-470	Fixing	Adhesive pad & 4 × fixing holes
			Cable Data	
			Type	CS23 (RG58 C/U)
			Length (m)	5 (16')
			Termination	FME socket/BNC

### BMP2-DPD

Combine two BMPs with a splitter to maximise coverage

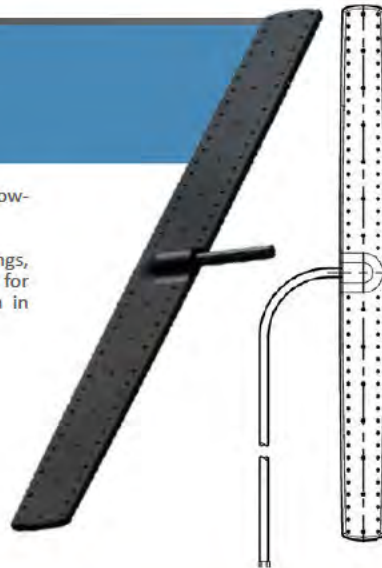


## Internal On Glass Antenna

Semi covert window mount antenna  
Install with no holes and no vehicle damage  
Flexible mounting for non-flat surfaces

The EF 'easy fit' antennas provide an effective low-visibility 'no-hole' solution.

With their secure but easy to fit adhesive pad mountings, the EF antenna provide a huge range of possibilities for the installer and is ideal for temporary installation in short-term use vehicles.



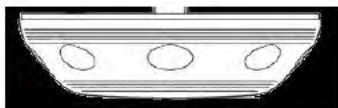
## Product Variants

Variants	Part No.	Frequency	Electrical Data	
	EF-S1	380-400	Peak Gain	2dBi
	EF-S2	410-430	Impedance	50Ω
	EF-S3	380-420	Max Input Power (W)	30
	EF-S4	450-470	Mechanical Data	
	EF-W	470-512	Operating Temp (°C)	-40°/+80°C (-40°/176°F)
	EF-S5	806-870	Material	TPE
	EFBAD	698-960	Colour	Black
	Termination Data			
	Connector		Various available on request	



## Ceiling Mount UHF Antenna

- Easy installation
- In building UHF coverage
- Suitable for airports and stadiums



The Panorama UHF ceiling antenna is designed to enhance network coverage in large buildings for the emergency services. Used in airports, large campus sites and shopping centres the antenna ensures there are no black holes in coverage or a reduction in signal strength.

## Product Variants

Variants	Part No.	Frequency (MHz)	Electrical Data	
	CM-S1-08NJ	380-400	Gain: Isotropic	0dBi
	CM-S2-08NJ	410-430	Pattern	Omni-directional
	CM-S4-03NJ	450-470	Impedance	50Ω
			Max Input Power (W)	25
			Mechanical Data	
			Dimensions (mm)	Height
				42
				Width
				160
			Operating Temp (°C)	-40°/+80°C (-40°/176°F)
			Material	ABS
			Colour	White (RAL9010)
			Mounting Data	
			Fixing	Ceiling tile mounting
			Mounting hole size (mm)	18
			Mounting length (mm)	72
			Cable Data	
			Type	CS23 Coaxial Cable
			Diameter (mm)	5
			Length (m)	0.8
			Termination	N Socket



## Ultra-wideband Ceiling Mount

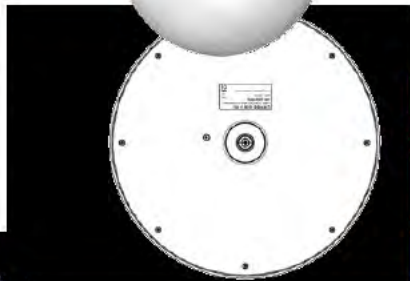
Discreet ceiling mount design  
Future-proof UHF and cellular coverage  
Flame retardant radome  
Low PIM

Panorama's CMWBD-038-3-NJ allows businesses and facilities to support multi-service / multi-operator wireless coverage. A wide range of services are supported from 380 MHz UHF to 6 GHz - including TETRA UHF, GSM900, AWS, Quadband GSM, 3G UMTS, 2.4 GHz WLAN, LTE & WiMAX etc.

This antenna provides DAS installers with a convenient 'one size fits all' solution.

### Featuring PIMGuard™

This product features Panorama Antennas' PIM Guard Technology and will meet or exceed a third order intermodulation level of <-140 dBc (2 x 43 dBm)



## Standard Data

Part No.		CMWBD-038-3-NJ
Frequency Range (MHz)		380-470, 698-960, 1710-6000
Operational Bands		UHF/2G/3G/4G/WLAN/WIMAX
Radiation pattern		Omnidirectional
Typical VSWR		< 2.5:1
Peak Gain		2dBi (698-960) 5dBi (1710-2170) 7dBi (2200-6000)
Typical Passive intermod. (2x20W, 3rd ord.) dBc+		<-140
Mechanical Data		
Dimensions (mm)	Height	150 (5.9")
	Diameter	266 (10.47")
Material		Geloy PC/ASA (chlorine and bromine free)
Mounting Data		
Fixing		N socket lock wheel
Diameter (mm)		6 (0.24")/16 (0.6")
Depth (mm)		41 (1.6")
Termination		N Socket

Typical range PIM performance verified @ 1900MHz under controlled conditions by Anritsu PIM Master test equipment.



## High-gain UHF Directional

8dBi peak gain  
Directional panel antenna  
Wall or mast mount

The WM8-TET is a directional panel antenna for UHF frequencies with a peak gain of 8dBi.

The heavy duty ASA radome is resistant to weathering and suitable for outdoor use in challenging environments. The enclosure is vented by a high performance GORE® gland which allows it to breathe while keeping moisture and contaminants out, further increasing service life.

Supplied with a multi-tilt wall and mast mount bracket the WM8-TET-NJ is perfect for inbuilding or light duty infrastructure applications.

## Standard Data

Electrical Data		WM8-TET	WM8-U2
Frequency Range (MHz)		380-450	450-520
Peak Gain: Isotropic		8dBi	
Compared to a dipole		6dB	
Pattern		Directional	
Impedance		50Ω	
Max Input Power (W)		100	
Mechanical Data			
Dimensions (mm)	Height	416 (16.37")	
	Width	416 (16.37")	
	Depth	60 (2.36")	
Operating Temp (°C)		-30° /+75°C (-22° /167° F)	
Materials		ASA & aluminium	
Ingress Protection		IP66	
Mounting Data			
Mounting type		Wall mount or mast mount	
Termination Data			
Termination		N socket	

## VHF & UHF Combined Ceiling Mount

- Covers VHF and UHF frequencies
- Ceiling mount design
- Low smoke halogen free flame retardant radome

Panorama's ceiling mounted solution is a dual band VHF/UHF ceiling mounted antenna designed for short range inbuilding, DAS and network infill applications.

The antenna combines omni-directional and UHF coverage in a single feed, minimising cable runs and allowing UHF radio systems to be integrated with existing VHF systems. The ceiling mount enclosure is weather-proof and constructed from flame retardant, low smoke halogen free PC/ASA.

The antenna is mounted via the integrated connector or optional screw fixings.



### Standard Data

Electrical Data		CM-H7-TET-NJ	CM-H7-S4-NJ
Frequency Range (MHz)		162-174 / 380-430	162-174 / 450-470
Radiation pattern		Omni-directional	
*Typical VSWR		≤ 2.5:1	
Peak Gain	162-174MHz	-2dBi	
	380-470MHz	-2dBi	
Max input power (W)		50 Watts	
Impedance		50Ω	
Mechanical Data			
Dimensions (mm)	Height	155mm (6.1")	
	Diameter	266mm (10.5")	
Operating temp (°C)		-30° / +70°C (-22° /158°F)	
Material		Geloy PC/ASA (meets UL746C f1)	
Flame Retardance		UL94-V0 (chlorine and bromine free)	
Mounting Data			
Fixing		Ceiling mount	
Termination		N Socket	



## Offset Dipole

Improves range  
Easy installation  
Light weight solution

The ODP wall mount antenna range is a simple and cost efficient way of providing a fixed antenna for terminals.

With 4 screw holes for mounting, the ODP is waterproof and can be fitted internally or externally.



Variants	Part No.	Frequency	Gain
	ODP-H5	149-159	2dBi
	ODP-H6	156-162	2dBi
	ODP-H7	162-174	2dBi
	ODP-TET	380-430	2dBi
	ODP-433	410-450	2dBi
	ODP-S4	450-470	2dBi
	ODP-S1G6-4B	380-400	6dBi
	ODP-S2G6-4B	410-430	6dBi
	ODP-S4G6-4B	450-470	6dBi

## Standard Data

Part No.	
Polarisation	Vertical
Pattern	Omni directional
Impedance	50Ω
Max Input Power (W)	20
Mechanical	
Operating Temp (°C)	-40°/+80°C (-40°/176°F)
Material	Engineering plastic
Colour	Black
Termination Data	
Cable/Connector	Various available on request

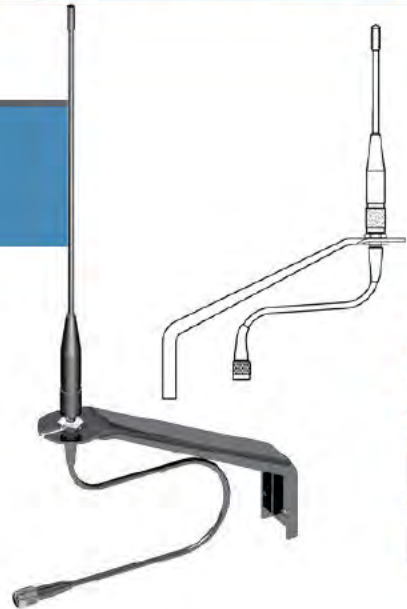
\*Some variants listed

## Bracket Mount

Used with fixed radio terminals  
Improves range  
Wall mount or mast mount options

The bracket mount antenna range is an easy to install solution, ideal for a fixed radio terminal in an office.

Emergency services often need a dispatcher radio and the BM range provides a simple and reliable solution for this application.



Variants	Part No.	Frequency (MHz)
	BM390	380-400
	BM420	410-430
	BM451	430-472
	BM460	450-470
	BM-S5	806-872
	BM900	890-960

## Standard Data

Part No.		
Gain: Isotropic		4dBi
Pattern		Omni directional
Impedance		50Ω
Max Input Power (W)		5
Mechanical Data		
Dimensions (mm)	Total Length	555 (21.8")
	Length of whip	420 (16.5")
Operating Temp (°C)		-40°/+80°C (-40°/176°F)
Mast diameter range (mm)		50.8 / 32.0
Cable Data		
Type		CS23
Length (m)		4.5 (14'9")
Diameter (mm)		5 (0.2')
Cable/Connector		Various available on request

\*Some variants listed

## Modular Stud Mount Antenna Bases

The modular whip range are interchangeable and any whip will fit on any of the modular bases. This allows a high level of flexibility and a wide range of options to suit every application.

### Permanent



Permanent: Panel mount, with a simple hole installation. These installations are secure and watertight.

### Temporary



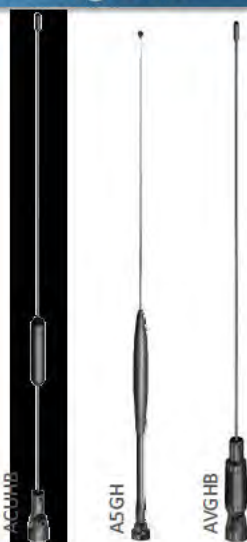
Temporary: Damage free and fast installations for drive testing or rental vehicles. Temporary bases provide a secure solution for situations where drilling holes is not possible.



### 1/4 Wave



### High Gain



### Multi-band





## M8 & M8A

Panel mount  
Rugged design  
Modular stud fitting  
Interchangeable whips



The M8 is the "industry standard" panel mount base. It incorporates stainless steel earthing teeth and a fully moulded construction with high quality coaxial cable for low loss and long term reliability.

The base is easy to fit and can be installed from above or below the panel. With the modular stud fitting, almost any antenna in the Panorama range can be fitted to the base.

Part No.	M8	M8A
Dimensions (mm)	Base Height	15 (0.6")
	Base Diameter	28 (1.1")
Operating Temp (°C)	-40°/+80°C (-40°/+175°F)	-40°/+80°C (-40°/+175°F)
Material	Nylon, stainless steel & nickel plated brass	Nylon, stainless steel & nickel plated brass
Cable Data		
Type	CS23 (RG58 C/U)	CS23 (RG58 C/U)
Diameter (mm)	5 (0.2")	5 (0.2")
Length (m)	4.8 (16')	4.8 (16')
Termination	Bare end	Bare end

## MMR & MBM

Temporary mount  
Rugged design  
Modular stud fitting  
Interchangeable whips



The MMR is large secure magnetic base for professional use, offering a fully moulded construction with high quality coaxial cable for low loss and long term reliability.

The MBM is a boot clip base designed for secure fixing.

Part No.	MMR-5	MBM
Dimensions (mm)	Base Height	23 (0.9")
	Base Diameter	38 (1.5")
	Base Length	42.5 (1.7")
Material	Nylon & nickel plated brass	Nylon & nickel plated brass
Cable Data		
Type	CS23 (RG58 C/U)	CS23 (RG58 C/U)
Diameter (mm)	5 (0.2")	5 (0.2")
Length (m)	5 (16')	5 (16')
Termination	Bare End	Bare End



### SAB-181

The NMO fitting can be converted to Panorama modular stud with the SAB-181 accessory. This allows use with the full modular antenna range.

## Panel Mount Base

Panel mount

Suitable for various whips

Stainless steel earthing teeth

The Panorama 'NMO' 3/4 inch panel mount antenna base combines compatibility with NMO style antennas with rugged engineering and high quality construction.

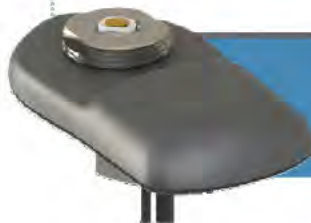
This quality panel mount is made from nickel plated brass to resist corrosion, and the earthing teeth are stainless steel to provide excellent earthing with every installation.



Public  
Safety  
Transport

Part No.	MINMOM-5		MINMOM-5F	
Dimensions (mm)	Diameter	28 (1.1")		
	Height mounted	19 (0.75")		
Operating Temp (°C)	-40°/+80°C (-40°/+175°F)			
Material	Nylon, stainless steel & nickel plated brass			
Cable Data				
Type	CS23		CS23	
Diameter (mm)	5 (0.2")		5 (0.2")	
Length (m)	5.2 (17')		5.2 (17')	
Termination	Bare end		FME (f)	

## Panel Mount Base With GPS



Panel mount

Rugged design

NMO fitting

Interchangeable whips

The GPSNMO is a GPS combination antenna that features a low-profile NMO mount and a high-performance GPS element with 26dB gain LNA.

This base fits on surfaces up to 6.5mm thick with a single hole.



GPS  
Public  
Safety  
Transport

Part No.	GPSNMO
Frequency Range	130-2700 (dependent on whip)
Base Diameter	102 (4.0")
GPS Data	
Frequency	1575
Gain: LNA	26dB
Termination Data	
Mounting Hole Size	19mm (3/4")
GPS Cable	SMA Plug
Comms Cable	Bare end

## Rigid 1/4 Wave Whip

1/4 wave whip

Removable for car wash

Hinged & non-hinged versions

The AQB & AQHB are Panorama's standard single frequency 1/4 wave rigid whips. These antennas feature a 17-7 PH stainless steel rod with a plated brass terminal protected by black nylon moulding.

The Panorama mounting system provides a high degree of interchangeability between whips and bases, making them suitable for all applications whether temporary or permanent. For use with all Panorama modular bases and available for VHF & UHF frequency bands.



Part No.	Frequency (MHz)
AQHB-H4A	138-155
AQHB-H6A	155-174
AQHB-TET	380-430
AQHB-U	430-472
AQHB-W	470-512
AQHB-S5	806-870

## Standard Data

Electrical Data	
Non-hinged version	AQB
Hinged version	AQHB
Electrical Data	
Peak Gain: Isotropic	2dBi
Compared to 1/4 wave	0dB
Polarisation	Vertical
Pattern	Omni-directional
Impedance	50Ω
Max Input Power (W)	100
Mechanical Data	
Operating Temp (°C)	-40°/+80°C (-40°/+175°F)
Material	Stainless steel & nylon
Colour	Black



## Configure Your Base

Turn to page 32 to select a compatible base for this product. Panorama's wide versatile range of bases mean that it's simple to get the right solution for any antenna application.



### High Gain Style Whips

High gain  
Removable for car wash  
Hinged & non-hinged versions

The A5G series is a broadband collinear antenna, the phasing coil is over-moulded to provide a rugged antenna for demanding applications.

The ACU series is a high-gain antenna for use where network signal is low.

Both antennas are available in fixed or hinged versions.



### Standard Data

Non-Hinged	Part No.	Frequency	Electrical Data	A5GH/A5GM	ACUB/ACUHB
	A5GM-TET	380-430	Peak Gain: Isotropic	5dBi	7dBi
	A5GM-S4	450-470	Compared to ¼ wave	3dB	5dB
	ACUB-S1	380-400	VSWR	<2:1	
	ACUB-S2	410-430	Polarisation	Vertical	
	ACUB-U	430-472	Pattern	Omni-directional	
	ACUB-460	450-470	Impedance	50Ω	
	ACUB-W	470-512	Max Input Power (W)	50	
Mechanical Data					
Hinged	Part No.	Frequency	Operating Temp (°C)	-40°/+80°C (-40°/176°F)	
	A5GH-TET	380-430	Material (coil)	Polyamide	
	A5GH-S4	450-470	Material (whip)	17-7 Stainless steel	
	ACUHB-S1	380-400	Colour	Black	
	ACUHB-S2	410-430			
	ACUHB-U	430-472			
	ACUHB-460	450-470			
	ACUHB-W	470-512			

## Base Loaded Gain Whips

Gain whips  
Rugged construction  
Hinged base and removable whip

The AVGHB/AUGHB range is a durable solution for vehicle installations requiring a medium gain antenna. The antennas feature a fully encapsulated impedance matching coil and a 17-7PH stainless steel whip.

The AVGHB & AUGHB ranges are compatible with the full range of Panorama Antennas modular bases and incorporates a hinge to enable vertical orientation.



## Standard Data

Variants	Part No.	Frequency	Electrical Data	AVGHB	AUGHB
	AVGHB-H4	141-151	Peak Gain: Isotropic	5dBi	3.5dBi
	AVHGB-H5	149-159	Compared to ¼ wave	3dBi	1.5dB
	AVGHB-H6	156-162	VSWR	<2:1	
	AVGHB-H7	162-174	Polarisation	Vertical	
			Pattern	Omni-directional	
			Impedance	50Ω	
Variants	Part No.	Frequency	Max Input Power (W)	50	
	AUGHB-S1	380-400			
	AUGHB-S2	410-430	Mechanical Data		
	AUGHB-TET	380-430	Operating Temp (°C)	-40°/+80°C (-40°/176°F)	
	AUGHB-U	430-472	Material (coil)	Polyamide	
	AUGHB-460	450-470	Material (whip)	17-7 Stainless steel	
	AUGHB-W	470-512	Colour	Black	

## VHF Wideband Antenna

Wideband VHF antenna  
Shock mount base

The AVWB is designed for vehicles that need a wide VHF range and require a rugged antenna.

The AVWB is compatible with all of the modular bases in the Panorama range.

Supplied with an integrated shock mount, the antenna is protected from impact and damage in low clearance situations.



### Standard Data

Electrical Data		
Frequency Range	VHF	138-169
Peak Gain	VHF	2dBi
VSWR		≤ 2.2:1
Maximum input power (W)		100
Mechanical Data		
Operating Temp (°C)		-40° / +80°C ( -40° / +176°F)



## 3dB Gain Flexible Whips

OEM bee-sting style  
High peak gain  
Flexible overmoulded construction

The AFGB offers omni-directional performance with 5dBi peak gain. The antenna whip is styled like an OEM 'bee-sting' type antenna and is both discrete and durable featuring an overmoulded coil and stainless steel rod.

The antenna base is flexible for added damage resistance and can be mounted on a range of Panorama GPS combination bases such as the GPSB and GPSK - please see page 6 for more information on the GPSB and page 9 for the GPSK.



## Standard Data

Variants	Part No.	Frequency	Electrical Data	
	AFGB-395	380-410	Peak Gain: Isotropic	5dBi*
	AFGB-S2	410-430	Typical VSWR	< 2:1
	AFGB-S4	450-470	Polarisation	Vertical
	AFGB-832	760-870	Pattern	Omni-directional
	AFGB-B1	745-806	Impedance	50Ω
	AFGB-S5	806-870	Max Input Power (W)	60
	Mechanical Data			
			Operating Temp (°C)	-40° / +80°C ( -40° / 176°F )
			Material	Stainless Steel & TPE
			Termination	M6 x 0.75

\* Peak gain of AFG-832 = 4dBi

## VHF ¼ Wave Flexible Whip

OEM bee-sting style  
Wideband ¼ wave  
Flexible overmoulded base

The AFBQ is a rugged VHF ¼ wave whip for use on GPSK & GPSB base types.

This antenna whip is styled to resemble an OEM 'bee sting' type design and is both discrete and durable, featuring an overmoulded shock spring and stainless steel rod.



## Standard Data

Variants	Part No.	Frequency	Electrical Data	
	AFBQ-H4A	138-155	Peak Gain: Isotropic	2dBi
	AFBQ-H6A	155-174	Typical VSWR	< 2:1
	AFBQ-H5	149-159	Polarisation	Vertical
	AFBQ-H7	162-174	Pattern	Omni-directional
			Impedance	50Ω
			Max Input Power (W)	60
	Mechanical Data			
			Operating Temp (°C)	-40° / +80°C ( -40° / 176°F )
			Material	Stainless Steel & TPE
			Termination	M6 x 0.75

### 1/4 Wave Flexible Whips

1/4 wave whip  
Removable for car wash  
Rugged, flexible design  
Suitable for GFSK, GFSB and GFSKM bases

This antenna features a flexible construction within a black nylon tube. This provides damage resistance without compromising RF performance.

The Panorama mounting system provides a high degree of interchangeability between whips and bases, making them suitable for all applications whether temporary or permanent.



### Standard Data

Variants	Part No.	Frequency	Electrical Data	
	AFB-S1	380-400	Gain: Isotropic	2dBi
	AFB-S2	410-430	Compared to 1/4 wave	0dB
	AFB-TET	380-430	Polarisation	Vertical
	AFB-U	430-472	Pattern	Omni-directional
	AFB-UT	406-472	Impedance	50Ω
	AFB-S4	450-470	Max Input Power (W)	100
	AFB-W	470-520	Mechanical Data	
	AFM835	806-870	Dimensions (mm)	Height 463 (18.2") Diameter 10(0.4")
			Operating Temp (°C)	-40° / +80°C (-40° / 176°F)
Variants	Part No.	Frequency	Material	
	AFNT-H4A	138-155	Multistrand cable & Nylon	
	AFNT-H6A	155-174	Black	
	AFNT-TET	380-430	Mounting Data	
	AFNT-U430	450-470	Fixing	M6 x 0.75 (GPSB, GFSK & MAR bases)
	AFNT-U2	450-512		



## Tri Band Whip

Tri band performance

Flexible rod with wound element

Fits Panorama GPS combination bases

This whip is stylish, discrete and durable, featuring a flexible overmoulded base section and a black jacketed flexible wound rod element.

This whip is designed to be mounted on the GPSB and GPSK range of bases - please see page 6 for more information on the GPSB and page 9 for the GPSK.



Public  
Safety



Utility



## Standard Data

Variants	Part No.	Frequency (MHz)
	ASFC-155-U2-B1	150-160 / 450-512 / 745-806
	ASFC-155-U2-S5	150-160 / 450-512 / 806-876
	ASF-155-S4-821	150-160 / 450-470 / 764-896
	AS-H5-6-7-S1-440	148-174 / 380-400 / 430-450
	AS-E4-TET	73-80 / 380-430

### Electrical Data

Peak Gain: Isotropic	2dBi
Typical VSWR	< 2:1 @ VHF / < 2.5:1 @ UHF / < 2:1 @ 800MHz
Polarisation	Vertical
Pattern	Omni-directional
Impedance	50Ω
Max Input Power (W)	60

### Mechanical Data

Operating Temp (°C)	-40° / +80°C ( -40° / 176°F )
Material	Flexible TPU, FRP, EPDM
Colour	Black

## VHF / UHF Diplexer

Allows dual band antenna to be used with 2 radios  
4m OR 2m VHF & UHF Bands



The Panorama VHF/UHF diplexer is housed in a compact, robust die cast case for reliability and easy mounting.

This Diplexer allows the Panorama dual band antenna to be used with 2 single band radios.

The Diplexer uses a stripline design to provide low insertion loss with high port to port isolation and high power handling capability.



## Standard Data

Electrical Data		
Frequency Range (MHz)	VHF	50 - 210
	UHF	270 - 1000
Insertion Loss	VHF	< 1dB
	UHF	< 1dB
Min. port-to-port isolation		> 40dB
Maximum input power		100
Mechanical Data		
Dimensions (mm)	Length	100 (3.9")
	Width	90 (3.5")
	Height	20 (0.8")
Operating Temp (°C)		-30°/+70°C (-22°/+158°F)
Material		Aluminium
Colour		Black
Termination		FME on all ports(male)
Mounting Data		
Fixing		4 × Mounting holes



## VHF / UHF / 7-800MHz Triplexer

Use one antenna for 3 radios or vice versa

VHF, UHF, 7/800MHz

Low Insertion loss, high port-to-port Isolation



The Panorama triplexer, TPX-VH-UHF-BA-TNC can either combine the signals from three antennas to a single multiband radio or split the signal from a tri-band antenna to three separate radios. Each port provides a low insertion loss passband for the respective frequency range. The unit is available with TNC female connector type on each port

This compact unit requires no power and can easily be installed in the roof lining of any vehicle or mounted next to the radio.

## Standard Data

Electrical Data		
Frequency Range (MHz)	VHF	136-174
	UHF	380-520
	7/800	760-896
Insertion Loss	VHF	< 1dB
	UHF	< 1dB
	7/800	< 1dB
Isolation between ports		> 55dB
Maximum input power		150 Watts
Mechanical Data		
Dimensions (mm)	Length	140 (5.5")
	Width	100 (3.94")
	Thickness	25 (0.98")
Operating Temp (°C)		-20° / +80°C (-4° / +175°F)
Material		Aluminium
Termination		TNC sockets on all ports
Mounting Data		
Fixing		4 × Mounting holes



## VHF / UHF With 7-800MHz Diplexer

Use one antenna for 2 radios  
Splits VHF & UHF from 7/800MHz & cellular  
Easy to install

The DPX-500-700 offers the opportunity to utilise a single multiband antenna with two radios. This conserves valuable vehicle real estate and saves on antenna installation costs.

The diplexer has low loss characteristics and is perfect for splitting a single antenna to a VHF or UHF radio and a 7/800MHz radio.

The diplexer is compact enough to locate in a vehicle headliner and is fitted with FME (m) connectors.



## Standard Data

Electrical Data		
Frequency Range (MHz)	VHF / UHF	50 - 500
	700-2500MHz	700- 2500
Max. in-band insertion loss	VHF / UHF	< 0.75dB
	700-2500MHz	< 0.75dB
Min. alternate Band Rejection	VHF/UHF	>40dB
	700-2500MHz	>30dB
Min. port-to-port isolation		> 25dB
Maximum input power		50 Watts
Mechanical Data		
Dimensions (mm)	Length	91 (3.58")
	Width	61 (2.4")
	Height	14 (0.55")
Operating temp (°C)		-30°/+70°C (-22°/+158°F)
Material		Aluminium
Termination		FME plugs on all ports
Mounting Data		
Fixing		4 x Mounting holes
Hole diameter (mm)		4 (0.16")

## F-HP270-F - High Pass Filter F-LP210-F - Low Pass Filter



Low insertion loss  
High out of band rejection

The F-HP270-F offers an ideal solution for protecting UHF transmitters from out of band interference. The F-HP270-F can be used with the F-LP210-F to protect co-located VHF / UHF systems from interfering with each other if this is a concern.

The filter has very low insertion loss characteristics combined with exceptional out of band rejection.

The filter is compact enough to locate in a vehicle headliner and is fitted with FME (m) connectors.

## Standard Data

F-LP210-F			F-HP270-F		
Frequency pass range (MHz)	0-210		Frequency pass range (MHz)	270-1000	
Max. in-band	< 0.5dB		Max. in-band	270-1000MHz	< 0.8dB
Min. out of band	270-1000MHz	> -30dB	insertion loss	380- 430MHz	< 0.2dB
	380-430MHz	> -60dB		Min. out of band	0-210MHz
Typical VSWR	<1.5:1			136-174MHz	> -60dB
Maximum input power	50 Watts		Typical VSWR	<1.5:1	
Mechanical Data			Mechanical Data		
Dimensions (mm)	Length	100 (3.94")	Dimensions (mm)	Length	100 (3.94")
	Width	90 (3.54")		Width	90 (3.54")
	Diameter	20 (0.8")		Diameter	20 (0.8")
Operating Temp (°C)	-40° / +80°C (-40°/176°F)		Operating Temp (°C)	-40° / +80°C (-40°/176°F)	
Material	Aluminium			Material	Aluminium
Termination	FME plugs on all ports		Termination	FME plugs on all	
Mounting Data			Mounting Data		
Fixing	4 × 4mm (0.16")		Fixing	4 × 4mm (0.16")	

## UHF Antenna Combiner

Combines two UHF radios on the same antenna

Combines two antennas on the same radio

When you can only fit one antenna on a vehicle, then this combiner is the solution providing > 26dB isolation over 380-430MHz with an antenna match at 1.2:1 and low insertion loss.

### Technical Note:

The isolation provided by this device is dependent on the antenna VSWR. An antenna match of 1.5:1 VSWR will result in a reduction of isolation to 20dB. Higher VSWR on the antenna port will result in a further reduction in isolation between the TX ports. During operation extreme care should be taken to ensure that the VSWR of the antenna connected to the combiner does not exceed 1.5:1.

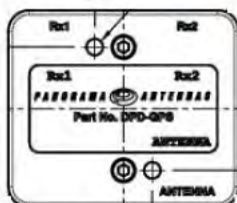


## Standard Data

Part No		
Frequency Range (MHz)		380-430
Split Loss		3dB
Insertion Loss		< 0.5dB
Isolation TX1 - TX2	≥ 26dB	VSWR of 1.1:1 at antenna port
	≥ 26dB	VSWR of 1.2:1 at antenna port
	≥ 20dB	VSWR of 1.5:1 at antenna port
VSWR at Tx1 / Tx2	< 1.5:1	VSWR of 1.5:1 at antenna port
Max input power (W)		20 per port
Mechanical Data		
Dimensions (mm)	Length	72 ( 2.83" )
	Width	72( 2.83" )
	Height	23 ( 0.90" )
Operating Temp (°C)		-40° / +80°C ( -40° / 176°F)
Material		Aluminium
Termination		N sockets on all ports



## GPS Splitter



Reduce installation costs

Run two GPS receivers from a single antenna

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 is perfect for ensuring that both GPS receivers can use an optimally located antenna, thereby reducing clutter and installation costs.

## Standard Data

Part No.		
Frequency Range (MHz)		1575
Insertion Loss		< 0.5dB
Isolation between GPS ports		> 15dB
Impedance		50Ω
Max input power		1W
DC Feed voltage		Fed via Rx1 Port
Mechanical Data		
Dimensions (mm)	Height	14 (5.5")
	Length	47.8 (1.8")
	Width	56 (2.2")
Operating Temp (°C)		-30° / +80°C (-22° / 176°F)
Material		Aluminium
Connectors		FME plugs on all ports
DC Feed connector		FME plug

## MTP850 Adapter

Remote antenna adaptor for Motorola MTP850 radio  
Spring loaded contact pin  
Sturdy quick release lock

A 'one of a kind product' the ADPT-85-05SJ is specifically designed for use with the Motorola MTP850 TETRA radio. With spring loaded contact pin and durable quick fit/release feature, the ADPT is both simple to connect and reliable to use. Designed for use with any antennas from Panoramas' temporary, vehicle and body worn ranges the ADPT unlocks the full potential of the MTP850 radio for covert, surveillance and other tactical applications.

**Note:** The standard belt clip cannot be used in conjunction with this adaptor.



### For Motorola MTP850

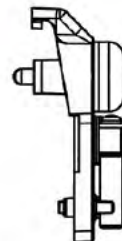
The ADPT-85-05SJ is for use with Motorola MTP850 series portable terminals

## Standard Data

Mechanical Data		
Dimensions (mm)	Height	47 (1.9")
	Width	30 (1.2")
	Depth	19 (0.7")
Operating Temp (°C)		-40° / +80°C
Material		PC/ABS
Colour		Black
Cable Data		
Type		RG316
Diameter (mm)		3 (0.12")
Length (m)		0.5 (1'7")
Termination		SMA Jack

### Compatible Antennas

**BWDT** - Bodyworn Dipole (covert surveillance)  
**MD-TET** - Magnetic Base TETRA Antenna (temporary vehicle)  
**EF Series** - Covert TETRA Antenna (vehicle covert)  
**CD Series** - Clip Dipole (temporary fixed)



## Portable Flexi-whip

Radio mounted quarterwave whip  
Moulded strain relief  
Push fit rotating connector  
Ideal for covert/bodyworn applications

For Motorola MTP850

For Sepura SRC3000


















These antennas are "Super flexi" quarter wave whips. When fitted and tuned correctly the antenna will have a typical VSWR of 1.5:1 or less, guaranteeing less drop out and better quality signal.

These whips use specialist terminations which make installation and removal very simple. It's durable, flexi-wire whip design with moulded strain relief makes it ideal for covert and bodyworn applications.

## Standard Data

Electrical Data		QFFM-QMAP-TET	SFQ-MT8-TET
Frequency Range (MHz)		380-430	
Gain: Isotropic		2dBi	
Compared to ¼ wave		0dB	
Bandwidth @ 2:1 VSWR		20%	
Polarisation		Vertical	
Pattern		Omni-directional	
Impedance		50Ω	
Max Input Power (W)		50	
Mechanical Data			
Dimensions (mm)	Total Height	172 ( 6.7" )	180 (7.1")
	Height of Whip	132 ( 5.19" )	11 (0.43")
Operating Temp (°C)		-40° / +80°C ( -40° / 176°F )	
Material		Stainless steel & PVC	
Colour		Black	
Connector		QMA	MTP850



Connector	Antenna
	MXK, PXX, MVQ, MFX, MQ, MFXU
	XPK, MFX, MQ, MFXU
	PXX, MFX, MFXU, MQ
	MFX, MFXU, MQ
	MXK, PXX, MVQ, MFX, MQ, MFXU
	MXK, PXX, MVQ, MFX, MQ, MFXU
	MXK, PXX, MVQ, MFX, MQ, MFXU
	MXK, MFX, MFXU
	PXX, MFX, MQ, MFXU
	PXX, MFX, MQ, MFXU
	MXK, MFX, MQ, MFXU
	MXK, PXX, MVQ, MFX, PUG, MQ, MFXU
	MXK, PXX, MVQ, MFX, MQ, MFXU
	MXK, PXX, MVQ, MFX, MQ, MFXU
	PXX, MFX, MQ, MFXU

## Portable Antennas

Panorama offers a comprehensive range of portable antennas. The MFX, MXK, PXX and MQ range are totally overmoulded in TPE or TPU thermoplastic while the remainder have a rugged Nylon moulding securing the outer sleeve to the termination. These features improve both the durability and life expectancy of the antenna.

Connector styles are available to fit most portable radio terminals.



Part No.	MXK	PXX	MFX	MFXU	MVQ	MQ	PUG
Description	moulded compressed helical	moulded compressed helical	moulded VHF helical	moulded UHF helical	moulded UHF quarterwave	moulded UHF quarterwave	UHF halfwave
Frequency	67-88	141-225	141-366	330-512	141-336	330-512, 698-960	350-512
Length (inch)	7.68 @ 68MHz	3.25 @ 146MHz	6.69 @ 451MHz	2.84 @ 451MHz	19.69 @ 146MHz	6.14 @ 451MHz	13.39 @ 451MHz
Max Diameter (mm)	14	10	10	10	14	11	16

## Cables

### CS23 Type for VHF-UHF

Cable Data	
Impedance	50Ω
Attenuation (per 10m)	2.5 dB @ 400 MHz, 4 dB @ 1GHz, 5.8 dB @ 2GHz, 11 dB @ 6GHz
Outer Diameter (mm)	5 (0.2" in)

### CS29 Type - for 4G LTE

Cable Data	
Impedance	50Ω
Attenuation (per 10m)	3dB @ 400 MHz, 5dB @ 1 GHz, 7.5dB @ 2 GHz
Outer Diameter (mm)	5 (0.2" in)
Shielding Effectiveness	785dB (According to IEC 61196)

### C74 Type - for GPS

Cable Data	
Impedance	50Ω
Attenuation (per 10m)	1.25 dB @ 1.575GHz
Outer Diameter (mm)	2.8 (0.1" in)

### C240 Type - for 5m + extensions

Cable Data	
Impedance	50Ω
Attenuation (per 10m)	3.8 dB @ 2 GHz
Outer Diameter (mm)	6 (0.2" in)

### C400 Type - for InBuilding

Cable Data	
Impedance	50Ω
Attenuation (per 10m)	1 dB @ 400 MHz, 1.4 dB @ 1 GHz, 2 dB @ 2GHz
Outer Diameter (mm)	10.29 (0.4" in)

## Coaxial Adaptors



Part No.	CA-BP-FP	CA-FP-FP	CA-MP-FP
Termination 1	BNC Plug (male)	FME Plug (male)	Mini-UHF Plug (male)
Termination 2	FME Plug (male)	FME Plug (male)	FME Plug (male)



Part No.	CA-NP-FP	CA-PLP-FP	CA-SP-FP
Termination 1	N Plug (male)	PL259 Plug (male)	SMA Plug (male)
Termination 2	FME Plug (male)	FME Plug (male)	FME Plug (male)



Part No.	CA-TP-FP	CA-FJ-FJ
Termination 1	TNC Plug (male)	FME Jack (female)
Termination 2	FME Plug (male)	FME Jack (female)



## Frequency Band Plan

VHF

UHF

SHF

Frequency (MHz)	Band
380-430	TET
390-432	T
400-430	T1
410-430	S2
410-470	U1
420-456	T2
430-472	U
450-470	S4
450-512	U2
470-512	W
500-520	W2
745-806	B1
806-870	S5
801-896	AMPS/CDMA850
872-960	GSM900
1575	GPS
1710-1882	GSM1800
1710-1755	AWS
1850-1990	PCS1900
1900-2170	UMTS
2100-2170	3G UMTS
2110-2155	AWS
2400-2470	BLUETOOTH/WLAN
2394-2696	WiMAX
4900-5800	WiMAX/WiFi



### **Important Waiver Information**

All information and data in this catalogue is intended to provide an indication of the performance of our products under particular circumstances and none of it implies a guarantee of performance or fitness for any particular purpose.

We strongly encourage our customers to conduct their own tests in order to establish the appropriate product for any particular application.

All products should only be installed by a properly qualified installer familiar with appropriate local laws and regulations. We advise our customers to consult and comply with the appropriate Panorama Antennas installation instructions.

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